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BENEFITS OF GENERAL PRACTICE SENTINEL SURVEILLANCE NETWORKS

General practice-based sentinel surveillance networks have been established in a number of Area Health Services and Regions with the primary aim of monitoring the occurrence of infectious diseases such as influenza. The establishment of sentinel networks may provide additional benefits to the Public Health Units (PHUs), general practitioners (GPs) and the communities they serve. These include the development of working relationships between GPs and public health professionals, increased awareness of local public health issues and the possibility of involving the networks in other general practice-based public health activities. The purpose of this article is to outline our experiences in setting up a general practice sentinel surveillance network in Central and Southern Sydney Health Areas, and to describe a method of data analysis we have found useful in this context.

The sentinel surveillance network in Central and Southern Sydney is run as a collaborative venture by the Division of Family Medicine, University of Sydney, and the PHU. The Areas have a population of about one million and a total of 900 GPs, 20 of whom take part in the network. The network was established in July 1991. Recruitment has been by direct approach to GPs and by open invitation through an Areas *GP Bulletin* which is published monthly. The latter has been more effective in recruiting GPs who remain in the network long term. The GPs are distributed proportionally by population between Health Areas and evenly within Areas, and an effort has been made to recruit GPs with a variety of age-sex practice profiles. They were recruited from extended-hours medical centres as well as traditional practices.

Participants assist in the selection of conditions to be monitored and help in defining the diagnostic criteria. Regular reporting is encouraged by the use of 'user friendly' reporting instruments and by enlisting the cooperation of the GPs' receptionists. The importance of rigorous application of the diagnostic criteria is stressed.

Five conditions are collected at any time. The first two (influenza and measles) remain unchanged and the last three conditions have changed from time to time in response to members' interests (these are currently acute asthma, diarrhoea and vomiting, and vestibular neuronitis).

The age and sex of patients satisfying case definitions are recorded on a simple form. In addition, members record the occurrence of any other conditions which they believe may be of interest, and report these in the comments section of the recording form. Completed forms are forwarded by post or facsimile at the end of each recording week.

Feedback of results to the GPs is provided through weekly telephone reports (which are recorded by the practice receptionists on specially-designed forms) and through the monthly *GP Bulletin* which is

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distributed to all GPs in the Areas. The coordinators receive feedback from the GPs through regular meetings over drinks or dinner. A data manager spends about eight hours a week collating the data, producing the monthly newsletter and giving weekly verbal reports to the GPs.

Participating GPs also indicate their total number of patient encounters in the recording week. The average metropolitan GP sees about 120 patients a week so the data are presented as the number of new presentations for the condition per 100 patient encounters, allowing GPs readily to relate the results to their own practices. It must be remembered that the number of patient encounters only approximates the population base of the practice (as some GPs see their patients more frequently) and that precise age profiles of practice attenders are rarely available. A further factor is that the rate for a given condition is not only proportional to the prevalence of the condition in the population but also inversely proportional to the prevalence of other conditions leading to GP attendances. For example a decreased rate of falls in the elderly may be detected in winter, but this may reflect a rise in the number of attendances for upper respiratory tract infection (which will increase the number of encounters a week). Figure 1 shows the total number of encounters per week and the influenza rate per 100 encounters. Peak rates of influenza often correspond to troughs in total encounters.

Not all GPs report every week for reasons including illness or holidays. Variations in rates may also result from different GPs reporting in any given week, differing application of criteria and differing practice profiles and styles. Particular care should be taken in interpreting data around school holidays as GPs with children (who often have a higher proportion of young patients) are likely to be away.

These variations can be partly overcome by application of data smoothing techniques. Smoothing reduces 'noise' in the data by combining adjacent data points. One way of smoothing sentinel practice data is to combine the week of interest with half the rate of the preceding and following weeks and dividing by two, i.e. a weighted moving average.

$$\text{rate week n} = \frac{\text{rate (week n}-1)/2 + \text{rate week n} + \text{rate (week n}+1)/2}{2}$$

This equation has the advantage that rates can be calculated relatively soon after data collection and the timing of an outbreak is not greatly altered, but dependence between data points is increased — a factor that must be considered in statistical analyses. Figure 2 shows the smoothed influenza rate and smoothed total number of encounters. Smoothing may be particularly appropriate for visual comparison of data collected over different years.

Sentinel surveillance based in general practice has the potential to monitor a range of acute conditions, not just infectious diseases. Its advantage is in the immediacy with which the beginning of an epidemic is indicated and this in turn can lead to early intervention. Short-term monitoring of chronic diseases is also possible with slightly more complex protocols. Possible future uses of sentinel networks could include relating rates for acute asthma to air pollution levels, monitoring the effectiveness of health promotion programs (e.g. falls prevention in the elderly) or assessing the effectiveness of general practice-based preventive care activities.

FIGURE 1

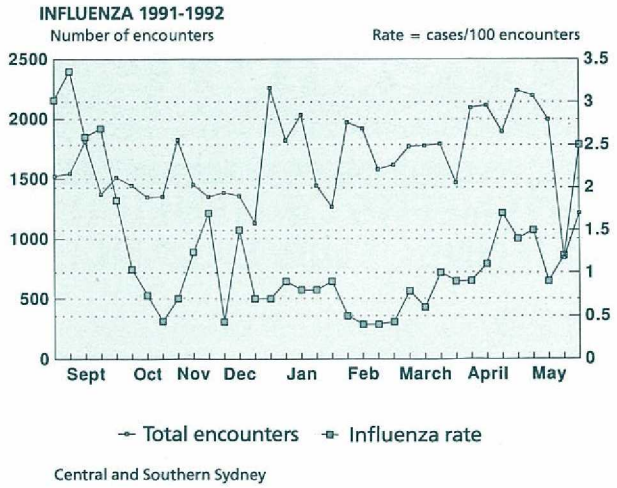
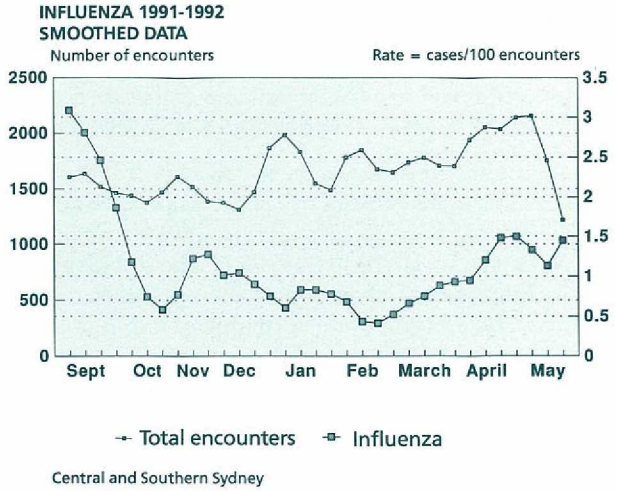


FIGURE 2



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