GOVERNANCE, MANAGEMENT AND PROFESSIONAL INFLUENCES ON INFECTION CONTROL IN CANTERBURY PUBLIC HOSPITALS 1978-2008

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ABSTRACT

An infection control service was introduced in Canterbury hospitals in 1978 with the employment of an infection control nurse and the establishment of an infection control committee (ICC). The development was in keeping with international trends and was initially requested by the Department of Health. Hospital infection was acknowledged as a public health issue with international research showing that up to 10% of patients develop a nosocomial infection in public hospitals.

The overall aim of this thesis is to evaluate the forces which shaped the development and performance of infection control in Canterbury public hospitals during 1978-2008 including governance by the state and hospital administration, hospital management and professional influences.

The research is an historical evaluation, based on mainly written material related to the operation of the Infection Control Committee and Infection Control Service in Canterbury Hospitals 1978-2008. Documents included ICC Annual Reports, ICC Minutes and correspondence, correspondence to and from the Infection Control operational group and reports on incidences and investigations. Key informant interviews supplemented documentary sources and provided data not available from written sources.

Five time periods were identified in this project (A: 1978-89 Medical management with early introduction to managerial approach; B: 1989-93 Conversion of hospital boards to area health boards; C: 1993-96 Introduction of Crown health enterprises and a market approach; D: 1996-2000 A coalition of political parties and retreat from the market approach and E: 2000-08 Introduction of district health boards). These periods reflect changes in public policy and the structure of the health services. Material collected for each period was analysed according to identified themes, including the development of the service according to progress towards New Zealand Standard on Infection Control NZS 8142:2000.

The research shows that the infection control nurse(s) and the medical microbiologist formed the infection team throughout the total period and received support from professional groups on the infection control committee and other groups of staff. Within a few years of operation
the infection control team’s work developed, from providing surveillance, education and guidelines, into multiple areas of hospital operation.

The governance structure represented by the Department/Ministry of Health encouraged infection control throughout the period with an initial support for education, but changing over time, from direct communication and requirements for surveillance data, to assessment of infection control performance at hospital certification via the hospitals’ quality systems. The research showed that the political changes in health also had an impact on infection control.

Institutional management provided varying support across the time periods studied, but generally management acknowledged that infection control was essential for the hospitals quality system and service effectiveness.

The infection control services were also shaped by responding to regular outbreaks, with the largest and most intense outbreaks occurring during the period when the Canterbury hospitals were divided into two CHEs. Outbreaks with viral organisms, especially norovirus, became prominent during the last period (2000-2008).

The research demonstrates infection control’s involvement in the development of the occupational health services and discusses the professional education of the infection control staff during the periods.
My first recollection of infection prevention and control practice came during medical training. As a medical student in Aarhus Denmark, during a surgical attachment in a cardio-thoracic ward in the early 1970s, one of the senior surgeons showed us, students, data he had collected on surgical wound infections analysed according to the operating surgeon. The same surgeon also instructed us in using an alcohol swab to clean the membrane on stethoscopes, before applying to a patient’s chest and required us to keep several alcohol swabs in our pockets for use at the bedside. The importance of a senior medical staff instructing students in infection control during a routine attachment only dawned on me later as I became aware how new this quality procedure was. Similarly I am grateful for the time operating theatre staff took to educate us as medical students in aseptic techniques and donning of personal protective gears. These early instructions laid a good foundation for later practice.

I want to thank my microbiology supervisor Joan Faoagali, who made sure that Infection Control was part of my curriculum during my specialist training and to the many infection control staff, I have worked with and who have inspired me over the years.

During preparations of this thesis I wish to thank my two supervisors, Pauline Barnett and Cheryl Brunton for their guidance, productive feedback on submitted drafts and for the stimulating discussion during the preparation.

Special thanks to my husband Jorgen, for his support and patience throughout the entire process.
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ABBREVIATIONS

AHB: Area Health Board
AIDS: Acquired Immunity Deficiency Syndrome
APIC: Association for Professional Infection Control and Epidemiology
BBFE: Blood and body fluid exposure
BCG: Bacillus Calmette Guérin (Tuberculosis vaccine)
CCMAU: Crown Company Monitoring Advisory Unit
CD: Clinical Director
CDC: Centers for Disease Control and Prevention (Atlanta, GA 30333 USA)
CDHB: Canterbury District Health Board (2000-)
CE: Chief Executive
CEO: Chief Executive Officer
CHE: Crown Health Enterprise
CHMSA: Christchurch Hospitals Medical Staff Association
DPH: Diploma in Public Health
ERCP: Endoscopic retrograde cholangio-pancreatography
ESBL: extended-spectrum ß-Lactamase
ESR: Environmental Science and Research Institute.
GM: General Manager
HAI: Hospital Acquired Infection; healthcare-associated (nosocomial) infections
HABSI: Hospital Acquired Blood Stream Infection
HHS: Hospital and Health Services (CHE’s name change in 1998)
HIV: Human Immunodeficiency Virus (Infection)
IV: Intra-venous
IC: Infection Control
ICC: Infection Control Committee (Canterbury Public Hospitals)
ICC AR: Infection Control Committee Annual Report (Canterbury Public Hospitals)
ICN(s): Infection Control Nurse(s)
NZCDC: New Zealand Communicable Disease Centre
PFGE: Pulsed Field Gel Electrophoresis (a molecular typing of bacteria)
PHLS: Public Health Laboratory Service (UK)
ICLN: Infection Control Liaison Nurses
ICLO: Infection Control Liaison Officer
ICNS: Infection Control Nurse Specialists
ICS: Infection Control Service
ICT: Infection Control Team
MRSA: Methicillin or Multiple Resistant *Staphylococcus aureus*
NHI: National Health Institute
NHS: National Health Service (UK)
NNIS: the National Nosocomial Infections Surveillance
QISG: Quality Improvement Steering Group
RHA: Regional Health Authority
RSV: *Respiratory Syncytial Virus*
RMO: Registered Medical Officer (title for junior medical officers i.e. house surgeons and registrars)
SHEA: The Society for Healthcare Epidemiology of America
SSI: Surgical site infection
UK: United Kingdom
vCJD: Variant Creutzfeldt-Jacob Disease
W: Ward (in Hospital for example W12)
WHO: World Health Organisation
1.1 BACKGROUND

There have been some important historic contributors to infection control and asepsis in the last 200 years. The most cited of these are Ignaz Philipp Semmelweis (1818–1865) and the description of his attempt to universalise the practice of hand washing. Many other scientists could be mentioned, such as Louis Pasteur (1822–1895) and Joseph Lister (1827–1912), a professor of surgery who introduced the concept of asepsis. Ernst von Bergmann introduced heat sterilisation of instruments in 1891, which proved superior to chemical sterilisation and furthered the concepts of sterile practice in surgery. Gustav Neuber of Kieland introduced sterile gowns and caps in 1883, and Mikulicz the surgical mask in 1897. The use of rubber gloves became widespread after 1890 for protection of staff hands which were affected by the harsh solution used to sterilise instruments and disinfect them (1). Nursing history often quotes Florence Nightingale (1820-1910) as the founder of infection control. She introduced simple hygiene measures, scrupulous cleanliness in her hospitals and efficient nurse training (2). Hospital based infection control nurses were introduced in the United Kingdom (UK) in 1959 as a response to the outbreak of the penicillin resistant Staphylococcus aureus (the H-bug) (3). Infection Control services were introduced into New Zealand hospitals considerably later, with the first being in Palmerston North (1976) and the second in Canterbury in June1978 (4).

1.2 AIMS OF THIS STUDY

While acknowledging infection control developments of the past, the overall aim of this thesis is to evaluate the forces which shaped the development and performance of infection control in Canterbury public hospitals from the time of the employment of the first infection control practitioner (1978) through the next 30 years until 2008, and to identify the main influences on this development e.g. the Government (Department of Health and its Agents (NHI/ESR)); hospital management; health professionals (medical, nursing and allied health), including interplay of professions; infection events; the world literature and the public press, i.e. newspapers and television.
1.3 BACKGROUND TO INFECTION CONTROL IN NEW ZEALAND.

The first indication of what was expected of hospital boards in New Zealand, with regard to development of infection control in their hospitals, was a letter from the Department of Health in 1974 recommending establishment of infection control committees (ICC). The occupational position of several potential members of such a committee were named, one being an infection control officer, who could be a qualified nurse (part or full time) or in some circumstances a laboratory technologist or a pathologist. Another member should be the microbiologist, a pathologist or, in small hospitals, the charge technologist, and the Medical Officer of Health. The majority of ICC members were to be selected from mainly clinical and other hospital staff, a group which could give guidance, oversight and support for the infection control team (ICT). The ICC should be involved in deciding the type of work which should be achieved. This was important as the ICT should be independent of the clinical services and employed to observe and record infectious issues, making them either a support service or a threat depending on the view of the clinical staff (A 10). No health facilities in New Zealand had such a service at that time. In the United Kingdom, where infection control nurses (ICN) had been employed for decades, another member of the team was often a microbiologist.

There are two important dimensions in understanding the forces that influenced infection control: the policy/management environment and the stakeholders or “players”. In terms of the policy/management environment during the 30 years covered by this research (1978-2008), the health sector, as well as other parts of the state sector, experienced multiple political and management changes. To be able to show a possible influence on infection control development during these health changes, the total period (1978-2008) can be divided into five periods (A-E), roughly corresponding to the health system structures of the time e.g. Hospital Board (A), Area Health Board (B), Crown Health Enterprise (C), Hospital and Health Service (D) and District Health Board (E). In terms of stakeholders, the major players in the development of infection control are the Government (mainly represented by the Department/Ministry of Health), institutional governance and management, and the professionals which include the infection control team. The Department/Ministry of Health group includes services funded by the Ministry such as the National Health Institute (NHI)/Environmental Science Research (ESR) and Standards New Zealand. Professional influences include the professional group in the ICT, ICC and other professional groups.
within the hospitals. These groups will all be seen to play a part in the development of infection control in Canterbury hospitals.

1.4 PUBLIC HEALTH SIGNIFICANCE

There are a number of reasons why infection control in the hospital setting is important to public health:

- Nosocomial infections cause harm to a large part of the hospital population: The US study in 1975-6 calculated a nosocomial infection rate of 5.7 per 100 admissions with an UK survey from 1982 reporting a 9.2% infection rate (5, 6).
- Nosocomial infections are costly to the society (7-9).
- Everyone receiving hospital care is at risk of nosocomial infection if adequate precautions are not in place.
- It is important that all health care workers practice infection control and that management of hospitals and the governing bodies, including the state, provide support and direction. The involvement, attitude and interaction of all groups responsible for the care and treatment of patients in public hospitals are a public health concern.

1.5 OVERVIEW OF RESEARCH PROCESS

The major part of the data collected for this study comprised material related to the Infection Control Committee e.g. annual reports, minutes, letters and other communication and reports, and communication related to the infection control team. A number of interviews were carried out with key informants from the five time periods.

The research material covering the period from 1978-2008 was divided into the five time periods A-E. It was reviewed under broad headings or themes: health system influences covering health system changes central and institutional governance; professional and scientific influences covering the ICT, its work and education, the ICC, its work, reporting structure and key issues; outbreaks and occupational health issues. New Zealand has had two infection control Standards published in recent times which outline goals for an infection control service. While it was impossible to consider all issues which infection control dealt with over the years the basic goals of the Standards gave some guidance to the material and themes chosen (10) (11).
1.6 OUTLINE OF STRUCTURE OF THE THESIS

The thesis contains ten chapters. Chapter one presents the introduction to the research; chapter two discusses the international literature, which might have influenced infection control 1978-2008 and chapter three the material and method of the study. The main body of research material is presented in six chapters: chapter four analysing the researched data from the period A (1978-89); chapter five analysing the data from the period B (1989-93); chapter six covering the period C 1993-96), chapter seven presenting data from the period D (1996-2000) and chapter eight the period E (2000-08). Chapter nine and ten contain the discussion, summary and recommendation.

Seven Appendixes are included, covering material not required to be included in the body of the work.

Appendix 1, divided into periods A-E, contains the bibliography of letters, memoranda and other unpublished information. Appendix 2, also divided into the time periods, summarises guidelines and protocols accepted by the ICC 1978-2008.

Appendixes 3 and 4 illustrate the CHE structure 1999 and the CDHB structure; appendix 5 the structure of the ICC 2005; appendix 6 show diagrams of the New Zealand Health Systems 1980-2008 reproduced with permission and appendix 7 gives a brief outline of the questions for the informants.
2.1 INTRODUCTION

This literature review aims to give a picture of infection control development in a range of areas relevant to New Zealand and Canterbury hospitals during the period 1978-2008. It is impossible to cover all the areas in which an infection control service is and has been involved, therefore some representative areas have been chosen to demonstrate influences on the development of infection prevention and control during the study period. Literature has been sourced from both management and scientific sources from parts of the world most likely to have influenced New Zealand.

Health sector changes during the period are briefly outlined in the beginning of the chapter to illustrate the contemporary political influences on infection control. The section on central and institutional governance provides a view of the influences from this sector. Professional influences are covered by reference to the Infection Control Committee and Teams. The education of infection control personnel during the period is also discussed. Selected examples of special infection control issues arising over time have been detailed. Outbreaks and prolonged infection issues are focused on as these often result in public interest and response from management and governance structures. These episodes also provide insight into the scientific basis of infection control and local management performance. The chapter concludes with a review of infection control’s input into occupational health with regard to infectious diseases. The Vancouver style have been used for the reference list (organised by number), but date of the publication is sometimes also included in the text to enhance the understanding of the sequence of events.

2.2 HEALTH SYSTEM INFLUENCES

2.2.1 HEALTH SECTOR CHANGES:

Sometimes changes in health policy either reflect or drive local pressures and political imperatives (12). New Zealand has been influenced by changes from other parts of the world
for example Australia, USA, or the United Kingdom (UK) (13). The period under review (1978-2008) saw a number of changes in many countries, but a closer examination of the broad changes in the UK and New Zealand illustrates the persistence of some important themes. Table 2.1 briefly summarises changes to the National Health Service in the UK (14) (15), and in New Zealand.

Table 2.1 Trends in health services UK and New Zealand 1970s-2008

<table>
<thead>
<tr>
<th></th>
<th>United Kingdom</th>
<th>New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regionalisation</strong></td>
<td>1970: The future structure of the National Health Service (NHS) in England - the second Green Paper proposes regional councils and Area Health Authorities. 1974: Health service reorganisation – three levels: RHAs, Area Health Authorities and Health Districts unify hospital services.</td>
<td>Failed regionalisation: Labour White Paper; pilot attempts to introduce Area Health Boards through late 70s and early 80s (16)</td>
</tr>
</tbody>
</table>
There are some strong similarities over these time periods, including NZ efforts to regionalise during the 1980s. This was less successful in New Zealand than in the UK, but with a stronger democratic principle with the slow introduction of the AHBs over six years. However the General Manager theme was very similar and the change resulted in the undermining of professional/clinical leadership with possible consequences for infection control.

The 1990 introduction of market principles, focus on efficiency and cost-control was seen in both countries. Robinson quoted Margaret Thatcher (Prime Minister of the UK at the time), describing the proposed NHS in 1989: *… taken together, the proposals represent the most far-reaching reform of the National Health Service in its forty year history* (20)… Robinson also quoted widespread criticism of not making provision for monitoring and evaluation of the reforms introduced in 1991 (20). The reforms included scope for income generation for hospitals, contracting out of health services and competitive tendering. Butler (1994) stated

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Event</th>
<th>Event</th>
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<tbody>
<tr>
<td>1996</td>
<td>Practice Fund Holding established</td>
<td>1996: Reorganisation of regional health authorities</td>
<td>Separation of public hospital service from purchasing function (17).</td>
</tr>
<tr>
<td>1997</td>
<td>National supervisory bodies such as National Institute for Health and Clinical Excellence and Primary Care Groups established to replace fund</td>
<td>1997: reorganisation of regional health authorities</td>
<td>Crown Health Enterprises (CHE) is monitored by Crown Company Monitoring Advisory Unit (CCMAU).</td>
</tr>
<tr>
<td>1998</td>
<td>Quality in the New National Health Service outlines Clinical Governance. General Practice Fund Holding abolished</td>
<td>1998: Quality in the New National Health Service outlines Clinical Governance. General Practice Fund Holding abolished</td>
<td>1993 Establishment of Public health Commission. National Advisory Committee on Core Health Services (known as National health Committee) established to rank health services into those which should or should not be purchased by RHA.</td>
</tr>
<tr>
<td>2000-</td>
<td>National Health Service Plan; Re-emphasis on quality: 2000 reform Primary Care Trusts to take on commissioning and major Hospitals. Community Health Councils to be replaced by patient advocacy service 2003: Community Health Councils abolished. 2006 Reorganisation of Strategic Health Authorities and Primary Care Trusts, Payment by Results introduced 2007: Trust, Assurance and Safety - The Regulation of Health</td>
<td>District Health Boards and Primary Health Organisations. Emerging interest in quality and clinical governance. 1999 Health Policy: ‘Focus on patients’ (17). District health Boards New Zealand developed to oversee and coordinate workforce development, benchmarking and efficiency related projects. The Primary Health Care Strategy 2001 guided the reorganisation of General Practitioners and Independent Practice Organisations (IPA) into Primary Health Organisations (PHO) in 2002 (17).</td>
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<td>2006</td>
<td>Reorganisation of Strategic Health Authorities and Primary Care Trusts, Payment by Results introduced</td>
<td>District Health Boards and Primary Health Organisations. Emerging interest in quality and clinical governance. 1999 Health Policy: ‘Focus on patients’ (17). District health Boards New Zealand developed to oversee and coordinate workforce development, benchmarking and efficiency related projects. The Primary Health Care Strategy 2001 guided the reorganisation of General Practitioners and Independent Practice Organisations (IPA) into Primary Health Organisations (PHO) in 2002 (17).</td>
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that the central focus of the white paper was separating the purchasing and providing of services and giving responsibility to different agencies (21).

Power (2000) characterised the change in UK as the ‘audit’ society or the age of inspection. He described the NHS reforms changes in UK during 1980s and 1990s including National Institute for Health and Clinical Excellence, Community Health Index and the 1990s introduced monitoring, evaluation and assessing, calling it ‘clinical auditing’. Cost effectiveness was the core objective of value-for money (22). However, from 1997 quality of service became increasingly emphasised, with clinical audit changed in focus to clinical governance. Developments of clinical guidelines were reported by Brian Hurwitz (2001) to have received increased acceptance by the clinical community and health service lawyers by 1999. He described how the US Institute of Medicine definition of clinical guideline gained acceptance in the UK.

New Zealand went further than NHS in introducing a managed market for health services, separating purchaser from provider, through the establishment of the four regional health authorities (RHA). The changes in New Zealand resulted in tension between managers and clinicians especially in the hospitals. Hornblow called New Zealand’s health reforms during the 1990s: a clash of cultures (these being the clinical and commercial cultures) (23). Does “clash of culture” affect infection control in hospitals and put patients at risk? Gladwell, in his book Outliers: the story of success, wrote a chapter on the ethnic theory of plane crashes. Most of his material was obtained from the National Transportation Safety Board’s accident reports. He argued that ethnic or cultural differences, as for example, in communication between pilots and air controller or cultural hierarchy amongst the flight crew, could influence communication with disastrous consequences (24). Hornblow, in year 2000 editorial, criticised the governments of the period for not formally evaluating the health reforms, one issue being the de-emphasis during the reforms on public health and preventive measures (25).

In 2000 UK focus on infection control re-emerged with the focus on quality and safety in hospitals (26). Since 2000, New Zealand saw similar increasing concern with other than financial performance (17). The New Zealand Health Strategy during the introduction of District Health Boards in the early 2000 provided an opportunity for renewal of clinical
leadership; a cooperative working relationship with management aiming for quality improvements (27). Appendix 6 provides an overview of the health changes 1980-2002 (reproduced with permission).

2.2.2 CENTRAL AND INSTITUTIONAL GOVERNANCE

What has been the contribution of central and institutional governance and management in the development of infection control?

Early experience internationally

The call to address infections in hospitals increased after the outbreaks of *Staphylococcus aureus* (*S. aureus*) in the 1950s (28). Jowitt (2004) refers to the global pandemic of antibiotic resistant staphylococcal infection 1946-1966, when *Staphylococcus aureus* resistant to Penicillin caused infection in maternity hospitals (29). The World Health Organisation (WHO) & The United Nations Educational, Scientific and Cultural Organization (UNESCO) held a joint Symposium in 1963 on Infection in Hospitals. One presenter, E.J. Henningsen, dealt with administration (30). He described a joint Committee consisting of the National Health Service of Denmark and the Danish Hospital Service, mainly servicing the hospitals outside Copenhagen. The Danish State Serum Institute in Copenhagen provided centralised epidemiological and bacteriological services. The World Health Organization (WHO) provided guidance via publications such as the “Practical Guide to the Prevention of Hospital-Acquired Infections”, with the first edition in 1974 and the second in 2002 (31, 32). The second edition provided guidance on national and regional programmes on infection control. The WHO provided other guidance for infection control and microbiology laboratories from early in the period (1978-2008), for example through its regional publications: “Hospital-acquired infections: guidelines to laboratory methods” and the report of a scientific working group on “Antimicrobial resistance” (1981) (33, 34). Textbooks during the early part of the period such as “Infection in Hospital: Code of Practice” edited by Gibson (1974), do not mention the responsibilities of the central or institutional governance structures, only the responsibility of the Consultant Clinician and Medical Officer of Health. The omission implies that efforts required for surveillance and control of nosocomial infections rest solely with clinicians and other health professionals (35). On the other hand E. Dubay and R. Grubb (1978), in “Infection, Prevention and Control”, covered infection control structure and organisation. It mentioned that in 1958 the Joint Commission on Accreditation of Hospitals
and the American Hospital Association issued recommendations on organisation of a hospital Infection Control Committee (ICC). The responsibility for establishing these committees depended on the individual hospital’s line of authority. It mentions the responsibility of boards of trustees, but then there is no mention of the administration’s responsibilities to the IC service or what to do with information submitted. An alternative approach would be:

After review and approval by the ICC copies of the monthly report should be given to the appropriate persons involved, such as the hospital administrators to keep them informed of the progress of the hospital infection control programme (36).

Role of CDC

The Centers for Disease Control, Atlanta Georgia in USA (CDC) became very influential in hospital infection epidemiology. The organisation began as the Office of Malaria Control in the War Areas in 1942. In 1946 the Surgeon General directed that the name be changed to Communicable Disease Center in recognitions of the Center’s competence in the control of a number of infectious diseases. In 1970 the name was changed to Center for Disease Control as the services started to include other preventable diseases (37).

In the early 1970s the Hospital Infections Section of CDC developed the National Nosocomial Infections Surveillance (NNIS) system with the aim of monitoring the incidence of healthcare-associated (nosocomial) infections (HAIs) and their associated risk factors and pathogens. NNIS is the only national system for tracking HAIs in USA. The NNIS system is a cooperative, non-financial relationship between US hospitals and CDC.

The principles of the NNIS system are based on CDC’s definition of public health surveillance and are divided into the following four objectives: a) detect and monitor adverse events, b) assess risk and protective factors, c) evaluate preventive interventions, and d) provide information to event reporters and stakeholders and partner with them to implement effective prevention strategies (38-40). In 1980, CDC began developing a series of guidelines entitled Guidelines for the Prevention and Control of Nosocomial Infections. The purpose of the Guidelines was twofold: 1) to disseminate advice on how to prevent or control specific nosocomial infection problems and 2) to cover the questions most frequently asked of the hospital infections control staff on different aspects of the hospital's inanimate environment (41).

In March 1982, the Guideline for Prevention of Surgical Wounds was written by Bryan P. Simmons, in collaboration with a working group, and copies were mailed to all US acute-care
The CDC continues to provide authoritative publications for infection control today.

However, CDC policies occasionally received some criticism for example; the benefit of the emphasis on surveillance came under review with the rise in MRSA. Panlilio et al. from the National Nosocomial Infections Surveillance Systems analysed data on MRSA in US Hospitals 1975-1991 and found a steep increase in nosocomial infections “regardless of hospital size”. He commented that the control measures for MRSA appear to require re-evaluation (43).

Emergence of governance and leadership

Nystrøm explained in 1991 that in Sweden the National Board of Health and Welfare had a supervisory function over medical and health care although it was the country’s 23 county councils, which by law were responsible for health, medical and dental care of its inhabitants, which included all hospitals in their region. It issued the first national guidelines for prevention of hospital-associated infections in 1959 and the present manual, which is revised every five years, mainly describes procedures but includes infection control chapters. A recent survey had demonstrated that it was widely used (44).

Cost effectiveness and quality management of health care and infection control became an entity from mid-1980s. Gordon described the cost-effectiveness perspective of prevention in health care, especially the transition to managed care with large integrated health care corporations. These changes took place in USA during the late 1980s and early 1990s. By 1996 these changes were still seen as innovative opportunities for a privately run health system (45). Stone et al performed a systematic review of the economic evidence linking nosocomial infections and the interventions published between 1990 and 2000, mostly from a hospital perspective. They concluded that increased standardization and rigor were needed to access and compare outcomes and assess the economic evidence (46).

Wolff reviewed the methods used for medical assurance and Total Quality Management (TQM) in his paper “A review of methods used for medical quality assurance in hospitals: advantages and disadvantages” in 1994. Infection control surveillance was not mentioned, not even under the heading “Hospital accreditation”. The 70 references were mainly from the period 1989-1993 (47).
The following communication from Department of Health in UK between 1996 and 2006 illustrates state governance for infection control during that period. In 1996 a Health Service Guideline was issued recommending that purchaser of health care included in their contractual requirements, surveillance, prevention and control of hospital acquired infection including arrangements for the control of outbreaks of infection in hospitals (48). In 1997 the Public Health Laboratory Service of Department of Health (UK) issued a report on a study of the control of hospital-acquired infection in nineteen hospitals in England and Wales. It summarised the hospitals’ routine surveillance policies and practice of recording the infections and the results (49). In 2000 a health service circular was sent outlining a programme of action for the National Health Service (NHS) to:

strengthen prevention and control of infection in hospital; secure appropriate health care services for patients with infection; improve surveillance of hospital infection; and monitor and optimize antimicrobial prescribing (50).

In 2001 the Department of Health had issued guidelines for the prevention and control of hospital acquired infection (51). By 2004 it appears that the Department of Health wanted to tackle a growing concern regarding MRSA and encouraged health care professionals to “clean up hospitals” (52). To strengthen the requirements for control of hospital acquired infection and spread of antibiotic resistant organism the Health Department introduced legislation, The Health Act 2006: Code of practice for the prevention and control of healthcare associated infections which would be in force until 2009 when a new code would be published (53).

2.2.2.1 THE PATIENT, CLIENT, CUSTOMER INFLUENCE

An Infection Control Service’s main aim is to protect the patient from acquiring a HAI. A section of the American Hospital Association, monograph series: Control of infections in Hospitals (1962) had sections on Injury to the patient even using words as tragic instances. It included a section on Spread of staphylococcus to patients’ homes and the cost to the patient including medical cost, loss of earnings, and impact of this on the family (54).

Very few of the references cited so far mention the cost or other effects on the patient/client, and mainly discuss the risk, cost and effect of nosocomial infection on hospitals. The media coverage shows public interest in nosocomial infections. These can be seen from an ethical, human rights and legal point of view. Elliott (55) refers to Wilkinson and Caulfield’s “The Human Rights Act: a practical guide for nurses”, and stresses that he believed that infection control violations could be looked at as human rights infringements under Articles 1-3,5,10,11
Ben Waters (Chapter 3 39-48) refer to the Maidstone & Tunbridge NHS Trust and C. difficile outbreak in 2005 expecting claims would follow. He also suggested that, after a patient acquires a nosocomial infection or dies as a result, claims for civil liability can be charged under, for example, breach of duty at common law; or breach of statutory duty; or criminal liability (56).

2.3 PROFESSIONAL AND SCIENTIFIC INFLUENCES ON INFECTION CONTROL

2.3.1 INTERNATIONAL DEVELOPMENTS IN INFECTION CONTROL SYSTEMS

Infection control practitioners were first introduced in England in 1959 to control hospital acquired staphylococcus infections (57). At that time hospitals around the world were experiencing outbreaks of penicillin resistant staphylococcus, dubbed the “H –bug”, with New Zealand experiencing such an epidemic from the mid-1950es into the 1960s (29).

The United States hired its first fulltime practitioner to control hospital infections in1963. Boston City Hospital conducted some of the first modern prevalence studies of hospital acquired infections (HAI) in 1965 and reported that 15% of in-patients had nosocomial infections (57). Prior to 1970, only a few hospitals in USA (6%) had an Infection control practitioner, but by 1977 more than 80% had hired at least one infection control practitioner, most of them nurses. The majority of hospitals had employed infection control practitioners by 1973 (58). Australia employed their first infection control practitioner in 1962. In UK, by 1979, 64% of health districts had appointed an infection control nurse (ICN), but there was on average only one nurse to 741 beds (59).

During 1975-76 a cumulative incidence study (SENIC project) carried out by CDC in the US found an overall rate of 5.7 infections per 100 admissions, with higher rates in larger hospitals and teaching institutions (60, 61). The SENIC project estimated that the overall HAI rate had increased by 10 % over the period 1970 to1975-76. SENIC found hospitals reduced their nosocomial infection rates by approximately 32% provided their infection surveillance and control program included four specific components:

- Appropriate emphasis on surveillance activities and vigorous control efforts
- At least one full-time infection-control practitioner per 250 beds
- A trained hospital epidemiologist
- Feedback of wound infection rates to practising surgeons regarding surgical wound infections

The authors of the SENIC study also hypothesised that the trend for increasing HAI rates could be expected to continue because of growth in invasive medical technology, relentless emergence of anti-microbial resistance and budgetary restraints on infection control and surveillance projects (6, 60). Major national prevalence studies were later carried out in England and Wales in 1981 and Australia 1984 (5, 8).

The National Audit Office (UK) published a review of the ICN role (2000). This found that there was now on average one ICN to 535 beds. The importance of the ICN role was highlighted with reference to the public and media concern over MRSA, as well as by professional concern over the continuing threat from infectious diseases (59).

Van Broek and Marshall in 2002 described what could be considered as a model: the infection control team in the Leiden University Hospital in the Netherlands. They had four departments providing infectious disease services: Infectious Disease Department; Medical Microbiology; Parasitology; and Infection Control. Infection control nurses were supported by a specialist in infectious diseases and a medical microbiologist, who had particular expertise in the infection control. The four services implemented hospital policy on antimicrobial therapy and infection control. Two committees, the Antibiotic Policy Committee and the Infection Control Committee were responsible for the guidelines for antimicrobial treatment and infection control in the hospital. The membership of these committees was drawn from the Departments of Infectious Diseases and Medical Microbiology as well as representatives from other disciplines, such as pharmacy, surgery and paediatrics. The goals of the four infectious disease services were to provide and ensure optimal treatment of patients with infectious disease, prevent development of antimicrobial resistance in the hospital, control costs of therapy by maximum adherence to antibiotic policy, protect against hospital-acquired infection and prevent the spread of resistant microorganisms by maximum compliance with infection control guidelines (62). This example has been detailed as it shows some similarity with the Canterbury District Health Board system especially with regard to the responsibility and membership of the Antibiotic Policy Committee, which in Canterbury is a subcommittee of the Medicine Advisory Committee and the ICC. Van Broek et al also reported that a workshop of ICNs and microbiologists concluded that a standard of one full-time equivalent (FTE) Infection control practitioner per 178 hospital beds and one FTE medical
microbiologist per 806 hospital beds was required. This was considerably more staff than proposed by the SENIC study in 1980s (63).

2.3.2 PROFESSIONAL EDUCATION, DEVELOPMENT AND EMPLOYMENT OF INFECTION CONTROL PRACTITIONERS

The need for designated personnel to oversee infection control in hospitals started to emerge during the 1960s and 1970s. A medically trained person, often a medical microbiologist, was designated “Control of Infection Officer” who was teamed with a “Nursing Sister” who would do the day-to-day work (35).

The provision of training in infection control varies around the world. However, it has been possible to acquire specialist training in infection control since the late 1960s. In the US, centralised training of infection control practitioners was provided by the Center for Disease Control and Prevention (CDC), Atlanta, by 1968. The training was centred on surveillance, prevention, and control of nosocomial infections. This course, with other further training, was offered by CDC until 1988 when it was discontinued. In 1989 The Association for Professional Infection Control and Epidemiology took over the responsibility of providing training and certification in infection control (64). The Association also sponsored Infection Control Conferences and workshops (65). The certification was aimed at multidisciplinary health care groups and practitioners in infection prevention and control in the US today comes from many different educational streams, including those with a laboratory background for example medical technologists, especially those trained in clinical microbiology, or from nursing. Some might be physicians with an infectious disease speciality (66). Specialised training in infection control and healthcare epidemiology was offered by a private company “Certification Board of Infection Control and Epidemiology” which awarded Certification in Infection Control and Epidemiology (CIC) and re-certifies infection control practitioners (67). The Association for Professionals in Infection Control and Epidemiology was primarily composed of infection prevention and control professionals with nursing or medical technology backgrounds. The Society for Healthcare Epidemiology of America mainly draws its members amongst practitioners who are physicians (68).

A number of universities in the UK offer qualifications in infection control. The University of Essex offers MSc, Postgraduate Diploma and Certificate in Infection Control, with training mainly aimed at the nurses (69). The London School of Hygiene & Tropical Medicine offer a
Diploma in Hospital Infection Control. The Diploma, which is run under the auspices of the Hospital Infection Society and the Public Health Laboratory Service, has been available since 1997 (70, 71).

In Australia, Griffith University School of Nursing and Midwifery has offered a Graduate Certificate in Infection Control and Prevention and a Master of Advanced Practice (Infection Control), including extramurally (72).

In New Zealand, Waiaariki Institute of Technology was the first to offer a Certificate in Infection Control through its School of Nursing and Health Studies (73). This can be completed extramurally over one to two years. There is not yet a university-based hospital infection control and prevention course available in New Zealand.

Training in Medical Microbiology, a subspecialty within Pathology for medical graduates, includes training in infection control in most western countries, especially those with a British or European based training system (74). Job advertisements for Medical Microbiologists also specify the requirement for providing infection control service (75). Some stipulate the length of training, for example one month (e.g. from Dalhousie University and Queen Elizabeth II Health Centre, Halifax, Canada) (76). The European Society of Clinical Microbiology and Infection Study Group on Nosocomial Infection examined the need for a specialty for infection control physicians, recognising the standardised training curriculum for infection control nurses and considering which professions should be included in the infection control team. Their first deliberations including a proposal for a training programme, were published through a number of papers in 2005 (77, 78) (79, 80).

Perry in 2005 discussed the employment position of the ICN over the years and referred to a 1995 Department of Health & Public Health Laboratory Service Report (UK) (81). According to this, few changes were suggested in the role of the ICN from an earlier 1988 report (82). The 1995 document recommended that the ICNs provide 24-hour cover. The role of the ICN in education was clearly recognised and it was suggested that the ICN should possess teaching skills and a teaching qualification. This report recognised the value of the link nurse role and set out a suggested specification. However, it warned that link nurses were not a substitute for an ICN and that all major acute hospitals should have at least one ICN based on the premises (83). The seniority/salary grade of the ICN was also discussed with the team made up of senior and junior ICNs and the introduction of a infection control nurse consultant role (59).
In 1978 Dubay and Grubb discussed the ideal infection control structure and organisation including the ICC, its membership and functions (84). The committee’s role should be to meet regularly, establish and operate a system for reporting and evaluating infections in patients, and provide criteria for identifying infections, their source and mode for transmission. They should also have access to reliable microbiology services and adequate IC personnel. They should provide adequate policies and procedures for the prevention and control of infection, promote IC education for health care workers, monitor antibiotic usage and analyse current trends of infections. They should make sure that there was continuing communication with other area hospitals. The membership of the ICC would vary but, apart from the IC coordinator, the committee should include representatives from clinical departments and specialties such as nursing, internal medicine, obstetrics, microbiology and operating theatre. Also considered were representatives from administration, employee health, pharmacy, housekeeping and sterile services (84). The reporting should be through the appropriate line of authority i.e. medical concerns should be referred to chief of medical staff and nursing to the nursing director. Copies should be sent to administration, medical and surgical chiefs and department heads. These proposals have not changed greatly over the years.

Cooke (85) evaluated different models for infection control in UK and referred to two reports by the Hospital Infection Working Group, from 1988 and 1995. The 1988 report (82) recommended the establishment of an ICC to formulate policies and IC programmes, an infection control team (ICT) comprising an infection control doctor and an ICN. It also recommended the formation of an action group in case of an outbreak. The report recognised the importance of the clinical microbiologist, the microbiology laboratory and the ICN. The 1995 report (81) confirmed the 1988 arrangements, but included the importance of surveillance of hospital infection, the role of the consultant in communicable diseases and the increasing interest in the cost of hospital acquired infection. It defined the duties of the ICC as including: endorsing all IC policies, procedures and guidelines, supporting the implementation of policies, participating in the development of the annual IC Program and monitoring its progress. The members of the ICC were, apart from the ICT, a representative of the CEO, occupational health personnel, senior clinical representative(s), the consultant in communicable diseases and other identified representatives. The Department of Health (UK) guidance document published in a Health Service Circular in 2000 (50) specified the principal
objectives of an effective infection control programme as: *surveillance of infection, education and training of staff and dissemination of written policies, procedures and guidelines, certain quality assurance standards including cleaning, catering, waste management and decontamination of medical equipment.* The document also recognised the significant issue of infections in the elderly and the risk introduced by a variety of new technologies.

2.34 KEY ISSUES DEALT WITH BY ICC AND ICT:

Four important topics are analysed in more detail below in order to provide background for subsequent analyses of infection control in Canterbury Hospitals. The first is the controversial issue of reuse of medical equipment manufactured and sold as a single use item. The second is the cleaning and disinfection of hollow endoscopes and third and fourth infection control involvement in hospital building and renovation, and disposal of infectious waste.

2.3.4.1 REUSE OF DISPOSABLE ITEMS

The revolution in plastic technology began in the 1950s. As it entered the medical field, research into possible toxicity was carried out, with satisfactory results and the subsequent adoption of plastic technology in the field (86). The items were meant as throw away items for “single use only” and thus much cheaper than cleaning and reuse.

Reuse or reprocessing of items labelled as single use was debated on the international scene from the 1970s. Between 1978 and 1989 the main item in the re-use debate was the dialyser. The European Dialyses and Transplant Association survey reported by Wing in 1978 found that 49.6% of 1109 patients treated with disposable dialysers reused their equipment, mainly because of cost. It was noted that the reuse caused some morbidity, but no mortality. Because of the cost of the dialysers the centre surveyed accepted the reuse as ethically defensible (87).

Wells reported in 1987 on a survey on reuse of items labelled as single use in Canadian Hospitals. He found that 41% of hospitals reused, with reuse higher in hospitals with more than 200 beds. Of those which reused, only 38% had written procedures, 32% had a method for estimating the number of reuses and only 29% had performed cost analyses (88).

Surveys of reuse of items labelled as single use continued during the 1990s. Christensen et al (89) reported on two surveys, one in Denmark and one in the Nordic Countries. They found widespread practice of reuse in the Danish hospitals during the 1996 survey, but argued that due to wide publication of the findings, the practice had substantially reduced by 1998 (48 of 58 hospitals (83%) reused in 1996 and in 1998 only 25 out of 67 (37%)). They rightly pointed
out that the responsibility for recycling these items was transferred from the manufacturers to
the user and that hospitals should encourage manufacturers to supply information about
suitable decontamination procedures that could be tested and validated.

Collignon et al (90) carried out a reuse of items labelled as single use survey in Canada in
1996 with the aim of assessing how widespread the reuse of items labelled as single use was,
for use in sterile sites. They also wanted to assess the cleaning of the devices and determine
incidence of infection. Reuse was carried out in 38% of those hospitals which responded (only
40% responded). In only 59% was the cleaning and sterilization evaluated as adequate. They
concluded that “Most devices appear to be unsuitable for reuse and the practice should stop”.
Another national survey was carried out in Canada in 2008 by Polisena et al (91). They had a
response from 413 (72%) of acute care hospitals and found that 28% reported reuse of items
labelled as single use. They concluded that little had changed since the previous survey.

A survey was carried out by Association of Anaesthetists of Great Britain and Ireland in 2007
related to reuse of items labelled as single use in Anaesthesia. They expressed scepticism
about the actual risk of the patient acquiring blood borne virus or variant Creutzfeldt-Jakob
disease (vCJD) from sterilised reused items. They put trust in the clinicians to balance the risk
of infection or injury to the patients when choosing reuse of items labelled as single use.
However, few wanted a reused items labelled as single use to be used on themselves or their
family (92).

Cost and financial constraint was already used as a justification for reuse of items labelled as
single use with regard to dialysers in 1978 (87). Reuse of items labelled as single use
appeared widespread in major hospitals over the next two decades. The cost argument was
debated more strongly during the second part of the 1990s.

DesCôteaux compared the cost of disposing of disposable laparoscopes after use and the cost
of reusing disposable laparoscopes during the period 1990-1994. The laparoscopes were
used from 1.7 to 68 times each. It was found that the cost of reusing, following an internally
validated reprocessing protocol, was $218,944 compared with $527,575 if all the endoscopes
were only used once, a saving of 58%. There was no discussion of any possible or noted risk
to patients (93).

Raltz et al. in 1995 provided a one year cost analyses of disposable compared with reusable
biopsy forceps in an endoscopy unit. They found that the reusable forceps became cost-
effective after seven uses. They were also concerned with the amount of waste produced (94). Carter argued, in 2006, from an anaesthesics point of view, that the cheap manufacture compared with labour intensive cost of cleaning made it more economical to use disposables. However, as already noted, disposables are not always discarded and reuse attracted the same cleaning expense. They suggested that the cost of disposables would be reduced by purchasing reusables, and the cost of cleaning reduced by using a filter between anaesthetic tubing and the patient. By using a new filter for each patient they suggested that the reusable tubing could be used for a week (95). Jacobs et al in 2006 returned to the cost saving of reusing of items labelled as single use. They surveyed the economic literature to assess current evidence of costs benefit in reusing of items labelled as single use. They selected nine published articles, which met their specific scientific criteria. From the evidence in these articles they predicted a saving of 49 % by reusing of items labelled as single use and found no mentioning of adverse events. They concluded that there was little available quality evidence on assessment of reusing of items labelled as single use, and clinical outcomes from reuse were missing (96).

Information regarding clinical risk to the patient is scarce. Gahrn-Hansen et al in 1988 recorded an outbreak of infection with an environmental gram-negative bacillus called *Achromobacter xylosoxidans* after the insertion of intravascular pressure transducers. All patients developed fever after an average of 6 days. Reusing of items labelled as single use and disinfection with a benzalcone was found to be the cause (97). Concerns regarding patients acquiring iatrogenic vCJD resulted in specific infection control (IC) guidelines for processing and sterilising surgical instruments including reusing of items labelled as single use. Jepson from the National Centre for Hospital Hygiene in Denmark published such a guideline in 2002 (98). One paper reporting observed clinical risk was published in 1998 by Larsen and Nelson. They reported on two cases, where the coating of an introducer used at introduction to anaesthesia in children, had observable breaks. The broken off pieces from the reused items labelled as single use could have obstructed the airways of the children (99). The implied risk of an incomplete cleaning and sterilisation process can be appraised from the following report by Clery et al (100). They looked for protein deposits in used but cleaned and sterilised laryngeal masks, finding mild staining of the mask in 91-94% of the masks post-sterilization dependent on type of mask. They found no protein material on new, unused masks. They concluded that even reusable masks have problems with getting protein material removed by routine cleaning and sterilization.
Legal and Ethical concerns became more prominent in the late 1990s and early 2000s. Some of the titles in nursing journals indicate the debate taking place in 1998/99. For example, Fulbrook: “Legal aspects of the re-use of single use items” (101) or Castille: “To reuse or not to reuse- that is the question” (102). Standards, management buy in and informed decisions were the theme of the article by Parson. The article, from the US, also touches on institutional responsibilities, risks and questions the possible need for insurance cover for instances of reuse of disposable items (103). Many of the references to legal and risk made their first appearance around 1999, which suggests that the public had become aware of the reuse and had concerns. The publications were not only by risk managers and lawyers, but also nurse managers. Jane Fiesta wrote in 1999, “Who’s Liable in Equipment Cases” as increasing numbers of law suits were recorded in cases of equipment failures, questioning the joint responsibility of providers and manufactures (104). Spencer et al questioned the advisability of reuse practice in view of the knowledge that reuse takes place due to budgetary constraint and there might be a significant risk to patients and liability for the provider (105).

The regulatory roles were covered in the third of a series of three articles by Dunn in 2002. The first two articles discuss the procedures for reprocessing and ethical issues (106). The US Food and Drug Administration in 2000 proposed regulating third party processors and healthcare facilities that reprocess single-use devices requiring the same standards as required of the original manufacturer. They proposed the reprocessing items be divided into three categories (low, moderate or high) dependent of the risk the reprocessing had to patients (107).

2.3.4.2 ENDOSCOPY AND HYGIENE

Hygiene issues related to endoscopes feature in the literature from the 1970s and onwards. The issues can be categorised as follows: international guidelines; sterilisation and disinfection issues; microbiological contaminations of endoscopes; validation of disinfection or sterilisation; and outbreaks related to endoscopy. Issues not included in this summary are antibiotic prophylaxis for endoscopy, bacteraemia other than outbreak examples and endocarditis. While these are important, they are not usually part of infection control advisory duties, although they are part of their surveillance activities.

International Guidelines:

The Center for Disease Control (CDC) Atlanta produced several authoritative documents and guidelines throughout the period 1978-2008. Bond noted in 1979 that guidelines from CDC
**strongly recommended** gas sterilization (e.g. ethylene oxide) or disinfection in 2% Gluteraldehyde or 6 percent hydrogen peroxide following each flexible endoscope cleansing for proper care (108). The Update from February 1981 contained a section on Disinfection and Sterilization. The 1985 Guideline introduced a ranking scheme for recommendations (Category I, II and III) with Category I strongly supported. The Guideline also used the Spaulding system of classification for instrument sterility: critical, semi-critical or non-critical depending on intended use. For example, instruments which enter a sterile area like a body cavity must be sterile, while entering a mucous membrane area is semi-critical and may only require high level disinfection (39).

The following year the working party of the British Society of Gastroenterology published recommendations on the cleaning and disinfection of equipment for gastrointestinal flexible endoscopy, including addressing the increasing concern regarding transmission of the AIDS virus via endoscopy (109).

The next important guideline was published at the World Congress of Gastroenterology by the congress’ working party at its meeting in Sydney 1990. The Guideline dealt with a continuous stream of reports on infections following endoscopy and the problems of achieving high level disinfection by manual or machine processing of endoscopes (110). The Association for Professionals in Infection Control and Epidemiology produced Guidelines with regular updates during the 1990s for example the guideline for Infection Prevention and Control in Flexible Endoscopy in 1994 and 2000 (111-113). A The working party chaired by G. Ayliffe, from the UK based Hospital Infection Research Laboratory, reported in 2000 on decontamination of minimally invasive surgical endoscopes and accessories. The paper described in details the different disinfection methods and disinfectants. They also commented on single-use accessories. The reports stressed the importance of trained staff cleaning the endoscopes and warned about the toxicity of Gluteraldehyde to staff (114).

**Sterilisation and disinfection issues**

The cleaning and disinfection of instruments was not always perfect with Endoscopy-related bacteraemia recorded by Mellow (115) and the risk related specifically to endoscopic retrograde cholangio-pancreatography (E.R.C.P.) by Bilbao (115, 116) already in 1976. Some communications published during the period 1992-1995 show the difficulties faced and ways of addressing the problems. Gubler et al described a pseudo-outbreak with non-tuberculous mycobacteria, which had contaminated the rinsing water of disinfection machine used for
clean and disinfected. They expressed concern that patients might be treated unnecessarily when the cultures from their endoscopy specimens grew the mycobacteria (117). Deva et al (118) addressed the concern that surgical instruments could be contaminated with hepatitis B, and they described a method of evaluating the effect of the disinfection by using a duck hepatitis B model. They showed that no transmission of hepatitis B occurred if the instrument had been cleaned and soaked for 5 minutes in Gluteraldehyde, the main disinfectant used at that time for endoscopes. Babb and Bradley questioned future directions (119). Cleaning was believed to be most important, with Gluteraldehyde still the main disinfectant and a new disinfectant becoming available (Peracetic acid, later known as Steris). However, there was still no proven safe alternative to ethylene oxide for sterilising invasive heat labile flexible endoscopes. Phillips et al (120) discuss problems with bacterial contamination of rinsing fluid from the automatic disinfection machine. They give laboratory examples of contamination and recommended that high grade filters be used to provide sterile water for rinsing disinfected endoscopes. Takigawa et al. (1995) (121) suggested adding a final rinse with alcohol to dry the channels of the bronchoscopes after disinfection and rinsing, documenting success with eliminating water born mycobacteria.

Microbiological contaminations of endoscopes:

Transmission of hepatitis B was reported in single case histories (122). However, Vennes reviewed infectious complication in endoscopy in 1981 and concluded that it was uncommon, with infections happened mainly when cleaning and disinfection was inadequate and transmission of viral diseases had not been demonstrated (123). The summary was important information at the time as epidemics of Hepatitis B were experienced related to dialyses (124). Later, when it was possible to detect the Hepatitis C virus, this virus was found to contaminate the endoscopes and the cleaning utensils as Bécheur documented in 2000 (125). Contamination with the HIV virus was also a concern during the 1980s and 1990s. Hanson et al. (1990) showed that the virus can be eliminated by cleaning and disinfection of endoscopes (126). However, Vandervoort et al (1997) examined endoscopes for evidence of HIV RNA after high-level disinfection and found 1/19 endoscopes positive (127). The risk of contamination with *Clostridium difficile*, the implied source of pseudomembraneus colitis in susceptible patients, was debated. Hughes showed that endoscopes become contaminated with *Clostridium difficile* spores, but with cleaning and exposure to Gluteraldehyde they are killed successfully (128).
Validation of disinfection or sterilisation

Bond et al evaluated in 1983 the ability of 70% isopropyl alcohol and 2% aqueous Gluteraldehyde to render the Hepatitis B virus, in dried plasma, non-infective to monkeys. They concluded that the Hepatitis B virus could be inactivated safely by those disinfectants (129). Similarly Bécheur et al successfully showed in 2000 that the Hepatitis C virus could be inactivated by Gluteraldehyde (125). Rutala et al evaluated the effect of Gluteraldehyde on Clostridium difficile spores. They found them susceptible to Gluteraldehyde using the Association of Official Analytical Chemists' sporocidal test. However if the Gluteraldehyde was diluted below the concentration of 2% it was not sporocidal within the usual disinfectant exposure time for endoscopes (130).

There were few references to using bacterial culture of endoscopes as a validation test during the period 1978-2008. Since 1985 CDC had discouraged environmental culture as a tool for infection control except during outbreak investigation. Rejchrt et al (2004) (131) investigated contamination of endoscopes after disinfection and storage for five days, culturing the surface and internal channels. All internal channels remained sterile. An exception to the CDC recommendation was the culturing of rinsing water as documented by Muscarella in 2002. He reviewed endoscope reprocessing literature and found that environmental cultures were justified in view of the documented risk of patient infection from gram-negative bacteria following endoscopy. He also documented CDC’s view on environmental cultures (132).

Outbreaks related to endoscopy

Infection and outbreak reports with different bacteria were recorded throughout the period 1978-2008, when those patients undergoing endoscopic retrograde cholangio-pancreatography (ERCP) seeming most at risk. Investigation of Pseudomonas aeruginosa infection related to colonised ERCP scopes was reported from New Zealand by Schousboe et al in 1980 (133). Siegman-Igra in 1987 also reported an outbreak with Pseudomonas aeruginosa septicaemia (134). Outbreaks with poor outcome were still a problem in 1990 as described by Bass in 1990. This time it was a contaminated bottle of water used during ERCP (135). Problems with Pseudomonas infection continued into the last decade of the period (1978-2008), as the paper from 2003 by Srinivasan et al documented. A number of patients died from the infection caused by contaminated bronchoscopes which were found to have a loose biopsy-port, a defect resulting in a nationwide recall of the instruments (136).
2.3.4.3 CONSTRUCTION AND RENOVATION OF HOSPITAL FACILITIES

Infection control teams have been recognised as important advisors during building and renovation of health care facilities especially during the last decade. Advice included provision for protection of hospitalised patients from dust and the increase in airborne *Aspergillus* during building activity. Teams also provided instructions and education to builders on the range of precautions required. During the planning phase the IC team would be required to advise on planned isolation facilities, air handling and placement of hand basins etc. Noskin in 2001 and Oleson in 2003 discussed the benefits of and need for IC consultation (137, 138). The IC staff would be able to consult guidelines such as the 2003 Australian Standards (2003) (139) and CDC’s 2003 (140) Guidelines for Environmental Infection Control in Health-Care Facilities.

*Legionella* in Hospital water systems

Contaminations of hospitals’ domestic water supply and related infections have been reported relatively less often than *Legionella* infections related to air-conditioning plants. In 1987 Muraca reported possible treatment options for killing *Legionella pneumophila* in potable water (141). Visca, in 1999 reported sporadic infections in patients from the hospitals potable water (142). The Legionella Conference in Washington USA in 2005 published the history of *Legionella* and the infections as well as the environments where it can be found. Several presentations reported contaminations in hospitals’ domestic hot water, testing and control (143).

2.3.4.4 WASTE MANAGEMENT

Medical or infectious waste management became an infection control interest area during the early 1990s, driven partly by the increased concern over risk to health care workers and partly by the interest in more modern ways of disposing of this waste (144-147). In late 2008 WHO declared medical waste a core component of an infection control and prevention programme (148).

2.4 OUTBREAKS AND PROLONGED INFECTION ISSUES

An outbreak of infection has been defined as at least three related infections in patients and staff with the same organism. Outbreaks are not only a risk to patients and costly in treatment and prolonged hospitalisation, but the process of getting the situation under control is also disruptive to routine patient care. It is also distressing to staff who may be concerned with
their own risk or feel guilty that they may have caused the problem. Experience gained from these events and why they occurred is often used to shape protocols and guidelines. In later periods the pressure of news media reporting these events and the possible inaccuracy in the reporting and the perceived judgement it contained, added to staff distress. The infection control service is therefore to a certain degree also “shaped” by outbreaks. It is during outbreaks that infection control gains the attention of a hospital’s governance and management structure, often with consequences for future “shape” and direction.

2.4.1 PSEUDOMONAS OUTBREAK (1980-2000)

Outbreaks in neonatal ICUs have been reported throughout the period 1978-2008. In 1993 Gubta et al (149) reported an outbreak of pseudomonas sepsis in 48 infants over a 19 month period in a in New Delhi, India. The organism colonised the resuscitation equipment and various cleaning solutions. Another report from 1995 by Becks found the probable source of a prolonged outbreak in a to be contaminated hand lotions (150). The monitoring of such small patients requires multiple blood tests for haematological and biochemical parameters and a Neonatal Intensive Care Unit often has its own analysers, which are operated by the same staff who care for the infants. In 1996 Garland et al (151) reported outbreak of an antibiotic resistant Pseudomonas aeruginosa causing infection in 24 newborns. Environmental surveillance and genomic fingerprinting traced the isolate to the blood gas analyser port. Pseudomonas infection in neonates has also been traced to hands of healthcare workers. During the investigation of an outbreak in a Intensive Care Unit in New York in 2000 affecting 6-9 infants, reported by Foca et al (152), the hands of 165 health care workers were cultured and 10 were found positive for the organism. They implicated artificial fingernails and nail wraps as supporting the colonisation. Moolenaar et al similarly suggested that nurses with artificial fingernails involved in care of infants were the source of another pseudomonas outbreak affecting 40 neonates in an in Oklahoma (153). It was not only fingernails which caused outbreaks in recent times. In 2003 Gras-Le Guen et al (154) reported an outbreak of nosocomial pseudomonas infection in neonates, with the source identified as a milk bank pasteuriser and bottle warmer used for heating frozen breast milk.
2.4.2 NNU AND BACILLUS CEREUS (1980-2000)

*Bacillus cereus* is a spore forming aerobic gram positive bacillus which is present in the environment, usually in a dry dusty area where it can survive as spores. It is also common in decaying matter. It is best known as a food poisoning organism, for example in reheated meat dishes (155).

Outbreaks in *B. cereus* have been described. Some of the early reports from the period 1978-2008 came from the Food Hygiene Laboratory in Colindale, England and other public health laboratories. In 1981 the WHO publication Weekly Epidemiological Record quoted an article from the Communicable Disease Report from 1980 detailing *Bacillus cereus* isolation from babies in a Maternity Unit. The same year Birch et al reported on cross-infection with *Bacillus cereus* in a maternity-unit. They isolated the organism from infected babies as well as from air samples and clean laundered nappies. The source was thought to be contaminated washable nappies (156). Colindale typed the isolates as serotype 11 (157). Several years later in 1984 the Communicable Disease Report reported another *Bacillus cereus* outbreak in a hospital maternity unit with the organism isolated from the babies. Again, the organism was typed as an unusual serotype H11/15. The organism was found widely dispersed in the environment and bed linen and baby clothes. The source was not found (158). However, *Bacillus cereus* was not only recorded as a concern in the 1980s. Van der Zwet et al reported in 2000 an outbreak in a Neonatal Intensive Care Unit causing sepsis in three neonates. Again a particular *Bacillus cereus* clone was found to cause the infection, which was traced to balloons used in manual ventilation (159). In 2003 Hilliard reviewed the literature related to infection in neonates of the organism, after he had diagnosed *Bacillus cereus* sepsis in a preterm neonate. He found about 22 reports ranging back to 1977 (160).

2.4.3 SCALDED SKIN SYNDROME

*Staphylococcus aureus* infection is associated with a variety of skin infections. Some strains of *Staphylococcus aureus* produce an epidermolytic toxin which can cause bullae in the skin. The infection is called bullous impetigo or staphylococcus scalded skin syndrome. The syndrome is rarely reported in adults, but usually in infants (161). Several neonatal scalded skin syndrome outbreaks were reported during the period 1978-2008. In 1990 Curran (162) reported a large outbreak involving 68 newborn babies. The phage type of the *Staphylococcus aureus* was reported to be unusual 29/79/80/3A/3C/54/75 and the infection was mild with no death. He did not report the source of the outbreak. In 1987 Dancer et al reported two
outbreaks close together in Guy’s Hospital, London. Epidemiological research found carriers among medical staff and midwives. They used reverse phage-typing of the staphylococcal isolates, initial typed as phage type 3A/3C, and in vivo testing for epidermolytic toxin (163, 164). The group also reported the results of the mass screening for carriage of *Staphylococcus aureus*, where they found that of 164 pregnant women, 33% were carriers, with 61% carrying the *Staphylococcus aureus* in the nose and in 25% the organism was only isolated from the perineum (165).

### 2.4.4 ACINETOBACTER OUTBREAKS

*Acinetobacter baumannii* is a small gram negative bacillus which can cause outbreaks in hospitals, due to its ability to survive in the environment and becoming resistant to antibiotics. The *Acinetobacter* sp has changed names several times since its early identification approximately 1908. Based on DNA-DNA hybridization studies, at least 21 different Acinetobacter strains have been identified. In routine clinical practice most clinical isolates are identified as *A. calcoaceticus-A baumannii* complex. The following references show that it has become necessary to perform more detailed identification when dealing with strains causing outbreaks and serious infections. Molecular typing pulsed field gel electrophoresis (PFGE), amplified fragment length polymorphisms (AFLP) and other molecular typing methods are needed for exact strain identification. *Acinetobacter* sp. has been isolated from the environment, animal carcases, hospital equipment and numerous human sources. It can survive for a prolonged period in a dry environment (166).

In 1998 Jawad et al (167) reported on an investigation into epidemic strains of *Acinetobacter baumannii* that were able to persist longer in dry conditions compared to non epidemic strains. Either was able to survive at least 26 days. He hypothesised that the bacterium’s ability to tolerate desiccation and its multidrug resistance contributed to its ability to cause prolonged outbreaks of nosocomial infections in hospitals. Willers et al (1998) (168) studied the epidemiology of *A. baumannii* infections and assessed the persistence of the multidrug resistant strain and the use of fluoroquinolone. They concluded that epidemic infections of multi-resistant strains were favoured by the selection pressure of fluoroquinolone.

In 2007 Shelburne et al (169) reported on the molecular differences of *A baumannii* isolates over a 14 month period in three separate adult Intensive Care Units in Texas by multi-locus sequence typing. They found that there were two distinct clones comprising 76% of the isolates from their patients during the period. The infections caused by the two clones were
associated with significantly different patient outcomes. They speculated that while colonisation with
_A. baumannii_ is thought to be a major risk factor for invasive disease in the susceptible host; the outcome was not always predictable. Due to the genetic diversity among the _A. baumannii_ strains they suggested that not all strains become invasive. One of their strains comprising 50% of the isolates caused 80% of the bacteraemia.

D’Agata et al reported in 2000 (170) on an investigation of a nosocomial outbreak of _A. baumannii_ in an Intensive Care Unit and used PFGE for strain identification. They concluded, after sampling multiple environment sites, which were all negative, that cross transmission between patients was the reason for the outbreak. They used a case-control study to identify risk factors, the conclusion being that cases were exposed to more colonised patients than controls.

The concept of digestive tract colonisation preceding infection was explored by Corbella et al in 1996 (171). They obtained rectal swabs from patients during the first week they were admitted to an Intensive Care Unit. Forty-one percent of 77 patients had multi-antibiotic resistant _A. baumannii_ faecal colonisation and in 71% the colonisation occurred within the first week. Clinical infection due to multi-antibiotic resistant _A. baumannii_ occurred more frequently in patients who were faecal colonised than those who were not (26% versus 5%). This indicated that isolation precautions of colonised patients were important to reduce cross infection.

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**2.4.5 MRSA**

Methicillin or Multi Resistant _Staphylococcus aureus_ (MRSA) caused hospital-based outbreaks throughout the period 1978-2008. _Staphylococcus aureus_ outbreaks existed earlier, most notably the H-bug of the 1950s (29). In the 1950s the H-bug was found resistant to the available antibiotic Penicillin by producing a betalactamase. Newer antibiotics became available, which was betalactamase stable and therefore able to treat betalactamase producing _Staphylococcus aureus_ infections. The first of these antibiotics was called Methicillin, and several others followed such as Cloxacillin, Flucloxacillin, Oxacillin and later the Cephalosporins. Betalactams is a group of antibiotics which include all penicillins and cephalosporins. The MRSA was noteworthy as a hospital pathogen, as it was resistant to all Betalactams. The control of this organism in hospitals by infection control intervention over
the study period included outbreak control, screening of patients and health care workers, surveillance, environmental decontamination, laboratory detection, antibiotic control and treatment and monitoring of MRSA strains as they spread over the world, as well as through healthcare institutions.

The 1980 saw the beginning of documented MRSA outbreaks in hospitals worldwide. In 1985 Tyzac discussed the management of a MRSA outbreak in a major hospital in Victoria, Australia involving re-education of healthcare staff and povidine-iodine baths for patients (172). The outbreaks were also discussed in popular magazines such as the Australian Women’s Weekly, and Robert Dreve wrote in the Bulletin in 1983 about the spread in hospitals in New South Wales (173). Although the article was not in a peer reviewed journal it gives a good picture of the debate at the time. It noted that an increasing number of hospitals were affected, and the options other than infection control precautions. It also commented on the different stance on prevention between the states of Victoria and NSW, with Victoria choosing fewer interventions. Articles in infection control journals discussed the outbreaks from different perspectives. The severity of infection was debated, with the assessment of patients’ risk of becoming infected or only colonised. In 1985 Longfield found that prior hospital admission, invasive procedure or wound debridement were the most important risk factors for a patient being infected rather than colonised (174). Worldwide, there was reporting of outbreaks of MRSA. A major hospital outbreak was described from Wellington New Zealand by Jones and Martin in 1987 (175). The Communicable Disease Intelligence (1986) reported a 9 months long outbreak in a 505 bed district hospital in UK. Ninety-five patients and thirteen staff became infected or colonised. The cost of the outbreak was calculated to be in excess of $A750,000 (176).

In June 1985 The Australian Health and Medical Research Council Antibiotic Committee approved their Guideline on Control of Cross-Infection with Methicillin (Multiple Antibiotic) Resistant *Staphylococcus aureus*. The document was a revision of a 1982 guideline of the same title (177). The guideline dealt with admission procedures, staffing, and admission to special risk areas, carrier status, antibiotic treatment and infection control.

Guidelines for the control of epidemic MRSA were produced by the Hospital Infection Society and British Society for Antimicrobial Chemotherapy (178). The guideline discussed screening of staff and patients. Samples included the nose, perineum and any wounds. The
Guideline also commented on EMRSA strains (E for epidemic) which had a special ability for spreading in institutions.

Infection control relies on laboratories using the best technique for identifying MRSA and IC personnel must be familiar with assessing the methods. Detection of different MRSA strains helps with tracking the spread and testing for antibiotic susceptibility. Brumfitt et al, in 1989, published one of many papers on this subject. They discussed MRSA resistance to certain antiseptics naming especially quaternary ammonium compounds (179). Aldridge reported under “Topics in Clinical Microbiology” in 1985 the inconsistency among methods for MRSA detection especially between commercial and conventional systems. He concluded that fastest systems might not be the most reliable (180).

Carriers of MRSA may be at risk of infection themselves or a source of infection in others. Factors which increase acquisition and eradication of the carrier state were also debated in the literature, including Casewell in 1986 (181). During the early 1990s concern was raised about the long-term carriage state and transmission of MRSA after discharge from hospital. In 1992 Frenay et al found that some patients infected during outbreaks were testing positive 2-3 years after becoming colonised; however, there was low transmission to family members who had not received antibiotics (182). During outbreaks staff are usually tested and some may be found positive. In 1992 Julia Shovein called MRSA: Pandora’s Box for Hospitals (183). She interviewed several hospitals and found different handling and treatment of colonised staff with some nurses not allowed to return to work for a year. The characterisation of MRSA strains by different testing methods, especially the use of molecular methods, was also discussed in the early 1990s. Richardson and Reith discussed the testing of the UK strain EMRSA-15 by different methods. They showed the degree of similarity between variants of epidemic strains evolving over a period (184).

MRSA as a community organism was highlighted mid-1990 in the US. In 1995 Moreno reported that most community isolates had a distinct Pulsed Field Gel Electrophoresis (PFGE) pattern, which was different from known hospital strains. The patients were often admitted with MRSA without prior known hospitalisation history (185). To control MRSA or not to worry was continually debated during the 1990s. By 2001 authors started to show the advantage of aiming for control of MRSA in hospitals, in spite of the cost and effort. Some countries such as the Netherlands and the Scandinavian Countries had low hospital MRSA infection rates. In 2001 Rubinovitch and Pitted reviewed screening for endemic MRSA in the
hospital and discussed what had been learned. They favoured containment of MRSA which included screening. Some of this screening required samples from the nose, perineum and wound (186). The UK strain EMRSA-15 found its way to New Zealand. In 1997 ESR in its issue of LabLink reported on the current epidemiology of MRSA in New Zealand. Most of the increase in MRSA between 1993 an 1996 was due to two strains called WSPP (Western Samoan phage Pattern) (187). In 2000 ESR reported, in the same journal, a steep increase in number of EMRSA-15 isolates. In 2000 this represented 55% of the isolates from in total 929 patients and 74 healthcare workers (188).

Even when MRSA became an emerging threat, it was uncommon to test staff for carriage. However, when the Department of Health (UK) began to put pressure on the UK hospitals and trusts, requesting them to clean up the hospitals and get MRSA under control, some hospitals started to screen staff if there was evidence of MRSA spread amongst patients (189, 190). In contrast, one trust already included staff screening in 2002 and kept staff screening positive for MRSA off work during treatment for the colonisation. The occupational health department of the hospital also provided follow-up for two weeks (191). The UK Guideline only recommend screening of staff in risk situations (192). There were reports that some staff experienced infections after becoming colonised, especially with the epidemic strain EMRSA-15, and it became an expensive exercise for the hospital to remove the MRSA colonisation from the staff and the staff’s family and home (193).

2.4.6 DIARRHOEA AND VOMITING ILLNESS, ESPECIALLY NOROVIRUS

Diarrhoea and vomiting diseases are frequently caused by viruses especially “small round viruses” such as rota- and noro-viruses. Food borne outbreaks of bacterial origin are rare in hospitals although exceptions can be found. Diagnoses of infections depend on available laboratory tests for diagnosis. Diagnostic tests for rotavirus, a common virus causing childhood diarrhoeal infection, became generally available in New Zealand in the early 1980s (194). Readily available tests for norovirus only became available in late 1990s and early 2000 with the routine use of molecular techniques (195).

Norovirus has become an important pathogen causing outbreaks both in hospitals and in nursing homes providing care for elderly patients. Goller et al (2004) (196) discussed the possible reason for these facilities being especially vulnerable to outbreaks, suggesting that long term excretion of the virus beyond the acute illness could be a factor. Lopman et al (197) analysed data on surveillance of viral gastroenteritis in ten European countries from 1995 to
2002 and noted an unusual increase in outbreaks in 2002 which coincided with the emergence of a new norovirus variant. The interest in analysing the data arose from the observation of gastroenteritis outbreaks in hospitals in the UK and in cruise ships in the USA. The new variant’s genogroup was II4. In 2000 Chadwick et al (198) discussed the management of hospital outbreaks of gastroenteritis. They also referred to outbreaks in Australian hospitals in 1997 and stressed the risk of airborne transmission and the risk of sharing of bathrooms with somebody who vomited. Cleaning and disinfection of areas contaminated with faecal matter or vomit was essential. ESR reported in LabLink that there were 93 outbreaks of laboratory-confirmed norovirus gastroenteritis in New Zealand in 2002, with no seasonal peaks. Of the 93 outbreaks 34 had been associated with rest homes and hospitals with 85 % caused by genogroup GII/1, 4, 8 (199). This was in contrast to the Annual Summaries 2001 of LabLink (200) where 53 Norwalk-like virus outbreaks were recorded, but only seven related to rest homes and none to hospitals. No outbreaks were reported in the 1999 annual summaries (201).

2.4.7 SCABIES

Scabies is a parasitic infection caused by the mite *Sarcoptes scabiei* variety hominis infection with the scabies mite occurs worldwide in all ethnic groups, in both sexes, and at all socioeconomic levels. The more crowded the living conditions, the higher the prevalence of scabies in the population. Outbreaks of scabies in hospitals and nursing homes have been described and the source is often traced to a patient with atypical scabies also called Norwegian scabies. Outbreaks of Norwegian scabies in nursing homes or long term care facilities were described by Hopper in 1990 (202), Andersen in 2000 (203), and De Beer in 2006 (204). They commented that the infestation was often misdiagnosed and that the cost of control increases as infection spreads to other residents in the facility. Outbreaks have not only been related to eldercare facilities with Danchaivijitr in 1995 (205), Bannatyne in 1992 (206), Sirera in 1999 (207) and Obasanjo in 2001 (208) also reporting outbreaks in acute hospitals, including surgical wards. Again, the source was often a patient with unrecognised Norwegian scabies.

Scabies has also been described as an occupational risk to the health staff. Anderson (2000) (203) noted infection among staff in a nursing home and other authors, for example, Bannatyne (206), and Obasanjo (208) between 1992 and 2001 reported on the risk to staff in
acute hospitals. Scabies has also have been described as an occupational disease in laundry workers (209).

Treatment can usually be achieved using an anti-parasitic cream over the whole body. Some resistance to the chemicals in these creams has already been observed and treatment with an oral drug called Ivermectin is required for cure (210). Resistance to this drug has also been documented by Curry et al (211).

2.5 OCCUPATIONAL HEALTH AND INFECTION CONTROL

Instruction for infection control personnel during the 1970s and early 1980s was very explicit regarding detection, and prevention of infections in health care workers. It was only later that a separate occupational health service developed in hospitals. Gibson (1974) recommended an occupational health service, but warned that it should not be the task of busy junior hospital staff but a service of X-ray departments and laboratories. A range of immunisation to be offered was listed, along with an annual chest X-ray with the requirements tailored to the different employment groups (35). Wehrle noted in 1978 (212):

_Hospital infection control programs should provide for detection, evaluation, prevention, and treatment of infections among personnel._

He recommended vaccinations including BCG, diphtheria and tetanus toxoid, influenza, measles, mumps, rubella and smallpox vaccinations. However, the author did not suggest that the ICN performed the vaccinations. Dubay (1978) (36) also discuss the personnel health service program, providing pre-employment examination, immunisations and _other_ services including ECG for employees over 40 years of age. A health service nurse in charge of the employee service should:

….._work closely with the infection control coordinator, who should be alerted immediately to any infectious problems._

CDC was also addressing their advice to infection control staff with recommendations for occupational safety and health (1988) (213). The guideline stated:

_The infection control objective of a personnel health service should be part of the hospital’s general programs for infection control._

In his 1981 presidential address to the association of clinical pathologists called “In pursuit of safety”, Reo Williams gave an insight into the view on staff health at the time. He declared
that since early 1970 there had been *an epidemic rise in papers published on microbiological safety in laboratories*. As the number of publications regarding hepatitis B infection increased, the number of infections declined, indicating the effect of precautions put in place. There were also numerous reports of occupationally acquired tuberculosis (214).

The early 1980s saw the devastating introduction of the HIV and resulting AIDS. Birk (1986) described not only the struggle of the infection control service and the laboratories with this new infectious hazard, but also told about other scourges besieging the healthcare sector such as the economic and legislative changes in the American health industry. She also demonstrated the close working relationship between epidemiologist and microbiologist as together they reviewed the CDC laboratory guidelines and introduced safety precautions against transmission of HIV (215, 216).

Henderson (1988) discussed the HIV risk to health care workers and the involvement with infection control. She pointed out, according to knowledge at the time, the similarity of transmission of HIV with that of hepatitis B, which was a concern to staff who knew about the risk of acquiring hepatitis B infection at work. The involvement of infection control was teaching “universal precautions” as designed by CDC, which minimised exposure of the staff to blood and body fluids (217, 218).

A vaccine for protection against hepatitis B became available in the first years of the 1980s. The early vaccine was produced as a whole cell virus vaccine from the blood of hepatitis B carriers. Spence looked at the uptake of the hepatitis B vaccine in 1990 amongst registered nurses. Less than 50% had been vaccinated. Some of the concerns were the fear of contracting AIDS from the vaccine. He also quoted a CDC estimate that by 1987 90% of larger (>500 beds) hospitals in USA had established hepatitis B vaccination programs (219). McDonald (1993) (220) discussed the influence occupational safety and health administration had on infection control. The US Congress had already passed the important Occupational Safety and Health (OSH) Act in 1970. This act divided the responsibilities among three federal agencies: the Occupational Safety and Health administration (OSHA), The National Institute of Safety and Health (NIOSH) and the Occupational Safety and Health Review Commission (OSHRC). However, it was only when OSHA began to enforce the CDC’s preventative guidelines on Universal Precautions in 1987 that the agency had an impact on infection control. Despite OSHA being in place for 20 years, it was only when it published the OSHA Blood Borne Pathogens Standards (BBPS) (1992) that infection control practitioners
became familiar with its standard enforcement activities. This standard was designed to protect employees with regard to personal protective equipment (PPE) from blood and other infectious material. Further standards were promised following the influential BBPS. In 1995 Kane Mark (221) outlined the World Health Assembly’s recommendations from 1992 (Global Programme for Control of Hepatitis B Infection) stating that all countries should have Hepatitis B vaccine integrated into their national immunisation programmes by 1997. Also by 1995 there was expert instruction for follow-up of health workers who had had exposure to three blood-borne viruses hepatitis B, C and HIV. An article by Gerberding in 1995 documented up to date treatment including administration of viral drugs for protection of the staff after occupational HIV exposure and post-exposure follow up with serological testing (221, 222).

2.6 SUMMARY

Infection control’s development during the total period, 1978-2008, has been influenced from multiple sources, ranging from the central governance structure to local management and the professional specialties in hospitals. The influences from political changes have been demonstrated, most obviously from a country with a strong public health system. The period 1990-2008 show the most active intervention by the central governance structure. Local governance structures (e.g. hospitals and other groupings) influenced infection control development by quality requirements, as they themselves were under pressure from central governments, regulators or insurers.

Professional influence came via the infection control committees, infection control teams and research. The structures of ICCs have shown surprisingly little change over 30 years. Apart from having an “authorative status” there is little evidence of its direct influence, and this is more marked as the influence of central and local governance structure increased.

Infection control staff have changed from the local microbiologist and a nurse allocated to the job as ICN to professionals receiving qualifications in the IC specialty via Certification, Diploma, Masters and PhDs.

There is no doubt that infectious events such as outbreaks or notable infections with MRSA and other antibiotic resistant organisms have also helped to drive change as the general public, the press and other media showed increased concern with the level of nosocomial infections.
Economic considerations have also had enormous influence. Initially it was the drive to contain the rising cost of health care. During the late 1990s the focus changed from cost containment per se to the increasing cost of hospital acquired infections with MRSA and other antibiotic resistant organisms. While maintaining the focus on general health care cost the period saw the introduction of “quality improvements” as a response to cost containment as well as improving the health care services.

Infection control increased its range of service from initially concentrating on surveillance, education and outbreak management to provision of hygiene audits, advice on facilities during building and renovation and other issues as they arose such as the reuse of disposable items. The service has shown itself to be able to adapt to changes and contribute to self development.
CHAPTER THREE-RESEARCH METHODS

3.1 RESEARCH AIMS AND OBJECTIVE

The aim of this study was to explore the influence of multiple groups and events on the development of infection control in Canterbury hospitals over 30 years from the time of the employment of the first infection control nurse in Canterbury public hospitals until 2008. The study recognises that the major players have been influenced by events in different historical periods, the most significant being health policy changes, local hospital governance and management as well as health professionals themselves. However, local or national events have also contributed to the development or shaping of the infection control service. Outbreaks and prolonged infectious events pose high risks to patients and are economically challenging for the institutions, as well as leading to an increased interest from the public media. Some major infectious events or challenges have been presented as contributing to the development of infection control and occupational health services.

3.2 RESEARCH APPROACH

The research methodology employed for this study was qualitative with emphasis on the integration of key themes and theoretically relating these to the literature. The term “qualitative research” refers to research that produces findings not arrived by statistical procedures or other means of quantification.

Pope in describing the main qualitative research methods stated that qualitative research deserved to be an essential component of health and health services research (223). Qualitative research methodology is valuable in addressing research questions that are different from those requiring clinical epidemiological evaluation. Qualitative research can address practices, opinion and attitudes and how evidence is turned into practice (224).
3.3 DATA SOURCES

The two main data sources used in this research were document analysis and key informant interviews, but the role of the researcher as a participant in many of the events under discussion must also be considered.

3.3.1 DOCUMENT ANALYSIS:

A document is a formal piece of writing that provides information or acts as a record of events or arrangements.

Lincoln discussed the value of documents and records as information sources in research. She discussed the difference between document and records and advocated document as letters, memorandums, diaries, position papers, case studies, newspaper clippings, photographs, written messages and communication produced during group interaction. She also recorded documents as primary and secondary, where secondary represented hear-say and other not first-hand documentations (225). She stated that the value of documents is availability, rich sources of information and inexpensiveness.

Dew in a two part paper, outlines some of the advantages and disadvantages in using documents in social research and gives as an example the use of documents in the research of complementary and alternative medicine. He points out that analyses of documents can provide important insight into social and political issues. His also gave guidance to the qualitative descriptive analysis and qualitative interpretive analysis of documents (226, 227).

3.3.2 KEY INFORMANT INTERVIEWS

Key informants are active participants in the research setting considered to have significant experience regarding their topic. Holloway (1997) (228) defined the key informants as members of a community who have knowledge of the setting or the phenomenon under study. He also noted that the sample size in qualitative research is usually relatively small, with what he calls information rich cases and in-depth interviews making a large sample size unnecessary, as it is uncommon to generalise from this type of research.

3.3.3 PARTICIPANT OBSERVER: THE RESEARCHER’S ROLE

The concept of participant observer has been used to describe the researcher who also is an ‘insider’ and participant in the setting being studied. Thorne described the political activist as
participant observer combining sociological observation with active participation in a political movement (229). Howard defined participant observer as a researcher who gathers data by participating in the daily life of the group or organisation he studies (230). Olin et al. defined it as a qualitative method of research with the objective to help researchers learn the diverse perspective by the study population and understanding the interplay among them (231).

At this point it is relevant to introduce information about the researcher as both a participant and informant. The researcher has been employed in the Microbiology Department Canterbury Health Laboratories, CDHB since 1976 initially as a microbiology registrar and since 1981 as medical microbiologist. She chaired the Infection Control Committee from 1986 to 2007 and has been the Director of Infection Control CDHB Hospitals since 1993. The knowledge of the subject has made it possible to select and present some of the data in detail, while strictly adhering to the written documentation. The research focuses on the influence of different groups and players in infection control and this has required reviewing the data from several perspectives not previously obvious to the researcher. Strict adherence to themes, documentation of the correspondence as well as introduction of key informants familiar with the subject provided assurance against bias in the data selection and presentation. The role in this research is somewhat different from the definition of a “Participant Observer” as that normally requires that the period and the interplay were observed with the purpose of research at the time. However, both the researcher and the key informants were participants during the periods recorded, and this has to be considered and allowed for carefully during the interpretation of the themes.

The two main methods for gaining information have been document analyses and key informant interviews. The period covered was 1978 to 2008. Some relevant information has been documented prior to 1978 to explain events leading up to the introduction of the infection control service. The methods of data collection and analysis are outlined below.

3.4 DOCUMENT RETRIEVAL AND ANALYSES

This section covers retrieval of documents and reviewing and analysing of the data. The analysing has been divided the documents into time period and themes.
3.4.1 RETRIEVAL OF DOCUMENTS

Documents were obtained from several storage areas. Initially Archive New Zealand’s local Christchurch storage was expected to hold documents from the old North Canterbury Hospital Board and Canterbury Hospital Board. Permission was obtained from the Canterbury District Health Board Corporate Lawyer to access documents relevant to the research. However, very few relevant documents were found apart from a few annual reports from the Infection Control Committee. The Canterbury Health Laboratories store relevant laboratory papers and equipment on the laboratory premises. Amongst those items were also archived documents from the ICC and the Infection Control Unit. These documents had been archived by infection control staff as well as by the Microbiology Department secretary who also provided secretarial services for the Infection Control Committee and was the regular minute taker.

The following were sourced from that site covering the period 1978-2008:

- The Infection Control Committee’s Annual Reports and the Minutes of the Monthly Infection Control Committee Meeting: The Laboratory Annual Reports from 1960 to 1989 were found the Laboratory library. These reports contained the ICC Annual Reports from the early years, 1980-83.

- Letters and copies of letters, memos and, emails to the Infection Control Committee or Infection Control staff: These documents are referenced separately from published work and appear in Appendix 1, divided into the time periods and numbered in the order they are presented i.e. letters in Period A (1978-1989) are numbered A1, A2 etc and in Period B (1989-1993) B1, B2 etc. More than 500 items have been referenced in the appendix.

- Relevant documents received by Infection Control Committee or Service for information or interest for example Canterbury Public Hospitals internal publications.

- Reports on incidents and investigations.

- Infection control manuals with guidelines and policies

- The Infection Control publication “Germbuster”

- Canterbury Health Laboratories Annual Reports

- Microbiology Department’s Newsletter.

- Information relating to governance and management of the Canterbury Hospital Board, Area Health Board and District Health Board, which may have been circulated to the
Infection Control Service or general staff. This includes such items as administrative information, letters, directives and other communication to and from management. These documents were either stored in boxes labelled with Infection Control or stored in the researcher’s own files. Some of these documents were also obtained from colleagues.

- Published papers documenting local infection control events have been referenced if the event was included in the presentation of data.

3.4.2 REVIEWING AND ANALYSING DATA

TIME PERIODS ANALYSED
The 30 year period has been defined from the time of employment of the first infection control nurse (ICN) in the North Canterbury Hospital Board in June 1978 until 2008. This period has been divided into periods, reflecting political or regional changes affecting infection control. The timeframes are approximately A: 1978 to 1989, B: 1989 to 1993, C: 1993 to 1996, D: 1996 to 2000 and E: 2000 to 20008. In most cases the beginning and the end of the year will be June/July reflecting the financial year, but often events and issues span two time periods.

PRESENTATION OF THE DATA
Data obtained from the total period was divided into time periods and further subdivided into themes. The aim of this research was to document the development of infection control. The Standard by which developments can be measured was the New Zealand Standard on Infection Control NZS 8142:2000 as the 2008 update was not available until sometime after the end of the research period. The Standard and New Zealand Handbook Infection Control Audit workbook SNZ8142: 2001 provided convenient sections which were used as guidance for themes of the material (10, 232). The data was further selected as representative and descriptive of each period, but also selected to allow a continuous thread from one period to the next.

The following themes will be present in most of the periods:

- Health sector change – to set the scene for the period
- National influences on infection control development
Governance and local management of infection control

Professional influences on infection control with operational subheadings:

Infection Control operational group:

a) Surveillance
b) Education
c) Protocols, guidelines, special issues, reports
d) Professional education, development and employment of IC staff

Infection Control Committee, ICC members, work and involvement:

a. The members of the ICC
b. The Infection Control Committee (ICC) and how it worked
c. Subcommittees

Outbreaks and special infectious issues.

Occupational Health

Period discussion and summary

3.5 KEY INFORMANT INTERVIEWS

Four key informants were chosen. Three of the informants were members of the hospital board governance structure as senior medical advisors during different periods. Two of the informants were also members of the Infection Control Committee for a period of time and all three were recipients of information from the Chair of the Infection Control Committee. One key informant was a senior scientist at ESR. These informants were chosen with the aim of obtaining information regarding the governance decisions made by the hospital in response to infection control in the hospitals or information from the ESR, which provided services for the Department/Ministry of Health during the period. The key informants were sent the questions ahead of the interviews. Three of the key informants were interviewed in person and the interviews tape-recorded. All tape-recordings were transcribed fully. One informant also provided detailed written answers to the questions. One informant was interviewed by phone and detailed note taken. The notes were sent to this interviewee for editing before use.

Selected quotes from the informants were used in the thesis. Each of the informants gave informed consent to the interview with identification restricted to their title and time period for work in the role. Informant I covered the period pre 1978 to 1989 (Period A); informant II covered period 1989 to 1996 (Period B & C) and informant III covered period 1995 to 1998.
Informant IV mainly covered the period 1989 to 2008. Informant I, because of his role, was difficult to anonymise. He was asked for and gave explicit permission to be directly quoted even if this allowed identification.

The interview schedules are available in Appendix 7.

### 3.6 ETHICAL ISSUES

The research involved participation of human subjects and therefore required ethical approval from the Health and Disability Ethics Committee.

Ethical Approval was sought by submitting the National Application Form for Ethical Approval of a Research Project (NAF-2005 v1) which provided information of the research and example of questions asked of the key informants. Approval was obtained from the Upper South A Ethics Committee, c/ Ministry of Health, P.O. Box 3877, Christchurch.

### 3.7 LITERATURE REVIEW

Several approaches were used for the literature review:

**DATABASES:**

**OVID (MEDLINE, EMBASE)**

Search terms: Infection control and any of subjects related to the themes outlined in presentation of the data (3.4).

**INTERNET SEARCH ENGINES:**

Key words searches of the internet via Google, Google Scholar and Science Direct search engines.

Keywords: Infection control, referenced authors names and any of subjects related to the themes outlined in presentation of the data (3.4).

**WEBSITES INCLUDING:**

**CDC**  [http://www.cdc.gov](http://www.cdc.gov)

**World Health Organisation**  [http://www.who.int/en](http://www.who.int/en)

**UK Department of Health**  [http://www.hd.gov.uk](http://www.hd.gov.uk)

**United States Department of Health& Human Services**  [http://www.hhs.gov](http://www.hhs.gov)

ARCHIVED PUBLISHED PAPERS

Archived journal articles related to reports or investigations kept by the author or infection control reports have been referenced if relevant.

More than 280 Journals articles and books from the international literature 1976-2009 and 4-6 from the period 1960-1976 were obtained and reviewed. The themes covered were identical to those documented in the research data.
4.1 INTRODUCTION

This chapter covers the period from the employment of the first infection control nurse in Canterbury hospitals 1978 and until the 1989 introduction of the Canterbury Area Health Board, which saw a change from a medically-led management to general management.

4.2 HEALTH SYSTEM INFLUENCES

This section investigates the health sector changes during this period, central governance influences including that of the National Health Institute (NHI) and institutional governance of infection control.

4.2.1 HEALTH SECTOR CHANGES:

Prior to 1983 the New Zealand health sector was subject to strong central control. A major health reform was introduced during the period. The Area Health Boards Act (1983) was introduced under a National led Government, but it was under the Labour Government (1984-90) that the conversion of all hospital boards to Area Health Boards (AHB) took place (16).

The Area Health Boards Act (1983) allowed the voluntary formation of directly elected population-based Area Health Boards. The North Canterbury Hospital Board, which changed to the Canterbury Hospital Board in 1983, did not convert to an Area Health Board (AHB) until 1 June 1989. That change saw the end to the position of the Medical Superintendent-in-Chief and the position of Chief Executive of the Canterbury Hospital Board change to General Manager (GM) of the Canterbury Area Health Board (CAHB). South Canterbury Hospital Board (Timaru), Ashburton Hospital and Christchurch Health Development Unit (Department of Health) were all included in the CAHB. The Medical Superintendent-in-Chief position was replaced with a Medical Advisor Medical Services and at hospital level the Medical Superintendent was replaced with institutional Medical Advisors. The AHB was responsible for the provision of public health, secondary and community care services, but not responsible for primary care services (233).
In 1983 an early version of population-based funding was also introduced. Other important Acts passed during this period were The Official Information Act 1982, implemented July 1983 (A1) (234), the State-Owned Enterprises Act 1986, the State Sector Act 1988, the Public Finance Act 1989 and the New Zealand Bill of Rights Act 1990 (235-238). It will be shown that the introduction of these acts influenced the development of infection control especially during the 1990s.

4.2.2 CENTRAL GOVERNANCE INFLUENCES ON INFECTION CONTROL

The political scene in New Zealand had a major influence on the organisation of the health sector but appears to have had little influence on infection control development. During this period (1978-1989), central government exerted its influence on infection control mainly by advising, financing and producing selected information pamphlets and guidelines to the Hospital/Area Health Boards.

According to Key Informant I interviewed in 2008: the role of the Department of Health was that of funding and advising; it had no influence on the operation of the Hospital Board. However the relationship was friendly and they discussed issues regularly.

The Department of Health also engaged in educational activities. In 1980 the first Infection Control Seminar was held in Palmerston North, arranged by the Department of Health. One of the main speakers was Dr Margaret Guthrie, Assistant Director Hospitals Division. The following main points from her presentation highlight the Department of Health’s views and interest area at the time.

1. Health department policy, and it has never really been spelt out, rather it has been taken for granted- is to support any measures which improve the efficiency of treatment of patients.
2. Nosocomial Infections are viewed as a public health problem of importance to the clinician, the nursing profession, the Department of Health, and the administrators of hospitals.
3. Since the 1970s the Health Department has had what was originally called Hospital Cross Infection Advisory Committee that metamorphosed into the Nosocomial Infection Advisory committee in June 1975.
4. She indicated that the Division of Hospitals was concerned about the increasing cost of disposables, which might lead to re-use and reprocessing. The difficulties of reprocessing
requiring at least the use of ethylene oxide sterilisation or radiation. We have said that only methods approved by the manufacturers should be used. We have recently issued a code of practice on the use of Ethylene Oxide (ETO) using as much of the American standards on acceptable levels as a guide.

5. All hospitals are supposed to have an infection control programme. Not all are equally enthusiastic. The main features of such a programme were: continuous surveillance of all hospital acquired infections and the institution of appropriate control or remedial measures. The programme should be managed by the Infection Control Committee (ICC) and the Infection Control Nurse (ICN) was a key person to carry out the programme.

6. She also warned about the ‘wait and see’ attitude until confronted by nosocomial infection on an epidemic scale. The role of the microbiologist was also mentioned. Three main areas suggested for activity were: 1) Microbiological investigation of micro-organisms likely to be associated or actually associated with hospital infection. 2) Microbiological investigation of the hospital environment, food and equipment and 3) Advice in the eradication of sources of infection including advice on disinfection and sanitising agents (A5).

For Canterbury hospitals, the minutes of the ICC mentioned several items of infection control information and guidelines received by the North Canterbury Hospital Board (NCHB until 1983) or Canterbury Hospital Board (CHB 1982 to 1989) and forwarded by the Medical Superintendent-in-Chief to the ICC for information and discussion. An example is Circular Letter (Hospital) 1983/53 to Chief Executives of Hospital Boards on Antibiotic Resistant Bacteria Monitoring. This letter was sent by the Medical Superintendent-in-Chief via the Chair of Pathology Services to the Chair of the ICC (A 6, 7). In some instances these publications were mentioned in the ICC annual report as providing baseline for local protocols, for example, the Department of Health’s guideline on meningococcal meningitis in 1984-85 and the Health Department circular protocol on control of viral haemorrhagic fevers. The Medical Superintendent-in-Chief would send a copy of the guideline with an attached memo and occasionally add some personal comments such as that accompanying the meningococcal guidelines in 1985: Perhaps someone has just sat the old D.P.H examination. The role of the ICC was to table and recommend for acceptance to Medical Superintendent-in-Chief (A8). However, not all advice from the Department of Health appeared to be acted upon, for example a Department of Health circular letter to Hospitals 1980/18, indicating that it was not advisable to re-use equipment labelled ‘disposable’. This had also been mentioned at the Infection Control Seminar 1980 (ICC Annual Report 1980/81) (A 5).
By 1987 the Department of Health appeared to have become interested in how far hospital boards had come in managing infection control. An Infection Control Survey with a questionnaire and accompanying letter was sent to Chief Executives of Hospital Boards 15 May 1987. In Canterbury, the Infection Control staff drafted the reply to the survey questions for the Medical Superintendent-in-Chief, detailing the present infection control service (A 9).

4.2.2.1 NATIONAL HEALTH INSTITUTE (NHI)

Central government provided a resource to hospitals through the advice and laboratory support for specialist microbiological testing at the National Health Institute (NHI). However, the NHI was not noted in ICC minutes or letters as providing any obvious management or leadership, but frequently referred to in their provision of routine and reference testing, as well as their role in outbreak management. From 1988 the NHI underwent changes in its operation. Some charging for services was introduced especially for respiratory pathogens testing (A2, 3). In the last few months of 1989 the NHI was seen to take further initiatives now we have entered the era of the Area Health Board. A new Communicable Disease Surveillance Unit was established and a two day workshop held on communicable disease surveillance in 1989 (A4). The NHI planned to change its name and direction to the New Zealand Communicable Disease Centre (CDC) possibly in the image of Communicable Disease Center (CDC) in the United States.

4.2.3 INSTITUTIONAL GOVERNANCE OF INFECTION CONTROL

The structure of the North Canterbury Hospital Board is briefly outlined in “The Last Thirty Years: The History of Canterbury Health Board”(233). There is limited documentation of the involvement of the local (NCHB) management on how the Infection Control Service began. A letter from the Department of Health (1974) suggested that surveillance of infection should be carried out (A10). This was followed by correspondence between The Medical Superintendent-in-Chief and the Chair of Surgical Services in 1975 (A11).

Informant I was unable to provide details when interviewed in 2008. He noted:

*I am sure within the Department of Health as it was called in those days, they may have talked about Infection Control and written about it in the monthly letters. There was a good working relationship. If there wasn’t something, they would have told us, but don’t forget the Department had no executive control, but they controlled the money. So if they*
didn’t like you, you got less money. But by and large I think we got on well with The Hospitals Division, and if you wanted to set up an Infection Control Committee they would have said “Please do it”.

During the interview Informant I was asked how the matters arising from the ICC was dealt with by the governing Board:

The Health Services Committee met once a month and it dealt with hospital matters. If there was any discussion about infection control, I’m sure this is where it would have popped up.

On being asked whether issues from the IC Committee went to the Board, the reply was that

The administrative structure was that the Board made policy, and the Medical Superintendent-in-Chief was, in terms of the by-laws, the chief advisor to the Board on all medical matters and responsible for implementing all medical matters. So the Medical Superintendent-in-Chief was really on paper fairly powerful. As such you were the Chief Advisor and you were responsible for doing it.

When questioned on whether ICC issues considered by the Health Services Committee could be put in place without going first to the Board, the response was:

Well I’m sure lots of things did, yes, that was the way it worked. On a day to day basis the Infection Control Nurse or Committee had a pretty free hand.

When taking office in 1979 the then Acting Medical Superintendent-in-Chief formulated a report on Medical Administration, Channels of Communication and Delegated Authority. This document was sent by him to new Heads of Departments and remained in force until his retirement in 1989. The document mentioned that the Hospital Board had more than 100 Advisory Committees of which ICC would become another in 1979 (A 12).

There was a close working relationship between medical and nursing services. In the words of Informant I during the interview in 2008:

When I was Medical Superintendent of Christchurch Hospital and when I was Medical Superintendent-in-Chief, I went to the Matron or the Matron-in-Chief every morning. There were some mornings I didn’t but as a general rule I did and we talked about things.
4.3 PROFESSIONAL INFLUENCES ON INFECTION CONTROL

This section examines the professional influences of those groups dedicated to infection control in the hospitals. One group is the infection control team (ICT) as the operational unit of infection control. Information regarding the composition of team, its work and professional education will be recorded. The second group is the Infection Control Committee (ICC). The details of its composition, function, reporting lines and activities have been researched. Part of its activities labelled “key issues” have been selected to demonstrate major or continuing issues for the ICC and ICT.

4.3.1 INFECTION CONTROL TEAM

The first Infection Control Nurse at North Canterbury Hospital Board was employed June 1978. The main driver for the development of the position was the medical microbiologist, who had herself only been employed by the Board for 4 years. The Pathology Annual Report 31 March 1977 recorded that the microbiologist had received a grant from the Canterbury Medical Research Foundation for a study into wound infection in Christchurch Hospital. When the study finished the nurse employed for the study was employed as the ICN to North Canterbury Hospital Board (A19).

From 1978 to 1989 the ICT comprised the ICN and the medical microbiologist. They were assisted by the microbiology registrar(s), whose reports on investigations of infection issues, frequently feature in the Infection Control Committee’s Minutes and Annual Reports.

Information about the ICN’s work has been obtained from the ICN’s monthly reports, which were available from the period 1979 to 1989, and from the ICC Annual Reports. It is possible to summarise the ICN’s routine monthly work from these reports as below:

4.3.1.1 INFECTION CONTROL WORK

The main routine work of the ICT was surveillance, protocol writing and education of the staff.
4.3.1.1.1 SURVEILLANCE

Surveillance of infectious organisms took a considerable part of ICN’s time. In the early years of the period, this included bed numbers and length of stay of patients. Some of the data collected were clinical isolates of mainly *Pseudomonas aeruginosa*, *Klebsiella pneumonia* and *oxytoca*, *Staphylococcus aureus*, and *Clostridium difficile* and from 1986 Methicillin or multiresistant *Staphylococcus aureus* (MRSA), and other multi-antibiotic resistant organisms. Information about the isolates was obtained from patients’ laboratory results. The majority of surveillance information originated from the Microbiology Laboratory and there was clearly a close working relationship with the laboratory, with the laboratory staff assisting the ICN with daily information, as well as noting if a cluster of infection occurred in clinical areas. If such a cluster was discovered bacteria from each patient infection were sent to the NHI for further typing, for example phage typing of *Staphylococcus aureus*, and pyocine typing of *Pseudomonas aeruginosa*. Case studies of such incidents or outbreaks are summarised later in this chapter. There was also regular communication between the microbiologist and microbiology registrar(s), who participated in investigations of possible infection cluster or outbreaks. When such a cluster was identified, the microbiologist in charge of infection control or, as the Chair of the ICC, would inform the Medical Superintendent of the Hospital of both the problem and any investigation which may have been instituted to identify the source (A 20, 21). It was also the microbiologist who provided clinicians with antibiotic resistance data. Again the Microbiology Department Newsletter was used for disseminating the information (A22). This was started before request from the Department of Health via their Circular Letter to Hospitals/Chief Executives of Hospital Boards about Antibiotic Resistant Bacteria Monitoring in 1983 (A 6, A23).

Receiving and evaluating results from environmental cultures of endoscopes such as gastrosopes and endoscopic retrograde cholangio-pancreatography (ERCP) scopes were noted in the ICN reports throughout time period. By 1978 this monitoring was already an infection control issue when these scopes were found to be contaminated with bacteria and difficult to clean. The details of the initial problem are documented in one of the IC case studies later in this chapter. The microbiologist would often handle further laboratory surveillance, such as testing detergent for sterility, a requirement introduced after the detergent contamination problem, discussed in one of the case studies later in this chapter (A 24).
Legionella surveillance of the domestic hot water (there were few air-conditioners in those days) was introduced in the mid-1980s. Negative culture results were found from screening tests from February 1985. The surveillance required the Microbiology Laboratory to set up culture techniques for clinical and environmental Legionella testing and the surveillance was mainly monitored by the microbiologist. The impetus came from Department of Health in one of its circular memoranda (A 28, 29, 30).

4.3.1.1.2 EDUCATION
Education of health care staff and advice on hygiene issues and isolation precautions for patients with communicable infections was another major part of the routine work. This often involved travel between the Board’s hospitals. Regular teaching sessions were also held at the local Polytechnic Institute as part of nursing education.

4.3.1.1.3 PROTOCOL AND GUIDELINES
Drafting protocols and guidelines was important work for the ICN and the medical microbiologist. The preparation involved considerable research and study to evaluate the most recent international and, if available, national recommendations. One of the first policies passed through the ICC was the Disinfectant Policy (A 31). Considerable field work was carried out including culturing of water from buckets containing floor mops which had been left soaking between floor washings. Some details of this work were recorded in the ICC minutes (1979/80).

Other important guidelines and policies introduced during the period 1978-1989 were documented in ICC Annual reports. At least 41 protocols, guidelines and policies were prepared and accepted during this 12 year period, nearly all of them new improvements. See Appendix 2 for details of the protocols and guidelines for the period (A).

4.3.1.1.4 MEETINGS
The ICN was a member of several committees. Sometimes the microbiologist had been invited as a member and the ICN took the place later. An important committee was the one planning a Central Sterilisation Services Department. The minutes of this committee, which met from 1980-1988 show it initially met monthly and later less frequently. The Committee initiated detailed consultation with users. A Central Sterilisation Services Department facility was finally established in a renovated ‘works building’ in 1989.
Another committee was the regular Cleaning Committee which discussed the performance of the contract cleaning for Christchurch Hospital. The members were also consulted in the contract specification (ICC annual report 1989/90).

4.3.2 PROFESSIONAL EDUCATION AND EMPLOYMENT OF IC STAFF

ICNs were employed without any specific education in infection control other than that already taught in nursing training. There were five changes of ICNs during the period (A) 1978-1989 with one ICN re-employed. The first ICN had had a one year engagement as a research assistant in a wound surveillance project prior to employment and that same ICN was employed as ICN for 60 months in total over two time periods. The other ICNs stayed in the position for 22 to 30 months. Microbiology registrars, who worked towards Fellowship in the Royal Australasian College of Pathologists (RCPA) in Microbiology, worked in the Microbiology Department for 48 to 60 Months.

Most ICNs “trained” in the job and the text books which were available to them were relevant to the time. At least nine archived IC books from the Laboratory Library have been noted (84, 239-246). Daily contact with the microbiologist was also part of the professional training and a source of information. However, The Department of Health may have been concerned about the lack of structured training of the ICNs, resulting in the Department’s Infection Control Seminar held in Palmerston North 1980. According to the ICN’s monthly report, attendances at only two more IC Seminars were noted: one in Auckland in 1982 and another National IC Conference in 1989. Attendance at one overseas meeting was recorded, the NSW Infection Control Association Seminar 1984.

It was possible to acquire extensive and detailed knowledge through preparation and research on specific topics. The ICC Annual Report and the ICC minutes as well as the ICN’s monthly report details a thorough investigation entitled “Infection Control Review of Operating Theatres Christchurch Hospital” in 1986, prepared by the ICN (A 32). Two microbiology registrars also undertook IC reviews and in 1987 submitted a twenty-five page report entitled “Investigation of Sterilisation Practices in Canterbury Hospital Board Hospitals” (A 33). The report found widespread problems with education, quality control and standardisation of sterilisation services in the Board hospitals. The report recommended formal and continuing training, standardisation of work methods and protocols. It also recommended reconvening of the Sterilising Committee. It is outside the scope of this research to evaluate the changes
introduced after the report was received, but it was noted in the ICN’s monthly report that a “second steam sterilisation course” was held on 24 February 1989.

The ICN monthly reports described routine regular contacts with Nursing Administration. The “First Assistant Principal Nurse” Christchurch Hospital was recorded as both participating in regular meetings until 1983 and receiving the monthly report from the ICN from 1979 to 1990. Meetings with Principal Nurses in other Board hospitals were also noted especially during the years 1979-1984. Only one entry was noted of contact with the Chief Nurse and the item for discussion was visit to another health board and cost of information to be sent.

The career prospects for the ICN and staffing numbers were commented on by the microbiologist in the Pathology Annual Report 31 March 1979, where she expressed *disappointment that the position had not been promoted from staff nurse to charge nurse in view of the considerable responsibility, aptitude and devotion to duty of the nurse.* The ICN also recommended in her annual report 1980/81 *consideration for upgrading present position to supervisor status to ensure job satisfaction and career prospects.* Further she recommended consideration of a second ICN. However, the position stayed as staff nurse throughout the period.

The voice for increasing ICN staff became stronger during the year the microbiologist was on leave. The relieving Chair wrote in the ICC Annual Report 1983/84: *WHO, on page 42 of their Practical Guide to the Prevention of Hospital-Acquired Infection state that* "it is recommended that one hospital hygiene nurse should be available full-time for every 250-400 beds or, taking into account the average length of hospitalization, for every 9,000-10,000 admissions per year. The numbers of admissions at Christchurch Hospital (16,733); The Princess Margaret Hospital (9,645), Christchurch Women’s Hospital (8,636) and Burwood Hospital (4,603) were also noted in the report.

### 4.3.3 INFECTION CONTROL COMMITTEE, ICC MEMBERS

The first Infection Control Committee meeting was held February 1979 (ICC minutes 5 February 1979). A letter to the Medical Superintendent-in-Chief enclosing the minutes questioned to whom the Committee was responsible, with whom the Committee could communicate (consultants or Medical Superintendent-in-Chief), the Committee’s authority and co-opting of members (Letter to Medical Superintendent-in-Chief 7 Feb.1979). A reply
was received, but its contents were not noted in the minutes (ICC 16 March 1979). The IC Annual report from 1980 and 1981 were included in the NCHB Pathology Services Annual Report 31 March 1981, and 1982, but after those two years it became an independent document. The ICN’s Annual Reports were available in the same Pathology publication annually until 1990, demonstrating the close relationship between Infection Control and the Microbiology Laboratory.

4.3.3.1 THE MEMBERS OF THE ICC

The ICC members’ clinical affiliations are specified in each of the ICC Annual Reports with a comment on their attendance. The members were senior medical (surgeon, physician, obstetrics and gynaecology specialist (gynaecologist), paediatrician and microbiologist) and a senior nursing staff member as well as the ICN. It was mentioned that the Medical Superintendent-in-Chief attended the first meeting in 1980 and received a copy of the minutes of each meeting for his information. However, the following year there was concern that communication could be better. The possibility of a member of the medical administration becoming a member of the committee was suggested as this may help communications and aid in change taking place (ICC Annual Report 1982/83). The call must have been heard as the Medical Superintendent for Christchurch Hospital (who was also the assistant Medical Superintendent-in-Chief) became a regular attendee, representing the Medical Superintendent-in-Chief from 1984 to 1989. Two more members were added during the period until 1990. In 1986 the Medical Officer of Health became a regular attendee and the first Infectious Disease specialist appointed to the CHB became a member from 1987. In 1989, the Medical Superintendent-in-Chief was replaced by a Board’s Professional Advisor Medical Services, a position introduced under the AHB.

4.3.3.2 THE INFECTION CONTROL COMMITTEE (ICC) MEETINGS AND REPORTING

According to the ICC Annual Report, the ICC met monthly, for approximately 1 ½ hours, 9-11 times a year. A medical microbiologist was the Chair for the majority of the period with exception of one year of maternity leave in 1983/4, when the paediatric representative held the Chair, and after the November 2007 when the Chair changed.

The Annual Reports (1979-1989) summarised the information delivered at the monthly meetings including some of the contents of the Chair’s and ICN’s monthly reports. Protocol and policies in draft were discussed and the final issues recommended for submission to the
Medical Superintendent-in-Chief. The minutes indicate that the meeting was an information receiving and discussion meeting rather than an operational working meeting. The amount of work just on protocol and guidelines are documented above (Protocols and Guidelines). The Committee commented on its ‘Terms of Reference’ in 1989, possibly in preparation for the review of the Infection Control Service in Canterbury hospitals, discussed later. It was mentioned that *Advice from 1984 re-confirmed by Assistant General Manager Patient Care* indicating that a ‘Terms of Reference’ of some kind had been available earlier.

### 4.3.4 KEY ISSUES DEALT WITH BY ICC AND IC- TEAM

It was clear from the ICC annual reports and minutes that the ICC members were not involved in drafting protocols, guidelines and policies, the ICC using frequent subcommittees for this purpose. Some of the ICC members may also have been members of the sub-committees; other members were clinical staff with interest or special knowledge in the subject of the guideline/protocols.

The first subcommittee mentioned was the Lassa Fever Committee in 1979/80. The work included preparing the Guideline and also finding a suitable area for containment of infected patients. However, it was mentioned in 1981/82 ICC Annual Report that it had made poor progress. Another committee was related to tuberculosis. In 1985/86 the Medical Superintendent-in-Chief asked the Medical Officer of Health, Dr Brieseman, to reconvene the Tb Surveillance Committee and in the last two years of this period (1978-1989) the ICC Annual Reports commented on an increasing number of sub-committees. The most important of these were:

1. **Disinfectant Sub-Committee** 1988/89. Meetings were held with nursing staff from the main hospitals for preparation of a draft protocol. However the work had to be abandoned in the middle of the year due to pressure of work especially as a result of some infection problems at Christchurch Women’s Hospital and maternity leave by the ICN.
2. **MRSA Sub-Committee.** The updated MRSA protocol was produced June 1989 and redrafted September 1989. Members of the Committee were the microbiologist, the ICN, Chief Nurse Christchurch Hospital and the Medical Superintendent.
3. **HIV Post Exposure Management Protocol Sub Committee.**
4. **The Enteral Feeding Committee** was convened by a gastroenterologist for assessment of enteral feeding and giving sets.
5. Sub-committee addressing the cleaning/disinfection of fibre-optic endoscopes in the Gastroenterology Department. The committee recommended and achieved an additional nurse aid for the endoscopy clinic.

6. Request for a subcommittee to discuss the future status of the ICC.

The Protocols were sent to the ICC after completion and then referred to the Medical Superintendent-in-Chief for acceptance and distribution via institutional Medical Superintendents.

4.3.4.1 MRSA POLICY

The ICC annual report 1989 recorded that an ICC subcommittee updated the 1986 MRSA protocol in 1989. Their recommendations were sent to the Hospital Board. The MRSA screening policy was one of the most important Infection Control Policies passed in the last year of the life of the CHB. The policy required that all staff with patient contact show evidence of not carrying Methicillin resistant Staphylococcus aureus (MRSA), on employment. It also supported screening of patients admitted from MRSA at-risk health care institutions. Newspaper clips from that time show that the Press was interested in the subject (A 18).

Key Informant I was questioned about the support for this policy, during the interview in 2008, he recalled:

*The MRSA policies always seemed reasonable, I think board members by and large were very reasonable, certainly the senior board members (were) and if you have a sensible thing, they listened and they’d agree to it. I remember the hullabaloo over that one patient in particular, and I remember the way some people were giving all sorts of complaints. I remember ringing someone in Hospitals Division (Department of Health) and they supported us. But there was really quite an argument with Nelson wasn’t there? There was quite a lot and the same from the Spinal Injuries people. There was another one from Wellington, when one of the staff members from Wellington had MRSA. I don’t think there were any difficulties at board level getting that (the MRSA policy) approved.*

Interest from the newspapers may also have had some influence on the Board Members’ decision (A 18).
4.4 OUTBREAKS AND PROLONGED INFECTIONS ISSUES

A number of outbreaks and prolonged infection problems were dealt with during the period (1978-1989). The following have been chosen as representative of the period with a considerable impact on infection control, or they represent problems which continue into or emerge again in other periods. Infection control problems chosen are those related to endoscopy, infections caused by pseudomonas species, *Bacillus cereus*, *Acinetobacter baumannii*, MRSA, scalded skin syndrome, Diarrhoea and vomiting especially norovirus and Scabies.

4.4.1 INFECTION RELATED TO ENDOSCOPY

In May 1978, a month before employment of the first Infection Control Nurse (ICN), the microbiology registrar noted in the laboratory the isolation of *Pseudomonas aeruginosa* (*Ps. Aeruginosa*) from a swab sample taken at post-mortem from a patient’s peritoneum. The unusual isolate was followed up and it was discovered that the patient had had an endoscopic procedure a few days before death. The thought that these two events were related was new to the hospital services and indeed to the pathologist performing the post-mortem. The incoming ICN had a professional background in gastroenterology and investigation of the endoscopes was considered. Cultures of the endoscopes were carried out and it was found that many harboured *Pseudomonas aeruginosa*. The National Health Institute (NHI) was contacted with request for typing of the isolates to determine relatedness. The investigation which followed became the first “outbreak “investigation carried out in the Canterbury Hospital Board in the period (247). The *Pseudomonas aeruginosa* was identified as the same in not only the index patient but also in multiple patients admitted to Intensive Care Unit, where identical *Pseudomonas aeruginosa* were isolated from patients’ biliary drains, post cholecystectomy.

Following the success of this investigation, Infection Control pursued not only monitoring the hygiene of endoscopes by regular culture, but also showed interest in other areas with Pseudomonas infection. The ICN continued regular surveillance of the endoscopes. Cleaning and disinfection of these instruments was difficult at the time as another patient with Pseudomonas sepsis following ERCP was noted in the ICN’s monthly reports in 1984 resulting in the first endoscope guideline in 1986 “Infection Control Committee recommendations on sterilisation and disinfection of Endoscopes” (A34). The difficulties with cleaning these instruments can be seen from the photos in Fig 4.1 showing the inside of the biopsy channel in an instrument sent for service during the period.
Figure 4.1 the biopsy/suction channel of a gastroscope cut open showing the inside of the channel full of debris. The photo is a scanned copy of the original taken from a scope sent for service. (Department of Medical Illustration CHB 21/11/88)

4.4.2 ANOTHER PSEUDOMONAS OUTBREAK

The Neonatal Unit at Christchurch Women’s Hospital cared for premature infants who were at high risk of infection. Due to this risk, it was routine, at the time, to take bacterial culture from skin surface areas such as ear, umbilicus and rectum of the neonate at birth and then
weekly. It is possible this routine started during the outbreaks with the *Staphylococcus aureus* in the hospital nurseries in the 1950s (248). It was noted that neonates became colonised with *Pseudomonas aeruginosa* a few days after birth. The ICC minutes recorded several environmental investigations 1979 to 1981 which failed to find the source. There were records of interventions such as installation of special “drain heaters” which failed to control the colonisation or infections of the infants. An ICC report from 1982 recorded 44 out of 146 babies admitted to the Unit colonised with the organisms and two babies with septicaemia, one with meningitis and one with pneumonitis. A report to the Infection Control Committee (ICC) May 1983 suggested that environmental sources were implicated, including the finding of *Pseudomonas* in suction tubing used for clearing mucus after delivery. Further typing by NHI had shown that isolates from the infants and the environment had changed over the years. The most common one 1982-1984 was serotype 6, phage type 16/21/68/F8/109/aa9x/col11, different from the one found in the suction tubing. The final investigation and discovery of the source was reported to the Infection Control Committee (ICC Minutes April 1984). It was found that the babies acquired the most recent type via contamination of breast milk expressed with the assistance of a breast pump. These pumps were cleaned with detergent and water followed by soaking in a dilute hypochlorite solution, by the user of the pump. The detergent was found to be contaminated with the *Pseudomonas aeruginosa* outbreak strain. The detergent was produced at Templeton Hospital as an occupational activity for one of the residents. Water from a common garden hose was used for making the detergent and the pseudomonas strain was isolated from the hose. Further investigation into commercial detergent, including all brands available on the supermarket shelves, revealed that all brands except one were contaminated with *Klebsiella oxytoca*, another coliform bacterium. The outbreak in the Neonatal Unit was stopped by introducing a sterile detergent brand for that unit, but it took several years for the hospitals to be able to get detergent without bacterial contamination. Initially, it became a written requirement in the tender document for detergent to be sterile (A 24). Through the years of investigation Infection Control (IC) had contact with Senior Medical staff and Nursing staff in NNU and paediatrics. Memos referred to in the ICC minutes, from the time the detergent was found to be a problem, indicated that communication extended to the Medical Superintendents of at least three hospitals, the purchasing manager, Government Stores Board, which was a central purchasing Board for hospital boards, and the Medical Superintendent-in-Chief.
Bacillus cereus is a gram positive spore-forming bacterium common in dusty environment. It can cause a variety of infections, especially food poisoning, due to contamination of food followed by poor refrigeration.

The information about this outbreak is obtained from ICC Annual Reports 1981-82, ICC minutes and minutes of meeting between the microbiologist, Infection Control and officers of the Engineering Department April 1981.

Infection control noticed an increase in isolation of Bacillus cereus in babies in the Neonatal Unit from routine screening swabs from the babies in early 1981. By April that year a meeting with the engineers was called, as not only were 40% of babies were found to be colonised, but there was also widespread environmental contamination of the Unit, with Bacillus cereus. The Infection Control Service initiated environmental testing in search of the contamination. Several brands of milk powder used for infant feeding, tested by the public health laboratory, showed a low number of contamination between 9-590 colony forming units (cfu) per gram of milk powder. However, the use of the milk powders had been constant, making it unlikely to be the answer to the sudden increase in bacillus isolation. Contamination of the air-conditioning unit was suspected. Extensive cleaning of the unit’s humidifier chamber had been instigated in November the previous year, after fungal growth had been observed. Bacillus cereus was found in the air-conditioning unit on both sides of the reheating coil. At the meeting it was suspected that the culprit was the intake to the air-conditioning unit. The air intake was on the roof of Christchurch Women’s Hospital facing downwards to avoid rain getting in. However, the roof was prone to flooding in heavy rain. The air intake was changed and the air-conditioning chambers cleaned, with immediate effect on the colonisation of the babies (Report to ICC included in minutes June 1981).

Remnants of a dead bird were found under the air-intake, when it was changed. However, the contamination had a tendency to build up again as it was impossible to clean out all the ducting. The colonisation slowly reduced after another cleaning. No untoward effect was recorded in any of the neonates. Interestingly, another increase in Bacillus cereus was discovered in December 1982 and cleaning was immediately instituted. This time, however, it was discovered that the source was bacillus in the transport media of imported laboratory swabs used for taking specimens. A recall of the product was initiated by importers after they were informed.
4.4.4 SCALDED SKIN SYNDROME

The following information is a summary of details from the ICC Annual Report 1989/90 and a report to the ICC by the Chair ICC.

The Microbiology Laboratories isolated *Staphylococcus aureus* from blood cultures of 3 neonates admitted to Paediatric Department February – April 1989. As this was an unusual event the blood culture isolates were sent to the NHI for phage typing. They returned an identical phage pattern. The ensuing investigation at Christchurch Women’s Hospital, which lasted from May to the end of the year, showed a number of babies with staphylococcus infection and patchy superficial skin loss termed ‘scalded skin syndrome’. The lesions affected mainly arms, groins and the neck area. The skin loss was due to a toxin produced by *Staphylococcus aureus* of a certain phage types. The phage type of the *Staphylococcus aureus* from the skin lesions was identical to the one isolated from the babies’ blood cultures earlier in the year. The *Staphylococcus aureus* was also isolated from environmental cultures such as baby scales in the intermediate nursery and soft toys in the nursery. It was decided to undertake an unprecedented investigation for carriage of the organisms among the staff. Two hundred and seven staff from the obstetric service in Christchurch Women’s Hospital had nasal cultures. The result of the cultures showed that 28% of staff were carriers of *Staphylococcus aureus* of different phage types other than the target phage type. NHI performed the phage typing. The target phage type required heat-shock treatment before it could be phage typed, which made the typing of this strain very laborious and slow. Only three staff were found to carry the target phage type, and none of these three had documented contact with the infected babies. IC extended the investigation to the laundry after observing that new born babies were wiped with clean but not sterile towels. Staff at the laundry were surveyed and a few with skin lesions were tested. Just before Christmas 1989, NHI found the target phage type from one laundry staff member with dermatitis. She was a supervisor, but occasionally assisted with folding towels. She had had a particularly bad year with infected psoriasis. The outbreak stopped after the possible source was found and treated.

The Christchurch newspaper, the Press, took an interest in this investigation and wrote several front page stories. Due to the prolonged nature of the investigation, (eight months, May to December 1989), the Press stories distressed staff resulting in the Medical Superintendent-in-
Chief requested a meeting with the Editor of ‘the Press’. Infection control was represented at the meeting (ICC minutes in August 1989).

4.4.5 ACINETOBACTER OUTBREAK

The ICN monthly report from November 1985 mentioned that the outbreak with the multi-antibiotic resistant *Acinetobacter* was affecting a Ward at the Princess Margaret Hospital (a thoracic-surgical ward at the time) and in the Intensive Care Unit, Christchurch Hospital. A detailed report was written by the microbiology registrar titled “An Outbreak of Resistant *Acinetobacter calcoaceticus* in Christchurch New Zealand.” Twelve patients were reported to have become colonised, but no recorded mortality. (A35).

4.4.6 MRSA

MRSA infection was first mentioned in the ICC Annual Report 1980 (available in North Canterbury Hospital Board Pathology Annual Report 31 March 1981). The report mentioned only that MRSA had been isolated and this was also reported in the Microbiology Newsletter and in communication from the Medical Superintendent-in-Chief to staff. Regular surveillance was initiated as well. There was no mention of MRSA problems again until 1986 when the first outbreak was reported from Christchurch Hospital Medical Ward affecting 4 patients and one staff member. The source could be traced back through two hospital boards to an admission from Australia (ICC minutes July 1986). The outbreak was extensively reported in the ICC minutes over several meetings during 1986. The Medical Superintendent-in-Chief was reported to have sent copies of letters to ICC indicating that the subject had been discussed at the medical superintendent-in-chiefs’ meeting in Nelson (ICC minutes May 1986). The first protocol was produced for CHB recommending screening patients from risk areas and screening of new staff on employment (ICC minutes August and September 1996). The October ICC minutes documented that the Board had approved the recommendations and the Chair of ICC met with the Medical Superintendent-in-Chief to discuss the implementation of the policy.

4.4.7 DIARRHOEA

Diarrhoea and/or vomiting outbreaks occurred during this period, but did not present such prominent IC issues as in later years. Figure 8.6 (Chapter 8) show outbreaks of diarrhoea and vomiting in the period compared to later periods.
4.5 OCCUPATIONAL HEALTH

The Canterbury Hospital Board did not have an Occupational Health Service. The “Nurses Clinic” provided some medical clinics for nursing students, but it was not regarded as an occupational health clinic. Selected occupational health issues managed by infection control during the period have been recorded. These included hepatitis B vaccination, blood and body fluid exposure (BBFE) management and MRSA policy for staff.

4.5.1 HEPATITIS B VACCINATION OF STAFF

The Microbiology Department’s medical staff provided Hepatitis B immunoglobulin injections to staff that had had a “sharps” injury, later called Blood and Body Fluid exposure (BBFE). The Microbiology Department also provided a vaccination clinic for travellers. When the “Chest Clinic” closed the microbiology registrar was approached to provide BCG vaccination for the new intake of nursing students. This latest responsibility and the laboratory’s duties in providing Mantoux testing resulted in the medical microbiology staff and later infection control staff to add Tuberculosis contact tracing, related to staff in hospital, to their duties. When the Department of Health sent a circular memorandum (General) No 1985/141 to hospital boards outlining Departmental Policy on Congenital Rubella in 1985, advising on testing staff for Rubella immunity, it was recorded in the Annual Report of the ICC 1985/86 that the Medical Superintendent-in-Chief had requested advice from the ICC (A13). The ICC had therefore already become a vehicle for discussion and advice on staff immunity and testing. However a decision had been made to close the Nurses Clinic. The ICN monthly report October 1988 mentioned the imminent closure, and predicted that this would greatly increase the demand for the ICN in the occupational health area.

During the late 1980s the Medical Superintendent-in-Chief and the CHB came under increasing pressure to provide hepatitis B vaccination for staff. A vaccine had become available in New Zealand earlier in the decade. Correspondence, in 1987, between Medical Superintendent-in-Chief and the Chief Executive of the Canterbury Health Board suggested that the Department of Health was advising HB/AHBs to vaccinate all health care staff against hepatitis B. There were several memos and letters available from the time which indicated that requests for finance for hepatitis B vaccination were sent to relevant Board Committees by the Medical Superintendent-in-Chief for consideration. The Financial Controller wrote to Medical Superintendent-in-Chief (August 1987) that the Budgeting and Staffing Committee had considered the request to provide hepatitis B vaccination to 3300
staff members but staff would be required to pay 50% of the cost and they should be made aware of the dose given. (It had been recommended that each vaccination used only ¼ of the dose equal to 5 ug instead of the full dose which was 20 ug). Several short notes were also available indicating there was a correspondence between the Medical Superintendent-in-Chief and others regarding the cost and purchase of hepatitis B vaccine (A14-16). A memo, written shortly before the Medical Superintendent-in-Chief’s retirement, demonstrated the level of discussion at governance level, on the subject of providing occupational health service in the form of a vaccination programme, and the battle for the funds. One memorandum (April 1989) was from the Acting General Manager-Patient Care (the title of the Medical Superintendent-in-Chief got after the introduction of the AHB) and addressed to the Acting General Manager. It commented on the low number of staff showing evidence of past hepatitis B exposure. The memo also referred to an attached Microbiology Department Newsletter from April 1989 reporting on the Staff Hepatitis B Vaccination Programme carried out November 1987 - October 1988 (A17).

4.5.2 BLOOD AND BODY FLUID EXPOSURE

The ICN also became involved in work aimed at protecting health workers after exposure at work to infections. Hepatitis B infection was a known risk after needle-sticks or other blood and body fluid exposures (BBFE). Testing for hepatitis B had been available for at least a decade, and until hepatitis B vaccination became available, injection with specific hepatitis B Immunoglobulin was the only treatment after a BBFE with hepatitis B positive body fluid. The ICN’s monthly reports mentioned the BBFE follow up. The ICC Annual Reports and correspondence mentioned two further IC improvements. One was the introduction of “sharps containers”, which initially were made of cardboard (in 1983) and later changed to hard plastic. The other improvements were a “Needle Stick Report Form” (A 25, 26). The Report Form was proposed well before the discussion about “Protection of the Health Care Workers from Aids” (A 27).

4.6 PERIOD DISCUSSION AND SUMMARY

The information available for this first period 1978-1989, demonstrates a positive attitude to the establishment and work of infection control from medical and nursing staff as well as local governance and management. NHI fulfilled its support function. From available information, it appears that any information and guidelines issued from the national sources
were forwarded to Infection Control Service/ ICC to be dealt with. Professional and management participation in ICC and the IC work of subcommittees were supportive and respected.

The comment made by the Assistant Director, Hospital Division at the IC Seminar in 1980 that *All hospitals are supposed to have an infection control programme. Not all are equally enthusiastic* might indicate that ICCs were not introduced in all hospital boards. The problems facing the Canterbury IC service and ICC during the early years of the period showed that “all was not well” in the management of hospital acquired infections and a new speciality of IC could make a difference.

A further number of questions could be asked about the period:

*How effective was infection control during this period and how would the period have been judged if the New Zealand Standard for Infection Control (NZS 8142:2000 and NZS 81134:2008) had been operative at the time?*

The Standard would not have been complied with in detail, however, most of the sections in the NZS8142:200 were addressed. Governance and management were responsive and supportive. There was an Infection Control Team which worked jointly on problems; education of health care workers was addressed and the education of the ICN was as detailed as was possible at the time. Surveillance was carried out and acted on if required. Antimicrobial usage was starting to be addressed. However, there were no organised approaches to quality and risk management.

*What were the local influences on infection control? Were governance/management or professional influence most important?*

The driving force in this period was mainly professional. There was no obvious influence on the scope of the service by management. Were there national/international influences? The national influence was through a government agency; however, this was rarely felt at the service level, except by nationally distributed protocols and “circular letters to Chief Executives of Hospital Boards/Area Health Boards” and in the early days there was a national attempt to direct the IC service via educational seminars. International influences were only documented on occasions, such as in the production of Isolation Manual and other guidelines (Appendix 2), but were referred to during investigation or production of reports.
What was the influence of the news media?

Newspaper interest in outbreaks was noted on occasions, mainly from 1987. The Official Information Act 1982, which came into force in July 1983, may have had some influence on the press; however there were no mentioning of request for information from the newspapers during the period.

For bibliography of letters etc, see separate section for Letters, Memorandum, emails, Press clippings and other not published information1978-1990 (Period A) in Appendix 1.
CHAPTER FIVE-PERIOD B (1989-1993)

5.1 INTRODUCTION

This period covers the period 1989 to 1993, from the introduction the Area Health Board to the introduction of Crown Health Enterprises. The research takes into consideration the influence of the health system, professionals, outbreaks and occupational health on the development of infection control during the period.

5.2 HEALTH SYSTEM INFLUENCES

The health system influences include health sector changes, central government and institutional governance’s influences on infection control.

5.2.1 HEALTH SECTOR CHANGES

In 1989 The Labour government implemented major health restructuring. The Canterbury Area Health Board (CAHB) was introduced October 1989 headed by a General Manager. Two years later the new National government abolished area health boards. The Board of the CAHB was replaced on the 30 July 1991 by a Commissioner appointed by the Minister of Health. This was part of restructuring of the New Zealand Health Service announced by the Minister of Health in the July 1991 Government Statement of Health policy (Canterbury Area Health Board – Overview 1991) (B1). During 1991-93 Canterbury health services were led by two Commissioners in preparation for the next phase of the health restructuring. After 1991 the General Manager was directly accountable to the Commissioners, and the Professional Advisory Unit to the General Manager.

5.2.2 CENTRAL GOVERNANCE INFLUENCE ON INFECTION CONTROL

Initially the Infection Control Committee’s minutes did not provide much comment on the influence from central Government. A few Guidelines were submitted to the ICC for comment, for example a Guideline on Skin Piercing from the Department of Health in 1989-90 was tabled and discussed at the ICC meeting (ICC Annual Report 1989/90). In 1990-91 the Department of Health Guidelines dealing with “HIV infection, breastfeeding and human milk
banking”, “disinfection and sterilisation of blood borne viruses” and “HIV infection-zidovudine availability” were forwarded to the ICC (B2). The Department of Health was also involved with the Tuberculosis Workshop “Finish the Job”, where public health physicians, microbiologists, respiratory physicians and infectious disease physicians met with the goal of formulating a national Tuberculosis guideline. (B3)

5.2.2.1 NATIONAL HEALTH INSTITUTE

The Department of Health still provided services through the National Health Institute (NHI). However, this institution also underwent changes which suggested that the Department of Health was attempting to exert more influence on Infection Control in hospitals. First NHI changed its name to New Zealand Communicable Disease Centre (NZCDC) in late 1989 and instituted part charges for some services, with the exception diagnosis of nosocomial infections and outbreak investigations (B4). During 1990, it developed a National Hospital Acquired Infection (HAI) Surveillance Unit, and engaged a medical epidemiologist, trained at CDC Atlanta US. During August that year NZCDC sent a proposed “Memorandum of understanding between the Canterbury Area Health Board and NZCDC” to the Canterbury Area Health Board. This type of communication was not new with regard to laboratory services, however, the reply of the Head of the Microbiology Department to the General Manager Canterbury Area Health Board, raised new points regarding outbreak investigations. There appeared to be some doubt as to whether the Canterbury Area Health Board had an obligation to engage NZCDC if outbreaks occurred in its area including hospitals (B5). By November 1990 a new approach was made to the Canterbury Area Health Board’s General Manager and Infection Control services. In a letter dated 20 November, the Manager of CDCNZ Epidemiology Unit and the epidemiologist sent out a draft proposal for the development of a National Surveillance System for comment (B6, 7). The following 5 months saw a flurry of correspondence, which indicated that the proposal had met with enthusiasm nationally. The limitation of surveillance to pilot areas initially was suggested in February 1991 (B8). In mid-March that year the epidemiologist met with Canterbury Area Health Board staff for discussion of the project (ICC Annual Report 1990/91) (B9, 10).

A further NZCDC initiative was the revision of the guidelines for the control of MRSA, which included hosting a national seminar on MRSA surveillance and control in August 1991. According to the ICC Annual Report 1991/92, the invited participants were microbiologists, infectious disease physicians and IC personnel (B4). The meeting led to a draft of the first national agreement on MRSA surveillance, screening and bacterial culture
technique released December 1992 (249). The Microbiology Unit of NZCDC had for years provided national surveillance of MRSA, but with the increasing number of outbreaks, mainly in the North Island, the MRSA isolation data presented in “Communicable Disease New Zealand” was revised, giving more details, so that it became possible for Infection Control Services to know which health care facilities had a current MRSA problem (B4).

Canterbury Area Health Board did request assistance with the investigation of a small outbreak of salmonellosis in the paediatric ward at Christchurch Hospital in 1992 as per the contract (ICC Annual Report 1991/92).

In July 1992 NZCDC was incorporated into the Institute of Environmental Health and Forensic Sciences one of the ten Crown Research Institutes established by the Government as part of the reform of state-funded scientific institutions without changing its name (B4).

5.2.3 INSTITUTIONAL GOVERNANCE OF INFECTION CONTROL

Initially the Canterbury Area Health Board was led by a General Manager (GM) who was employed by and reported to the Board. The Area Health Board was divided into 2 divisions: Primary and Secondary Care each with managers in charge who reported to the GM. The position of Medical Superintendent-in-Chief had been abolished with the introduction of the Canterbury Area Health Board and initially the incumbent received the title Assistant General Manager Patient Care. Later this senior medical advisory position was named “Professional Advisor Medical Services” to the Board. The Chief Nurse position changed similarly to the Professional Advisor Nursing Services. The Medical Superintendent of each hospital was replaced by a non-medical manager. (B11)

There were indications that plans were being developed to revise the operation and reporting of Infection Control. According to the Minutes of the ICC meeting November 1989, the Committee had written to the Acting General Manager-Patient Care requesting a meeting to discuss the future status of the ICC. The reply stated that the role of the ICC in ensuring uniform Board-wide standards was recognised as part of Board structure, and it was felt that this function would be a part of the Performance Audit Unit. However, until this division was fully established, the ICC should continue with its normal pattern of meetings and should report to the Professional Advisor Medical Services. However Infection Control did not feature in the “Strategic Position Statement Secondary Care Division, Canterbury Area Health Board” October 1990 (B12).
The approach from NZCDC regarding national surveillance of hospital acquired infections (HAI) appeared to be received positively by management. The ICC surgical representative wrote to Nursing Management at Christchurch Hospital regarding involvement of the ICN (which was supported) and to the Manager at Christchurch Hospital for information and support (B13, 14). Day surgery in 1991 was allocated to the Princess Margaret Hospital and the Manager there confirmed the hospital’s interest in participation (B15, 16).

During this period IC had multiple contacts with several layers of management, with the Chair of ICC a member of several committees operating at the time.

One of the most important committees was the Quality Improvement Steering Group (QISG). The QISG reported to the Management Board and the Transition Working Group. The purpose of the TGW was to assist in the effective co-ordination of the transitional issues inherent in the health reforms which began in July 1991 (B17). The QISG consisted of 6-7 people, with the General Manager as Convener. The Representative for the Christchurch Hospital’s Medical Staff Association at the QISG was also the Chair of the Infection Control Committee. The Committee was set up in February 1992 and one of its aims was to establish Quality Improvement Teams (QIT). The intention was that each Team/Area would prepare a Business Plan which would include at least three quality improvement strategies. The QISG’s Action Plan for 1992/93 was to concentrate on five areas, one of which was Board-wide Infection Control (B17, 18).

Another important committee was the Waste Disposal and Recycling Committee which was formed after a decision by the Board’s Corporate Management Group (B19). It operated for a little more than 2 years. Before it was disbanded, it had recommended that the Board adopt the New Zealand Standard 4304:1990 Health Care Waste Management (250). In December 1992 a new Waste Standard Subcommittee was convened at the request of the GM. The Chair of the newly formed committee requested the participation of the microbiologist/Chair ICC as member of the Committee. This was reluctantly agreed to by the Manager Christchurch Hospital & Clinical Support Services as he did not see it as a laboratory issue despite the Laboratory being a considerable producer of infectious waste (B20). A preliminary report was issued June 1993 (B21).

By early 1993 the introduction of the CHE structure was imminent. A comment in the ICC Annual report 1992/93 (from ICC Meeting October 1992) mentioned that the ICC sent a
written submission to the Crown Health Enterprises Advisory Committee on the functional issues of Infection Control throughout the Canterbury Area Health Board Institutions.

5.3 PROFESSIONAL INFLUENCES ON INFECTION CONTROL

This “professional influences” section is divided into two main subsections covering information about the Infection Control Team (ICT), which was the operational part of infection control and the Infection Control Committee (ICC). Both subsections have been further divided into paragraphs covering specific information.

5.3.1 INFECTION CONTROL OPERATIONAL GROUP/INFECTION CONTROL TEAM

The ICN was on maternity leave in November 1989 and there was no management support for a replacement. Instead a registered nurse of some seniority, in each major hospital, was given extra IC duties on top of their regular work. These nurses were given the title of Infection Control Liaison Nurses (ICLN). The ICC minutes 1989/90 indicated that there was an attempt to support the ICLNs by having a weekly meeting or by one of the microbiologists meeting with the staff member in their hospital.

The ICC minutes as well as the IC Annual Report 1989/90 indicated the desperation which was felt by the staff.

*Request for meetings to discuss the future status of the ICC.*

*Problem with the IC liaison Nurses, who are having problems coping with the extra workload of the infection control duties.*

*No ICN at Christchurch hospital when a patient with MRSA in the paediatric ward had to be followed up*  (Reported to ICC 1990). The report written by the Medical Microbiologist was sarcastically titled: “Report by the acting ICN” (B22).

The ICN returned from leave November 1990, however, it was noted in ICC Annual Report 90/91 that the position had been transferred to Nursing Services at the Christchurch Hospital site. Previously the ICN had had close working relationship with the microbiologist and was situated in the laboratory. No information reported in the ICC minutes or any other communication was found to indicate why the situation had changed. The Laboratory Manager may have been involved as the Laboratory had moved to a new location in December 1990, and the space allocated for the ICN could be used by the Laboratory. The ICN’s monthly reports are also missing from the folder containing the ICN reports from
before 1989 and after 1994. By March 1992 the ICC minutes reported that the Christchurch Hospital ICN, and the only full time ICN, had resigned March 1992 approximately 15 months after returning from maternity leave. The position remained empty until September that year.

There was also a problem with ICN staffing in another hospital. It was reported in the ICC minutes during 1991 and 1992 that the ICLN Christchurch Women’s Hospital resigned May 1991 and the job was covered by Director of Nursing Christchurch Women’s Hospital. By July 1992 it was commented that the position was still not filled.

The Acting Principal Nurse, the Princess Margaret Hospital informed the ICC Committee that a part time ICN had been employed at the Princess Margaret Hospital. The Chair of the ICC subsequently invited her to join the Infection Control Operational Group (B23).

During this period, it was agreed that the ICC receive regular reports from Infection Control Nurses of all hospitals and these reports were noted in the ICC minutes during 1990 to 1993 with the exception of reports from the ICN Christchurch Hospital. There was now regular weekly work meetings called “The Infection Control Nurses’ group” later called the IC Operational Group, which was chaired in rotation by the ICNs. Some of the minutes of these meetings are available and document some of the work carried out during this period.

During 1991 the publication of a monthly IC Newsletter was discussed by the Infection Control Nurses Group. It was reported in the ICC Annual Reports 1991/92 that the first issue a monthly IC Newsletter called “Germbuster”, had published in December 1991. The chair of the ICC was one of the editors representing the ICC.

5.3.1.1 INFECTION CONTROL WORK

Previously the main infection control work had been surveillance, protocol and guideline writing and education of staff. This period saw increasing involvement of IC staff in providing advice during renovation of buildings and resiting of clinical services.

5.3.1.1.1 SURVEILLANCE

The ICN returned from leave November 1990 just as communications from NZCDC regarding national surveillance was initiated.

In the ICC Annual Report 1990/91, it was noted that the Surgical Departments at Christchurch Hospital had agreed to participate in data collection of the hospital infection surveillance
system. It was noted that at Christchurch Hospital the surveillance would involve wound surveillance on all patients with breast surgery; at Burwood Hospital surveillance would include patients undergoing total hip and knee replacements; At Christchurch Women’s Hospital it would be wound surveillance of patients who had had abdominal hysterectomies and caesarean sections (B24).

A day meeting was held in Christchurch, in March 1990, with all interest areas of the CAHB and the NZCDC epidemiologist to discuss the national surveillance programme for hospital acquired infection.

By the end of year some preliminary data were available from a few areas.

However, in the 1991/92 ICC Annual Report the tone changed: The wound surveillance programme set up in the 1990/91 year, after extensive consultation with Clinical staff, management staff and the NZ Communicable Disease Centre in Wellington was, unfortunately, not able to be continued. At Christchurch Hospital, three months of wound infection surveillance after mastectomy was carried out. The infection rate was greater than 25%. When the monitoring changed to another procedure, the surveillance stopped. The Christchurch Women’s Hospital surveillance on abdominal hysterectomies and caesarean sections stopped when the ICN resigned and no replacement was forthcoming. At Burwood Hospital, wound surveillance of hip and knee replacements was carried out during 91/92, but lack of computerisation and information regarding readmission rendered the results incomplete. At the Princess Margaret Hospital, IV line infection was able to be monitored when the ICN was on day duty, but lack of continuance during the ICN’s shifts, weekend and leave, makes data incomplete.

And the report finished with the following advice: If the AHB or the CHE of the future are serious about monitoring of Hospital acquired infections, reliable resources need to be allocated to this area.

Key Informant IV (from ESR) interviewed in 2009 recalled: We got an epidemiologist from CDC (and her husband). She developed a system and I think it was using the CDC epi-info software they had, which they used for their outbreak and it was called HAISS – Hospital Acquired Infection Surveillance System. I don’t know if it was too rudimentary, whether it didn’t link in with systems, I think any surveillance system has got to link in with the system.
5.3.1.1.2 IC EDUCATION OF CLINICAL STAFF

A few educational initiatives provided for staff were mentioned in the ICC Annual Report 1990/91.

- Replacement of the disinfectant Milton, which was in fluid form, with a similar product in tablet form. In-service education and instructions on usage was carried out in all institutions.
- Plastic aprons were introduced as a replacement for gowns in most isolation situations in the Paediatric Department.
- An educational orientation pamphlet in infection control called “Hands” was produced for staff.
- An instructional video on IC and safety issues was commissioned by the Quality Improvement Steering Group (QISG minutes 25 March 1992). After several meetings the final product was produced in November 1992 and presented to ICC (ICC minutes December 1992).

5.3.1.1.3 PROTOCOLS, GUIDELINES SPECIAL ISSUES REPORTS

In spite of the limitation of IC staffing fifteen protocol and guidelines were produced after requests by the hospital staff, all summarised in the ICC Annual Reports 1989-93. These have been summarised in appendix 2. Reports on two important areas will be presented further:

- The ICC Minutes September 1991 made reference to the issue of sanitisers and quality assurance of their performance. A report on the investigation of the sanitisers was presented to the ICC in December 1991. The ICC recommended that all hospital managers investigate and remedy problems related to the sanitisers (ICC Committee Meeting minutes December 1991).
- The reuse of single use cardiac catheters continued to be of concern for the ICS. The IC annual reports 1991-93 commented on the issue: The reuse of disposable cardiac catheters discussed again after a possible case of hepatitis B. A new protocol was written regarding the reuse and quality control of the cheaper cardiac catheters. On Ethylene oxide (ETO) equipment failure in the Central Sterilisation Service Department: The issue of ETO failure was not only a problem regarding the cardiac catheters, but also other heat sensitive equipment. It was commented that a Central Sterilisation Services
Department incident stressed *the issue of inadequate supply and numbers of equipment, encouraging a rapid turnover.*

5.3.1.1.4 ANTIBIOTIC SENSITIVITIES

Reports of antibiotic sensitivities of bacterial isolates had been published from time to time via the Microbiology Newsletter. The Microbiology Department had also reported annual sensitivity data to the NZCDC (B25). Requests came both from clinical staff and the Preferred Medicine List Committee, also called Medicine Advisory Committee that these data made generally available to all medical staff both junior and senior (B26, 27). The QISG also took up the issue as a quality initiative, thereby facilitating funds for publication of a booklet. This was recorded in the QISG minutes of 27th of April 1992. However in the 15 May Minutes of the QISG, it was noted that the publication was produced from within existing operational funds.

5.3.1.1.5 BUILDING CONSTRUCTION AND DESIGN, AND RESITING OF CLINICAL SERVICES

An example of consultation with IC Service during building, construction or changes of clinical services was during a major resiting of Clinical Services, which took place during 1991. One of the services was the Plastic Surgery Unit, which was moved from Burwood Hospital to Christchurch Hospital. During the planning stages it was initially proposed to site Plastic Surgery in the same area, where Acute Dialysis was temporarily located. Infection Control was consulted and recommended another siting. Advice was further requested from an infectious disease physician (B29).

5.3.2 PROFESSIONAL EDUCATION AND EMPLOYMENT OF IC STAFF

There is very limited information on infection control staff training and education during this period. It was mentioned in the ICC annual reports 1990/91 that a regular weekly meeting was held with the infection control liaison nurses for update and information. In the following year it was reported that this meeting had increased their confidence and knowledge. The 1992/93 ICC Annual Report noted that the Infection Control staff had been given computers and printers. The Annual Report mentions staff training in entering and accessing collected data. The staff training on use of the computers had started August 1992.

Nationally there was some initiative in the professionalisation of infection control. The National Division of Infection Control Nurses, which was part of the New Zealand Nurses
Organisation, appointed a subcommittee to investigate the feasibility of forming an Infection Control Society (B30). Such a Society should include input from clinical infectious disease specialists, microbiologist, surgeons and other interested parties involved in infection control. However, the National Division of ICNs is still part of the New Zealand Nurses Organisation and no Infection Control Society has been formed, although there was another attempt to form a New Zealand Infection Control Group in 2005 (see 8.3.2).

5.3.3 INFECTION CONTROL COMMITTEE (ICC), ICC MEMBERS AND, REPORTING LINES

This section records information about the ICC, its members and reporting lines.

5.3.3.1 THE MEMBERS OF THE ICC:

The composition of the ICC committee did not change greatly during the first year of this period. During 1990/91 at least three of the infection control nurses attended the ICC meeting. Consideration was given in the ICC minutes during 1990 to including representation from Pharmacy on the subcommittee working on the protocol called: “Disinfectants and Antiseptics Use”. During the 1991-92 year it was noted in the ICC Annual report that the ICC committee now had a General Manager’s Representative (March 1992) and a Commercial Support Services representative (April 1992). The ICNs from the five main hospitals and Templeton Centre were also members. The ICC therefore comprised 20 members and the secretary at this time.

5.3.3.2 THE INFECTION CONTROL COMMITTEE (ICC) AND REPORTING LINES

The ICC Annual Report and Minutes mentioned many times during late 1989 and throughout 1990 ICC members’ concern over of the lack of a Board wide ICN and no obvious decision by the management of the future of IC service.

Comments in ICC Annual Report 1989/90; Infection control work has slowly ground to a halt after the ICN went on maternity leave in November 1989. Six months later a replacement has still not been planned. Protocols such as the disinfectant policy, which desperately needs updating, the last being written ten years ago, have had to be shelved. The Committee has continuously expressed its desperation for the lack of decision on the future plan for the Infection Control Committee and the Infection Control Nurse for the Board. The concern about the issue did not change during the following years. The ICC Annual Report 1991/92 commented: The regular meetings of the remaining ICNs have increased their knowledge and
confidence, but the lack of commitment by the Board to Infection Control has caused frustration and been a cause of concern to the Infection Control Committee.

The ICC minutes from 1989-90 reported that the public health registrar attended the ICC twice as an observer while she reviewed the Infection Control Service. Her report, “A Review of Infection Control in the Canterbury Area Health Board”, was submitted April 1990 (B31). The ICC Annual Report 1990/91 notes that the report lingered for a while before the Corporate Management Group responded. The response included rejection of the important recommendation number 8: that an Infection Control Liaison Officer (ICLO) position was created with the specific function of the co-ordination of the Infection control policies, liaison between divisions and outside agencies and to act as a trained resource person for staff and management in the matters related to infection control (B31). Such a position would be able to relieve the Microbiologist/Director of Infection Control of some of the administrative and communication work. Several meetings of the ICC Committee were held to discuss and respond to Corporate Management Group. The ICC arranged in October 1990 for the Manager of the Performance Unit address the Committee to explain the Corporate Management Group’s view and the reason for the rejection of the core recommendation of the report. In a memo dated 21 January 1991 to the Manager, Secondary Care, the Professional Advisor, Medical Services wrote a lengthy argument for the establishment of the ICLO position, and noted that he had been on leave for a period. He referred to a letter he had written in August 1990 expressing his thoughts on the Board funding the Board wide ICLO position. He commented further, appearing slightly annoyed, that he noticed several meetings had been held with Infection Control during his leave (B35).

During this Period (1989-1993) Infection Control communicated in most important matters through the Professional Advisor, Medical Services. The Professional Advisors, Medical and Nursing Services were both members of the Infection Control Committee. Key informant II interviewed in April 2009 was asked: How did the information from ICC come to the notice of the Board or the Management?

Informant II: I fed the information to the GM or I would go to the relevant manager of the section. Most of it was actually delegated down to each Manager of the Service or section.

When the Informant II was asked if management meetings included discussions about IC, he replied: We had a corporate management group, but then they also had their divisional management groups. IC was taken up at the corporate level and it got pushed to one side, to
my recollection. When asked about issues like the delay in replacing the ICN the response was: *It was difficult to get things done, I mean the whole idea of an overarching Infection Control Service was being challenged as to whether “we could do it ourselves” and “didn’t need you to tell us”, even if we had movements between Services.*

Key Informant II was further asked: Which service was challenging the need for Infection Control Service and he replied: *Mental Health Service was challenging us to why the role was there. Why it wasn’t something we could just look after ourselves without seeing the fact it was actually for the greater good of the AHB not the services within.* Informant II also referred to a briefing paper he had prepared for the Canterbury Area Health Board in July 1992 outlining his views on the role of a Professional Advisor which included the involvement with Infection Control (B34).

5.3.3.2.1 INFECTION CONTROL ADVICE CHALLENGED BY CLINICIANS AND SOME MEMBERS

On several occasions the ICC was requested to provide international or overseas evidence or confirmation on matters brought to the attention of clinical services by the IC Service. The following were documented in the ICC minutes and Annual Reports during the period (1989-1993).

MEFIX

A nonsterile dressings (Mefix) was found to be used for post-operative wound dressings in some Operating Theatres and some surgical wards without sterilizing it before use. Mefix was available as a roll of dressing, which required the length be cut to size. Mefix was autoclavable. ICC minutes September 1989 documented the request to obtain advice from the manufacturer regarding optimal conditions for autoclaving. The manufacturer’s reply (November 1991) provided the autoclaving instructions and a statement that they could not guarantee the suitability of Mefix for use on fresh surgical wounds without prior autoclaving (B 36).

PREOPERATIVE SHAVING

There had been concerns in the literature since the 1980s that preoperative shaving might contribute to surgical wound infection. Literature on this issue was requested by Chairman of Surgical Services. Comment in the ICC Annual Report 1989/90: *Issue not solved this year* indicated that Surgical Services was not convinced about this issue.
EQUIPMENT USED FOR ANIMAL STUDIES.

In 1990 The IC Service had been concerned by the occasional use of hospital equipment for research purposes. It was reported in the ICC minutes from August 1990 that the Clinical Head of Intensive Care attended the meeting to discuss the use of Hospital Board equipment in animal studies. The ICC members expressed severe concern about such use, especially if the equipment was returned to patient use without adequate decontamination and sterilisation. It was decided to consult CDC Atlanta. CDC replied that they could not assist with references data, guidelines or laws dealing with this subject and would only comment on personal opinion, which was not supportive of such use.

5.3.4 KEY ISSUES DEALT WITH BY ICC AND IC-TEAM (SUBCOMMITTEES)

The ICC was the policy committee and the committee which received reports from the Infection Control staff. Specific committees were convened to work on guidelines for special issues. The members of these committees might differ from the ICC.

5.3.4.1 OUTBREAK COMMITTEE

The Outbreak Committee became an important ad hoc Committee, with the Professional Advisor, Medical Services involved in outbreak support. Meningococcal disease had been on the increase in the Christchurch area late 1992. However, reports from an outbreak control group had been mentioned earlier in the 1989/90 ICC Annual Report. Outbreak meetings were held with hospital staff advising on symptoms and antibiotic treatment. It became apparent that it was important to formalise procedures for action and communication during an outbreak, and an Infectious Disease Outbreak Group was set up. In a memo, dated 10 February 1993, the Professional Medical Advisor wrote to the Chair of the ICC the Acting General Manager has approved the draft for the Infectious Diseases Outbreak Group and asked that it be incorporated into the Board’s Civil Defence Plan. I enclose a copy of the flow chart... (B37, 38). The concept of an infectious diseases outbreak group would become important as the years went by, although the group would be modified according to the time and size of the outbreak.

5.3.4.2 MRSA POLICY

Another Subcommittee was the MRSA Committee. An increase in number of MRSA isolates in New Zealand was noted in the monthly CDC report submitted to the ICC October 1990. It was also recorded in the December 1990 ICC Minutes that staff with MRSA was regularly
picked up on the MRSA test performed pre-employment. The source of the MRSA was nearly always Australia. An MRSA sub-committee met to review Board’s MRSA policy.

5.3.4.3 INFECTION CONTROL CONSTITUTION AND BUSINESS PLAN COMMITTEE

The ICC minutes of September and October 1991 mentioned that a sub-committee was formed to work on the Infection Control Committee’s constitution then continue to work on a Business plan for the ICC. The subgroup met first in November 1991. They submitted a Business Plan in February 1992 to the GM as Chair of the QISG and Infection Control was one of the QISG interest areas. At its Meeting Minutes for 25 March 1992 the QISG set an action plan for Infection Control Unit Business Plan. It wrote that the QISG was committed to improve Board wide Infection Control, and agreed to hold the budget for implementing Infection Control, overview the process, and report directly to the Management Board. Further, according to the QISG minutes, the Business Plan was adopted in principle, subject to the support from Divisional managers. The minutes also required the agreement of the action plan by the Manager of the Performance Audit Unit.

As a member of the QISG (5.2.3) the microbiologist/Chair ICC was given the task of establishing a Quality Improvement Team in Infection Control. It was mentioned in the ICC minutes from May 1992 that the Quality Improvement Team Infection Control was fortunate enough to get the Professional Advisor Nursing and Midwifery to chair the group, which set it first task to create job descriptions for ICNs and research Business Plans for IC goals. The first important outcome of the group was the acceptance of the Infection Control Liaison Officer (ICLO) position in September 1992, however, a suitable employee was not found before 1993 with start date April 1993 in the last days of the Canterbury Area Health Board (ICC Annual Report 1992/93). It was also noted in the same ICC Annual Report that there was a further recommendation that the IC Service should have a budget so that it was able to arrange infection control procedures, when the Board changes to clinical budgets.

The IC Service also presented the Business plan for the 1993/94 Year to the ‘Acute CHE’ (later Canterbury Health Ltd), Healthlink South and the Timaru ICC in June 1993.

5.3.4.4 TUBERCULOSIS CONTROL GROUP

Another smaller sub group was formed, called the Tuberculosis Control Group, according to the ICC minutes October 1990. This group was charged with adapting, for Canterbury, the
National Tuberculosis Guidelines written after the National Workshop on Tuberculosis control earlier in the year. (B3)

5.4 OUTBREAKS AND PROLONGED INFECTION ISSUES

During the period 1978-1989 a number of “outbreaks “were recorded and in addition to the considerable work to contain them, protocol and guidelines were written to prevent a similar situation happening again.

5.4.1 INFECTION RELATED TO ENDOSCOPY

No infection related to endoscopy was recorded in patients during this period according to either ICC minutes or Annual Reports. The protocol developed had required that all scopes except Cystoscopes be regularly monitored by bacterial culture. It was noted in the Annual Report 1989/90 that routine monitoring had found Mycobacterium in Gastroscopes after routine cleaning and disinfection with Gluteraldehyde. It was also noted that prolonged exposure to or increased temperature of the Gluteraldehyde was required to rid the endoscopes of this resistant organism, especially Mycobacterium species (B3). But IC still monitored any concerns regarding the disinfection of endoscopes. The ICC Annual report 1991-92 noted: Concern regarding bronchoscope cleaning machine in Intensive Care Unit. Further works needed to sort out problems with cleaning bronchoscopes. In the same Annual Report: Problem with staff getting sensitised to Gluteraldehyde when sterilising endoscopes. This issue had already been raised in 1989 by the Assistant General Manager Patient Care (B39). In the Annual Report a new sterilant was discussed called Steris System, and the manufacturer’s guarantee of instruments reviewed. The sterilant system had been trialled at another centre and the ICN was to make contact regarding the outcome of the trial.

5.4.2 PSEUDOMONAS AGAIN

Pseudomonas species infections were considered twice during this period and reported in detail in the ICC annual reports 1990/91 and 1991/92. The first investigation was started after multiple blood cultures from babies in the Neonatal Unit at Christchurch Women’s Hospital grew Pseudomonas cepacea. The investigation was dealt with over several months. The organism was traced to a silicone barrier hand cream that contained the organisms. Staff hands were contaminated when they used the cream after hand washing. The discovery resulted in a nationwide recall. Many different batches were found positive (B40).
The second “outbreak” with *Pseudomonas* sp was in the Neonatal Unit, and again it was discovered because of an increase of positive blood cultures from babies with the specific organism. This time the source was found to be related to the Neonatal Unit laboratory. Hygiene changes were subsequently implemented. Investigation had also shown that *Pseudomonas species* were isolated from tap water and recommendation regarding using sterile water rather than tap water for rinsing babies’ mouths was submitted to the Neonatal Unit.

### 5.4.3 STAPHYLOCOCCUS AUREUS AND MRSA

Each period had its problems with Staphylococcal infection. During this period IV line infections were noted repeatedly in the IC Annual Reports from 1990-1993, but the infections were related to problems with asepsis, rather than outbreaks. In one instance it was hypothesised that *the use of medi-swab was inadequate for disinfection of the skin prior to line insertion*.

The IC Annual Reports also noted increasing frequency of admission of patients with MRSA. Admissions of these patients were not only to hospitals with acute services. Other sites mentioned were Stewart Villa at Sunnyside Hospital, Darfield Hospital, and Spinal Unit at Burwood Hospital.

The MRSA positive patients were noted in the earlier years to have originated or have had treatment in Australian hospitals. However, the February 1991 ICC meeting minutes noted that the monthly NZCDC report showed an increase in the number of MRSA isolates in New Zealand. The new MRSA protocol update (April1989) may have contributed to the dedicated screening of at risk admissions. However, the period did not escape MRSA outbreaks.

In April 1992 the ICC minutes reported two MRSA outbreaks. The first was in Ward 30 Christchurch Hospital, involving three patients. The index patient had been in an Australian hospital. The second was discovered shortly afterwards at Christchurch Women’s Hospital. The index was thought to be a patient at Christchurch Women’s Hospital who had been in a Bermuda Hospital five years earlier. The patient’s baby was found positive for MRSA at time of discharge. Investigation revealed numerous babies and one staff member colonised with the specific MRSA. A warning was issued from the ICC in each Annual Report 1991/92: *The increase in MRSA in the country makes the Board vulnerable to the introduction of this*
organism. The two outbreaks, W30 Christchurch Hospital and W5 Christchurch Women’s Hospital, required extensive resources for them to be brought under control.

5.4.4 DIARRHOEA AND VOMITING CONCERNS.

This period saw the beginning of concerns with patients acquiring diarrhoea in hospital. Several organisms were implicated according to the ICC Annual reports.

A diarrhoea outbreak implicating Clostridium difficile was recorded at Burwood orthopaedic ward in three patients and four patients at the Princess Margaret Hospital.

Hospital acquired Rotavirus was recorded in the paediatric wards, also affecting staff. Diarrhoea and vomiting was recorded affecting 18 staff and 15 patients at Jubilee Hospital, and an incident of food poisoning at Templeton Centre due to contaminated fish paste was also recorded in the ICC Annual report 1991/92.

NZCDC epidemiologist was called in to assist with the investigation of an outbreak of Salmonella Virchow in the Paediatric Ward at Christchurch Hospital. According the ICC Meeting minutes (November 1991) this outbreak started with the transfer of a mother and newborn baby from a private hospital in Christchurch. Two further babies in the ward were infected with the same Salmonella type, and infection of a third baby also included infection of its mother, father, two year old sister and maternal grandmother, all acquiring the infection in the Ward. There was also extensive participation by the Primary Health Division during the investigation. The source was thought to be linked to the rubber teats for baby bottles, which were stored in bulk in a plastic bag in drawer of the ward’s fridge.

5.4.5 RESPIRATORY INFECTION AND OTHER VIRAL INFECTIONS

The identification of specific viral organism by culture or rapid laboratory techniques had become easier. The diagnosis of respiratory infection especially with Respiratory syncytial Virus (RSV) was available as a rapid laboratory test. It is therefore not surprising that cross-infection caused by viral organism was also reported to the ICC, with information available from the Annual report 1992/3. In one winter 50 admissions with respiratory infection to the paediatric wards were recorded over one weekend resulting in numerous cross infections with RSV.

The same year the Neonatal Unit was recorded as having two neonates with meningitis caused by Coxsackie virus B5 and at least 10 babies with symptoms of Enterovirus infection. And
again the same year a major “pseudo outbreak” was also recorded, involving 20 cases with laboratory diagnosis of *Echovirus* type 1 infection, in both paediatric wards and Neonatal Unit. However, the isolates proved to be caused by laboratory contamination of the cell cultures.

5.5 OCCUPATIONAL HEALTH,

The Infection Control Service and the ICC was expected to provide some occupational health and preventive measures for staff against infection risks.

5.5.1 IMMUNISATIONS

Infection control continued the pressure on management to provide immunisation to staff against infectious diseases which could be occupationally acquired.

5.5.1.1 HEPATITIS B VACCINATION:

The November 1990 ICC minutes carried a recommendation regarding hepatitis B vaccination after needle sticks, if the staff member was not already vaccinated. Staff would receive hepatitis B Immunoglobulin after hepatitis B surface antigen (HBsAg) positive contact if they were not already immune. This would be followed by vaccination. Cost of these vaccinations would be carried by Secondary Care, and the charge would go to the clinical area concerned. The recommendation was taken by the Medical Advisor (member of the Committee) to the Corporate Management Group. It was noted in the ICC Annual Report 1990/91 that the recommendation was accepted.

5.5.1.2 STAFF IMMUNISATION AND IMMUNE STATUS:

According to the ICC Annual report 1992/93 a subcommittee was commissioned by the QISG to present a proposal for monitoring staff immune-status to infectious diseases and the provision of immunisation of new employees (B41). The Minutes of the March 1993 ICC meeting recorded that the subcommittee had stressed the importance of an occupational health nurse for the successful monitoring of staff’s immunity status. A draft Health and Safety Policy for Secondary Care Division with ICC representation was tabled.

5.5.1.3 INFLUENZA VACCINATION

The Laboratory had offered influenza vaccination for the first time on a trial basis to staff in 1991. It was repeated in 1992 and a report issued showing the vaccination not only protected staff against influenza, but was also cost effective in relation to sick leave (B42) (251). This
The standard Blood and Body fluid Exposures (BBFE) reporting form was first used in 1986/87. In the 1992/93 ICC Annual Report approximately 405 incidents were recorded, with some preliminary data on risk reported. Four areas were recommended for attention: use of sharps containers; recapping of needles; use of kidney dishes and trays and blood sugar testing using the Autolet automatic lancing device for the finger prick. The Autolet was found to contribute to 7% of injuries. It was also found that the platforms might not always have been changed with each use, as a large volume of platforms were found in stock. These platforms were usually ordered together with the lancet, but higher numbers of lancets were ordered by clinical areas rather than platforms. The outcome of this review was that the Autolet automatic lancing device was replaced with the Glucolet automatic lancing device.

There was also a recommendation that small sharps containers be present in rooms of patients who were carriers of blood-borne viruses as well as on pathology bleeding trays. The ICC minutes also made reference to a protocol drawn up with the ID physicians for issuing prophylaxis after needle-stick carrying HIV transmission risk.

5.5.1.5 MANAGEMENT OF STAFF WITH AIDS

The Royal Australasian College of Surgeons’ policy document “Management of AIDS and hepatitis B” was tabled at the ICC during 1990/91, according to the ICC Annual Report of that year. At another meeting that year, the New Zealand Medical Association Policy Statement on HIV testing was discussed at the ICC.

It was decided that the Canterbury Area Health Board needed a Guideline on HIV and employment. According to the 1991/92 Annual Report, a guideline was drafted and recommendations made to the Management Group. The discussion continued however, and the May 1993 ICC minutes mentioned that the Medical Advisor and the Medical Officer of Health had attended a meeting to discuss a possible amendment to the Human Rights Bill.
The Bill as drafted would make it illegal to discriminate against anyone who may be carrying infectious diseases. They were working on having this clause removed.

5.5.1.6 GLUTERALDEHYDE.

Gluteraldehyde was used in the hospital for disinfection of heat sensitive instruments such as gastroscope and other endoscopes. During 1991/92 year the ICC minutes commented on concerns regarding staff sensitisation to Gluteraldehyde. ICC instructed the IC Service to investigate the extent of Gluteraldehyde use. A questionnaire was circulated to all areas of Canterbury Area Health Board using Gluteraldehyde. There was also a concern expressed in the ICC minutes regarding bronchoscope cleaning machine in Intensive Care Unit. It indicated that further work was needed to sort out the problems with cleaning bronchoscopes. The ICC Annual report 1992/93 mentioned that the ICC service was involved in looking at the Steris system as a possible replacement for Gluteraldehyde.

5.5.1.7 OTHER OCCUPATIONAL HEALTH ISSUES

Protocols on staff health issues were produced and remained in the ICC Manual until early 2000. The protocol “Staff Health: Gastrointestinal Illnesses” was produced in 1993 in association with the Medical Officer of Health who was a member of the ICC.

There were several references in the ICC minutes during 1989-93 to staff exposure to tuberculosis and needing follow up. Included were details of an incident in 1993 when seven staff had Mantoux conversion after contact with a patient with M. bovis infection diagnosed post-mortem.

The occupational health issues were not restricted to infections only, but also to prevention. The ICC minutes in 1993 also commented on a dry skin cream for staff use, called Mantle hand cream, which was introduced as a trial in Wards 21 and 22 with favourable comments.

5.6 PERIOD DISCUSSION AND SUMMARY

Management arrangements in the Canterbury Area Health Board in relation to Infection Control were questioned through major part of this period. The handover from the previous administration indicated that the issue was discussed. Infection Control should be part of the Performance Audit and under that section’s Manager. A Review of IC was commissioned and delivered. However, the recommendations were ignored for some time. It is possible that the review did not deliver what management wanted. Management ignored Infection Control in
spite of numerous approaches, a situation which could have caused chaos for the IC Service and ICC. Chaos as a management tool, during introduction of changes, has been recognised, but chaos did not occur.(252) The Medical Advisor, to whom ICC reported, and the members of the ICC continued to provide support for IC Service throughout the period. Some important questions can be asked about the period:

*Did Infection Control continue to develop and if so what was the driving force?*

When the introduction of the Crown Health Enterprises was imminent, multiple committees were set up to prepare for the changes. One of these was the Quality Improvement Steering Committee. The ICC Chair became a member of this Committee, as a representative of Senior Medical Staff. The Chair was initially the GM, who had also been part of the Canterbury Hospital Board administration. The QISG took IC development as one of its projects, which resulted in not only the acceptance of the recommendation of the “IC Review”, but also improvements such as job descriptions for ICNs, preparation of a Business plan and a budget.

*Were there National and/or International influences?*

Appropriate surveillance of hospital acquired infections has always been an important goal for any IC Service. A national initiative through NZCDC nearly succeeded, but failed in the long term due to lack of resources and clinical support.

*What was the influence of the Newspapers?*

There were minimal comments regarding the influence of the public press during this period.

*Professional influences?*

The increase in numbers of ICNs, initially as IC Liaison Nurses, made it possible to carry out some of the required functions of the IC Service especially after the forming of an Operational Group for internal support. Some Protocol and Guidelines were able to be produced after request from clinical staff.

Occupational health and prevention issues were still carried out by ICS, with a call for an occupational health nurse getting stronger, especially during the drafting of a protocol for staff immunisation and immune status check on employment. However, neither the protocol nor the staff proposal was accepted by management during this period.
A number of outbreaks did happen but were controlled. The concern regarding MRSA continued, but viral infection, especially respiratory viruses and diarrhoea and vomiting diseases were increasingly given attention. Commercial products such as hand cream were also causing concern, but without severe patient infection.

How effective was infection control overall during this period?

Infection control continued to give attention to ongoing issues such as the hygiene of endoscopes and outbreaks, although minor, were controlled and some protocol and guidelines were produced. The laboratory was still the main source of information for infection problems. The biggest issue tackled, with support from the Corporate Medical Advisor, was protection of staff by promotion of an occupational health services which could provide immunisation. In view of the pressure for keeping up with the health changes, infection control still managed to provide basic service and start new initiative with limited resources.
CHAPTER SIX-PERIOD C (1993-1996)

6.1 INTRODUCTION

This period records the influence on infection control and its activities from the introduction of the Crown Health Enterprises (CHE) introduction in 1993 until further changes was introduced in 1996.

6.2 HEALTH SYSTEM INFLUENCES

This section records the health sector changes, central governance influence and institutional governance of infection control during the period.

6.2.1 HEALTH SECTOR CHANGE

The Government’s health reforms were implemented in July 1993, and the fourteen area health boards were replaced by 23 semi-commercial crown health enterprises (CHE). Public Health became the responsibility of the ‘Public Health Commission’. The Health and Disability Services Act 1993 introduced separation of the purchasing of health care services from provider organisations, the so-called purchaser/provider split. The funding for health and disability was transferred to the regional health authorities (RHAs) (253). Included in the design was a Crown Company Monitoring Advisory Unit (CCMAU) (C1). CCMAU’s role was to provide advice to the shareholding government ministers. The advice included information regarding their companies’ performance, monitoring, ownership, governance and recommendations regarding qualified persons to sit on the boards of these companies. CHEs were expected to compete with each other, and other commercial features, such as part charges for hospital services, were introduced from 1992 (253). Shortly after 1993, the Department of Health was reformed as the Ministry of Health (254).

Appendix 6 provides an overview of the health changes 1980-2002 (reproduced with permission).

In 1993 the decision was made to change the electoral process for the New Zealand Parliament from ‘First Past the Post system’ to a Mixed Member Proportional voting system (MMP), to be introduced in the subsequent election. Although it was three years before the next election (planned for 1996), there was a high level of political uncertainty. A number of
new political parties emerged (255). The Government had indicated that user part charges
would be introduced, but in a letter from the Transition Management Group, the Department
of Health informed the Area Health Boards GMs late June 1993 that patients with notifiable
diseases attending hospital outpatient services would be exempt from charges (C2).

The Canterbury Area Health Board Staff Newsletter “New Direction” (November/December
1992) explained that there would be Three Crown Health Enterprises for Canterbury (C3)
Timaru became a separate CHE and the previous Canterbury Hospital Board was divided into
two CHEs. One CHE was Canterbury Health Ltd which maintained acute services,
Christchurch and Burwood Hospitals together with some of the smaller community hospitals.
The other was Healthlink South which was made up of The Princess Margaret Hospital,
Christchurch Women Hospital, Sunnyside Hospital, the peripheral smaller maternity hospitals
and other secondary links to community services including School Dental Services (C4). This
meant that all acute and day surgery services had to be transferred from the Princess Margaret
Hospital to Christchurch Hospital (253). The First Chief Executive for the Canterbury CHE
resigned in May 1996 after a 3 year term (C5).

6.2.2 CENTRAL GOVERNANCE INFLUENCES ON INFECTION CONTROL

Several regulations and other national requirements were discussed at the ICC meetings and
documented in minutes and ICC Annual Reports during the period 1993-1996. These
included:

- A proposal regarding the 1993 Hospital Regulations dealing with hospital staff with
  communicable diseases. This regulation required nursing staff to report if they were
  infected with a communicable disease and to be cleared by the Medical Officer of Health
  before returning to work (C6).

- The Health and Safety in Employment Act 1992; in particular Appendix B: Employer’s

- The ICC was told in July 1994, according to that month’s minutes, that a New Zealand’s
  Health Standard for Infection Control (for use in a New Zealand accreditation process) had
  recently been released and one section dealt with Infection Control. In the past the
  Australian Guidelines had been used for accreditation. In 1996 the Minister of Health Jenny
Shipley issued a joint statement with the minister for CHEs regarding the development of Infection Control Standards (C7).

- In preparation for the introduction of the CHE structure, the ICC discussed the quality indicators proposed by the Crown Company Monitoring Advisory Unit (CCMAU) and the reporting requirements which had recently been sent to them. Some of these performance indicators affected the CHE Infection Control Service (ICC Minutes February-May 1994 and Annual Report 1992/93(C1/C8)). A CCMAU representative, who had met with ICS and the Quality services of Canterbury Health Ltd, indicating that they were required to monitor nosocomial bacteraemia and clean wound infections (C9). The majority of the CHE quality indicators were not relevant to most of Healthlink South institutions, with the exception of Christchurch Women’s Hospital, where they could monitor surgical wounds. In the coming years regular monitoring was carried out and the CHE Chief Executive would receive reports regarding CCMAU clinical indicators from the performance analyst (C10) and on occasion the ICS would get feedback from CCMAU (C11).

6.2.2.1 ESR
The Ministry of Health still provided services through NZCDC. The NZCDC had become part of a Crown Research Institute, ESR, and later was mainly referred to as ESR. The monitoring of hospital acquired infections was now managed by CCMAU. This was an issue discussed in Chapter 5, where NZCDC had tried but failed. Key Informant IV (from ESR) interviewed in 2009 recalled:

*ESR employed a second epidemiologist, the first one having left. She tried for about five years developing the second epidemiologic system called RISK; I don’t know what it stands for. This one was very much us developing and offering it. ESR spent a lot of money on it. She developed the concept, I think, and then she went to the Ministry of Health. This was the time of the RHA and the CHEs. The Ministry of Health said no, you need to go to the RHAs, hospital infections are a quality issue, and the RHAs said it’s a quality issue you need to go to each CHE. You can’t try to develop a national surveillance system and sell it to 23 CHE or however many there were then. This was the time when I was involved because the 2nd epidemiologist, when she first came, reported to me. Then she moved away and started reporting to someone else in our surveillance unit, so I lost track of it. Then she got into some sort of joint venture with a private laboratory and its microbiologist. IC warned them it was a bad idea, because you were trying to sell something to a group which had no money, and then there would be the whole competitive and confidentiality issue. The epidemiologist stayed on at ESR and after about five years of going down this path ESR abandoned it.*

In mid 1994 the ESR Public Health Business Unit sent the Chief Executive Canterbury Health Ltd a letter outlining a Memorandum of Understanding between the CHE and ESR.
According to the Memorandum the CHE undertook to send information and clinical microbiological samples of designated pathogens to ESR for surveillance. The ESR undertook to provide certain laboratory and epidemiological services (C12).

A few issues, reported in ICC March 1995 Minutes and Correspondence, demonstrated the interaction between Infection Control, ESR and Canterbury Health Ltd’s Management. For example a routine report, from Canterbury Health Laboratories to ESR, related to a patient in a Healthlink South institution, including information that the patient had been in a named, private rest home. The name of the rest home was subsequently reported in ESR’s MRSA report. The rest home management was furious that it had been named, and complained to the Chief Executive of Canterbury Health Ltd, claiming breach of privacy. A flurry of correspondence followed with IC Service caught in the middle. The Canterbury Health Ltd’s Company Secretary requested an opinion from the Privacy Commissioner. NZCDC quoted the Contract of Understanding between ESR and Canterbury Health Ltd regarding information on resistant organisms. The outcome was that private hospitals and rest homes refused to be part of the voluntary MRSA reporting (C13, 14, 15).

The Key Informant IV interviewed in 2009 commented on this issue:

*From the late 80s we used to ask people to send us all MRSA, and we used to produce a Weekly Report. We stopped producing that, on the advice of the Ministry’s committee called the Antibiotic Resistance Advisory Group, which was a surveillance sub-committee. The people that were on that surveillance sub-committee were [four names mentioned with one] from the Ministry. They said that weekly report was nonsense, and we should stop it. However, when we stopped it there was a big outcry.*

The problem was, to produce it people had to send us all their MRSA, but it was getting to the stage, we couldn’t cope with the numbers (requiring typing and sensitivity testing - author’s explanation) and most nursing homes didn’t want their names mentioned. The private labs never told us the names and they never even told us what the nursing home was. In fact, often they didn’t even tell us the patient was a nursing home patient. Some like Diagnostic MedLab would always tell us if the patient was in a nursing home but they wouldn’t tell us the name of the nursing home because they had been forbidden by the nursing homes.

*Anyhow, when the infection control nurses group complained bitterly about that report being dropped by the Ministry, we came up with an alternative, the web based system.*

It’s a pity about that website because it was very much governed by [name] and his infection control team in Wellington. They absolutely guaranteed that all hospitals would have the information on how many people they had, at any time, in their hospital with an MRSA flag on them and it should be no trouble for infection control to enter this data once a week.
We applied to the Ministry for more money, first of all to see whether there was any use in enhancing the system and if there was a group of infection control nurses, which we would have to include. It would include those using the system and those that did not to see whether it is worth pursuing or whether we just drop it. I think the infection control nursing organisation wrote to the Ministry and that is when the Ministry said that we had to do something, so we came up with this. The Ministry having agreed we stop the report, then when there was an outcry they turn around and say you’ve got to do something.

6.2.3 INSTITUTIONAL GOVERNANCE OF INFECTION CONTROL

In June 1993, as documented in chapter 5 (5.3.3.3), a “Strategic Plan for Infection Control for 1993-94” was written and a budget prepared for the Infection Control Unit’s expenses. The Infection Control Committee (ICC) Annual Report 1993/94 summarised the decision that, with the employment of the Infection Control Liaison Officer (ICLO), the Infection Control Service (ICS) should also have an independent budget. This budget included the salary of the ICLO and incidental expenses. It also contained the budget for MRSA screening of staff and expenses associated with ICC meetings. The microbiologist was allocated .1 FTE to the Service. Discussion, documented in the minutes of the ICC August 1993, regarding the ownership of the ICC, indicated that the Canterbury Health Ltd. wanted to take ownership, but the Committee was in favour of a joint Committee for the two CHEs, because of the importance of maintaining the same IC protocols and guidelines due to the number of patients transferred between the two CHEs. Initially the joint ownership proposal was adopted.

The ICC minutes of September 1993 documented that the position and reporting lines for the Infection Control Service within the CHEs had been discussed with the CEO. The Infection Control Unit, situated in the Laboratory Building, would be under the General Manager (GM) Diagnostic and Support Division. The reporting lines for the ICC went through the GM Diagnostic and Support Division at Canterbury Health and the Professional Advisor at Healthlink South. The Professional Advisor, later General Manager of Christchurch Hospital, would receive a copy of the ICC minutes. The Infection Control Unit, as mentioned, so far only consisted of 0.1FTE microbiologist (who was also Chair of ICC) and the Infection Control Liaison Officer. The IC Unit was the only part of the “IC Service” which could tender for services as the other ICNs were employed by their respective hospitals although they were professionally linked to the “Service”. As the Chair for the ICC, and the budget for ICC and MRSA screening, was linked to the IC Unit, that part could also be part of a tender for services.
6.3 PROFESSIONAL INFLUENCES ON INFECTION CONTROL

This section on professional influences documents information about the infection control team, its work and education, and the Infection Control Committee, its members, reporting lines and key issues dealt with during the period 1993-1996.

6.3.1 INFECTION CONTROL OPERATIONAL TEAM

The Infection Control Team (ICT), as the operational group of the Infection Control Service, met weekly. It consisted of infection control staff from each of the main public hospitals, and from the Infection Control Unit, the microbiologist and the Infection Control Liaison Officer (ICLO). Most of the infection control nurses were employed part time in the IC role and in some instances also had another role. Only the ICN from Christchurch Hospital and the ICLO were employed fulltime in IC. The IC Annual Reports 1993 to 1995 lists ICNs from CHEs, Canterbury Health Ltd and Healthlink South. From Canterbury Health Ltd were ICNs from Burwood Hospital, Christchurch Hospital and the ICLO from The Infection Control Unit. From Healthlink South were ICNs from Christchurch Women’s Hospital, the Princess Margaret Hospital, Sunnyside Hospital and Templeton Hospital. Most of the routine IC work was performed by the members of this group in their individual hospitals. They worked as a group when they researched and drafted protocols, guidelines and policies. The Terms of Reference for the Operational Group also named the Professional Advisors, the Medical Officer of Health, the Infectious Disease Physician acting on a consultative basis to the group. The work of the group was also recorded yearly in the ICC Annual Report.

Mid-1995 the Operational Group lost one of the ICNs as the Princess Margaret Hospital (Older Persons Health) contracted a private laboratory to provide laboratory and IC service (C16).

As mentioned in chapter 5 (5.3.1), the ICN for Christchurch Hospital had been moved from the laboratory setting to a site at Christchurch Hospital. In 1995 it was proposed to move the position from the Professional Nursing Unit to the Hospital Service Division. The ICN proposed that instead the position be moved to the Infection Control Unit, under the Manager of Diagnostic and Support services, as the Unit would provide the appropriate support and resource team for the Christchurch Hospital Infection Control Nurse (C17). Shortly thereafter the ICN moved to the IC Unit, which was now staffed with 2 FTE IC staff and the part-time microbiologist. A short time later the Operational Group lost another of its members as the
ICN from Christchurch Women’s Hospital tendered her resignation from ICC when the IC service at Christchurch Women’s Hospital came under the direction of a new provider (C18).

INFECTION CONTROL LIAISON NURSES

In early 1993 the ICN at Christchurch Hospital investigated the possibility of setting up an Infection Control Liaison Nurse group. The Infection Control Liaison Nurses, as proposed, would act as an IC resource in wards and departments; identify infection control problems, monitor peer practice and share ideas and concerns and assist in solving problems in their area. The first meeting took place in April 1993. By November 1993 the Committee included members from 22 different areas within Christchurch Hospital. Regular meetings have been held ever since (C19).

CANTERBURY INFECTION CONTROL INTEREST GROUP (CICIG)

The infection control staff had formed a “Canterbury Infection Control Interest group” meeting approximately three monthly, as a focus for IC practitioners in the Canterbury area, (ICC minutes October 1993). According to a letter from the Director ICS to the Clinical Director OPH a few years later, it appears that the group only met a few times, and ceased to meet as it became dominated by certain private commercial interests, which inhibited the free exchange of views (C20).

6.3.1.1 INFECTION CONTROL WORK

The core ICN work was surveillance, education of staff and composing protocols and guidelines.

6.3.1.1.1 SURVEILLANCE

Organised hospital acquired infection (HAI) surveillance and reporting became a routine function of the Infection Control Service during this period. Some, but not all of the surveillance activities were related to the CCMAU requirements for regular reporting. The ICC Annual Reports from 1993-996 list the following activities:


- Clean Surgical Wound Infection: CCMAU monitoring requirements for Canterbury Health Ltd and Healthlink South (Christchurch Women’s Hospital) commenced April 1995 (C22).
- Monthly “Significant Isolates” and urinary tract isolates reporting for Older Persons Health commenced November 1994 to August 1995 (C23).

- *Klebsiella oxytoca* isolated from babies in the Neonatal Unit: Reporting commenced October 1994 until December 1995 (C24)

- Prevalence Study on current IV Line Practice at Coronary Care Unit and Ward 12 Christchurch Hospital (C25).

### 6.3.1.1.2 EDUCATION OF STAFF

The ICC Annual Reports, 1993-1996, recorded in its “Summary of Achievements” related to the Infection Control Unit’s Business Plans that the ICNs regularly participated in orientation of new employees, talked to new junior medical staff and showed the Infection Control video which was produced early 1993 (see chapter 6). An education pamphlet called “Hands” was also produced. The issue of the monthly IC Newsletter “Germbuster” which began in January 1991, as mentioned previously (5.3.1), continued to be produced with the aim of providing education for all healthcare workers.

### 6.3.1.1.3 PROTOCOLS, GUIDELINES SPECIAL ISSUES REPORTS

An important task for the Infection Control Service was the drafting of relevant protocols and guidelines. A further function was reporting on infection control assessments, audits and review of policies.

- In the first months of the new CHE structure letters were sent from the ICS to the Chief Executive Officers (CEO) of the two Christchurch based CHEs requesting clarification regarding the legitimacy of Canterbury Area Health Board Infection Control Guidelines. A reply was received only from the Healthlink South CEO confirming the CEO’s acceptance of the Guidelines (C26).

- A new MRSA protocol was drafted and submitted to both CHEs. The ICC minutes and list of correspondence during the second half of 1993 and 1994 document that clarification on several issues was sought from both CHEs. One issue was the different approaches to casual staff found positive for MRSA, within each of the two CHEs, Canterbury Health Ltd and Healthlink South. Healthlink South favoured seeing the issue as an ACC problem, but it was noted that the ACC had not accepted that view (IC Annual Report 1993/94). Another concerning issue was whether the Human Rights Act
1993 could prevent the CHE from screening potential staff for MRSA and keeping MRSA colonised or infected staff off work. The Mental Health Division (part of Healthlink South) queried whether MRSA screening was at all relevant for their division as they were not an acute medical/surgical facility (C27). The Medical Advisor Healthlink South researched the question, which included legal opinion from the Ministry of Health. The outcome was that there were nothing in the act which prohibits health care providers treating people carrying infectious diseases differently if the treatment was “limited in scope and duration” (C28). Also the Hospital Regulations 1993 refer to the employment of nursing staff and their need for medical clearance by the Medical Officer of Health if they are suffering from an infectious disease (C6).

During 1994 and 1995 the Isolation Manual, last updated in 1988, was rewritten. One of the changes was the renaming and updating of the term “Universal Precautions” to “Standard Precautions”. One of the main differences was to include body fluids other than blood among the precautions and extending the emphasis from protection of the health care worker only to protection of both health care worker and the patient. The subject of Universal or Standard Precautions had been an issue involving managers from the CEO to General Manager Diagnostic and Support mid-1995, when Medlab South (a private laboratory) Infection Control Service was contracted by Southern Regional Health Authority to produce an information and teaching tool for health care institutions on Universal Precautions. They had invited the CEOs and Managers of the two Canterbury CHEs to a function to launch the paper. Information was forwarded to Infection Control, which rejected it, as they had already done the research for updating the Isolation Manual according to Standard Precautions (C29-32).

Besides these, the IC Annual Reports documented a number of other protocol and guidelines during this period which, following consultation with ICC members and other professionals, were issued and accepted by the CHEs (C33). While Timaru’s ICN rarely came to the operational meetings, Timaru still received the protocols and guidelines.

A total of 60 protocols, guidelines or updates were documented in the IC Annual Reports 1993-1996 as having been issued during this period. These are summarised in Appendix 2.
6.3.2 PROFESSIONAL EDUCATION AND EMPLOYMENT OF IC STAFF

The IC Annual Reports for 1994-96 made no reference to any professional education or training, but refer to the work of the IC operational group in developing protocols and guidelines. A conference report submitted to the ICC by the ICLO refers to attendance at New Zealand Nurses Organisation’s Infection Control Conference 24-26 August 1995.

During the first two years following the introduction of the CHE structure, the Operational Group of Infection Control learned to work as a team. The Operational Group met weekly, on Fridays, for several hours, as documented in the ICNs’ and ICLO monthly reports to ICC 1993-6. The staff in the Infection Control Unit learned to write business plans with goals and objectives and at the end of the year summarised the achievements in the IC Annual Report. At the end of the second year of this period, business plans were sent to all three CHEs and, for Healthlink South, to different divisions within the CHE. Even though the Infection Control Unit was not a laboratory service, it was part of the Canterbury health Ltd’s Diagnostic and Support Division situated in the Laboratory Building, while all the ICNs were situated in the individual hospitals. Any IC business plans were therefore submitted together with the laboratory services tenders. In 1995 the Laboratory and Infection Control Contracts were due for renewal with Healthlink South and Timaru. From Healthlink South, Older Persons Health contracted one of the private laboratories to provide their laboratory and infection control services from August 1995 and Women’s Health Division contracted the other private laboratory to provide the services for them from November 1995 (C16)(C34).

Correspondence reported in the July 1995 ICC minutes, recorded that Women’s Health Division had requested that their ICN did not attend IC Operational Committee Meetings at Canterbury Health Ltd. The ICC Chair had replied that her attendance was also for educational and ‘peer’ support. This was supported by the O& G specialist member of the ICC, who requested that the ICN be ‘allowed’ to come to the educational sessions of the meeting (C35). However, with the loss of the tender for Christchurch Women’s Hospital, the IC Operational Group lost two of its ICN members by the end of 1995. The Mental Health Division of Healthlink South stayed with the CHL ICS and their ICNs stayed as part of the operational team. The IC Annual report recorded that the ICLO resigned in May 1996 and took up employment with the private laboratory servicing OPH. The new ICLO was recruited with a nursing background while the former had been a laboratory scientist.
6.3.3 INFECTION CONTROL COMMITTEE, ICC MEMBERS, REPORTING AND ACTIVITIES

6.3.3.1 THE MEMBERS OF THE ICC:

At the start of the first “CHE year” the ICC minutes indicated that the membership of the Committee was discussed in detail. There were suggestions that members of senior management or even the CEOs became members. The Healthlink South representative was the Professional Medical Advisor. Several divisions within Healthlink South had their separate representatives. Older Persons Health was represented by a physician and a manager, while Mental Health and Disabled Person Health, both Healthlink South Divisions, provided medical members for the Committee. During 1993-96 the ICC correspondence showed evidence of reports being sent following each ICC meeting to the Medical Advisor Healthlink South and the GM Diagnostic and Support Division Canterbury Health Ltd, outlining the most important issues, and regular replies were received (C36, 37). After the contracts for infection control services for Older Persons Health (August 1995) and Women’s Health Division (November 1995) were awarded to the two community laboratories (one each), there was some correspondence between ICC and the two services. The Obstetrics and Gynaecology Services Healthlink South continued to be represented by a gynaecologist and Older Persons Health, Healthlink South by a Physician. There were a number of letters related to the Older Persons Health representation over several months. Initially the Clinical Director Older Persons Health requested that a physician and a member of their infection control team attend the committee meetings. The reply from the Director ICS stated that the infection control staff would not be invited, and pointed out the purpose of ICNs’ presence at the ICC was to report the month’s activities, concerns and drafting of guidelines. The Older Persons Health IC representative had no obligation or need to report to ICC. The ICC meeting confirmed the physician attendance as an observer (C38, C39) (C20).

6.3.3.2 THE INFECTION CONTROL COMMITTEE (ICC) WORK

The following are examples of the issues the ICC was dealing with during the period.

6.3.3.2.1 ISOLATION ROOMS

The IC minutes during 1993/94 noted an increasing concern regarding the limited number of isolation rooms available for infectious patients, especially those with tuberculosis, in Christchurch Hospital. This could have been a response to CDC Atlanta issuing a draft protocol on the design of isolation rooms, with the impetus for the protocol being the increase in Tuberculosis as part of the AIDS epidemic in USA (257, 258). The Paediatric Department
also raised concerns that there were no negative pressure rooms in their Department (ICC minutes August 1993). Another concern was suitable ventilation requirements for the Morgue (C40-42). These concerns were submitted to management for consideration.

6.3.3.2.2 HOSPITAL UNIFORMS
Concerns were also raised at ICC over the practice of staff wearing operating theatre scrubs outside hospital premises. Staff had been able to wear their regular ward uniforms home since the 1980s, but had never been allowed to wear scrubs off hospital premises. This apparent change in practice was strongly discouraged by the Committee (ICC Annual Report 1993/1994).

6.3.3.2.3 WASTE
The disposal of infectious waste had been on the Infection Control Service agenda, although not the ICC agenda, since the Waste Standards were published in 1990. The issue became active again with regular reports to the ICC of breaches of the Standard (ICC Annual report 1994-1996). In early 1995 the ICS worked with the GM Business Development to develop a waste policy for the Christchurch Hospital site (C43). Later the GM Diagnostic and Support requested that the IC Service review waste disposal procedures and recommend any changes for the Canterbury Health Laboratories (C44). The area for storage of the waste was especially a concern as Microbiology’s culture plates were collected in waste bags directly from the laboratory without treatment.

The ICC Annual Report 1996 commented that there had been discussion about the CHE considering contract with a commercial waste company after Christchurch Hospital resource consent for incineration of waste was not renewed by the Christchurch City Council (C45).

6.3.3.2.4 MEFIX
The discussion mentioned in chapter 5 (5.3.2.3.1), over the use of Mefix as a postoperative wound dressing, continued. The use of unsterile Mefix straight off the roll had been an issue since 1989. It was estimated that 30% of the patients in hospital were given unsterile Mefix on minor wounds (ICC Annual Report of 1995).
6.3.4 KEY ISSUES DEALT WITH BY ICC AND IC-TEAM (SUBCOMMITTEES)

There were some key issues that the ICC team had to deal with such as commercial negotiations and tender preparations, and some work which had been carried out in subcommittees. Some of these are documented in the next sections.

6.3.4.1 ICS AND ICC IN THE COMPETITIVE WORLD OF TENDERS AND CONTRACTS

With the introduction of tendering for services, including services between the CHEs, Infection Control had become a commodity exposed to the same tender process. In the following section some of the narrative of the contracting experience as it affected infection control has been highlighted.

Since the introduction of the CHEs in 1993 the Infection Control Service had had a yearly contract to provide IC service to Healthlink South. The IC contracts were handled by the GM Diagnostic and Support Services (C46). During the period 1993-95 reports detailing the results of regular monitoring of Nosocomial Blood Stream Infections (BSI) and Clostridium difficile infections were sent to the Clinical Director of Older Persons Health, Healthlink South. The ICLO also prepared six monthly summaries of services provided to Healthlink South and these were sent to Healthlink South managers and some clinical directors (C47).

May-June 1995: preparation for contracting

As the 1994/95 year came to an end, and 1995/96 draft IC business plan had been circulated to all parties, a more active communication took place regarding contracts with Healthlink South, involving the GM Diagnostic and Support Canterbury Health Ltd, Healthlink South Management Accountant Older Persons Health and the IC Service (letters written by the ICLO or Director ICS) (C48, 49). One letter to the ICS from the GM Diagnostic and Support Canterbury Health Ltd gave the impression that Healthlink South was unhappy with the service, indicating concerns about the service provision (C50). Investigation by ICS was reported in the IC Minutes and the IC operational Committee minutes May 1995, giving the impression that Healthlink South was concerned about both their own staff member, who was part of the IC operational group, and the expense of IC Unit budget. Healthlink South paid a proportion of the ICLO salary and expenses, the major part being laboratory tests for MRSA screening and staff serology tests following blood and body fluid exposures (BBFE). The allocation of the budget was detailed in the IC Unit’s draft Business Plan April 1995, where the proportionate ratio was noted as Canterbury Health Ltd: 49%, Healthlink South Ltd 49%
and Health South Canterbury Ltd 2% (C51). An appreciation of the cost can be deduced from a letter sent by the ICLO and Director of the Infection Control Service to the Inter CHE Contract coordinator Healthlink South in May 1995, reporting that the total cost for Healthlink South was approximately $73,000 for the 1994/95 Year. The letter also addressed other points of concern raised at a meeting of 15 May (C52). The cost of the laboratory tests, in contrast to expenditure only for the IC Service, can be deduced from a letter sent by the Chair ICC Health South Canterbury Ltd in 1996, where he asked to be invoiced $2,000 for the IC services (C53). Health South Canterbury Ltd paid via another contract for all laboratory services. While Healthlink South appeared not to be aware of the breakdown of the items in the budget, they obviously felt they paid too much. All IC could do was to suggest that all parties including Canterbury Health Laboratories investigate whether there may have been some errors in the allocation of cost (C 54).

The IC Service received a copy of the tender document for Older Persons Health 25 May 1995 with a submission deadline of 9 June for provision of infection control service at Older Persons Health. The contract would be for one year with the possibility of extending it to three years. The contract required that the provider prepare their response on the basis that there was no ICN working for Older Persons Health i.e. employ an ICN themselves for the service (C55). The ICN responded with a basic tender which excluded the extra staff and laboratory test cost, leaving that cost to be added on (C56).

July 1995: new providers

In a letter dated 28 July 1995 the ICC was informed that one of the private laboratories, Southern Community Laboratories was taking over the responsibilities for Infection Control at Older Persons Health (C16). This responsibility did not include Mental Health Division. Initially this resulted in some confusion regarding the definition of the service areas as the Mental Health Division had some wards at the Princess Margaret Hospital, and the Older Persons Health service had some Units at the Sunnyside Hospital, which was the home to most of the Mental Health Division wards (C57). The Women’s Health Division was more defined, although some country hospitals had maternity services whereas others did not. Information regarding the service to those areas remained uncertain for some time. Healthlink South continued contracting the IC Service for the Divisions including Mental Health, and Templeton Centre.
The confusion between the Divisions regarding site or division specific responsibilities was recorded in the ICC meeting minutes September 1995 which resulted in the Medical Officer of Health (ICC member and employed in Healthlink South) writing to the CEO Healthlink South about the issue, expressing concern at the fragmentation of infection control advice which appears to be developing with Healthlink South as a result of the action of individual divisions (C58). The Chair also wrote to the Medical Advisor Healthlink South enquiring whether the Infection Control Service was division or site specific with a reply received 29 September 1995 indicating that service was “divisional specific”. He also requested, as he just had taken over the “Acting Medical Advisor” position, some background information on the topics of Infection Control, and staff immunisation and immunity check. This was sent a few days later (C59, C60). The Chair of ICC also responded to Clinical Director Older Persons Health after receiving the information of the Southern Community Laboratories contract, with an invitation for the Older Persons Health physician representative to continue attending the ICC meetings as observer (C61, C62). The Director Older Persons Health also suggested forming a Canterbury Regional ICC to replace the service specific ICC (C63).

At the September ICC Meeting the new ICC structure was discussed. The Christchurch Women’s Hospital had created its own ICC to which the Chair of Canterbury Health (combined) ICC, was initially invited. However, the tender for IC service to Women’s Health Division was unsuccessful and one of the private laboratories took over the contract in November 1995 (C34). The obstetrician representative from Christchurch Women’s Hospital stayed on the ICC. The provision of laboratory services may have continued, as in May 1996 the Women’s Health Division contract for providing both laboratory services and the Infection Control service came up for review. This time the private laboratory provider was again allocated the laboratory services. This private laboratory provider was different from the one that provided services for OPH (C64). No communication has been found regarding tenders with Health South Canterbury (Timaru) at this time, but letters written one year later discuss the provision of IC Service and invoicing for IC Service (C53, C65).

Apparently the private laboratories wished to extend their involvement. A proposal for “Audit of the Canterbury Health Ltd’s Infection Control Service” was received by the GM Diagnostic and Support Division CHL (C66). When he approached the Director of the ICS he received a blunt reply, that ISO9002 accreditation was welcome by the ICS, but any auditing
should be by an ICS, for example from the North Island, which did not have a vested interest of the outcome. The ICC minutes have a brief note about a meeting at the private laboratory between the private laboratory administration and the Director ICS accompanied by the Service Manager Canterbury Health Laboratories to discuss our differences. No further documentation has been found about the outcome of the meeting.

After the loss of the Women Health Division contract, the GM Diagnostic and Support Division Canterbury Health Ltd called the Unit Director Microbiology to a meeting to discuss the implication for the Infection Control Service of the work lost to the private laboratories (C67). In a letter November 1995 the Director ICS submitted a proposal ‘Additional Revenue Generation’ which included contracting services to private hospitals or health services to contract out the ICLO for routine laboratory bench work (C68).

May 1996: clarification of roles?

With the changes in Infection Control’s contracts came discussion at ICC meetings of the reporting lines of the Committee, and a request for clarification of the arrangement. Communication to and from Clinical Directors/Unit Managers was also discussed and recommendations for a new communication pathway drawn up. The general view amongst clinical staff is best demonstrated from discussion about the 1996/1997 ICC Business Plan at the ICC meeting 6 May 1996. The Surgical ICC member was recorded suggesting that there should be a presentation to the surgeons, at least once a term, by the ICS to keep them up to date with the issues. The representative also said that ICS would find the surgeons very receptive. He also questioned that if the surgical services were contracted out, would the ICC have jurisdiction over monitoring infection control?

On a positive note the ICC received a letter from the CEO CHL at the end of one financial year, thanking the ICC for a copy of the Annual Report and noting appreciation of the Committee’s work (C69).

6.3.4.2 OUTBREAK COMMITTEE

In each of the years of this period, the ICC Annual Reports documented several meetings of the Canterbury Outbreak Committee called to address the increase in meningococcal disease in the community. A sombre note was recorded in the ICC Annual report 1995/96 Four to five cases of meningococcal disease reported in one week; the outbreak committee was convened. The members of the committee were representatives from the Medical Officer of Health,
Infectious Diseases, Microbiology, Professional Advisor Medical Services and Accident and Emergency. Advice regarding antibiotic prophylaxis was issued as an example of one of the outcomes of the meetings.

The ICC Annual Report 1995/96 noted that Canterbury Outbreak Committee was convened in July 1995 in response to a patient who was found to have MRSA during admission to hospital. The patient had been in the care of Nurse Maude Domiciliary Nursing Services prior to admission, and had become the index patient for cross infection to staff during hospitalisation. The ICC Minutes from August 1995 recorded from the Outbreak Committee minutes that Nurse Maude had found three more patients positive for MRSA. The source might have been a patient transferred from a North Island hospital.

6.3.4.3 ENDSOCOPY AND ENDOSCOPE PROTOCOL COMMITTEE

Endoscopes continued to be monitored for bacterial contamination during this period. The endoscope washer & disinfector were noted in the IC minutes from September 1994 as being of concern. The endoscopes were rinsed with water by the endoscope machine after being disinfected by Gluteraldehyde. The rinsing water from the machine in the Gastroenterology Day Ward was found contaminated with *Pseudomonas aeruginosa*. It was found that design was such that it was difficult to eradicate the *Pseudomonas aeruginosa*. Treating the endoscopes to a 70% alcohol rinse after finished process in the machine was proposed and initiated after discussion.

A sub-committee was formed during this period with the aim of drafting a protocol acceptable to all endoscope using specialities (C70). The first meeting of the sub-committee was held with representation from nursing, surgeons and infection control. It was noted that the sub-committee felt it was important to include as further members a gastroenterologist, a respiratory physician and an ear, nose and throat specialist (ICC minutes September 1995) (C71). The Endoscope Committee was using international guidelines as reference for their protocol preparation. These were the Infection and Endoscopy Guidelines from Australian and US (ICC minutes November 1995) (110, 259). A draft protocol was tabled at the February 1996 ICC meeting (ICC Minutes February 1996).

6.3.4.4 REUSE OF SINGLE USE ITEMS

During the first year of the CHE, regular discussions were held at the ICC regarding re-use of single use items, and the issue had been included in the IC 1994-1995 Business Plan for further investigation. In the ICC July 1994 minutes it was reported that Canterbury Health
Limited had requested urgent attention to this issue and for the Committee to first look at documenting where and what items were re-used. During discussion of how to tackle the issue it was recommended that a legal opinion be obtained, that an accountant be involved, and that the Committee have user representation.

This issue became a regular item for several years. The September 1994 minutes of the ICC noted that the American Society for Hospital Central Service Facilities Guidelines was used to help design the discussion paper. Two months later it was reported to ICC, by the Manager for Business Development, that a legal opinion had been obtained from Chapman, Tripp, Sheffield, Young, which concluded that the approach designed by the ICC Subcommittee, such as recording where reuse occurred, review of protocols, and evaluation of cost, was appropriate (C72).

By mid-1995 The Reuse of Single use Disposable Medical Items Committee had finished its investigation and tabulation of reused items. The Report was submitted to the GM Diagnostic and Support Division (C73) with a letter summarising the Committee’s concerns and investigation into reuse. At least 55 articles were identified with a replacement cost of the items ranging from 5c to $6,000. In a letter to the Chair dated 8 August 1995, the ICC was informed by the GM Diagnostic and Support Division that a new Product Evaluator would be in charge of the issue. The Director of Infection Control also received a copy of the instruction to the Product Evaluation Coordinator, and the reply (C74-76).

There were further subgroups documented in the ICC Annual Reports 1994/95 and 1995/96 which dealt with broad issues relevant to both CHEs such as:

- Infectious Diseases and Safety in Employment first meeting December 1995.

- Control of Drug Resistant Tuberculosis subgroup, Tuberculosis Isolation room (1993/94).

- Disposal of Infectious Waste 1995

- Infectious Diseases and Transplantation of Tissue Subgroup met twice 1995/96.

6.3.4.5 CANTERBURY REGIONAL INFECTION CONTROL COMMITTEE

Besides creating sub-committees of the ICC, there was some discussion of the need for regionalisation of efforts. As mentioned earlier the Director Older Persons Health sent a letter to the Chair of the ICC expressing concerns about the possible threat of MRSA from rest homes, and suggesting the formation of a Canterbury Regional ICC to replace the service
specific ICC. This was following a private laboratory’s takeover of the Older Persons Health’s infection control service (C63). A number of communications took place resulting in an invitation to all IC services located in Christchurch to a meeting of the first Canterbury Regional ICC meeting to be held at St Georges Hospital in December 1995 (C77, 78, 79). At the first meeting only two representatives from each of the IC Services in Canterbury were present. At the ICC meeting February 1996 the Professional Advisor Nursing Canterbury Health Ltd queried the Terms of Reference for Canterbury Regional ICC who did the Committee belong to and concern was raised that it appeared to have no accountability or responsibility. It was also questioned as to why the membership was restricted to two members from each organisation and what actually defined an organisation. These questions were taken back to the Regional ICC by its Chair, the Medical Officer of Health (also member of ICC). The Regional ICC had its second meeting in April, but was not mentioned thereafter in the ICC Annual Reports.

6.4 OUTBREAKS AND PROLONGED INFECTION ISSUES

Outbreak reports did not feature prominently in the ICC Annual Reports during this period. However a few minor infection concerns are worth mentioning as some of the issues may reappear in later periods.

6.4.1 LEGIONELLA

Legionella pneumophila serogroup 1 was reported in the ICC Annual Reports and in several communications as an issue related to hot water calorifiers. Legionella was isolated regularly from these vessels (C80). Investigations pointed to an engineering solution implemented some time earlier which involved using surplus steam to preheat the water supply for the hot water calorifiers. This “preheater” heated the water to 39-45˚ C and stored water until required by the usage from the hot water calorifiers (260). A Nosocomial Pneumonia Study was undertaken in 1994-95 in Christchurch Hospital. After five months of the study, a number of patients showed evidence of infection with Legionella species (ICC Minutes December 1994) (C81). However, at the end of the study only 3 of the 16 patients diagnosed had “definite” nosocomial infection and the infection was caused by a mixture of Legionella species with only one isolated by culture (261). The Legionella colonisation of the hot water calorifiers continued to be monitored.
6.4.2 SCABIES

Several outbreaks of scabies were noted during this period in the ICC Annual Reports. The Report from 1995/96 recorded an outbreak in a Christchurch Hospital medical ward and one in the Burwood Spinal Unit (C82). An outbreak in May 1994 related to Sunnyside Hospital, with concern that treatment with “Benhex” failed to clear the infection. The 1994/95 Report noted an outbreak in an Older Persons Health Unit. In one of the outbreaks there was a concern regarding the availability of scabies treatment during weekends. In another at the Spinal Unit it was found difficult to identify the casually employed nurses working in the area. It was recorded in the ICC Minutes from December 1995 that it was estimated that 60-70 casual staff were used by the Unit.

6.4.3 DIARRHOEA AND VOMITING CONCERNS.

Diarrhoea and vomiting outbreaks were noted with increasing frequency in the ICC Annual Reports during this period. In some of the records the minutes identified causal infecting organisms.

- Diarrhoea, Ward 18 Christchurch Hospital (ICC July 1995).
- Ward 3 Burwood Hospital had problems with diarrhoea and vomiting; seven staff affected (ICC minutes September 1995).
- Gastroenteritis in Ward 12 and CCU Christchurch Hospital (C83).
- *Shigella sonnei* outbreak at Templeton Hospital. (June 1996) (C84).

6.4.4 NEONATAL UNIT KLEBSIELLA

The ICC Annual Report 1995/96 reported concern over cross-infection in Neonatal Unit with *Klebsiella oxytoca*, which had a reduced sensitivity to Gentamicin, one of the first line antibiotics for treatment of neonates with sepsis. Several babies developed septicaemia with the organism isolated from blood cultures. Hygiene measures were introduced which resulted in the organism disappearing. However, 5 months later infection with *Klebsiella oxytoca* reappeared, but following typing by ESR, the strain proved to be different from the earlier one. The infection was of immediate concern to the newly appointed Clinical Director of NNU (C24). The second outbreak was ongoing when the Infection Control Service contract was taken over by the private laboratory.
6.5 OCCUPATIONAL HEALTH

Occupational Health issues continued to stay on the Infection Control agenda during this period. Three issues dominated the discussions from previous years: staff immunity to infectious diseases and the use of immunisation; staff exposure to blood and body fluid; and MRSA.

6.5.1 Immunisation and Immunity status.

The protocol on Staff Immunity Status and Immunisation, formulated by a subgroup during 1992/93, was resubmitted to the CHE Management (C85). The response from Canterbury Health was reserved. The costing of the project was requested. However, the ICC Annual Report 1993/94 anticipated a looming measles epidemic, continued to express concern regarding measles vaccination of staff that had not had Measles/Mumps/ Rubella (MMR) vaccination. This discussion took place after a patient, suffering from measles, had been admitted to Intensive Care Unit and staff contacts had to be followed and treated with Gamma globulin and vaccination. The concern was again raised in 1995 when there was a Rubella outbreak, mainly in young males, who never had been offered Rubella vaccination (C86).

While the Annual Report continued to comment on the importance of Hepatitis B vaccination, discussion also included situations where a staff member themselves may be positive for Hepatitis B or C, or HIV as this may be revealed when staff had immunity checks. The MoH wrote to the Chair of ICC in October 1994 about the follow-up of HIV positive worker in Australia (C87). This resulted in questions regarding the availability of local guidelines in case we experienced a similar situation. The discussion continued over how records could be kept of CHE staff immunity status. The discussion also extended to independent midwives attending Christchurch Women’s Hospital and how to trace staff that might be either exposed to or exposing others to infectious diseases. The discussion was broadened to screening of tissue for transplants and a register of donors and recipients (C88, 89). The ICC Annual Report 1995/96 recorded that a subcommittee was formed. Some immunisation may have taken place, as the Annual Report 1995/96 mentioned a Hepatitis B Vaccination programme for Mental Health Division staff with 150-200 staff vaccinated.

As discussed in the previous chapter Influenza vaccination of staff had been initiated as an Infection Control/Microbiology Vaccination Clinic initiative. The ICC Annual Report 1995/96 noted continued discussion at the ICC meetings of the number of staff vaccinated and
an estimated budget for Influenza vaccination at Canterbury Health Ltd. This was later followed in some areas of Healthlink South. However, in some part of the CHEs the staff paid for vaccination themselves. It was mentioned that the cost of influenza vaccine had gone up, more than $4.00 per dose. This could be a risk to vaccine purchase and uptake by staff. Free vaccination was recommended by the Director of the ICS (C90). The ICC Annual Report 1993/94 mentioned that a briefing was held at the end of the season after the first influenza vaccination programme for all staff and later ICC Annual reports made this reporting a regular item.

6.5.2 BLOOD AND BODY FLUID EXPOSURES AND CONFIDENTIALITY

The ICC Annual Reports 1993-1996 reported several administrative concerns regarding the protection of staff after reported exposure to a patient’s blood or body fluid (BBFE). The blood test after a BBFE used to go to a single laboratory. Following the initiation of the competitive model, blood specimens might be sent to private laboratories from either the patient or the health care worker. Requests for results from the private laboratories by the ICT were declined with the claim of possible breach of the Privacy Act. The Medical Officer of Health had to investigate the legality of this process and the conclusion as recorded in his report to the ICC was that the Health Act overrides the Privacy Act regarding patient protection and release of the information.

Discussion at the ICC meetings, as recorded in the Minutes during 1995, included debate regarding the right of staff to access serology results of the source of a BBFE incident for the same privacy reason. Also discussed was the legality of taking blood for HIV testing of patients under anaesthetic if the patient body fluid was the source of a BBFE exposure.

Practical steps to reduce needle sticks by changing health care methods were also noted. The ICC Annual Report 1994/95 reported that the Anaesthetic Department was evaluating the effectiveness of Interlink, a new needle-less system for accessing IV lines, in an attempt to prevent needle stick injuries. This evaluation included a six month period before and after implementation, with no change in needle stick incidents found from this trial (262). However, the Interlink system was introduced and the annual analyses and reporting showed that the number of BBFE reports regarding IV lines, injury by IV needles, angiocath and giving IV injections were reduced from 17% of total injuries to 7%, but there had been changes in other areas, and especially a drastic increase in injuries from sharps in rubbish bags from 0.6% to 8% of total injuries.
The use of masks and gloves to reduce BBFE as a part of Universal Precaution was also debated during this period according to the IC Annual Reports. This included discussion regarding surgical masks for midwives. However no decision was made. Midwives were apparently well represented in the BBFE reports as receiving splashes of body fluids during delivery.

It was also decided to stress in junior doctors (RMO) standing orders that students should be taught that gloves are essential when dealing with blood, and when they are in contact with blood or body fluid.

The confidentiality of staff members’ exposures to BBFE and serology results were challenged when management at Christchurch Women’s Hospital requested a report from the ICN of staff names, treatment and results after BBFE. The issue was discussed at the ICC meetings early in 1995. It was recommended that a staff member was entitled to normal confidentiality and only general information and numbers of injuries were appropriate in a report.

The ICC was, according to the Annual Report 1994/95, informed about a recent publication in the Morbidity and Mortality Weekly Report (MMWR) on AZT prophylaxis for post HIV exposure and the level of protection it provided. The meeting was also informed that this had been the standard practice in Canterbury for some years.

The ICC Annual Reports also made reference to Ebola Haemorrhagic Fever in Zaire where 286 cases had been reported of which 26% of cases were in nurses and students. The mode of transmission had been body fluid exposures.

6.5.3 MRSA

There was minimal discussion at the ICC, during this period, regarding MRSA transmission, but the IC Annual Report noted that there were concerns regarding work implications and “special leave” for staff infected with MRSA. The incidence was highest among casually employed staff, without the right to sick leave or other leave (C28). The ICC recommended that casual staff should not be involved in looking after patients with MRSA (C91). Another concern noted was to identify who was responsible for both making sure that MRSA pre-employment screening took place and for payment.
**6.6 PERIOD DISCUSSION AND SUMMARY**

Some of the questions that can be asked to help summarise this period:

*Did Infection Control continue to develop and if so what was the driving force?*

Infection Control developed at a high speed, maybe stimulated by the increase in staffing and a staff member who could focus on a broad range of reports. The range of issues and challenges dealt with were well documented. The ICS ventured into tendering and contracts which would have been impossible without a central service such as the IC Unit and the ICLO.

*Were there national and/or international influences?*

There was a very strong national influence on infection control development, especially the surveillance activities during this period, driven by the changes in health policy requiring CHEs to compete with the private sector and with each other. The CHEs’ requirement for reporting of quality measures to the Crown Company Monitoring Advisory Unit had great influence on the attention the local hospital administration gave to infection control. The out-tendering of infection control services may have been a way the risk averse CHE tried to transfer this issue to an outside provider. However there was only minimal evidence that the results of the surveillance data were understood by management and that any action was taken to influence clinical practice which could contribute to patients’ risk of hospital acquired infections.

*What was the influence of the news media?*

There were minimal comments regarding the influence of the public media during this period.

*Professional influences?*

It was not only the Infection Control staff who were involved in the development of infection control during this period. Both medical and nursing professionals took an active part in ICC meetings and subcommittees. The learning curve was steep, as they brought the discussion of infection control issues into the competitive world of contracts and the legal issues of Health and Safety in Employment and Privacy act legislation.

*Would the Standard have been complied with (in relevant sections)?*
There was a high level of activity with surveillance as required by CCMAU. Some education, protocol writing and reporting was also carried out. The activity would have complied with the requirements of NZS 8142:2000, if it had been available at the time. The most disruptive aspect of the period for infection control was the wreckage of the infection control team by the division of the Canterbury Area Health Board into two competing CHEs which obviously did not work well together. The large administrative workload for the IC staff, created by the commercialisation of infection control, diverted resources away from routine infection control work in patient care.
7.1 INTRODUCTION

This period records the influence on infection control and its activities from the first Coalition Government in 1996 through the changes from Crown Health Enterprises (CHE) to Hospital and Health Services (HHS) until 2000 and the anticipated changes of HHSs to District Health Boards.

7.2 HEALTH SYSTEM INFLUENCES

This section on health system influences records health sector changes, central governance including ESR’s involvement, and institutional governance of infection control.

7.2.1 HEALTH SECTOR CHANGES

At the 1996 general election, National and New Zealand First formed a Coalition Government. New Zealand First was one of the several smaller parties which had entered Parliament through the new Mixed Member Proportional voting system (MMP) electoral system. The Coalition Agreement on Health Policy retained the purchaser/provider split, but replaced the four RHAs with a single Transitional Health Authority that subsequently became the Health Funding Authority (HFA) (263, 264). The CHEs became Hospital and Health Services (HHSs) with some appointed community representation in 1998. The Steering Group formed to implement the Coalition Agreement on Health commented in its report on the previous policy’s effects on morale and quality of care. Cooperation replaced competition with the ‘for profit’ motive abandoned (265).

In 1994 The Health and Disability Commissioner Act had been passed and the first Commissioner, Robyn Stent appointed (266).

In Canterbury, medical staff at Canterbury Health Ltd and the Women’s Health Division had opposed the split of Canterbury Acute Services between two CHEs, and in 1997 the
Women’s Health Division with its main hospital Christchurch Women’s Hospital, was transferred to Canterbury Health Ltd from Healthlink South (D1).

7.2.2 CENTRAL GOVERNANCE INFLUENCES ON INFECTION CONTROL

The change in political leadership and the impact of the early reforms on staff morale, had some consequences for Canterbury, especially in the form of the Health and Disability Commissioner involvement some of the local issues. Nationally, a new initiative was the requirement that public hospitals undergo certification.

The Health and Disability Commissioner’s first major investigation was into concerns by senior medical staff at Christchurch Hospitals (‘Patients are Dying’), with her Report published in 1998 (267, 268), (269). A second investigation followed when Christchurch Hospital reported a malfunction of pumps in an endoscope cleaning processor at Christchurch Hospital in 1999 (267, 270, 271).

Hospital certification and accreditation review included many areas where Infection Control input was required. Apart from the routine areas of surveillance, education and outbreak investigation, it included areas such as ventilation, air conditioning, water towers, warm water storage and water temperature, water supply, Occupational Safety and Health etc (272)(D2).

The Infection Control Annual report 1998/99 mentioned a national meeting on Tuberculosis held in Wellington 27th July 1998. The purpose was to get consensus on the review of the first (1996) National Guidelines for Tuberculosis (D2).

7.2.2.1 CDC ESR (NHI)

CDC ESR was only mentioned twice during this period. In 1998, their decision to provide reports only on those MRSA isolates which were found to be multi-resistant strains was noted (ICC Ann Report 1998/99). IC resisted this as, according to their view and protocols, all patients or staff with MRSA should be treated the same, irrespective of the MRSA strain. The minutes of one ICC meeting in 1998/99 also commented that the ‘community’ strains were on the increase in Auckland. Information from Key Informant IV (from ESR), interviewed 2009, has been reported in 6.2.2.1.

The second mention was in 1999/ 2000, when the CDC ESR had been involved in investigating an outbreak of Acinetobacter baumannii in Christchurch and Princess Margaret
Hospitals. The epidemiologist from ESR reviewed the outbreak and presented a report (D3, 4). See more detailed information about this outbreak in 7.4.2.

7.2.3 INSTITUTIONAL GOVERNANCE OF INFECTION CONTROL

This section on institutional governance documents the influence on infection control of the interaction between the two CHEs in Canterbury and the Clinical Planning and Policy Committee.

7.2.3.1 INTERACTION BETWEEN THE TWO CHES/HHS

A range of issues reported in The ICC Annual Reports, minutes and correspondence demonstrates the interaction between the two CHEs/HHSs. The interaction reported relates to infection control issues involving not only the infection control service but also the governance body and managers. Most of these issues are dealt with in the relevant sections. The specific sections where it is best illustrated in relation to Infection Control are:

- Outbreaks: MRSA and *A baumannii* (7.4.1 and 7.4.2).

- Building and renovation: Use of the Princess Margaret Hospital facilities during the upgrading of the ventilation in the morgue of Christchurch Hospital (7.3.1.1.4).

- IC Operational Group and ICS: Attendance of Older Persons Health the Princess Margaret Hospital Laboratory or IC Staff at the ICC (7.3.1.2).

7.2.3.2 CLINICAL PLANNING & POLICY COMMITTEE (CPPC)

Canterbury Health had issued plans for “restructured care delivery” involving changes to nursing case management at Burwood and Christchurch Hospitals. The model involved, amongst other plans (in 1995), increasing casual nursing pools in contrast to a permanent employed staff. Canterbury Health senior medical staff expressed concern regarding the lack of medical input in decisions of events during 1995, which resulted in a review by Ministry of Health in 1996 (D5). Senior medical staff through the Christchurch Hospitals Medical Staff Association (CHMSA) requested that a committee of health professionals be established. The delays in involving health care staff adequately in the management of the health service culminated in the well known letter to the Minister of Health, Christmas Eve 1996, entitled “Patients are Dying.” This subsequently resulted in the Health and Disability Commissioner’s inquiry and eventually the Clinical Planning & Policy Committee (CPPC), was formed as requested by the clinicians (D6).
The new committee had representation from several groups of Health Care Workers, some elected by staff and some appointed. IC did not report to this committee, but the committee’s Terms of Reference (TOR) included *important events affecting patients and services*, suggesting that a connection with infection control could be included. Several issues were obviously discussed and decisions were sent to ICC. In response to the MRSA outbreaks the CPPC had decided, according to ICC Annual Report 1999/2000, that the CHL should carry out random testing of staff, i.e. MRSA screening. The ICC felt it was a risky undertaking and requested legal advice. Other CHEs had investigated this issue and ICC received a copy of Buddle Findlay’s advice to Middlemore Hospital. The opinion was that there could be problems with random testing if there is no obvious reason for doing this (D7, 8).

A Clinical Planning and Policy Committee Meeting also decided to take up the issue of the other outbreaks, and communication issues between Healthlink South and Canterbury Health regarding infection control matters. The Committee requested copies of The Infection Control Committee minutes for their information (D9, 10).

7.2.3.3 PRESS RELEASES

The CEO was actively involved in infection control concerns during this period. His corporate communication officer issued press statements and also organised responses to inquiries from the press (see 7.3.4.5, 7.41, 7.42 and 7.4.3).

7.3 PROFESSIONAL INFLUENCES ON INFECTION CONTROL

This section on professional influences on infection control explores the information about the infection control team (ICT) and the teams’ work, challenges and education. It also includes information about the Infection Control Committee (ICC), its members, communication and work.

7.3.1 INFECTION CONTROL OPERATIONAL GROUP/TEAM

The Infection Control Team included the Infection Control Liaison Officer (ICLO), Infection Control Nurse (ICN) in each of the Canterbury Health Ltd main hospitals, the ICNs from Mental Health Division and Intellectual Disabled Division Healthlink South and from December 1998 the Christchurch Women’s Hospital, and the medical microbiologist. Its main work still included surveillance, audits, protocols and guideline preparation and education of
staff. However, this period the work saw the routine inclusion of infection control issues related to facilities and waste.

7.3.1.1 INFECTION CONTROL WORK

The main work of the IC Operational Group and the individual ICN, during the period, can best be illustrated by summarising some of the Agenda items from the Minutes of the Operational Group’s fortnightly meetings:

- Standardised education policy for orientation & introduction days
- Accreditation of the hospitals: IC requirements
- Updating of the main Infection Control Folders containing policies and guidelines. The folder was labelled 10 A&B; the number referred to the IC manual number in the volumes of Canterbury Health’s policy and procedure manuals.
- Germbuster (IC Newsletter)
- Hospital uniform policy
- IC Guidelines
- Cleaning and disinfection of items.
- Sharing of IC issues in the ICNs’ respective hospitals

Some more extensive work areas have been summarised in more details below.

7.3.1.1.1 SURVEILLANCE

The number and scope of audits carried out during this period was more extensive than during the previous period. There was increasing evidence from the Operational Minutes that an IC recommendation was followed by remedial actions. Some audits were proposed in the ICC minutes and Annual Reports, but never eventuated.

The routine monitoring for reporting to CCMAU continued with quarterly results provided for surgical site infections and hospital acquired blood stream infections (HABSI or BSI). CCMAU in turn provided reports comparing quarterly results with other CHEs/HHSs. It was noted that Canterbury Health rated in the middle of five other large HHSs Hospitals with regard to nosocomial bacteraemia (D11-17).

It was noted during the 1997/98 year that the ICC decided to set the threshold for HABSI to 0.5. The performance measure was: Total number of episodes of BSI during the quarter of
year divided by number of inpatients per quarter of year (C1, 8, 9 from Chapter 7). There was a further comment that it was expected that the threshold might need to be adjusted upwards following the introduction of Cardio-Thoracic Surgery at Christchurch Hospital (D18). The following year it was noted that Cardio-Thoracic Surgery had had approximately 1-2 bacteraemia per month and we will probably have problems staying with our target which is lower than average (D19). Some active intervention may have taken place as it was further noted that the Staphylococcus aureus isolated appeared to originate from the patients, but it was spread by hand to IV lines (D20).

A comment aimed at another hospital service noted that there had been a steep increase in nosocomial bacteraemia. A review was carried out and the cause was suspected to be related to insertion of lines and environmental contamination. After an increase in environmental hygiene, involving cleaning of shelves with open boxes of supply, and guidelines on insertion of lines were put in place, the number of HABSI declined. (ICC Annual Report 1997/98 and 1998/99)

7.3.1.1.2 AUDITS CARRIED OUT

- Sharps box use and placing (response to increase in injuries 1996/97)
- Waste disposal (1996/97)
- MRSA screening of nursing staff (Random audit of 500 nurses 1997/98. Few had provided a MRSA screen)
- Food Services (milk drinks for BMTU- ICC had no input into contract with outside provider) (D21-24).
- Monitoring of urinary tract infections in Burwood Spinal Unit.
- Legionella in domestic hot water system Christchurch Hospital.
- Review of sterilisation of reusable medical equipment (D25, 26,).
- Regular cleaning audits (D27).
- Regular monitoring of pathogens i.e. MRSA, Cl. Difficile and antibiotic resistant bacteria. Also infection in hospital with Rotavirus, Influenza and other viral organisms able to transmit nosocomial.

Two more audits were proposed in the annual operational plan, but there is no evidence found that they were carried out. These were
- Point Prevalence Survey of Nosocomial infections (1998/99)
Central line sepsis and peripheral inserted central lines (1996/97)
These are mentioned as they continued as proposals for audits in future annual plans.

7.3.1.1.3 ACCREDITATION/CERTIFICATION
The first National Infection Control Standards had been published in 1997 (see also 6.2.2) (272). Standard New Zealand began rewriting the Standard, but it did not become available until the end of this period (Period D) (10, 232). However, the drafts were useful as the period saw preparation for the First Accreditation of Christchurch Hospital and other Canterbury Health Ltd Hospitals. Infection Control was required to provide self assessments in preparation for the accreditation visits (D28).

7.3.1.1.4 BUILDING, RENOVATION, FACILITIES AND ISOLATION ROOMS
The Report of the Controller and Auditor General 2003 reviewed the inclusion of Infection Control advice in the broad area of purchase of new equipment or plans for alteration or renovation (273). Long term plans for alteration of existing or construction of new buildings had to include the need for adequate isolation facilities for patients. The construction process can also pose a risk to patients, especially the immunocompromised; hence the need for infection control input during planning and construction. The 2003 Report includes two recommendations related to this. Recommendation 27 The infection Control Team should be consulted when changes to the hospital environment (including contracting of services) are proposed and Recommendation 38: Hospital Services should review the adequacy of their arrangements for isolating patients (273). A number of building and renovation projects were carried out during this period and the following are examples of Infection Control involvement in the building plans and the ventilation requirements.

- Relocation of the Bronchoscopy suite. It was important to reduce the risk of tuberculosis transmission during procedures by providing appropriate ventilation (D29, 30, 31).
- The Mortuary at Christchurch Hospital had to be vacated during the upgrading of its air-conditioning system. This required negotiation between the two CHEs as the Princess Margaret Hospital (part of Healthlink South) had, during its time as an acute surgical/medical facility, had a mortuary, which had been mothballed. During the negotiations Infection Control was requested to comment on the infection control requirements for the interim use of the Princess Margaret Hospital’s mortuary (D32, 33, 34, 35).
• Planning of the Cardio-Thoracic Intensive Care Unit layout, including isolation rooms with the requirement for single room, ante-room and ventilation (ICC Annual Report 1997/98) (D36).

• There were multiple discussions at the ICC of the future plans for Christchurch Hospital. The Hospital lacked adequate isolation facilities, especially rooms with ensuite facilities for patients with organisms spread by contact e.g. MRSA or the faecal-oral route. The concern was raised both by infectious disease physicians and IC (ICC Annual Report 1998/99).

• Minor items such as the location of an automatic washer in the decontamination room in TSSU (D37).

7.3.1.1.5 PROTOCOLS, GUIDELINES SPECIAL ISSUES REPORTS
The IC Annual reports 1996-2000 noted 22 protocol and guidelines written or updated during the period. The details of these are summarised in Appendix 2 in the section 1996-2000 (Period D).

7.3.1.1.6 COMMUNICATION WITH OLDER PERSONS HEALTH
During 1998 the ICS received several emails from the Clinical Director Older Persons Health expressing concern over the level of IC communication between Canterbury Health’s IC and Older Persons Health. The Clinical Director of Older Persons Health requested that the staff from the private laboratory which serviced the Older Persons Health division attend Infection Control Committee Meetings (D38).

Key informant III working for Healthlink South at the time was interviewed in 2009. He was invited to comment on any significant IC issues requiring high level discussion or concern by Clinical Directors of Services, or any tension or competition between the CHEs which had influence on the Infection Control Service.

His reply: I did not have much to do with Older Persons Health. The Clinical Director was doing it all himself. There was a lot of tension between the CHEs. Initially they were supposed to be in competition with each other. I do not think they liked each other and that might have resulted in them using Infection Control as a way of getting to each other. I do not think it was Infection Control which caused the tension. The CEO of Canterbury Health Ltd was a very controlling man and used to play people off against each other.
IC Operational Committee Minutes first mentioned a Canterbury Health/Older Persons Health IC Operational Meeting in December 1998, with an inaugural meeting of the group planned for 25th January. A number of meetings were held. However, the 2 August 1999 minutes commented that meetings have slipped into abeyance. The Older Persons Health representative did not attend the meeting planned for 21st June and was to have organised the July meeting. Recent communication has her away until mid-August then meetings to resume (D39, 40). There were no further attendances by the Older Persons Health ICN noted at any Operational Group meeting for the rest of this Period (Period D).

7.3.2 PROFESSIONAL EDUCATION AND EMPLOYMENT OF IC STAFF

The professional education and development of IC staff were reported in the part of the ICC annual reports of the period (1996-2000) which summarise the achievements of the IC Business Plan goals and objectives.

From these records it has been noted that at least one of the ICNs went to an Infection Control Conference in each of the years. In 1998/99 it was recorded that there was a ‘Regional Meeting of the National Division of Infection Control Nurses - Canterbury Branch’ at which the IC Service presented. In 1998/99 it was first recorded that two ICNs undertook one or two levels of the Infection Control Practitioner’s Certificate Rotorua Polytechnic (Later the Waiariki, Institute of Technology; Whare Takiura). In 1999/2000 the Infection Control Officer (ICO) (previous called the ICLO) had passed all three levels of the Certificate, one ICN had passed two levels and a third started level one.

7.3.3 INFECTION CONTROL COMMITTEE, ICC MEMBERS, WORK AND INVOLVEMENT

7.3.3.1 THE MEMBERS OF THE ICC:

Information regarding the membership of the ICC during this period (1996-2000) has been obtained from the ICC Annual Reports. During the first year of the period the membership did not change. CHL had representation from senior nursing and medical representation from surgical, orthopaedic, medical (Infectious Diseases) and paediatric services. Corporate and Management services were represented by the Risk Manager and a Medical Services manager. Two Medical Officers of Health were members, including the Medical Officer of Health for South Canterbury. This member had also been Medical Advisor for Canterbury Area Health Board, and after the introduction of the CHE structure was Medical Advisor for
Healthlink South. Healthlink South was represented by the Medical or Clinical Advisor, until the position was disestablished in February 1998 (D41) when the Healthlink South Risk Manager took his place. Healthlink South also had a medical representative from the Mental Health Division and, as observers, medical representatives from Older Persons Health and Obstetrics and Gynaecology Services (D42). The gynaecologist representative continued when Obstetrics and Gynaecology Services, Women’s Health Division was transferred to Canterbury Health Ltd in December 1997. From the IC Operational Group were the Microbiologist, who was also the Chair of the ICC, and the ICNs of which there were three from Canterbury Health Ltd and 2 from Healthlink South (Sunnyside and Templeton Hospitals). The Canterbury Health Ltd’s ICNs increased to four when the ICN from Women’s Health Division rejoined the Operational Group. Of the three medical representatives from Healthlink South only two attended regularly with the representative from Older Persons Health recorded as attending only once 1996/97 and never during the following years of the period.

The Committee had attendance by a non-regular member during 1999/00, in the person of the Maintenance Manager, who was invited to give an update regarding the isolation of *Legionella* from the domestic hot water system.

During the two last years of the period criteria for membership of the Committee was discussed, with a draft tabled. It was proposed that each service should have a representative on the Committee and the member have a duty to either attend the meeting or appoint a deputy. There should be a duty for members to report back to their services and elaborate on the discussion at the meetings, with the minutes as an outline. It was also suggested that a General Manager should be on the Committee not a Service Manager. The Infection Control Committee’s Terms of Reference were redrafted and tabled (ICC Annual Report 1998/99, 1999/2000).

In response to concerns regarding communication from the ICC to senior staff, it was noted that in 1999 the ICC initiated the circulation of its meeting notes to all Clinical Directors and other nominated recipients to facilitate a wider distribution of information (ICC minutes October 1999).
7.3.3.2 DIVISIONAL INFECTION CONTROL COMMITTEE

The only Divisional ICC operating during the period was that of the Women’s Health Division which continued with its own Christchurch Women’s Hospital ICC meeting after transfer from Healthlink South to Canterbury Health Ltd. The minutes of ICC December 1998 noted that common members on the two committees (ICC and Women’s Health Division ICC) were the gynaecologist, Director IC and the Medical Officer of Health, the ICO and the Christchurch Women’s Hospital ICN. The operation of this Committee became especially important during the planning construction of the new Christchurch Women’s Hospital.

7.3.4 KEY ISSUES DEALT WITH BY ICC AND ICC TEAM (INCL. SUBCOMMITTEES)

There were a few themes, as routine agenda items, which continued from the previous periods, and new ones arose. The continuing items were related to ‘waste’ and ‘Mefix’, and some of the new items were the wearing of hospital uniforms (specifically scrubs), cleaning and food service, and discussion about isolation rooms and ventilation. The last item was summarised under the section of building and renovation (7.3.1.1.4).

Issues arising from the interaction between the two Christchurch HHSs were mainly reported with the correspondence (see 7.2.3.1 and 7.3.1.2). Several subcommittees were active of which the ‘Outbreak Committee’, with varying memberships, and the ‘Reuse of Single Use Item Committee’, with a set membership, were the most active during the period.

7.3.4.1 THEATRE DRESS CODE AND OTHER SCRUB SUITS

Discussions regarding Operation Theatre (OT) attire continued over several years.

It was noted in the 1996/97 ICC Annual Report that there had been sudden decision by theatre user groups to stop using gowns. An “Operating Theatre Dress Code Committee” had decided on changes to theatre attire. However, the Committee had had no representative from the surgeons, with the absence of orthopaedic surgeons a particular concern. The Operating Theatre’s Service Manager, after discussion at the ICC, requested a return to the previous code until interdisciplinary consultation had taken place (D43, 44). By 1998 a dress code had been accepted by theatre users. However the minutes continued to address lapses of adherence to the dress code and there were comments that the Operating Theatre Dress Code was still not properly introduced. There were disagreements regarding mask use during surgery and continual problems with theatre personnel wearing scrub suits outside the Operating Theatres, especially junior medical staff who were seen in cafeteria wearing scrub suits. The last entry
of the period suggested that there were plans to organise a meeting with the Operating Theatre User Group to further address the dress code issue when a new Theatre Manager was appointed (D45). The Emergency Department was also keen to get their own scrub suits as they had been using garments from the Operating Theatres on occasions (D46).

7.3.4.2 WASTE

Waste issues continued to be on the ICC agenda (D47). As discussed in the previous chapter the provision of disposal infectious waste had been outsourced to a commercial waste company. From March 1997 it was noted in the ICC minutes that Infection Control had become aware of that the waste company’s Christchurch incinerator, which destroyed all infectious waste including the laboratory cultures, had broken down. Not knowing what the company’s contingency plan was, the ICS paid a visit to the company’s medical waste facilities at the Airport. It was found that hospital waste and laboratory waste had being taken out of their hard shell containers and piled on the floor in the incinerator “barn” at the medical waste facility. It had been necessary to empty the containers to be able to supply empty containers for the next collection of hospital waste (D48). The Environmental Health Officer, Christchurch City Council, and Public Health became involved. Discussion continued at the ICC over the following year. The contingency plan for incinerator breakdown was requested from the company, however, it was found unacceptable. It suggested that during any period of breakdown or programmed maintenance, special waste in hard-shell containers collected from facilities other than Canterbury Health Laboratories will be unpacked from the containers (D49, 50, 51, 52, 53).

An audit was carried out to investigate how clinical areas disposed of medical waste. The audit (“Waste Minimisation and Cleaner Production Assessment”) showed that the overall disposal/separation of waste from within the hospital was very poor (D54). In the 1998/99 year it was reported that the tender for infectious waste management for Canterbury Health Ltd was issued and two companies submitted proposals. One utilised an autoclaving method and one was incinerating infectious waste. In the ICC minutes of December 1998 it was noted that the incineration option was chosen (D55, 56, 57).

7.3.4.3 MEFIX

Mefix, as explained in the previous chapter, was a dressing tape which was purchased unsterile. Infection Control had warned, as documented in previous chapters, that it was an infection risk to use unsterile dressings. *Staphylococcus aureus* infection rate in a surgical
ward was monitored over 2 years and an increase noted. It was found that in 14 surgical wounds with *Staphylococcus aureus* infections, unsterile Mefix had been used. The ICC reiterated its policy that "Sterile dressings should be used on wounds". The ICC wrote to the Theatre Users Group, Surgeons, Sterile Stores and Clinical Directors stating that there were two acceptable options: *purchasing sterile Mefix or have Sterile Services autoclave unsterile Mefix for wound dressing use* (ICC Annual Report 1998/99) (D58, 59).

7.3.4.4 OUTBREAK COMMITTEE

The Outbreak Committee was activated several times during this period. Most of its meetings were related to the major hospital outbreaks caused by the two multiresistant organisms MRSA and *Acinetobacter baumannii*. Two of the MRSA outbreaks and the *Acinetobacter baumannii* outbreak have been described in detail in this chapter under the section ‘Outbreaks’.

7.3.4.5 ENDOSCOPY AND ENDOSCOPE PROTOCOL COMMITTEE

Concerns over the cleaning and disinfection of endoscopes played a prominent role during this period. Previous chapters have documented Infection Control’s involvement. In Period A, problems with cleaning and disinfection were discovered, and all through the period, IC monitored infections and scope contamination. The first protocol agreed on by the clinical specialties was issued 1986. A subcommittee of the ICC was formed in 1995 during Period C, with the aim of redrafting the protocol. The draft protocol was tabled at the end of Period C; however, the final guideline called “Infection Control Recommendations for Sterilisation and Disinfection of Endoscopes” was not issued until November 1997 (Period D). It was issued as a review of the 1986 protocol (ICC Annual Report 1997/98) (D60). Throughout 1997 there were multiple consultations with users as there were plans for locating an automatic washer in the operating theatres’ sterilisation facilities providing a centralised service outside the Gastroenterology Department. The users were identified as those services using Gluteraldehyde (i.e. Respiratory Physiology Laboratory; Operating Theatre; Ear, Nose and Throat Outpatients; Parkside Outpatient; Emergency Department; Urology department; Echo Laboratory; Intensive Care Unit and X-Ray Department) (D61, 62).

On the 27 April 1999, it was discovered that one of pumps of the automatic disinfection machine, which processed endoscopes in the Gastroenterology Department, had failed. The last time it was known to have been functioning was 29 January the same year. According to the letter sent to General Medical Practitioners with this and other information, the adequate
cleaning of the scopes had never been questioned (D63). Unfortunately, the routine culturing of the scopes for bacterial contamination post disinfection, which was recommended as a quality control measures in the 1997 Guideline, had not been carried out consistently (D60, 63). Evidence of trace of viral debris post-cleaning was shown experimentally. Also, a severely ill patient, who had been testing positive for several blood borne viruses, was known to have been endoscoped during the period the pump might have been out of action (D63). It was decided to screen 1331 patients who had had endoscopy during the period for evidence of infection of blood borne viruses hepatitis B, hepatitis C and HIV. This also meant that the patients had to be tested twice - a major undertaking (D64, 65).

Canterbury health Ltd communication manager issued press statements after patients and General Medical Practitioners had been informed (D66, 67).

On the 13 July 1999 The Health and Disability Commissioner, in response to the apparent breakdown of the quality system, indicated that she would undertake an investigation into the quality systems within the Gastroenterology Department of Christchurch Hospital (D63). Her investigation would examine whether there has been a breach of the Code of Rights (270). From May 1999 to the end of the patient screening period the CEO held regular meetings with the so-called ‘CEO Canterbury Health Endoscope Incident Working Group’ with the aim of being briefed about serology results, discuss clinical concerns, issue press statements, and provide information for the Health and Disability Commissioner (D68).

The final results of the second round of testing became available in September 1999 and the results showed no evidence of infection with blood borne virus (D69). The “Endoscope incident” process was discussed at the Clinical Planning and Policy Committee during August 1999 and information made available to staff in their newsletter. When the results from the screening program were available the CEO sent out a letter to staff stating the clinical policy in relation to cleaning of instruments and scopes throughout Canterbury Health (D70).

There were some clinical areas that did not have the same strict quality processes as the Gastroenterology Department and these areas needed to be provided with high level disinfection (D 71, 72, 73, 74, 75). The options were disinfection with Gluteraldehyde or Steris. According to opinion expressed in the correspondence, the Steris system, using Peracetic acid, had a procedural turnaround time which was too slow and was acceptable only
to Respiratory Services. This service was keen on the Steris ability to sterilise rather than merely provide high level disinfection.

The Health and Disability Commissioner’s report issued on the 19 August 1999 (271), stated (shortened version): Canterbury Health’s Gastroenterology Department is to be commended for its thorough cleaning of endoscopes" and "The overall process of infection control was thorough and minimised potential harm to consumers." While the timeframes could have been shortened, the process followed and the decision to inform the 1331 consumers was correct in the circumstances" and "the methodology of analysis, followed by information preparation and execution of plans to ensure a smooth rollout of planning and testing of consumers was of a high standard. However, she did find a breach of Right 4(2), the Right to Services of an Appropriate Standard: Every consumer has the right to have services provided that comply with legal, professional, ethical, and other relevant standards (271). The Acting Director-General of Health also wrote to all hospitals instructing them to have adequate cleaning and disinfection or sterilisation procedures in place for endoscopes (D76).

While the processes set out in the 1997 Canterbury Health Ltd Guideline was vindicated, there was continuing information from international sources regarding problems with the automatic washers and disinfection machines (D77).

7.3.4.6 REUSE OF SINGLE USE ITEMS

During the Health and Disability Commissioner’s investigations of Canterbury Health’s Patient Safety Inquiry (1997) several years of Infection Control Committee minutes, correspondence and ICC Annual Reports were requested for the investigation (269). In her final report the Health and Disability Commissioner expressed concern regarding the Canterbury Health Ltd’s management of the issue of Reuse of Single Use Items (269). The initial IC Report to Canterbury Health Ltd Management (see 6.3.3.4) had resulted in referral to the ‘Product Evaluator’ for decision on further action. However, no further action was noted. After the release of the Health and Disability Commissioner Report the Chair of ICC wrote to the Company Secretary of Canterbury Health Ltd asking if the ICC required adding the “Reuse Issue” to the ICC Business plan for the coming year (D78). There was some evidence that the Chief Executive (CE) was made aware of the issue during June 1997, resulting in a request to the Director IC to re-establish the Reuse of Single Use Item Committee (Reuse Committee) (D78, 79, 80, 81). A number of communications followed involving the Risk Manager and the GM Diagnostic and Support following up on the request (D82, 83). Two weeks after the CE’s request, the Director IC submitted a proposed process
for assessing reuse items (D84). Before the first meeting of the Committee the CE sent a message to all GMs that no items, deemed to be single use were to be reused until the committee had approved the protocol (D85). The Committee was set up as an ICC Sub-Committee with the same Chair. The Committee was to meet fortnightly and cost analysis was to be included with the help of a Board accountant. A letter was sent to all Clinical Directors, GMs, Patient Care Managers and Director of Nursing requesting all to assess any single use item they wished to reuse. They were to submit a protocol to the Committee with information regarding the cleaning, sterilisation, structural and quality checks as well as costing (D84). The Reuse Committee’s members were representatives from Infection Control, Operating Theatre, Technical Services, Supply Department, Quality Coordinator, Medical Physics, Intensive Care Unit, IC Coordinator Ashburton Hospital, Orthopaedic and Surgical Services. Assistance from an accountant was promised.

The first meeting of the Reuse Committee was held 29 July 1997 (D86). The Committee submitted its first half yearly report to the CEO mid December 1997 outlining the review of 18 items submitted during the 10 meetings held by the Committee. The report documented those items accepted for reuse and those declined. The Committee also submitted a policy suggestion, which was accepted (D87, 88) and became part of the Canterbury Health Ltd. Procedure Manual vol. 2, Company Policy: Reuse of Single-Use Items.

The policy stated that: *Canterbury Health Ltd does not support or permit, in general, reuse of items labelled by their manufacturer for single use. Due to the financial impact of discarding all expensive disposable medical devices, a limited amount of reprocessing is accepted* (D89).

The Committee continued to meet every two months during this period (1996-2000) and issued a report yearly documenting items assessed and either declined for reuse, achieving temporary approval pending more information or an approval for reuse for two years. After two years the items were to be reassessed. During the 2 year period 18 items were declined for reuse, six were stopped from being reused after initial submission and 25 had temporary or two year approvals (D90, 91). Most of the items approved were noted in the Reuse of Disposable Item Committee’s minutes (Reuse Committee) as either to be cleaned and sterilised by heat or they were classified as non-invasive. Some items, like cardiac catheters, had to be sterilised by Ethylene Oxide (ETO). This sterilisation method was of concern to the Committee according to the discussion reported in several of the Committee’s minutes over the period. Several papers were distributed and a laboratory scientist from Toxicology was
invited to one meeting to explain the toxicity and measurement of residual gas in material sterilised. Some information was distributed by the Ministry of Health (October 1998) including reference to an article published by the Ministry in December 1994. That article recommended that manufacturers’ recommendations should be followed with regard to single use items, unless there was published evidence to justify a reuse (author’s paraphrase) (D92).

7.3.4.7 CANTERBURY REGIONAL INFECTION CONTROL COMMITTEE.

Only one comment was written (ICC Minutes December 1996) regarding the Canterbury Regional ICC Report: This Committee has not met since early 1996. It followed by a comment of who is Chairman of the PMH Committee?

7.4 OUTBREAKS AND PROLONGED INFECTIOUS ISSUES

This Period (D) saw a number of severe outbreaks. The largest of outbreaks were caused by two microorganisms: Methicillin Resistant *Staphylococcus aureus* (MRSA) and *Acinetobacter baumannii*. Table 7.1 below gives a brief overview of the context in which the outbreaks occurred.

**Table 7.1** Chronology of events with influence on infection control 1996 to 2000, recorded with time or period of times for the events

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1996</td>
<td>The 1993-96 CEO leaves CH</td>
</tr>
<tr>
<td>November 1996</td>
<td>Visit to CHL by the new CEO</td>
</tr>
<tr>
<td>December 1996</td>
<td>Senior doctors wrote Christmas Eve 1996, to the Minister of Health that “Patients are Dying” at Christchurch Hospital. Health and Disability Commissioner starts investigation 1997</td>
</tr>
<tr>
<td>June-August 1997</td>
<td>MRSA W57 outbreak 13 patients and 10 staff infected at Christchurch and Burwood Hospitals</td>
</tr>
<tr>
<td>April 1998</td>
<td>Health and Disability Commissioner’s report on her investigation into safety issues at Christchurch Hospital published</td>
</tr>
<tr>
<td>June-August 1998</td>
<td>MRSA (29/52/77) Outbreak Christchurch Hospital. 8 Patients and 2 staff members affected.</td>
</tr>
<tr>
<td>September 1998</td>
<td>MRSA 47/614 Outbreak 4 patients and three staff tested positive.</td>
</tr>
<tr>
<td>December 1998-April 1999 and October- November 1999</td>
<td><em>Acinetobacter baumannii</em> Outbreak, Christchurch Hospital Canterbury Health Ltd and the Princess Margaret Hospital Healthlink South</td>
</tr>
<tr>
<td>April-July 1999</td>
<td>Endoscope cleaning failure and 2nd Health and Disability Commissioner’s enquiry</td>
</tr>
<tr>
<td>January/February 2000</td>
<td>MRSA Outbreak starting Burwood Hospital. Will be reported in Chapter 9 (Period E)</td>
</tr>
</tbody>
</table>
Most of the outbreaks happened from the second half of 1997 and onwards and initially mainly affected Canterbury Health Ltd. Key informant III employed at Healthlink South (1995-1997) interviewed in 2009 was asked if he could remember any corporate discussion regarding outbreaks or other infectious issues during his employment. He reiterated: “We did not have outbreaks at Healthlink South during the period I was there”.

7.4.1 MRSA

Two major and one minor MRSA outbreak happened during this period. The information about these outbreaks has been obtained from the ICC Annual Reports 1996-2000, correspondence to the ICC Committee during the same period and minutes from the Outbreak Committee, an Infection Control Committee subcommittee activated during outbreaks.

The first MRSA outbreak related to a patient previously treated in a Hospital in Korea. The patient was treated as an inpatient on an orthopaedic ward for 11 days before his death in April 1997, with the MRSA infection only discovered shortly before he died. The spread of this particular MRSA strain, labelled MRSA W57, was not realised before beginning of June the same year. On the 4th of June an outbreak of MRSA was announced in Orthopaedic wards at both Christchurch and Burwood Hospitals (D93). A media release was issued 7 days later (D94). Ten staff and 13 patients were found to be infected or colonised with this particular MRSA strain. The Minutes noted that it was important that the two affected Christchurch Hospital wards were able to continue routine work so it was decided to open an isolation ward in a vacant ward at Burwood Hospital. This ward was able to house the infected patients and could be staffed with some of the colonised staff, while all were on treatment to clear the infection (D95, 96, 97). The ward was able to be closed again 4 weeks later. The newly appointed CEO took a keen interest in the outbreak, organised media releases and requested regular reporting and a 12 month follow up (D95, 98, 99). Concern by Older Persons Health, Healthlink South regarding communication during the outbreak, was noted (D100, 101).

The minutes of the Outbreak Committee Meeting 28 July 1998 describe the second major outbreak of MRSA in Canterbury Health. It began insidiously with one patient found to have positive blood cultures with MRSA on the 21 June 1998 in Intensive Care Unit (D102). The MRSA strain was called 29/52/77 following phage typing by ESR. As the patient had been in hospital for more than a month a nosocomial infection was suspected. All patients and staff in Intensive Care Unit were screened for MRSA, with one staff member found positive. The staff member had been employed into the casual nursing pool recently, and had provided a
clear screen obtained from a smaller hospital laboratory outside Canterbury. The MRSA strain had not been seen before and was very resistant to multiple antibiotics, including the antibiotic cream, Mupirocin. After the outbreak was declared, it was instituted that all patients discharged from the Intensive Care Unit to other wards were to be screened. The screening process of staff and patients took several weeks as a large number of staff were involved. On the 7th July a previous Intensive Care Unit patient was found positive in a surgical ward at Christchurch Hospital, which admitted cardiac surgical patients. By the 19th a third patient with the same strain was found infected in an orthopaedic ward. By the 22nd of July 6 patients had been found positive in different wards and one transferred to another CHE (D103). The minutes of the Outbreak Committee’s meeting on the 11th August recorded the count of infected/colonised persons as 2 staff and 8 patients. A comment followed that the outbreak was under control. It also stated that review of admission times and employment histories suggested the outbreak began in the Intensive Care Unit on 2 May and slowly moved to an orthopaedic ward at the end of June and then to the surgical ward in July. As the MRSA strain was resistant to Mupirocin and no other available antiseptic cream seemed to work, tea tree oil was tested against the strain and found to be very active. Ethical approval was sought and received for using the tea tree oil for treatment during the outbreak (D104). It was noted, in the outbreak meeting minutes that other hospitals receiving patients from affected areas should be made aware of the MRSA status of patients and the discharging wards (D105, 106). It was also noted that Healthlink South’s main hospital had expressed concern and at the next outbreak meeting 18 August 1998 a representative from Healthlink South accepted an invitation to attend (D107, 108, 109, 110). During the outbreak more than 300 staff members were screened for MRSA. Sixty-nine patients were found to been possibly at risk and screened if still in hospital. Discharged patients were brought to the attention of their general practitioners by letter.

Hardly was this outbreak under control than there was information of a new strain of MRSA causing cross infection (D111). This strain had, according to the ICC minutes of October 1998 and the ICC correspondence, arrived via a patient who had been in an Australian hospital. He had only spent two hours in an outpatient area in Australia. On return to Christchurch Hospital, he spent one day in the Intensive Care Unit, one day in the High Dependency Unit and two days in a surgical ward (D112). The patient was found positive five days after admission. Follow up of contacts found 3 patients; two ward staff and one physiotherapist positive with this particular strain (47/614) following phage typing by ESR.
The Infection Control minutes indicate that there were problems getting staff to adhere to the MRSA screening protocol, which had been in place since 1989 (Period A). The ICC Chair wrote to the CEO after the second MRSA outbreak informing him of the need for screening staff for MRSA carriage on employment (D113). The medical advisors were asked about the orientation senior medical staff received on employment and it was discovered that MRSA screening or risk information was not included in the information packet. The RMO employment information packet also lacked this information.

The Director of Nursing did an audit of 500 nurses over one month regarding MRSA screening and reported: When requested to provide it (the MRSA screen), very few had done it and there appeared to be resistance and even aggression in some cases when confronted with this issue. ICC members expressed their frustration: This Committee does not appear to have the authority to enforce policies and therefore a letter should be sent to the CEO stating that we refuse to take responsibility due to the line management failing (ICC Minutes August 1998).

A letter was sent and the next few months saw correspondence from GMs, accountants, Human Resources and Medical Advisors trying set a routine in place for MRSA control and assessing the cost of screening and the cost of outbreaks. The Clinical Planning and Policy Committee (CPPC) recommended “Random testing of staff for MRSA colonisation” in their Newsletter October 1998 (D112, 113, 114, 115, 116, 117, 118, 119).

One more MRSA outbreak was reported in the Annual Report 1999/2000 centred in the Spinal Unit at Burwood Hospital in the beginning of 2000. That outbreak caused some disharmony amongst the medical staff and affected IC into next period (E). The details of this outbreak will be referred to in the following chapter.

7.4.2 ACINETOBACTER BAUMANNII

Hardly was MRSA brought under control before another bacterial infection caused concern. While MRSA had had the potential to render the CHE at risk for endemic spread and an increased risk of severe infection in the future; the organism, Acinetobacter baumannii, caused severe infection from the start. The onset of the outbreak, according to ESR’s investigation, appeared to be in the last quarter of 1998 with the greatest “attack rate” during last quarter of 1998 and first quarter of 1999 (D3, D4). The outbreak, which had a high mortality rate among those with respiratory infection, became a source of tense interchange.
between the two Christchurch HHSs and of incessant interest from the news media, requiring responses. The corporate outbreak group was chaired by the CEO and press statements were issued by Canterbury Health Ltd corporate communication (D 125, 126, 127, 128, 129).

The first information that several patients were found infected with a multi-antibiotic resistant *Acinetobacter sp* in Older Persons Health at the Princess Margaret Hospital came to IC on 20/11/1998 (D120). The organism was first noticed in Christchurch Hospital after a patient, transferred from the Princess Margaret Hospital, died in the Intensive Care Unit late November 1998 and on post-mortem was found have a lung infection with *Acinetobacter baumannii*. The Outbreak Committee was first called the 23rd of December and several meetings, including representation from Older Persons Health, followed during January. Following its first meeting, the committee issued advice to all medical staff, regarding precautions when prescribing antibiotics (ICC Annual Report 1998/99) (D121, 122, 123, 124). CHL issued a media release 1 January 1999 alerting the community to the new outbreak strain affecting the hospital (D125). The outbreak *Acinetobacter baumannii* strain was resistant to numerous antibiotics but Ciprofloxacin resistance was the most common marker separating it from other *Acinetobacter baumannii* strains involved in serious infections (D3, 4). Environmental sites were investigated with the aim of finding the source and several were found positive both at the Princess Margaret Hospital and in the Intensive Care Unit. It was noted that the Princess Margaret Hospital underwent major renovation at the time and the Intensive Care Unit was also having renovation in a small part of its area. The named sites in the Intensive Care Unit were a humidifier, a keyboard in a nursing station and an Olympic Dryer (ICC minutes February, March 1999 and ICC Annual Report 1998/99). According to the same source, patients’ wounds, sputum and urine were screened and isolation precautions were instituted on all patients carrying the outbreak strain. A site specific ICC was set up in Intensive Care Unit to deal with problems and tidy up the processes in the Unit.

An historic analysis of *Acinetobacter* isolation in Christchurch Hospitals was performed and presented to the outbreak meeting in January. It was found that *Acinetobacter* isolates were seen as far back as the early 1990s and Quinolone (Ciprofloxacin) resistant strains were found in the Spinal Unit at Burwood in 1994. These strains had the same sensitivity pattern as the outbreak strains. Speculation regarding the origin of the strain resulted in several theories, including the suggestion that it had moved with the Department of Plastic Surgery from Burwood to Christchurch Hospital. Another suggestion was that the appearance was a result of increased use of quinolone antibiotics, to which the organism was resistant.
Communication with a microbiologist at one of the private laboratories, who gave suggestions regarding the “case definition”, also alerted the Committee to the antibiotic resistant *Acinetobacter* outbreak in 1985 involving the Princess Margaret Hospital and Intensive Care Unit Christchurch Hospital (see 4.4.5) (D130). The building activities at the Princess Margaret Hospital and alteration carried out in Intensive Care Unit at the time could have facilitated its spread.

From March-July 1999 the outbreak appeared to enter a dormant phase (D3, 132). However, there was a continuing discussion in the ICC minutes regarding readmission of patients, or the occasional colonised patient coming from the community and nursing homes. It was further reported in the ICC minutes that information had come from ESR regarding a resistant *Acinetobacter baumannii* in the Burns Unit at Middlemore Hospital in November 1998. However this strain was found to be different from the Canterbury strain.

Hygiene, especially environmental cleaning, was discussed as a factor in the Acinetobacter outbreak and in the previous MRSA outbreaks. ICC recommended that clinical areas routinely receive a ‘spring clean’ twice a year involving staff as well as patient areas (D131). The issue of spring cleaning was referred to the Clinical Planning and Policy Committee to get a consistent policy for Canterbury Health Hospitals.

The *Acinetobacter* returned with a fatal outcome again in October 1999 and correspondence again became active between the CHEs. The news media continued their interest, raising questions which were addressed by a group chaired by the CEO, with assistance of the communication officer (D132, 133, 134) (D23, 24). Both HHSs requested an independent investigation by the ESR epidemiologist at the end of 1999 (D3, 4). The reports were analytic and carefully worded to avoid pointing blame at either HHS. However it was acknowledged that a severe outbreak had taken place with a Ciprofloxacin/ multiresistant bacteria, *Acinetobacter baumannii*, with a notable mortality. It was also noted that isolation of *Acinetobacter baumannii* from microbiology specimens from patients were reasonably common, most were susceptible to Ciprofloxacin and typed different by ESR’s Pulsed Field Gel Electrophoresis (PFGE) typing from each other and the outbreak strain (D135, 136, 137,138). Finally Clinical Planning and Policy Committee decided to become involved and requested information (D139, 140). At the end of 1999 the outbreak was finally controlled.
**7.4.3 LEGIONELLA**

*Legionella sp* had so far been an organism of interest because it was found to colonise water samples taken from the bottom of Christchurch Hospital’s hot water calorifiers and the water entering these vessels. It had not previously been found in the circulating domestic hot water system. The organism had sometimes been isolated from cooling towers, mainly if a disinfecting pump had failed; however as most of the Canterbury public hospitals did not have water-cooled air-conditioning, possible contamination was confined to a few towers only. These cooling towers were commercially maintained and the water disinfected (D141, 142, 143, 144, 145). In 1994 an engineering change was introduced to the hot water system with water being preheated before it reached the calorifiers. However, water to the domestic hot water system still exited the calorifiers at 60°C and returned at 55°C. *Legionella pneumophila* serogroup 1 (L. pn.1) was found in the bottom of the hot water calorifiers, and several other sites of the supply line to the hot water calorifiers (274). All sites including patient areas were regularly monitored for *Legionella* and always found negative on culture. Until December 1998 the reticulation temperature of the domestic hot water system was set to 60°C. This was however in contravention of the New Zealand Building Code which required no more than 55°C at each outlet (275). This became an issue as a building permit was required for the Parkside West extension to Christchurch Hospital. In December 1998, it was decided that the temperature had to be reduced to 55°C. This was achieved by keeping the calorifiers at 70°C and tempering the water to 55°C shortly after it left the calorifiers. By January 1999, test sites on the domestic hot water system were positive for L. pn.1 and August 1999 the first patient was diagnosed with the infection (D146, 147). The CEO arranged a meeting with Infection Control, the Maintenance Manager, Corporate Solicitor and Risk Manager. The solution was to add a U-V light to incoming cold water, build a new coldwater supply line from the coldwater storage tanks on the top floor of the Christchurch Hospital building to the calorifiers in the cellars. This line provided UV irradiated cold water to the water exiting the calorifiers at 80°C and lowering it to 55°C. The hot water system would also be chlorinated twice a year (D148, 149, 150, 151, 152)(274). When these measures were not able to clear the circulating domestic hot water system, an external consultant was called in from Australia to provide an independent opinion (D153).

Several other safety measures were instituted. All shower roses in the hospital would be regularly tested for *Legionella* as well as the hot water system and the calorifiers. To make sure that patients did not acquire unrecognised nosocomial infection with *Legionella* it was
also instituted that all patients with nosocomial pneumonia had a urine test for detection of Legionella infection. To date there have only been two patients with proven infection with the hospital strain (276). The Medical Officer of Health also requested information regarding the colonisation of the Hospital’s hot water system with *Legionella* and the infected patient. As a member of the ICC he had always been a supporter of the ICS recommendation to keep circulating water at 60ºC and investment in tempering valves closer to hot water outlets (ICC Ann Report 1994/95, 1997/98, 1998/99, 1998/2000).

### 7.4.4 OTHER WATER FACILITIES

The overseeing of the hygiene of the water supply and swimming pools is usually regarded as a responsibility of the Public Health Unit. However, large hospitals often have rehabilitation pools under the control of their Physiotherapy Department. Canterbury Public Hospitals had several such indoor pools. The pool in one of the hospitals was not only used for patients but also hired out for public use. The implication was that the pool might be used for incontinent adults and diapered infants. Routine monitoring usually require the checking of chlorine level, bacterial contamination and regular cleaning and filter maintenance. During 1998, according to the ICC Annual Report, the Public Health Unit became concerned about contamination of public pools with *Giardia* and *cryptosporidium*. Cysts of both parasites were found in the hydrotherapy pool in low levels when checked (D154, 155). Cleaning of the pool and its filters required closing of the pool for a period and a future requirement of regular monitoring for contamination.

### 7.4.5 DIARRHOEA AND VOMITING.

In contrast to the next period (2000- 2008) the present period was free of reports on diarrhoea and vomiting outbreaks. However, the ICC annual report did not record any information from Older Persons health, the Princess Margaret Hospital.

### 7.5 OCCUPATIONAL HEALTH

According to the ICC Annual Report 98/99 there were moves to consider employing occupational health staff to oversee of the need for staff screening and carriage of infectious organisms or their requirements for immunisation. It was reported that two occupational health personnel had been appointed to Christchurch Hospital and one was to spend half a year in Diagnostic and Support Division to initiate a protocol for MRSA screening of staff.
However, no evidence has been found from this period that the task was ever completed. It has already been mentioned that the Clinical Planning and Policy Committee suggestion regarding random testing of staff, especially MRSA screening was discussed and the legal position according to Buddle Findlay’s Report to Middlemore Hospital was that there could be a problem with random testing if there is no obvious reason for doing so.

7.5.1 IMMUNISATION AND IMMUNITY STATUS.

The discussion regarding staff safety and their immunisation and immunity testing continued during this period.

The two previous chapters (Periods B and C) documented the persistent suggestions from the ICC that Hepatitis B testing and immunisation, Mantoux tests and BCG vaccination programme for employees should be initiated and a central system for maintaining staff records be established. The advice was also sent to Medical Advisors (D156, 157). A further incentive provided by the ICS for the CHE/HHS Management, to initiate routine Hepatitis B vaccination for staff, was providing information about the recent price rise for Hepatitis B Immunoglobulin, which had increased from $17.49 to $192.58 per dose. Hepatitis B Immunoglobulin was routinely offered to staff who had experienced exposure or needle stick contaminated by blood and body fluid from a known Hepatitis B carrier or where the infectivity of the body fluid was unknown (ICC Annual Report 1996/97) (D158, 159).

Influenza vaccination was discussed each year by ICC during the period (1996-2000) and it seemed that the CHE/HHS management had accepted the value of offering the vaccination to staff. In 1997/98, extra efforts were put into providing immunisation with an increase in available vaccination clinics and advertising, including a prize draw amongst those vaccinated (ICC Annual Report 1997/98). In 1998/99 1770 influenza vaccinations were given with 2100 in 1999/2000 (ICC Annual Reports 1998-2000). Some areas of the hospitals had organised their own vaccination but not everybody approved that arrangement, raising the issue of accredited vaccinators (ICC Annual Reports 1996-2000) (D160, 161, 162).

When a measles outbreak was judged imminent in 1996, the Infection Control Committee advised CHE management that it needed to ensure that staff were immune and that isolation facilities were adequate to protect patients and staff. Concern was expressed regarding the air control in Paediatrics as measles can be acquired from air borne exposure. ICC provided recommendations that staff born after 1969 have two doses of MMR vaccine to minimise the
risk to patients and staff and to reduce the liability to the CHE. ICC advised strongly that, as there was no public health provision, the CHE itself should vaccinate staff. Concern was expressed regarding the amount of measles vaccine available and the use of alternative serological checks for immunity. The Outbreak Committee was convened to make recommendations to the CHE. The recommendations also include Christchurch Women’s Hospital (ICC Annual Report 1996/97) (D163, 164, 165, 166, 167, 168, 169).

By June 1997 the measles outbreak arrived and staff born after 1969 were vaccinated. The Microbiology Department Vaccination Clinic vaccination nurse vaccinated 179 staff, including 46 medical students (D170). The vaccination was organised jointly by IC and the Clinic. In spite of substantial correspondence from IC and the Outbreak Committee it was left for IC to take charge of the vaccination. There is no correspondence from the CHE management directing or supported this initiative.

The concept of immunisation of health care workers did, however, get new life following the measles outbreak. The Medical Advisor at Healthlink South worked on providing protocol for staff immunisation and immunity checks, and the ICC minutes (December 1997) and Annual Report (1997/98) recorded discussion between Human Resource Managers, Canterbury Health Ltd and Healthlink South on staff immunisation and employment, and drafting of employee record, information sheets and questionnaires. There were plans to have the same protocols for staff immunisation in Healthlink South and Canterbury Health, with a computer programme to collect data on immunisation. The Director of Nursing initiated discussion with the nursing course at the Polytechnic Institute so that the students would be fully immunised when they qualified (ICC Annual Report 1997/98 and 1998/99). The Medical Advisor worked on an orientation package for senior medical staff as well as orientation of new staff (D171).

At Healthlink South the policy on staff immunisation stated that all new staff must be immunised, and those who chose not to be immunised had to sign a disclaimer to release the CHE from any responsibility should the employee contract an infection in the workplace. Healthlink South also installed a Time Master Computer programme to log all immunisations in Healthlink South. There was discussion regarding new Registered Medical Officer’s (RMO) and their immunisation status. The extent to which RMOs were immune to Hepatitis B was uncertain and a pilot programme on immunisation and vaccination for the regular new intake of RMOs was instituted in November/December 1997 (ICC Annual Report 1998/99).
7.5.1.1 CONSEQUENCES OF TESTING STAFF

There was also discussion in the ICC on how to handle staff or potential staff found to be carriers of Hepatitis B. A discussion paper submitted to the ICC Committee recommended a policy involving screening staff for Hepatitis B, with action taken according to risk status. Risk status would depend on presence of Hepatitis B e Antigen or Hepatitis B DNA. It was suggested that a policy in line with the Medical Council was accepted. At the time there were no systems or procedures in place to ensure that staff were not hepatitis B antigen, hepatitis B DNA or e antigen positive, of special concern if they worked in high risk areas such as surgery. According to the ICC Annual Report the issue was referred to the divisional Medical Advisors to solve. The Committee also obtained a copy of a legal opinion commissioned by Middlemore Hospital regarding testing of staff for blood borne viruses. The opinion recommended that any testing be done before employment or before employment was offered (D164).

7.6 PERIOD DISCUSSION AND SUMMARY

This period had marked central Government involvement into CHE/HHS affairs in the form of Health and Disability Commissioner’s inquiries. It was also marred by multiple widespread outbreaks of multiresistant organisms in the hospitals. It further saw reduced compliance with or challenge by health care staff of Infection Control Guidelines, and the necessary adjustment by the Infection Control Service and other CHE/HHS staff to contracts by private providers. The period also saw an unprecedented unswerving involvement by senior management, led by the Chief Executive, with Infection Control concerns. The news media showed a persistent interest into general issues and those related to infection control at Canterbury Health Ltd during the period. The tense relationship between various groups, especially senior medical staff, the CEO and hospital management was played out in the media (D172-174). Some of this tension might have affected Infection Control services indirectly in the form of reduced compliance with IC protocols and guidelines. The changes to the nursing structure in 1996 might also have contributed to the problems experienced by the Infection Control Service.

The difficulties in communication experienced between the fragmented parts of infection control in the two local CHEs/HHSs especially with Older Persons Health might have been a result of the provision of IC services by different laboratories. Communication difficulties were not experienced with the parts of CHE/ HHS served by the same laboratory service.
Hygiene problems were especially related to cleaning services and building/renovation projects. The hygiene problems appeared especially significant during the Acinetobacter outbreak and resulted in the instigation of twice yearly ‘spring cleaning’ of clinical areas.

Key Informant III interviewed in 2009 was asked: What is your view on the Governance and management of IC during that period? His reply was: *It looked to me as the Management only worked from crisis to crisis. The Board did not show interest in anything else. They were not interested in the day to day running of IC. This illustrates one danger of having non-medical managers.* He was further questioned: In your opinion, what did we learn from that period? His reply: *It was a very difficult and disruptive time. The financial focus on patient care resulted in some of the clinicians flourishing in this environment and others did not. It is questionable if patients benefited from the tension between staff and management. The atmosphere amongst clinicians was not good either, and I think it was known to be one of the worst in the country. I was happy to leave Canterbury. I think I would have referred to my views on the contractual environment at the time, in which contracts were used to drive competition and supposedly improve performance. However the health sector, in my view, has not benefited from the contractual environment because of lots of inherent complexities which mean that cooperative relationships are essential for good seamless patient care and high quality service.*

In considering the overall development of IC during this period, some key questions can be posed:

*Would the relevant Standard have been complied with?*

Management, from the CEO to the service managers, became very involved in Infection Control during this period. Unfortunately much of the involvement was related to “fire fighting”. The Infection Control staff still managed to carry out the required surveillance while a major part of their time was taken up with outbreaks. The Clinical Director of Infection Control was recorded as the main correspondent, a change from Period C (1993-1996) where the Infection Control Liaison Officer had undertaking most of the correspondence, but he became heavily involved in preparing the tender proposals. Most sections of the Standard were addressed and checked during the preparation for Hospital Accreditation. A notable number of protocols and guidelines were produced. Occupational health issues were mainly carried by Infection Control and attempts to get a dedicated occupational health service developed were not successful at this time, although a few false
starts were noted. Occupational health was a key area for Infection Control, involving active and positive interaction with the other CHE/HHS with efforts to get universal immunity testing and immunisation protocols for Health Care Workers introduced.

*Did Infection Control continue to develop and if so what was the driving force?*

ICNs increased their areas of involvement as can be seen from the involvement in infectious waste and investigation of the hot water supply. The main challenge was the outsourcing of services, which needed to be reviewed and audited. The value of screening health care workers for MRSA became apparent during several outbreaks and the need for IC to be aware of changes to the workforce became equally apparent. This was the first period where the ICN took advantage of further IC education. Several of the Infection Control Staff signed up for the Infection Control Practitioner’s Certificate at Rotorua Polytechnic. At that time it was a 1-2 years part time study in three parts.

*Were there national and/or international influences?*

The most forceful “national” influence was the involvement of the Health & Disability Commissioner in two inquiries one of which was related to Infection Prevention and Control. The Ministry of Health introduced certification of public hospitals and supported the more independent accreditation of the health care institutions. Both certification and accreditation required a sizable Infection Control input. CCMAU continued to require monitoring and reporting of hospital acquired bacteraemia and surgical site infection. The Ministry of Health, through its national ESR service, provided a review and analyses of the *Acinetobacter baumannii* outbreak. The review provided some means of easing the tension which had developed between the two HHSs over the Infection Control even though the outbreak had been brought under control by the time of the review.

*What was the influence of the newspapers?*

The newspapers provided frequent coverage of opinions on the struggles between health care staff and management. The risks to patients were the declared concern. Both the Endoscope issue and the *Acinetobacter* outbreak resulted in full and sometimes persistent news media attention.

*Professional influences?*
Professional influences were marked during this period. The involvement was seen both during outbreaks and the H&D C inquiries but also with the preparation of some of the major protocols and guidelines. The Reuse of Disposable Item Committee review of all disposable clinical items reused required participation of many clinical specialities. At the end of the period the Clinical Planning and Policy Committee (CPPC) decided to become more involved in IC issues. The CPPC did not have Infection Control, as a preventative service, as part of its Terms of Reference, it was mainly interested in issues which centred on possible conflict amongst staff or affected staff.

8.1 INTRODUCTION

Period E is the last researched period of the thesis covering the time from 2000-2008, completing the 30-year period. This chapter reports on the health system influences defined as those shaped by political changes and by central and institutional governance. It also reports on professional influence, which includes infection control and hospital staff. Where relevant, this section reflects back on previous time periods.

8.2 HEALTH SYSTEM INFLUENCES

8.2.1 Health Sector Changes:

In 1999, there was again political change, with Labour ruling as a minority government in coalition with the Alliance (1999-2002) and subsequently with the Progressive Party (2002-2008). The new government introduced further changes to the health system. The New Zealand Public Health and Disability Act 2000 disestablished the Health Funding Authority, which merged with the Ministry of Health. HHSs were incorporated into 21 District Health Boards (DHB). Decision-making was decentralised to the DHBs, which were intended to be community focused, run hospitals and fund all their health services including Public Health and primary care, for a defined population. During the period they also took over disability support and aspects of public health (253, 277). CCMAU became the Hospital Monitoring Directorate (E1).

Appendix 6 provides an overview of the health changes 1980-2002 (reproduced with permission)

8.2.2 CENTRAL GOVERNANCE INFLUENCES INFECTION CONTROL

The Ministry of Health took a very active leadership role in preparation for managing external infectious threats, notably pandemics. It had a clear interaction with DHBs during pandemic
planning, but also took an active interest in auditing Infection Control during the period. Some of these activities including communication with the DHB governance structure as summarised below.

8.2.2.1 ANTHRAX

International infectious diseases were recognised as important during this period. Following a scare in the United States caused by the spore-forming bacterium species *B anthracis* being sent through the mail as a white powder, the NZ Prime Minister’s office issued instructions on how to handle such situations in New Zealand (Nov 2001 ICC minutes). The Outbreak Committee was convened in Christchurch and a draft Guideline was prepared. Community and Public Health also sent the Guideline to all general practitioners. Mailrooms were known targets and security measures were put in place (E2) (ICC Annual Report (ICC AR) 2001/02).

8.2.2.2 SARS AND PANDEMIC PLANNING

In the 2002 IC minutes, it was noted that the Ministry of Health worked on pandemic planning, preparing for a world epidemic of a new influenza strain “Avian Influenza”. An influenza pandemic simulation Exercise Virex, took place over a period, directed by the Ministry of Health. Infection Control was part of the Exercise with the Control Centre placed in CDHB Corporate facilities (ICC Annual Reports 2001/02, 2002/03) (E3).

During the Severe Acute Respiratory Syndrome (SARS) scare in early 2003, the Ministry of Health provided regular communications and case definitions for surveillance of SARS, which assisted the CDHB in its own response. Later the CDHB participated in a commissioned case study by BRC Marketing and Social Research (IC Annual Reports 2002/03, 2003/04) (E4-9).

The IC Minutes 2003/04 noted that the Ministry of Health had made information regarding avian influenza available on its website and also provided a “National Health Emergency Plan: Infectious Diseases” for DHBs (278).

The CDHB began its own preparation which included personal protective equipment (PPE) such as mask fitting (E7-9) (ICC AR 2002/03, 2003/04).

8.2.2.3 STANDARDS NEW ZEALAND

Standards New Zealand completed the Update of the Infection Control Standard 2000/ NZ 8142 and also provided some additional National Guidelines (ICC AR 2000/2001) (10). Some of these Guidelines were updates of the New Zealand Infection Control Audit Tool and
Endoscope Cleaning, Maintenance and Monitoring. (232) The committees preparing these guidelines had representation from the CDHB infection control staff (232, 279) (E 10-11) See Appendix 2 and endoscope section later in this chapter.

8.2.2.4 MRSA GUIDELINES

The Ministry of Health organised an update of the 1992 National MRSA protocol (280). No CDHB ICNs or any from the other South Island tertiary centres were chosen as members of the Update Committee. Two points in the draft National Guidelines were controversial: the screening of staff, where there was a preference for limited screening to a nose screen, and spread of respiratory MRSA. The ICC Minutes May 2002 recorded that a response was sent to the National Guideline Committee with CDHB data, which indicated that 20% of MRSA carriers would be missed if only a nose screen was requested (E16-18)(IC AR (2001/2, 2002/3). (281)

The CDHB experienced notable internal reaction during this period, which is recorded in the section of the Clinical Planning and Policy committee and Clinical Advisory Committee.

8.2.2.5 AUDITOR GENERAL’S REVIEW OF HOSPITAL ACQUIRED INFECTIONS


The CDHB received an official Information Act request in 2004 from the Deputy Chair, Health Select Committee (Sue Kedgley) for a copy of the questionnaire and the report completed by the CDHB as part of the Controller and Auditor General survey.

In response to this request, a letter containing a summary of the report findings was prepared by the CDHB IC Service and forwarded to the Office of the General Manager, Hospital and Specialist Services, CDHB on Friday 28th November ( IC AR 2003/04) ( E23).

8.2.2.6 MINISTRY OF HEALTH: SURVEYS OF HOSPITAL ACQUIRED INFECTIONS

The Ministry of Health released a National Surveillance Consultation Document, however, the short time frame given for response caused a national reaction as it was anticipated the
implementation of the proposed surveillance programme would be a strain on IC staff resources, computer software and clerical staff (ICC minutes of October 2004).

The National Surveillance of Hospital acquired bacteraemia had created some concern among infection control staff especially in larger DHBs. It was questioned whether the collection of data and interpretation of the rules were the same in all DHBs. A consultation meeting was held in October in Wellington with infection control services from throughout the country. A report containing the national DHB infection control summary of discussion and recommendations was completed in November 2004. IC forwarded the documents to the CDHB General Manager Hospital and Specialist Services for consideration and response to the Ministry of Health (E23) (IC AR 2004/5).

The New Zealand Standard for Infection Control requires acute care and surgical hospitals to have established and implemented policies for the use of antibiotics. These requirements have been fulfilled for infection control by the CDHB Medicine Advisory Committee which published antimicrobial guidelines by including the guideline in the CDHB Preferred Medicine List. The CDHB Medicine Advisory Committee not only regularly produced antibiotic guidelines, but also provided advice for other DHBs. The Ministry of Health conducted a survey in 2002 on antibiotic advice in hospitals. When the Ministry of Health published their report, it labelled the CDHB erroneously as non-compliant. The problem arose due to uncertainty over who should respond to the survey (E 24-25) (IC annual report 2002/3).

8.2.2.7 ESR

The Ministry of Health continued providing reference laboratory services through Communicable Disease Centre (CDC) NZ, previously NHI, and during this period renamed ESR. The services provided to CDHB, of special use to IC, were the typing of MRSA and extended-spectrum β-lactamase (ESBL) -producing organisms isolated for IC purpose. Early in the period, ESR was also the only laboratory for Norovirus testing and later it provided molecular typing and epidemiology (E27).

During the period a new web-based national surveillance system for MRSA, ESBL-producing Enterobacteriaceae and other resistant organisms was proposed and designed by ESR (E28-29) (ICC AR 4/5).
Key Informant IV, an ESR Scientist, interviewed in 2009 was asked about ESR involvement in surveillance of nosocomial infections during the period 2000-2008.

She recalled:

*The only thing we have now is this web based surveillance system for the MRSA and ESBL. It requires putting in numbers of MRSA and the number of ESBL producers, numbers of patients in your hospital with MRSA or an MRSA flag at a point in time. It has also got ability, very rudimentary to report outbreaks of any resistant organisms.*

*We had a manager a while ago, in our surveillance unit not on the lab side of things, who was interested in the infection control aspect and, because we have internal research funding, put up the research proposal to develop surveillance for HAIS infection. I said you have to go sell this to the managers of ESR that this is something that really needs to happen, but I think you are wasting your time; ESR has been burnt so many times. But he put up a proposal and it just got wiped.*

8.2.3 INSTITUTIONAL GOVERNANCE OF INFECTION CONTROL

The Corporate “proposal for change” document in 2001, after the introduction of the District Health Board, did not mention Infection Control. The previous structure had placed Infection Control under the Laboratory and Support Services Division with reporting line to the GM of the division. However, the division did not exist under the new structure with the previous GM leaving and no replacement proposed. IC sent a submission to the Board’s Chief Operating Officer (ICC AR 2000/01) (E202).

During the latter half of 2001, the CHL raised questions regarding how Infection Control Services fitted into the District Health Board structure when the change took place. This concerned all the CDHB’s hospitals, especially those from the previous Healthlink South, and Public Health. Questions regarding possible changes to the composition of the Committee and other relevant issues were also raised. The Board’s Risk Manager, as member of the ICC, was asked to investigate the issue. However, no significant changes were proposed (ICC AR 2001/2). Appendix 3 and 4 show the structure of Canterbury Health Ltd in 1999 and the CDHB in 2001.
8.2.3.1 CLINICAL PLANNING & POLICY COMMITTEE (CPPC)/CAC/CLINICAL BOARD

The Clinical Planning and Policy Committee was initially established in 1997 (see 6.3.3.4) as an Advisory Committee to the CEO, involving senior medical, nursing and allied health staff in clinical policy decisions, in response to senior clinicians’ concerns over the clinical implications of the CHE’s operational decisions. The IC Annual Report 2000/2001 noted that the Clinical Planning and Policy Committee had changed its name to Clinical Advisory committee during the year.

In 2000, Clinical Planning and Policy Committee was initially interested in IC protocols and guidelines related to multi resistant organisms and indicated this through correspondence to ICC. One of the Medical Advisors drafted a protocol (E30-34).

The following year the IC Service and the MRSA policy came under scrutiny by the Clinical Advisory Committee. The Chair of Clinical Advisory Committee advised the ICC that some CDHB Staff had raised questions regarding IC practices in Christchurch hospitals (E30-31).

He wrote, “The practices related principally, but not exclusively to the MRSA control policy. The Committee wanted to be reassured that the current practices were necessary and that the MRSA control was being achieved at a reasonable cost” (ICC Minutes 6 August 2001) (E35).

The Clinical Advisory Committee used “flyers” to inform staff about minutes and Agenda items. The MRSA policies and complaints had been mentioned in these flyers from May and October 2001. The December ICC minutes recorded that the ICC chair met with the Clinical Advisory Committee Chair to discuss the issues. The ICC requested copies of the complaints so the issues could be addressed. The Chair of IC was informed that there were no written complaints available, only “word of mouth”. The Clinical Advisory Committee Chair and the Chief Operating Officer made an appearance at the March 2002 ICC meeting further addressing different aspects of the MRSA Protocol, the structure of the ICC and its policy preparations (E36). The distribution of the ICC Minutes, documenting the Clinical Advisory Committee’s address, resulted in several letters to the ICC from senior clinicians responding to the information (E37).

The April meeting minutes indicated that the Chair was aware of some of the background to the discontent with the MRSA protocol, judging from correspondence following MRSA outbreaks in 2000 and 2001 (ICC AR 2000/01, 2001/02). The redrafting of the MRSA policy was initiated at that time at the request of the acting CEO (E 38-41). An ICC member offered
further comments at a later ICC meeting regarding the CAC’s approach: *The Clinical Advisory Committee are now far more accessible by staff members and a lot of information is getting passed on to them.* The meeting was told that after reviewing previous correspondence it appeared that the initial dissatisfaction had begun during the third MRSA outbreak, which took place at Burwood Hospital, at the end of the previous period (Period D).

In the following months, the Clinical Advisory Committee Chair continued the communication regarding how ICC recommendations should become policy and suggested that the Clinical Advisory Committee became involved (E42). In 2003, a committee named the “Clinical Board” which was chaired by the Chief Medical Officer replaced the Clinical Advisory Committee. Allied Health (Pathology) provided one committee member to the Clinical Board. For the first two years, this member was the microbiologist, who was also Chair of the ICC. The CB initially decided that the Infection Control Committee and other committees should not report to them unless there was a specific need. However, by 2004, ICC and ICS communication indicated that Clinical Board was requesting communications and protocols from ICC (E44-46). In its 2007 Terms of Reference one of the Clinical Board’s purposes were to *Co-ordinate and support the work of the appropriate specialist clinical advisory committees e.g. Infection Control etc.* The Clinical Board was also interested in the water cooler issue (see later) (E47, 48).

### 8.3 PROFESSIONAL INFLUENCES ON INFECTION CONTROL

This section on professional influences documents the activities of the infection control team (ICT), the team’s work and education. It also documents influence of the ICC, its work, members and reporting lines.

#### 8.3.1 INFECTION CONTROL OPERATIONAL TEAM

The Infection Control Operational Team consisted of the Infection Control Nurses (ICNs) and the Director of Infection Control, the latter also the Microbiologist of the team. The other microbiologist and the microbiology registrars provided input to infection control work by covering infection control after routine hours and on weekends, as part of their microbiology on call duties.

By early 2000 Christchurch Hospital had 2.0 FTE ICNs of which 0.5 FTE was employed with CDHB wide responsibilities, a left over from the infection control liaison officer (ICLO) position. The position for the ICN for the Intellectual Handicap Centre had ceased to exist.
The ICN for Older Persons Health, the Princess Margaret Hospital became part of the group in 2004, having worked the Princess Margaret Hospital during the Healthlink South period. The group of ICNs had become more stable; however, there was still a considerable turnover of staff and often periods of vacancy while waiting for the new employee to start.

The number of ICN positions in the CDHB’ Hospitals over the five periods (A-E) 1978-2008 are shown in table 8.1. It shows the number of staff changes in each period and months of vacant positions. The table shows that period A covering 11 years only had one position and five staff changes. The number of staff increased to seven in period B and nine in period E. Period B and C show long periods of unfilled positions, increasing workload for employed staff. Period B especially shows a high number of staff changes over the four years.

**Table 8.1 Infection control staffing 1978-2008**

<table>
<thead>
<tr>
<th>Period</th>
<th>Number of years in period</th>
<th>Number of positions in each period</th>
<th>Number of staff changes in each period</th>
<th>Number of months of vacant positions in each period</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 1978-89</td>
<td>11</td>
<td>1</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>B 1989-93</td>
<td>4</td>
<td>7</td>
<td>13</td>
<td>23</td>
</tr>
<tr>
<td>C 1993-96</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td>40</td>
</tr>
<tr>
<td>D 1996-2000</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>E 2000-08</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>7</td>
</tr>
</tbody>
</table>

Fig. 8.1 shows the duration of employment of individual ICNs recorded from the year of employment. Three ICNs’ employment periods feature twice. One was employed twice in period A; one in period A and B, both time in same hospital; the third was first employed in one hospital during periods B, C, and D and in another hospital during Period E. The large number of months with vacant position in Period C (1993-96) was due to non-employment of an ICN in the Mental Health Division (Sunnyside Hospital/Hillmorton). Vertical axes: length of employment (months) of each IC staff in each hospital, recorded from year of employment in the designated hospital. Christchurch1 was employed to covering all hospitals 0.5FTE.
8.3.1.1 STAFFING RESOURCES

In 2000, the accreditation surveyors commented on the low level of staff resources for ICS resulting in an increase of 0.8 FTE at Christchurch Hospital (E86, E87). The ICC Minutes of May 2007 recorded a submission to the Professional Advisors Medical and Nursing for an increase in IC staff. IC wrote the proposal in response to action points from the certification assessment of Christchurch and Burwood Hospitals. Internationally, CDC recommendation of the 1970s, for 1 ICN/250 beds, had been reviewed. Hospitals had become more complex and there was an increased risk worldwide of antibiotic resistant organisms. A revised figure of 1 ICN/150-180 beds had been proposed (282). The Professional Advisors decided to hold a review; however, the review changed into a review of Infection Control in Canterbury (ICC AR 2006/7, 2007/8). At the time of writing, the issue of number of staff needed is still outstanding as well as the accreditation’s “Action Point”, which needed to be addressed or explained at later accreditation visits.

**Figure 8.1** IC Staff’s length of employment (months) in each hospital 1978-2008 from year of first employment in hospital.
8.3.1.2 INFECTION CONTROL WORK

The basic infection control work was still surveillance and audits, education of staff, and writing protocols and guidelines. The pressure from central government on the CDHB regarding reporting of quality data, certifications of hospitals and pandemic preparation resulted in increasing and broadening the IC work.

8.3.1.2.1 SARS AND PERSONAL PROTECTIVE EQUIPMENT

Both the world SARS scare in 2003 and pandemic preparation provided extensive work for the IC Service. Monthly ICC Minutes reported work with education, planning meetings and assessment and reports on ‘personal protective equipment’. The Infection Control service (ICS) provided an estimate of ‘personal protective equipment’ requirement for hospitals to the Ministry of Health (E4, E49). It was reported that the Ministry of Health would provide funding for the ‘personal protective equipment’ with DHBs leading co-ordination of supply across the health sector (E50-51). There was also discussion about mask fitting of the N95 masks and whether the Health and Safety Team should provide the service (When the occupational health service was established in 2005 it became part of the health and safety department as recorded in 8.5). The use of the N95 was investigated by ICS in a pilot mask wearing exercise, which involved comparing masks worn in a hospital ward, and the effect on staff. The exercise recorded that staff found it difficult to wear a N95 mask all day (E52, E53) (ICC Minutes May, August and September 2003).

8.3.1.2.2 SURVEILLANCE AND AUDITS

Some of the routine work of the Infection Control Team was surveillance and audits (Summarised in the Annual Reports 2000/01 to 2007/08). The Infection Control Service continued to provide surveillance of hospital acquired Bacteraemia or Blood Stream Infections (HABSI). This surveillance was one of the Board’s Infection Control Indicators reported monthly to the Hospital Monitoring Directorate of the Ministry of Health. At one time in 2003/4 the figures were above the agreed threshold. This caused concern, with a letter to ICC from the CDHB’s Corporate Office inquiring about the Nosocomial Bacteraemia report, requesting an update and a response. ICC had initially set the Bacteraemia rate’s threshold for Canterbury Health Ltd at 0.6, but the Australian Counsel of Healthcare Standards Programme, which had been adopted by the CDHB, recommended an aggregate rate for public hospital of more than 500 beds of 0.54. The ICC accepted this change, which could easily be achieved, as the level at that time was 0.4-0.42. (ICC 2003/4 Annual report)
Later on, the surveillance for the national monitoring scheme was changed to include only Hospital Associated Bloodstream Infections (HABSI) caused by \textit{Staphylococcus aureus}. However the IC Annual report on HABSI continued to monitor all nosocomial infection caused by all organisms (ICC AR 2003/04, 20043/05) (E55-57).

There were few questions asked at ICC or at CDHB level regarding the statistic provided from the national monitoring scheme. Key Informant IV (from ESR) interviewed 2009 was asked who analysed the reports to CCMAU.

The comments were: \textit{I remember our epidemiologist and me going along and talking to the section about that and our epidemiologist (name given) actually analysed the data for them once or twice. Later I think the Microbiologist had been doing it, because they didn’t have anybody with a medical background to do it, they had accountant type people. So he did it for a while, I don’t know who is analysing the data for them or if they are just doing it themselves now.}

During the period 2000-2008 the IC staff carried out a number of surveillance of Hospital Acquired Infection (HAI) related to HABSI and surgical site infection. While HABSI were reported regularly to clinical staff and a yearly report issued, surgical site infection were irregularly reported with the exception of orthopaedic surgery at Burwood and wound infection following caesarean sections at Christchurch Women’s Hospital ( see table 8.2)

\textbf{Table 8.2} Hospital Acquired Infections Surveillance (HAIS) 20000-2008 by IC Service at different hospitals, year(s) reported and receivers of reports. (E59, E60) (E61)

<table>
<thead>
<tr>
<th>Surveillance</th>
<th>Year reported and to whom reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound infections vascular surgery Christchurch Hospital</td>
<td>Clinical staff and ICC (2000/01)</td>
</tr>
<tr>
<td>Cardiac surgical site infections Christchurch Hospital</td>
<td>Clinical staff and ICC( 2001/05)</td>
</tr>
<tr>
<td>Wound infection caesarean sections Christchurch Women’s Hospital</td>
<td>Yearly to clinical staff and ICC</td>
</tr>
<tr>
<td>Surgical Site Infection orthopaedic surgery at Burwood hospital</td>
<td>Yearly to clinical staff and Burwood ICC</td>
</tr>
<tr>
<td>All Hospital acquired Bacteraemia</td>
<td>Timely to patient’s Consultant and Monthly and Yearly reports</td>
</tr>
<tr>
<td>Hospital acquired Bacteraemia with \textit{Staphylococcus aureus}</td>
<td>To Quality for reporting to Hospital Monitoring Directorate</td>
</tr>
</tbody>
</table>
Other HAI of patients or staff were:

- Yearly monitoring of infectious diarrhoeal organisms: *Clostridium difficile*, Rotavirus and Norovirus outbreaks.
- MRSA infection or colonisation in patients and staff.
- Blood and Body fluid exposure (BBFE) incidents in staff.
- Influenza infections in hospitalised patients.
- Monitoring of antibiotic resistant organisms reported from the community by IC personal (E558).
- Monthly air sampling for Aspergillus in Bone Marrow Transplant Unit (BMTU) and Children’s Haematology and Oncology Centre
- *Legionella* culture of hospital domestic hot water and air conditioners.

Several other surveillance activities were documented in the ICC Annual reports during the period.

Audits were also carried out regularly or as required. Examples of audits during the period are:

- Standard Precautions Audit (2003/04)
- Cleaning audits in each hospital once to twice a year. (E62)
- IV audit, peripheral inserted central lines (PICC line) audit and an environmental audit at the Princess Margaret Hospital (2003).
- MRSA audit in the Emergency Department 2003/04
- Anaesthesia hygiene audit 2004/05 (E63)
- IC Surgical and Medical Cluster audit from 2006-2008
- Occasional antibiotic audit

A staff satisfaction questionnaire regarding services provided by ICS was also carried out (E64).

8.3.1.2.3 ACCREDITATION/ CERTIFICATION
The Infection Control Service became involved in the preparation for hospital accreditation and certification, which included assessment of the IC Service as well.
Between 2000 and 2006, the Ministry of Health’s Certification Team and Quality Health New Zealand (QHNZ) Assessment Survey for Accreditation visited the CDHB Hospitals. In each Hospital, the IC practitioner had been working closely with the quality team. IC Protocols and Guidelines were increasingly prepared for Board wide use, but each hospital was still assessed individually. In most surveys, the Infection Control Service had their work acknowledged with only minor corrections and improvement requests (E65).

8.3.1.2.4 INFECTION CONTROL’S INVOLVEMENT IN BUILDING AND RENOVATION ACTIVITIES

Infection Control staff had historically been involved in providing advice during building, mainly renovation projects, during the previous periods, but the scale of involvement increased during this period (E66). Several Building Codes had to be consulted to provide information regarding ventilation, filtration of incoming air supply e.g. Hepa-filtration or EU 8 (A European standard for filtration), mixture of fresh and recycled air, size of rooms etc (E67-70). The New Zealand Building Code had not been updated since 1992, and one comment in the IC minutes referred to ventilation for smoking rooms (275). The Infection Control Service had to research the risk to patients during construction and renovation especially with regard to the risk of infection with *Aspergillus species* (E71-74). The following involvement in construction was recorded:

- A new Dental Department: discussion regarding air supply using fresh or recycled air without Hepa-filtration (IC Annual Report 2000/01).

- Site Redevelopment: IC input on the draft on the Christchurch Women’s Hospital development plans especially regarding isolation facilities. Subsequent discussion of further details for example in regard to birthing pools (E75) (IC Annual Report 2001/02).

- ICS sign off on the major construction of Christchurch Women’s Hospital, and renovation of the Bone Marrow Transplant Unit (BMTU), Renal Unit, and Gastrointestinal Investigation Unit. (E76) Weekly or fortnightly meetings were held with clinical groups concerned with the risk to patients during construction and the precautions to be put in place. (E77) There were concerns about ventilation in the Riverside block which contains Children’s Haematology and Oncology Centre, as there was no filtration of the air supply. It was proposed that filtered air level to EU8 standard be supplied to identified risk areas and the windows sealed (IC Annual Report 2002/03).
- Renovation of the Gastroenterology Day Unit and Respiratory Units, modifications to the loading bay (used for supply and kitchen waste), Bone Marrow Transplant Unit Day Stay area, Endoscopy Suite including area for bronchoscopy and discussion regarding humidity control in operating theatres. (IC Annual Report 2003/04) (E74).

- There was continuous discussion regarding air supply issues and problems with the site and function of the new Theatre Sterile Service Unit at Christchurch Hospital. Plans for the new Oncology Centre and an isolation area in for the new Home Dialysis/Diabetes Centre also requiring ICS involvement. (IC Annual Report 2004/05)(E78, E79).

- At Burwood Hospital discussions were held regarding Theatre Sterile Service Unit, isolation rooms, ventilation, and anaesthetic rooms in the hospital’s construction plans (ICC Annual Report 2005/06).

- The Infection Control Service reported the proceedings of the construction and renovation meetings on a regular basis to the Infection Control Committee. The meetings continued after Christchurch Women’s Hospital project was finished with the aim of keeping the infection control service informed regarding construction and renovation projects and ensure infection control precautions were included (ICC Annual Report 2006/07).

8.3.1.2.5 GUIDELINES AND PROTOCOLS 2000-2008

A large number of protocols and guidelines were prepared or updated several times during this Period (E). In the last few years the ICC Annual Report also summarised division specific protocols (E80, 81, 83). At least 41 protocols and guidelines were listed in the Annual Reports 2000/2001 to 2007/8. Please refer to Appendix 2 for the full list from the period.

A number of major reports were also compiled yearly such as Annual Nosocomial Bacteraemia Report and BBFE Report (2000/01-2007/08) (E82).

8.3.1.2.6 IC EDUCATION FOR HEALTH CARE STAFF

The IC staff carried out extensive infection control education for hospital staff. New employees received staff orientation. It was noted that the number of staff receiving such information at Christchurch Hospital alone was 712 in one year. In-service education was provided for medical students, various groups of health workers and other hospital staff. (E84, E85) During the construction phase of the new Christchurch Women’s Hospital site the construction workers were initially given weekly orientation and later fortnightly orientation.
on the risk of infection. During the SARS scare, orientation was given to health workers on personal protection, including practical sessions on the use of personal protective equipment (PPE). In one year it was noted that the ICNs had provided 62 hours of education to 1059 staff members.

A study day was held yearly for ‘infection control representatives’, the new title for the IC Link Nurses. In 2002, 34 attended the study day and by the end of the period the study day had become so popular that it had more than 100 attendees (ICC Annual Report and “Achievements of Operational Plan” 2000-2008).

8.3.2 PROFESSIONAL EDUCATION AND EMPLOYMENT OF IC STAFF

The achievements against the operational plan of professional education and the educational activities for staff were summarised in the Annual Report each year.

The Infection Control Practitioners Certificate from Waiaariki Institute of Technology in Rotorua had become the academic requirement for infection control specialty training, according to the job description at that time. Each new employee was required to attend the three part Certificate papers. The rest of the training took place ‘on the job’. In 2002/3 it was noted that three ICNs completed Part Three of the Certificate. It was also noted that the ICNs attended the Annual NZ Infection Control Nurses Conference regularly and relevant textbooks were purchased (ICC Annual Report 2003/4). The Service had subscriptions to relevant journals and established a “journal club” reviewing a number of journal articles each year. Key journals/articles were distributed to IC operational staff on a ‘round robin’ basis. A number of Infection Control posters and papers were presented to conferences during the period and a few publications were achieved. A South Pacific Teleclass education initiative for IC staff development began in 2006/7. (ICC Annual Reports “Achievements of the Operational Plan” 2000-2008)

In 2006 the Infection Control nurses underwent a job scoping process and were disappointed that they and most of their colleagues nationwide were not acknowledged at the level to which they aspired. They had already changed their title to Infection Control Nurse Specialist in early 2000 (IC AR 2006/7) (Infection Control Operational Group meeting 2006).

There was another attempt in 2005, by the national group of infectious disease physicians and medical microbiologists, to form a combined (with ICNs) New Zealand Infection Control Group. The proposal was discussed at the CDHB ICC, but there was no further
documentation available that it had been discussed by ICNs nationally (ICC Minutes 7 November 2005).

8.3.3 INFECTION CONTROL COMMITTEE, ICC MEMBERS, REPORTING AND ACTIVITIES

8.3.3.1 THE MEMBERS OF THE ICC:

The Infection Control committee met approximately 10 times each year during the period. For the first year (2000/01) the main members were from Canterbury health Ltd and Mental Health Division of Healthlink South, the latter represented by the Healthlink South Risk Manager. The CDHB structure was introduced 2001/2002 and Ashburton joined the Committee in 2002/3. The main members were microbiologist(s), the Director of Nursing and Operating Theatre. Medical, Surgical, Orthopaedic, Obstetrics/Gynaecology and Infectious Diseases Services were represented by Medical Specialists. The Medical Officer of Health had been a member since 1986. Hillmorton Hospital was represented only during the 2000/01 Year. Each hospital had an infection control practitioner as members. The Princess Margaret Hospital’s ICN, representing Older Person’s Health, joined in February 2004. The Risk Manager from CH was also a member. Until Older Persons Health the Princess Margaret Hospital joined, the previous Healthlink South division was represented by the Risk Manager. The recently established Occupational Health Service joined in 2005. The Risk Manager for the CDHB was replaced by a Quality Manager in 2004. The last additions were representatives from Pharmacy and Sterile Services in 2005/6 (E91). The orthopaedic and surgical representatives ceased to attend and later resigned from 2004/5. The operating theatre representative later took up the surgical representation (ICC Annual reports 2000/2001 to 2007/2008) (E92, E93).

8.3.3.2 ICC AND IC PROGRAMME

In 2004/05, the IC Programme changed its name to Infection Prevention and Control Programme. Every year a draft of the programme was circulated to Clinical Directors, Directors of Nursing and senior managers for comments and suggestions before it was accepted and sent to the Board. This procedure was documented in the IC Minutes between April and July each year (E88-90).

In 2004/05, the IC Programme changed, as each hospital was required to have its own Infection Prevention and Control Programme for certification purposes and a summary of these IC programs were collated in a CDHB IC Programme for corporate use. See Appendix 5 for ICC Structure in 2005/06.

8.3.3.3 DIVISIONAL AND OTHER ICC COMMITTEES

During this period there were multiple Infection Control Committees, which directly or by having joint members, reported to the CDHB ICC. These IC Committees were:

- The Intensive Care Unit ICC (Christchurch Hospital) which was established following the Acinetobacter outbreaks. It met regularly until the 2003/4 year (E94).

- The Canterbury Regional ICC which met only 4 times in the 2000/01 year (95).

- Burwood hospital and

- Older Persons Health, the Princess Margaret Hospital were noted to have ICC committee meetings in 2003/04 (E96-99).

- Women’s Health Division met monthly until late 2004. From that time Christchurch Women’s Hospital and Christchurch Hospital only had representation via the CDHB Committee (E100-103).

- Ashburton ICC was recorded as established in 2005 (ICC Annual Reports 2000/2001 to 2007/2008).

8.3.3.4 REPORTING LINES FOR ICC

The reporting lines for ICC, the Divisional ICC and the Director of Infection Control Services became increasingly complicated during the period. Table 8.3 summarises the reporting line for ICC 1978-2008.
Table 8.3 Reporting lines for Infection Control Committee 1978-2008

<table>
<thead>
<tr>
<th>Period/Years</th>
<th>ICC reporting line to the institutional governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: 1978-1989</td>
<td>Canterbury Hospital Board’s Medical Superintendent-in-Chief.</td>
</tr>
<tr>
<td>B: 1990-1993</td>
<td>Canterbury Area Health Board’s Professional Advisor, Medical services.</td>
</tr>
<tr>
<td>C: 1993-1996</td>
<td>General Manager Diagnostic and Support Services</td>
</tr>
<tr>
<td>D: 1996-2000</td>
<td>Risk Manager for Canterbury Health Ltd and the Professional Medical Advisor for Healthlink South</td>
</tr>
<tr>
<td>E: 2002-2003</td>
<td>CDHB Chief Operating Officer</td>
</tr>
<tr>
<td>E: 2003-2005</td>
<td>CDHB General Manager Hospital and Specialist Services</td>
</tr>
<tr>
<td>E: 2005-</td>
<td>CDHB Chief Medical Officer</td>
</tr>
</tbody>
</table>

The reporting was usually preformed by the Chair of the ICC. During period E, each Divisional IC Committee had its own Terms of Reference and reporting structure within the Division. The Director of IC was a member of several of the Divisional Committees with the exception of Ashburton/Rural Health and Mental Health Services. The Minutes of the divisional ICC meetings were submitted to the CDHB ICC and the Divisional ICNS gave reports at the monthly ICC meeting. Issues reported to the CDHB IC Committee were summarised in the Annual Report. The Operational Plan for the coming year was published in July and the analyses of achievements of the operational plan were published with the Annual Report for the year. The Terms of Reference was updated regularly with suggestions from members and senior staff. It was noted that some communication regarding the ICC Terms of Reference went via the Chief Medical Officer in 2004 (E104, E105).

Before the annual operational plan was issued it was circulated to hospital managers, chairs of services and nursing administration (ICC Annual Reports 2000-2008) (E30). Since 1992 the Director of ICS has been accountable for the ICS budget to the GM Laboratory and Support. The budget held the salaries of the IC staff in the IC Unit and the budget for the MRSA screenings of staff and patients. The Divisional ICC reported mainly to the General Manager and Medical and Nursing administration of the Division.
8.3.4 KEY ISSUES DEALT WITH BY ICC AND IC-TEAM

Some examples of the important work of the ICC are summarised below. The ICC had several subcommittees working independently, but reporting to the ICC. Some of these committees have been mentioned in previous chapters.

8.3.4.1 OUTBREAK COMMITTEES

Each hospital had activated their own outbreak committees regardless of whether of the same organism, such as norovirus affected more than one hospital simultaneously. Outbreak committees dealing with norovirus were recorded as meeting several times during the years 2004-2008 at Christchurch and the Princess Margaret Hospitals. The Corporate Communication Manager was noted to be part of those committees managing the communication to all CDHB hospital staff and the community (ICC correspondence from outbreak meetings 2004-2008). The Specialist Mental Health Services also had outbreak meetings during 2005-2008. A number of other outbreaks, apart from Norovirus, took place during the last three years of the period. Both Christchurch Women’s Hospital and the Princess Margaret Hospital had minor MRSA outbreaks requiring only one or two meetings of an outbreak committee. The Princess Margaret Hospital had a minor influenza outbreak in 2006. An outbreak at the Princess Margaret Hospital caused by Streptococcus Gr. A is reported in detail in section 8.4.5.

8.3.4.2 ISOLATION ROOMS

The availability of suitable isolation rooms especially with negative air pressure and en-suite facilities continued to be an item for discussion and recommendation from the ICC. The only areas with suitable facilities were the Intensive Care Unit (3 rooms) and the Bone Marrow Transplant Unit (1 room). The discussion became acute when an elderly visitor from an Asian country was diagnosed with multiresistant tuberculosis. The respiratory ward had no suitable facilities and as a result the patient was transferred to an empty ward and staff protection was provided by a mobile Hepa-filtration unit. Later the patient was moved to a facility called ‘the old Matron’s flat’. In the meantime two rooms in a ward were converted to an isolation facility. The patient stayed in that unit until she died more than a year later. It was impossible to render the patient non-infectious (E106-108).

After this incident, isolation facilities were discussed for Burwood Hospital and the Respiratory Ward at Christchurch Hospital. By 2002/3 the lack of infection control isolation
rooms available in the Christchurch Hospital Emergency Department was highlighted during the SARS alert.

By 2004/5 The ICC Annual Report noted that two negative pressure rooms were available for use in the Respiratory Ward. During alterations to the Spinal Unit, Burwood Hospital, two suitable isolation rooms were also built. The need had already been established during the MRSA outbreaks early in the period. (E109-110) Following this, during the planning of any building and major renovation, isolation rooms were discussed and provided in several areas (E111, E112). For example during the building of the new Christchurch Women’s Hospital, the hospital was provided with two rooms on each floor with negative air pressure and en-suites for admission of patients with infections. However, concern arose during 2007/8 over whether the negative pressure was operational and whether the staff knew how to operate it. All isolation rooms were investigated and some defects found, with remedial work required. Several meetings were recorded between the engineers and the IC Service (ICC AR 2007/08).

8.3.4.3 WASTE

Infectious waste from wards and departments was rarely discussed at the ICC during the first years of the period, but later became an important addition to the Infection Control interest area. Infection Control was involved in making and distributing posters on waste segregation, storage of waste contaminated with radioactive material and blood & body fluid and transport of waste. The last item involved scrutinising the loading dock which needed upgrading as it was not expected to pass hospital accreditation review (ICC Annual Report 2000/2001) (E113, E114). Reports to the ICC indicate that during the updating of the New Zealand Waste Standard NZS 4304:2002 the CDHB was informed by ICC that the CDHB Medical Waste Policy needed updating in accordance with the new Standard (ICC Ann Report 200/1) (E114, E115).

The NZ Waste Management Standard 2002 was released by Standards NZ in 2002. The standard stipulated the requirement for three waste streams; Infectious Waste, Controlled Waste and General Waste. The controlled waste required a sanitary landfill, which was not available in Canterbury. Incineration of waste would be unavailable from 2004 and autoclaving was being the preferred method for inactivation of infectious waste. The Christchurch City Council held a Waste Meeting to discuss how to get health care providers and industry to comply with the standards. The meeting was attended by the Clinical Director (CD) ICS (W50) (ICC Ann Report 2001/2) (E116, E117).
As previously reported, since April 1997 the CDHB had required the Waste Contractor to have a contingency plan for incinerator breakdown (see 7.3.3.2):

*The Canterbury Operations Contingency Plans for Emergency Breakdown of the high temperature incinerator states that any period of breakdown or programmed maintenance shut-down exceeding two working days will be notified to the Manager Hospitality Services at the beginning of day three.* It also states “that any decision to ship waste off site to Dunedin will be made in consultation with the Manager Hospitality Services or his nominee."

An incident reported to the ICC by Medical Officer of Health, Dunedin involved a blood spillage from a waste contractor’s vehicle in Dunedin. The incident investigation revealed that the waste did not come from the CDHB, but did show a breakdown at the Christchurch incinerator had not been reported according to contractual requirements (ICC Ann Report 2002).

The CDHB established a Waste Committee to investigate recycling issues, waste separation, the preparation of a new Waste Policy and new requirements from Standards New Zealand (NZS4304:2002) E116,117)(282). It was recorded again that the incinerator was to be decommissioned in 2004 and replaced by autoclaving. This created a problem for the disposal of anatomical waste and human tissue which previously had been incinerated. Alternative methods for disposal of amputated limbs, for example whilst maintaining a level of cultural and religious sensitivity, required consultation with Māori. The method chosen was cremation (ICC Annual report 2003/04) (E118-121).

A new waste contractor was engaged in May 2004 after a tendering process. The contract stipulated the extra requirement of cremation of human body parts and a new destruction method for dealing with sharps after autoclaving. Initially the sharps waste was sent to Auckland for incineration, but later when the machinery had arrived the sharps waste was supposed to be shredded before being dumped. This process caused continuous problems as the sharps boxes were used for all infectious metal waste including prosthetic hips. The attempted shredding of this waste made the machine break down (E122-124) (W13, 14, 15). An incident with injury to the waste contractor’s employee resulted in a meeting amongst waste customers to look at the disposal of sharps at the waste contracting site. Investigation found that the grinding process was inadequate and employees were required to sort through the sharps waste prior to shredding. As a result a letter was drafted to the Environment Canterbury suggesting a possible exception to the waste standard, so that sharps can be
autoclaved and disposed of directly to landfill. Unfortunately this issue remains unresolved (ICC Annual reports 2004/5, 2005/6, 2006/7, 2007/8) (E125-8).

8.3.4.4 ENDOSCOPE SUBCOMMITTEE

The ICC received regular information about endoscope monitoring. Due to the toxicity of Gluteraldehyde used for high-level disinfection of the scopes, the Gastroenterology Unit changed to a product called OPA, which was supposedly less smelly and less toxic. There was a quality control concern that colonscopes were still returning positive cultures after they had been checked for defects by the service provider. A letter was sent to the Ministry of Health, regarding the recall of patient who had had investigation with a culture positive scope (E129). However, the ICC agreed that this was a quality control concern of the cleaning process, not an assurance that each scope was sterile. The problem was solved however, when one of the gastroenterologists proposed that the positive culture was a result of the cleaning being performed with the scopes in an outstretched rather than a coiled position. When the procedure was changed to vertical cleaning the problem disappeared (E130) (ICC minutes 2000 and ICC Annual Report 2000/01).

One person from the ICS team was a member of the Standards New Zealand committee set up to develop a Standard for Endoscope cleaning and disinfection. The result was a “workbook” rather than a Standard due to the limited international evidence for some of the recommendations (E6, E131, E132)(283, 284). However, the workbook was accepted nationwide and there were no enthusiasm for the scheduled review proposed for two years after publication. During 2002/03 a new Endoscopy Unit was planned. It was decided that Respiratory and Gastroenterology should share a new endoscopy suite. The service requested IC advice on the choice of disinfection and sterilisation systems and the proposed layout (E133).

Some meetings were held on the planning of the new Unit. The high level disinfection and sterilisation of the endoscopes required a specific area for the cleaning and disinfection by OPA and Steris. Ventilation both for infection precautions and for protection of staff from chemical fumes were required (E134-137).

The period was not without some endoscopy drama. IC was informed, via an incident report, during a Sigmoidoscopy, that the rubber tubing and rubber bladder was found full of blood from a previous investigation. The Sigmoidoscope was disposable, but the rest of the equipment was not. Further investigations revealed that the non-disposable equipment was not
always cleaned between investigations. A protocol requiring Central Sterilisation Services Department processing was instituted (E138-140).

8.3.4.5 REUSE OF SINGLE USE ITEMS COMMITTEE

The Reuse of Single Use Items Committee had been operating for half a decade and had reduced the number of items accepted for reuse to a final list. The summary of comments from the ICC Minutes over those years (2000-2008) demonstrates the attempts to get a final decision on reuse implemented locally as well as nationally (E141).

In 2001-02 the Reuse of Single Use Items Committee met regularly and in June 2002 presented a briefing paper to the Corporate Executive Management team which recommended: 1. The introduction of a no reuse policy with EP catheters as the only exception; 2. That the policy and practice was reviewed in one year considering changes that have occurred in practice in other countries; 3. that the Ministry of Health be encouraged to produce a clear policy statement that determines whether devices labelled as single use devices will be reused or not. The paper was accepted and the General Managers were notified of the change in policy by the Chief Operating Officer (E142-143).

During 2002-3 the Committee anticipated that it would be disestablished. However, the no-reuse policy implemented August 2002 was reported as being deferred for two further years (E144) due to concern that the costing of the policy was inaccurate and some items, especially from Anaesthetics, had not been included. The estimated cost of the no-reuse policy was reported to have increased from $250,000 to $1.2 million. The Committee recommended that the no-reuse policy not be revoked but implementation delayed at Christchurch Hospital. It further recommended that the Reuse Committee become a “Specialist Advisory Committee on Reuse of Disposable Items” to the Hospital Management Committee or Cluster Groups and the Reuse Committee only evaluate whether the item can be cleaned, its stability etc. and the Clinical Director of the department, submitting the item, would then accept or reject the item for reuse, making them responsible for the reuse (E145) (E146).

In 2003-4 the Corporate Solicitor was reported to be concerned that there may be litigation risks if, clinical directors chose to reuse items after the Specialist Advisory Committee had declined them. In 2004-6 the Single-use Item Committee only met when necessary. Comments in the minutes indicated the members felt that the committee was ‘in limbo’. The CDHB had not decided to implement the policy of no reuse of single-use items at Christchurch Hospital. It was also noted that new legislative requirements would take effect in
Australia from December 2005 with respect to re-use of single use items. It was unknown whether this would provoke legislative changes in New Zealand. The situation noted in 2005/06 was acceptance of by the CDHB of a limited re-use of single use items at Christchurch Hospital only. It was also noted that the Committee now reported to the Chief Medical Officer and the Clinical Board (ICC AR 2005/06).

During 2007-8, it was reported that the policy had expired in July 2007. The Chief Medical Officer, however, confirmed that the current policy on re-use of single use items was still active, even though it is out of date. However exceptions to policy could only be approved by the Clinical Board. The ICC subgroup should only provide advice on the ability of the item to be cleaned and sterilised and the Clinical Board would be liable for the reuse of any single use item accepted by the Committee. It was reported that staff needed clarification about re-use status and how they could find it on the CDHB website. This information was supplied via a CEO’s newsletter and the policy was re-dated (E147). Despite this information being available some reuse was taking place. For example an item was submitted to the GM and accepted for reuse without going through the Clinical Board. (Correspondence to ICNS Burwood June and July 2008) (ICC CDHB Meeting minutes August 2008). It was expected that the new Health & Disability standards in February 2009 would state that there should be no reuse of single use items unless on the manufacturer’s recommendation or published evidence to its safety as written in circulated draft edition. However, this statement was not included in the final version; instead it is left to individual DHBs to decide on policy of reuse. The Press commented on the reuse issue in 2001 with the words: Christchurch Hospital involved in equipment recycling row (E148).

8.3.4.6 MEFIX

The Mefix issue had its last entry in ICC minutes of December 2000. An increase in surgical wound infections and the use of unsterile Mefix were both noted. The surgeon was contacted regarding the infections and the Sterile Services for the sterilizing of Mefix. However, it was reported that an alternative sterile product had been trialled, which could be used in the future (E150, E151).

8.4 OUTBREAKS AND PROLONGED INFECTION ISSUES

A number of outbreaks were experienced during the period (2000-2008). However, the period saw a change in source, from MRSA to viruses causing diarrhoea and vomiting.
8.4.1 MRSA

MRSA Outbreaks continued unabated during 2000-2002, but at much lower levels than in the previous period. Most involved just one ward, four or fewer patients and one to three staff members. Figure 8.2 gives an overview over the intensity of problems with multiresistant organisms, patients and staff infected in the period E, with data obtained from Infection Control Service MRSA databases.

Figure 8.2 MRSA outbreaks 2000-2008 with number of wards affected, Patients and Staff infected.

EMRSA 15, one of the epidemic strains originating from the UK (E in front of MRSA indicate that it is an epidemic strain) was involved in three of the outbreaks and a variety of other strains in the rest. Only one ward, the Spinal Injury Unit, was affected twice. A summary of MRSA outbreaks 1978-2008 is illustrated in Figure 8.3. It shows that part of period D 1998-2000 experienced the biggest MRSA outbreaks involving most patients, staff and wards simultaneously.

Figure 8.3 Major outbreaks of MRSA during the entire researched time period 1978-2008, noting the number of wards, patients and staff affected per year.
The outbreaks in the early part of year 2000 took place at Burwood Hospital and in one ward in Christchurch Hospital. However, the outbreaks might have been seen as following on from the outbreaks at the end of the last period (D) (see 7.4.1) although the strains may have been different. Considerable correspondence took place regarding those outbreaks including staff adherence to use of personal protective equipment (E152-158).

Infection control workload included dealing with MRSA colonised staff. The number of staff found MRSA colonised on employment had increased greatly since the increase in casual nursing pools in 1995 (7.2.3.2). Since 2002 there had also been an increase in patients admitted with “community acquired MRSA strains”. Figure 8.4 shows the number of patients and staff identified carrying MRSA at Christchurch Hospital 1998-2007 and Figure 8.5 shows the number of staff and patients identified as carrying the EMRSA 15 CDHB wide. Most of these patients were identified on admission and staff on employment (data obtained from the infection control surveillance database). The increasing number of patients with MRSA or in precautionary isolation awaiting screening results put a severe pressure on the few single rooms available for isolation. The microbiology laboratory researched new media for laboratory identification aiming to shorten the turnaround time for screening test achieving several days’ savings on the turnaround time.

![Figure 8.4 Numbers of Patients and Staff at Christchurch Hospital identified with MRSA 1998-2007](image-url)
8.4.2 NORO-, ROTA VIRUS AND DIARRHOAL OUTBREAKS

Diarrhoeal outbreaks dominated the latter part of the period (2000-2008). The previous periods had recorded occasional outbreaks with a number of different pathogens, but this period was dominated by outbreaks caused by predominately norovirus and occasional rotavirus (E 158-164). Only two rotavirus outbreaks were recorded in children, one in a paediatric ward and one in the Neonatal Unit (E165). While laboratory testing for Rotavirus had been available for decades, testing for norovirus had only recently became available locally as a routine pathology test (September 2004) (E166) (194). Further sub-typing was available from ESR. The sub-typing of isolates, from samples submitted to ESR, confirmed that all the norovirus outbreaks were caused by a new global Norovirus strain GII/1, 4, 8. Further molecular typing was performed by ESR about once a year using an international sequence typing, showing any possible similarity with isolates from hospitals and nursing homes (285). Multiple reports indicated outbreaks in many nursing homes for the elderly. The outbreaks caused severe casualties amongst both patients and staff. One hospital reported at one stage 30% of their staff absent. An example of the impact of some of the outbreaks can be deduced from the minutes of November and December 2007 ICC where it was reported that 143 patients and 43 staff had shown symptoms of norovirus during the recent outbreak at Christchurch Hospital. At another norovirus outbreak at the Princess Margaret Hospital in 2004/5 over 200 people, half of whom were staff members, were affected. Outbreak committees met regularly at all affected hospitals planning the containment of the outbreaks, including, isolation of patients, possible ward closure and an extensive cleaning of the ward.
before reopening (E167-169). Not all patients’ infections were confirmed by laboratory test so the causative organism was extrapolated from a limited number of patients tested per outbreak. The news media also showed interest in the hospital outbreaks and the Board’s communication manager issued press statements (E 170).

Diarrhoeal outbreaks during this time are shown in Fig.8.6. Also shown are the parts of the hospital and wards affected, which provide treatment of predominantly elderly patients e.g. Stroke wards, rehabilitation wards or health care of the elderly. The main hospitals affected, were Christchurch and the Princess Margaret hospitals (ICC minutes 2000/1 to 2007/8).

Diarrhoeal outbreaks have been recorded in all periods (1978-2008); however, the naming of the causative organism was possible only if a laboratory test was able to identify the organism. The number of the diarrhoea outbreak/episodes as recorded in fig 8.7 is an overall indication of the size of the problem each year.

Figure 8.6 Number of diarrhoea and vomiting outbreaks in all the CDHB hospitals per year (blue) and number of patient wards affected (red); number of hospitals caring for elderly patients (green) and affected wards in these hospitals (purple).
Figure 8.7 Number of diarrhoea and vomiting outbreak/episodes diagnosed or assumed to be caused by Norovirus, Rotavirus, C difficile or /Other) 1978-2008.

8.4.3 INFLUENZA

Influenza infections resulted in increased admission to hospitals every year during the period. A rapid influenza test, which provided results within hours, became available in 2002. The test made it possible to admit the majority of patients into isolation and thus reduce cross infection to other patients. An influenza guideline providing advice on infection control precaution and treatment was published by ICS and updated approximately yearly (E81). The Infection Control Services provided surveillance on number of admissions due to infection with influenza and number of nosocomial infections. Figure 8.8 has been summarised from the IC yearly surveillance data. The percent of nosocomial infections in hospital diagnosed by laboratory tests over the years 2002-8 was highest (13%) in 2004 and lowest in 2005 (1.9%) (Reports to the ICC 2002-2009).
8.4.4 *Acinetobacter baumannii*

The period saw the end of the *Acinetobacter baumannii* outbreak. There was a small cluster of cases in the plastic surgical ward, and a concern that patients suffering from chronic obstruction airways disease were exposed to patients with infected wounds (ICC Annual Report 2000/2001) (E171, E172).

8.4.5 *STREPTOCOCCUS GR.A (PYOGENES)*

One of the most serious outbreaks happened at the Princess Margaret Hospital in 2006/2007. The outbreak was caused by Beta-haemolytic *Streptococcus Group A*. Three patients with Streptococcus Group A sepsis died. Staff members were screened for possible colonisation and four were found to be positive. The *Streptococcus Group A* was found to be an em-type 1. Molecular testing carried out by ESR showed the organisms to be identical.

The index patient had oozing leg wounds. For the first time a sentinel event protocol was initiated and a Strategic Implementation Methodology (SIM) used. The SIM was chaired by the General Manager of the Division, for dealing with the incident. As has been seen before, the newspapers were interested in the outbreak (ICC Annual Report 2006/2007) (E173, E174).
8.4.6 ADENOVIRUS, SCABIES AND LEGIONELLA

Two further outbreaks and a continuous environmental problem are of note. Two of the outbreaks were only discovered by follow-up of chance observations or attention to single reports from staff. Not all outbreaks are obvious especially when they involve outpatients or patients discharged to the community.

8.4.6.1 ADENOVIRUS

This was small and localised in Ophthalmology Outpatients, where Adenovirus type 19 caused an outbreak of ‘red eyes’ in nine patients and one medical staff member. The ICS investigated and recommended hygiene measures (E175-176)(286).

8.4.6.2 SCABIES

This outbreak was considerable and affected mainly patients who were already discharged from hospital. The outbreak started with a patient with initially undiagnosed ‘Norwegian Scabies’, a presentation with extensive and crusted scabies. The patient was immune-suppressed and did not survive the infestation. An outbreak investigation involved follow-up of 303 patients who had been admitted to general medical wards at Christchurch Hospital, via a letter to the patients’ general practitioners (ICC Minutes September, October and November 2006) (E177-179). Of the 303 discharged patients 33 were confirmed infected. The final communication was from the Coroner, who had had a letter from relatives of a deceased who blamed the scabies outbreak for their elderly relatives refusing to request admission to hospital because of the ‘dirty disease’. They believed that the non-hospitalisation contributed to her death (E180).

8.4.6.3 LEGIONELLA

Legionella continued sporadically to be isolated in Christchurch Hospital from domestic hot water sites, especially shower heads. The management of the incidents and further improvement to the hot water system was decided in a small group involving the Chief Engineer, Chair of ICC and chaired by the CEO (ICC Annual Reports (1998/99, 1999/2000). The screening of other hospitals was recorded in the ICC Annual Reports (2005/2006). This surveillance showed that Legionella of different serotypes was isolated from two more hospitals (E181-183). The monitoring also resulted in an investigation into the exposure of one patient to Legionella from the water from a water cooler. However, the molecular typing
showed that the patient was infected with molecular types different from the hospital strains (E184-186).

8.5 OCCUPATIONAL HEALTH

Waterless alcohol based hand gel was introduced early during this period after some trials with different products. The product was favourably received by staff and became one of the important hand hygiene products for staff use (E186, E187).

Infection Control wrote to the Clinical Advisory Committee in 2000 asking the Committee to take up the issue of immunisation of staff (E188). This request was repeated during the March meeting of ICC 2002 (E188- E192). A small working group including the Chair of ICC, Director of Nursing and two other members was formed in 2003. In January 2005, The CDHB established an Occupational Health Service as part of the Health and Safety Team (E193, E194). The most important aspect for IC was that the provision of immunisation for staff, especially Hepatitis B and Influenza vaccination, was taken over by the occupational health service. This enabled, in April 2005, the Microbiology Vaccination Clinic for staff to be closed (ICC minutes August 2005). The short term impact was the need for IC staff to assist with especially influenza vaccination (E195).

After taking over the routine Hepatitis B vaccination, the Occupational Health Service later managed the follow up of staff after body fluid exposure (BBFE). This included testing for possible hepatitis C infection and vaccination of staff that were found non-immune to hepatitis B (E196, E197). Late in the period, it also took over the administration of Hepatitis B Immunoglobulin to non-immune staff after a BBFE with hepatitis B risk and contact tracing of staff that had been exposed to tuberculosis. The IC Service still provided the Annual Report on BBFE. ICS initiated mask fitting of the N95 masks for staff, but a nurse employed for the purpose later provided this task. However, the Occupational Health Service was not able to extend their service on some occasions, for example it was the IC Staff who arranged treatment of staff exposed or infected with scabies during the outbreak in 2005 (E192).

8.5.1 THEATRE DRESS CODE

The discussion of adherence to the operating theatre dress code continued into early this period and then died away. Contamination of laundered items from operating theatres was also an issue. In the end, the dress code was changed back to a previously accepted code and the issue appeared to be handled within the operating theatres (E198-201).
8.6 PERIOD E (2000-2008) DISCUSSION AND SUMMARY

This last period (E) covered the years from mid 2000 to 2008. Central government, mainly represented by the Ministry of Health, showed they were concerned with infectious diseases from the public health aspect as well as prevention of nosocomial infection in hospitals. Central government took charge by directing the reaction to the national threats such as Anthrax and SARS. Ministry of Health initiated the pandemic planning for the “Avian Influenza” with the exercise “Virex” and posted information on their website. The Ministry of Health and Standards New Zealand published multiple National Infection Control Guidelines. The Office of the Controller and Auditor General conducted a review of the management of hospital-acquired infections. Regular certification of DHB hospitals became routine and Quality Health New Zealand was charged with providing assessment for accreditation.

Local governance and management initially did not differ from the preceding period with reporting lines unchanged. The Clinical Planning and Policy Committee/Clinical Advisory Committee remained interested mainly in staff issues, and the outbreaks in hospitals. The Infection Control Committee had asked for their support for establishment of an Occupational Health Service but there are no records of their response to the request. However, from an Infection Control point of view, a basic and long overdue Occupational Health Service was established, focusing on immunisation of staff.

Later in the period, local management became increasingly involved, especially regarding outbreaks or specific infection issues. The reporting structure for ICC changed again.

The merging of the two CHEs resulted in the IC operational group becoming united once again, and from 2002/3 year went from strength to strength in their educational activities and production of IC Guidelines. The building of a new hospital showed that they could adapt to new challenges such as producing infection control related advice during planning and building phases. Surveillance and audit of infection control concerns became routine activities and only the lack of consistent surgical site infection surveillance was a concern to the ICC staff, as expressed in every ICC Annual Report. The Surveys for Hospital Certification and Accreditation resulted in the ICS being openly acknowledged for their achievements, and provided some guidance when challenges were observed.
The ICC continued without active participation from senior surgical staff during the later part of the period. This was especially obvious as there had been consistent and loyal participation noted in all the previous periods. Some of the long-standing issues such as waste, reuse of single use items, availability of isolation rooms and endoscope issues were diminishing or becoming less acute.

The period saw some outbreaks. No major MRSA outbreaks were seen, only the occasional cluster. Intensive Care Unit was not affected during this period. Looking at the whole researched time, 1978 to 2008, Intensive Care Unit was only involved in one major MRSA outbreak (1998) and had one further single MRSA cross-infection.

However, the period saw some substantial outbreaks of Norovirus in several hospitals affecting a large number of patients, especially amongst the elderly, as well as staff. The Norovirus was identified as a new strain becoming dominant worldwide. It is interesting that the word pandemic has not been used in relationship to infection with this organism.

The questions asked in the summaries of the previous chapter, have mostly been covered in the discussion of this chapter except the last question. Those questions were:

*Did Infection Control continue to develop and if so what was the driving force?*

*Were there national and/or international influences?*

*What were the professional influences?*

What was the influence of the news media? There were regular comments about infection control matters and two examples have been provided, namely the Gr. A. Streptococcal infections in a cluster of patients and the reuse of disposable items. The CDHB adopted the routine of providing media releases by the corporate communication officer, as part of any Outbreak Committees’ Agenda, which was initiated during the previous administration (see 7.4.2). The aggression displayed by the news media, during the previous period, became less apparent.
CHAPTER NINE-DISCUSSION

9.1 INTRODUCTION

Policy changes in the health system relate not only to structure, finance and communication but also to culture and work conditions. As a result, changes to the health system create new liaisons, new communication pathways and new relationships. It is therefore not surprising that these changes affect an individual service, which interacts with many areas of a hospital and wider system infrastructure. This research has analysed the development of infection control in Canterbury over 30 years, how it was influenced by political and institutional change, and national and international professional influences. Outbreaks with nosocomial infections, especially, had a significant impact on infection control development. Infection control’s influence on the development of occupational health was also important. During the research periods the infection control service has shown a substantial adaptability to changes and resilience during periods of adversity while still continuing to develop the service. The discussion that follows is organised in three sections: the influence of the health system on infection control, the development of the Infection Control service and the emergence of an Occupational Health service.

9.2 HEALTH SYSTEM INFLUENCES

9.2.1 HEALTH SECTOR CHANGES 1978-2008

During the period 1978-2008 New Zealand experienced 5 sets of changes to the health systems of which four were introduced in Canterbury between 1989 and 2000. The changes have been compared with changes to health systems overseas, in particular the United Kingdom, and are described in detail in relation to the time periods of this research’s in chapters 4-8, (4.2.1, 4.2.1, 6.2.1, 7.2.1, 8.2.1) (15). From 1989 a health system led by professionals changed to a management led system (area health board), followed within a few years by a system, still management led, but built on a
competitive model with a purchaser/provider split. That system proved extremely unpopular within the health services and a modified system was introduced three years later, with supposedly, the competitive system abolished. A few years later (2001) the district health board system was introduced. Each system change maintained some of the previous structure’s features and continued to be management led. While legislative changes to the health system can be approved fairly quickly, it is a bigger task to change the culture of health personnel. Health professionals’ work is mainly built on patient care and evidence-based practice. It is therefore not surprising that changes built on financial models create strong reactions.

Why should health sector changes have an influence on an infection control service (ICS), a service which is mainly advisory to clinicians and institutional governance? The following discussion might give an answer to that question.

9.2.2 CENTRAL LEADERSHIP IN INFECTION CONTROL 1978-2008

It is clear from this research that the Department/Ministry of Health was considering infection control requirements in hospitals throughout the entire time examined in this research. In the 1970s the Department of Health encouraged hospital boards to introduce infection control and also showed concern for the education of infection control staff (4.2.2). During the 1980s a survey was carried out to check on the status of infection control in hospitals (4.2.2) and Department of Health used the National Health Institute (NHI) to provide education in surveillance (4.2.2.1). Surveillance of hospital acquired infection was still seen as the main infection control objective during period B (1989-1993) with the New Zealand Communicable Disease Centre (NZCDC) engaging an epidemiologist to oversee the project (5.2.2.1). When this surveillance project did not succeed, the government and Ministry of Health took over the project themselves and engaged the Crown Company Monitoring Unit (CCMAU) to receive surveillance reports on hospital acquired infections (6.2.1). These reporting requirements continued through the remaining periods (8.2.1).

The monitoring requirements placed a considerable workload on the infection control staff and the hospitals’ quality teams. There is little evidence that this reporting had any direct beneficial effect on the infection rate in hospitals, with little if any evidence of changes as a result of the reporting. However, it made the institutional governance aware of the need for an infection control service, further strengthened by the review
by the Auditor General into hospital acquired infections in 2002 (8.2.2.5). Central
government introduced certification of hospitals, and accreditation during the late
1990s and early 2000s. Another agency, not introduced for infection control reasons,
but which nevertheless had an effect on infection control, was the Office of the Health
and Disability Commissioner. The Commissioner carried out an investigation related
to an infection control incident at Christchurch Hospital in 1999 (7.2.2). Across the
entire research period there were several other important infection control support
measures provided by central government and agencies such as ESR or Standards New
Zealand. An important contribution was the production and publication of guidelines,
as well as publications relating to pandemic planning (8.2.2.1-4).

9.3 LOCAL INSTITUTIONAL ARRANGEMENTS AND INFECTION CONTROL
1978-2008

Infection control was introduced in Christchurch in June 1978 with the employment of
the first infection control nurse (ICN). As was the tradition of the time, the Medical
Superintendent-in-Chief discussed the introduction of such a position with senior
medical staff to obtain their approval and cooperation.

Health sector changes were not particularly relevant when the infection control service
(ICS) was initially set up in Canterbury hospitals and the role of the ICN and the ICS
was limited to surveillance, education and reporting on surveillance to surgeons.
However, shortly after the introduction of the ICS it became obvious that ICS
operations involved not only interactions with the nursing and medical staff, but with
multiple other services such as the supply department (4.4.2 detergents), hospital
facilities (4.4.3 air-conditioning) and immunisation of health care staff (4.5.1 hepatitis
B). Many of the interactions involved the Hospital Board’s governance structure,
mainly the Medical Superintendent-in-Chief, but communication about infection
control policies were not limited even to the internal institutional structure (4.2.3).

The first part of the research period lasted 11 years (1978-1989) until the formation of
the Canterbury Area Health Board (CAHB) with the resulting managerial change.
Within two years of converting, the CAHB was required to initiate preparations for the
subsequent change to a Crown Health Enterprise (CHE) with the transition facilitated
by the introduction of two commissioners (5.2.1) (period B: 1989-93). Both
communication and resources to infection control were poor from the institutional
governance body during the period following the abolition of the Hospital Board in 1989, although the Medical Advisor provided some continuity of communication. The likely reason was a national strategy, which recommended that ICS and Infection Control Committee (ICC) be located in the performance audit section (5.2.3). It is unlikely that the Canterbury Area Health Board itself preferred to place infection control in that section and the philosophical background for this view was not found to have been discussed with the ICS. A 1987 survey on the management of infection control by hospitals boards, carried out by the Department of Health, could possibly have influenced this decision; however, a report to the survey was not available in the IC archives (4.2.2). The introduction of the CHE (periods C&D: 1993-2000) did not improve communication although the ICS had benefitted from an increase in staffing and the wider introduction of computerisation (5.2.2). The change to communication through a general manager to the CHE board affected the clinical contact, previously available through the Medical Advisors, and made it possible for management to make the ICS subject to competition in line with politically driven design of the CHE model (6.2.3).

During these years the ICS and the ICC also had to address several issues related to other new policies, such as the Official Information Act (7.2.3.3), the New Zealand Bill of Rights Act (7.5) and the Health and Disability Commissioner Act (7.2.2). The CHE period saw at least a partial introduction of the competitive model into ICS when the Canterbury Area Health Board was divided into two CHEs, Canterbury Health Ltd and Healthlink South and some of the Healthlink South divisions engaged private laboratories to provide infection control services (6.3.4.1). Even when the political situation changed again (after 1997) and a cooperative model was introduced as part of the change to Hospital and Health Services (H&HS), the ICS recorded minimal changes to its operation. The ICSs were still divided and there were little in the H&HS interaction in Canterbury which indicated that anything had changed. However, communication with the CHL management and governance structure greatly improved during this period, for a number of reasons. The ICC and ICS reported to a risk manager, who viewed infection control from a risk perspective (Table 8.3). The Chief Executive Officer (CEO) appeared to have an understanding of some of the Infection Control (IC) issues such as multiple outbreaks and the implication of several enquiries by the Health and Disability Commissioners taking place (7.2.2) (7.4). However, the
period represented a constant battle ground for infection control rather than a progressive development. The interaction with management was based on a demand for infection control assistance and expertise during these events rather than a supportive development of the infection control service (7.2.3.1).

The last period (E: 2000-08) saw the introduction of the district health board which united all the Canterbury hospitals under one board again (8.2.1). However, it took several years to integrate the infection control services as contracts continued several years into the period (8.3.1). The Ministry of Health had successfully introduced accreditation and certification of hospitals, which required infection control to work closely with the CDHB’s “Quality and Risk” group (7.2.2). National nosocomial infection monitoring requirements were carried out by infection control, but reported by Quality and Risk to the Hospital Monitoring Directorate. There was a substantial change from the standoff situation between the Performance Audit and Infection Control demonstrated in period B (1989-1993) and the independent reporting to the quality manager in period D (1996-2000), to an acknowledged cooperation and communication between infection control and the Corporate Quality and Risk in later years. This change could be seen as a maturing relationship acknowledging the separate responsibility in monitoring patients’ risk but the requirement for collaborative reporting.

9.4 DEVELOPMENT OF THE INFECTION CONTROL FUNCTION

According to the literature the two most important entities in an infection control service are the infection control team (ICT) and the infection control committee (ICC). (36, 81, 82, 85) These two groups were the first to be defined when the infection control service was introduced in Canterbury (4.3.1) (4.3.3). A third more diffuse group can be identified as directly supporting infection control development (4.3.4). This group includes those staff involved in sub-committee work or other IC involvement in addition to the ICC and ICT, although this group has not been well defined in the literature as an integral part of infection control (81, 82). These three groups had varying influence during the research period (1978-2008) and their involvement will be addressed in three broad time periods A (1978-89); B, C and D (1989-2000) and E (2000-2008).
During the first 11 years (Period A) there was no evidence that Infection Control (IC) was affected by political or structural changes. The Hospital Board’s medical services were led by the medical superintendent-in-chief and hospital medical superintendents who encouraged the recognition of infection control (4.3.2) aided by the infection control team’s productivity and professionalism (4.2.3).

The Infection Control Committee first met within a year of the employment of the first infection control nurse and the distribution of the infection control work between ICC and the infection control team (ICT) (defined in 4.3.1) quickly became clear (4.3.3.2, 4.3.4). The ICT carried out the main operational work, with the ICN the main workforce, although sometimes the microbiologist took the lead (hepatitis B vaccination 4.5.1; BBFE 4.5.2). The ICT core work included surveillance, protocol and guideline drafting, and education (4.3.1.1). The ICC members provided professional support for the ICT, received reports on the ICT’s work and represented their service’s interest making sure that the ICC’s decisions were acceptable to their service. However, ICC was also the official group, ultimately responsible for accepting and recommending protocols and guidelines, for board wide distribution (4.3.3.2). Besides the ICT and ICC, a third group of participants included all those professionals, who were involved in work on guidelines, providing requests for service and being members of subcommittees e.g. outbreak committees (4.3.4).

It is difficult, during the early part of this first period, to separate surveillance from some of the prolonged infections work. Surveillance identified problems related to cleaning of instruments (endoscopes 4.4.1); air-conditioning systems (B cereus 4.4.3); services (laundry 4.4.4), food (nasogastric feeds 4.4.5) and products used in health care (detergents 4.4.2). The period experienced the first MRSA outbreak and the first MRSA policy was produced, which provided support for the control of MRSA for years to come. A number of guidelines and protocols were produced including some major protocols such as the isolation and disinfection manual (4.3.1.1.3, Appendix 2) with the main complaint being the length of time it took to finalise some of the protocols (Lassa fever protocol, Appendix 2)
During this period the basic aspect of occupational health provision was instigated such as sharps containers, blood and body fluid exposure follow up and hepatitis B vaccination (4.5).

Evaluation of the period (1978-1989)

Assessing the local influences on infection control during this first period 1978-1989, these are evenly distributed between governance, management and the professionals, as all groups contributed what could be expected of them. The ICT was acknowledged as the professional group to develop the service with support from clinical staff. The governance structure was positive and communicated effectively. The main concern during the period was the ICN workforce, both their numbers and professional grading (4.3.2), both far below the recommendation of the SENIC project (a nosocomial infection incidence study carried out in the United States during the 1970s), which became the ‘gold standard’ for the infection control staffing and practice for subsequent decades. (6, 60)

The period (1978-1989) laid the foundation of the infection control service for the rest of the research period.

9.4.2 SURVIVAL OF THE INDEPENDENT INFECTION SERVICE 1989-2000

It did not take long for IC to be affected by health policy changes in Period B (1989-1993). The institutional governance view of infection control changed with the introduction of the area health board, with plans to include the ICC and the ICN in a yet to be developed Performance Audit Unit (5.2.3). The ICC and the IC Team opposed this, although there are no records of discussion of the time (5.3.1).

Subsequent events can be interpreted as the Infection Control Service’s battle to survive independently, involving considerable professional manoeuvrering supported by clinical staff.

Restructuring and managing the IC Team

With the ICN on maternity leave and not replaced, the medical microbiologist was left to continue the service alone and hold regular ICC meetings. Some of the Board’s hospitals missed the presence of an ICN and allocated a senior nurse to perform some ICN duties in addition to the staff member’s routine work, calling them infection
control liaison nurses, making it possible for the microbiologist to assemble a working team (5.3.1). A report, “A review of infection control in the Canterbury Area health Board” was initially shelved, but in the last months of the AHB, it was revived and resulted in the employment of a satisfactory team of infection control staff. Several of the infection control liaison nurses, who had already worked in the team, took up the employment as ICNs, so the change did not appear as dramatic as in fact it was, restoring resources to infection control. The infection control group continued to work together after 1993 (Crown Health Enterprises period), although late in Period C (1993-96), vacancies in the ICNs positions and the intermittent attendances by the Healthlink South staff meant that mainly Canterbury Health Limited (Ltd.) staff were involved (6.3.2) (Table 8.1). Following the loss of two ICNs from Healthlink South in 1996, the remaining ICNs from Healthlink South attended more often. Thus, through quite difficult restructuring and fragmentation the resources and coherence of IC had, with considerable effort, been largely maintained (7.3.1).

Place of IC in the Canterbury CHE structure

During the structural changes that divided the Canterbury Area health Board into two Crown Health Enterprises (CHEs), Canterbury Health Ltd substituted its medical advisor with a “Risk Manager” with legal training and the “performance audit” function became “quality and risk”. The Ministry of Health policy identified hospital infection control as a quality issue (6.2.2).

Despite maintaining independence following the introduction of the CHEs, infection control did not achieve the position it had during the earlier period (1978-1989). Between 1993 and 96 there was no distinction recognised between reports from the ICC or operational infection control. All infection control issues were placed under the GM Diagnostic and Support Services, with no direct relationship to the Board’s governance structure. This changed for the Infection Control Committee in 1996, but the IC operational issues still went through the GM Diagnostic and Support Division until 2005, when the Chief Medical Officer took over as the receiver of reports (8.3.3.4) (Table 8.3). The budget for the IC Unit remained with the GM Diagnostic and Support Services (1993-2008).

So why did infection control succeed in staying as an independent service and avoid being moved under the team of Quality and Risk (6.2.3)? The main reason was
probably that the ICT was an operational entity with staff employed throughout the organisation and not a centrally administered group, and therefore difficult to reassign. All the ICNs were based in their respective divisions and employed under the nursing administration and only operationally linked to infection control. With creation of the two CHEs, Canterbury health Ltd and Healthlink South, all but two of the ICN were employed in Healthlink South. The newly established infection control unit (part of Canterbury Health Ltd) had only two employees, the Infection Control Liaison Officer and the part-time (approximately four hours /week) medical microbiologist, director of the unit, allocated by the laboratory. The members of both the ICC and the Infection Control Operational meeting were professionals who met to address infection control issues and provide recommendations, but none were employed specifically to do so (6.3.1).

**Marginalisation of IC**

Infection control became a provider of data from its surveillance activities such as hospital acquired blood stream infections (HABSI) and wound infections to Quality and Risk, which the submitted the IC data with other CHE/CDHB reporting requirements to central government e.g. CCMAU and later the Hospital Monitoring Directorate (6.2.1, 8.2.1). It was also Quality and Risk, which during period E (2000-2008) reported the data to the CDHB Clinical Board. This appeared to be a reasonable arrangement, if the aim was to standardise official reports. It is definitely the impression that infection control received most attention from management during the middle periods (B-D) when, apart from outbreak control, they were needed to provide the data required for reporting to government agencies.

**Redesigning the work programme and outcome of national surveillance efforts**

Surveillance of hospital acquired infection remained one of the core tasks during the research period (until 2008). However, the hospital infection surveillance projects, taken on after discussions with the ESR Epidemiologist during period B, faltered due to the lack of secure staffing and management support. Only some basic surveillance was carried out (5.3.1.1.1).

The computerisation of infection control offices became very important for surveillance and communication (5.3.2), including access to microbiology laboratory
computerised results. During certain periods more extensive surveillance of surgical wound infections (SSI) took place as required for Board reporting to the government agencies (8.3.1.2.2).

The number of guidelines and protocols produced or reviewed in Period C (1993-96) showed that IC staff took advantage of the increase in staff; however, a number of the guidelines were related to the different divisions indicating that individual ICN also took responsibility for their own divisions. Production declined during Period D, but did not get as low as in period B.

**New roles and work for ICT**

In spite of uncertainties in ICN staffing between 1989 and 2000, the infection control staff undertook some innovative work. A newsletter “Germbuster” and an antibiotic sensitivity booklet from this period are still published today (5.3.1) (5.3.1.1.4). They started an infection control liaison nurse group, initially in one hospital, but soon taken up by the other hospitals (6.3.1.1).

The ICS introduced audits of many aspects of ward hygiene and hospital services (7.3.1.1.2), the newly introduced accreditation and certification of hospitals, requiring infection control to work with Quality and Risk to fulfil the necessary requirements. Infection control as a service was separately assessed during the assessors’ visits usually with good result (7.3.1.1.3). Infection control staff were consulted during major alterations, despite no documented requirement for this to take place. During the building of the new Christchurch Women’s Hospital a regular consultation system was introduced and later a committee met regularly to discuss further plans, ensuring precautions for protection of patients during subsequent building activity (7.3.1.1.4) (8.3.1.2.4). Such precautions were at the initiative of the infection control staff.

Control of *Legionella* and surveillance of Christchurch hot water supply and other water features were standardised (6.4.1, 7.4.3, 7.4.4) and the initial work on a reuse of single use item policy was started during periods C and D (6.3.4.4, 7.3.4.6). Other new roles were the preparation of yearly infection control business or operational plans and, during the CHE period, tender documents (6.3.4.1).
The Infection Control Committee has always been seen as central to hospital infection control and prevention. According to the literature, the duties of such a committee have changed surprisingly little over time and include meeting regularly, identifying, evaluating and reporting infection, providing protocols and guidelines, promoting education and monitoring antibiotic use. Over time further specific duties were added such as formation of outbreaks groups (1988); reviewing the costs of infection (1995) and quality assurance standards for areas such as cleaning, waste etc (from 2000) (36, 81, 82, 85). The membership was also stipulated to include, in addition to clinical staff, those involved in hygiene, and a consultant in communicable diseases such as the Medical Officer of Health (85).

**ICC role and the voice of its members**

In contrast to the respectful communication and reports to the hospital board governance structure by ICC members during period A, their communication became more assertive and demanding between 1989 and 2000. For example, the committee demanded answers for the delay in employment of IC staff (5.3.3.2) and requested that the ICC remain a joint committee for the two CHEs (5.2.3). The committee’s voice became quieter as the CHEs became more competitive and the ICT and service were divided, although questions continued to be raised regarding the fragmentation of infection control advice and further outsourcing of services (6.3.4.1). Reporting also became fragmented as the committee accommodated reporting to two different positions in the CHEs e.g. medical advisors in Healthlink South and managers in Canterbury Health Ltd. The work of the ICC was otherwise similar to that of the period 1978-1989. However there was a consistent use of ICC subcommittees or ad hoc committees, one of which “the outbreak committee”, initially set up as an “Infectious Diseases Outbreak Group” and incorporated into the Board’s Civil Defence Plan (5.3.4.1). The participants of the sub-committees between 1989 and 2000 were not all recruited from the members of ICC or ICT, but often were recruited from professional groups or management with expertise or interest in the work of the particular subcommittee (5.3.4) (6.3.4.2-5). The members of these groups are referred to in (9.3) as the ‘third IC group’. This involvement of other staff in ad hoc committees was widespread, but is best described with reference to outbreak groups.
(81, 82). It contributed to broadening the staff base involved in infection control work and is in contrast to the work during the last period 2000-2008 where most of the ad hoc committees were phased out and work was based on national guidelines, Standards New Zealand or ICT’s own protocols and guidelines

**Challenges to ICC advice and tension rising from restructuring**

During the period 1989-2000 ICC (and the ICT) noted a change in staff attitude to infection control from that experienced in period 1978-1989. This may be partly attributed to the effects of health restructuring, which possibly contributed to increase infection control risks during the period. Advice from ICC was more frequently challenged and sometimes not followed (5.3.3.2.1-4). There were also challenges to previously accepted IC policies with records of these not being followed, for example regarding theatre scrubs (6.3.3.2.2), and MRSA screening (6.3.1.3.3 and 7.4.1). Some of these reactions could be related to the tension from restructuring especially the 1995 Canterbury Health’s changes to nursing case management and the casualisation of nursing staff. The changes caused a substantial reaction amongst the clinical staff, culminating in the publication “Patients are dying” (6.4.2) (7.2.3.2). In this context new staff were ready to react to policies and protocols in the infection control guidelines. The MRSA screening of staff and patients came under debate. Staff quoted the Human Rights Act 1993 as a reason not to screen, an issue however, researched and refuted by the Corporate Medical Advisor (Healthlink South) (6.3.1.3.3). An audit at Canterbury Health Ltd of the MRSA screen from 500 nursing staff found very few had submitted one (7.4.1). Line management was supposed to enforce the policy of pre-employment MRSA screening, but they were either unable to do so or ignorant of the requirements (7.4.1). Casual staff pools may also have included staff entering the workforce from overseas with different views the infection control and MRSA requirements (6.3.1.3.3). The CEO was responsive to ICC concern and activated general managers, human resources, accountants and medical advisors to set a routine in place for MRSA control. The accountants tried to estimate costing including the cost of MRSA testing from the IC Unit’s account. The newly formed Clinical Planning and Policy Committee became involved and recommended “random testing of staff” (7.2.3.2) (7.4.1).
MRSA Outbreaks Periods B-D

MRSA outbreak management, especially during period D (1996-2000), occupied a large part of the ICT time and dominated the ICC meetings. There were MRSA outbreaks across all the time periods, however, the outbreaks in period D showed a picture totally different from previously, with three large MRSA outbreaks recorded within three years (1997-2000) (7.4.1). The problems in getting staff to adhere to the established MRSA protocols are noted above and there was concern about the lack of isolation rooms with an increasing number of patients admitted with or acquiring MRSA (7.3.1.1.4).

However, there was intense national and international debate over MRSA control. The international literature during the 1990s increasingly discussed MRSA carrier state, reporting that colonisation might be difficult to eradicate (181, 182). The testing of staff for colonisation was referred to as a “Pandora’s Box” with a different approach to staff handling in the UK (183). To control or not control MRSA was debated during the 1990s, with claims that the cost of control might be prohibitive (186). Several issues with regard to MRSA management were also noted nationally (6.2.2). The Ministry of Health established an Antibiotic Resistant Advisory Group which recommended changing ESR’s MRSA testing service to include only multi-resistant MRSA, and the group also advised ESR to stop its weekly MRSA report. National Division of Infection Control Nurses submitted a complaint to the Ministry of Health resulting in the Ministry requesting ESR to find an alternative (6.2.2). This lack of certainty over MRSA management nationally and internationally could also have contributed to these outbreaks.

The number and extent of the MRSA outbreaks experienced in Canterbury Health Ltd’s hospitals led to complaints about communication from the Healthlink South division, particularly Older Persons Health, which was not represented on the ICC. Older Persons Health received patients from Canterbury Health Ltd during the outbreak times, and raised concern about the risk to their service (7.4.1).

And the outbreaks continued 1996-2000

Hardly were the MRSA outbreaks under control when an outbreak with a more deadly organism, *Acinetobacter baumannii*, occurred in circumstances that highlight tension
between the two CHEs (7.3.2). The outbreak began with information to the ICS from Older Persons Health Healthlink South about a patient with *Acinetobacter baumannii* infection transferred from the Princess Margaret Hospital to the Intensive Care Unit Christchurch Hospital. The size of the Acinetobacter problem at the Princess Margaret Hospital at the time was unknown and no communication had been found explaining the overall situation. What followed was a heated debate between the CHEs, including intense media interest in the outbreak, with accusations from both sides over lack of communication. The Canterbury health Ltd CEO chaired the corporate outbreak committee and the information manager managed communication to staff and the media, while the infection control services worked to contain the outbreak. To try to reach an explanation for the outbreak, ESR was called in to analyse it separately for the two CHEs. ESR managed this admirably without apportioning blame for the outbreak. The benefit to infection control was the acceptance of an ICC recommendation that clinical areas routinely receive a “spring cleaning” twice a year involving staff areas as well as patients areas (D131)(7.4.2)

Can the extent of the outbreaks during period D be explained?

Outbreaks hold a unique position in the work of infection control as they present challenges, stretch resources and cause an increased risk to patients as well as an economic risk to the health service. The main aim of infection control is to educate hospital staff in the prevention of infection, to recognise if infection occurs and control further infection by means available. It is during outbreaks that teamwork and respect for each profession’s role, knowledge of management and effective communication become essential for achieving rapid control of the situation.

Outbreak management was not new to infection control and when entering period D the ICS must have had thousands of hours of experience in identifying, managing and, in most instances, preventing further outbreaks. The size and intensity of the MRSA outbreaks was unique to the period and can probably be explained by staff discontent and the institutional changes throughout the period 1989-2000, but most obviously between 1995 and 2000. The successful management of smaller outbreaks with MRSA in the last period (E: 2000-8)), which still experienced a large number of patients screening positive for MRSA on admission, justify that analysis (8.4.1) (Fig. 8.2, 8.3, 8.4, 8.5). The Acinetobacter outbreak also demonstrated the risk of destabilising a
good working relationship between two close services that need to work together, when they are artificially put under different administration and management.

Evaluation of the period 1989-2000

This period had a major effect on infection control development. There was a direct effect of the health changes, projected through management of the institutions, which changed the work environment, but also energised the sector. The effect on infection control was both positive and negative requiring the service to battle for independence, but it was stimulated towards greater productivity by increased staffing. It was therefore the professionals, the IC service and other health care staff, which provided the most direct effect on IC development. However, development cannot be regarded as positive, unless it has a beneficial effect on patient care or risk to patients. The major outbreaks and the conflict between the services resulted in a harmful effect on patients. The health changes (1993-2000) had therefore both a positive and a negative effect on infection control in the hospitals.

9.4.4 INFECTION CONTROL DURING PERIOD E (2000-2008): REACHING MATURITY AND WHERE TO GO FROM HERE?

It took some years before the change to a district health board system showed any effect on the infection control service and the first few years presented challenges from the previous period. The institutional governance did not provide any clear guidance for infection control, and the reporting lines were initially unclear (8.2.3) (8.3.3.4). The Clinical Planning and Policy Committee (8.2.3.1) had shown some interest in IC but, when it changed terms of reference and name to the Clinical Advisory Committee (advisory to the CEO), it began to inquire about ICC policies, especially those related to MRSA control, and finally challenged the ICC (8.2.3.1). Some change to the reporting lines took place after this, but only in 2005 did reporting change from a General Manager to the Chief Medical Officer (by this time the Clinical Advisory Committee had changed again to the Clinical Board).

Continuing work by the ICT

From mid-2002, the infection control operational group included the ICN from Older Persons Health the Princess Margaret Hospital although, due to the ongoing contract
with the private provider, representation on the ICC did not occur until early 2004. The annual IC programme (with a name change to Infection Prevention and Control Programme 2004/5) work plan followed the requirement of the National Infection Control Standard published in 2000 (8.2.2.3) with obvious reference to accreditation and certification requirements (8.3.1.2.3) (8.3.3). A few major new guidelines were produced, such as those related to influenza and norovirus infections. A major change (Appendix 2 Period E) was the introduction of the IC guidelines onto the CDHB intranet and the brief presentation of all IC policies in a staff handbook, issued to all patient care staff, called “the little red book” due to the colour of its cover. During the last decade further work included pandemic planning and routine hygiene audits (8.3.1.2).

The number of staff in the IC Unit had increased by one (0.8FTE) with the ICT including representation from each division including Ashburton. The IC staff again worked as a CDHB team, but there were now some obvious divisional elements. This can be seen from the list of guidelines (Appendix 2) which show divisional specific guidelines, and the appendices to the IC manual (287).

What about outbreaks?

Outbreaks continued during this last period (2000-2008) and caused disruption to patient services (8.4). However, as the majority were in medical wards of the main hospitals with a high admission rate of elderly patients, these did not disrupt surgical services. Single issue outbreaks involved scabies (8.4.6.2) and *Streptococcus* Gr.A (8.4.5) infections. During the latter the incident group followed a Strategic Implementation Methodology (SIM) procedure for the first time. While seasonal influenza infections required special precautions, it was the recurrent outbreaks of norovirus which caused most concern (8.4.2). Christchurch hospitals had previously experienced smaller outbreaks of diarrhoea (4.4.7) (5.4.4) (6.4.3) (figure 8.6 and 8.7), but nothing of the scale seen from 2002, which was blamed on a new norovirus variant (197, 199). Apart from the emergence of a new strain to which the population had little immunity, the impact on the hospitals was largely due to lack of isolation facilities and shared toilets and washing facilities. This was not a new issue, but one which had been discussed at ICC over most of the 30 years (5.4.3) (6.3.3.2.1) (7.4.1), and was addressed when planning new hospital buildings (Christchurch Women’s Hospital
8.3.1.2.4). It was however, the older parts of Christchurch and the Princess Margaret Hospitals with the greatest lack of facilities which were the centres of the outbreaks.

**What happened to ICC?**

The CDHB ICC met regularly with widely published minutes and an annual report summarising the year’s activities. The membership of the ICC changed little, however, the number of medical staff attending declined, with surgeons absent and physicians mainly represented by those also working in infectious diseases. Most divisions had established a local ICC, which dealt with operational issues of the divisions and served as a point for the ICN to present local IC reports and draft protocols and guidelines prepared by the CDHB ICT. The CDHB ICC included issues from Christchurch Hospital and the Christchurch Women’s Hospital when their ICC stopped meeting in 2004 (8.3.3.3).

With the ICT drafting most of the guidelines, fewer subcommittees were needed. The main standing subcommittee during this period (2000-8) was the Reuse of Single Use Item Committee with the committee desperately trying to obtain resolution of the issue (8.3.4.5). When Standards New Zealand took charge of the endoscope guideline (8.3.4.4), the main subcommittees remaining were those dealing with outbreaks.

In keeping with the development of divisional ICCs, most of the outbreak groups or committees were institution based even when the same organism caused outbreaks in several hospitals. It was also the divisional ICNs who were part of the local outbreak committee rather inclusion of the ICNs from several divisions.

ICC had become a committee receiving reports from the divisions although this reporting was not set out in the Terms of Reference. It was still the ICC which recommended protocols and guidelines and issued annual reports, although guidelines had to be accepted by the Clinical Board.

**Evaluation of the period 2000-8**

Although infection control had a slightly rocky start, this period can be described as settled. Infection control was accepted as a professional activity with a job to do. ICNs had become increasingly career minded and most received certification in infection control. The infection control staff continued to develop new skills and new work
areas, but the major development was introducing IC onto the intranet and dealing with pandemic planning. The three main stakeholder groups, as outlined in 9.3, were changing. The ICNs continued to work as part of the ICT, but were also increasingly responsible for infection control in their own divisions. The ICC remained more or less as before, but was also changing in importance in relation to divisional ICCs. Lastly the third group, the more diffuse professional participation involved in subcommittees were disappearing, with only outbreak groups left. By late 2008 there was obviously a need for a review of the functions of the ICCs and maybe also ICT to maintain the momentum for development of IC.

9.4.5 PROFESSIONAL DEVELOPMENT IC STAFF

The first infection control nurse (ICN) was employed in Christchurch Hospital, June 1978, at a staff nurse level, without any specialist training in infection control. The two issues important for the development of IC staff since then have been: the employment condition or professional grading of the individual practitioner and the education of staff employed in infection control.

Employment arrangements for the infection control staff

The infection control practitioners were, with one exception, recruited from the nursing profession. While there is evidence that the ICN had close relationship with senior nursing staff during A, there was also a close working relationship with the microbiologist and microbiology laboratory staff. During period B (1989-93), the ICNs were all employed under nursing administration with operational connection to the microbiologist. This situation changed with the development of the Infection Control Unit late in period B (1989-1993) which was independent of the nursing administration, and directed by the microbiologist (employed .1 FTE in IC) (5.2.1, 5.3.1). From period C (1993-96) (6.3.1), IC staff were either employed in the Unit (mainly covering Christchurch Hospital) or in the divisional hospitals’ nursing administration (5.3.1).

Throughout period A (4.3.2) both the ICN and the microbiologist recommended re-grading the position as charge nurse, citing two reasons; authority when providing advice, and status and salary related to recruitment and retention of ICNs. When recalling the turnover of infection control staff over the years, both are important
issues (4.3.2). However, the infection control liaison officer (ICLO) employed in 1993 was a trained laboratory technologist (called laboratory scientist today) and employed on a contract, as was common at that time, and would have secured a salary comparable to the technologists grades (6.3.2). The first changes to ICN positions came in early 2000, when most of the ICN positions changed from staff nurse to nurse specialist, and later in 2006 when the ICNs nationwide went through a scoping process (8.3.2). This lack of career acknowledgement, especially within the nursing structure, may have contributed to the high turnover of infection control staff over the research period.

Education of infection control staff

The education of the ICN was obviously an issue earlier for the Department of Health and those involved with the employment of the infection control staff. Relevant educational material such as books and guidelines were made available (4.3.2) as a resource for producing the guidelines and protocols.

The Department of Health started yearly IC seminars (4.3.2) and this important educational session was continued by the New Zealand Nurses Organisation’s National Division of Infection Control Nurses (5.3.2) as yearly conferences. However, the ICNs were largely self-taught. Additional training came from working with the medical microbiologist, who was involved in most of the ICNs’ work. The medical microbiologist training includes epidemiology and transmission of infectious diseases, disinfection and sterilisation. When ICNs were employed in most of the major hospitals within Canterbury Area Health Board the microbiologist supported the ICNs in the single hospital positions; however, the formation of the infection control operational group in period C gave the single practitioners a place for exchanging experience and peer support (6.3.2). It is obvious that the breakup of the operational group, when two of the Healthlink South hospitals contracted alternative providers caused a decline in morale (6.3.2).

The infection control staff at Canterbury only began to obtain certificates in infection control in 1998/99 and new appointees were encouraged to study for the IC certificate (7.3.1.2). A more advanced training at diploma or master level is not available in New Zealand a particular gap for health professional, be it nursing, medical or medical scientists, who wish to further their career in the field. An attempt in 1990 to form a
National Infection Control Society, which would have included both medical and nursing practitioners failed, for unknown reasons (5.3.2) and neither did another attempt by IC interested medical staff in 2005 (8.3.2). More academic or centralised training of infection control personnel has been developed in many countries (2.3.2). Some universities in the UK provide diploma and master courses aimed at nurses, and one provided other health professionals including laboratory staff. An Australian university provides both certificate and master courses through the university’s school of nursing (2.3.2) (67-70, 72). There is obviously a great need in New Zealand for postgraduate education in infection control epidemiology and prevention aimed at several professional groups. Secure career structures and postgraduate education for infection control practitioners are also needed in New Zealand. The compatibility with some aspects of public health training should make it possible to create a broader and interchangeable education pathway, which could support both career development and research.

9.5 OCCUPATIONAL HEALTH

Infection control’s concern with occupational health issues is primarily the risk to staff from infections transmitted directly from patients or indirectly through clinical equipment or the work environment. Infection control’s other interest in occupational health is the risk to patients from infected staff. Preventive measures involve modifying environmental or equipment related risks or increasing protection of the staff member themselves by use of personal protective equipment or immunisation.

The Canterbury Hospital Board did not have a dedicated occupational health service. Microbiology department medical staff and infection control provided some occupational health service during Period A (1978-89), mainly post exposure cover after “sharps” injuries, later called blood and body fluid exposures (BBFE) (4.5.2). Infection control realised early on that protection of patients from nosocomial infections also depended on keeping the health worker safe and free of infection. IC and the ICC were the drivers behind introducing “sharps containers” and the introduction of a special BBFE report form which streamlined the information and protection of staff after BBFE (4.5.2). During 1980s IC had become the main force appealing for an occupational immunisation service for staff supported by the microbiology department’s medical staff. The microbiology laboratory medical staff
provided BCG vaccination for new nursing student intakes and contact tracing after staff had been exposed to Tuberculosis. In 1987 the IC and the Microbiology Department’s medical staff provided hepatitis B vaccination for 3300 staff (4.5.1). MRSA screening of staff at the time of employment was also introduced during period A (4.5.3). Institutional management was involved in all these developments as they were the group which had to recommend that resources were allocated to these improvements. Every development went through the Medical Superintendent-in-Chief who submitted the proposals to the Board. The decisions and requests for implementation were distributed to the Medical Superintendents of Hospitals with copies to various affected parties.

Period B did not deliver the continuous hepatitis B vaccination service expected, but the ICC recommendation of hepatitis B vaccination after BBFE to non-immune staff, was accepted by management (5.5.1.1). The Microbiology Department medical staff, which were behind the main drive for staff immunisation, convinced the laboratory to offer influenza vaccination to their staff in 1991. The following year research confirming that the vaccination programme was cost effective, was influential in the decision to offer influenza vaccination to all hospital staff in 1993 (5.5.1.3).

The data obtained from the surveillance of BBFE were also used for production of evidence for implementing changes benefitting occupational health. A BBFE review in 1992 of 405 BBFE reports concluded that a frequently used device used for obtaining blood by finger prick contributed to seven percent of BBFE and the instrument was removed and replaced by a safer one (5.5.1.4). Discussion about risk of HIV infection and AIDS resulted in the Medical Advisor (member of ICC) writing the first and only Guideline for HIV and Employment for the CDHB (5.5.1.5). Other occupational health guidelines were produced often in association with the Ministry of Health for staff suffering from possible infectious diseases (5.5.1.6). IC and ICC’s continuous interests in endoscope disinfection resulted in discussion of the occupational risk of staff exposed to Gluteraldehyde (5.5.1.6). In the last few months of the CAHB the ICC submitted a proposal for an occupational health nurse who could monitor staff immune status, but there was no documentation that the proposal was considered before the changes of the Canterbury Area Health Board into Crown health Enterprises (5.5.1.2).
provide a ‘safe workplace’) might have had some influence on the normally positive attention the risk aversive CAHB gave to IC occupational health proposals.

Documents from period C (1993-1996), the CHE period, showed some uncertainty over communication about immunisation of staff and BBFE precautions. The protocol submitted on staff immunisation and immune status had to be resubmitted and a reserved response was received requesting costing. Influenza vaccination of staff continued and the Healthlink South Medical Advisor, who during period B had been the CAHB Medical Advisor, informed IC that some areas of Healthlink South also had initiated influenza vaccination (6.5.1). The BBFE follow up programme recorded concern with obtaining laboratory results from private laboratories with claims of breach of the Privacy Act, and requests from managers to obtain names of staff with BBFE exposures (6.5.2). Some research was initiated related to risk of needle stick from access of IV lines. Uses of personal protective gear were debated. It was documented that AZT prophylaxis for BBFE HIV exposure had been standard practice for some years in Canterbury (6.5.2).

During Period D IC and ICC kept the pressure on the institutional management to introduce an occupational immunisation service. IC and the Microbiology Department’s vaccination clinic for travellers still provided the hepatitis B vaccination for staff after BBFE exposure and on departmental requests. Influenza vaccination was performed by the same group but required a yearly institutional budget. The ICC had warned the institutional management about a looming measles epidemic with younger staff at risk. No response was received and IC took the initiative together with the Microbiology Department’s vaccination clinic to vaccinate staff. The Medical Advisor at Healthlink South pursued the concept of an immunisation programme for staff and managed to get a computer programme installed to log immunisations. After the measles epidemic Canterbury Health Ltd and Healthlink South human resources discussed a possible joint venture on immunisation, however, it did not eventuate, possibly a casualty of the divided management of the Canterbury health services. After a discussion by ICC the Chair of ICC initiated a pilot immunisation and immunity status programme for junior medical staff (RMOs) (7.5.1.). The consequences of testing staff for blood borne viruses and the effect on their future employment were also discussed at the ICC (7.5.1.1).
Period E (2000-2008) saw a change in the institutional management attitude to an occupational health service with it discussed under the heading “health and safety”. In 2000 ICC wrote to the Clinical Advisory Committee asking the committee to take up the issue of immunisation of staff. Nothing happened, and the request was repeated in March 2002. No documentation of a response was available. However, in 2003 a steering group, chaired by the Director of Nursing, was formed to prepare a budget proposal of an occupational health service to provide staff vaccination and it became operational in 2005 (8.5). The Occupational Health Service began to provide hepatitis B vaccination later followed by Tuberculosis contact tracing and follow up of staff (8.5). Four months after the occupational health service started to provide vaccination, the Microbiology vaccination clinic service closed as a result of a decision taken independently by the laboratory.

The New Zealand Standard Infection Control (NZS 8142:2000) and New Zealand Standard Infection Prevention and Control (NZS 8134.3:2008) (8.2.2.3) both refer to

Policies and procedures should cover the prevention of infection and management of personnel with infectious, communicable diseases and potential pathogens of clinical significance.

The Standards also stress that policies and procedures should clearly indicate who is responsible for occupational health and pre-employment screening.

The 2003 report of the Controller and Auditor-General titled “Management of hospital- acquired infection” also discusses the screening of staff for carriage of resistant microorganisms such as MRSA or BBFE (8.2.2.4).

The New Zealand infection control standards and reports from the last decade have outlined the occupational health requirements, however, the literature from as far back as 1970s stressed the importance of evaluating infection in staff (35, 212). Offers of immunisation available at the time were stressed. Later precautions against blood borne virus hepatitis B, C and HIV dominated the literature. This included the concept of “universal precautions” which also stressed the importance of safe disposal of sharps. Hepatitis B vaccination became a universal requirement for staff (288, 289).

It took infection control (and the microbiology department medical staff) 27 years to persuade the institutional governance body to set up an independent occupational health service to relieve infection control of some of its occupational health duties.
Did Infection Control continue to develop and if so what was the driving force?

Infection control developed from the employment of one infection control nurse (ICN) in 1978, whose work encompassed the whole North Canterbury Hospital Board’s hospitals, to a team of ICN with ICN representation in each major hospital in 1993. Since then there has only been a moderate increase of one position.

The work areas also diversified as infection control staff found infection concerns in multiple areas of hospital operation or staff requested advice on infection control risks. The initial area of ICN work (surveillance of hospital acquired infection after surgery, education of staff, protocol writing and outbreak control) increased to include environmental risks, product risk, sterilisation/disinfection and hygiene, laundry etc. While the major drive for this development was the infection control staff themselves, their close association with the microbiology laboratory and its staff provided them with infection information, facilitating investigation and control, and an operational system introducing them to quality issues such as operational plans and annual reports.

Were there national and/or international influences?

The national influence on infection control, mainly from the government or its agencies, was only felt indirectly during the early part of the research period, but as surveillance of hospital acquired infection became a national driven quality issue during the 1990s, the influence increased. Hospital accreditation and certification and development of national standards added further to the national influence.

International influence was through publications, with especially protocols and guidelines from CDC Atlanta from early in the research period, with national guidelines published in the UK and Australia complemented the resources accessed by infection control.

Professional influences?

The professional influence on infection control was first and foremost the infection control staff (ICNs and Microbiologist), but also the numerous members of the infection control committee (ICC) over the years and other professional groups, not always members of the ICC. The professional influence also included development of infection aspect of an
occupational health service. This influence, which infection control performed jointly with the microbiology department medical staff resulted in a basic occupational health service getting started in the early 2000.

The New Zealand Nursing Organisation supported the development of National Division of Infection Control Nurses which was instrumental in providing regular professional conferences. Formal professional education in the form of an infection control certificate could be obtained through a Polytechnic Institute. University courses are still not available nationally at the end of the research period (2008)

What was the influence of the news media?

The news media became involved in reporting infection control issues through several of the periods. The reporting of mainly outbreak events was noted during the early period of the 1980s and again during the late 1990s. The reporting of outbreaks was often quite distressing to staff due to the invariable sensationalistic reporting style. However, other issues reported covered areas such as reuse of disposable items, when that issue was pertinent in the late 1990s. During the 2000s the news media became a valuable apparatus for the CDHB to inform the public about infectious events. This was enhanced when the communication with the news media was facilitated by a professional communication manager.

Would the Standard (NZS8142:2000 and 2008) have been complied with (in relevant sections)?

The National IC Standard was used as a measurement tool for hospital accreditation and certification introduced the last decade. Even then, most of the sections would have been addressed by infection control as early as the end of the first ten years of the research period. With the reservation that the ability to comply with all sections in the Standards was not always possible for IC, such as increasing staff numbers or other resource constraint the majority of the Standards would have been complied with from the early 1990s.
CHAPTER 10-SUMMARY AND RECOMMENDATIONS FOR THE FUTURE DEVELOPMENT OF INFECTION CONTROL

SUMMARY

The overall aim of this research was to evaluate the forces which shaped the development and performance of infection control in Canterbury public hospitals from 1978, when the first infection control nurse was employed, until 2008, a period of 30 years. The forces identified were the Government (Department/Ministry of Health and its Agents (NHI/ESR)); institutional management and board directions management; health professionals (medical, nursing and allied health), including interplay of professions; infection events; the world literature and the public press.

This research has demonstrated how infection control in Canterbury hospitals developed, from the early beginnings, employing one infection control nurse (ICN), to employing a team of infection control staff. The early infection control service, including the ICN and an infection control officer (the medical microbiologist) supported by an infection control committee (ICC) providing surveillance of surgical site infections and education, evolved to include infection control and prevention service to many parts of a hospital’s operation. Some of the examples given include providing advice during building and renovation, infectious waste management, laundry service and Legionella monitoring of the domestic hot water. The list of protocol and guidelines written and updated during the period is large and included research from the world literature and international guidelines. In addition there were numerous reports from outbreak investigations and hygiene audits. This development has been mainly driven by the professionals employed in infection control with support from professional groups within the hospitals.

The governance represented by the Department/Ministry of Health set out the requirements for infection control in hospitals and some early basic education. Its main role in development has been to require initially through NZ Communicable Disease Centre/ESR and later through
other agencies to require infection control monitoring and quality systems by public hospitals. In the later part of the research period its major contribution was the production of guidelines. The institutional governance and management’s contributions in the development are more indirect. Their major role was through support of the infection control service increasing its involvement in many areas of hospitals operation and providing budgetary support.

Major events such as outbreaks have played a role in shaping infection control through the experience in controlling the events, the interaction with other health professionals and the hospital management. It was mainly during these events that the press showed interest in infection control, but its influence on infection control developments have been minimal compared to the other forces.

An unanticipated major force having an influence on the infection control service was the impact of the four health restructurings, where each sent waves through the service requiring it to adjust, using political acumen in the battle to survive. The number and size of infectious events during one of these health political changes demonstrate that the hospital patient population also was affected.

There have been many staff changes in infection control during the 30 years with most infection control nurses only staying employed for a few years. However, as the formal education possibilities became available, infection control staff became more career orientated. During the total period of 30 years there have only been two microbiologists dedicated to infection control and they were able to provide continuity and leadership, especially important during years with lack of formal education for ICNs.

INFECTION CONTROL STRENGTHS, THREATS AND FUTURE OPPORTUNITIES (RECOMMENDATIONS)

STRENGTH OF INFECTION CONTROL

The main strength of the infection control service in Canterbury hospitals is its dedicated and enthusiastic workforce, which receives good support within the New Zealand Nursing Organisation. The importance placed by nursing administration within hospitals on education has resulted in infection control being part of the continuing education of the hospital workforce. It has also encouraged infection control personnel to acquire further education and
qualifications. Infection control staff are mainly recruited from nursing staff with some seniority, bringing a blend of hospital and often other experience to the position.

Infection control is also well supported by the microbiology laboratory scientists, if the ICNs have enough knowledge of how to utilise the laboratory. The microbiologist is usually also an important support.

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THREATS TO THE FUTURE DEVELOPMENT OF INFECTION CONTROL

The major threat to infection control development during the research period and in the future is its place in health sector. This research has already demonstrated the problems governance and management have differentiating between the development of Quality and Risk management, an Infectious Disease service, and Infection Control. Infection Control has got a strong relationship with Quality, particularly in its work with standardising infection control through protocols and guidelines, provision of hygiene audits and providing data by surveillance for assessment of hospitals’ performance in relation to nosocomial infections.

The other part of its work is more closely linked with public health. While infectious diseases practice deals with infection in individual patients in hospital prevention, like public health, it deals with risks to the population, both patient and staff, in hospitals.

Another threat is the lack of career structure and further education in New Zealand. Education in infection control is only to certificate level, and further academic training requires access to overseas universities. Also most of these universities are mainly placing the education in their nursing schools, which does not encourage other professional groups to pursue these papers. The IC certificate and even further overseas education does not provide any career advantage within the workforce. Many of the IC staff are from the nursing profession and the positions appear to have reached their top level in the nursing grades. The small number of staff in each health care institution makes it impossible to have different level of seniority and training employed in each institution. There is no benefit for a medical technologist or medical professionals to pursue further education in infection control. This lack of career structure may contribute to increase turnover of staff. Infection control training of medical staff is mainly part of the training of Microbiology registrars training for specialist in medical microbiology. The training is very dependent on the interest of the supervisory microbiologist and the interest of the trainee.
OPPORTUNITIES FOR DEVELOPMENT

There are opportunities for further development of and in infection prevention and control, but most involve engaging with other services. Such opportunities include the following:

It is recommended that the Canterbury District Health Board develops a clear mandate for infection prevention and control and incorporate advice into planning of operations both in hospitals and community through:

**Governance**


  In the Canterbury District Health Board (CDHB) there is an infection control committee operating in each division dealing with local issues. Reformating the CDHB Committee to deal with strategic issues including Community and Board supported facilities as well as concerns from the hospital committees. This Committee should be reporting to the Board’s governance structure.

- A review of the position of infection prevention and control service as a “public health service”, by affirming its broad base within CDHB infection prevention service and thus breaking down barriers between institutions and community services.

**Outreach services**

- The availability of community designated infection control staff, possibly connected to the communicable disease section of the public health service.

  One of the major threats for the spread of multiresistant organisms is now coming from the community especially long stay facilities for the elderly. At the same time these institutions are at risk from infections originating in hospitals. The availability of infection control practitioners providing a continuing cover between these facilities and hospitals would help in preventing this spread and improve education.

- Infection control practitioners available for education during outbreaks and pandemics also possibly connected to public health service.

In the wider infection control field it is recommended that:

**Education**

- Universities develop courses for further training in infection prevention and control attractive to many professional groups. Attachment of these papers to training in public
health and some science courses would make the education widely applicable and require few additional resources. This would also encourage research in infection prevention and control.

Research
- District health boards and universities encourage research into areas of IC expertise such as issues related to infection prevention related to products, building and spread of multi-antibiotic resistant organisms in institutions and community by making resources available. There is an increase in community acquired MRSA with no research into the origin, spread and possible control of these strains.

Employment and training
- District health boards make infection control training available and rewarding to laboratory scientists. This would benefit smaller hospitals, which need cover for single infection control practitioners during leave and after hours.

CONCLUSION

This research has fulfilled its aim of demonstrating the forces which have influenced the development of infection control over the last 30 years. It has demonstrated professionals’ influences, those of the central and institutional governance and the influence of infectious events. It has identified centrally driven strategies; the demand on administrators to produce indicators of performance, and it has shown individuals sharing the fundamental belief that infection control is there for the benefit of patients.

It is hoped that in the next decade infection control will move into a proactive rather than a reactive phase by removing the distinction between hospitals and the community, recognising that infection control is above all a public health issue.
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64. Russell B. Excerpt from APIC history. Infection Control and Hospital Epidemiology 1995;16:522-25.
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Community Organism


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13 July In: Commissioner HaD, editor.; 1999.


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In: Standard New Zealand, the trading arm of the Standards Council; 2002. p. 44.


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## APPENDIX 1

**BIBLIOGRAPHY OF LETTERS, MEMORANDUM, EMAILS PRESS CLIPPINGS AND OTHER NOT PUBLISHED INFORMATION**

### PERIOD A 1978-1989

<table>
<thead>
<tr>
<th>A</th>
<th>Date</th>
<th>From</th>
<th>To</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 2</td>
<td>17 January 1989</td>
<td>B.W. Christmas, director NHI, Department of Health</td>
<td>Dear Colleagues</td>
<td>Service available from Virology Laboratory NHI (and their cost)</td>
</tr>
<tr>
<td>A 3</td>
<td>10 February 1989</td>
<td>Head of Microbiology and IC)</td>
<td>Acting Associated General Manager, Patient Care, Canterbury Hospital Board</td>
<td>Services available from Virology Laboratory, NHI</td>
</tr>
<tr>
<td>A 4</td>
<td>15 September 1989</td>
<td>Yvonne Galloway, Communicable Disease Surveillance Unit, NHI</td>
<td>Public health Specialists and Microbiologists</td>
<td>Workshop: Communicable Disease Surveillance (to be held at NHI Wellington)</td>
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<tr>
<td>A 5</td>
<td>24-27 November 1980</td>
<td>Dr Margaret Guthrie, Hospital Division, Department of Health</td>
<td>Infection Control Seminar, Palmerton north Attendants</td>
<td>Manuscript of presentation</td>
</tr>
<tr>
<td>A 7</td>
<td>2 May 1983</td>
<td>Medical Superintendent-in-Chief North Canterbury Hospital Board</td>
<td>Chairman Pathology Services and copy to Acting Chairman, Infection Control Committee</td>
<td>Antibiotic Resistant Bacteria Monitoring</td>
</tr>
<tr>
<td>A 8</td>
<td>28 May 1985</td>
<td>Medical Superintendent-in-Chief Canterbury Hospital Board</td>
<td>Chairman of Medical and Paediatric services and via Chairs to Infection Control Committee</td>
<td>Departmental letter concerning control of meningococcal meningitis.</td>
</tr>
<tr>
<td>A 9</td>
<td>15 May 1987</td>
<td>Acting Chief Executive</td>
<td>Chairman, Infection Control Committee</td>
<td>Infection Control Survey with letter from Department of Health</td>
</tr>
<tr>
<td>A10</td>
<td>8 October 1974</td>
<td>Department of Health, Head Office</td>
<td>Medical Superintendents Hospital Boards. Copies Secretaries and Chief Executives</td>
<td>Circular Memorandum No 1987/78</td>
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<tr>
<td>A11</td>
<td>3 March 1975</td>
<td>Medical Superintendent-in-Chief North Canterbury Hospital Board</td>
<td>Chairman, Surgical Services</td>
<td>Memo: Nosocomial Infections inclosing Department of Health circular Letter 1974/189</td>
</tr>
<tr>
<td></td>
<td>15 April 1975</td>
<td>Chairman, Surgical Services</td>
<td>Medical Superintendent-in-Chief</td>
<td>Reply with concern about the “lot of extra work”</td>
</tr>
<tr>
<td>A12</td>
<td>15 May 1979</td>
<td>Acting Medical Superintendent-in-Chief</td>
<td>Senior Staff North Canterbury Hospital Board</td>
<td>Medical Administration, Channels of Communication and Delegated Authority</td>
</tr>
<tr>
<td>A13</td>
<td>3 February 1986</td>
<td>Medical Superintendent-in-Chief Canterbury Hospital Board</td>
<td>Chief Executive CHB</td>
<td>Rubella Immunity Status of Hospital and Board Employees (Infection Control Committee’s policy suggestion on Department of Health Memorandum No 1985/141 Rubella Immune status memo 21October 1985 from Chair ICC)</td>
</tr>
<tr>
<td>A14</td>
<td>17 February 1987</td>
<td>Medical Superintendent-in-Chief Canterbury Hospital Board</td>
<td>Microbiologist/ Chair ICC</td>
<td>Handwritten note “any news about a new Hepatitis B vaccine? P.S.A. is pushing for staff at Templeton to be tested and vaccinated. Please phone</td>
</tr>
<tr>
<td>A15</td>
<td>16 July 1987</td>
<td>Microbiologist, Canterbury Hospital Board</td>
<td>Medical Superintendent-in-Chief Canterbury Hospital Board</td>
<td>Commitment from all Hospital Boards H-B-Vax/ Merck Sharpe and Dohme purchase. $39.00 per 1.0 mls (20mcg) Offer until 31/23/88. Comment from Medical Superintendent-in-Chief to Medical Microbiologist: “May we discuss”.</td>
</tr>
<tr>
<td>A16</td>
<td>11 July 1988</td>
<td>Medical Superintendent-in-Chief Canterbury Hospital Board</td>
<td>Acting General manager , CHB</td>
<td>Hepatitis B Vaccination Last year 2700 staff vaccinated. Logistic complicated but managed extremely well. What will be out policy in the future? 3 options given.” Cost”</td>
</tr>
<tr>
<td>A17</td>
<td>20 April 1989</td>
<td>Acting General Manager –Patient Care</td>
<td>Acting General Manager, Canterbury Hospital Board</td>
<td>Microbiology Newsletter April 1989 Hepatitis B vaccination Programme for staff carried out November 1987 to October 1988. Comment about the low number of staff showing evidence of past</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>A</th>
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<tr>
<td>18</td>
<td>December 1987</td>
<td>Colin Bryant Weekend Star</td>
<td>Newspaper Readers Drug-resistant germ found in city. Hospital bug.</td>
</tr>
<tr>
<td>19</td>
<td>November 1979</td>
<td>Canterbury Medical research Foundation</td>
<td>Newsletter Survey of Post-operative Wound Infections</td>
</tr>
<tr>
<td>20</td>
<td>14 March 1984</td>
<td>Medical Microbiologist</td>
<td>Medical Superintendent Christchurch Women's Hospital Staphylococcus aureus isolates Christchurch Women’s Hospital (Several babies in W 5 with identical Staphylococcus aureus isolates)</td>
</tr>
<tr>
<td>21</td>
<td>27 June 1984</td>
<td>Medical Microbiologist</td>
<td>Medical Superintendent Christchurch Women’s Hospital Staphylococcus aureus infections in Christchurch Women’s Hospital (babies and nasal swabs from staff)</td>
</tr>
<tr>
<td>22</td>
<td>1982</td>
<td>Microbiologist, Microbiology Department, North Canterbury Hospital Board</td>
<td>Microbiology Newsletter Antibiotic Sensitivities of Clinical isolates Appendix 3</td>
</tr>
<tr>
<td>23</td>
<td>2 May 1983</td>
<td>Medical Superintendent-in-Chief North Canterbury Hospital Board</td>
<td>Chairman Pathology Services and copy to Acting Chairman, Infection Control Committee Antibiotic Resistant Bacteria Monitoring</td>
</tr>
<tr>
<td>24</td>
<td>23 December 1983</td>
<td>Microbiologist Christchurch Hospital</td>
<td>Medical Superintendent-in-Chief, North Canterbury Hospital Board Detergent Distribution and Maintenance. (Hospital compliance with sterile detergent, contractors required to do the same.</td>
</tr>
<tr>
<td>25</td>
<td>31 March 1984</td>
<td>Medical Microbiologist</td>
<td>Medical Superintendent Christchurch Hospital Introducing a needle stick injuries report form.</td>
</tr>
<tr>
<td>26</td>
<td>14 October 1985</td>
<td>Medical superintendent Christchurch Hospital</td>
<td>Medical Superintendent-in-Chief CHB Needle stick injury Protocol</td>
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<tr>
<td>Date</td>
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<tr>
<td>12 September 1985</td>
<td>John Mills Assistant Director Division of Hospitals Department of Health</td>
<td>All Chief Executives Hospital Boards CE Northland Area Health Board</td>
<td>Prevention of Legionnaire’s Disease ( Memo from Chief Engineer 14/10/83)</td>
</tr>
<tr>
<td>15 November 1983</td>
<td>Medical Superintendent-in-Chief North Canterbury Hospital Board</td>
<td>Microbiologist Christchurch Hospital</td>
<td>Prevention of Legionnaire’s Disease ( Memo from Chief Engineer 14/10/83)</td>
</tr>
<tr>
<td>10 February 1989</td>
<td>Microbiologist, Head of Department Canterbury Hospital Board</td>
<td>Chief Engineer, Canterbury Hospital Board</td>
<td>Legionella sample checks from Hospital Equipment.</td>
</tr>
<tr>
<td>10 October 1980</td>
<td>Medical Superintendent, Christchurch Hospital</td>
<td>Principal Nurse, House Manager, All Wards and Departments</td>
<td>Disinfectant Policy</td>
</tr>
<tr>
<td>1986</td>
<td>Infection Control Nurse, Canterbury Hospital Board</td>
<td>Report to the ICC</td>
<td>Infection Control review of Operating Theatres Christchurch Hospital</td>
</tr>
<tr>
<td>September 1987</td>
<td>Microbiology Registrars (2) Microbiology Department</td>
<td>Report to ICC</td>
<td>Investigation of Sterilisation Practices in Canterbury Hospital Board Hospitals</td>
</tr>
<tr>
<td>1986</td>
<td>Infection control Committee</td>
<td>IC Guideline</td>
<td>Infection Control recommendation on sterilisation and disinfection of Endoscopes.</td>
</tr>
<tr>
<td>August 1985</td>
<td>Microbiology Registrar</td>
<td>Research Report to ICC and RCPA</td>
<td>An Outbreak of Resistant Acinetobacter calcoaceticus in Christchurch New Zealand.</td>
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**PERIOD B 1989-1993**

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<th>Date</th>
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<tr>
<td>1991</td>
<td>Canterbury Area Health- Overview</td>
<td>Orientation information</td>
<td>Available after the removal of the Area Health Board and replacing the Board with Commissioners.</td>
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Also discussed July 1990

Also discussed Department of Health Guidelines on HIV & Breastfeeding and
<table>
<thead>
<tr>
<th>B3</th>
<th>17 July 1990</th>
<th>Chair ICC</th>
<th>Professional Advisor Medical Services</th>
<th>Skin piercing</th>
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<tr>
<td>B4</td>
<td>29 July 1992</td>
<td>MI Tobias, Manager NZCDC</td>
<td>Area Health Boards</td>
<td>'Tuberculosis Workshop 'Finish the Job’</td>
</tr>
<tr>
<td>B5</td>
<td>4 September 1990</td>
<td>Head of Microbiology Department Christchurch Hospital</td>
<td>General manager, Canterbury Area Health Board</td>
<td>Incl. NZCDC Annual Report 1991. Also information regarding CDC joining ESR</td>
</tr>
<tr>
<td>B6</td>
<td>20 November 1990</td>
<td>J. Stehr-Green, H. Heffernan and D. Bandaranayake</td>
<td>Head of Microbiology Christchurch Hospital (IC)</td>
<td>Memorandum of understanding between the Canterbury Area Health Board and NZCDC. (Duty and obligations)</td>
</tr>
<tr>
<td>B7</td>
<td>4 December 1990</td>
<td>Manager Secondary Care Division Canterbury Area Health Board</td>
<td>Chair, Infection Control Committee</td>
<td>Proposal for a National HAI Surveillance System. (Reply 11 December 1990)</td>
</tr>
<tr>
<td>B8</td>
<td>5 February 1991</td>
<td>Epidemiologist NZ CDC</td>
<td>Head of Microbiology Christchurch Hospital</td>
<td>HAI National Surveillance System. (Request comments regarding the enclosed CDC proposal) (reply 21 December 1990)</td>
</tr>
<tr>
<td>B10</td>
<td>19 March 1991</td>
<td>Epidemiologist, New Zealand Communicable Disease Centre</td>
<td>Head of Dept of Microbiology Christchurch Hospital</td>
<td>HAI Surveillance, meeting with NZCDC Epidemiologist.</td>
</tr>
<tr>
<td>B11</td>
<td>22 March 1990</td>
<td>Office of the Manager, Secondary Care Division</td>
<td>Circular Memorandum</td>
<td>Summary of multi disciplinary meeting on HAI Surveillance in Christchurch 14 March</td>
</tr>
<tr>
<td>B12</td>
<td>October 1990</td>
<td>Manager, Secondary Care Division</td>
<td>Head of Departments</td>
<td>Acting Manager: Christchurch Hospital; Hospital Management Appointments</td>
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<td></td>
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<td>Strategic Position Statement Secondary Care Division, Canterbury Area Health</td>
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<td>Date</td>
<td>Position/Role</td>
<td>Details</td>
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<tr>
<td>B13</td>
<td>29 January 1991</td>
<td>Surgeon, Senior Lecturer in Surgery CAHB</td>
<td>Manager Nursing Services, Christchurch Hospital                        In support of National HAI system as extension of Surgical Audit Programme, requests assistance if the ICN. (Reply 31 January 1991 indicate support)</td>
<td></td>
</tr>
<tr>
<td>B14</td>
<td>18 February 1991</td>
<td>Senior Lecturer in Surgery Canterbury Area Health Board</td>
<td>Manager Surgical Services, Christchurch Hospital                     A surveillance programme for HAI, with suggestions of surveillance areas.</td>
<td></td>
</tr>
<tr>
<td>B15</td>
<td>26 March 1991</td>
<td>Chair ICC</td>
<td>Acting Hospital Manager the Princess Margaret Hospital, Manager Older Persons Health,</td>
<td>HAI Surveillance draft. Ask if the Princess Margaret Hospital was interested in participating and the support requirements.</td>
</tr>
<tr>
<td>B16</td>
<td>3 April 1991</td>
<td>Acting manager, the Princess Margaret Hospital</td>
<td>Chair ICC</td>
<td>The Princess Margaret Hospital would like to participate in HAI Surveillance.</td>
</tr>
<tr>
<td>B17</td>
<td>31 January 1992</td>
<td>The Transitions working Group</td>
<td>Minutes</td>
<td>Report of the first meeting held in the fourth floor committee room, Central Administration Building.</td>
</tr>
<tr>
<td>B19</td>
<td>2 November 1990</td>
<td>Head of Microbiology Department, Pathology Services.</td>
<td>Manager, Pathology services, Canterbury Area Health Board</td>
<td>Waste Disposal and Recycling Committee</td>
</tr>
<tr>
<td>B20</td>
<td>3 February 1993</td>
<td>Manager, Christchurch Hospital &amp; Clinical Support</td>
<td>Garth Bateup, Manager, Ashburton Health Services, Ashburton</td>
<td>Formation of Waste Standards Subcommittee</td>
</tr>
<tr>
<td>B21</td>
<td>June 1993</td>
<td>Chair Waste Standard Subcommittee</td>
<td>Canterbury Area Health Board Management</td>
<td>Report of Committee established to develop Standards for the disposal of waste within the Canterbury Area Health Board</td>
</tr>
<tr>
<td>B22</td>
<td>January 1990</td>
<td>Microbiologist</td>
<td>ICC</td>
<td>Report from ‘Acting Infection Control Nurse’</td>
</tr>
<tr>
<td>B23</td>
<td>18 February</td>
<td>Chair ICC</td>
<td>Acting Principal Nurse, the Princess Margaret</td>
<td>Infection Control the Princess Margaret Hospital.</td>
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<tr>
<td>Date</td>
<td>Name/Role</td>
<td>Institution/Position</td>
<td>Message</td>
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<tr>
<td>16 April 1991</td>
<td>Director Microbiology Unit, Chair ICC</td>
<td>Hospital, Epidemiologist, New Zealand Communicable Disease Centre</td>
<td>Christchurch Hospital and Christchurch Women’s Hospital, able to start; Burwood Hospital to start later on HAI Surveillance.</td>
<td></td>
</tr>
<tr>
<td>13 March 1991</td>
<td>Scientist, Clinical Microbiology Unit NZ CDC</td>
<td>Microbiologist, Head of Microbiology Department, Canterbury Area Health Board</td>
<td>Thank you for sending the 1989 antimicrobial susceptibility data</td>
<td></td>
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<tr>
<td>13 December 1991</td>
<td>Chair Oncology Services</td>
<td>Director Microbiology Unit</td>
<td>Antibiotic Sensitivities 1990. Request RMO receive the information</td>
<td></td>
</tr>
<tr>
<td>20 December 1991</td>
<td>Director Microbiology Unit (also on behalf of Christchurch Hospital Medicine Advisory Committee)</td>
<td>Chairman Oncology Service</td>
<td>Update- Antibiotic Sensitivities; support of issue of information to RMOs</td>
<td></td>
</tr>
<tr>
<td>1 June 1993</td>
<td>Professional Advisors, Nursing and Medical Services</td>
<td>All Staff Canterbury Area Health Board</td>
<td>Disinfection and Sterilisation. General Guidelines prepared by ICC Canterbury Area Health Board</td>
<td></td>
</tr>
<tr>
<td>18 June-17 July 1991</td>
<td>Review Team</td>
<td>Manager of Surgical Services on behalf of Canterbury Area Health Board</td>
<td>Joint Implementation Study of Surgical Services, Burwood Hospital And comments ID Physician Orthopaedic Services et al.</td>
<td></td>
</tr>
<tr>
<td>1 August 1990</td>
<td>New Zealand Nurses Organisation National Division of Infection Control Nurses</td>
<td>Dear Colleagues</td>
<td>The formation of a National Infection Control Society. (Incl. a questionnaire) Reply 25 September from The Chair ICC</td>
<td></td>
</tr>
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<td></td>
<td>Date</td>
<td>Sender</td>
<td>Recipient</td>
<td>Message</td>
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<tr>
<td>B33</td>
<td>31 March 1992</td>
<td>Convener Quality Improvement Steering Group</td>
<td>Managers Corporate Services, Primary Health, Secondary Care, Secondary Extended Care, Commercial Support Services</td>
<td>Infection Control Unit – Business Plan, February 1992</td>
</tr>
<tr>
<td>B34</td>
<td>10 July 1992</td>
<td>Professional Advisor-Medical Services</td>
<td>Canterbury Area Health Board</td>
<td>Briefing Paper from Medical Advisor on Professional Issues for medical and other professional groups (2. Infection Control)</td>
</tr>
<tr>
<td>B35</td>
<td>21 January 1991</td>
<td>Medical Advisor – Medical Services</td>
<td>Manager, Secondary Care</td>
<td>Infection Control Liaison Officer</td>
</tr>
<tr>
<td>B36</td>
<td>1 November 1989</td>
<td>Molnlycke Health Products</td>
<td>Chair ICC</td>
<td>Advice that Mefix adhesive dressing is not guaranteed for use on fresh surgical wounds without prior autoclaving.</td>
</tr>
<tr>
<td>B37</td>
<td>January 1993</td>
<td>1st Outbreak Committee (Draft)</td>
<td>Canterbury Area Health Board Emergency plan and Outbreak Committee</td>
<td>Outbreak Flow chart Role of Microbiologist, Medical Officer of health, Professional Advisor Medical Services, Infectious Disease Specialists and Microbiologists</td>
</tr>
<tr>
<td>B38</td>
<td>10 February 1993</td>
<td>Professional Advisor Medical Services</td>
<td>Chair ICC</td>
<td>Infectious Diseases Outbreak Group. ‘Acting GM has approved the Infectious Diseases Outbreak Group and asked it be incorporated into the Board’s Civil Defence Plan’</td>
</tr>
<tr>
<td>B39</td>
<td>7 September 1989</td>
<td>Assistant General Manager Patient Care</td>
<td>Chair ICC</td>
<td>Letter inclosing a copy of an article entitled: ‘Occupational risk from Gluteraldehyde’</td>
</tr>
<tr>
<td>B40</td>
<td>5 September 1990</td>
<td>Microbiologist, Head of Department</td>
<td>Secondary Care division, General Affairs, Canterbury Area Health Board</td>
<td>Memo re: Silicone Barrier Cream 555 incl. minutes of ICC 2 July and 6 August 1990 and letters to Medical Advisor 9 and 13 August 1990.</td>
</tr>
<tr>
<td>B41</td>
<td>2 June 1993</td>
<td>Chair ICC</td>
<td>QICG</td>
<td>Memo with Protocol on Canterbury Area Health Board Staff Immunisation</td>
</tr>
</tbody>
</table>
and Immunity Status Check for New Employees attached.

<table>
<thead>
<tr>
<th>Date</th>
<th>From</th>
<th>To</th>
<th>Subject</th>
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</thead>
<tbody>
<tr>
<td>B 42 March 1993</td>
<td>Director Microbiology Unit Canterbury Health Laboratories</td>
<td>ICC Canterbury Area Health Board</td>
<td>Report on the evaluation of Vaccination of Canterbury Area Health Board Staff 1992</td>
</tr>
<tr>
<td>B43 20 March 1991</td>
<td>Pathology Services</td>
<td>Board Employees</td>
<td>Pathology Services offers Influenza Vaccination for Board Employees (cost $17)</td>
</tr>
<tr>
<td>B44 22 April 1993</td>
<td>Chair ICC Canterbury Area Health Board</td>
<td>Acting general Manager CAHB</td>
<td>ICC recommend free Influenza vaccination for staff (It was approved before the next ICC meeting)</td>
</tr>
</tbody>
</table>

PERIOD C 1993-1996

<table>
<thead>
<tr>
<th>C</th>
<th>Date</th>
<th>From</th>
<th>To</th>
<th>Subject</th>
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</thead>
<tbody>
<tr>
<td>C1</td>
<td>March 1993</td>
<td>Department of the Prime Minister and Cabinet</td>
<td>Crown Health Enterprises (CHEs)</td>
<td>Crown Health Enterprise Performance Reporting Measures</td>
</tr>
<tr>
<td>C2</td>
<td>24 June 1993</td>
<td>Ian Miller , GM Transition Management Group, Department of Health</td>
<td>Acting GM Canterbury Area Health Board</td>
<td>User Part Charges: Further information on exempting services. Exception for patients with Notifiable diseases attending hospital outpatient only.</td>
</tr>
<tr>
<td>C5</td>
<td>7 May 1996</td>
<td>Chief Executive</td>
<td>To All Staff</td>
<td>I announce my personal decision to resign from Canterbury Health Ltd</td>
</tr>
<tr>
<td>C6</td>
<td>1993</td>
<td>1993 Hospital Regulations</td>
<td></td>
<td>1993 Hospital Regulations dealing with hospital staff with Communicable Diseases. This regulation required nursing</td>
</tr>
<tr>
<td>C7</td>
<td>23 April 1996</td>
<td>Minister of Health, Jenny Shipley and Minister of CHEs, Bill English</td>
<td>NZ Public</td>
<td>Joint media Statement re Infection Control Standards being developed</td>
</tr>
<tr>
<td>C8</td>
<td>10 May 1993</td>
<td>GM Christchurch Hospital</td>
<td>Clinical Staff incl. Infection Control Service</td>
<td>The new CHEs will be required to monitor a number of Quality indicators, two of these relate to infection.</td>
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<tr>
<td>C9</td>
<td>7 October 1994</td>
<td>Ian Short, Performance Analyst, CCMAU Clinical Indicators.</td>
<td>CHE CEOs</td>
<td>Clean wound Infection</td>
</tr>
<tr>
<td>C10</td>
<td>7 October 1994</td>
<td>Ian Short, Performance Analyst, CCMAU Clinical Indicators.</td>
<td>CHE CEOs</td>
<td>Clean wound Infection</td>
</tr>
<tr>
<td>C11</td>
<td>6 September 1995</td>
<td>Adrian Wimmers, Business Analyst, CCMAU</td>
<td>Chair CHE ICC, CHE Statistician</td>
<td>Results of First Surgical Site Inf. (SSI) Surveillance period)</td>
</tr>
<tr>
<td>C15</td>
<td>26 May 1995</td>
<td>Company Secretary/Privacy Coordinator Canterbury Health Ltd</td>
<td>Elizabeth Harding, Executive Officer, Office of the Privacy Commissioner</td>
<td>ESR: Health MRSA Report.</td>
</tr>
<tr>
<td>C16</td>
<td>28 July 1995</td>
<td>Clinical director Older Persons Health, the Princess Margaret Hospital</td>
<td>Chair ICC</td>
<td>Notification that Southern Community Laboratories is now responsible for Infection Control at Older Persons Health</td>
</tr>
<tr>
<td>C17</td>
<td>19 September 1995</td>
<td>Infection Control Nurse, Christchurch Hospital</td>
<td>General Manager Special Projects. c/o GM Diagnostic and Support Division, New Zealand Nurses Organisation, Director ICS</td>
<td>Submission to the ‘Proposal for Nursing Coordinated Care Management in Christchurch Hospital’, dated 30 August 1995 Document</td>
</tr>
<tr>
<td>C18</td>
<td>2 November 1995</td>
<td>IC Practitioner, Christchurch Women’s Hospital</td>
<td>Chair ICC</td>
<td>I tender my resignation as IC Christchurch Women’s Hospital is now under direction of another provider.</td>
</tr>
<tr>
<td>C19</td>
<td>April 1993</td>
<td>ICN Christchurch Hospital</td>
<td>ICLN Christchurch Hospital</td>
<td>ICLN’ Committee Christchurch Hospital, Terms of Reference, Meeting dates Introductory letter and list of participants.</td>
</tr>
<tr>
<td>C20</td>
<td>10 August 1995</td>
<td>Director Infection Control Service</td>
<td>Clinical Director Older Persons Health, the</td>
<td>Response to a letter regarding membership of</td>
</tr>
<tr>
<td>Date</td>
<td>ICLO or Department</td>
<td>Notes</td>
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<tr>
<td>C21 11 July 1996</td>
<td>ICLO</td>
<td>Manager, Performance Monitoring Unit, Canterbury Health Ltd</td>
<td>Hospital acquired bacteraemia for the Month of June 1996</td>
<td></td>
</tr>
<tr>
<td>C22 1 July 1996</td>
<td>ICN, Christchurch Hospital</td>
<td>Manager, Performance Monitoring Unit, Canterbury Health Ltd</td>
<td>Re: March/April 1996 Surgical Site Infection Performance Indicator results.</td>
<td></td>
</tr>
<tr>
<td>C24 1 November 1994</td>
<td>ICLO Canterbury Health Ltd</td>
<td>Clinical Director Paediatric Department Manager Support services, Women’s Health Division Neonatologist and Unit Nurse Manager Neonatal Unit</td>
<td>Memo: <em>Klebsiella oxytoca</em> Neonatal Unit, Call for a meeting. (Issue started September 1994 “Three issues ICS have been involved with recently” detailing the <em>Klebsiella oxytoca</em> in Neonatal Unit Typing by ESR show recent strain to be related, but different from strain present September 94 to March 1995 <em>Klebsiella oxytoca</em> isolated from 4 patients.</td>
<td></td>
</tr>
<tr>
<td>C26 20 September 1993</td>
<td>CEO Healthlink South</td>
<td>Director Infection Control Service</td>
<td>Legitimacy of CAHB Infection Control Guidelines in Healthlink South Institutions.(confirmed) This was a response to a letter from Infection Control 3 August.</td>
<td></td>
</tr>
<tr>
<td>C27 16 August 1995</td>
<td>Employee Relation Coordinator Mental Health Division (Healthlink South)</td>
<td>General Manager Mental Health Division (Healthlink South)</td>
<td>MRSA Standards query not relevant for Mental Health Division (Healthlink South) as it is not an acute medical/surgical facility. Should some Healthlink South standard protocols be reformulated?</td>
<td></td>
</tr>
<tr>
<td>C28 20 February 1994</td>
<td>Clinical Advisor/Medical Officer of Health</td>
<td>ICLO, ICS</td>
<td>MRSA and Casual Staff. Incl. Copy of Public Health</td>
<td></td>
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<tr>
<td>Date</td>
<td>Subject</td>
<td>Description</td>
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<tr>
<td>6 July 1995</td>
<td>GM, Diagnostic and Support Division, Canterbury Health Ltd</td>
<td>Unit Director, Microbiology Universal Precautions Draft Guidelines. With reply 7 July 1995 from Director IC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 &amp; 13 December 1995</td>
<td>Director Infection Control Service. GM, Diagnostic and Support Division Canterbury Health Ltd and Clinical Advisor Healthlink South</td>
<td>Southern Regional Health Authority: Universal Precautions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 March 1996</td>
<td>Medical Officer of Health, Public Health Service, Healthlink South ICLO</td>
<td>My comments on Canterbury Health’s protocol for viral haemorrhagic fever.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 September 1995</td>
<td>Manager Support Services, Healthlink South GM Diagnostic &amp; Support Services Canterbury Health Ltd</td>
<td>Re Your tender for provision of IC Service for Women’s Health Division unsuccessful this time. Present contract cease 31 October 1995</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 July 1995</td>
<td>Obstetrician &amp; Gynaecologist Christchurch Women’s Hospital</td>
<td>Manager Support Services, Women’s Health Division, Christchurch Women’s Hospital Concern regards the ICN not being able to attend the weekly ICN meetings. Important for the ICN to continue liaison closely with other ICNs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 August 1995</td>
<td>Professional Advisor, Healthlink South Chair ICC</td>
<td>Minutes from the ICC 7 August 1995.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 July 1995 and 19 October 1995</td>
<td>Chair ICC GM, Diagnostic and Support Services</td>
<td>Infection Control Committee Meeting 3 July and 2 October 1995</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 July 1995</td>
<td>Clinical Director Older Persons Health</td>
<td>Chair ICC Re: Older Persons Health Physician and one of the IC team from Southern Community Laboratories attending ICC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 August 1995</td>
<td>Clinical Director Older Persons Health Director ICS Canterbury Health Ltd</td>
<td>Re: Older Persons Health Physician attending ICC; also cost of IC; should we consider a Canterbury ICC rather than a CHE/ service specific committee?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 November 1993</td>
<td>Professor of Paediatrics, Christchurch School of Infectious Disease Physician, Christchurch Hospital</td>
<td>Control of Multi-drug resistant Tuberculosis. Discussion filters or Ultra-</td>
<td></td>
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<tr>
<td>C41</td>
<td>17 February 1994</td>
<td>Professor of Paediatrics, Service Facilitator, Paediatric Department, Christchurch Hospital</td>
<td>Protection of Hospital Staff from Airborne Infection. Discussing the subcommittee of ICC working on the Tuberculosis protocol</td>
<td></td>
</tr>
<tr>
<td>C42</td>
<td>7 February 1996</td>
<td>Forensic Pathologist, Consulting Engineer, Powell Fenwick Consultants</td>
<td>Copy of a letter re: Mortuary Air conditioning</td>
<td></td>
</tr>
<tr>
<td>C43</td>
<td>2 May 1995</td>
<td>General Manager, Business Development GMs Hospital Services, Diagnostic and Support, Finance&amp; IS</td>
<td>Waste Policy from Christchurch Site. Policy aiming for reduction of waste, not including radioactive waste.</td>
<td></td>
</tr>
<tr>
<td>C47</td>
<td>8 August 1995</td>
<td>ICLO Canterbury Health Ltd Managers/Clinical Directors Healthlink South</td>
<td>Six Monthly Summaries of Services Provided to Healthlink South.</td>
<td></td>
</tr>
<tr>
<td>C49</td>
<td>25 May 1995</td>
<td>Management Accountant, Older Persons Health Division ICLO Canterbury Health Ltd</td>
<td>Infection Control Tender With reply from ICLO 12 June 1995 and another reply from Divisional Accountant Healthlink South 19 June 95.</td>
<td></td>
</tr>
<tr>
<td>C50</td>
<td>2 May 1995</td>
<td>GM, Diagnostic and Support Division. Ian Sheering</td>
<td>Infection Control Service</td>
<td></td>
</tr>
<tr>
<td>C51</td>
<td>April 1995</td>
<td>ICLO and Director ICN For GM, Diagnostic and Support Division</td>
<td>Draft Business Plan 1995-1996</td>
<td></td>
</tr>
<tr>
<td>C52</td>
<td>19 May 1995</td>
<td>ICLO and Director ICS Ian Sheerin, Inter CHE Contract Coordinator, Healthlink South</td>
<td>Infection Control Service contract with Healthlink South</td>
<td></td>
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<tr>
<td>No.</td>
<td>Date</td>
<td>Name and Position</td>
<td>Title</td>
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<tr>
<td>C53</td>
<td>23 May 1996</td>
<td>Chairman ICC, HSC Ltd.</td>
<td>Director Infection Control Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The contribution HSC to the Regional IC cost</td>
<td></td>
</tr>
<tr>
<td>C54</td>
<td>5 May 1995</td>
<td>Clinical Director Infection Control Unit</td>
<td>Paul Monk, GM, Diagnostic and Support Division</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Infection Control Budget and Expenditure.</td>
<td></td>
</tr>
<tr>
<td>C55</td>
<td>25 May 1995</td>
<td>Management Accountant, OPH Division</td>
<td>ICLO Canterbury Health Ltd</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Infection Control Service.</td>
<td></td>
</tr>
<tr>
<td>C56</td>
<td>16 June 1995</td>
<td>ICLO Canterbury Health Ltd</td>
<td>Inter CHE Contract Coordinator, Healthlink South</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Briefing re the ICS CHL proposal with a cost of $38,000 not including laboratory testing cost for staff pre-employment, BBFE or MRSA screens.</td>
<td></td>
</tr>
<tr>
<td>C57</td>
<td>24 August 1995</td>
<td>GM, Mental Health Division, Healthlink South</td>
<td>Carolyn Campbell, Divisional Manager, Older Persons Health, Healthlink South</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Responsibility Infection Control ‘C’ Ward the Princess Margaret Hospital</td>
<td></td>
</tr>
<tr>
<td>C58</td>
<td>4 September 1995</td>
<td>Medical Officer of Health, Canterbury; Healthlink South Child and Family Health Service, Public Health Service</td>
<td>CEO, Healthlink South</td>
<td></td>
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<td></td>
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<td></td>
<td>Infection Control Practices as discussed at the ICC 4 September 1995. Level of coordination between IC-Services within two of the divisions of Healthlink South.</td>
<td></td>
</tr>
<tr>
<td>C59</td>
<td>29 September 1995</td>
<td>Medical Project Officer/ Acting Medical Advisor, Healthlink South</td>
<td>Chair ICC, CH</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>Response to report from ICC 2nd October 95 referring to IC Service within Healthlink South. Being site or service specific.</td>
<td></td>
</tr>
<tr>
<td>C60</td>
<td>6 October 1995</td>
<td>Director Infection Control Service, Canterbury Health Ltd</td>
<td>Acting Medical Advisor, Healthlink South</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Staff Immunisation and Immunity Status check and Infection Control.</td>
<td></td>
</tr>
<tr>
<td>C61</td>
<td>1 August 1995</td>
<td>Chair ICC</td>
<td>Clinical Director</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Attendance of Older Persons Health’s Physician at ICC Meetings.</td>
<td></td>
</tr>
<tr>
<td>C62</td>
<td>10 August 1995</td>
<td>Director IC Service Canterbury Health Ltd</td>
<td>Clinical Director Older Persons Health, the Princess Margaret Hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Confirmation that Older Persons Health Physician will continue to be invited as an observer to the ICC meetings.</td>
<td></td>
</tr>
<tr>
<td>C63</td>
<td>4 August 1995</td>
<td>Clinical Director, Older Persons Health, the Princess Margaret Hospital</td>
<td>Director IC Service</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Consideration being given to a Canterbury ICC rather than CHE/Service specific committees.</td>
<td></td>
</tr>
<tr>
<td>C64</td>
<td>10 May 1996</td>
<td>Business Development Manager, Canterbury Health Laboratories</td>
<td>Director Infection Control Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Meeting with Women’s Health Division.</td>
<td></td>
</tr>
<tr>
<td>C65</td>
<td>22 April 1996</td>
<td>ICLO, Canterbury Health Ltd</td>
<td>Chair ICC Health South Canterbury.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Infection Control assistance by Canterbury Health Ltd</td>
<td></td>
</tr>
<tr>
<td>C66</td>
<td>13 May 1996</td>
<td>Director Infection Control Service</td>
<td>GM, Diagnostic and Support, Canterbury</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>Medlab South Infection Control Proposal.</td>
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<td>Sender</td>
<td>Recipient</td>
<td>Note</td>
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</tr>
<tr>
<td>14 September 1995</td>
<td>GM, Diagnostic and Support, Canterbury Health Ltd</td>
<td>Unit Director, Microbiology</td>
<td>Infection Control Services for Christchurch Women’s Health Division</td>
<td></td>
</tr>
<tr>
<td>3 August 1995</td>
<td>CEO, Canterbury Health Ltd</td>
<td>Chair ICC</td>
<td>Thank you to the ICC for a copy of the Annual Report and appreciation for the work the Committee had been involved in.</td>
<td></td>
</tr>
<tr>
<td>23 May 1995</td>
<td>Head of Academic Dept of Surgery, Christchurch School of Medicine</td>
<td>Director Infection Control CHL</td>
<td>Re: Guidelines for the disinfection of flexible endoscopies. I have received guidelines from USA, UK and Australia. How do we proceed?</td>
<td></td>
</tr>
<tr>
<td>4 September 1995</td>
<td>ICLO, Canterbury Health Ltd</td>
<td>Gastroenterologist, ENT Consultant, Respiratory Physician, Manager Preoperative Services CH, Unit Nurse Manager</td>
<td>Re: Infection Control and Endoscopy. Invitation to the Committee’s 2nd meeting</td>
<td></td>
</tr>
<tr>
<td>6 September 1994</td>
<td>Chapman, Tripp, Sheffield, Young, Barristers &amp; Solicitors</td>
<td>Canterbury Health Ltd, Business Development Division</td>
<td>Reuse of Single-Use Disposable Items</td>
<td></td>
</tr>
<tr>
<td>2 August 1995</td>
<td>ICLO, Canterbury Health Ltd</td>
<td>GM, Diagnostic and Support Division, Canterbury Health Ltd</td>
<td>Update on status of investigation into reuse of single use disposable medical items within CH.</td>
<td></td>
</tr>
<tr>
<td>5 September 1995</td>
<td>GM, Diagnostic and Support Division, Canterbury Health Ltd</td>
<td>Product Evaluation Coordinator, Business Development</td>
<td>Investigation into re-use of single use disposable medical items within Canterbury Health.</td>
<td></td>
</tr>
<tr>
<td>7 November 1995</td>
<td>Product Evaluation Coordinator CH</td>
<td>GM, Diagnostic and Support Division, Canterbury Health Ltd</td>
<td>Investigation into re-use of single use disposable medical items within Canterbury Health. I have received the file from the ICLD and look into the problem.</td>
<td></td>
</tr>
<tr>
<td>28 December 1995</td>
<td>ICLO, Canterbury Health Ltd</td>
<td>Members of the Reuse of Single use item Committee.</td>
<td>Further evaluation of reuse etc. The GM Diagnostic and Support Division has requested the Product Evaluation Co-coordinator, to coordinate further investigation</td>
<td></td>
</tr>
<tr>
<td>24 August 1995</td>
<td>Director Infection Control Service</td>
<td>Clinical Director Older Persons Health</td>
<td>Happy to discuss your ideas of a Canterbury Infection Control</td>
<td></td>
</tr>
<tr>
<td>Ref</td>
<td>Date</td>
<td>Role/Position</td>
<td>Committee and co-operate if resources made available.</td>
<td></td>
</tr>
<tr>
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<td>--------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>C78</td>
<td>28 November 1995</td>
<td>ICLO Canterbury Health Ltd</td>
<td>General Manager, Diagnostic &amp; Support Division</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>General Manager, Diagnostic &amp; Support Division</td>
<td>Attendance of the first Regional Infection Control Committee 11 December 1995</td>
<td></td>
</tr>
<tr>
<td>C79</td>
<td>11 December 1995</td>
<td>Canterbury Regional Infection Control Group</td>
<td>Members of Canterbury Regional Infection Control Group</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Members of Canterbury Regional Infection Control Group</td>
<td>Record of 1st meeting at St George’s Hospital.</td>
<td></td>
</tr>
<tr>
<td>C80</td>
<td>18 October 1994</td>
<td>Chair ICC</td>
<td>CEO, GMs Diagnostic and Support Division, Hospital Services and Medical Advisors Canterbury Health Ltd</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CEO, GMs Diagnostic and Support Division, Hospital Services and Medical Advisors Canterbury Health Ltd</td>
<td>Legionnaires Disease. Legionella pneumophilia sg. 1 has been isolated from CHH hot water tanks. Reply from Medical Advisors 9 November 1994</td>
<td></td>
</tr>
<tr>
<td>C81</td>
<td>6 December 1994</td>
<td>Chair ICC</td>
<td>Senior Medical Staff through Medical Advisors Canterbury Health Ltd</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senior Medical Staff through Medical Advisors Canterbury Health Ltd</td>
<td>Legionnaires Disease. Advice that the “Nosocomial pneumonia study showed 9-10 % of nosocomial pneumonia may be due to Legionnaires disease.</td>
<td></td>
</tr>
<tr>
<td>C82</td>
<td>9 November 1995</td>
<td>Director Infection Control Service</td>
<td>Clinical Director, Senior Consultant, Unit Manager Spinal Injuries Unit and GM, Ability Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinical Director, Senior Consultant, Unit Manager Spinal Injuries Unit and GM, Ability Services</td>
<td>Scabies Outbreak, Spinal Injuries Unit. Describing the outbreak, action taken and meetings.</td>
<td></td>
</tr>
<tr>
<td>C83</td>
<td>14 August 1995 &amp; November 1995</td>
<td>ICLO Canterbury Health Ltd</td>
<td>Unit Nurse Manager W26 &amp; Unit Nurse Manager W 12/ Coronary Care Unit, Christchurch Hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit Nurse Manager W26 &amp; Unit Nurse Manager W 12/ Coronary Care Unit, Christchurch Hospital</td>
<td>Memo: Gastroenteritis Cross Infection. Staff and patients with sudden onset of vomiting and diarrhoea.</td>
<td></td>
</tr>
<tr>
<td>C84</td>
<td>21 May 1996</td>
<td>Director Infection Control Service, Canterbury Health Ltd</td>
<td>Manager, Clinical services Templeton Centre, Dr. Public health Unit and several more</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manager, Clinical services Templeton Centre, Dr. Public health Unit and several more</td>
<td>Shigella sonnei Outbreak Management Plan.</td>
<td></td>
</tr>
<tr>
<td>C85</td>
<td>8 November 1993</td>
<td>Chair ICC</td>
<td>General Manager, Diagnostic and Support Services, Canterbury Health Ltd</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>General Manager, Diagnostic and Support Services, Canterbury Health Ltd</td>
<td>Memo with Protocol on CAHB Staff Immunisation and Immunity Status Check for New Employees attached.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GM, Hospital Services, GM, Diagnostic and Support Services, GM, Ability Services.</td>
<td>Rubella outbreak mainly in young males, who are not vaccinated. Vaccination recommended.</td>
<td></td>
</tr>
<tr>
<td>C87</td>
<td>18 October 1994</td>
<td>Medical Officer of Health, Child and Family Health Division, Public Health Service, Healthlink South</td>
<td>Chair ICC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chair ICC</td>
<td>HIV positive workers.</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Date</td>
<td>From</td>
<td>To</td>
<td>Subject</td>
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<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| C88| 16 June 1995 | Medical Advisor  
Canterbury Health Ltd | General Manager  
Hospital Services | Transmission of HIV (Screening of human tissues used for transplants and the availability of a list of donors and recipients and exposure to possible infected healthcare worker.                                                                                                                                                                                                                   |
| C89| 22 June 1995 | Medical Officer of  
Health | Chair ICC | Transmission of HIV. Discussion at ICC letter from Medical advisors 16 June. Response from Chair ICC 14 August 1994                                                                                                                                                                                                                          |
| C90| 21 March 1996 | Medical director  
Infection Control  
Service, Canterbury Health Ltd | General Manager,  
Diagnostic & Support  
Services Canterbury Health Ltd. | Re: Influenza Vaccination, do we offer it again this year. Information about purchase cost. Also expressed concern that staff were unhappy about having to pay the previous year.                                                                                                                                                       |
| C91| 5 October 1995 | ICLO Canterbury Health Ltd and ICN  
Christchurch Hospital | General manager  
Hospital Services  
Canterbury Health Ltd | Casual Nursing Staff and MRSA. Concern re. Casual staff provide care for MRSA positive patients due to their lack of financial protection if they acquire MRSA                                                                                                                                                                      |

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PERIOD D 1996-2000

<table>
<thead>
<tr>
<th>No</th>
<th>Date</th>
<th>From</th>
<th>To</th>
<th>Subject</th>
</tr>
</thead>
</table>
| D1 | 29 October 1997 | Office of the Chief  
Executive | Important message to  
all staff | Reconfiguration of the two Christchurch CHEs. Health Minister announced today that Women’s Health Division transferred to Canterbury Health Ltd from 1 December 1997                                                                                                                                                                                   |
| D2 | 30 March 1998 | Director IC  
The Ministry of Health, Wellington | Copy of the Evaluation and  
Comments re Guidelines to  
Tuberculosis Control in New Zealand 1996 |
| D3 | 21 October 1999 | Communicable Diseases  
Programme Manager ESR | Medical Director  
Microbiology/IC  
Canterbury Health Ltd | Report of Initial Investigation into Acinetobacter baumannii outbreak                                                                                                                                                                                                                                                                     |
| D4 | 21 October 1999 | Manager Communicable Diseases  
Programme, ESR | Medical Director  
Microbiology and Infection Control Canterbury Health Ltd from | Acinetobacter baumannii Outbreak  
Initial Investigation. Also mentioned ongoing funding from Ministry of Health sought                                                                                                                                                                                                                                               |
<table>
<thead>
<tr>
<th>Date</th>
<th>Author</th>
<th>Recipient(s)</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 December 1996</td>
<td>The Executive CHMSA</td>
<td>All Senior medical staff</td>
<td>Re Policy and Planning Committee. Re confusion between the Committee requested by CHMSA and the one offered by Chief Executive.</td>
</tr>
<tr>
<td>16 October 1998</td>
<td>Director IC</td>
<td>GM Diagnostic and Support</td>
<td>Re MRSA Screening Process and CPPC suggestions</td>
</tr>
<tr>
<td>19 October 1998</td>
<td>GM Diagnostic and Support</td>
<td>Director IC</td>
<td>Re Clinical Planning and Policy Committee Newsletter suggestion of Random Testing for MRSA.</td>
</tr>
<tr>
<td>17th January 2000</td>
<td>Secretary, Clinical Planning &amp; Policy Committee</td>
<td>Director IC</td>
<td>Re request for a copy of the minutes. Reply 17th January 2000</td>
</tr>
<tr>
<td>January 2000</td>
<td>Clinical Planning and Policy Committee</td>
<td>ICC</td>
<td>Report of December 1999 Clinical Planning and Policy Committee Meeting</td>
</tr>
<tr>
<td>27th November 1996</td>
<td>Performance Analyst</td>
<td>Director Infection Control CHL</td>
<td>Memo re CCMAU Quarterly Results.</td>
</tr>
<tr>
<td>31 July 1997</td>
<td>Crown Company Monitoring Advisory Unit</td>
<td>All CHE Infection Control Officers</td>
<td>Letter re Surgical Site Infection Rates</td>
</tr>
<tr>
<td>21 December 1998</td>
<td>ICN, Burwood Hospital</td>
<td>Manager, Performance Monitoring Unit</td>
<td>Re Audit results for September &amp; October 1998 of clean wound surgical site infection rates at Burwood Hospital.</td>
</tr>
<tr>
<td>19 August 1996/7</td>
<td>Director IC</td>
<td>Risk Manager</td>
<td>Report re Cardiothoracic Surgery: Impact on Microbiology Services and</td>
</tr>
<tr>
<td>Date</td>
<td>Type</td>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>------------</td>
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<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>6th July 1998</td>
<td>Performance Analyst</td>
<td>Email re Graph with Bacteraemia Results.</td>
<td></td>
</tr>
<tr>
<td>5 December 1998</td>
<td>Consultant Cardiothoracic Surgeon</td>
<td>Letter re Reply to <em>Staphylococcus aureus</em> audit.</td>
<td></td>
</tr>
<tr>
<td>15th January 1997</td>
<td>Director Infection Control</td>
<td>Memo re Failure of Operating Theatre Flash Bomb Steriliser Quality Control Checks.</td>
<td></td>
</tr>
<tr>
<td>21st January 1997</td>
<td>Director Infection Control</td>
<td>Memo re Microbiological testing of food provided for patients in Canterbury Health.</td>
<td></td>
</tr>
<tr>
<td>24th January 1997</td>
<td>Manager, Hospitality Services</td>
<td>Memo re Reheating of Patient Meals.</td>
<td></td>
</tr>
<tr>
<td>10th April 1997</td>
<td>Manager, Hospitality Services</td>
<td>Memo re Food Services Contract, Christchurch Hospital.</td>
<td></td>
</tr>
<tr>
<td>31 October 1997</td>
<td>Quality Co-coordinator</td>
<td>Re review of disinfection and sterilisation of reusable medical equipment.</td>
<td></td>
</tr>
<tr>
<td>26th September 1997</td>
<td>Quality Co-coordinator, Christchurch Hospital Services</td>
<td>Re Review of disinfection &amp; Sterilisation of Reusable medical equipment - Progress report. Copy to Director IC. re Steriliser Audit Report</td>
<td></td>
</tr>
<tr>
<td>12 March 1998</td>
<td>Director IC</td>
<td>Email re Cleaning audit performed 9th June 1999. Report re Three monthly team cleaning audit (random sampling).</td>
<td></td>
</tr>
<tr>
<td>10th June 1999, 4th July 1999</td>
<td>Quality Co-coordinator, Hospitality Services, Christchurch Hospital</td>
<td>Email re next Ministry of Health Audit and Notes from the meeting held on 11 November to discuss the preparation for the Ministry of Health Audit - Feb/Mar 1998.</td>
<td></td>
</tr>
<tr>
<td>4th October 1996</td>
<td>Patient Care Manager Respiratory Services</td>
<td>Memo re Proposed Relocation of Bronchoscopy Room Report</td>
<td></td>
</tr>
<tr>
<td>3rd June 1998</td>
<td>Respiratory Physician</td>
<td>Memo re Proposed Relocation of Bronchoscopy Room Report</td>
<td></td>
</tr>
<tr>
<td>28th &amp; 29th January 1999</td>
<td>Chief Engineer Canterbury Health Ltd</td>
<td>Re New Bronchoscopy Room Air-conditioning / ventilation requirements.</td>
<td></td>
</tr>
<tr>
<td>25th February</td>
<td>Medical Advisor, PMH</td>
<td>Copy of letter re Use of the Mortuary at the Princess.</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Recipient</td>
<td>Title</td>
<td>Note</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>25th February 1997</td>
<td>Section Head, Mortuary</td>
<td>Director IC</td>
<td>Memo re Mortuary - Temporary Transfer.</td>
</tr>
<tr>
<td>27th February 1997</td>
<td>Service Manager Laboratory</td>
<td>Director IC</td>
<td>Memo re Use of Mortuary at the Princess Margaret Hospital, Infection Control Perspective.</td>
</tr>
<tr>
<td>13th March 1997</td>
<td>Alex Evans, Powell Fenwick Consultants Ltd.,</td>
<td>Director IC</td>
<td>Memo re Mortuary Alterations</td>
</tr>
<tr>
<td>17th April 1998</td>
<td>Cardio-thoracic Intensive Care Unit Project Co-ordination Meeting held</td>
<td>Project group</td>
<td>Copy of Minutes from the Isolation Rooms for Cardio-thoracic Intensive Care Unit Project Co-ordination Meeting and subsequent meetings to confirm items discussed with IC.</td>
</tr>
<tr>
<td>3rd June 1997</td>
<td>Infection Control Officer</td>
<td>Director IC</td>
<td>Copy of memo re Location of Automatic Washer in Decontamination Room, Theatre Sterilisation Unit.</td>
</tr>
<tr>
<td>30th November 1998</td>
<td>Chair ICC</td>
<td>Clinical Director, Older Persons Health</td>
<td>Re Infection Control Communication and attendance of private laboratory staff at ICC</td>
</tr>
<tr>
<td>14th December 1998</td>
<td>Canterbury Health / Older Persons Health Infection Control Operational Meeting</td>
<td>Minutes</td>
<td>Meeting time established to discuss infectious issues that relate to the transfer of patients and staff shared between Canterbury Health and Older Persons Health First 1999 meeting, Monday 25th January</td>
</tr>
<tr>
<td>2nd August 1999</td>
<td>Infection Control Operational Meeting</td>
<td>Minutes</td>
<td>3.9 Canterbury Health / Older Persons Health Meetings have slipped into abeyance</td>
</tr>
<tr>
<td>15 January 1998</td>
<td>Clinical Advisor - Healthlink South</td>
<td>Chair ICC</td>
<td>Re disestablishment of the position of Clinical Advisor - Healthlink South.</td>
</tr>
<tr>
<td>10th December 1996</td>
<td>Clinical Advisor - Healthlink South</td>
<td>Chair ICC</td>
<td>Re PMH Contact Person</td>
</tr>
<tr>
<td>19th August 1997</td>
<td>Orthopaedic Surgeon</td>
<td>Theatre Manager, Christchurch Hospital (Copy to Chair ICC)</td>
<td>Re Changes to operating Theatre Dress Code.</td>
</tr>
<tr>
<td>25th August 1997</td>
<td>Infection Control Nurse, Burwood Hospital</td>
<td>Manager, Operating Theatre, Burwood Hospital</td>
<td>Re Operating Theatre Dress Code / Overshoes.</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Position</td>
<td>Re:</td>
</tr>
<tr>
<td>--------------</td>
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<td>-----------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>13th September 1999</td>
<td>Emergency Department Specialist</td>
<td>Manager Emergency Department</td>
<td>Re Theatre style scrubs for Emergency Department.</td>
</tr>
<tr>
<td>11th July 1996</td>
<td>Hospitality Services Manager</td>
<td>ICN Christchurch Hospital</td>
<td>Medical Waste Management, Christchurch Hospital.</td>
</tr>
<tr>
<td>21st February 1997</td>
<td>Manager, Southern Region, Medical Waste Group</td>
<td>Hospitality Services Manager, Canterbury Health Ltd</td>
<td>Re Breakdown of Incineration Facility in Christchurch.</td>
</tr>
<tr>
<td>16th July 1997</td>
<td>Risk Manager Canterbury Health Ltd</td>
<td>Director ICS, Canterbury Health Ltd</td>
<td>Re Medical Waste</td>
</tr>
<tr>
<td>7th September 1998</td>
<td>Hospitality Services Manager</td>
<td>Plant Manager, Medical Waste Group</td>
<td>Copy of letter to Director ICS re Planned shutdown of incinerator.</td>
</tr>
<tr>
<td>8th October 1998</td>
<td>Team Leader, Environmental Effects, Christchurch City Council</td>
<td>Infection Control Officer Canterbury Health Ltd.</td>
<td>Re Medical Waste Disposal</td>
</tr>
<tr>
<td>22nd April 1999</td>
<td>ICN Christchurch Hospital</td>
<td>Product evaluator, Canterbury Health Ltd</td>
<td>Waste separation systems for trial in Theatre.</td>
</tr>
<tr>
<td>4th December 1998</td>
<td>Hospitality Services Manager, Canterbury Health Ltd</td>
<td>Director ICS, Canterbury Health Ltd</td>
<td>Email re Health Care Waste.</td>
</tr>
<tr>
<td>23rd January 1999</td>
<td>Hospitality Services Manager, Canterbury Health Ltd</td>
<td>Director ICS, Canterbury Health Ltd</td>
<td>Letter, re Responses from three tenders for the Canterbury Health Ltd - Special Medical Waste Tender.</td>
</tr>
<tr>
<td>19th April 1999</td>
<td>GM Laboratory &amp;Support Services, Canterbury Health Ltd</td>
<td>CE, Canterbury Health Ltd</td>
<td>Copy of letter to Director ICS, Canterbury Health Ltd, re Medical waste disposal.</td>
</tr>
<tr>
<td>18th November 1998</td>
<td>ICN Christchurch Hospital</td>
<td>Product evaluator, CHL and Theatre User Group.</td>
<td>Email re Mefix Results</td>
</tr>
<tr>
<td>25th January 1999</td>
<td>Clinical Director, Department of General and Vascular Surgery</td>
<td>Chair ICC</td>
<td>Letter re Mefix dressings</td>
</tr>
<tr>
<td>November 1997</td>
<td>IC Service Canterbury Health Ltd</td>
<td>All Endoscope Users CEO Canterbury Health Ltd</td>
<td>Infection Control Recommendations for Sterilisation and Disinfection</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Role</td>
<td>Location</td>
</tr>
<tr>
<td>--------------</td>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>21 May 1997</td>
<td>Technical Director/Scientific Officer</td>
<td>Clinical Manager TSSU, Manager Technical Services, Medical Director Respiratory Department</td>
<td>TSSU, Manager Technical Services, Medical Director Respiratory Department</td>
</tr>
<tr>
<td>3 June 1997</td>
<td>Infection Control Officer Canterbury Health Ltd</td>
<td>Clinical Manager, Theatre Sterilisation Unit, Christchurch Hospital</td>
<td>Theatre Sterilisation Unit, Christchurch Hospital</td>
</tr>
<tr>
<td>11 July 1999</td>
<td>Chief Executive CH and Clinical Director Gastroenterology Christchurch Hospital</td>
<td>To All General Medical Practitioners</td>
<td>Gastroenterology Department of Gastroenterology</td>
</tr>
<tr>
<td>9th July 1999</td>
<td>Gastroenterology Department of Gastroenterology</td>
<td>CEO CH Copy Director IC</td>
<td>Gastroenterology Department of Gastroenterology</td>
</tr>
<tr>
<td>14 July 1999</td>
<td>Kathryn McNell The Press</td>
<td>Readers of the Press</td>
<td>Gastroenterology Department of Gastroenterology</td>
</tr>
<tr>
<td>14 July 1999</td>
<td>Stacey Doomenbal Christchurch Star</td>
<td>Readers of Christchurch Star</td>
<td>Gastroenterology Department of Gastroenterology</td>
</tr>
<tr>
<td>27 July 1999</td>
<td>Chief Executive Canterbury Health Ltd</td>
<td>Infection Control Manager</td>
<td>Gastroenterology Department of Gastroenterology</td>
</tr>
</tbody>
</table>
| September 1999 | CEO CH Endoscope incident Working Group | Laboratory Result interpretation Group (Gastroenterologist, ID Physician, Microbiologist) | Gastroenterology Department of Gastroenterology | Report: Gastroenterology incident laboratory testing results.  
a) Endoscope Audit.  
b) Endoscope Audit Protocols and Maintenance |
<p>| August 1999   | CPPC (CEO Canterbury)              | Update for all Staff                    | Gastroenterology Department of Gastroenterology | Key issues which have been discussed by the CPPC over |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Subject</th>
<th>Recipient</th>
<th>Actions/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7th September 1999</td>
<td>CEO Canterbury Health Ltd, Quality Manager, Christchurch Hospital, Director IC</td>
<td>Re last few months. (Endoscope screening programme) Letter re Clinical policy in relation to cleaning of instruments and scopes throughout Canterbury Health.</td>
<td></td>
</tr>
<tr>
<td>D71 18th June 1999</td>
<td>Clinical Director, Dept. Otolaryngology – Head and Neck Surgery, Otolaryngology Service Manager, Christchurch Hospital and Director IC</td>
<td>Re ENT Outpatient Disinfection and Sterilisation procedures and Re Sterilisation or disinfection of flexible nasolaryngoscopes.</td>
<td></td>
</tr>
<tr>
<td>D72 15th July 1999</td>
<td>General Manager, Christchurch Hospital, Clinical Directors</td>
<td>Re Standards, protocols, systems and processes used within Canterbury Health related to cleaning, sterilising and disinfected equipment and other items that re reused in patient care.</td>
<td></td>
</tr>
<tr>
<td>D73 16th July 1999</td>
<td>Clinical Director, Dept. Otolaryngology, Otolaryngology Outpatient Nursing Staff</td>
<td>Re Parasafe disinfection / sterilisation of endoscopes.</td>
<td></td>
</tr>
<tr>
<td>D74 21st July 1999</td>
<td>Secretary to GM Christchurch Hospital, Clinical Director, Dept. Otolaryngology, Meeting in Dept. Otolaryngology</td>
<td>Re Meeting to discuss flash steriliser usage. Notes made at meeting held 22nd July 1999 held in Dept. Otolaryngology to discuss use of flash steriliser in the Ear, Nose and Throat (ENT) Department.</td>
<td></td>
</tr>
<tr>
<td>D75 18 August 1999</td>
<td>Clinical Director, Respiratory Services, Medical Director, Respiratory Laboratories</td>
<td>Re Disinfecting of Bronchoscopes. Referred to Director IC for comments. Reply 30 August</td>
<td></td>
</tr>
<tr>
<td>D76 11 May 2000</td>
<td>Acting Director-General of Health, All Hospitals and Health Services, CEO</td>
<td>Endoscope Cleaning and Disinfection/ Sterilization Referring to a letter from Director- General of health wrote on 13 July 1999 seeking assurance that institutions had appropriate QC measures in place. Also refer to the requirement for microbiological testing to ensure sterility.</td>
<td></td>
</tr>
<tr>
<td>D77 13 October 1999</td>
<td>Acting Deputy Director-General SARB/ Director Public Health, Chief Executive Canterbury Health</td>
<td>Cleaning and Disinfecting Endoscopes by Automated Endoscope Reprocessing Systems. Warning from US regarding disinfection of Bronchoscopes and FDA advisory notice re automatic reprocessing</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Author/Department</td>
<td>Recipient/Committee</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
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<td>-----------------------------</td>
<td>----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>16th May 1997</td>
<td>Chair ICC</td>
<td>Company Secretary Canterbury Health Ltd</td>
<td>Memo re Reuse of Single Use Disposable Equipment - Health &amp; Disability Commissioner's Investigation.</td>
</tr>
<tr>
<td>26 June 1997</td>
<td>Patient complaint Manager</td>
<td>Director ICC</td>
<td>Reuse Issue. Corporate Solicitor has got the folder with the reuse documentation, and he will talk to the CEO.</td>
</tr>
<tr>
<td>4th July 1997</td>
<td>CEO Canterbury Health Ltd</td>
<td>Director Infection Control</td>
<td>Letter re Reuse of Single Use Items.</td>
</tr>
<tr>
<td>1st August 1997</td>
<td>Acting General Manager, Diagnostic &amp; Support Division</td>
<td>Director Infection Control</td>
<td>Memo re Questions from the Health &amp; Disability Commissioner on Infection Control Matters.</td>
</tr>
<tr>
<td>11th July 1997</td>
<td>GM Diagnostic and Support</td>
<td>Chair Reuse of single use items Committee</td>
<td>Copy of a memo re Reuse of Single Use Items.</td>
</tr>
<tr>
<td>16th July 1997</td>
<td>Risk Manager</td>
<td>Director IC</td>
<td>Memo Re Reuse of Single use devices.</td>
</tr>
<tr>
<td>18th July 1997</td>
<td>Chair Reuse of Single Use Items Committee</td>
<td>CE Canterbury Health Ltd</td>
<td>Memo re Protocols for Reuse of single use items.</td>
</tr>
<tr>
<td>6 August 1997</td>
<td>Infection Control Officer Canterbury Health Ltd</td>
<td>All Clinical Directors, Service Managers, GMs, Acting Director Nursing.</td>
<td>Reuse of Single Use Item Committee. Committee established on the directive of the Chief Executive. Documentation</td>
</tr>
<tr>
<td>29 July 1997</td>
<td>Reuse of Single Use Item Committee</td>
<td>Members of the Committee</td>
<td>Minutes of first meeting 29 July 2007. Itemised documents given to group, discussions on definitions and how the Committee would assess items submitted. Fortnightly meetings planned.</td>
</tr>
<tr>
<td>18 December 1997</td>
<td>Chair Reuse of Single Use Items Committee</td>
<td>CEO, Canterbury Health Ltd.</td>
<td>Letter Re Use of Single Use Item Committee, half yearly report with summary of submitted items and policy proposal.</td>
</tr>
<tr>
<td>22 December 1997</td>
<td>CEO, Canterbury Health Ltd.</td>
<td>Chair Reuse of Single Use Items Committee</td>
<td>Receipt of memo of 18 December 1997, Agree with comments. Please submit as company policy to the Policy and Procedure Manual</td>
</tr>
<tr>
<td>July 2000</td>
<td>Secretary/ICO</td>
<td>CEO via ICC</td>
<td>Report on Reuse of single.</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>To/From</td>
<td>Content</td>
</tr>
<tr>
<td>---</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>D93</td>
<td>4th June 1997</td>
<td>Director Infection Control</td>
<td>Memo Re MRSA - Report on precautions taken followed by an update 9th June 1997</td>
</tr>
<tr>
<td>D94</td>
<td>11th June 1997</td>
<td>Communications Manager, Canterbury Health Ltd</td>
<td>Re “No Concern at MRSA Infection Warranted”.</td>
</tr>
<tr>
<td>D96</td>
<td>25th June 1997</td>
<td>Director IC</td>
<td>Memo re MRSA Isolation Ward.</td>
</tr>
<tr>
<td>D97</td>
<td>25th June 1997</td>
<td>Director IC CH</td>
<td>Memo (and related correspondence) re MRSA - Ward 19 Rehabilitation</td>
</tr>
<tr>
<td>D98</td>
<td>13th June 1997</td>
<td>CEO Canterbury Health Ltd</td>
<td>Memo re MRSA – A thank you for excellent work!</td>
</tr>
<tr>
<td>D100</td>
<td>1st July 1997</td>
<td>Clinical Director, Older Persons Health</td>
<td>Memo re MRSA - Christchurch / Burwood Hospitals.</td>
</tr>
<tr>
<td>D101</td>
<td>11th July 1997</td>
<td>Director IC Canterbury Health Ltd</td>
<td>Letter re MRSA outbreak - communication concerns.</td>
</tr>
<tr>
<td>Date</td>
<td>From/To</td>
<td>Subject/Action Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>D102 24th July 1998</td>
<td>Director IC Canterbury Health Ltd</td>
<td>Memo re Intensive Care Unit MRSA strain spread to Ward 19 - Action to take.</td>
<td></td>
</tr>
<tr>
<td>D103 28th July 1998</td>
<td>Outbreak Committee Meeting, Canterbury Health Ltd</td>
<td>Minutes of the Outbreak Committee Meeting discuss and plan strategies for managing the new strain of MRSA 29/52/77+.</td>
<td></td>
</tr>
<tr>
<td>D104 31st July 1998</td>
<td>Ethics Committee Administrator, 14th August 1998</td>
<td>Director IC Canterbury Health Ltd Re Approval for Treatment of MRSA Nasal Colonisation with Tea Tree Oil. Re Ethical approval of 50% solution of Tea Tree Oil in alcohol.</td>
<td></td>
</tr>
<tr>
<td>D105 30th July 1998</td>
<td>GM Diagnostic and Support Canterbury Health Ltd</td>
<td>CEO Canterbury Health Ltd Copy to Director IC Memo re Meeting of the Outbreak Committee.</td>
<td></td>
</tr>
<tr>
<td>D106 24th September 1998</td>
<td>ICN Older Persons Health, the Princess Margaret Hospital</td>
<td>Director IC CH Re MRSA and transfer of patients.</td>
<td></td>
</tr>
<tr>
<td>D108 11th September 1998</td>
<td>Director IC Canterbury Health Ltd</td>
<td>Clinical Director, Older Persons Health, the Princess Margaret Hospital Email re Concern re Physiotherapy student and possible exposure to MRSA.</td>
<td></td>
</tr>
<tr>
<td>D109 17th September 1998</td>
<td>ICN Older Persons Health, the Princess Margaret Hospital</td>
<td>Director IC Re MRSA Update issued 15 September.</td>
<td></td>
</tr>
<tr>
<td>D110 21st and 24th September 1998</td>
<td>ICN Older Persons Health, the Princess Margaret Hospital</td>
<td>Director IC Canterbury Health Ltd Re MRSA positive Physiotherapy student.</td>
<td></td>
</tr>
<tr>
<td>D112 25th September 1998</td>
<td>Clinical Director, Older Persons Health, the Princess Margaret Hospital</td>
<td>Director IC Canterbury health Ltd Re New MRSA strain in Intensive Care Unit and Ward 15 Christchurch Hospital.</td>
<td></td>
</tr>
<tr>
<td>D113 24th August 1998</td>
<td>CEO Canterbury Health Ltd</td>
<td>Director IC Canterbury Health Ltd Re Screening staff for MRSA on employment.</td>
<td></td>
</tr>
<tr>
<td>D114 23rd September 1998</td>
<td>Director IC Canterbury Health Ltd</td>
<td>Corporate Medical Advisor CH and Risk Manager Canterbury Health Ltd Re Draft documents: MRSA Screening on Employment document and Instructions for Occupational Health Responsible for Viewing Staff MRSA Results on</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Date</td>
<td>From</td>
<td>To</td>
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</tr>
<tr>
<td>D115</td>
<td>4th November 1998</td>
<td>Manager Human Resources</td>
<td>Infection Control Officer</td>
</tr>
<tr>
<td>D116</td>
<td>4th November 1998</td>
<td>ICN</td>
<td>Manager Clinical Case Mix</td>
</tr>
<tr>
<td>D117</td>
<td>16th November 1998</td>
<td>Human Resources</td>
<td>Clinical Director IC</td>
</tr>
<tr>
<td>D118</td>
<td>16th November 1998</td>
<td>Accountant,</td>
<td>Clinical Director IC</td>
</tr>
<tr>
<td>D119</td>
<td>24th December 1998</td>
<td>Director IC</td>
<td>Clinical Director Cardiothoracic Unit</td>
</tr>
<tr>
<td>D120</td>
<td>20th November 1998</td>
<td>ICN, Infection Older Persons Health, the Princess Margaret Hospital</td>
<td>Clinical Director IC Canterbury Health Ltd</td>
</tr>
<tr>
<td>D121</td>
<td>21st December 1998</td>
<td>Clinical Director, Older Persons Health</td>
<td>Clinical Director IC Canterbury Health Ltd</td>
</tr>
<tr>
<td>D122</td>
<td>23rd December 1998</td>
<td>Outbreak Committee</td>
<td></td>
</tr>
<tr>
<td>D123</td>
<td>Wednesday 24th December 1998</td>
<td>Outbreak Committee</td>
<td></td>
</tr>
<tr>
<td>D124</td>
<td>24th December 1998</td>
<td>Infectious Diseases, Medical Microbiology / Infection Control and Clinical Pharmacology</td>
<td>All Medical Staff</td>
</tr>
<tr>
<td>D125</td>
<td>1 January 1999</td>
<td>Communication Officer CHL</td>
<td>Media release</td>
</tr>
<tr>
<td>D126</td>
<td>2 January 1999</td>
<td>Kathryn McNeil Journalist The Press</td>
<td>The Press Front page</td>
</tr>
<tr>
<td>D127</td>
<td>8 January 1999</td>
<td>Kathryn McNeill Journalist The Press</td>
<td>The Press page 3</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Position</td>
<td>The Press Front page</td>
</tr>
<tr>
<td>---------------</td>
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<td>------------------------------------------------</td>
</tr>
<tr>
<td>24 December 1998</td>
<td>Medical Microbiologist</td>
<td>Medical Director Microbiology</td>
<td>Medical Director Microbiology Acinetobacter baumannii-Outbreak strain ; case definition</td>
</tr>
<tr>
<td>28th January 2000</td>
<td>Secretary Clinical Planning and Policy Committee</td>
<td>Chair ICC GM, Christchurch Hospital</td>
<td>Re Recommendation by ICC for a policy of regular spring cleaning of clinical areas. Re Routine spring cleaning of clinical areas. Same</td>
</tr>
<tr>
<td>3rd February 2000</td>
<td>Secretary Clinical Planning and Policy Committee</td>
<td>Chair ICC GM, Christchurch Hospital and Chair ICC</td>
<td>Same</td>
</tr>
<tr>
<td>28 February 2000</td>
<td>Clinical Director</td>
<td>CEO, Canterbury Health Ltd.</td>
<td>Multiple Antibiotic Resistant Acinetobacter (MRAB). Related to the patient who was the source of spread of MRAB incl death of a patient Related information in the press</td>
</tr>
<tr>
<td>11 November 1999</td>
<td>Medical Epidemiologist and Manager Communicable Disease Programme ESR</td>
<td>Clinical Director Older Persons Health, the Princess Margaret Hospital</td>
<td>The Princess Margaret Hospital- Acinetobacter investigation</td>
</tr>
<tr>
<td>12 April 2000</td>
<td>Medical Microbiologist</td>
<td>Medical Director Microbiology</td>
<td>Medical Director Microbiology Acinetobacter baumannii-Outbreak strain ; case definition</td>
</tr>
<tr>
<td>11 October 1999</td>
<td>CEO Healthlink South Ltd</td>
<td>Acting CEO, CH Ltd</td>
<td>Acinetobacter baumannii (Canterbury Health Ltd requested ESR assessment, Healthlink South want to participate. Discussion of cost of the review)</td>
</tr>
<tr>
<td>12 October 1999</td>
<td>Acting CEO, Canterbury Health Ltd Canterbury Health Ltd</td>
<td>CEO Healthlink South Ltd</td>
<td>Letter re Acinetobacter baumannii (Canterbury Health Ltd requested ESR assessment, also discussed with Clinical Director, Older Persons Health, who wants to participated. Discussion of cost of the review)</td>
</tr>
<tr>
<td>12 October</td>
<td>Acting CEO, Medical Director</td>
<td>Re ESR review Healthlink</td>
<td>Re ESR review Healthlink</td>
</tr>
<tr>
<td>No.</td>
<td>Date</td>
<td>Sender</td>
<td>Receiver</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>D138</td>
<td>13 October 1999</td>
<td>Medical Director Microbiology</td>
<td>Clinical Director Older Persons Health, Healthlink South</td>
</tr>
<tr>
<td>D139</td>
<td>3 November 1999</td>
<td>Secretary, The Clinical Planning and Policy Committee</td>
<td>ICC Chair</td>
</tr>
<tr>
<td>D140</td>
<td>17 November 1999</td>
<td>Secretary, The Clinical Planning and Policy Committee</td>
<td>Clinical Director Infection Control</td>
</tr>
<tr>
<td>D141</td>
<td>19 February 1998</td>
<td>ESR Communicable Disease Group</td>
<td>Microbiology department Christchurch Hospital</td>
</tr>
<tr>
<td>D142</td>
<td>20 February 1998</td>
<td>Maintenance Manager Canterbury Health Ltd</td>
<td>GM Diagnostic and Support Canterbury Health Ltd</td>
</tr>
<tr>
<td>D143</td>
<td>13th March 2000</td>
<td>Maintenance Manager</td>
<td>GM Diagnostic and Support Canterbury Health Ltd</td>
</tr>
<tr>
<td>D144</td>
<td>13th March</td>
<td>GM Diagnostic and Support Canterbury Health Ltd</td>
<td>Director IC</td>
</tr>
<tr>
<td>D145</td>
<td>14th March</td>
<td>GM Diagnostic and Support Canterbury Health Ltd</td>
<td>Corporate Quality and Risk Manager</td>
</tr>
<tr>
<td>D146</td>
<td>28th January 1999</td>
<td>Maintenance Manager Canterbury Health Ltd</td>
<td>Director IC</td>
</tr>
<tr>
<td>D147</td>
<td>29th January 1999</td>
<td>GM Diagnostic and Support Canterbury Health Ltd</td>
<td>Maintenance Manager Canterbury Health Ltd</td>
</tr>
<tr>
<td>D148</td>
<td>3rd August 1999</td>
<td>Surgical Departments Business Manager</td>
<td>Director IC</td>
</tr>
<tr>
<td>D149</td>
<td>12th August 1999</td>
<td>Director IC</td>
<td>Maintenance Manager</td>
</tr>
<tr>
<td>D150</td>
<td>16th August 1999</td>
<td>Director IC</td>
<td>Maintenance Manager and GM Diagnostic and Support Canterbury Health Ltd</td>
</tr>
<tr>
<td>D151</td>
<td>27th September 1999</td>
<td>Director IC</td>
<td>Medical Officer of Health, Christchurch</td>
</tr>
<tr>
<td>D152</td>
<td>27th September 1999</td>
<td>Director IC</td>
<td>Corporate Solicitor</td>
</tr>
<tr>
<td>D155</td>
<td>19 June 1998</td>
<td>Chief Engineer Canterbury Health Ltd</td>
<td>GM Diagnostic and Support Canterbury Health Ltd</td>
</tr>
<tr>
<td>D156</td>
<td>13 January 1997</td>
<td>Director ICS</td>
<td>Medical Advisors, Canterbury Health</td>
</tr>
<tr>
<td>D157</td>
<td>29 January 1997</td>
<td>Medical Advisor</td>
<td>Director ICS</td>
</tr>
<tr>
<td>D158</td>
<td>16 April 1997</td>
<td>Business Manager, Blood Group, Canterbury Health Laboratories</td>
<td>Director ICS</td>
</tr>
<tr>
<td>D159</td>
<td>21 May 1997</td>
<td>Risk Manager Canterbury Health Ltd</td>
<td>Chair ICC</td>
</tr>
<tr>
<td>D160</td>
<td>4 March 1998</td>
<td>Senior Advisor, Ministry of Health,</td>
<td>Medical Officer of Health, Canterbury</td>
</tr>
<tr>
<td>D161</td>
<td>7th March</td>
<td>Medical Officer of</td>
<td>Director ICS</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Author/Recipient</td>
<td></td>
</tr>
<tr>
<td>------------</td>
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<td></td>
</tr>
<tr>
<td>1998</td>
<td>Medicines Act and Regulations in connection with immunisation.</td>
<td>Medical Officer of Health, Canterbury Director ICS Email re Approved non-medical vaccinators. Email re Protocol for approved courses.</td>
<td></td>
</tr>
<tr>
<td>D162 8 Mar</td>
<td>Director ICS Medical Officer of Health, Canterbury Director ICS</td>
<td>Email re Protocol for approved courses.</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>Email re Approved non-medical vaccinators.</td>
<td>Medical Officer of Health, Canterbury Director ICS Email re Protocol for approved courses.</td>
<td></td>
</tr>
<tr>
<td>D163 16 Apr</td>
<td>General Manager, Diagnostic and Support Services Director ICS</td>
<td>Memo Re Immunity Testing and Immunisation for Healthcare Workers</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Email re Protocol for approved courses.</td>
<td>Director ICS</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Chair ICC</td>
<td>Director ICS</td>
<td></td>
</tr>
<tr>
<td>D165 14 May</td>
<td>Medical Officer of Health Doctor ICS Canterbury Health Ltd</td>
<td>Memo re Health &amp; Safety in Employment Act and MMR for Hospital Staff.</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Director ICS</td>
<td>Acting General Manager, Diagnostic &amp; Support Division</td>
<td></td>
</tr>
<tr>
<td>D166 16 May</td>
<td>Acting General Manager, Diagnostic &amp; Support Division Director ICS</td>
<td>Copy of memo re Measles Epidemic.</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Director ICS</td>
<td>Chair ICC</td>
<td></td>
</tr>
<tr>
<td>D167 19 May</td>
<td>Chair ICC Canterbury Health Ltd/ Healthlink South Medical Advisor</td>
<td>Letter re Issues arising from the Infection Control Committee</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Healthlink South</td>
<td>Director ICC</td>
<td></td>
</tr>
<tr>
<td>D168 21 May</td>
<td>Director ICC General Managers, Managers, Service Managers, Nurse</td>
<td>Memo re Measles Epidemic - Staff Immunity or Immunity Status.</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Specialists, Infection Control personnel / Outbreak Committee,</td>
<td>Director ICS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Canterbury Health Ltd etc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D169 23 May</td>
<td>Project Manager, Risk Management Director ICS</td>
<td>Copy of Memo re Planning for Possible Measles Outbreak.</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Director ICS</td>
<td>GM Christchurch Hospital Email memo re Paediatric Registrar with Measles.</td>
<td></td>
</tr>
<tr>
<td>D170 11 Jun</td>
<td>Director ICS</td>
<td>Produced by the Medical Advisors Office</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>GM Christchurch Hospital</td>
<td>Human Resource Department Information Booklet for new Senior Medical Staff to Canterbury Health Ltd.</td>
<td></td>
</tr>
<tr>
<td>D171 1999</td>
<td>Produced by the Medical Advisors Office</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>The Press (Newspaper), Front page</td>
<td>Hospital ‘should be safer’ 1. Staff say morale low. 2. Brother blames reforms for death.</td>
<td></td>
</tr>
<tr>
<td>D172 3 Apr</td>
<td>Kathryn McNeil Reporter, The Press</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>1. Power play blamed for the problems of 1996. 2. Highs and lows the last four years</td>
<td>The Press, Christchurch (Newspaper), page 5</td>
<td></td>
</tr>
<tr>
<td>D174 23 Jul</td>
<td>Kathryn McNeil</td>
<td>1. Power play blamed for the problems of 1996. 2. Highs and lows the last four years</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>The Press</td>
<td>‘Still a risk’ at hospital.</td>
<td></td>
</tr>
<tr>
<td>Period E</td>
<td>Date</td>
<td>From</td>
<td>To</td>
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</tr>
<tr>
<td>E1</td>
<td>23 March 2001</td>
<td>Quality Manager CDHB</td>
<td>Chair ICC</td>
</tr>
<tr>
<td>E2</td>
<td>19 October 2001</td>
<td>Operational Manager Laboratory and Support CDHB</td>
<td>Director IC</td>
</tr>
<tr>
<td>E3</td>
<td>22 February 2002</td>
<td>Security &amp; Emergency Planning Manager CDHB</td>
<td>Exercise Group</td>
</tr>
<tr>
<td>E4</td>
<td>3 April 2003</td>
<td>Senior Advisor Ministry of Health</td>
<td>Infection Control Officer CDHB</td>
</tr>
<tr>
<td>E5</td>
<td>10th November 2003</td>
<td>Security &amp; Emergency Planning Manager CDHB</td>
<td>Director IC</td>
</tr>
<tr>
<td>E6</td>
<td>10th November 2003</td>
<td>Security &amp; Emergency Planning Manager CDHB</td>
<td>Relevant IC Personnel</td>
</tr>
<tr>
<td>E7</td>
<td>29/01/04</td>
<td>Senior Advisor Ministry of Health</td>
<td>ICNS CDHB</td>
</tr>
<tr>
<td>E8</td>
<td>10th September 2004</td>
<td>Quality Manager Christchurch Hospital</td>
<td>ICN Christchurch Hospital</td>
</tr>
<tr>
<td>E9</td>
<td>26 September 2005</td>
<td>Chief Medical Advisor CDHB</td>
<td>ICNS Christchurch Hospital</td>
</tr>
<tr>
<td>E10</td>
<td>5th September 2005</td>
<td>Microbiologist CDHB</td>
<td>Risk Manager And Quality</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>From</td>
<td>To</td>
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</tr>
<tr>
<td>E11</td>
<td>5th March 2001</td>
<td>ICNS Rural Health CDHB</td>
<td>Microbiologist CDHB</td>
</tr>
<tr>
<td>E12</td>
<td>26 April 2002</td>
<td>Risk Manager And Quality CDHB</td>
<td>Director IC</td>
</tr>
<tr>
<td>E17</td>
<td>21 December 2001</td>
<td>Clinical Director, Older Persons Health</td>
<td>Infection Control Operational Group, CDHB</td>
</tr>
<tr>
<td>E18</td>
<td>19 April 2002</td>
<td>Microbiologist CDHB</td>
<td>Microbiologist, Green Lane Hospital, Auckland</td>
</tr>
<tr>
<td>E19</td>
<td>9 January 2002</td>
<td>Quality manager Christchurch Hospital</td>
<td>Infection Control Officer ICO</td>
</tr>
<tr>
<td>E22</td>
<td>14 October 2002</td>
<td>Office of the Controller and Auditor-General</td>
<td>CEO CDHB</td>
</tr>
<tr>
<td>E23</td>
<td>25th November 2003</td>
<td>Personal Assistant to GM Hospital and Specialist Services</td>
<td>Director IC</td>
</tr>
<tr>
<td>E24</td>
<td>17 July 2000</td>
<td>Analyst Public Health Group Ministry of Health</td>
<td>Antibiotic Policies- Prescribing in Hospitals; thank you for your response to the survey March 2000</td>
</tr>
<tr>
<td>E25</td>
<td>7 November 2002&lt;br&gt;2 July 2003</td>
<td>Secretary for Chair Medicine Advisory Committee&lt;br&gt;AR Public Health Directorate</td>
<td>Director ICS&lt;br&gt;Pharmacist, Clinical Pharmacology</td>
</tr>
<tr>
<td>E26</td>
<td>17th August 2004</td>
<td>GM Laboratory and Support CDHB</td>
<td>relevant personnel</td>
</tr>
<tr>
<td>E27</td>
<td>5th May 2000</td>
<td>Scientist ESR, Porirua</td>
<td>Director IC CDHB</td>
</tr>
<tr>
<td>E28</td>
<td>19 May 2005</td>
<td>NZ Bug Network</td>
<td>Network members</td>
</tr>
<tr>
<td>E30</td>
<td>5th May 2000</td>
<td>Secretary Clinical Planning and Policy Committee Christchurch Hospital</td>
<td>Chair ICC</td>
</tr>
<tr>
<td>E31</td>
<td>27th June 2000</td>
<td>Secretary, Clinical Advisory Committee</td>
<td>Chair ICC</td>
</tr>
<tr>
<td>E32</td>
<td>07 September 2000</td>
<td>Chair Clinical Planning and Policy Committee</td>
<td>Medical Advisor Christchurch Hospital</td>
</tr>
<tr>
<td>E33</td>
<td>30th June 2000</td>
<td>Director IC CDHB</td>
<td>Clinical Director Spinal Injury Unit.GM and Director of Nursing,</td>
</tr>
<tr>
<td>E34</td>
<td>12\textsuperscript{th} July 2000</td>
<td>Risk and Quality Manager CDHB</td>
<td>Burwood hospital</td>
</tr>
<tr>
<td>E36</td>
<td>14 January 2002</td>
<td>Clinical Advisory Committee Administrator</td>
<td>Chair ICC CDHB</td>
</tr>
<tr>
<td>E37</td>
<td>3 April 2002</td>
<td>Locum Haematologist CDHB</td>
<td>Chairperson, Infection Control Service</td>
</tr>
<tr>
<td>E38</td>
<td>8th June 2000</td>
<td>Director IC CDHB</td>
<td>Health and Safety Manager Canterbury Health Ltd</td>
</tr>
<tr>
<td>E39</td>
<td>16th June 2000</td>
<td>Clinical Director SIU</td>
<td>Health and Safety Manager Canterbury Health Ltd (copy sent Director IC)</td>
</tr>
<tr>
<td>E40</td>
<td>28th February 2001</td>
<td>Medical Advisor Christchurch Hospital</td>
<td>Acting CEO, Re MRSA Policy.</td>
</tr>
<tr>
<td>E41</td>
<td>26th March 2001</td>
<td>Acting CEO CDHB</td>
<td>Infection Control Committee</td>
</tr>
<tr>
<td>E42</td>
<td>15 March 2002</td>
<td>Chair Clinical Advisory committee</td>
<td>Chair ICC CDHB</td>
</tr>
<tr>
<td>E43</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E44</td>
<td>12\textsuperscript{th} February 2004</td>
<td>Chair ICC</td>
<td>Chairperson of the Clinical Board CDHB</td>
</tr>
<tr>
<td>E45</td>
<td>16\textsuperscript{th} February 2004</td>
<td>Infection Control Service CDHB</td>
<td>Chairperson of the Clinical Board CDHB</td>
</tr>
<tr>
<td>E46</td>
<td>03/02/04</td>
<td>ICNS Christchurch Hospital</td>
<td>Risk and Quality Manager CDHB</td>
</tr>
<tr>
<td>E47,</td>
<td>20th February 2007</td>
<td>Director IC CDHB</td>
<td>GM Medical and Surgical Services Christchurch</td>
</tr>
<tr>
<td>E48</td>
<td>19&lt;sup&gt;th&lt;/sup&gt; February 2007</td>
<td>Secretary, Clinical Board CDHB</td>
<td>Director IC CDHB</td>
</tr>
<tr>
<td>E49</td>
<td>21 October 2005</td>
<td>Chief Medical Advisor CDHB</td>
<td>ICNS Christchurch Hospital</td>
</tr>
<tr>
<td>E50</td>
<td>16 April 2003</td>
<td>Emergency Manager</td>
<td>Infection Control Officer CDHB</td>
</tr>
<tr>
<td>E51</td>
<td>2 May 2003</td>
<td>Minute taker CDHB SARS Committee</td>
<td>Committee Members</td>
</tr>
<tr>
<td>E52</td>
<td>23 July 2003</td>
<td>Procurement officer ICN Christchurch Hospital</td>
<td>ICN Christchurch Hospital</td>
</tr>
<tr>
<td>E53</td>
<td>11 August 2003</td>
<td>Director IC</td>
<td>Manager Maintenance and Engineering.</td>
</tr>
<tr>
<td>E54</td>
<td>12&lt;sup&gt;th&lt;/sup&gt; September 2000</td>
<td>Quality manager Christchurch Hospital</td>
<td>ICNS Christchurch Hospital</td>
</tr>
<tr>
<td>E55</td>
<td>9&lt;sup&gt;th&lt;/sup&gt; May 2006</td>
<td>Chief Medical Officer CDHB</td>
<td>Director IC, Quality and Risk Manager CDHB and Director of Nursing Burwood Hospital</td>
</tr>
<tr>
<td>E56</td>
<td>25&lt;sup&gt;th&lt;/sup&gt; August 2006</td>
<td>ICNS Christchurch Hospital</td>
<td>ICC CDHB</td>
</tr>
<tr>
<td>E57</td>
<td>11&lt;sup&gt;th&lt;/sup&gt; October 2006</td>
<td>ICNS Christchurch Hospital</td>
<td>Quality Manager Christchurch Hospital</td>
</tr>
<tr>
<td>E58</td>
<td>21&lt;sup&gt;st&lt;/sup&gt; March 2006</td>
<td>ICN Christchurch Hospital</td>
<td>ICNS Private Laboratory</td>
</tr>
<tr>
<td>E59</td>
<td>17&lt;sup&gt;th&lt;/sup&gt; November 2004</td>
<td>Director ICS</td>
<td>Chief Medical Officer CDHB Copy Cardio-Thoracic Surgeons</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>From</td>
<td>To</td>
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<tr>
<td>E60</td>
<td>July 2005</td>
<td>Clinical Director Cardiothoracic Department</td>
<td>IC Service</td>
</tr>
<tr>
<td>E61</td>
<td>18 September 2000</td>
<td>ICN Burwood Hospital</td>
<td>Manager, Laundry Service,</td>
</tr>
<tr>
<td>E62</td>
<td>March 16th 2005</td>
<td>IC Service</td>
<td>ICC CDHB</td>
</tr>
<tr>
<td>E63</td>
<td>27/02/04</td>
<td>Clinical Director Anaesthesia</td>
<td>ICNS Christchurch Hospital</td>
</tr>
<tr>
<td>E65</td>
<td>May 2000</td>
<td>Quality Manager Christchurch Hospital Accreditation Co-coordinator</td>
<td>Director IC Infection Control Service Christchurch Hospital</td>
</tr>
<tr>
<td>E66</td>
<td>4th July 2001</td>
<td>Project Manager Site Redevelopment</td>
<td>Director IC CDHB</td>
</tr>
<tr>
<td>E67</td>
<td>7 September 2001</td>
<td>Project Manager Chow Hill Architects</td>
<td>Director IC</td>
</tr>
<tr>
<td>E68</td>
<td>10 September 2001</td>
<td>Project Manager Chow Hill Architects</td>
<td>Director IC</td>
</tr>
<tr>
<td>E69</td>
<td>21 September 2001</td>
<td>Manager Engineering Services</td>
<td>Director IC</td>
</tr>
<tr>
<td>E70</td>
<td>24</td>
<td>Manager</td>
<td>Director IC</td>
</tr>
<tr>
<td>Date</td>
<td>From</td>
<td>Subject</td>
<td></td>
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<tr>
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<td>-------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>E71 11 July 2002</td>
<td>Director IC and IC Service Christchurch Hospital</td>
<td>Email re Meeting to discuss Infection Control Precautions During Building Activity Christchurch Women’s Hospital.</td>
<td></td>
</tr>
</tbody>
</table>
| E72 31 July 2002 | Meeting Infection Control Issues in Construction | Meeting Members copy to ICC CDHB  
Agenda and Minutes of the Infection Control Issues in Construction and Renovation dated  |
| E73 23 October 2002 | Construction and Renovation Meeting | IC Issues in Construction and Renovation Meeting Agenda  |
| E74 4 December 2002 | Manager Child Health Christchurch Hospital | Email Overview of Infection Control Precautions to be observed during Site Redevelopment.  |
| E75 24th February, 2006 | ICNS Christchurch Women’s Hospital | Chair ICC  
Email regarding the cleaning of spa pool. Attached is a policy for cleaning of spa baths.  |
<p>| E76 25 September 2001 | Project Manager Chow Hill Architects | Fax Re Preliminary Design Sign Off.  |
| E77 17/2/04 | Project Manager Site Redevelopment | Email regarding a breach of the sealing up of the BMTU day unit by Higgs Builders.  |
| E78 21st July 2004 | Personal Assistant to the General Manager Christchurch Hospital | Email attaching a memorandum entitled” Issues concerning the Operating Theatres (especially new Day Surgery Unit) – Air Supply and Anaesthetic gases/vapours”  |
| E79 27th January 2006 | Theatre Sterile Service Unit Steering Committee | Agenda and Minutes of the Theatre Sterile Service Unit Steering Committee meeting held on 27th January 2006.  |
| E81 17 July 2002 | ICS Secretary | Email with a copy of the IC Guidelines for the Management of Inpatient Influenza.  |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Sender</th>
<th>Recipient</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>E82</td>
<td>19 July 2002</td>
<td>Quality Manager Christchurch Hospital</td>
<td>Director ICC</td>
<td>Email re distribution list of the Bacteraemia Annual Report.</td>
</tr>
<tr>
<td>E83</td>
<td>4th June 2004</td>
<td>ICNS</td>
<td>Corporate Document Controller</td>
<td>Email attaching the final version of the Building, Construction and Maintenance Infection Control Guidelines and requesting that the flow diagram be amended and returned to the Infection Control Service for final approval before being submitted to relevant personnel for consultation.</td>
</tr>
<tr>
<td>E84</td>
<td>10 September 2002</td>
<td>Professional Development Unit</td>
<td>Divisional Orientation Presenters (incl. ICNs)</td>
<td>Divisional Orientation September 17th 2002</td>
</tr>
<tr>
<td>E85</td>
<td>24 February 2003</td>
<td>Graduate Nurse Programme Coordinator</td>
<td>ICN</td>
<td>Letter Re Thank you for agreeing to talk to Graduate Nurses Group on the topic of “Needle Stick Injuries”</td>
</tr>
<tr>
<td>E86</td>
<td>28th September 2000</td>
<td>IC Officer CDHB</td>
<td>GM Laboratory and Support CHL</td>
<td>Memo re: Accreditation Gap Analysis, Staffing Requirements at Christchurch Hospital.</td>
</tr>
<tr>
<td>E87</td>
<td>11 August 2001</td>
<td>GM Laboratory and Support</td>
<td>Director IC CDHB</td>
<td>Re Infection Control Budget – Staffing resources</td>
</tr>
<tr>
<td>E89</td>
<td>26 July 2002</td>
<td>Chief Operating Officer</td>
<td>Director OC Service</td>
<td>Memo Re IC Programme 2002-2003.</td>
</tr>
<tr>
<td>E90</td>
<td>14th July 2004</td>
<td>General Manager Hospital and Specialist Service</td>
<td>Chair ICC</td>
<td>Letter Thanking the IC committee for sending him a copy of the Infection Prevention and Control Programme for 2004/2005 and advising that he will attend a future meeting of the Infection Control Operational Committee meeting.</td>
</tr>
<tr>
<td>E91</td>
<td>27th July 2004</td>
<td>Chair ICC</td>
<td>Clinical Director Clinical Pharmacology</td>
<td>Several Email correspondences between: Regarding the appointment of a representative from the Clinical Pharmacology/Pharmacy departments to join the Infection Control Committee.</td>
</tr>
<tr>
<td>E92</td>
<td>26 August 2005</td>
<td>Chair ICC CDHB</td>
<td>Chair Surgical Services CDHB</td>
<td>Letter asking that a representative of surgical services be seconded to the Infection Control Committee or that he suggest an alternative way in which constructive interaction can be put in place for the benefit of the service and patients.</td>
</tr>
<tr>
<td>E93</td>
<td>26 August 2005</td>
<td>Chair ICC CDHB</td>
<td>Chair Orthopaedic Services CDHB</td>
<td>Letter asking that a representative of orthopaedic services be seconded to the Infection Control Committee or that he suggest an alternative</td>
</tr>
</tbody>
</table>
way in which constructive interaction can be put in place for the benefit of the service and patients.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Place/Discussion Topic</th>
<th>Participant</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>E94</td>
<td>23rd November 2000</td>
<td>Intensive Care Unit Infection Control Meeting</td>
<td>Director IC</td>
<td>Minutes of Intensive Care Unit Infection Control Meeting</td>
</tr>
<tr>
<td>E95</td>
<td>26th March 2000</td>
<td>Regional IC Group</td>
<td>Director IC CDHB</td>
<td>Minutes Regional Infection Control Group Meeting.</td>
</tr>
<tr>
<td>E96</td>
<td>Wednesday 26th November 2003</td>
<td>Burwood Hospital Infection Group</td>
<td>Committee Members</td>
<td>Agenda and Minutes for Burwood Hospital Infection Group meeting</td>
</tr>
<tr>
<td>E97</td>
<td>November 2003</td>
<td>ICN Burwood Hospital</td>
<td>Burwood Hospital Infection Group</td>
<td>Infection Control Nurses Monthly Report to the Director of Nursing and Infection Control Committee Burwood Hospital for November 2003.</td>
</tr>
<tr>
<td>E98</td>
<td>26 October 2005</td>
<td>Burwood Hospital Infection Group</td>
<td>Committee Members</td>
<td>Agenda for Burwood Hospital Infection Control Group meeting held on 26 October 2005.</td>
</tr>
<tr>
<td>E99</td>
<td>28 October 2005</td>
<td>the Princess Margaret Hospital ICC</td>
<td>Committee Members</td>
<td>Agenda for the Princess Margaret Hospital Infection Control Committee meeting held on 28 October 2005.</td>
</tr>
<tr>
<td>E100</td>
<td>9th May 2000</td>
<td>Women’s Health Division ICC</td>
<td>Committee Members</td>
<td>Agenda, Minutes and Terms of Reference dated 9th May 2000 for Infection Control Committee Meeting, Christchurch Women’s Hospital.</td>
</tr>
<tr>
<td>E101</td>
<td>4 June 2002.</td>
<td>Women’s Health Division ICC</td>
<td>Committee Members</td>
<td>Minutes of the Women’s Health Division ICC Meeting held on 4 June 2002</td>
</tr>
<tr>
<td>E102</td>
<td>20 July 2005</td>
<td>Medical Officer of Health Christchurch</td>
<td>GM Christchurch Women’s Hospital</td>
<td>Email saying it seemed not unreasonable to him to disband the CWIC group by combining it with the existing Christchurch Hospital group. He is concerned that there are groups represented on the CCW group that are not on the Christchurch Hospital group and feels if these are added to the Christchurch Hospital group with would solve the problem.</td>
</tr>
<tr>
<td>E103</td>
<td>29 July 2005</td>
<td>CD Infection Control Service</td>
<td>GM Christchurch Women’s Hospital</td>
<td>Email stating that she believes it is too early to disestablish the Women’s Hospital Infection Control Committee. She states it would be good to wait until the CDHB IC Committee is structured for the future.</td>
</tr>
<tr>
<td>E104</td>
<td>19/03/04</td>
<td>Chair ICC</td>
<td>Personal Assistant to Chief Medical Officer CDHB</td>
<td>Email regarding amendments to the Terms of Reference for the Infection Control Committee with respect to the Committee reporting to the General Manager of Hospital and Specialist Services. Reply dated 22/03/04 advising that the above change to the ICC Terms of Reference have been approved.</td>
</tr>
<tr>
<td>E105</td>
<td>4 August 2005</td>
<td>Medical Officer of Health Christchurch &amp; Member ICC</td>
<td>Chair ICC</td>
<td>Email suggesting structure for the IC Committee.</td>
</tr>
<tr>
<td>E107</td>
<td>14th June 2000</td>
<td>GM Laboratory and Support Services CDHB</td>
<td>Manager Cleaning Service and Nursing Supervisor</td>
<td>Email to and from service with copy to Director IC re Cleaning of “Matrons Flat” – Hagley Hostel.</td>
</tr>
<tr>
<td>E108</td>
<td>14th June 2000</td>
<td>Nursing Supervisor</td>
<td>Director IC</td>
<td>Email Re Opening of Ward 31 while patient in isolation.</td>
</tr>
<tr>
<td>E109</td>
<td>13th September 2000</td>
<td>Secretary Clinical Planning and policy Committee Canterbury Health Ltd</td>
<td>Chair ICC</td>
<td>Letter re: Isolation Facilities – Spinal Unit, Burwood Hospital and Canterbury Health MRSA Risk.</td>
</tr>
<tr>
<td>E110</td>
<td>8th November 2000</td>
<td>GM Burwood Hospital</td>
<td>Director IC</td>
<td>Email Re Isolation Rooms – Spinal Unit.</td>
</tr>
<tr>
<td>E111</td>
<td>22nd November 2000</td>
<td>GM Laboratory and Support Services</td>
<td>Director IC and several copies to.</td>
<td>Re Isolation Facilities</td>
</tr>
<tr>
<td>E112</td>
<td>11th January 2001</td>
<td>Director of Nursing Medical Christchurch Hospital</td>
<td>Director IC</td>
<td>Re Proposal for New Isolation Room.</td>
</tr>
<tr>
<td>E113</td>
<td>18th July 2000</td>
<td>GM Laboratory and Support</td>
<td>CD ICS</td>
<td>re Meeting notes for the Loading dock planning team 13.7.00 Waste</td>
</tr>
<tr>
<td>E114</td>
<td>1 September 2000</td>
<td>Infection Control Officer</td>
<td>Service Manager Medical services</td>
<td>Re Storage of Waste Contaminated with Radioactive Material and Blood &amp; Body Fluid.</td>
</tr>
<tr>
<td>E115</td>
<td>17th April 2001</td>
<td>Chair ICC</td>
<td>GM Laboratory and Support</td>
<td>Re Infectious and General Waste.</td>
</tr>
<tr>
<td>E116</td>
<td>23rd April 2001</td>
<td>GM Laboratory and Support</td>
<td>Waste Officer Jeanette Elliott</td>
<td>Re Medical Waste.</td>
</tr>
<tr>
<td>E117</td>
<td>24 July 2002</td>
<td>Team Leader Environmental Effects, Christchurch City Council</td>
<td>CD ICS</td>
<td>Re Management of Healthcare Waste</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>E118</td>
<td>21 August 2002</td>
<td>Team Leader Environmental Effects, Christchurch City Council</td>
<td>ICO CDHB</td>
<td>Re Management of Healthcare Waste</td>
</tr>
<tr>
<td>E119</td>
<td>24 September 2003</td>
<td>PA/ Administrator Site Redevelopment</td>
<td>ICC</td>
<td>Re to CDHB Waste Management Committee 12 September, 2003</td>
</tr>
<tr>
<td>E120</td>
<td>25 September 2003</td>
<td>Manager Southern Region Nuplex Medismart</td>
<td>Procurement Manager CDHB</td>
<td>Letter Re Incineration vs. Steam sterilisation</td>
</tr>
<tr>
<td>E121</td>
<td>12th May and 17th May 2004</td>
<td>Health and Safety Advisor CDHB</td>
<td>CD IC</td>
<td>Email correspondence re the method now being used to dispose of medical waste including body parts.</td>
</tr>
<tr>
<td>E122</td>
<td>28th May 2004</td>
<td>Quality Manager, Canterbury Health Laboratories</td>
<td>Manager Waste Company</td>
<td>Advising that it is OK to dispose of cremation ashes to landfill.</td>
</tr>
<tr>
<td>E123</td>
<td>28th October 2004</td>
<td>Quality Co-coordinator &amp; Medical Record Manager</td>
<td>ICNS and Waste Management Officer</td>
<td>Email correspondence regarding concern about Kate Valley not accepting controlled waste unless it has been treated. Incl Kate Valley Landfill “Waste Acceptance – A User’s Guide”.</td>
</tr>
<tr>
<td>E124</td>
<td>09 and 10 December 2004</td>
<td>Quality Co-coordinator &amp; Medical Record Manager</td>
<td>IC Operational Group CDHB</td>
<td>Email correspondence regarding confusion about Kate Valley accepting controlled waste.</td>
</tr>
<tr>
<td>E125</td>
<td>19th November 2004</td>
<td>ICNS</td>
<td>Waste Management Officer</td>
<td>Email correspondence regarding disposal of metal items as sharps waste.</td>
</tr>
<tr>
<td>E126</td>
<td>22/02/05</td>
<td>ICNS</td>
<td>Waste Management Officer</td>
<td>Advising that the Emergency Waste Management Plan and Emergency Waste Management Planning documents have been reviewed by the Infection Control Operational group and several comments were made. Each group member will provide their individual comments to the Waste Management Officer</td>
</tr>
<tr>
<td>E127</td>
<td>23rd March 2005</td>
<td>Waste Management Officer</td>
<td>Alison Hardy</td>
<td>Email re regarding San-I-Pak’s grinding machine. Scissors in a Reece sharps container was found in the machine; however the</td>
</tr>
<tr>
<td>E128</td>
<td>29 July 2005</td>
<td>Quality Manager, Canterbury Health Laboratories</td>
<td>Several recipients, ICC and IC operational group</td>
<td>Memo concerning human tissue disposal procedures. Included procedures, processes and forms regarding cremation of body parts throughout the Canterbury District Health Board.</td>
</tr>
<tr>
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</tr>
<tr>
<td>E129</td>
<td>19th June 2000</td>
<td>All Gastroenterologists, Christchurch Hospital</td>
<td>Chief Advisor Safety &amp; Regulation, Minister of Health, Wellington</td>
<td>Letter re National Guidelines for cleaning of endoscopes.</td>
</tr>
<tr>
<td>E130</td>
<td>17th May 2000</td>
<td>CD Gastroenterology</td>
<td>CD ICS</td>
<td>Letter re Microbiology Quality Control on Gastroscopes and Endoscopes.</td>
</tr>
<tr>
<td>E131</td>
<td>dated 15th February 2001</td>
<td>Microbiologist CDHB Member Expert Committee</td>
<td>Secretary Standard Expert Committee P8149 (Endoscope)</td>
<td>Draft Document for P8149, Draft 6: comment</td>
</tr>
<tr>
<td>E133</td>
<td>14 August 2002</td>
<td>Charge, Endoscope Unit, Christchurch Hospital</td>
<td>CD ICS</td>
<td>Email re Infection Control Issues Relating to Bronchoscopy/Endoscopy Sharing Space.</td>
</tr>
<tr>
<td>E134</td>
<td>19th July 2000</td>
<td>Charge, Endoscope Unit</td>
<td>CD ICS</td>
<td>Email re Gastroenterology Cidex /OPA Comparisons to date.</td>
</tr>
<tr>
<td>E135</td>
<td>7 November 2002</td>
<td>Charge, Endoscope Unit, Christchurch Hospital</td>
<td>CD ICS</td>
<td>Email re Failed OPA Results.</td>
</tr>
<tr>
<td>E136</td>
<td>4th December 2003</td>
<td>Johnson and Johnson</td>
<td>Charge, Endoscope Unit, Christchurch Hospital</td>
<td>Product notice advising that CIDEX OPA Solution Test Strips will now be supplied in a Screw-Top bottle containing two sachets of silica gel.</td>
</tr>
<tr>
<td>E137</td>
<td>29/03/04</td>
<td>CD ICS</td>
<td>Project Manager Site Redevelopment</td>
<td>Email advising that because the Steris in the Intensive Care Unit has broken down, a new Steris is required and should be placed in the new Endoscopy area. However, after inspecting the area, it was found that there was no provision for plumbing or any signs of installation for the Steris in the renovation plans.</td>
</tr>
<tr>
<td>E138</td>
<td>5th February 2001</td>
<td>Charge Nurse Emergency Department</td>
<td>CD ICS</td>
<td>Email Re Sigmoidoscope Incident.</td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Supervisor</td>
<td>Email/Document Description</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
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<td>-------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>5(^{th}) February 2001</td>
<td>CD ICS</td>
<td>Surgeon Christchurch Hospital</td>
<td>Email Re Sigmoidoscope bladders.</td>
<td></td>
</tr>
<tr>
<td>20(^{th}) February 2001</td>
<td>Single Use Items Committee</td>
<td>Committee Members and ICC</td>
<td>Minutes of the Reuse of Single Use Items Committee dated 20(^{th}) February 2001.</td>
<td></td>
</tr>
<tr>
<td>30 September 2002</td>
<td>Quality Manager Christchurch Hospital</td>
<td>GM Christchurch Hospital</td>
<td>Email re Single Reuse Committee. Incl. Table of items being reused, including costs. Report on Reuse of Single Use Items Committee July 2001-2002.</td>
<td></td>
</tr>
<tr>
<td>26th August 2003</td>
<td>Secretary Specialist Advisory Committee Reuse of Disposable Items</td>
<td>members of the Specialist Advisory Committee Reuse of Disposable Items</td>
<td>Email enclosing a document from Tony Blacker regarding legislative consequences in Australia of re-processing single use items. The legislation will take effect in December 2005.</td>
<td></td>
</tr>
<tr>
<td>7 April 2003</td>
<td>Quality Manager Christchurch Hospital</td>
<td>Reuse of Single Use Items Committee</td>
<td>Memo re Delayed Implementation of the Non Reuse Policy.</td>
<td></td>
</tr>
<tr>
<td>1st September 2004</td>
<td>Quality Manager Christchurch Hospital</td>
<td>all members of the Christchurch Hospital Management Group</td>
<td>Memo providing an update on the reuse of single use items policy.</td>
<td></td>
</tr>
<tr>
<td>20/6/06.</td>
<td>Quality Manager Christchurch Hospital</td>
<td>Reuse of Single Use Items Committee</td>
<td>Document outlining the CDHB policy on Reprocessing of single-use medical devices</td>
<td></td>
</tr>
<tr>
<td>08 March 2001</td>
<td>Yvonne Martin, Journalist, The Press</td>
<td>Readers of the Press</td>
<td>Christchurch Hospital involved in equipment recycling row</td>
<td></td>
</tr>
<tr>
<td>17 October 2000</td>
<td>General &amp; Plastic Surgeon</td>
<td>Dear Colleague</td>
<td>Reply to issues of 1. Infected grafts; 2. Shaving before surgery; 3. use of hair dryer to dry patients’ skin; 3. wearing of masks; 4. Use of Mefix and a new product trialled.</td>
<td></td>
</tr>
<tr>
<td>2nd November 2000</td>
<td>Infection Control Officer</td>
<td>Manager and Supervisor Central Sterilisation Services Department</td>
<td>re Sterilising of Mefix ( Copy to Plastic Surgeon)</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Name</td>
<td>Position</td>
<td>Message</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8th June 2000</td>
<td>Director IC CDHB</td>
<td>Health and Safety Manager Canterbury Health Ltd</td>
<td>Letter re Non-adherence to MRSA exposure protocols. Reply dated 15th June requesting relevant protocols.</td>
<td></td>
</tr>
<tr>
<td>16th June 2000</td>
<td>Clinical Director Spinal Injury Unit</td>
<td>Health and Safety Manager Canterbury Health Ltd (copy sent Director IC)</td>
<td>Letter re non adherence to MRSA protocols at Burwood.</td>
<td></td>
</tr>
<tr>
<td>12th July 2000</td>
<td>CD ICS</td>
<td>Clinical Director Spinal Injury Unit, GM, Director of Nursing, ICN, Burwood Hospital, GM Laboratory and Support Canterbury Health Ltd and others</td>
<td>Email re Burwood Hospital MRSA update</td>
<td></td>
</tr>
<tr>
<td>15th July 2000</td>
<td>Service Manager Plastic Surgery Christchurch Hospital</td>
<td>GM Burwood Hospital</td>
<td>Re MRSA concerns at Burwood.</td>
<td></td>
</tr>
<tr>
<td>24 August 2000</td>
<td>Nurse Manager</td>
<td>Clinical Directors</td>
<td>Email Re MRSA Outbreak Plastic Surgery Unit.</td>
<td></td>
</tr>
<tr>
<td>28 August 2000</td>
<td>Director of Nursing, Surgery</td>
<td>CD ICS</td>
<td>Re MRSA Outbreak Ward 20 – closed to admissions.</td>
<td></td>
</tr>
<tr>
<td>28th January 2001 to 22nd February 2001</td>
<td>CD ICS or CD SIU or Supervisor Surgery and others</td>
<td>GM Burwood Hospital, CD SIU, ICN Burwood, Medical Advisors.</td>
<td>Multiple email correspondences between senior staff and Managers Re MRSA/Streptococcus gr.A Investigation, MRSA Outbreak at Burwood, Re MRSA Meeting.</td>
<td></td>
</tr>
<tr>
<td>4TH AUGUST 2000</td>
<td>Clinical Director Older Persons Health, the Princess Margaret Hospital</td>
<td>Clinical Director ICS</td>
<td>Email re: Norwalk Virus Outbreak and reply</td>
<td></td>
</tr>
<tr>
<td>25 November 2002</td>
<td>ICN Christchurch Hospital</td>
<td>Nurse Manager Ward 29</td>
<td>Re Ward 29, Christchurch Hospital, diarrhoea and vomiting outbreak Copy to Clinical Director ICS</td>
<td></td>
</tr>
<tr>
<td>28 July 2003</td>
<td>ICN Christchurch Hospital</td>
<td>Nurse Manager Ward 27</td>
<td>Re Diarrhoea and Vomiting Ward 27. Copy to Clinical Director ICS</td>
<td></td>
</tr>
<tr>
<td>18 March 2004</td>
<td>Charge Nurse 2A the Princess Margaret Hospital</td>
<td>To multiple receivers incl. Clinical Director, GM, ICN Older Persons Health, CD ICS</td>
<td>Email re advising that Ward 2A has been closed for admissions for 48 hours due to the diarrhoea and vomiting outbreak on that ward.</td>
<td></td>
</tr>
<tr>
<td>26/12/04</td>
<td>ICN Older Persons</td>
<td>CDHB Infection</td>
<td>Email advising that a full Norovirus</td>
<td></td>
</tr>
<tr>
<td>Ref</td>
<td>Date</td>
<td>Sender</td>
<td>Recipients</td>
<td>Content</td>
</tr>
<tr>
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</tr>
<tr>
<td>E164</td>
<td>24/01/05 and 25/01/05</td>
<td>ICN the Princess Margaret Hospital, ICN Christchurch Hospital</td>
<td>ICN the Princess Margaret Hospital, ICN Christchurch Hospital</td>
<td>Several email messages between ICNS regarding a new Norovirus outbreak at the Princess Margaret Hospital.</td>
</tr>
<tr>
<td>E165</td>
<td>28 December 2005</td>
<td>ICN Christchurch Hospital</td>
<td>ICN Christchurch Women’s Hospital</td>
<td>Email informing of new Rotavirus positive in Neonatal Intensive Care Unit.</td>
</tr>
<tr>
<td>E166</td>
<td>19th August 2004</td>
<td>GM Laboratory and Support</td>
<td>All Staff</td>
<td>Email providing Norovirus update and precautions to be taken by all staff during the outbreak.</td>
</tr>
<tr>
<td>E167</td>
<td>28th October 2004</td>
<td>Personal Assistant to Clinical Director Older Persons Health, the Princess Margaret Hospital</td>
<td>Outbreak Group</td>
<td>Advising another Norovirus outbreak has occurred in two areas of the Princess Margaret Hospital and advising that an Incident Management Team has been assembled to co-ordinate a response to this latest outbreak.</td>
</tr>
<tr>
<td>E168</td>
<td>10th November 2004</td>
<td>ICNS Older Persons Health, the Princess Margaret Hospital</td>
<td>Relevant Personnel (Staff the Princess Margaret Hospital and ICNs Christchurch Hospital)</td>
<td>Email advising that Ward 2A, the Princess Margaret Hospital has been terminally cleaned and is now open to admissions.</td>
</tr>
<tr>
<td>E169</td>
<td>25/12/04</td>
<td>Communications Manager</td>
<td>The News Room of the Press</td>
<td>Memorandum advising that the Norovirus situation at Christchurch Hospital is unchanged.</td>
</tr>
<tr>
<td>E170</td>
<td>3rd August 2004</td>
<td>ICNS the Princess Margaret Hospital</td>
<td>Clinical Director Older Persons Health</td>
<td>Email providing summary of interview with “The Press” newspaper about Norovirus outbreak.</td>
</tr>
<tr>
<td>E171</td>
<td>19th December 2000</td>
<td>ICN Christchurch Hospital</td>
<td>Nurse Manager Ward 20 Christchurch Hospital; Copy to CD ICS</td>
<td>Email Re Acinetobacter baumannii – Ward 20.</td>
</tr>
<tr>
<td>E173</td>
<td>Friday 13th October 2006</td>
<td>Gr. A Streptococcus Incident Group the Princess Margaret Hospital</td>
<td>Members of the group</td>
<td>Flowchart entitled ‘CDHB Coordination Diagram for the Step A Infection, the Princess Margaret Hospital, with attached table of patient Streptococcus Gr. A Blood cultures results.</td>
</tr>
<tr>
<td>Date</td>
<td>Sender</td>
<td>Recipient</td>
<td>Content</td>
<td></td>
</tr>
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<td></td>
</tr>
<tr>
<td>5th October 2006</td>
<td>The Press Readers</td>
<td>Article from The Press entitled 'Several factors in fatal infection'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22/04/04</td>
<td>ICNS Christchurch Hospital</td>
<td>Quality Manager Christchurch Hospital</td>
<td>Email attaching the recent Eye Outpatients audit and the initial outbreak report Adenovirus Type 19 from August 2003 with recommendations.</td>
<td></td>
</tr>
<tr>
<td>02 September 2005</td>
<td>Clinical director Ophthalmology</td>
<td>CD ICS</td>
<td>Letter informing that for Adenovirus Type 3 there were six patients who were culture positive, all from General Medical Practitioner s. He gives details.</td>
<td></td>
</tr>
<tr>
<td>30 August 2005</td>
<td>ICN Christchurch Hospital for Outbreak group</td>
<td>Charge Nurse Ward 23</td>
<td>Email informing of a patient diagnosed with Norwegian scabies who had been a patient on other wards and asking that staff with skin irritation/rash report this so that appropriate treatment is given. Copy of letter to all staff Ward 23 concerning a case of Norwegian Scabies and treatment on offer for staff.</td>
<td></td>
</tr>
<tr>
<td>3 September 2004</td>
<td>ICN Christchurch Hospital</td>
<td>ICS for Scabies Outbreak Group</td>
<td>Email concerning a case of Norwegian scabies and treatment on offer for staff.</td>
<td></td>
</tr>
<tr>
<td>3 October 2005</td>
<td>Quality Manager Christchurch Hospital</td>
<td>PA GM Medical and Surgical Division Christchurch Hospital and Directors of Nursing</td>
<td>Email 2005 informing that the IC Committee had suggested that an item be put in the hospital newsletter about the importance of clinicians thinking about scabies when a patient presents with itchy skin.</td>
<td></td>
</tr>
<tr>
<td>17th October 2006</td>
<td>Medical Advisor Christchurch Hospital</td>
<td>CD ICS</td>
<td>Email re scabies; attaching report to the Coroner.</td>
<td></td>
</tr>
<tr>
<td>18th July 2000</td>
<td>GM Laboratory and Support Services</td>
<td>CD ICS</td>
<td>Re Legionella in Hospital Water Supply.</td>
<td></td>
</tr>
<tr>
<td>20th July 2000</td>
<td>CD ICS</td>
<td>Manager Maintenance Services</td>
<td>re Victorian Dept of Human Services Guidelines</td>
<td></td>
</tr>
<tr>
<td>27th July 2006</td>
<td>ICNS Older Persons Health, the Princess Margaret Hospital</td>
<td>Older Persons Health’s ICC</td>
<td>Report regarding Legionella pneumophila Serogroup 8</td>
<td></td>
</tr>
<tr>
<td>19th November 2006</td>
<td>CD ICS</td>
<td>IC Committee CDHB</td>
<td>Report regarding Investigation following patient diagnosis of Legionella pneumophila serogroup 1</td>
<td></td>
</tr>
<tr>
<td>20th November 2006</td>
<td>CD ICS</td>
<td>Manager Water cooler Company</td>
<td>Email regarding a meeting for water cooler incident, to be held on 20th November 2006.</td>
<td></td>
</tr>
<tr>
<td>E186</td>
<td>November 2001</td>
<td>ICN Christchurch Hospital</td>
<td>ICC CDHB Christchurch Hospital</td>
<td>Memo re Waterless Alcohol-based Hand Gel Trial 13/08/01 – 21/10/01.</td>
</tr>
<tr>
<td>E187</td>
<td>6 December 2001</td>
<td>Supply Manager</td>
<td>CD ICS</td>
<td>Re Waterless Alcohol Hand Gel.</td>
</tr>
<tr>
<td>E188</td>
<td>17th April 2001</td>
<td>Chair ICC CDHB</td>
<td>Chair CAC</td>
<td>Letter Re Occupational Health Service for Canterbury District Health Board Hospitals. Reply 14th May 2001</td>
</tr>
<tr>
<td>E189</td>
<td>16th February 2001</td>
<td>Communication Manager</td>
<td>CD ICS</td>
<td>Re Flu Staff Vaccinations.</td>
</tr>
<tr>
<td>E190</td>
<td>28th February 2001</td>
<td>Manager RMO Unit</td>
<td>Clinical Director ICS</td>
<td>Re RMO’s assistance re Vaccinations</td>
</tr>
<tr>
<td>E191</td>
<td>5 December 2001</td>
<td>Health and Safety Advisor</td>
<td>Clinical Director ICS</td>
<td>Email re Health Monitoring/Vaccinations.</td>
</tr>
<tr>
<td>E192</td>
<td>17th April 2001</td>
<td>Chair CPPC</td>
<td>CD ICS</td>
<td>Letter Re Occupational Health Service for Canterbury District Health Board Hospitals.</td>
</tr>
<tr>
<td>E193</td>
<td>26 May 2003</td>
<td>Manager Health and Safety</td>
<td>Executive Management Team</td>
<td>Letter re Occupational Health Monitoring</td>
</tr>
<tr>
<td>E195</td>
<td>25th November 2004</td>
<td>ICNS Christchurch Hospital (email)</td>
<td>CDHB Document Controller</td>
<td>Correspondence regarding inclusion in the BBFE policy of the role for Occupational health Service.</td>
</tr>
<tr>
<td>E197</td>
<td>5 September 2005</td>
<td>Manager Health and Safety</td>
<td>ICNS Christchurch Hospital</td>
<td>Email concerning a letter that had been sent to staff informing them that Occupational Health Service would provide treatment. The Manager Health and Safety states that staff from Occupational Health Service already have a full work plan and only become involved when staff are infected. She goes on to explain the role of IC and Occupational Health Service.</td>
</tr>
<tr>
<td>E198</td>
<td>26th June</td>
<td>Operating Theatre</td>
<td>CD ICS</td>
<td>Memo Re Theatre Dress Code.</td>
</tr>
<tr>
<td>Date</td>
<td>Category</td>
<td>Sender Name</td>
<td>Recipient Name</td>
<td>Description</td>
</tr>
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</tr>
<tr>
<td>6 September 2001</td>
<td>E199</td>
<td>Director of Nursing Christchurch Hospital</td>
<td>IC Secretary Canterbury Health Ltd</td>
<td>Email re Theatre Dress Code.</td>
</tr>
<tr>
<td>5 March 2002</td>
<td>E201</td>
<td>Operating Theatre Manager, Christchurch Hospital</td>
<td>Copy to CD ICS Canterbury Health Ltd</td>
<td>Email re Previous incident report regarding compel surgical gowns.</td>
</tr>
</tbody>
</table>
1. Standard protocol for the usage of disinfectants in the NCHB area
2. Isolation protocol evaluated (1979)
3. Preparation of a contingency plan for the NCHB to cope with Lassa fever
4. Disinfectant policy
7. Infectious linen: Written recommendation to Laundry manager
8. Investigation into the use and contamination of suction apparatus carried out at the instigation of the engineers’ department. Recommendation and a protocol distributed to clinical staff.
9. Recommendation regarding the use of Rotahalers
11. A trial isolation policy using a door card system for advising staff of the correct procedures to use for each patient in isolation. (1981)
12. Standard antibiotic prophylaxis policy for the University Orthopaedic Department.
13. A protocol for the care of IV infusion tubing and catheters for the RMO handbook (in conjunction with the IV Infusion Advisory Committee)
17. Protocol regarding sharps boxes, sealable bags and infectious stickers
18. Staff health: cold sores and other herpes simplex infections.

20. Staff health protocol: Streptococcal infection


22. "MRSA positive" alert on National computer of those positive in the last 2 years.

23. ICC Guideline for diagnosis and treatment of antibiotic associated diarrhoea

24. Advice to Christchurch Women’s Hospital regarding glove use for vaginal examination.

25. Guidelines for Board policy on infectious diseases such as chicken pox and measles infection in staff or their family.


27. Protocol for multi-use items, nebulisers and inhalers.

28. Isolation manual prepared and distributed (July 1988)

29. Recommendation regarding Hepatitis B vaccination of staff and patients

30. Templeton Hospital.

31. Drip-site sepsis. Recommendation on care and change of IV lines.

32. Recommendation regarding product evaluation committee to monitor product for their cost effectiveness, user acceptability and safety.

33. A draft Health and Safety policy for Secondary Care Division with Mental Health representation tabled. (This Committee was never instituted)

34. Problems with delays in processing of IV fluid involved in transfusion reactions.

35. Recommendations regarding culture and recording of Batch numbers.

36. Needle-stick policy trialled and implemented Board wide. This policy was later renamed the Blood and Body Fluid exposure (BBFE) Policy. It provided guidance for recording and treating hospital staff after accidental exposure to a patient’s body-fluid. (1984/85).

A year later the first BBFE recording form was introduced and it has since been reviewed regularly (AA 23, 24).

37. Protocol on insertion and care of IV-catheter became operative and mandatory.

38. Recommendation regarding recording of batch numbers on vaccine distributed.

39. Introduction of ‘approved’ (sterile) detergents (1984/85)

40. Green stickers for IV site available from hospital stores.
1989-1993 (PERIOD B)

1. A protocol on indefinite sterility was drafted on request from Central Sterilisation Services Department and users and accepted by ICC with the title “Indefinite sterility guidelines”. (ICC Annual Report 92/93)

2. The Disinfection and Sterilization Guideline, which had been referred to over several years ICC Annual Reports, was finally issued June 1993. (B28)

3. Recommendation on the use of topical disinfectant was submitted it to ICC in December 1990. However, Board wide recommendation was delayed until a skin preparation containing a dye to stain the skin to outline the treated area was able to be purchased by Pharmacy. A dye used previously had been withdrawn by Pharmacy due to published toxicity concerns. ‘The Topical Antiseptic Policy’ was accepted five months later and issued via the Professional Advisor Medical Services. (ICC Minutes December 1990 and May 1991)

4. The use of communal razors stopped in K Wards.

5. 90/91 A draft protocol regarding animals in hospital was commissioned
6. 91/92 Protocol regarding visiting dialysis patients.
7. Request for protocol for MRSA screening of general medical practitioner obstetricians and independent midwives.
8. A protocol for the disinfection procedure of anaesthetic circuits was adopted and submitted to the Director of Anaesthetics Services. (ICC 92/93)
9. A protocol for isolation room mops cleaning procedure was adopted.
10. Infant feeding protocol covering infant feeding of boarded babies in general wards.
12. Glove usage protocol for each institution produced.
13. Cleaning and maintenance of ice-making machine in hospitals.
14. An Infection Control manual issued to all nurses at Sunnyside hospital (ICC 92/93)
1. Hand Washing Guidelines
2. Urinary Drainage and drainage bags guidelines
3. Small volume parental fluid protocols
4. Protocol for insertion and care of the intravenous catheter.
5. Hands Pamphlet
7. Standard Precautions
8. Viral Haemorrhagic Fever Guidelines (update)(C33)
9. Instruction for Ward or Unit use of Hospi-Gard.
10. Protocol for Sterile and Unsterile Glove Usage (update)
11. Protocol on Staff Immunity Status and immunisation resubmitted. This protocol was formulated by a subgroup during 1992/93 year. The response from Canterbury Health was reserved. The costing of the project was suggested.
12. IV line insertion Protocol being prepared by IV Committee to be included in RMO standing orders.
13. Guidelines and Protocols:
14. Update of the Blood and Body Contact Report Sheet
15. Small volume Parental Fluid protocol
16. MRSA update
17. Endocavity Transducers (Ultrasound) Decontamination and Disinfection Guideline
18. HIV Consent Sheet
19. HIV Information Pamphlet.
20. Protocol for insertion and care of the Intravenous catheter (Review)
21. Regime for eradication of MRSA carriage in a Patient or in a staff member.
22. Staff health protocols: Erysipelas and Impetigo.
23. Infection Control guidelines on Pediculosis (Lice) Treatment and control.
24. Hepatitis B Booster vaccination Recommendations.
26. Modified MRSA isolation procedures for Queen Mary centre.
27. Infection Control guidelines for cleaning and Disinfection of Venoject Cylinders.
29. Hepatitis B vaccination protocol for the newborn Infant, Christchurch Women’s Hospital and Burwood Hospital.
30. Precautions for administering First Aid when contact with blood or body fluids is likely (QMC)
32. Procedure for collecting Blood cultures into Bact/Alerts bottles.
33. Discussion paper on follow-up of HIV positive Worker in Australia. What Guidelines are available here in case we experience the same situation?
34. Tuberculosis screening/BCG vaccination Christchurch Women’s Hospital. A flowchart planned.
35. Discussion regarding HIV screening of pregnant woman since the use of AZT appears to be useful in reducing transmission.
36. Food fridges in wards are going to have the temperature monitored by thermometers.
37. Criteria for BCG vaccination of High risk Neonates.
38. Guidelines for HIV Post Exposure Management (Placed in Infection Control folders in the wards).
40. Sonic-Aid Transducer (Doppler) cleaning and Decontamination Protocol. (for use on skin flaps and grafts.
41. Standard precautions.
42. Vial Haemorrhagic Fever Guidelines.
43. Protocol for Sterile and Unsterile glove Usage.
44. Staff Health: Scabies
45. Linear Vaginal Applicator (LVA) Disinfection protocol.
46. Hands update& Staff orientation Pamphlet
47. Flowchart for IC Practitioners on Hepatitis B Testing & Vaccination.
48. Miele Machine (W22) Presept Disinfection Instruction
49. Recommendation on multidose vials in relation to anaesthetic Department.


51. Discussion regarding MRSA computer flagging.

52. Review of RMO standing orders on IV Infusion Management protocol.


55. National Guidelines for Tuberculosis still not available as substantial changes had been proposed in the last draft (May 1996)


57. Use of Bactroban queried by Prof in Paediatrics. The procedure for Pharmacy to issue outlined.

1996-2000 (PERIOD D)

1. Isolation manual (November 1996)

2. Re-indexed 65 IC folders

3. Protection for Patients! (March 1997)

4. Resuscitation Manikin Disinfection

5. OT dress code from the sub-committee.


7. Admission of antenatal and postnatal women with an airborne communicable disease (1998)

8. Sterilisation and Disinfection of Endoscopes. (Nov. 1997)


14. The new form on Blood & Body Fluid Exposure Form issued (March1999)


16. Canterbury MRSA Working Party was creating a pamphlet on MRSA for General Practitioners. (1999/00)

17. Guideline on aseptic Technique in the Non-operating Theatre Areas.(99/00)

18. Infection Control information for orientation pack for the new RMO’s.(99/00)

19. Policy on guard dogs implemented (99/00)


22. Parasafe (High Level Disinfection) Guideline for ENT (July 1999)

2000-2008 (PERIOD E)

1. Infection Control Manual: Reviewed and reprinted to include Women’s Health Division. (2000/1)

2. Sigmoidoscope equipment cleaning and sterilisation protocol. (2000/1)

3. CDHB MRSA guideline review. Draft circulated for comment then re-drafted with reference to the NZ Guidelines for Control of MRSA (draft) and re-circulated for comment amongst Senior Staff and Managers.(2001/2)(E80)

4. Infection Control Manual reviewed – 10A and 10B merged and updated (2001/2)

5. Guideline for the Management of Inpatients with Influenza, compiled and distributed to all clinical areas (2001/2)(E81)
6. Isolation Cards reviewed and redesigned (2001/2)

7. MRSA admission risk assessment flowchart were reviewed to include patients admitted with chronic wounds/ulcers. (2001/2)

8. MRSA patient information pamphlet compiled and distributed. (2001/2)

9. CDHB MRSA Guideline completed (2002/3) (initiated 2001/1)

10. Influenza Guidelines updated and distributed to all Clinical areas. (2002/3)

11. CDHB Intranet site completed and made active (2002/3) (work commenced 2001/2)

12. SARS Guidelines developed and distributed including 1. Admission process for SARS. 2. IC Advice for care of patients and probable SARS 3. Cleaning of SARS isolation room (2002/3)

13. Procedure for correct donning and safely removing personal protective equipment (PPE) (2002/3)


16. Review of BBFE form and consent for testing for Blood Borne Viruses. (2003/4)


21. Influenza Guidelines – Updated May 2005

22. Infection Surveillance Programme for Specialist Mental Health Services (2004/5)

23. Neonatal IC Guidelines (Christchurch Women’s Hospital 2005/6)

24. Spa pool Cleaning Policy (Christchurch Women’s Hospital 2005/6)

25. Milk Room Policy (Christchurch Women’s Hospital 2005/6)
26. IC Manual policies & procedures, updated October 2006
27. IC Service Staff Policy Handbook (Little red book), August 2006
28. Intranet guidelines
29. SARS May 2007
30. Pandemic Influenza May 2007
31. BBFE flowchart
32. Pandemic Plan (2006/7)
33. Christchurch Women’s Hospital Infection Control appendix to IC Manual 2006
34. Use of negative pressure isolation rooms at Christchurch Women’s Hospital (2006/7)
35. Legionella water testing at all sites Ashburton Hospital (2006/7)
36. Review and sign off Infection Control Manual Burwood Hospital appendix
37. Review Viral Haemorrhagic Fevers Guidelines for the intranet site
38. Return of body parts (Burwood Hospital ICC 2006/7)
39. *Clostridium difficile* flow chart (the Princess Margaret Hospital 2006/7)
41. Sigmoidoscope Equipment (2007/8)
APPENDIX 3 CHL STRUCTURE 1999
APPENDIX 4 DISTRICT HEALTH BOARD STRUCTURE
Figure 1. The structure of New Zealand’s health system, 1980

Source: Based on Figure 16.1 OECD. ‘New Zealand’. The reform of health care systems: a review of seventeen OECD countries. Health Policy Studies No. 5 OECD, Paris, 1994, p227
Area Health Boards 1983-1993

Figure 2. The structure of New Zealand’s health system, 1992

Source: Courtesy of Ministry of Health
Regional Health Authorities and Crown Health Enterprises 1993-1997

Figure 3. The structure of New Zealand’s health system after enactment of 1993 reforms

Source: Courtesy of Ministry of Health

Figure 4. The structure of New Zealand’s health system, 1996

Source: Courtesy of Ministry of Health
Figure 5. The structure of New Zealand’s health system, 1999

Source: Courtesy of Ministry of Health
The diagrams have been obtained from a Parliamentary Library Research paper by Research Analyst Peter Quin. Reproduced with permission by Support Services Manager, Parliamentary Library Wellington.
APPENDIX 7 INTERVIEW QUESTIONS FOR INFORMANTS

STANDARD TOPICS

Question s Q)

Topic 1 Planning for Infection Control

- The influence of the Department of Health
- Any discussions by the North Canterbury Health Board
- Your own involvement
- The role of NCHB clinicians
- The input from nursing
- Any other influences that you can recall

Topic 2 Relations with the Department of Health

Topic 3 Infection Control Committee

- What were the responsibilities of the ICC?
- Reporting?
- Receiving reports

Topic 4 Concerns about Infection Control

Topic 5 Special issues local and nationally

Were there any special issues, which required special attention? Examples are:

- Outbreak.
- Isolation area.
- HIV and Hepatitis C
- Immunisation of staff.

Topic 6 Later developments

Topic 7 Nursing and infection control