Fragmentation of influenza surveillance in Australia

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Abstract

Monitoring of community influenza through sentinel practice networks is essential to track the onset and progress of epidemics. In 1999, the Influenza Pandemic Planning Committee of the Communicable Diseases Network Australia New Zealand (CDNANZ) recommended that a national surveillance system be established comprising both community-based and institutional surveillance. In 2001, however, influenza surveillance remains fragmented in Australia and mainly restricted to major cities. Methods of surveillance and reporting of influenza activity vary between States and even within States. Three disparate case definitions are in use for reporting influenza-like illnesses. Many sentinel sites do not have laboratory support for confirmation of influenza or identification of circulating strains. Dissemination of information is uncoordinated and without a standardised reporting format for collation at a national level. Prompt attention to these issues is important to ensure an adequate public health response to future influenza virus epidemics or a pandemic. *Commun Dis Intell* 2002;26:8-12.

Keywords: influenza, epidemic and pandemic preparedness, surveillance

Introduction

In 1999, the Influenza Pandemic Planning Committee recommended that virological and clinical influenza surveillance programs should be conducted using sentinel general practitioner sites.[1] Virological surveillance facilitates the collection and identification of influenza strains circulating within the population, and has the potential to detect genetic shifts and drifts in influenza virus that may signify the emergence of novel strains. In some circumstances virological surveillance may alert clinicians and public health officials to the circulation of non-influenza viruses that may be contributing to significant mortality within the community. Clinical surveillance enables an estimation of the impact of influenza on the community and provides information against which to evaluate public health policies, such as the provision of free influenza vaccine to people aged 65 years and over. If timely, clinical surveillance also allows feedback to clinicians about the likelihood of the presence of influenza in the community.

State-based sentinel practice influenza surveillance programs operate in New South Wales, Victoria, Western Australia, South Australia and the Northern Territory and obtain supplementary surveillance data provided by regional and hospital-based laboratories. In addition, influenza virus activity is monitored through the Australian Sentinel Practice Research Network (ASPREN), an Australia-wide general practice sentinel reporting system. ASPREN general practitioners (GPs) recorded the attendances of patients for 14 conditions during 2001, two of which were 'influenza' and 'influenza with culture'. The aim of ASPREN is to provide information on the burden of disease in primary health care and to monitor consultation rates.[2] An independent national sentinel surveillance program is funded by Roche pharmaceuticals and is based in New South Wales.

As part of the Virology and Serology Laboratory Reporting Scheme (LabVISE), sentinel laboratories in Australia report laboratory identification of viruses and other organisms to the Commonwealth Department of Health and Ageing, on a monthly basis.[2]

The Influenza Pandemic Planning Committee was established by the Communicable Diseases Network Australia New Zealand (CDNANZ) to develop a contingency plan for pandemic influenza in Australia and in 1999 made a number of recommendations regarding influenza surveillance.[1] The committee recommended that:

"A national surveillance system should be established using a nationally agreed definition of influenza-like illness (ILI), consistent surveillance methods and national coordination of data collection, analysis and dissemination. The system should comprise community-based surveillance of influenza based on sentinel practices during the interpandemic period, complemented by institutional surveillance, with enhanced measures during a pandemic".

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Other recommendations included:

- Sentinel sites (health care providers) be at a ratio of 1 per 200,000 in metropolitan areas and 1 per 50-100,000 in rural areas.
- Information should be gathered by sentinel sites on the number of ILI seen and include age, gender, locality and vaccination status.
- The first patient seen with an ILI on a Monday, Tuesday or Wednesday should have a nose and throat swab collected for detection of influenza virus.
- Sentinel nursing homes and other institutions or closed communities should be included in surveillance.
- Year round monitoring should consist of virus detection in children and routine detection of influenza virus in laboratories.
- Data should be accumulated weekly and forwarded to a national centre on a weekly basis. State centres should provide fortnightly feedback to sentinel sites.

We undertook a survey of all Australian States and Territories to determine the extent of sentinel influenza surveillance in each jurisdiction and to compare current surveillance practices with the recommendations of the Influenza Pandemic Planning Committee 2 years after the recommendations had been made.

Methods

In August 2001, a telephone survey was conducted with co-ordinators of sentinel practice State-based schemes in New South Wales, Western Australia and the Northern Territory. In Queensland and Tasmania representatives were identified through contact with respective State health departments. The Department of Human Services in South Australia was contacted in February 2002. Co-ordinators of programs with multi-State sentinel sites, ASPREN and the Roche National program, were also contacted. Agencies were asked to provide information on influenza surveillance, the number of general practitioners involved in surveillance, the number and location of surveillance sites, the frequency of reporting and surveillance issues that were perceived as important to the responders. Results of the survey were summarised in tabular form and distributed to each agency that had provided information so that a representative from the agency could check the accuracy of the summary. Permission was obtained from each agency to publish summary information.

Results

Table 1 summarises the current sentinel surveillance programs throughout Australia. State-based sentinel influenza surveillance programs operate in New South Wales, Victoria, Western Australia, South Australia and the Northern Territory. There is no state-specific monitoring of influenza activity in Queensland, or Tasmania. The New South Wales, Victorian, Western Australian and the Roche National scheme operate from May until September inclusive. In South Australia, the Northern Territory, and in ASPREN practices, influenza activity is monitored year round. There is some overlap between schemes, as some ASPREN practitioners may report to both ASPREN and state-based surveillance schemes.

Influenza surveillance is not representative of the population by region because a significant majority of sentinel sites in state-based, ASPREN and the Roche programs are in metropolitan locations. There are 120 registered ASPREN sites; most sites are located in the major cities of Sydney, Melbourne, Adelaide and Brisbane with a few sites in Perth and Hobart and some rural areas. The Roche national program has similar coverage to ASPREN, excluding the rural sites and including Newcastle. Data from ASPREN sites are collated to produce a national figure with no attempt to analyse the data by region. Only in Victoria is surveillance approaching the site ratio per head of population recommended by the Influenza Pandemic Planning Committee. In Queensland, follow-up of persons with laboratory-confirmed influenza commenced in August 2001 and a protocol for follow-up of laboratory-confirmed cases is being developed in Tasmania.

The variation in surveillance schemes highlighted above has resulted in methodological differences, both within and between States, for the collation and dissemination of data. For example, only the first visit for an episode of ILI is recorded in some States, while both the first and subsequent visits are recorded in other States. This may result in distortions in ILI consultation data between regions. Consultation data is split into metropolitan and rural regions in some States but not others. Reporting varies from weekly to monthly intervals. While laboratories in all States and Territories have access to facilities for detection of respiratory viruses, differences occur in the laboratory support and range of diagnostic tests offered to GPs participating in sentinel surveillance programs (Table 1). Many states conduct laboratory surveillance independent of sentinel surveillance.

Table 2 demonstrates the variations in case definitions for reporting ILI currently in use. The ASPREN case definition is used by GPs in the New South Wales, Northern Territory and South Australian surveillance programs and GPs throughout Australia who are registered with, and collect data, for ASPREN. Following an analysis of Western Australian and Victorian data which evaluated the predictive value of various symptoms of ILI for laboratory-confirmed influenza,[3] a common case definition was adopted for use in Western Australian and Victoria. GPs in the Roche National scheme use yet another case definition for recording ILI consultations.

Discussion

Surveillance can be an effective tool in assessing influenza activity, indicating the early detection of epidemics and identifying circulating strains. In Australia, as elsewhere, the lack of standardisation of information and use of various case definitions make assessment of severity and the comparison of influenza data between States over time problematic.[4,5] Ascertaining which signs and symptoms are most predictive of influenza has been the subject of a number of recent studies.[3,6-10] Fever and cough have been found to be predictors of influenza in 3 studies,[6-8] another study identified fever, cough and acute onset,[9] and another fever, cough and fatigue.[3] One study found that clinical signs varied with the virus subtype.[10] Agreement on a simple and reliable case definition for ILI would provide a uniform format for data collation and might increase the accuracy of the clinical diagnosis of influenza.

Year round reporting of laboratory-confirmed cases through the sentinel laboratory (LabVISE) program provides further data on circulating viruses. Although reports from laboratories are submitted monthly for collation, problems have been identified with LabVISE data because of delays in specimen collection and reporting, variations in numbers of laboratories reporting and changing diagnostic tests.[4,11]

Participation of GPs is paramount to the success of sentinel surveillance. Community-based practitioners are well positioned to observe increasing consultations for ILI due to rising levels of respiratory pathogens.[5] This surveillance can serve as an early warning system of influenza epidemics if increases in presentations of ILI are monitored and circulating viruses identified.[12-14] Laboratory support should therefore be accessible to all sentinel sites so that influenza can be distinguished from other circulating viruses.

If Australia is to respond to an influenza epidemic or pandemic, all elements of surveillance must be operational during interim periods.[1] In the 2 years since the publication of the Australian Influenza Pandemic Plan, many of the recommendations for pandemic preparedness appear incomplete at both a state and national level. A framework for pandemic preparedness cannot exist without an agreed definition on ILI, laboratory support for surveillance sites and surveillance methods that provide for timely analysis and dissemination of data.

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Table 1. Sentinel influenza surveillance programs in Australia

State	Organisation responsible	Number of general practitioners	Number of metropolitan sites	Number of rural sites	Record influenza-like illness	Virological surveillane with laboratory support[1]	Collation of data	Reporting
NSW State program (1)	Communicable Diseases Surveillance and Control Unit, NSW Health	32	4	5	No	Yes PCR, serology, IF	Weekly	Weekly
NSW State program (2)	Communicable Diseases Surveillance and Control Unit, NSW Health	37-47[2]	1 public health unit	2 public health units	Yes	No	Weekly	Weekly
Victoria State program	Victorian Infectious Diseases Reference Laboratory	70	21	20	Yes	Yes PCR (respiratory multiplex)	Weekly	Fortnightly
WA State program	PathCentre	8-12	6-8	2-4	Yes	Yes PCR, rapid culture, cell culture	Weekly	Weekly
SA State program	Department of Human Services	Not stated			Yes	No	Weekly	Weekly
NT State program	Centre for Disease Control, Territory Health Services	17	11	2	Yes	Yes throat gargle(WHO)[3] rapid kit	Monthly	Monthly
ASPREN[4] national program	Research & Health Promotion Unit, RACGP[5]	55	Not available[6]	-	Yes	No (may request)	Weekly	Fortnightly
Roche national program	Centre for Virus Research, Westmead Hospital	65	2-10 per major city[7]	-	Yes	No rapid kit	Weekly	Weekly

1. Laboratory support includes testing of the presence of virus by polymerase chain reaction (PCR) or antigen detection including immunofluorescence (IF), and/or testing for specific antibodies.
2. 17 GPs also report to ASPREN
3. Throat gargles sent to World Health Organization Collaborating Centre for Influenza Reference and Research, Parkville, Victoria for analysis.
4. ASPREN Australian Sentinel Practice Research Network
5. RACGP Royal Australian College of General Practitioners
6. Predominantly Melbourne, Sydney, Adelaide and Brisbane, but registered GPs in Perth, Hobart and some rural locations also contribute data. On average 55 reports from 120 registered sites are received each week.
7. Sites in Sydney, Melbourne, Adelaide, Brisbane, Perth, Hobart and Newcastle.

Table 2. Case definition for influenza like illness (ILI) used in different States

State	Fever, cough, fatigue	ASPREN	Sudden onset fever or chills myalgia +/- headache +/- dry cough +/- fatigue
NSW State program (2)		✓	
NSW sites of ASPREN national program		✓	
NSW sites of Roche national program			✓
Victorian State program	✓		
Victoria sites of ASPREN national program		✓	
Victoria sites of Roche national program			✓
SA State program		✓	
SA sites of ASPREN national program		✓	
SA sites of Roche national program			✓
WA State program	✓		
WA sites of ASPREN national program		✓	
WA sites of Roche national program			✓
NT surveillance program		✓	
Queensland sites of ASPREN national program		✓	
Queensland sites of Roche national program			✓
Tasmania sites of ASPREN national program		✓	
Tasmania sites of Roche national program			✓

ASPREN Australian Sentinel Practice Research Network

ASPREN criteria: sudden onset (<12 hours), cough, rigors/ chills, fever, prostration and weakness, myalgia, redness of mucous membranes, influenza in close contacts

ASPREN for ILI during epidemic: 4 criteria, outside epidemic: 6 criteria

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Correction

Invasive meningococcal disease and HIV coinfection

There was an omission in the article Couldwell D. Invasive meningococcal disease and HIV coinfection *Commun Dis Intell* 2001;25:279-280. A reference was inadvertently omitted from end of the second paragraph of the Introduction. The Introduction is reprinted below with the missing reference.

Introduction

Neisseria meningitidis commonly colonises the human nasopharynx. In a small proportion of subjects, acquisition progresses rapidly to invasive disease, resulting in bacteraemia and/or meningitis. Although the risk of development of invasive disease is thought to be largely determined by the virulence of the meningococcal strain, environmental and host factors also contribute. These factors include age, concomitant upper respiratory tract infection, cigarette smoking, and host immune function.[1]

Numerous encapsulated bacteria cause sepsis at increased rates in HIV-infected individuals; higher rates of mortality also occur.[2] The commonly involved pathogens vary with geographic location as well as patient risk factors. Although there have been a number of reports of meningococcal disease in HIV-infected patients,[3,4,5] an increased risk in HIV-infected people has not been demonstrated.[6,7] However, a population-based study of sporadic meningococcal disease from Atlanta in the United States identified immune compromise due to conditions including HIV-infection in two-thirds of affected adults over 24 years of age.[8]

Reference

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