



Report on the New Zealand workshop on *Clostridium difficile* infection (CDI)

Wellington, 11 February 2013

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Background

Context – CDI worldwide

Clostridium difficile infection (CDI) is the most common cause of infectious diarrhoea among hospitalised patients in the developed world and as such CDI is a leading cause of healthcare-associated infection (HAI). In the past decade, hypervirulent strains have emerged, contributing to an increased frequency and severity of CDI throughout North America, Europe and Australia. Large outbreaks in hospitals have carried high morbidity and mortality rates, necessitating ward closures and extensive infection control measures. Community-acquired CDI has also increasingly been reported.

Studies from North America and Europe reveal the high cost for patients, hospitals and society of CDI acquired and treated in healthcare facilities. Overseas evidence shows that effective infection prevention and control strategies are required to manage the disease. Key management principles include antimicrobial stewardship, heightened surveillance, hand hygiene, contact precautions, environmental decontamination, education and quality improvement. Although the clinical and economic burden of CDI in New Zealand is poorly understood, there is a need to be prepared for the escalation of CDI in this country.

NZ workshop on CDI

The Health Quality and Safety Commission New Zealand (the Commission) sponsored a workshop on CDI in response to the Director-General of Health's concerns about the issue. The Commission, along with Ministry of Health (MOH), facilitated the national workshop in Wellington on 11 February 2013. Representatives from across the health sector – infection prevention and control groups, laboratories, hospital leadership teams, medical colleges, nursing council, microbiology and public health specialties, Treasury, and Ministry of Primary Industries – were invited and a broad group of attendees participated.

The main aims of the workshop were to determine the nature and implications of CDI in the New Zealand context, and to identify nationally co-ordinated priorities for future action to manage CDI. Keynote speakers invited from Australia were Tom Riley, microbiology professor from the University of Western Australia, and Marilyn Cruickshank of the Australian Commission on Safety and Quality in Health Care. New Zealand presenters were Sally Roberts, infectious diseases physician and clinical microbiologist, and John Holmes, public health specialist.

The Chief Executive, Dr Janice Wilson, and Board Chair, Alan Merry, of the Commission opened and closed the day, respectively, and reflected the Commission's commitment to quality standards in action as we face the challenge of CDI.

Kevin Woods, Director-General of Health, delivered the workshop's opening address, reflecting on the experience of CDI in the United Kingdom. There, the emergence of hypervirulent strains with associated serious outbreaks changed the face of health care, impacting on both clinical practice and hospital design. The Director-General emphasised the need for both vigilance and diligence in our response to CDI.

Don Mackie, Chief Medical Officer, MOH, and Jane O'Malley, Chief Nurse, MOH, chaired the meeting, including four presentations by expert speakers and two smaller-group discussion sessions. During the group discussions, participants were asked to reflect on various questions, such as:

- What further information is required to characterise the burden of disease in New Zealand?
- How well are we currently placed to detect and respond to changing trends, including an increase in cases?
- What approach to surveillance and response systems should be considered?

Presentations

Presentations from the four keynote speakers at the National CDI Workshop are available on the Commission's website at <http://www.hqsc.govt.nz/our-programmes/infection-prevention-and-control/publications-and-resources/publication/833/>. Brief descriptions are given below:

***Clostridium difficile* infection: the Australian experience**

– Prof Tom Riley, University of Western Australia

Topics discussed were the history and characteristics of the *C difficile* bacterium, risk factors for infection, emergence of hospital outbreaks and virulent strains in the US, UK, Europe and Australia, community-acquired CDI, virulent strains, potential animal and food sources of infection and CDI control strategies.

A national approach to *C difficile*

– Dr Marilyn Cruickshank, Australian Commission on Safety and Quality in Health Care (ACSQHC)

Dr Cruickshank discussed the Australian health system's organisation, performance and accountability frameworks and development of national monitoring and surveillance of CDI.

***Clostridium difficile* infection: New Zealand perspective**

– Dr Sally Roberts, Auckland DHB and Health Quality & Safety Commission

Dr Roberts reviewed the laboratory diagnosis of CDI in NZ, findings from two national surveys (2009 and 2011), the newly emergent Ribotype 244 in severe community onset CDI in New Zealand and Australia and the previously unrecognised issue of CDI in hospitalised children. She briefly discussed infection prevention and control and surveillance of CDI.

***Clostridium difficile* infection (CDI) – issues around surveillance and notifiability**

– Dr John Holmes, ESR and University of Otago

Dr Holmes outlined the nature of surveillance and disease notification in New Zealand, describing the following options for the surveillance of CDI: maintenance of status quo, formalisation of biennial voluntary surveillance, enhanced annual surveillance or laboratory notification.

Discussion issues

A summary of issues discussed by expert speakers and workshop participants is presented in the table below.

Issue, with agreed priority	Gaps	Suggested action
<p>The nature of CDI in New Zealand – agreement that CDI is an important hospital acquired infection and a greater awareness of the disease and its epidemiology is needed</p>	<p>Limited knowledge of the epidemiology of hospital-acquired and community-acquired disease</p> <p>Variable approach nationally to diagnosis, testing and management</p> <p>Unclear if CDI in NZ should be viewed primarily as a component of hospital-acquired infection or a wider population health issue</p> <p>Uncertainty about the nature of CDI as a zoonosis in NZ, and the extent of animal/ food contamination</p>	<p>Determine prevalence and severity of CDI in NZ: review hospitalisation data (demographics, rates, readmissions, surgical complications, ICU admissions, duration of stay, mortality) and primary care data</p> <p>Develop definitions for CDI: hospital onset, healthcare-associated, community onset and severe disease</p> <p>Undertake research on community-acquired CDI – epidemiology, risk factors, potential animal reservoirs</p> <p>Maintain cross-sector collaboration on CDI research (MOH, MPI, academia)</p>
<p>Testing processes – agreement that consistent best-practice testing strategy is required to accurately assess disease status and determine appropriate response</p>	<p>Lack of sensitivity of many diagnostic testing processes used in NZ</p>	<p>Review lab testing practices</p> <p>Develop a best-practice algorithm for testing, including rationale for ribotyping</p> <p>Standardise the laboratory testing and reporting strategy</p>
<p>Surveillance – agreement that enhanced surveillance of CDI is necessary</p>	<p>No consistent approach regarding testing or definitions (numerator and denominator) for laboratory or clinical surveillance</p>	<p>Define purpose of surveillance – for quality improvement, infection control or public/ wider health purposes (including animal health)</p> <p>Develop national CDI surveillance system, involving at minimum</p>

		regular laboratory-based surveillance
Notification – agreement that direct laboratory notification should be considered by public health community	<p>No current early warning systems of CDI rates increasing nationally or locally</p> <p>Poorly understood benefit and opportunity cost of investigating individual cases</p>	<p>Determine whether direct laboratory notification to Public Health Services is required</p> <p>If so, require enhanced hospital infection epidemiology, algorithm for identification and management of risk factors in each case</p>
Infection prevention and control (IPC) – agreement that robust IPC measures are the basis of preparedness and response to CDI outbreaks; agreement that quality improvement processes should underpin IPC activity	<p>Uncertain if current IPC strategies in hospitals/ aged residential care facilities are sufficient or specific for containment of CDI</p> <p>Uncertain role of antimicrobial stewardship in humans and animals in the control/ prevention of CDI in NZ</p>	<p>Review current IPC practices against overseas guidelines for CDI control; determine what improvements to NZ practice may be required</p> <p>Develop best practice guidelines and standards for environmental cleaning of hospitals (public and private)</p> <p>Broaden measurability and accountability for IPC measures in hospitals – require audits</p> <p>Make Hand Hygiene everybody’s responsibility, not merely an IPC activity</p> <p>Develop enhanced approach to antimicrobial stewardship in NZ</p> <p>Undertake further research into animal/ plant antimicrobial usage and role of vaccinations</p> <p>Anchor IPC actions in a more general approach and commitment to Quality Improvement</p>

Summary

The 11 February 2013 workshop on *Clostridium difficile* infection (CDI) provided the first national forum for discussing CDI in New Zealand. There was recognition that CDI is a potentially more serious disease than has been recognised and that action across the health sector is required to respond to the issue.

Key recommendations from the workshop are to:

1. Implement a standardised New Zealand approach for
 - a. The definition of CDI, including classification of severe disease, for surveillance purposes
 - b. The testing and reporting of CDI
 - c. The monitoring and surveillance of CDI
 - i. The nature of the surveillance system needs to be determined
 - d. Hospital cleaning best practice including measurable, auditable standards
 - e. Antimicrobial stewardship in the human health and primary industries sectors
2. Strengthen and systematise the research and surveillance of
 - a. The epidemiology of CDI among hospital and community populations
 - b. Possible animal and food reservoirs of *C difficile*
3. Build on current quality improvement initiatives to enhance infection prevention and control practices in hospitals

Appendix 1. Agenda

National workshop on *Clostridium difficile* infection (CDI) – agenda

11 February 2013 – 8.30am-5pm

Bunker Room, Miramar Golf Club, 1 Stewart Duff Drive
Miramar, Wellington

Workshop Aims:

To define the nature and implications of CDI in the New Zealand context
To identify nationally co-ordinated priorities for future action to manage CDI

8.15 am	Coffee on arrival	
8.30am	Introduction to the day	Janice Wilson / Diane Callinicos
	Opening comments	Kevin Woods
	Overall Chair	Don Mackie
8.45am	Professor Tom Riley, UWA – <i>International and Australian perspectives on CDI</i>	
10.00am	Morning tea	
10.15am	Dr Marilyn Cruickshank, ACSQHC – <i>Developing a national CDI strategy – issues and guidelines</i>	
11.00am	Dr Sally Roberts, Health Quality & Safety Commission – <i>NZ context; definitions; epidemiology; testing; current management and infection control strategies</i>	
11.45am	<i>Workshop 1:</i> Lessons for NZ from the international experience	Don Mackie
12.45pm	Lunch	
1.30pm	Dr John Holmes, ESR – <i>Issues around surveillance and notifiability</i>	
2.00pm	Panel discussion – Tom Riley, Marilyn Cruickshank, Sally Roberts, John Holmes – <i>facilitated by Don Mackie</i>	
3.00pm	Coffee break	
3.15pm	<i>Workshop 2:</i> The whole picture and the actions required	Jane O'Malley
4.30pm	Closing comments	Don Mackie, Jane O'Malley, Alan Merry

Appendix 2. Speaker biographies

Professor Tom Riley

BAppSc Curtin, MAppEpid ANU, PhD UWA, MAIMS, FASM, FRCPath, FAAM, FSHEA, FFSc(RCPA)



After 15 years working in diagnostic laboratories and completing a PhD part-time at The University of Western Australia (UWA) in 1984, Tom was appointed Senior Medical Scientist in Charge of the Department of Clinical Microbiology at Sir Charles Gairdner Hospital in Perth, Western Australia, in 1988. In 1993-4, he undertook a Masters degree in Applied Epidemiology at the Australian National University and, in 1995, was appointed as an Associate Professor in the Department of Microbiology at UWA, and Principal Research Scientist at the Western Australian Centre for Pathology & Medical Research, now PathWest Laboratory Medicine (WA). In 2002, he was awarded a Personal Chair at UWA. He has had a long

standing interest in healthcare-related infections, particularly the diagnosis, pathogenesis and epidemiology of *Clostridium difficile* infection, and the antimicrobial activity of Australian native plants. He is a Fellow of the Royal College of Pathologists, the Australian Society for Microbiology, the American Academy of Microbiology and the Faculty of Science of the Royal College of Pathologists of Australasia, and has published nearly 300 refereed journal articles and book chapters.

Dr Marilyn Cruickshank

RN PhD FRCNA

Marilyn is a registered nurse working in paediatrics for most of her clinical practice. Following the completion of doctoral studies Marilyn has worked in safety and quality for the past 8 years. Marilyn is currently leading the Australian national healthcare associated infection prevention program with the Australian Commission on Safety and Quality in Healthcare, and recently the Chair of the Antimicrobial Resistance Standing Committee which reports via the Chief Medical Officer to Australian Health Ministers Advisory Council. Marilyn is the co- editor of the *Reducing harm to patient from healthcare associated infection: the role of surveillance* and the *Antimicrobial stewardship in Australian hospitals*.

Dr Sally Roberts

BSc, MBChB, FRACP, FRCPA, CIC

Dr Sally Roberts is a graduate of the University of Auckland School of Medicine graduating in 1989. She is a Clinical Microbiologist and Infectious Diseases Physician at Auckland City Hospital and is the Clinical Head of Microbiology at LabPlus, Auckland District Health Board. She was appointed as an Honorary Clinical Senior Lecturer in Department of Medicine, Faculty of Medicine & Health Sciences.

Dr Roberts has been on a number of New Zealand Ministry of Health working groups including the MRSA Guidelines Working Group (2002), Chair of the National Antenatal HIV Screening Implementation Advisory Group (2005 onwards), Pandemic Influenza Technical Advisory Group, and Tuberculosis Working Group. Since August 2011 she has been working with the Health Quality and Safety Commission as the Clinical Lead for the Infection Prevention and Control programmes.

Dr John Holmes

MB ChB, FAFPHM, FNZCPHM, FRACMA

Dr John Holmes is a public health medicine specialist currently working part-time at ESR and an Honorary Clinical Senior Lecturer in the Department of Preventive and Social Medicine, Dunedin School of Medicine, University of Otago. His interest in hospital acquired infection started in the mid-1980s when he became a Medical Superintendent in the then Canterbury Hospital Board and joined the Infection Control Committee. He chaired the Otago DHB Infection Prevention and Control Committee for six years until November 2009 when he was seconded to the Ministry of Health as a Chief Advisor. He was Medical Officer of Health in Canterbury/ South Canterbury from 1993 to 1999 and then in Otago /Southland until December 2012.

Appendix 3. Participant list

The following table lists individuals and organisations invited to participate at the national workshop on CDI and notes those who attended on 11 February 2013.

Name	Role	Organisation	
Dr Kevin Woods	Director General of Health and Chief Executive	Ministry of Health (MOH)	Attended
Dr Janice Wilson	Chief Executive	Health Quality & Safety Commission (HQSC)	Attended
Dr Alan Merry	Board Chair, Anaesthetist	HQSC, Auckland DHB	Attended
Speakers			
Professor Tom Riley	Professor of Microbiology	University of Western Australia PathWest Laboratory Medicine (WA)	Attended
Dr Sally Roberts	Infectious Diseases Physician Clinical Microbiologist	Auckland DHB	Attended
Dr Marilyn Cruikshank	Chair, Antimicrobial Resistance Standing Committee (AMRSC) Program Director	Australian Commission on Safety & Quality in Healthcare (ACSQHC)	Attended
Dr John Holmes	Public health medicine specialist Clinical Senior Lecturer	ESR University of Otago	Attended
Health Quality and Safety Commission board and staff			
Gillian Bohm	Principal Advisor, Quality Improvement	HQSC	Attended
Diane Callinicos	Senior Portfolio Manager, IPC	HQSC	Attended
Richard Hamblin	Director, Health Quality Evaluation	HQSC	Attended
Dr Deborah Jowitt	Senior Advisor	HQSC	Attended
Karen Orsborn	General Manager	HQSC	Attended
Dr Imogen Thompson	Senior Advisor	HQSC	Attended
Dr Peter Foley	Board member, GP	HQSC	Apologies
Dr David Galler	Board member, Intensive care specialist	HQSC, Counties Manukau DHB	Apologies
Dr Peter Jansen	Board member, GP	HQSC	Apologies
Ministry of Health's Healthcare-Acquired Infection Governance Group (HAIGG)			
Dr Don Mackie	Chief Medical Officer	Ministry of Health	Attended, Chair
Dr Jane O'Malley	Chief Nurse	Ministry of Health	Attended, Chair
Ruth Barratt	Infection prevention and control nurse specialist	Canterbury DHB; National Division of Infection Prevention and Control Nurses	Attended
Dr Arthur Morris	Chief Executive Clinical Microbiologist	Diagnostic Medlab	Attended

Dr Virginia Hope	Public health physician, programme leader	ESR	Attended
Chris McKenna	Director of Nursing	Hawke's Bay DHB	Attended
Dr Sally Roberts	Clinical Lead IPC program, HQSC	HQSC, Auckland DHB	Attended
Grant Storey	Principal Technical Specialist	Ministry of Health	Attended
Emma Mold	Senior Advisor Nursing	Ministry of Health	Attended
Dr Hasan Bhally	Infectious Diseases Physician	Waitemata DHB	Attended
Dr Margaret Wilsher	Chief Medical Officer	Auckland DHB	Apologies
Health Quality & Safety Commission's Strategic Infection Prevention and Control Advisory Group (SIPCAG)			
Diane Callinicos	Senior Portfolio Manager	HQSC	Attended
Dr Deborah Jowitt	Senior Advisor	HQSC	Attended
Gillian Bohm	Principal Advisor, Quality Improvement	HQSC	Attended
Dr Sally Roberts	Clinical Lead IPC program, HQSC	HQSC, Auckland DHB	Attended
Dr Joshua Freeman	Clinical Lead Hand Hygiene NZ, HQSC; Clinical microbiologist	Auckland DHB	Attended
Dr Arthur Morris	Chief Executive Clinical Microbiologist	Diagnostic Medlab	Attended
Jane Pryer	IPC Nurse Specialist	Hutt Valley DHB	Attended
Adrienne Morgan	IPC nurse consultant	Private sector	Attended
Dr Massimo Giola	Infectious diseases specialist	Bay of Plenty DHB	Apologies
Dr Shawn Sturland	Clinical Lead Central Line Associated Bacteraemia (CLAB), HQSC; Intensive care specialist	Capital & Coast DHB	Apologies
Other participants, alphabetically by organisation			
Dr Deborah Williamson	Clinical Microbiologist Clinical Research Fellow	Auckland DHB Auckland University	Attended
Professor Bruce Arroll	Professor of General Practice	Auckland University	Apologies
Dr Mona Schousboe	Medical Microbiologist	Australasian Society Infectious Diseases (ASID) NZ; Canterbury DHB	Attended
Dr Richard Doehring	Clinical Microbiologist	Australasian Society Infectious Diseases (ASID) NZ; Medlab South	Attended
Dr Lesley Voss	Paediatric infectious diseases specialist	Australasian Society Infectious Diseases (ASID) NZ; Auckland DHB	Apologies
Dr Tim Blackmore	Infectious Diseases Physician Clinical Microbiologist	Capital & Coast DHB	Attended
Dr Geoffrey Robinson	CMO, Physician	Capital & Coast DHB	Attended
Viv McEnnis	IPC clinical nurse specialist	Capital & Coast DHB	Attended
Eman Radwan	Manager, Infection Prevention & Control	Ko Awatea Centre for Quality Improvement, Counties Manukau DHB	Attended

Dr Graham Mackereth	Co-ordinator, Health Intelligence Team	ESR	Apologies
Dr Philip Carter	Co-ordinator, Microbiology	ESR	Attended
Helen Heffernan	Laboratory Manager, Clinical Microbiology	ESR	Attended
Dr Kerry Sexton	Public health physician	ESR	Apologies
Dr Don Bandaranayake	Public health physician	ESR	Attended
Dr Iwona Stolarek	CMO, physician	Hutt Valley DHB	Apologies
Dr Teresa Thompson	Geriatrician	Hutt Valley DHB	Attended
Professor Nigel French	Professor of Food Safety and Veterinary Public Health	Massey University	Attended
Dr Mark Jacobs	Director of Public Health	Ministry of Health	Attended
Dr Fran McGrath	Deputy Director of Public Health & Acting Manager Communicable Diseases	Ministry of Health	Apologies
Dr Chrissie Pickin	Chief Advisor Population Health	Ministry of Health	Apologies
Sam Chan	Clinical Microbiologist	Medlab Central	Attended
Dr Craig Thornley	Public health physician	Ministry of Primary industries	Attended
Dr Roger Cook	Manager Food Risk Assessment	Ministry of Primary industries	Attended
Dr Chris Wong	Clinical Leader Public Health	National Health Board, Ministry of Health	Attended
Cathy Whiteside	Chair of Gastroenterology Nurses	New Zealand Nurses Organisation	Apologies
Prof Michael Baker	Public health specialist	Otago University, Wellington	Apologies
Prof Allan Fraser	Gastroenterologist	Royal Australasian College of Physicians	Apologies
Dr John O'Donnell	NZ President	Royal Australasian College of Physicians	Apologies
Mr Scott Stevenson	NZ Chair	Royal Australasian College of Surgeons	Apologies
Dr Richard Steele	Immuno-pathologist	Royal College of Pathologists of Australasia	Apologies
Dr Tim Malloy	President	Royal New Zealand College of General Practitioners	Apologies
Dr Julia Peters	President	New Zealand College of Public Health Medicine	Apologies
Dr Antje van der Linden	Medical Microbiologist	Southern Community Laboratories	Attended
John Marney	Principal Advisor, Health	The Treasury	Attended
Vicki Parry	Nurse Manager Infection Control	Waikato DHB	Attended