

# A STATEWIDE 'OUTBREAK' OF ASTHMA IN NSW, FEBRUARY 1999

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Surveillance data have shown that in February of each year there are recurrent and distinct peaks of admissions for asthma to hospitals in Sydney.<sup>1</sup> Anecdotal reports suggested that during February 1999 admission rates for asthma to the intensive care units of the Sydney Children's and New Children's Hospitals were unusually high, even when allowing for seasonal peaks in admission. This article describes the preliminary results of an investigation of this apparent increase in the expected number of cases (or 'outbreak') of asthma in Sydney in February 1999. The aim of the investigation was to gauge the magnitude and extent of this outbreak and to describe the characteristics of people attending hospital with asthma during the period of the outbreak.

## METHODS

NSW Department of Health maintains a centralised Emergency Department Data Collection (EDDC) which was accessed through the Health Outcomes Information Toolkit (HOIST).<sup>2</sup> There are 50 hospitals throughout NSW that have an EDDC. All attendances to these emergency departments with a diagnosis of asthma (ICD-493) in patients 1–45 years, for the period February 1995 to February 1999 were examined. The analysis was limited to this age group, as before the age of one year and in older age groups the diagnosis of asthma can be confused with other conditions. The variables examined were:

- gender
- country of birth
- language spoken at home
- primary diagnosis
- hospital and area health service attended
- postcode of residence.

Data describing hospital separations attributed to asthma were obtained from the Inpatient Statistics Collection (ISC), also on HOIST, for the period July 1993–June 1999. The variables accessed were:

- age
- gender
- hospital attended
- date of admission
- primary diagnosis
- country of birth.

A comparison of hospital attendances and separations in the years for which both were available (1995–1999) was also made. Data were analysed using SAS Version 6.12.

## RESULTS

The total number of attendances at emergency departments in NSW in February 1999 were 105,885, and 3,151 (three per cent) of these were for asthma. Of the 21,145 emergency department attendances for children aged between 1–14 years in this month, 2,026 (9.6 per cent) were for asthma. The number of attendances for asthma in February 1999 was compared to the attendances in February for the four preceding years (1995–1998) in hospitals where reporting rates for all diagnoses seemed consistent over time. An increase of attendances for asthma in children 1–14 years of 100 per cent or more in February 1999 compared to mean attendance of February 1997 and 1998 was found in most Sydney hospitals, as well as hospitals in the Hunter, Illawarra and north and south coast regions, and also at Dubbo and Orange Base hospitals.

Construction of an epidemic curve of daily asthma attendances in NSW from January 1 1999 to February 28 1999 showed a steep increase beginning in early February. The increase was more marked in children

**TABLE 6**

### HOSPITAL ATTENDANCES FOR ASTHMA IN CHILDREN 1–14 YEARS, JAN–FEB 1999.

	January 1999	February 1999
Sydney	327	1,409
Illawarra	32	118
Hunter	38	164
Central Coast	29	103
Mid North Coast	30	46
Northern Rivers	16	34
New England	11	20
Macquarie	8	19
Mid Western	13	44
Far West	8	18
Greater Murray	17	40
Southern	2	11
<b>Total</b>	<b>531</b>	<b>2,026</b>

Source: HOIST, Emergency Department Data Collection

**TABLE 7**

### COMPARISON OF FEBRUARY HOSPITAL ATTENDANCES AND SEPARATIONS FOR ASTHMA IN CHILDREN 1–14 YEARS (TOTAL NSW), 1995–99.

	1995	1996	1997	1998	1999
<b>Attendances</b>	1,104*	1,930	1,053	972	2,026
<b>Separations</b>	1,248	1,525	739	688	1,633

\* In 1995 there were large numbers of missing diagnoses for attendances in several locations.

Source: HOIST, Emergency Department Data Collection and Inpatients Statistics Collection.

1–14 years. For the Sydney area health services, daily attendances for this age group more than doubled over the January baseline between 31 January and 6 February, and increased further through February, with a distinct peak from 16 February to 21 February (Figure 2). A similar pattern was seen in the Illawarra, Hunter and north coast areas. In the mid-west region, the attendance rate started to increase from 8 February. While other areas did appear to have higher attendances for asthma in February compared to January, there was no clear evidence of an outbreak (Table 6). Similarly, there was no evidence of an outbreak for adults in the age group 15–45 years, although attendances in Sydney did peak between 20–22 February in a similar pattern to that for children.

Review of the patterns of attendance in Sydney hospitals for asthma related to age and gender in February 1999 showed an increase in the proportion of attendances by the youngest age group (1–4 year olds), which represented 65 per cent of children's asthma attendances, compared to a mean of 57 per cent over all months studied. The gender ratio did not differ from the usual pattern, with 57 per cent male patients. Similarly, stratification by country of birth and language spoken at home did not reveal any change to the expected patient characteristics. Analysis of postcode of residence also showed a similar pattern compared to other months.

Hospital separation data broadly reflected the patterns found in emergency department attendance data (Table 7). February 1996 had the highest number of monthly separations for children 1–14 years for asthma (1,525) for any year prior to the outbreak in February 1999. February 1996 also had a high total number of asthma separations for the 1–45 years age group (2,323), which were exceeded only by regular high levels of monthly separations in May of each year (Figure 7). While there is little variation in total children's hospital separations from year to year,

February is the only month with significant variability, varying from a low of 677 in February 1998 to 1,633 in February 1999.

## DISCUSSION

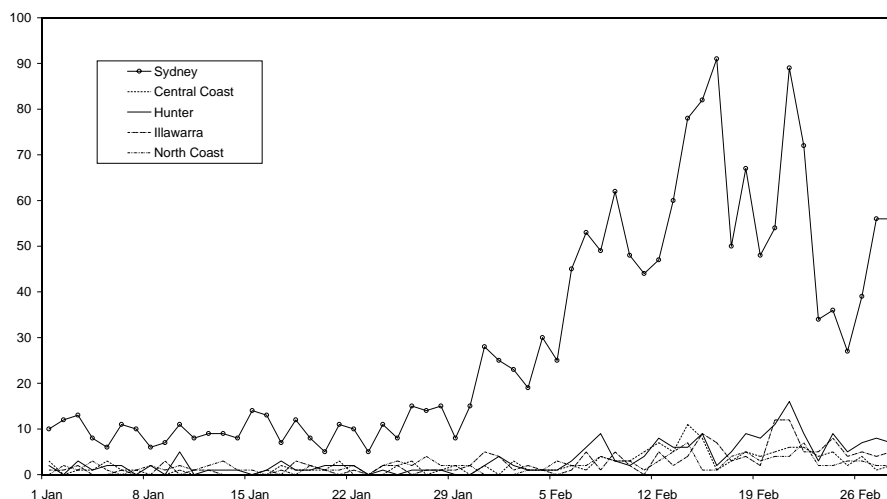
This review of emergency department attendances for asthma in 50 NSW hospitals demonstrated a sharp increase in attendances and admissions for asthma in children aged 1–14 years that began in early February 1999 and involved areas along the NSW coast and some inland centres. Possible precipitating factors are the commencement of the new school year, with the rapid transmission of a virus predisposing to asthma attacks,<sup>3,4</sup> high levels of grass pollen resulting from high summer rainfalls, or other environmental causes related to meteorological conditions.<sup>5,6</sup> Localised factors, such as air pollution, or industrial contaminants,<sup>7</sup> are not likely to be implicated, as children were affected over a large area of the state. The northern- and southern-most boundaries of the outbreak have not yet been defined.

Separation data suggest that each year there are recurrent and distinct peaks of admissions for asthma to hospitals in NSW. To identify opportunities for prevention of asthma, the Environmental Health Branch is continuing the investigation of asthma 'outbreaks' in children in February, including:

- defining the geographical extent of this outbreak through records of asthma admissions in Victoria and Queensland;
- a case-control study of 'outbreak days', defined appropriately, to examine possible meteorological and other environmental precipitating factors;
- a case-control study of children admitted with asthma to Sydney Children's Hospital during and in the preceding months to the outbreak.

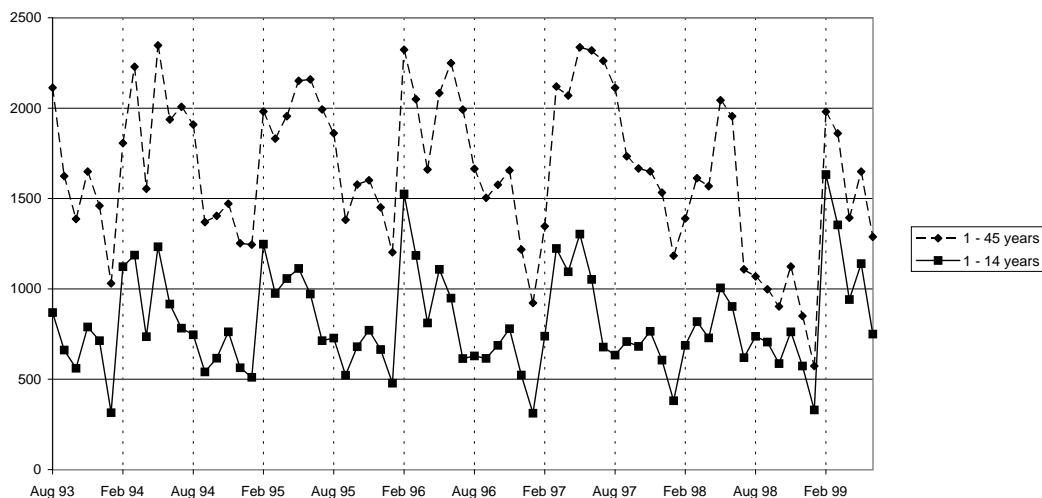
**FIGURE 2**

### DAILY ASTHMA ATTENDANCES FOR CHILDREN AGED 1–14 YEARS, JANUARY AND FEBRUARY 1999



**FIGURE 3**

**MONTHLY SEPARATIONS FROM NSW HOSPITALS, WHERE PRIMARY DIAGNOSIS IS ASTHMA. AUGUST 1993 – JUNE 1999.**



## REFERENCES

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## NSW HEALTH SERVICES COMPARISON DATA BOOK 1998–1999

The *NSW Health Services Comparison Data Book 1998–1999*, the 'Yellow Book', was released on HealthWeb on 6 October 2000.

The prime purpose of the Yellow Book is to inform the people of NSW about the efficiency, effectiveness, accessibility and appropriateness of NSW public health facilities in the supply of health services to the community, and the nature of services provided by these facilities.

The Yellow Book contains comparative data for key activity, staffing and financial measures of performance for all public hospitals in NSW and for private hospitals treating public patients under contract with NSW Health. Hospitals are grouped according to their peers to enable comparison of performance to be made for the year 1998–1999.

This is the first edition of the Yellow Book to include a set of comparative tables at the Area Health Service (AHS) level to supplement the hospital comparative tables. The AHS tables focus on the provision of health services by facilities within the AHS, rather than on the health of residents of the AHS. The inclusion of the AHS level data means that facilities other than hospitals, such as community health centres, are incorporated within the Yellow Book for the first time.

The 1998–1999 Yellow Book is available from the NSW Department of Health's internet site HealthWeb at [www.health.nsw.gov.au](http://www.health.nsw.gov.au). Hard copies can be purchased for \$70 from the Better Health Centre by telephone at: (02) 9816 0452.