MEETING OF THE STATES PARTIES TO THE CONVENTION ON THE PROHIBITION OF THE DEVELOPMENT, PRODUCTION AND STOCKPILING OF BACTERIOLOGICAL (BIOLOGICAL) AND TOXIN WEAPONS AND ON THEIR DESTRUCTION

BWC/MSP/2004/MX/WP.25
20 July 2004

ENGLISH ONLY

Second Meeting
Geneva, 6-10 December 2004

Meeting of Experts
Geneva, 19-30 July 2004
Items 5 and 6 of the agenda

Australian Disease Surveillance and Response Systems: Humans

Submitted by Australia

Introduction

1. Australia acknowledges the difficulty in distinguishing between natural and intentional outbreaks of diseases, particularly at the early stages of an outbreak. However, the initial procedures for dealing with both deliberate and natural outbreaks of disease are essentially similar for which Australia has a well-practised disease control system. Australian States and Territories have legislative responsibility for disease control with the exception of quarantinable diseases, which come under Commonwealth legislation.

2. Surveillance is fundamental to the prevention and control of all communicable diseases. Surveillance systems of unusual diseases at all levels are being reviewed and strengthened. This will deliver security benefits and public health benefits which, in turn, flow on to improved regional and international security.

I Removing the threat by reducing the consequences

3. Managing the risk through improved detection and rapid response to biological threats could contribute to reducing the BW threat. Knowing that the intended high-impact and economic consequences would be considerably diminished through early detection and response, hostile use of biological agents could be reduced. Details of Australia's response capabilities are provided at section 4.

4. Two main collaborative networks form the base for disease surveillance and control in Australia: the Communicable Diseases Network Australia (CDNA) and the Public Health Laboratory Network (PHLN). These networks have served the country well, enabling Australia to

respond to natural outbreaks and anthrax powder hoaxes. CDNA oversees the coordination of: national communicable disease surveillance, the response to communicable disease outbreaks of national importance; and field training of communicable disease epidemiologists. Members of the network include representatives from the Australian government; State and Territory governments; representatives from other countries in the region as observer members; and experts from key organisations in the communicable disease control. The PHLN is a collaborative group of microbiologists from public health laboratories that provide the public health diagnostic capacity in States and Territories.

II Legislation

5. Each State and Territory has public health legislation that enables local disease control activities. If a severe epidemic and/or misuse of a biological agent is considered to be a national emergency, the *Quarantine Act* (*The Act*) could be applied. Under this ACT, an epidemic or risk of an epidemic can be proclaimed by the Governor General on advice from the Chief Medical Officer and Health Minister. Once a proclamation has been declared, Australia's Chief Medical Officer would then provide direction under this Act to coordinate the State and Territory response to controlling and eradicating the epidemic or removing the danger of the epidemic by applying quarantine measures necessary to control the disease.

6. Currently there are eight human diseases that are subject to quarantine controls in Australia. These are: plague, rabies, cholera, yellow fever, viral haemorrhagic fever, smallpox, SARS and recently introduced Highly Pathogenic Avian Influenza in Humans.

7. Australia is also currently exploring the need for new health security legislation to support existing public health legislation and to provide means to better detect and respond to outbreaks of disease. Such legislation could address natural but unusual emerging outbreaks and deliberate outbreaks.

III Multiple Approaches to Disease Surveillance

8. Australia has multiple approaches to surveillance. The most comprehensive surveillance scheme is the National Notifiable Diseases Surveillance Scheme that collates diseases that are notified to State and Territory governments. The disease may be notified by doctors, staff in microbiology laboratories or both. This surveillance system is augmented by specific surveillance schemes to capture data about other communicable diseases.

9. The NNDSS is a voluntary reporting scheme underpinned by commitment to communicable disease control through the CDNA. In 1989, the Communicable Diseases Network Australia (CDNA) was established to improve the control of communicable diseases, including addressing the inconsistencies in surveillance and reporting that arose from the different State and local surveillance systems.

10. The jurisdictional surveillance systems are crucial for timely and effective detection, investigation and local management of outbreaks. The national surveillance system provides for; the

detection and management of outbreaks affecting more than one jurisdiction; monitoring of the need for and impact of national control programs; guidance of national policy development and resource allocation; and description of the epidemiology of rare diseases for which there are only a few notifications in each jurisdiction. National surveillance also assists in quarantine activities and facilitates international collaborations such as reporting to the World Health Organization.

11. Australia has a number of other surveillance schemes such as the Laboratory Virology and Serology Reporting Scheme (LabVISE), and the Australian Sentinel Practice Research Network (ASPREN). Details of these programs will be discussed under section 4 of this document.

IV Major Features of Australian Surveillance Schemes

12. Data from Australian surveillance systems is placed on the Department of Health and Ageing's website and published quarterly in the *Communicable Diseases Intelligence* (*CDI).* The data is accompanied by commentaries, tables and graphs to illustrate important aspects of the data, including possible trends.

13. Other surveillance schemes supplement the NNDSS and data from more than one scheme are analysed to provide a comprehensive picture. These supplementary schemes include:

- enhanced surveillance schemes that collate detailed data about risk factors for disease,
- surveillance of syndromes and specific diseases by community doctors and less common diseases by specialist medical practitioners,
- surveillance of laboratory evidence of viral illness,
- detection of threats by surveillance for infections sentinel animals,
- characterisation of specific organisms that are a public health threat and
- measures of implementation such as vaccination to prevent infection.

National Notifiable Diseases

14. The National Notifiable Disease Surveillance System (NNDSS) coordinates the national surveillance of over 50 communicable diseases or disease groups that are notifiable under State and Territory legislation (listed in Annex A). The NNDSS is administered by the Commonwealth Department of Health to allow for the detection of national trends, detection of outbreaks crossing state borders and for cooperative national action.

15. Under the NNDSS, notifications are made from doctors and laboratories to state or territory health authorities under the provisions of the public health legislation in their jurisdiction.

16. While the NNDSS provides important data on trends of disease, age, sex and geographic distribution of cases, it is not designed to provide information on emerging conditions or factors associated with transmission.

Enhanced Surveillance Schemes

17. While HIV infection is included as a national notifiable disease, data are not collated within

the NNDSS. When HIV emerged, a disease specific notification process was developed to be able to accommodate conditions or factors associated with a newly emerging disease. National surveillance for HIV and AIDS is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR]. The NCHECR publishes in CDI and produces an annual report. http://www1.health.gov.au/cda/Source/CDA-index.cfm www.med.unsw.edu.au/nchecr/

18. The OzFoodNet network is a national disease surveillance system for enhanced surveillance for outbreaks of gastrointestinal illness. OzFoodNet conducts studies on the burden of food-borne illnesses and coordinates national investigations into outbreaks of food-borne disease. The system ensures Australian food supplies are safe from food-borne diseases and would be an early detection system for any deliberate contamination of foods. http://www.ozfoodnet.org.au

Syndromes and Diseases Seen by Community and Specialist Doctors

19. The Australian Sentinel Practice Research Network (ASPREN) is a national network of general practitioners who report presentations of defined medical conditions each week. Its main objective is to provide an indicator of the burden of disease in the primary health care setting and to detect trends in consultation rates. The network is operated by the Royal Australian College of General Practitioners.

20. The list of conditions is reviewed annually by the ASPREN management committee and an annual report is published. In 2004, nine conditions are being monitored; four are related to communicable disease issues. These include influenza, gastroenteritis, varicella and shingles. http://www.cda.gov.au/pubs/cdi/2003/cdi2704/htm/cdi2704ae.htm#aspren

21. The Australian Paediatric Surveillance Unit (APSU) conducts national, active surveillance of uncommon conditions of childhood, including infectious, genetic, mental health, and vaccine preventable diseases and childhood injuries. Communicable diseases currently under surveillance through the APSU include: acute flaccid paralysis, congenital cytomegalovirus infection, congenital rubella, HIV infection, AIDS and perinatal exposure to HIV, neonatal herpes simplex virus infection, and hepatitis C virus infection.

22. The APSU documents the number of Australian children under 15 years that are newly diagnosed with specified conditions, their geographic distribution, clinical features, current management and outcome. Contributors to the APSU are clinicians known to be working in paediatrics and child health in Australia.

Laboratory evidence of viral infections

23. Under the Virology and Serology Laboratory Reporting Scheme (LabVISE), contributors submit data fortnightly on the laboratory identifications of viruses and other organisms. Seventeen laboratories in the States and the ACT participate in the Scheme. Monthly updates of LabVISE data are published on the Communicable Diseases Australia website. Reports are collated, analysed and published quarterly.
http://pandora.nla.gov.au/pan/10754/20011010/www.health.gov.au/pubhlth/cdi/labvise/labvise.htm

Infections in sentinel animals indicate threat to humans

24. The Sentinel Chicken Surveillance Programme provides an early warning of increased Flavivirus activity in Australia. The main viruses of concern are Murray Valley encephalitis (MVEV) and Kunjin. MVEV virus causes the disease Murray Valley encephalitis (formerly known as Australian encephalitis), a potentially fatal disease in humans.

25. These viruses affected Kimberley region of Western Australia, top end of Northern Territory, Northern Queensland and Central Australia.

26. Since 1974, a number of sentinel chicken flocks have been established in Australia to provide an early warning of increased MVEV virus activity. Currently, 59 flocks are maintained around Australia and are either tested all year round or during the summer months depending on their location and the risk. Results are posted on the National Arbovirus Surveillance Website by State representatives. A yearly summary is presented in *CDI*. The Australian Quarantine Inspection Service also conducts surveillance of seroconversion to arboviruses in pigs in northern Australia.

Characterisation of specific organisms that pose a public health threat

27. The Australian Gonococcal Surveillance Programme (AGSP) monitors antimicrobial resistance in *Neisseria gonorrhoeae* and includes the reference laboratories in all states and territories. These laboratories report data on sensitivity to an agreed core group of antimicrobial agents on a quarterly basis and provide an expanded analysis as an annual report in *CDI*. The main purpose of the AGSP is to help define standard protocols for antibiotic treatment of gonococcal infection. Similar typing and susceptibility testing is performed for *Neisseria meningitidis and* Mycobacterium.

28. The National Enteric Pathogens Surveillance System (NEPSS) collects, analyses and disseminates data on human enteric bacterial infections diagnosed in Australia. These pathogens include *Salmonella, Escherichia coli, Vibrio, Yersinia, Plesiomonas, Aeromonas* and *Campylobacter*. Only *Salmonella* is reported in the NEPSS quarterly reports of the *CDI.*

29. NEPSS is operated by the Microbiological Diagnostic Unit, Department of Microbiology and Immunology, University of Melbourne.

Example of a comprehensive picture of disease activity using surveillance data from more than once source

30. Influenza morbidity in Australia is determined from data from a number of schemes:
(a) the National Notifiable Diseases Surveillance System,
(b) laboratory reports of influenza diagnoses, including virus type
(c) five sentinel general practitioner schemes reporting on influenza-like illness: the Australian Sentinel Practice Research Network, Tropical Influenza Surveillance (Northern Territory), the New South Wales Sentinel General Practice Scheme, the Victorian Sentinel

General Practice Scheme and Western Australian sentinel general practices.

31. The results of each of the schemes are published together fortnightly throughout the year on the *Communicable Diseases Australia Website* as the National Influenza Surveillance Scheme. Annual reports on influenza in Australia are published in *CDI* each year.

Measuring delivery of vaccination

32. The Australian Childhood Immunisation Register (ACIR) was established in 1996, by transferring information of all children under the age of seven years enrolled with Medicare (the national health insurance provider). The aggregated information gives estimates of immunisation coverage in Australia. The coverage estimates are reported quarterly in the Communicable Disease Intelligence. http://www.racgp.org.au/document.asp?id=1847

V Australia's response capabilities

33. Australia has established effective response capability through collaboration between governments. State and Territory Health Departments are primarily responsible for the surveillance and control of communicable diseases, and the response is guided by public health legislation in each jurisdiction. The Australian government is involved in policy development surrounding surveillance and control of communicable diseases, but takes a lead role in outbreak investigations of national significance or when there are issues that relate to human quarantine.

34. Australia has an enviable record of border protection from exotic diseases in animals and plants. Border control measures for people have gained importance to ensure that emerging diseases such as SARS or avian flu are not brought into the country via travellers. The Department of Health and Ageing works closely with the Australian Quarantine and Inspection Service (AQIS) on border control measures. These measures may include screening of travellers at Australian borders, the use of a Passenger Health Declaration Card, and provision of health assessments and information at all international airports.

35. If emerging infectious diseases, such as SARS or avian flu, are introduced to Australia, there is an experienced workforce in disease control and well-established methods to control spread of communicable diseases. These include

- surveillance of cases and active case finding;
- provision of preventative agents such as medicines and vaccines;
- management of cases to reduce spread; and
- tracing of contacts and instituting quarantine.

36. When there is an emerging disease of national significance, the Department of Health and Ageing serves as a central point for the Communicable Disease Network Australia (CDNA) to develop protocols and guidelines, and to address issues for investigation at national level. Such guidelines were introduced rapidly for SARS and were placed on the Department of Health and Ageing website.

37. The Early Warning and Response Unit in the Department of Health and Ageing operate the National Incident Room and co-ordinate the Australian Response to a disease threat. In such circumstances, an emergency teleconference is held with CDNA and the possibility of an intentional outbreak assessed. Hostile use of biological agents could be suspected under the following circumstances:

(a) A single case of illness or death from potential bioweapons including *B. anthracis*, *Yersinia pestis*, *Francisella tularensis*, variola virus, viral hemorrhagic fever viruses, *Clostridium botulinum* toxin,
(b) A new disease unable to be diagnosed by laboratory tests,
(c) Unusual epidemiological characteristics or anomalies such as an unusual age group, location or exposure history,
(d) Several simultaneous epidemics in different locations or
(e) Serial epidemics of different diseases in the same population.

VI The Future

38. The Australian Government has recently committed $10 million to enhance the national Biosecurity Surveillance System. Australian Government funding will be used to improve reporting speed, expand capacity with the use of algorithms (to detect increased notification rates or clusters of notifiable diseases), enable the use of geospatial mapping and expand the range of surveillance syndromes.

39. The first stages of the improved surveillance system will be to provide a secure information sharing network with a web-based outbreak reporting system. The Secure Information-Sharing Network will be improve the national capacity to rapidly identify a disease outbreak or health emergency, whether introduced or naturally-occurring. This includes the occurrence of an infectious disease such as pandemic influenza or SARS.

40. In the event of an outbreak, the network will be supported by a web-based reporting system to allow for real-time reporting and analysis of data across Australia.

VII Summary

41. Australia has a comprehensive surveillance system for communicable disease outbreaks and an experienced and practised workforce that provide effective disease response. The Australian Government has recognised the importance of the threat from bioweapons and has committed to further enhancing disease detection and capacity. This will augment Australia's position to the International Health Regulations proposed by the World Health Organization.

Annex

Diseases Nnotifiable Under the National Notifiable Diseases Surveillance System (NNDSS)

1. Acquired immunodeficiency syndrome (AIDS)
2. Anthrax
3. Australian bat lyssavirus
4. Barmah Forest virus infection
5. Botulism
6. Brucellosis
7. Campylobacteriosis
8. Chlamydia
9. Cholera
10. Congenital rubella syndrome
11. Congenital syphilis
12. Creutzfeldt-Jakob disease (CJD)
13. Cryptosporidiosis
14. Dengue fever
15. Diphtheria
16. Donovanosis
17. Flavivirus infection - unspecified
18. Gonococcal infection
19. Haemolytic uraemic syndrome (HUS)
20. *Haemophilus in fl uenzae* type B (Hib) infection - invasive
21. Hepatitis A
22. Hepatitis B – newly acquired
23. Hepatitis B – unspecified
24. Hepatitis C - newly acquired
25. Hepatitis C - unspecified
26. Hepatitis D
27. Hepatitis E
28. Hepatitis - unspecified
29. Human immunodeficiency virus (HIV) – child aged less than 18 months at the time of blood sample collection
30. Human immunodeficiency virus (HIV) – newly acquired
31. Human immunodeficiency virus (HIV) - unspecified
32. Influenza
33. Japanese Encephalitis virus infection
34. Kunjin virus infection
35. Legionellosis
36. Leprosy
37. Leptospirosis
38. Listeriosis
39. Lyssavirus - unspecified
40. Malaria

41. Measles
42. Meningococcal disease – invasive
43. Mumps
44. Murray Valley Encephalitis virus infection
45. Pertussis
46. Plague
47. Pneumococcal disease - invasive
48. Poliomyelitis (wild-type and vaccine-associated)
49. Psittacosis (ornithosis)
50. Q fever
51. Rabies
52. Ross River virus infection
53. Rubella
54. Salmonellosis
55. Severe acute respiratory syndrome (SARS)
56. Shiga toxin-producing/vero toxin-producing Escherichia coli – STEC/VTEC
57. Shigellosis
58. Smallpox
59. Syphilis – infectious (primary, secondary and early latent), less than 2 years duration
60. Syphilis – more than 2 years or unknown duration
61. Tetanus
62. Tuberculosis
63. Tularemia
64. Typhoid fever
65. Viral haemorrhagic fevers
66. Yellow fever

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