POSITION STATEMENT

ASID New Zealand Subcommittee (ASID-NZ)

Minimum specifications for New Zealand's national response plan for Carbapenemase Producing Enterobacteriaceae (CPE)

Purpose

The “New Zealand Antimicrobial Resistance Action Plan” includes a commitment to develop a more specific national response plan targeted to a group of extremely resistant bacteria known as carbapenemase producing Enterobacteriaceae (CPE).\(^1\) To reduce the impending impact of CPE on the NZ health system, coordinated national response systems and processes are required; in particular to reduce the risk of CPE transmission and infection in healthcare settings. In the following position statement, the Australasian Society of Infectious Diseases NZ Subcommittee recommends a set of minimum specifications that NZ’s CPE response plan must meet in order to be effective and fit for purpose.

Background

1. Carbapenemase producing Enterobacteriaceae (CPE) are one of the foremost antimicrobial resistance threats facing New Zealand (NZ). CPE are (typically) resistant to nearly all known antibiotics, and there are currently very few antibiotics in the development pipeline likely to have activity against CPE.\(^2\) Over the last 5-10 years, CPE have disseminated widely internationally. During this time, the rate of CPE carriage and infection has increased sharply in many countries including NZ.\(^3\) Fortunately, however, at this point CPE do not appear to have become endemic in either NZ

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healthcare facilities or the wider community. Currently the vast majority of cases in NZ have been in patients with recent travel to high prevalence regions, but the epidemic is evolving rapidly, and the window of opportunity to minimise the risk of spread in healthcare facilities is likely to be narrow. It is essential therefore that current efforts to minimise the risk of spread in healthcare facilities are strengthened and coordinated at the national level.

2. **The consequences of CPE spreading between patients within the NZ healthcare system are very serious.** Patients at highest risk would be those most reliant on antibiotics for survival including those in intensive care units, those undergoing treatment for cancers, those undergoing bone marrow and solid organ transplantation, those with complex urological problems, and those undergoing major surgery.

3. **Infection prevention and control (IPC) measures required to reduce the risk of CPE spreading in healthcare facilities include a combination of general measures and measures specifically targeting CPE.** General measures include optimising healthcare worker hand hygiene practice, optimising environmental cleaning and minimising the use of unnecessary antibiotics (antimicrobial stewardship). Specific measures include identifying asymptomatic carriers of CPE on admission to the facility and managing them with special “transmission-based precautions”. Transmission based precautions are a set of activities designed to prevent transmission of pathogens between patients. In the acute care setting these include providing the patient with their own dedicated equipment, room and toilet facilities for the duration of their hospital stay.

4. **Without appropriate active surveillance and infection prevention measures, there is a high likelihood that CPE will spread within aged related residential care (ARRC) facilities in NZ.** This is suggested by local and international experience with a closely related family of resistant organisms known as extended-spectrum beta-lactamase producing Enterobacteriaceae (ESBL-E). The prospects of CPE spreading in ARRC poses a risk, not only to ARRC residents themselves, but to

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5 Centers for Disease control and Prevention (CDC) https://www.cdc.gov/infectioncontrol/basics/transmission-based-precautions.html

patients in acute care hospitals (due to the frequent movement of patients between these two types of facilities).

5. **The inter-connectedness of the NZ healthcare system means that a coordinated, systems-based response plan to CPE is needed.** A nationally coordinated response across the health sector was found to be effective in controlling a particular type of CPE, known as KPC, in Israel.⁷ At the state level in Australia, Victoria has put in place systems and processes for responding to suspected or confirmed CPE transmission in healthcare facilities.⁸ This includes the appointment of a team of experts to provide central oversight and support for affected healthcare facilities. A similar approach has been advocated at the national level in Australia, but efforts have been hampered by inter-state jurisdictional differences and a very large private hospital sector; in contrast, there are fewer hurdles to NZ developing a national approach.

6. **Setting up a system for CPE could provide a useful model and platform for managing future transmissible AMR threats to the NZ healthcare system.** The emergence of novel AMR genes and pathogens will continue to be a threat in the future. In developing NZ’s response to CPE, there is an opportunity to set up platforms that are also able to address future transmissible AMR threats.

7. **NZ has high rates of antimicrobial use compared to other EU and OECD countries.** Overuse of antibiotics exerts selection pressure for the emergence and ongoing transmission of drug resistant pathogens. Previously published data demonstrates a clear correlation between antibiotic usage and resistance rates.⁹ NZ needs to address this issue with national coordinated Antimicrobial Stewardship (AMS) strategies for targeting antibiotic prescribing in healthcare facilities as well as in the community.

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Recommended minimum specifications for NZ’s CPE response plan

The NZ ASID expects the Ministry of Health to demonstrate clear leadership and support for healthcare providers in response to the CPE threat. A clear mandate and commitment to funding must also be applied to ensure that the response plan is both effective and sustainable. The core high level components of NZ’s CPE national response plan must include the following:

1. A requirement for all diagnostic microbiology laboratories to have in place minimum laboratory standards for the detection of CPE from clinical samples and active surveillance specimens.

2. A requirement for all healthcare and ARRC facilities to have in place and comply with minimum IPC policy and procedure for the identification and management of CPE colonised patients. The national CPE response plan must give clear guidance and expectations of what key IPC components should be adhered to, including active surveillance strategies, appropriate transmission based precautions and cleaning/decontamination procedures.

3. CPE must be under public health surveillance. This means there must be:
   i. Compulsory laboratory reporting of all CPE cases, along with appropriate meta-data (including but not limited to travel and healthcare exposure history), to an agency responsible for collecting, processing, and reporting the data.
   ii. Compulsory referral of all new CPE isolates to ESR for molecular characterisation and typing

4. Roles, responsibilities, systems and processes must be in place to
   i. regularly review and analyse national CPE surveillance data
   ii. ensure, where appropriate that information is used to advise changes in infection prevention and control practices, for example changes to criteria used for targeting newly admitted patients for active surveillance
   iii. communicate relevant developments to IPC stakeholders throughout the sector
5. Systems must be in place to ensure suspected or confirmed CPE transmission is responded to promptly and appropriately at both the local and national level. This must include centralised national-level IPC oversight and support by an appropriate team of experts (with representation from infectious diseases; clinical microbiology; ESR; infection prevention and control; ARRC and public health). This team will be particularly important where the necessary IPC expertise is not available in house (for example smaller DHBs and the aged residential care [ARRC] sector). Systems must also be in place to ensure that relevant developments are communicated to other healthcare facilities. Prompt communication between facilities is essential and there must be no restrictions.

6. Systems for providing and updating IPC recommendations as the CPE epidemic develops and unfolds, particularly regarding active surveillance for CPE carriers on admission to healthcare facilities.

7. Systems of accountability with escalation pathways must be in place to ensure that the responsibilities and roles of various agencies within the CPE response plan are adhered to. Healthcare agencies include diagnostic and reference microbiology laboratories; acute care public hospitals; aged residential care facilities; private surgical hospitals; and home healthcare providers. Accreditation bodies should have a role in ensuring compliance (such as IANZ to ensure minimum laboratory standards for CPE detection are maintained).

8. A nationally coordinated AMS strategy and requirement for healthcare facilities and community prescribers to have in place an AMS programme. Key components of such programmes should include antibiotic usage surveillance and reporting, audit and feedback to prescribers. Efforts to promote public engagement in appropriate antibiotic usage is also recommended.

9. The CPE response plan must receive adequate resourcing and in particular the necessary administrative support to make it effective and viable.

10. Processes and pathways must be in place to ensure public and private hospitals can have timely access to colistin; ceftazidime avibactam; tigecycline; fosfomycin; aztreonam and other agents
potentially required for treatment of infections caused by CPE. This may require a stockpile of such agents at the national level that can be accessed locally as required.

11. Once established, the above systems, processes and arrangements for CPE could in principle also be extended and applied to other transmissible antimicrobial resistance threats; essentially becoming a national communicable disease-based framework for responding to specific AMR threats as they arise.

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Also endorsed by: The New Zealand Microbiology Network (NZMN, www.nzmn.org.au)

About the Australasian Society for Infectious Diseases Inc. (ASID)

The Australasian Society for Infectious Diseases is the peak professional body for infectious disease and microbiology in the region. Membership encompasses Infectious Diseases Physicians, Clinical Microbiologists, Scientists, Infection Control Practitioners, Public Health Physicians, Sexual Health Physicians, Veterinarians and others eminent in the field of infectious diseases. In New Zealand its members include many of the HIV specialists who care for those people living with HIV infection.

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