National Influenza Surveillance 1996

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Abstract

In 1996 data from laboratories, general practitioners and a national employer were combined to detect trends in influenza activity in Australia. An epidemic of influenza A (H_3N_2) was recorded. Little influenza B activity was noted throughout the winter months, however the number of laboratory reports of influenza B rose in the last quarter of the year. Influenza activity was reflected in the consultation rates recorded by sentinel general practitioner reporting schemes. Of particular note was the Tropical Influenza Surveillance in the Northern Territory which demonstrated a bimodal epidemic pattern. There was no apparent trend in national absenteeism rates recorded by a national employer. *Comm Dis Intell* 1997;21:101-105.

Introduction

Influenza is a continually emerging disease and remains a major threat to public health worldwide. Due to ongoing antigenic variation these viruses cause epidemics of respiratory disease at local, regional, national and international levels. Those who are particularly at risk of severe disease and death are the elderly and patients with chronic debilitating diseases such as cardiovascular disease.

An effective national surveillance system is an essential component of a program for the control of influenza. The major objectives of such a scheme include:

- early detection of epidemics thus enabling the implementation of public health measures such as the immunisation of at risk groups, and planning for the possible impact on clinical services;
- characterisation of the nature of the epidemic by the collection of morbidity and mortality data and estimation of the impact of the outbreak and of control measures such as vaccination campaigns; and
- isolation and antigenic characterisation of influenza virus for planning for the formulation of the following season's vaccine.

Influenza activity has been recorded in Australia by the

CDI Virology and Serology Laboratory Reporting Scheme, LabVISE, since 1978. While laboratory diagnosis is the most specific marker of influenza activity, the sensitivity of such a scheme is low as laboratory confirmation is only sought in a small proportion of cases. In 1994 national surveillance was expanded to include data from several other sources which provide less specific surveillance information but can be used as surrogate markers of influenza activity.

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Between May and October 1996, data from several sources were combined and published fortnightly as *National Influenza Surveillance 1996* in *Communicable Diseases Intelligence*.

This is the annual report of *National Influenza Surveillance* for 1996.

Surveillance methods

Three types of surveillance data were included in *National Influenza Surveillance 1996*. These were laboratory surveillance, sentinel general practitioner surveillance and absenteeism surveillance. Some of these were State and Territory based rather that national schemes.

Laboratory surveillance

Laboratory diagnoses of influenza, and in particular influenza virus isolation, constitute the gold standard in influenza diagnosis and surveillance specificity[1]. In 1996 the *CDI* Virology and Serology Laboratory Reporting Scheme's influenza reports were included in *National Influenza Surveillance 1996.* Twenty-one sentinel laboratories from throughout Australia contributed reports to LabVISE in 1996. In addition the World Health Organization (WHO) Collaborating Centre on Influenza Reference and Research contributed reports on the subtypes of influenza viruses isolated during the season in Australia. This provided information on the degree to which circulating viruses were related to current vaccine strains and strains circulating elsewhere in the world.

Sentinel general practitioner surveillance

Four sentinel general practitioner schemes recording influenza-like illness were included in *National Influenza Surveillance 1996.* These included the Australian Sentinel Practice Research Network[2] (ASPREN, a national network), the New South Wales Sentinel General Practice Scheme and the Victorian Sentinel General Practice Scheme. In addition data from Tropical Influenza Surveillance, a sentinel network of general practitioners in the Northern Territory, were included for the first time[3]. This scheme adopted the ASPREN case definition while case definitions varied for the other schemes.

The ASPREN case definition was:

(a) Viral culture or serological evidence of influenza virus infection, or

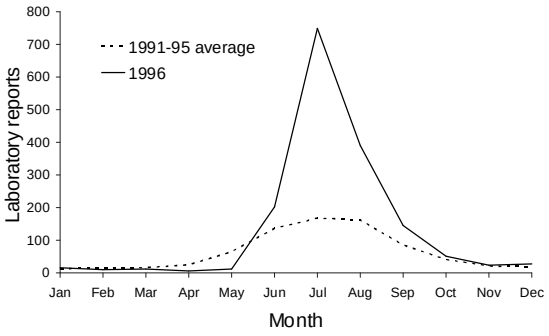
(b) influenza epidemic, plus four of the criteria in (c), or

(c) six of the following:
- (i) sudden onset (within 12 hours)
- (ii) cough
- (iii) rigors or chills
- (iv) fever
- (v) prostration and weakness
- (vi) myalgia, widespread aches and pains
- (vii) no significant respiratory physical signs other than redness of nasal mucous membrane and throat
- (viii) influenza in close contacts.

Absenteeism surveillance

Absenteeism surveillance provides a non-specific measure of the effects of influenza epidemics. *National Influenza Surveillance 1996* included Australia Post sick leave absenteeism surveillance which had the potential to measure the impact of influenza activity on the adult population on a national scale. Absenteeism was reported as the percentage of total employees absent from work on a single day of the week.

Figure 1. Influenza A laboratory reports, 1991 to 1995 average and 1996, by month of specimen collection



Results

Laboratory surveillance

CDI Virology and Serology Laboratory Reporting Scheme

An epidemic of influenza A (H_3N_2) was recorded by this scheme in 1996. Reports peaked in July, with July and August being the usual peak months for laboratory-diagnosed influenza A in Australia (Figure 1). Overall this was a larger epidemic than those recorded previously by this scheme (Figure 2). There was little variation between the States and Territories with respect to the peak month of reporting (Figure 3), July being the peak month in all jurisdictions. There were 1,642 reports of influenza A received for the year, of which 70 (4%) were identified as being H_3N_2 strains. No reports of H_1N_1 strains were received; the strains of the remainder were unknown. The

Figure 2. Influenza A and B laboratory reports, 1979 to 1996, by year of specimen collection

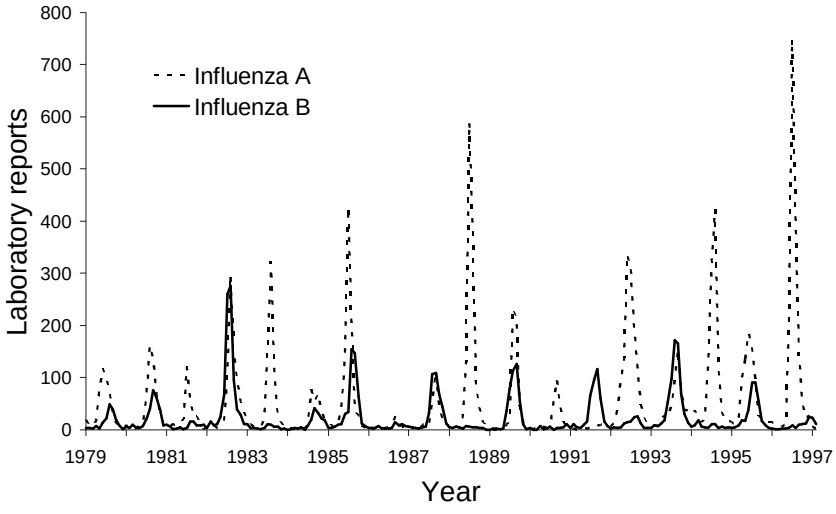


Figure 3. Influenza A laboratory reports, 1996, by State/Territory and month of specimen collection

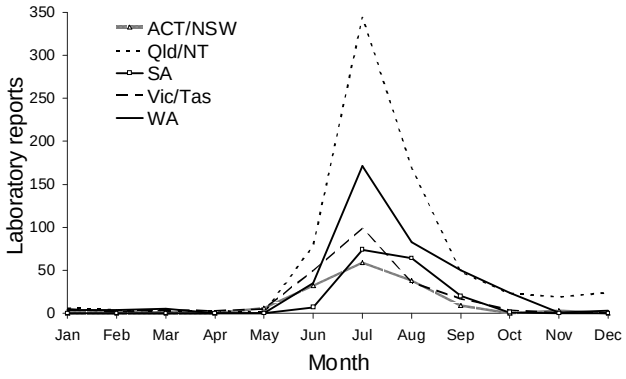
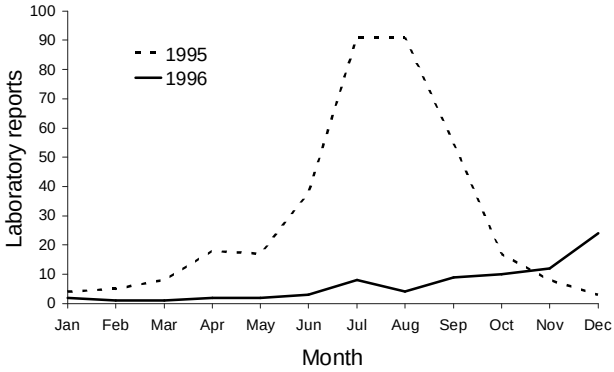


Figure 5. Influenza B laboratory reports, 1995 and 1996, by month of specimen collection



male:female ratio was 1.1:1 and 45% of reports were for children under the age of five years (Figure 4).

There were 78 reports of influenza B received by the LabVISE scheme in 1996. This was average for a non-epidemic year (Figure 2). Reports remained low throughout the winter, but rose during the last three months of the year (Figure 5). The male:female ratio was 1.6:1 and 26% of reports were for preschool-aged children (less than 5 years of age).

WHO Collaborating Centre for Reference and Research on Influenza

During 1996, a total of 693 influenza isolates from Australian laboratories were analysed at the Centre. The great majority of these (677) were influenza A (H_3N_2) strains and the remaining 16 isolates were influenza B. No isolates of influenza A (H_1N_1) were received from Australian laboratories during 1996.

Influenza A (H_3N_2) viruses closely related to the A/Wuhan/359/95 variant predominated in all areas sampled, almost totally replacing the A/Johannesburg/33/94-like viruses. A/Wuhan-like viruses had been found in small numbers in the previous northern winter and its replacement of the previous variant was unusually rapid. Approximately 5% of isolates were A/Johannesburg-like and 90% were A/Wuhan-like while the remaining 5% showed some reduction in reactivity with all reference antisera including that to A/Wuhan. These latter isolates displayed some antigenic heterogeneity but, as yet, there is no clear indication of further significant antigenic drift variants emerging which would not be covered by A/Wuhan-containing vaccines.

The influenza B strains analysed were all closely related antigenically to the B/Beijing/184/93 vaccine strain.

Sentinel general practitioner surveillance

Consultation rates for influenza-like illness reported by general practitioners to the ASPREN scheme rose from June through to September as has been the case in previous years (Figure 6). Both the New South Wales and Victorian schemes demonstrated similar patterns of consultation to those recorded by ASPREN (Figure 7). By contrast and of particular note were data from Tropical Influenza Surveillance in the Northern Territory which displayed a bimodal pattern: consultation rates peaked in late March with a larger peak in August and September (Figure 7). Both of these peaks were attributable to influenza A/Wuhan/359/95 (Fay Johnston,

Figure 4. Influenza A laboratory reports, 1996, by age group and sex

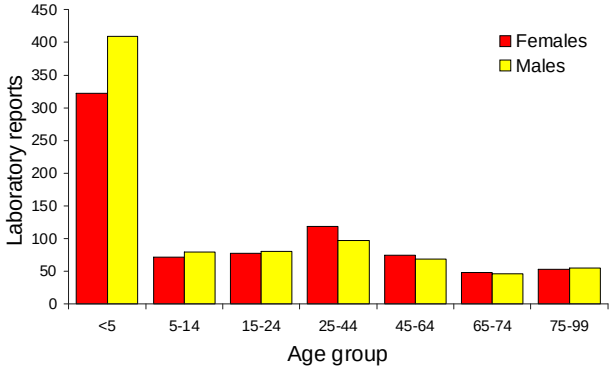


Figure 6. ASPREN consultation rates, 1994 to 1996, by week

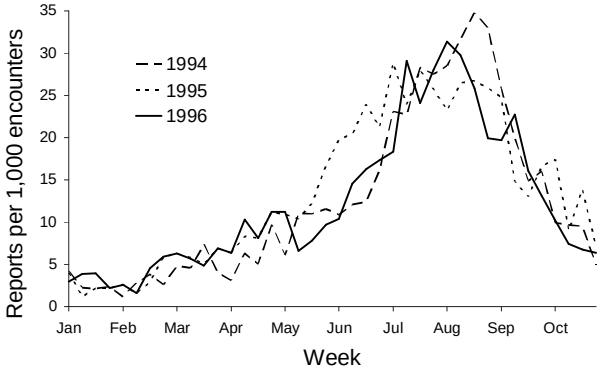


Figure 7. Sentinel general practitioner consultation rates, 1996, by week and scheme

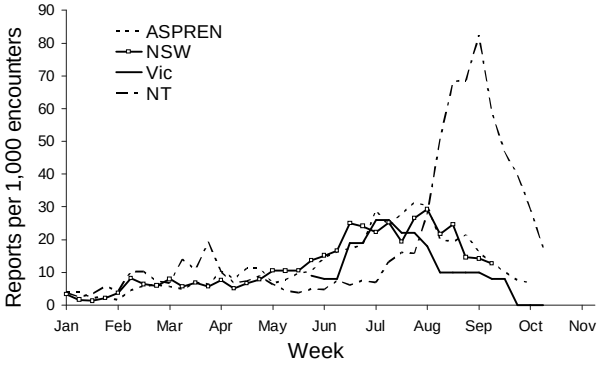
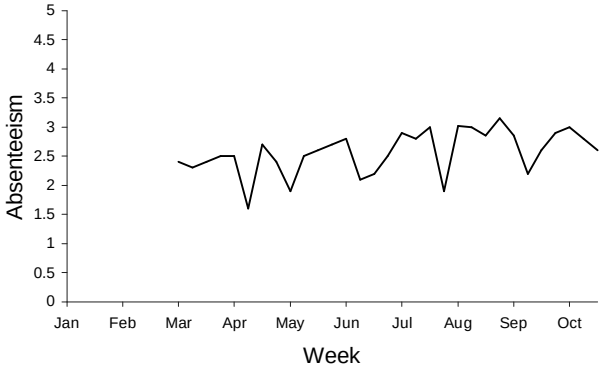


Figure 8. Australia Post absenteeism rates, 1996, by week



Northern Territory Health Services, personal communication).

Absenteeism surveillance

National absenteeism rates reported by Australia Post remained between 2% and 3% throughout the winter months (Figure 8). There was no apparent trend which could be attributed to increased influenza activity.

Discussion

In 1996 in Australia an epidemic of influenza A (H_3N_2) was documented. There was little influenza B activity. While in the past annual winter epidemics of influenza A have been observed, influenza B outbreaks have been recorded in alternate years. As the last epidemic of influenza B was recorded in 1995[4], we expect an outbreak of this virus in 1997. An early indication may be the rise in the number of laboratory reports in late 1996, this probably being due to the outbreak on an oil rig off the coast of Darwin[5].

Although LabVISE is a sentinel scheme, seasonal trends in influenza activity are reflected in the data produced by this system. As in previous years, laboratory reports provided the most specific information on influenza activity in Australia in 1996. Laboratory surveillance remains the best available indicator for influenza surveillance. However it is difficult to ascertain the extent and severity of the influenza epidemic from the data presented here. While the laboratory data demonstrated an unusually high peak, this was not reflected in consultation rates for influenza-like illness recorded by sentinel general practitioners, which were similar to previous years.

As the LabVISE scheme recorded only H_3N_2 and no H_1N_1 sub-types it can be deduced that H_3N_2 was the epidemic sub-type in 1996. This was confirmed by data from the WHO Collaborating Centre for Reference and Research on Influenza which also reported no H_1N_1 isolates in 1996. The last epidemic year for H_3N_2 in Australia was 1994. In the 1996-1997 northern winter, epidemics of this sub-type were recorded in Western Europe and North America. However, many countries also experienced a second epidemic wave due to influenza B. (WHO World Wide Web site. Influenza Global Situation, 26 February 1997). Recent outbreaks of influenza B have been recorded in the United Kingdom and Canada. Outbreaks in Asia (China, Iran and Israel) have more commonly involved influenza B while the epidemic in Japan was due to influenza A (H_3N_2)[6,7].

The predominant strains of influenza virus isolated in 1996 were closely related to A/Wuhan/359/95. This virus was included in the Australian vaccine for 1997[8]. The influenza B strains analysed were also antigenically closely related to the B/Beijing/184/93 vaccine strain.

The sentinel general practitioner schemes provided timely information on reports of influenza-like illness in Australia. A similar seasonal pattern was observed in the ASPREN, New South Wales and Victorian data. However the Northern Territory demonstrated a markedly different pattern of consultation for influenza-like illness. In 1996 the Northern Territory experienced two outbreaks of influenza, an early small peak which preceded the winter epidemic elsewhere in Australia, followed by a much larger peak later in the year. This is consistent with data from other tropical regions which also recorded a bimodal pattern of disease[9].

National absenteeism rates reported by Australia Post remained between 2% and 3% throughout the winter months, similar to the previous year[4]. This is an insensitive measure of influenza activity in Australia. It is not clear whether a major epidemic would be reflected in the data collected by this scheme.

National Influenza Surveillance will continue in the winter of 1997. While laboratory data continue to form the cornerstone of the scheme, data on influenza-like illness reported by sentinel general practitioners provide a reliable non-specific indicator of influenza activity in the Australian community. Data from the Northern Territory may be of particular importance in heralding an outbreak of influenza elsewhere in the country.

Acknowledgements

We would like to thank all contributors for the time they have invested in the collection of these data. They include: the Australian Sentinel Practice Research Network; *Communicable Diseases Intelligence* Virology and Serology Laboratory Reporting Scheme contributing laboratories; New South Wales Department of Health; Australia Post; Victorian Department of Health and Community Services and the World Health Organization Collaborating Centre for Reference and Research on Influenza.

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National Health and Medical Research Council recommendations on influenza vaccination

The National Health and Medical Research Council (NHMRC) recommends routine annual influenza vaccination for all individuals over the age of 65 years[1]. It is also recommended for Aboriginal and Torres Strait Islander adults over 50 years of age.

The NHMRC also advises vaccination for those in the following groups:

- adults with chronic debilitating diseases, especially those with chronic cardiac, pulmonary, renal and metabolic disorders;
- children with cyanotic congenital heart disease;
- adults and children receiving immunosuppresive therapy;
- residents of nursing homes and other chronic care facilities.

Annual vaccination should also be considered for those in the following groups:

- staff who care for immunocompromised patients;
- staff of nursing homes and other chronic care facilities.

It is recommended that vaccination take place in the autumn in anticipation of winter outbreaks. The formulation of the vaccine is reviewed annually to take account of the antigenic variation of the virus. The composition of the 1997 Austalian vaccine has been published previously[2].

1. National Health and Medical Research Council *The Australian Immunisation Handbook*. 6th Edition. Canberra: Australian Government Publishing Service;1997.
2. Composition of the Australian influenza vaccine for the 1997 winter. *Comm Dis Intell* 1996;20:465-466.