Policy Relevant Infectious disease Simulation and Mathematical Modelling

APPRISE
the Australian Partnership for Preparedness Research on Infectious Disease Emergencies

Professor Jodie McVernon

Strengthening Australia’s emergency response to infectious diseases through high-impact research
APPRISE overview

Multi-disciplinary, nationally-distributed NHMRC Centre of Research Excellence

Create evidence base for Australia’s response to:
- New pathogens emerging in Australia
- New pathogens emerging outside Australia
- Existing pathogens that become of concern locally or regionally

20 investigators from 16 institutions with over 40 listed collaborators

Year 1: 2016-2017
- Consultation and stakeholder identification

Years 2-5: 2017-2021
- Implementation of research priorities

Ongoing
- Sustainable networks, practices and capacity
Consultation overview

- Funding conditional on consultation process and outcomes

<table>
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<tr>
<th>Stakeholder mapping</th>
<th>Interviews</th>
<th>Workshops</th>
<th>Consolidation workshop</th>
<th>Consultation report</th>
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<tbody>
<tr>
<td>• Liaison with investigators and</td>
<td>• 35 individuals</td>
<td>• 4 workshops</td>
<td>• APPRISE investigators reviewed and addressed consultation</td>
<td>• Addressed context and challenges for APPRISE</td>
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<td>Expert reference group</td>
<td>• 19 organisations</td>
<td>• 40 participants</td>
<td>findings</td>
<td>• Recommendations for improved success and impact</td>
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<td></td>
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<td>• 29 organisations</td>
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Expert reference group (9 members):
- Federal and state/territory Health Officers and Medical Advisors
- Indigenous researchers
- Veterinary health experts
- Public health researchers

To NHMRC with response from APPRISE
APPRISE aims

Establish a sustainable multidisciplinary research team across Australia to perform high-quality and high-impact infectious disease emergency response research

Develop a research strategy for the emergency response to infectious diseases across clinical, laboratory and public health domains

Generate and execute the best evidence for the emergency response through capacity-building, training and effective communication with diverse stakeholders
APPRISE research priorities

- Embed observational study protocols
- Embed interventional study protocols
- Improve hospital infection prevention practices

- Establish specimen collection protocols for FF100 studies & serology at animal-human interface
- Develop study protocols for enhanced disease surveillance
- Support changes in routine reporting
- Improve cross-sector integration

- Understand and engage communities in emergency response preparedness
- Adapt protocols to build capability in Indigenous communities
- Build evidence for risk influencers and mitigation strategies

- Establish a national biobank for PBMC, plasma and organisms
- Advance pathogen and vector identification
- Enhance understanding of pathogen impact

APPRISE
APPRISE investigators

CHIEF INVESTIGATORS
Prof Sharon Lewin  The University of Melbourne
Prof Tania Sorrell  Westmead Institute for Medical Research
Prof Jodie McVernon  The University of Melbourne
Prof Steve Webb  University of Western Australia
Prof John Kaldor  University of New South Wales
Prof Ross Andrews  Menzies School of Health Research – Charles Darwin University
Prof Allen Cheng  Monash University
Prof Lyn Gilbert  University of Sydney
Prof David Smith  Pathwest Laboratory Medicine WA
Prof Soren Alexandersen  Deakin University

ASSOCIATE INVESTIGATORS
Prof David Paterson  University of Queensland
Prof Nigel Stocks  University of Adelaide
Dr Peter Massey  James Cook University
Prof Angus Dawson  University of Sydney
A/Prof Kristine Macartney  The Children’s Hospital at Westmead
Adj/Prof David Irving  Australian Red Cross Blood Service
A/Prof Stephen Lambert  University of Queensland
Prof Adrian Miller  Griffith University
Prof Scott Ritchie  James Cook University
A/Prof David Anderson  Burnet Institute

AND OUR MANY COLLABORATORS
Complex stakeholder network

Government
- International
- Representative groups
- Indigenous
- Other

Clinical and professional bodies
- Medical
- Emergency mgmt
- Animal health

Research
- Projects
- Individuals
- Centres
- Networks

Industry
- APPRISE

AppriSE

Agencies
- Regulators
- Networks
APPRISE Expert Reference Group

CHAIR
Prof Bart Currie  Menzies School of Health Research

Ms Sharon Appleyard  Office of Health Protection
Dr Penny Burns  GP Roundtable
Dr Dawn Casey  NACCHO
Dr Jenny Firman  Office of Health Protection
Ms Jennifer Herz  Biointelect
Prof Ben Howden  PHLN
Dr Vanessa Johnston  CDNA
Dr Janene Kingston  Dept Agriculture & Water Resources
Dr Henry Ko  Community representative
Prof John Mackenzie  Curtin University
Dr Maria Pinero de Plaza  Community representative
Dr Mark Veitch  AHPPC
Dr Stephanie Williams  DFAT
PRISM - Overview

- Optimising the National Immunisation Program
- Understanding and controlling influenza and other respiratory viruses
- Characterising emerging infectious diseases
- New methods for simulation and modelling
PRISM - Investigators
PRISM – Mission

To advance understanding of the drivers and burden of infectious diseases to inform effective control policies for Australia and the region
PRISM - Scope

- In vitro, animal & human study infection data
- Institutional & family outbreak disease data
- Epidemiological, sociological & spatial data
- Within & between host transmission models
- Household & closed population models
- Epidemiologic, demographic, network & spatial models
PRISM - Stakeholders

- **Research**
  - Extended modelling networks beyond consortium (Kirby, Telethon Kids)
  - Multidisciplinary projects and partnerships (Menzies, MCRI)

- **Industry**

- **Government**
  - Australian Government Office of Health Protection,
  - Australian Technical Advisory Group on Immunisation
  - Department of Foreign Affairs and Trade
  - Defence Science Technology Group

- **International**
  - Academic networks, partnerships and conferences
  - TD ModNet consortium, Bangkok
  - World Health Organisation – Melbourne node undergoing CC accreditation
  - Global modelling network development – recent Wellcome Trust consultation
National research networks

Policy Relevant Infectious disease Simulation and Mathematical Modelling
Developing new methods for studying disease distribution and transmission

Integrated Systems for Epidemic Response
Systems research in biosecurity and epidemic response

Hot North
Improving Health Outcomes in the Tropical North
Research and capacity building to mitigate chronic and infectious tropical disease threats

PRISM²
Centre of Research Excellence in Emerging Infectious Diseases
Getting new technologies into public health practice

CREID

ISER
Opportunities for collaboration

▪ Generate new knowledge that leads to improved health outcomes
  ◦ Emerging infectious diseases, skin and respiratory health, AMR

▪ Ensure effective transfer of research outcomes into health policy
  ◦ Share existing trust relationships with policy advisors, public health and clinical practitioners

▪ Develop the Health and Medical research workforce
  ◦ Seek opportunities for cross-fertilization of training and development activities, placements

▪ Facilitate collaboration
  ◦ Formal and informal strategies – joint meetings, shared projects
Challenges and risks

- Minimise duplication of effort and share resources (research, training, advocacy, partnerships development) by joining forces where possible
- Identify opportunities for linking up stages along the translational pathway, to enhance sustainability of impact
- Seek potential for early engagement with Aboriginal and Torres Strait Islander perspectives, to develop inclusive research agenda
- Maintain external badging as distinct but complementary consortia, whole greater than the sum of the parts
- Avoid potential for projects to ‘fall between camps’ where strategy aligned