A National Sepsis Action Plan for Aotearoa, New Zealand

Technical Report and Highlights of a National Consensus Meeting

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Sepsis
Trust NZ

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Acknowledgements

This report would not have been possible without the time and generosity of those who participated in the consensus process. Our staff met with nothing but generosity, openness, and a willingness to engage in wide-ranging conversations touching every part of our healthcare system.

We heard the difficult experiences of those who have had to face critical illness.

We encountered some of the barriers that need to be overcome to achieve a more equitable future, mixing optimism with the present reality of inequity in health outcomes for Māori and Pacific people. In this, we were fortunate to follow in the footsteps of the Ministry of Health's Achieving Equity in Health Outcomes programme, which provided a framework, language and vision for change.

Finally, we acknowledge the Accident Compensation Corporation Treatment Injury Team, whose support laid the foundations for this report.

Contents

Forward

The New Zealand Sepsis Trust was formed to bridge the gap between what we know about sepsis and what we do about sepsis.

In October 2019, with generous support from the Accident Compensation Corporation (ACC), the Trust held a consensus meeting to understand the effect of sepsis and to describe barriers and enablers to better sepsis prevention and care. Included were sepsis survivors, doctors, nurses, pharmacists, scientists, Māori clinicians, healthcare administrators, non-government and government agencies. The meeting tapped into deep knowledge and experience of sepsis and uncovered a strong desire for change. Presented here is a technical report summarising the state of sepsis care in New Zealand, along with the meeting's key findings.

These have been used to develop a National Sepsis Action Plan, reported separately. The plan sets out achievable goals through which New Zealand can reduce the impact of sepsis.

We're working towards "Increasing Awareness, Saving Lives". We welcome your comments and ideas - find out more at www.sepsis.org.nz

Meeting Participants

Organisation Name **Contributions to the plan gratefully received from:**	**Attendees are listed against their primary affiliation for the purposes of the consensus meeting.** ****Indicates primary affiliation where multiple are present*** ***#Indicates membership of sepsis core working group***	
NZ Sepsis Trust Board Members	Mr Harvey Duncan Robert Martynoga* Dan Dobbins* Paul Huggan*# Elaine Fernandes	Mania Campbell-Seymour Laura Findlater Paige Nicholson Steve Chambers (Patron)
Te Ohu Rata O Aotearoa (Te ORA)	Mania Campbell-Seymour - Te Aitanga a Mahaki, Whakatōhea, Tūhoe Turuki Tahuri - Ngāti Kahungunu ki Te Wairoa, Tūhoe	
Australia and NZ Intensive Care Society	Craig Carr#	
Australasian Society of Infectious Disease	Nigel Raymond# Hasan Bhally#	Paul Huggan
ACEM	Alice Rogan#	
NZNO College of Emergency nurses	Jo King#	
Waikato District Health Board - Sepsis Ready Program	Odette Paul* Paul Huggan Mark Huddart Elaine Fernandes	Paige Nicholson Robert Martynoga Dan Dobbins Laura Findlater
Paediatric Society NZ	Mark Huddart*# Rachel Clements Turuki Tahuri	
Health Quality and Safety Commission	Nikki Grae#	
NZ College of Midwives	Lesley Dixon	
Consumer reps	Korrin Barrett# Paige Nicholson*	Laura Findlater* Chris Vanderweg*
Australian Sepsis Network	Brett Abbenbrooke	
ACC	Linda Shepherd	
Independent Facilitator	Margaret Macky	

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Meeting Participants Continued

University Research/Academic Medicine	Steve Chambers*
Best Practice Advocacy Centre	Nigel Thompson
Infection Prevention and Control Nurses College	Elinore Harper
NZ Private Hospitals Association	Kirstie Cook Rose Geden
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Medical Research Institute of NZ	Jason Wright
Invited but unable to attend	
Royal NZ College of General Practitioners Royal NZ College of Urgent Care	
Institute of Innovation and Improvement (i3), Waitemata District Health Board	
The Order of St John	
Wellington Free Ambulance	
New Zealand Hospital Pharmacy Association	
Ministry of Health	

Equity

Ko tou rourou, ko toku rourou ka ora ai te iwi
"With your contribution and my contribution there lies well being for the people"

This report uses the Ministry of Health's definition of equity to frame conversations about inequitable harm due to sepsis.

"In Aotearoa New Zealand, people have differences in health that are not only avoidable but unfair and unjust. Māori and Pacific people living in Aotearoa are at least twice as likely as non-Māori and non-Pacific people to experience sepsis. The consensus meeting recognised this as an example of health inequity, and that different people with different levels of advantage require different approaches and resources to get equitable health outcomes."

Commitments under Te Tiriti o Waitangi include those to effective partnerships between Māori and Crown agencies, and to Māori control over the resources and response to problems affecting health and wellbeing. A National Sepsis Action Plan should be core to ongoing efforts to improve Māori health, underpinned by these principles.

An approach to building an equity focus into the governance of a National Sepsis Action Plan is shown below, which makes use of Ministry of Health guidance (Achieving Equity in Health Outcomes: Summary of a discovery process. Ministry of Health 2019).

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Equity Continued

Mandate	It is a priority for the government to deliver equitable outcomes for all New Zealanders. **This includes sepsis and major infection**			
Definition	In Aotearoa New Zealand, people have **differences in sepsis incidence** that are not only avoidable but unfair and unjust. The National Sepsis Action Plan recognises that different people with different levels of advantage require different approaches and resources to get equitable health outcomes.			
Te Tiriti o Waitangi	With **Te Tiriti** as the foundation, prioritisation for Māori is an imperative			Research what a ***Hauora Māori*** competent workforce means for sepsis care
Core Principles	Recognise **social determinants** as key drivers of infection and sepsis	Include **ethnicity and equity** definitions in the collection of data for quality improvement and performance	Enable local **empowerment and decision making** by providing useful, searchable datasets	Train a **competent workforce**, that recognises the increased risk of major infection and sepsis associated with ethnicity and socio-economic deprivation
Health Strategy Alignment	A **people-centered** plan focussed on increasing awareness (health literacy) and supporting sepsis survivors based on **documented experience and need**	Value and high performance means identifying disadvantaged groups and striving for change which **reduces their burden of infection and sepsis**	Focus on the whole journey through the health system. Ensure pathways are **nationally consistent but link to local services.**	
Vision for the Future	We will be successful when we see no preventable harm due to sepsis. This includes measuring and reducing the burden of sepsis related to inequity and socio-economic deprivation.			
Leadership	The National Sepsis Network will seek a wide-range of partnerships at all levels of the system. The Network will ensure Māori representation on its Board, and establish a Māori Outcomes Group to advise and support quality and data teams.			
Greater coherence across the system	Implementing the plan requires community support and excellent relationships across the health sector. The Plan recognises that investments to reduce inequity rest on whole-of-government collaboration.			
Shift in strategy - action and accountability	**Action:** the National Sepsis Network will address gaps in data to allow evidence-informed and coordinated effort, defining priorities using a 'start small, think big, move fast' approach		**Accountability:** The Plan will shift national thinking away from aspirational goals toward explicit ownership of the problem and accountability to the solutions. Targets, measures, monitoring and reporting of outcomes will drive improved performance for priority populations.	
Approach- themes	1. Evidence - smart data, analytics, qualitative and quantitative research 2. Efficiency - bring existing skills, energy and resources to the table first - invest new funds carefully and disinvest if necessary 3. Equity - the Plan has not been successful if nothing changes for Māori- a focus on equity will benefit other vulnerable groups, including Pacific people and the elderly 4. Integrate an equity focus into all programmes addressing infection prevention, antimicrobial stewardship and sepsis care 5. Indicates where sepsis impacts Government strategic priorities such as child wellbeing, mental health and primary health care			

Context

Sepsis (also known as blood poisoning (toto pirau) or septicaemia) is characterised by a life-threatening organ dysfunction due to a dysregulated host response to infection. The term sepsis has been translated into te reo Māori as mate whakatāoke (toxic illness).

World Health Assembly Resolution A70.13 (2017) requires that member states adopt a National Sepsis Action Plan. The work described here responds to this obligation and forms part of a global effort to reduce preventable morbidity and mortality due to sepsis.

Sepsis is always caused by an infection, and this is reflected in the epidemiology of sepsis. The best estimates available suggest that sepsis affects up to 1 per 100 people in New Zealand each year. It follows that individuals at high risk of infection are also at high risk of sepsis. Chronic disease and the effects of socio-economic deprivation increase the risk of infection. This is thought to explain why the risk of sepsis is higher for Māori and Pacific people.

In those who present with symptoms of infection, certain clinical features predict mortality and morbidity. These features can be summarised in clinical tools that provide guidance to frontline nursing & medical staff as well as to patients and whānau. Where these tools are introduced into healthcare systems in combination with resuscitation 'bundles', patient outcomes improve.

Saving lives from sepsis depends on increasing awareness across the spectrum of acute care.

This starts with empowering the general population to consider sepsis as an explanation for sudden illness:

Me pātai noa, "ko te mate whakatāoke rānei tēnei?"
Just ask, "could it be sepsis?"

Training for frontline healthcare workers improves recognition of patients at risk and supports adherence to best practice in resuscitation.

Support for sepsis survivors begins with understanding the disability that frequently results from a sepsis admission, particularly those involving admission to an intensive care unit.

"An ounce of prevention is worth a pound of cure". This is as true for sepsis as any other condition. Sepsis events embody social, emotional and biologic events over a life-course. Reducing sepsis incidence is therefore complex, involving long-term investment towards health equity outside the hospital.

In our hospitals there is abundant evidence that benchmarks for sepsis care are not being met. We can and we must do better.

The Consensus Meeting Framework

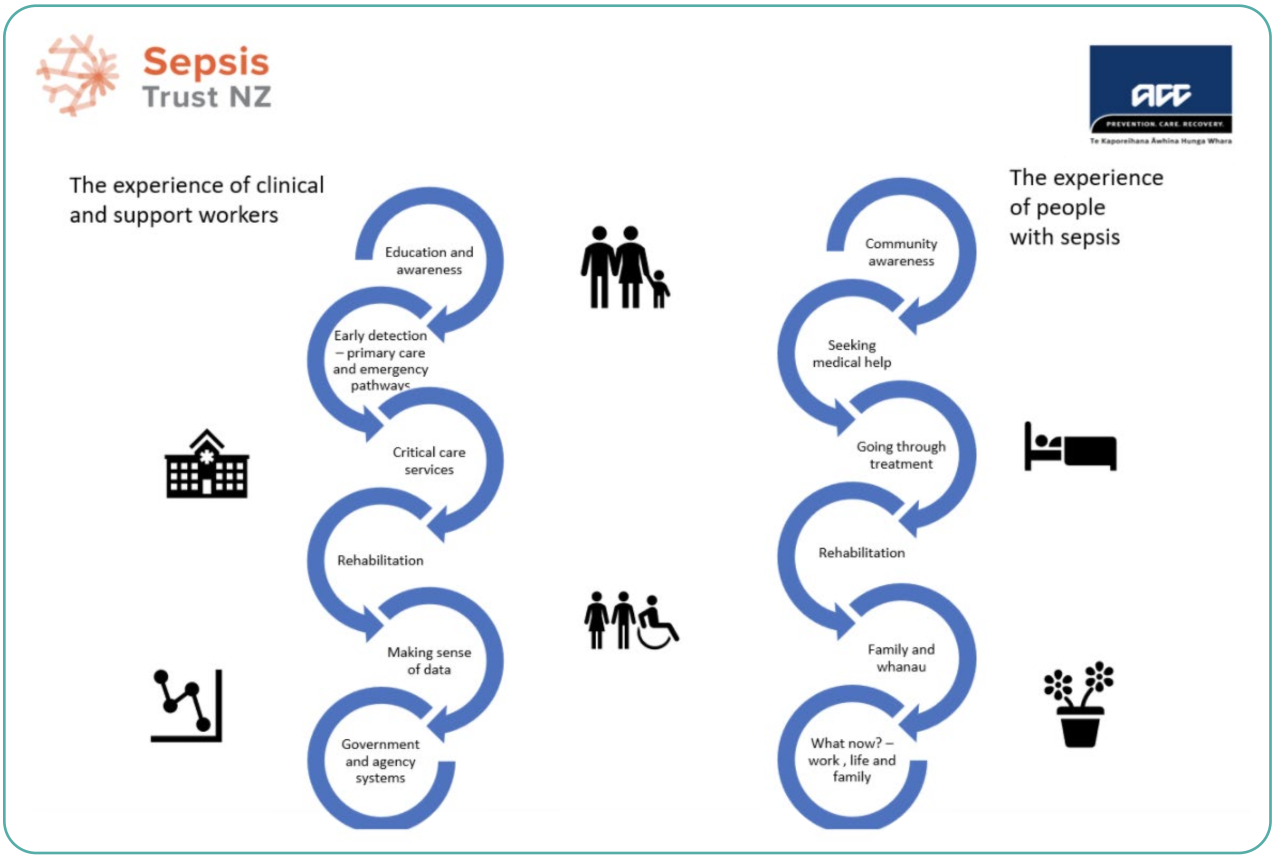


Figure 1: consultation framework for consensus meeting

The consensus meeting focussed on ‘current state’ and ‘gaps’, addressing three stages of a person’s sepsis journey: awareness and prevention (before), early management (during), and support for survivors (after). The meeting considered the needs of two groups at each stage; i) clinical and support workers and ii) people with sepsis, their family and whānau.

Themes emerged which were constant across every stage:

Awareness of sepsis amongst the public and healthcare workforce is poor, creating multiple missed opportunities for prevention and early intervention.

A “whole-of-pathway” approach to sepsis care is needed; centered on the patient and whānau, equitable at a national level and integrated across the patient’s sepsis journey from acute care to survivorship.

Sepsis quality improvement activities need to be sensitive to their impacts on related areas (such as antimicrobial stewardship), and contextualised to each healthcare setting (such as GP surgery, ambulance, emergency department).

Awareness & Prevention of Sepsis

The consensus meeting considered patient and population-level awareness of sepsis, and the impact of low awareness on outcomes.

WHAT WE FOUND:

Patients, family and whānau are the first to notice the signs of sepsis in their loved ones and the best placed to advocate for them. We do not build counseling and education into the routine care of people with risk factors for sepsis, nor do we share these messages with family, whānau, or the population at large.

The nature of excellent sepsis care along this pathway should be made clear to the public. Patients and whānau who suspect sepsis are entitled to high expectations of the care they receive, but need to know what to expect.

Robust education and safety-netting must become part of managing infections that can lead to sepsis. Members of the core working group felt this should include multilingual resources applied particularly to:

- Chest infection (suspected pneumonia)
- Skin and soft tissue infection
- Emergency or acute care discharges following assessment for abdominal pain
- Hospitalised patients undergoing procedures, including day-case surgery.
- Vulnerable groups ie children, people with disabilities and their carers

The Experience of Sepsis

Understanding Sepsis

Pneumonia, strep throat, cellulitis, impetigo, boils, urinary tract infections (UTIs) are all bacterial infections – so what is sepsis?

In sepsis, the body's immune system responds to infection by releasing chemicals. If the immune system loses control, it releases poisonous amounts of these chemicals into the blood. Without treatment, this poisoning continues and the body responds; the pulse rate goes up, breathing gets faster; fever and sweating give way to cool mottled skin. Rashes may appear as blood clotting changes. The body cannot maintain normal blood pressure, and vital organs begin to fail. This can happen quickly - getting treatment is now a race against the clock.

The chances of dying due to sepsis are higher than having a stroke or a heart attack. Of those who go to ICU with sepsis, one in three people die in hospital.

Survivors experience slow recovery, with serious after-effects, new health problems and high rates of readmission to hospital.

Despite this, there are no specific supports or rehabilitation pathways for sepsis survivors.

The consensus meeting took time to focus on the patient journey.

WHAT WE FOUND:

Sepsis is common, but for many healthcare providers and most families, sepsis is still a rare and frightening event. It is not clear where to get help for sepsis. We don't use shared critical language whilst making referrals from the community, nor from one part of the healthcare system to another.

Low awareness leads to low expectations. Where there is a persistent concern about a patient or loved one, the possibility of sepsis is not considered.

An "educated and listening' healthcare system would encourage questioning and respond with standardized assessment.

A highly reliable healthcare system would train healthcare providers to use standardised assessment and resuscitation tools. Currently, if sepsis pathways exist at all, they differ between regions, between facilities, and between primary and secondary care.

Vulnerable groups ie children, people with disabilities and their carers.

WHAT THIS MEANS

- People should feel empowered to just ask, "could it be sepsis"?
- People should expect rapid assessment, consistent care and close follow-up following sepsis.
- Clear, concise, nationally consistent and evidence-based tools must be on hand to support carers and healthcare providers.

Sepsis recognition and resuscitation is a key competency. Sepsis should be a mandatory component of undergraduate and postgraduate curricula for healthcare providers, particularly in frontline specialties and environments.

Survivors Struggle

The consensus meeting took time to focus on the experiences of people surviving a sepsis admission. The six survivors who contributed to the meeting were in normal health and in full-time employment when they fell ill. All had spent time in an intensive care unit. Although many specific examples of survivor experience were shared, few specifics are reported here in the interests of privacy.

WHAT WE FOUND:

The experience of sepsis is terrifying for patients, their family and whānau.

Sepsis, was not used as a unifying term either i) to explain the diverse changes in function that people experienced or ii) to link the presence of infection in one organ to failure in another

Sepsis survivors were unable to find anyone to help navigate services after discharge. Very little information was provided explaining what to expect in recovery. Post-discharge care was delayed and/or poorly coordinated. Poor function and slow recovery were not anticipated except where physical deficits were obvious (ie upper limb amputation).

The psychological damage associated with severe illness was common and persistent, with survivors vividly describing features of post-traumatic stress disorder. The impact of sepsis on immediate family and whānau was significant, and distressing to recall.

A variety of long term sequelae were described by survivors including difficulty sleeping and concentrating, nightmares, hallucinations, panic, muscle weakness and joint pain, difficulty concentrating, low self-esteem, and depression.

How this fits with literature on this topic:

- ICU survivors with sepsis have the same quality of life at discharge as do ICU survivors with trauma - in other words, being admitted to ICU with sepsis is literally like being hit by a bus.
- The term Post-Sepsis Syndrome (PSS) is being used to describe the objective physical and cognitive deficits that follow a sepsis event.
- Post-discharge impairment/PSS is most pronounced amongst those with the fewest physical and cognitive deficits prior to admission.
- The risk and severity of PSS correlate with illness severity and duration of hospitalization.
- Sepsis survivors (with or without PSS) are more likely to be re-admitted to hospital, to experience recurrent infection, new organ failure, and/or new cardio-vascular events.
- Re-admission rates fall as front-door recognition and resuscitation improves
- Referral to rehabilitation with sepsis within 90 days of discharge lowers 10-year mortality

WHAT THIS MEANS:

Healthy people with sepsis experience steep declines in physical, cognitive, and emotional function, receiving little support in recovery.

ICU admission predicts physical, cognitive, and emotional impairment at discharge.

People who were well at admission may have the highest needs in recovery.

Survivors need an explanation, good information, and a clear path to recovery.

There is a lack of investment in support and resources for people during recovery from sepsis.

Links to New Zealand Health Priorities

Drawn from “Achieving Equity in Health Outcomes: Summary of a discovery process “ (Ministry of Health, 2019), the table on page 5 describes the challenge of achieving equity within *whole-of-sector* programmes of change.

The consensus meeting and core working group considered the strengths and gaps of the health system in depth. The results of this analysis are shown below (Strengths and Gaps in Healthcare Services), together with analysis of stakeholders, enablers and barriers to change.

WHAT WE FOUND:

New Zealand has the capacity to radically improve sepsis care. Although starting from a low baseline, existing investments in health, social and research infrastructure could be re-prioritised to face ‘major infection and sepsis’ as priorities.

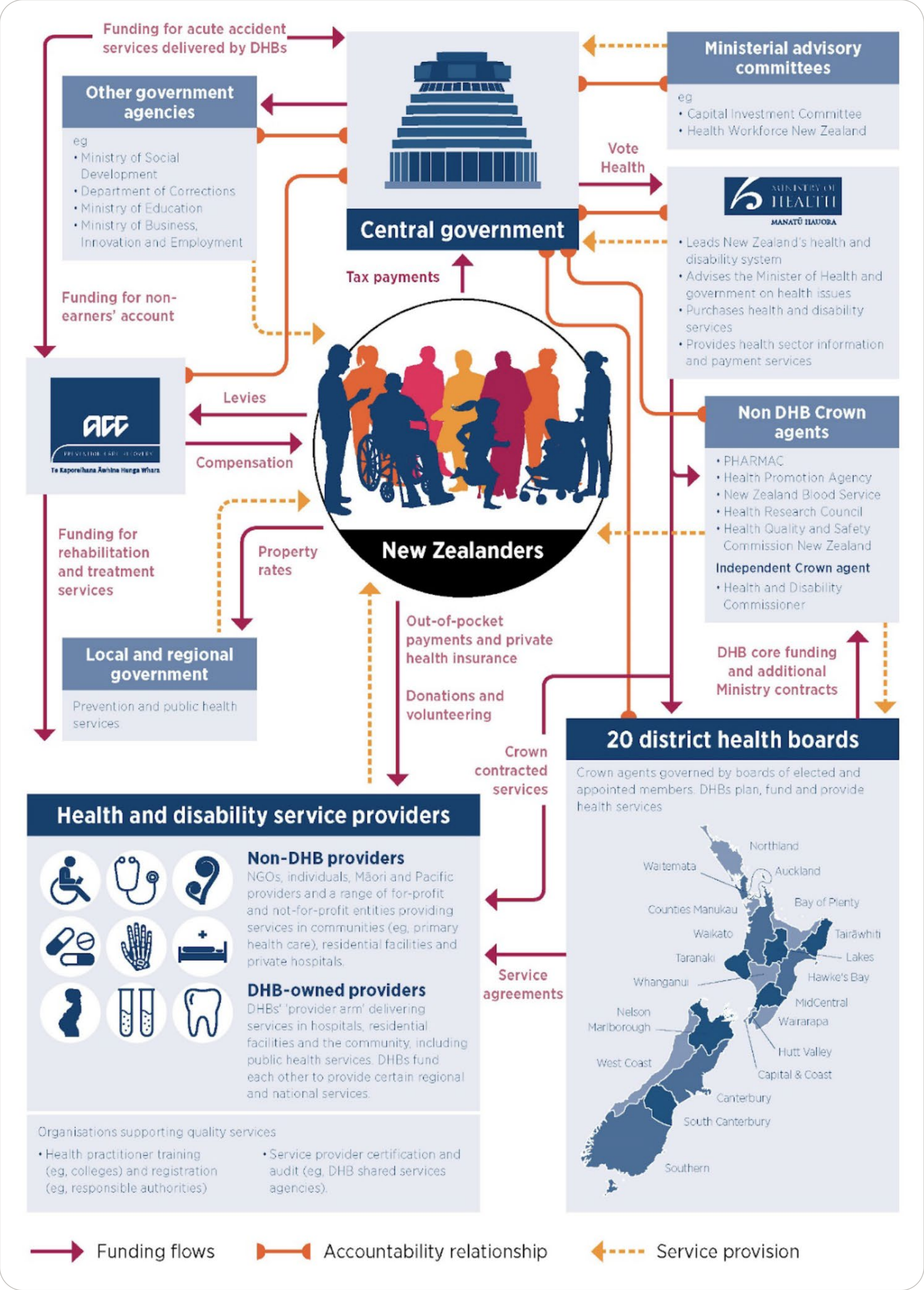
WHAT THIS MEANS:

If conceived as a key component of “reducing harm due to infection”, better sepsis care links directly to existing investments in infection prevention and control and antimicrobial stewardship. Balanced investment in each of these three areas is necessary to achieve maximum health benefits. In other words, the whole is greater than the sum of each part.

Where new funding is required, it should be in leadership and governance models which promote cross-sector collaboration, high-quality data collection and exchange of best-practice. Existing models such as the National Trauma Network provide evidence of success where this approach is taken. Integration and prioritisation of Māori leadership within such a network would bind it to the principles of Te Tiriti o Waitangi, as well as the goals set out in the Ministry’s health equity programmes.

Flow chart on following page.

Links to New Zealand Health Priorities Continued



Central government

New Zealanders

Other government agencies

eg

- Ministry of Social Development
- Department of Corrections
- Ministry of Education
- Ministry of Business, Innovation and Employment

Ministerial advisory committees

eg

- Capital Investment Committee
- Health Workforce New Zealand

Ministry of Health

- Leads New Zealand's health and disability system
- Advises the Minister of Health and government on health issues
- Purchases health and disability services
- Provides health sector information and payment services

Non DHB Crown agents

- PHARMAC
- Health Promotion Agency
- New Zealand Blood Service
- Health Research Council
- Health Quality and Safety Commission New Zealand

Independent Crown agent

- Health and Disability Commissioner

Local and regional government

Prevention and public health services

20 district health boards

Crown agents governed by boards of elected and appointed members. DHBs plan, fund and provide health services

Health and disability service providers

Non-DHB providers

NGOs, individuals, Māori and Pacific providers and a range of for-profit and not-for-profit entities providing services in communities (eg, primary health care), residential facilities and private hospitals.

DHB-owned providers

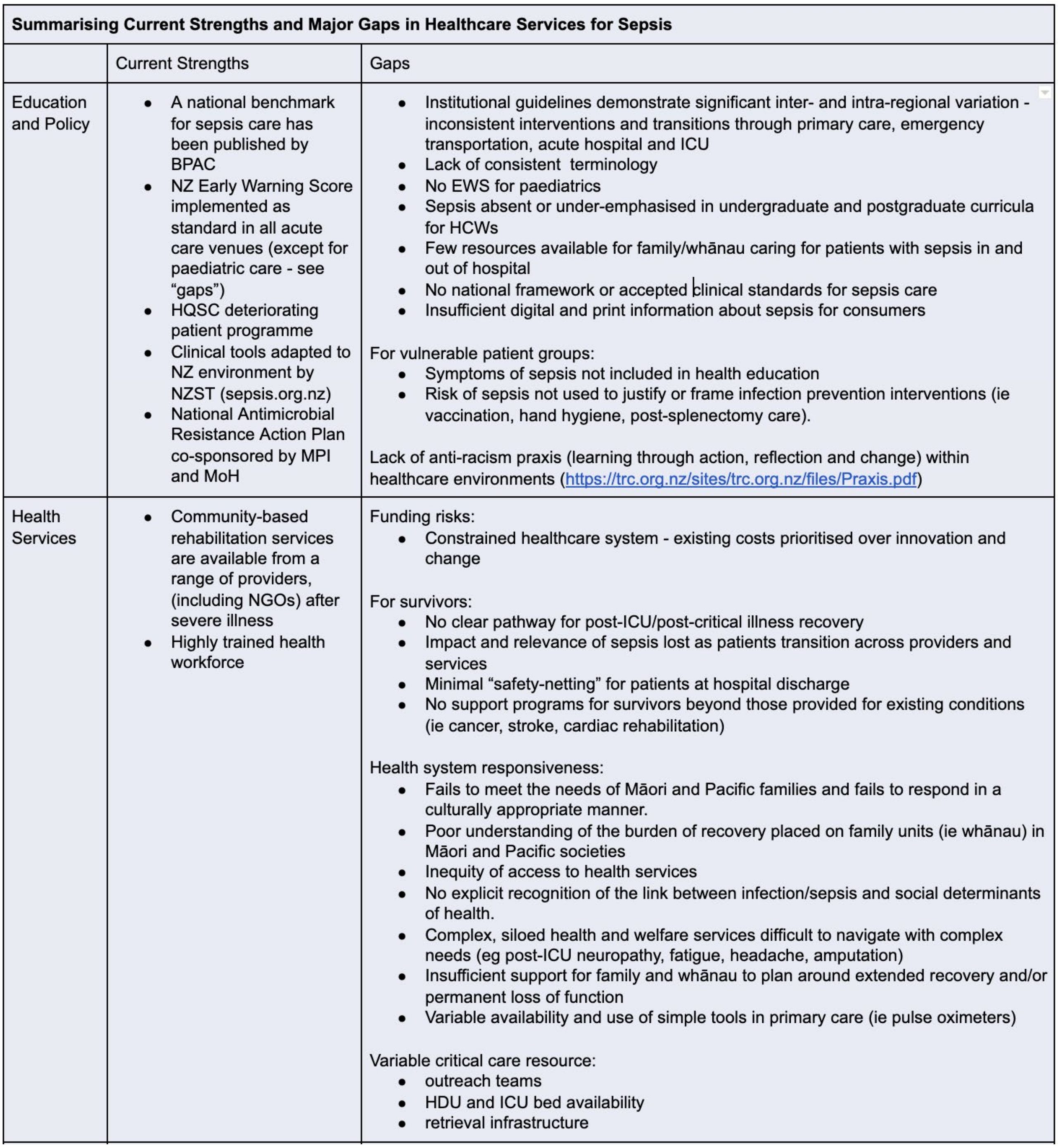
DHBs' 'provider arm' delivering services in hospitals, residential facilities and the community, including public health services. DHBs fund each other to provide certain regional and national services.

Organisations supporting quality services

- Health practitioner training (eg, colleges) and registration (eg, responsible authorities)
- Service provider certification and audit (eg, DHB shared services agencies).

→ Funding flows
⊢ Accountability relationship
⇠ Service provision

Strengths and Gaps in Healthcare Services



Summarising Current Strengths and Major Gaps in Healthcare Services for Sepsis		
	Current Strengths	Gaps
Education and Policy	• A national benchmark for sepsis care has been published by BPAC • NZ Early Warning Score implemented as standard in all acute care venues (except for paediatric care - see “gaps”) • HQSC deteriorating patient programme • Clinical tools adapted to NZ environment by NZST (sepsis.org.nz) • National Antimicrobial Resistance Action Plan co-sponsored by MPI and MoH	• Institutional guidelines demonstrate significant inter- and intra-regional variation - inconsistent interventions and transitions through primary care, emergency transportation, acute hospital and ICU • Lack of consistent terminology • No EWS for paediatrics • Sepsis absent or under-emphasised in undergraduate and postgraduate curricula for HCWs • Few resources available for family/whānau caring for patients with sepsis in and out of hospital • No national framework or accepted clinical standards for sepsis care • Insufficient digital and print information about sepsis for consumers For vulnerable patient groups: • Symptoms of sepsis not included in health education • Risk of sepsis not used to justify or frame infection prevention interventions (ie vaccination, hand hygiene, post-splenectomy care). Lack of anti-racism praxis (learning through action, reflection and change) within healthcare environments (https://trc.org.nz/sites/trc.org.nz/files/Praxis.pdf)
Health Services	• Community-based rehabilitation services are available from a range of providers, (including NGOs) after severe illness • Highly trained health workforce	Funding risks: • Constrained healthcare system - existing costs prioritised over innovation and change For survivors: • No clear pathway for post-ICU/post-critical illness recovery • Impact and relevance of sepsis lost as patients transition across providers and services • Minimal “safety-netting” for patients at hospital discharge • No support programs for survivors beyond those provided for existing conditions (ie cancer, stroke, cardiac rehabilitation) Health system responsiveness: • Fails to meet the needs of Māori and Pacific families and fails to respond in a culturally appropriate manner. • Poor understanding of the burden of recovery placed on family units (ie whānau) in Māori and Pacific societies • Inequity of access to health services • No explicit recognition of the link between infection/sepsis and social determinants of health. • Complex, siloed health and welfare services difficult to navigate with complex needs (eg post-ICU neuropathy, fatigue, headache, amputation) • Insufficient support for family and whānau to plan around extended recovery and/or permanent loss of function • Variable availability and use of simple tools in primary care (ie pulse oximeters) Variable critical care resource: • outreach teams • HDU and ICU bed availability • retrieval infrastructure

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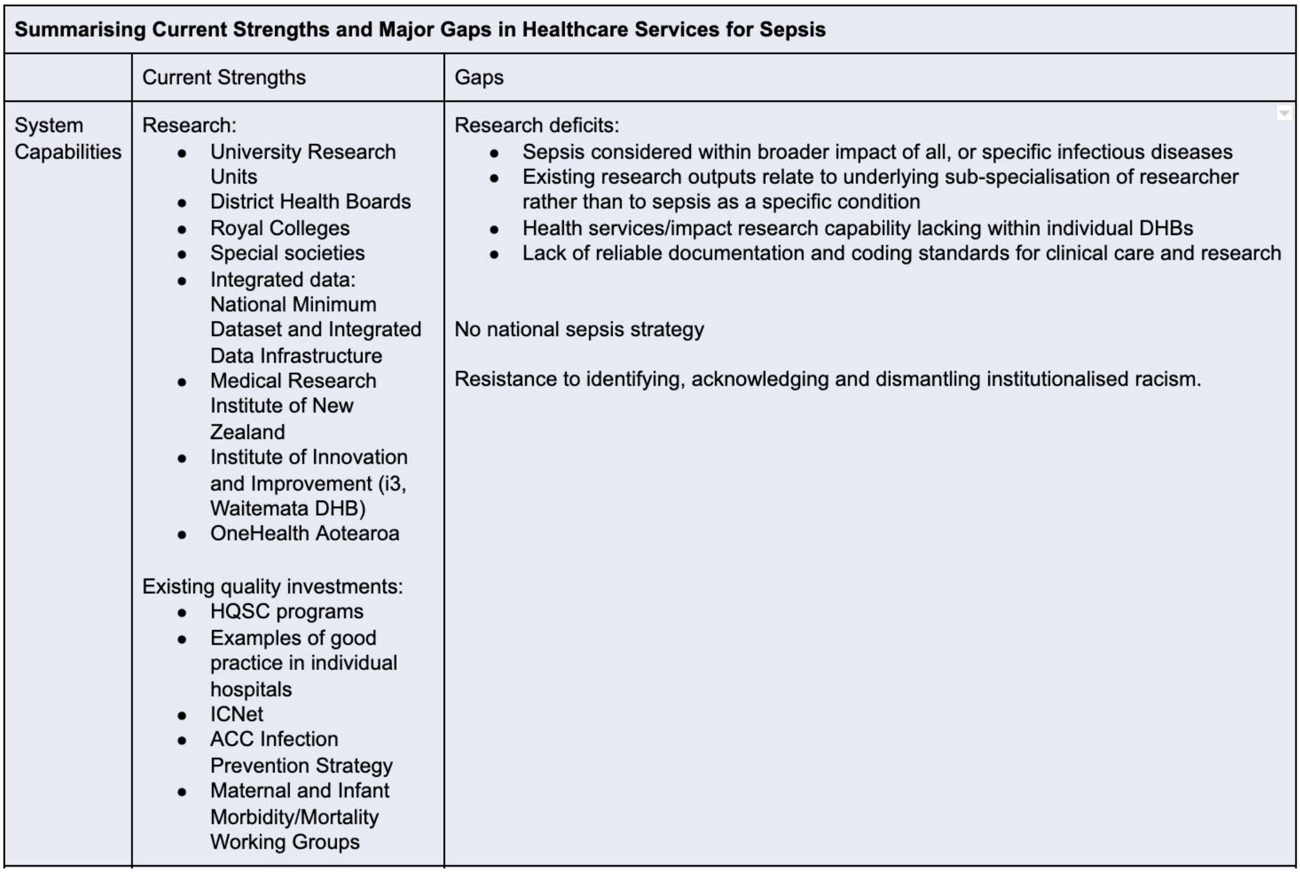
Strengths and Gaps in Healthcare Services Continued



Summarising Current Strengths and Major Gaps in Healthcare Services for Sepsis		
	Current Strengths	Gaps
System Capabilities	Research: • University Research Units • District Health Boards • Royal Colleges • Special societies • Integrated data: National Minimum Dataset and Integrated Data Infrastructure • Medical Research Institute of New Zealand • Institute of Innovation and Improvement (i3, Waitemata DHB) • OneHealth Aotearoa Existing quality investments: • HQSC programs • Examples of good practice in individual hospitals • ICNet • ACC Infection Prevention Strategy • Maternal and Infant Morbidity/Mortality Working Groups	Research deficits: • Sepsis considered within broader impact of all, or specific infectious diseases • Existing research outputs relate to underlying sub-specialisation of researcher rather than to sepsis as a specific condition • Health services/impact research capability lacking within individual DHBs • Lack of reliable documentation and coding standards for clinical care and research No national sepsis strategy Resistance to identifying, acknowledging and dismantling institutionalised racism.

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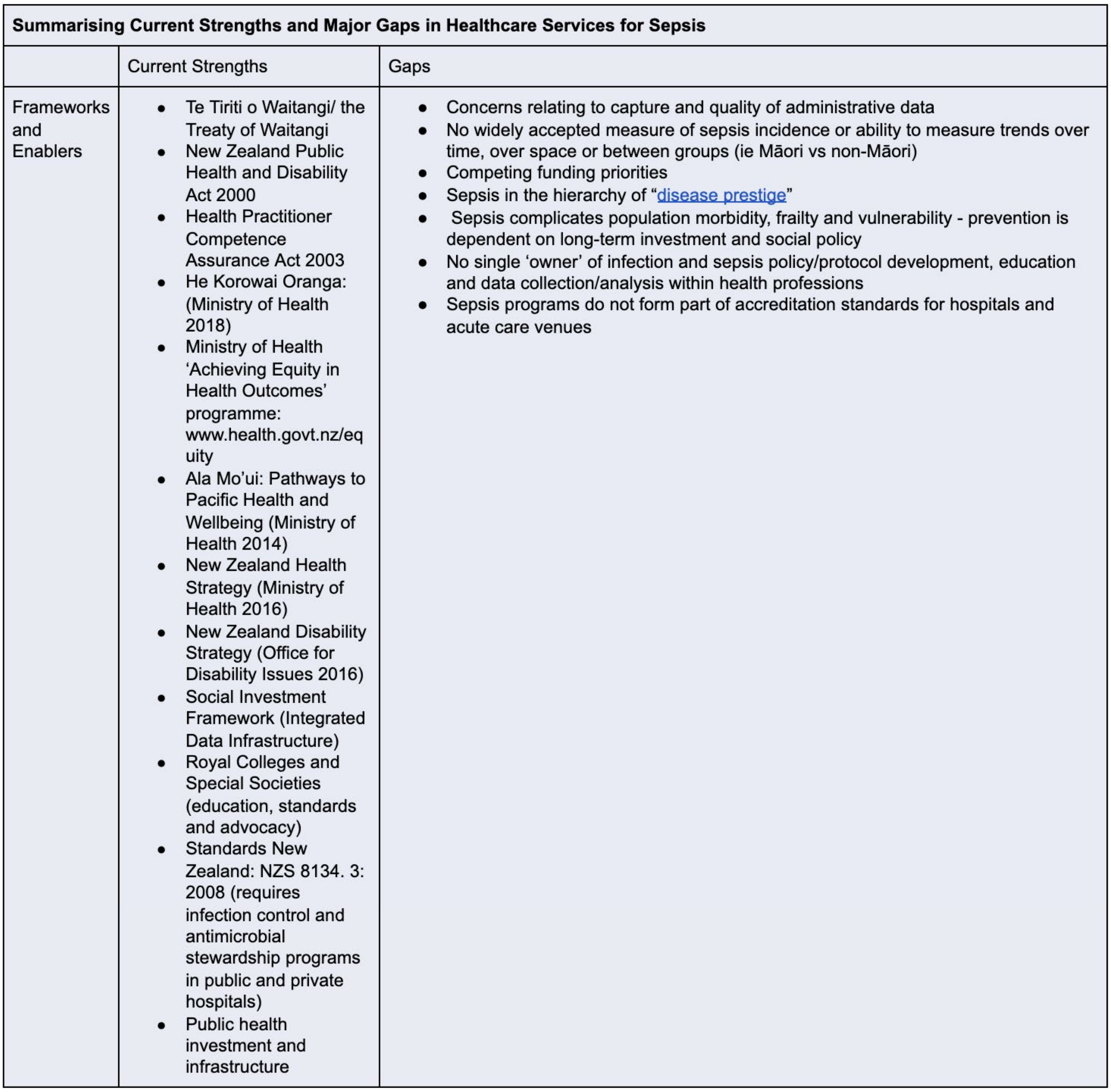
Strengths and Gaps in Healthcare Services Continued



Summarising Current Strengths and Major Gaps in Healthcare Services for Sepsis

	Current Strengths	Gaps
Frameworks and Enablers	• Te Tiriti o Waitangi/ the Treaty of Waitangi • New Zealand Public Health and Disability Act 2000 • Health Practitioner Competence Assurance Act 2003 • He Korowai Oranga: (Ministry of Health 2018) • Ministry of Health 'Achieving Equity in Health Outcomes' programme: www.health.govt.nz/equity • Ala Mo'ui: Pathways to Pacific Health and Wellbeing (Ministry of Health 2014) • New Zealand Health Strategy (Ministry of Health 2016) • New Zealand Disability Strategy (Office for Disability Issues 2016) • Social Investment Framework (Integrated Data Infrastructure) • Royal Colleges and Special Societies (education, standards and advocacy) • Standards New Zealand: NZS 8134. 3: 2008 (requires infection control and antimicrobial stewardship programs in public and private hospitals) • Public health investment and infrastructure	• Concerns relating to capture and quality of administrative data • No widely accepted measure of sepsis incidence or ability to measure trends over time, over space or between groups (ie Māori vs non-Māori) • Competing funding priorities • Sepsis in the hierarchy of "disease prestige" • Sepsis complicates population morbidity, frailty and vulnerability - prevention is dependent on long-term investment and social policy • No single 'owner' of infection and sepsis policy/protocol development, education and data collection/analysis within health professions • Sepsis programs do not form part of accreditation standards for hospitals and acute care venues

Table 1. Current strengths and gaps in sepsis care, New Zealand. BPAC: Best Practice Advocacy Centre; ICU: intensive care unit; HQSC: Health Quality and Safety Commission; NZST: New Zealand Sepsis Trust; MPI: Ministry of Primary Industries; ACC: Accident Compensation Corporation; NGO: non-governmental organisation; DHB: District Health Board; HPQAA: Health Practitioners Quality Assurance Act

Stakeholder, Barrier and Enabler Analysis

Stakeholders		
Medical Council of New Zealand	TeORA	Primary Health Organisations
Universities and Royal Colleges	Special Societies	Iwi and Hapu
Sporting Organisations	HQSC	DHBs
BPAC	ACC	Community Groups
Private Hospitals	Plunket	Survivors
Role Models/Champions	Health and Safety - Employer Associations	Ministry of Health
Ambulance Services	Non-DHB Crown Agencies	Public Health Units
Health-related Non-Government Organisations ie Te Mana Raraunga	Government Agencies	

Barriers		
Silo mentalities	Institutional racism	Media Bias and Interest
Lack of critically connected networks	Health IT services (lack of integration)	Inertia - “she’ll be ‘right”
Health literacy	Language and terminology	Lack of culturally appropriate resources
Money	National Plan (lack of)	National agency (lack of)
Clinical and coding standards (lack of)	Lack of physical infrastructure and patient flow (ED bed block)	Reluctance to agree on standardisation and protocol-driven care
Time	Funding	Privacy regulations

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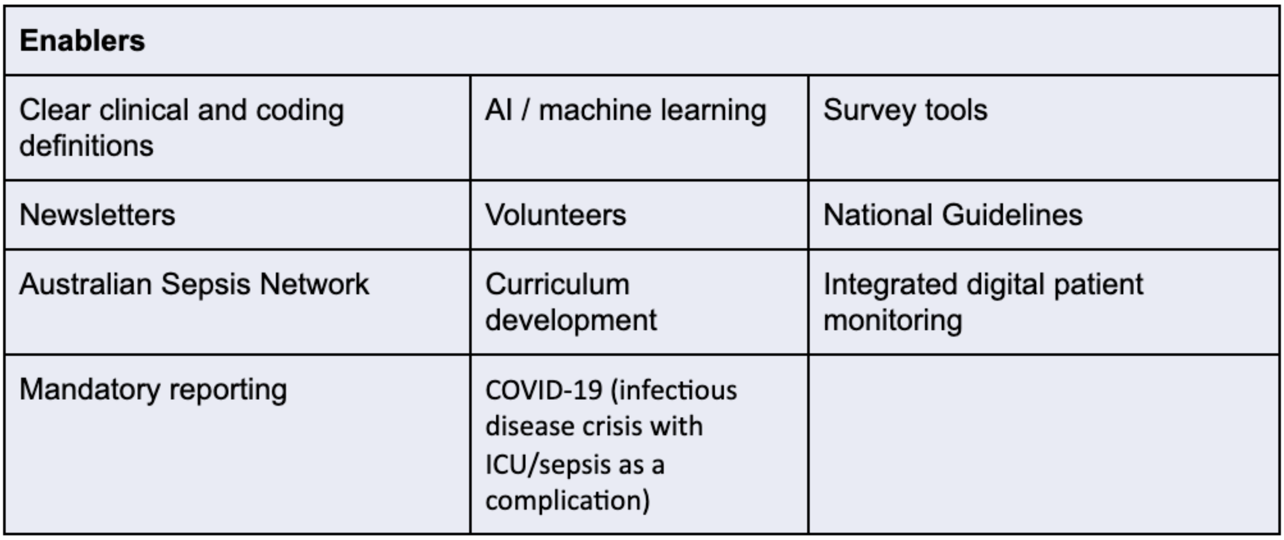
Stakeholder, Barrier and Enabler Analysis Continued



Enablers		
Clear clinical and coding definitions	AI / machine learning	Survey tools
Newsletters	Volunteers	National Guidelines
Australian Sepsis Network	Curriculum development	Integrated digital patient monitoring
Mandatory reporting	COVID-19 (infectious disease crisis with ICU/sepsis as a complication)	

Summary and Next Steps

This consensus report has described the current state of sepsis prevention, management and recovery in Aotearoa New Zealand. Multi-stakeholder consultation has allowed a complete picture of our current state to emerge, whilst also pointing to a path forward.

Practical steps need to be taken to secure immediate gains. These are:

- Adopt and Implement a National Sepsis Action Plan
- Seek funding to establish the leadership and governance principles of a National Sepsis Network
- Promote the uptake of sepsis quality improvement programmes in our hospitals and acute care settings
- Re-prioritise infectious diseases and sepsis as major threats to public health and safety
- Recognise sepsis as an additional health burden for Māori and Pacific people, which is unjust and unfair, therefore representing inequity
- Make use of existing data to describe national incidence and economic burden

References

Achieving Equity in Health Outcomes: Summary of a discovery process. Ministry of Health 2019

Achieving Equity in Health Outcomes: Highlights of important national and international papers. Ministry of Health 2018

Achieving Equity (web-page) Ministry of Health. 2019. https://www.health.govt.nz/about-ministry/what-wedo/work-programme-2019-20/achieving-equity

Statement of Intent 2018-2022. Accident Compensation Corporation - available at https://www.acc.co.nz/assets/corporate-documents/f23bf80b2d/acc7849-statement-of-intent-2018-2022.pdf

Dwyer J. A boy's life is lost to Sepsis. Thousands are saved in his wake. *The New York Times,* 13 April 2017.

Gander K. Sepsis: Campaign to raise awareness of UK's second biggest killer could save 14,000 lives, says charity. *The Independent*, 22 February 2016

Glaspey LJ, Roberts MB, Mazzarelli A, Trzeciak S, Roberts BW. Early interventions for the prevention of post-traumatic stress symptoms in survivors of critical illness: protocol for a systematic review. *BMJ Open* 2017;7(9).

Paul J Huggan, Tania Helms, Veronique Gibbons, Katie Reid, Harry Hutchins, Ian Sheerin. Counting the Cost of Sepsis in New Zealand. *NZMJ* (in press)

Paul J Huggan, Anita Bell, James Waetford, Zuzanna Obertova, Ross Lawrenson . Evidence of High Mortality and Increasing Burden of Sepsis in a Regional Sample of the New Zealand Population ; *Open Forum Infectious Diseases*, Volume 4, Issue 3, Summer 2017, ofx106, https://doi.org/10.1093/ofid/ofx106

Improving outcomes for patients with Sepsis. National Health Service England, December 2015.

Jones C, Griffiths RD. Mental and physical disability after Sepsis. *Minerva Anestesiol* 2013;79(11):1306-12.

New Zealand Major Trauma Registry and National Clinical Network Annual Report 2019 https://www.majortrauma.nz/assets/Publication-Resources/Annual-reports/National-Trauma-Network-Annual-Report-2018-19.pdf

Reinhart K, Daniels R, Kissoon N, et al. Recognising Sepsis as a global health priority – a WHO Resolution. *New England Journal of Medicine* 2017; 377:414-417.

Sepsis: recognition, diagnosis and early management. NICE Guideline 51 [NG51]. National Institute for Health and Care Excellence England, September 2017.

Sepsis Regulations: Guidance Document 405.4 (a) (4). New York State Department of Health, July 2013.

Sepsis Study (survey). The George Institute for Global Health, August 2016.

Stopping Sepsis – A National Action Plan , The George Institute for Global Health. 2017 (Australian National Sepsis Action Plan)

World Health Organization. *The ICD-10: international statistical classification of diseases and related health problems.* 10th revision, 2nd edition. Geneva: World Health Organization, 200

Prescott HC, Angus DC. Enhancing Recovery From Sepsis: A Review. *JAMA.* 2018;319(1):62–75. doi:10.1001/jama.2017.17687

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