

A programme for collaborative influenza surveillance

A REPORT OF A WORKING GROUP OF THE PUBLIC HEALTH LABORATORY
SERVICE*

(Received 27 June 1974)

SUMMARY

A surveillance programme is described which is intended to assess the effects of influenza virus infections on communities at large by collating influenza virus isolations and consultations for respiratory infections from general practices with new claims for sickness benefit and deaths from all causes. Particular importance is attached to relating virus isolations to symptomatic respiratory disease seen in practices of known age and sex structure.

INTRODUCTION

This surveillance programme was undertaken in an attempt to ascertain which indicators of influenza are best suited to a collaborative study by a number of laboratories with the principal aim of assessing the impact of infection on the whole community as well as determining the presence of influenza virus. The study was deliberately based on unselected patients in general practices of known age and sex structure. This enabled virus isolations to be related to the number of individuals at risk, while providing a broader picture than can be obtained from selected populations in factories, residential schools or Service establishments.

Five laboratories in the Public Health Laboratory Service collected indices of community infection week by week during the first quarter of 1972. Records were also kept of isolations of influenza virus A from nasopharyngeal swabs taken by collaborating practitioners from a proportion of their cases of acute respiratory infection.

METHODS

Sources of information

The following data were studied: general practitioner consultation rates for acute respiratory illness; hospital admissions; mortality statistics; industrial sickness absence; new first claims for sickness benefit; school sickness absence records and influenza virus isolations.

* The following members of the P.H.L.S. took part in this study: Dr R. J. C. Hart (Exeter), Dr C. H. L. Howells (Cardiff), Dr H  l  ne Mair (Leicester), Dr P. G. Mann (Bath) and Dr E. R. Mitchell (Nottingham).

Requests for reprints should be addressed to Dr P. G. Mann, Public Health Laboratory, Royal United Hospital, Combe Park, Bath, BA1 3NG.

General practitioner consultation rates

First consultations for acute respiratory disease were recorded daily, by age and sex, in at least one practice for each participating laboratory. These 'spotter' practices were asked to provide an up-to-date age and sex register of their patients. The same practitioners were also asked to swab up to nine of the patients with acute respiratory infections each week.

Hospital admissions

Different laboratories approached this in differing ways. Some collected figures from a local Bed Bureau handling all acute admissions to local hospitals. Some were provided with figures by hospital Infection Control Nurses, others by hospital telephone operators and yet others by medical administrative officers. Data were collected only in respect of acute respiratory or cardio-respiratory conditions.

Mortality statistics

Figures were obtained from local Medical Officers of Health for deaths from all causes and for deaths where a respiratory element was considered to have played a significant part in the terminal illness.

Industrial sickness absence

Participating laboratories secured figures for sickness absence from one large public concern and one large private employer. Local industry, the Post Office, the Gas Board and Local Authority Health Departments all proved helpful.

New first claims for sickness benefit

These figures were obtained from the local offices of the Department of Health and Social Security or from Medical Officers of Health.

Influenza virus isolations

These were undertaken by each laboratory from nasopharyngeal swabs submitted by their 'spotter' practices. Swabs were sent in transport medium and were cultured on secondary monkey kidney cells.

School sickness absence records

These were sought from School Attendance Officers or from School Medical Officers.

RESULTS

Certain of the data proved difficult or impossible to secure in a regular and reliable form. School sickness absences are no longer notified daily but only on a monthly basis. Hospital admissions were successfully collected only in the one centre where a Bed Bureau effectively controlled hospital admissions. Industrial sickness absence records were secured in large industrial centres but were not

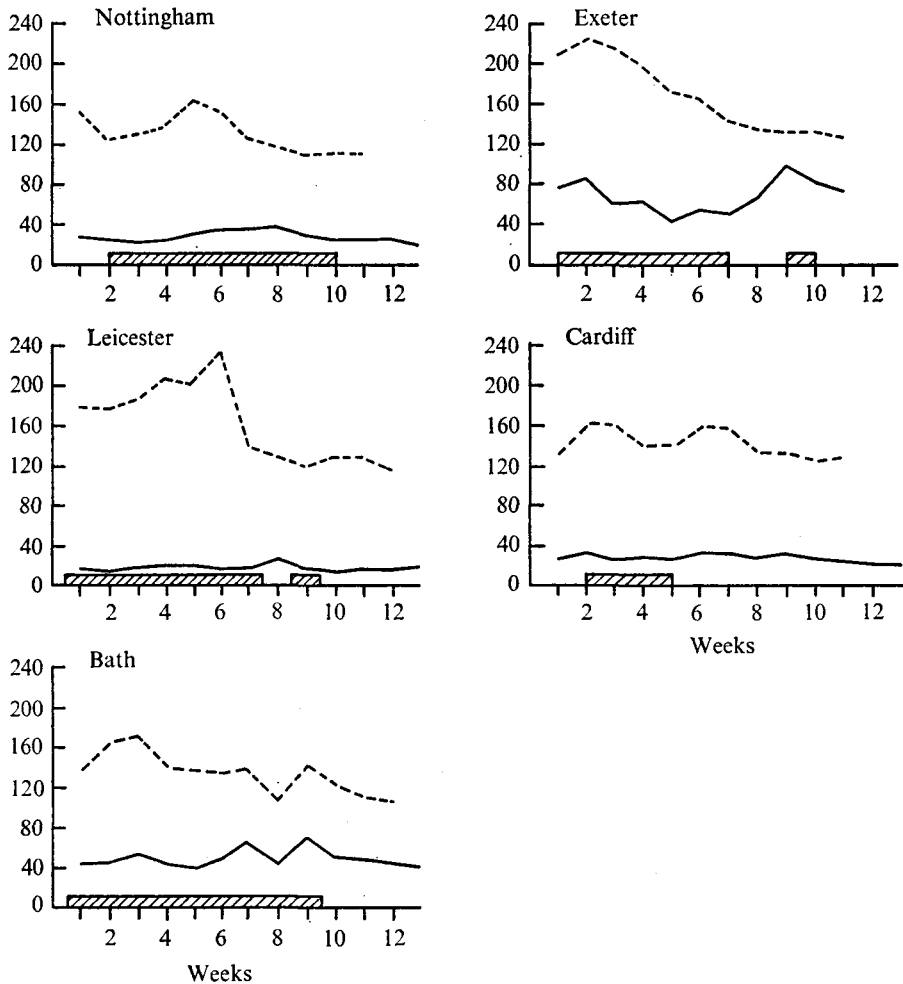


Fig. 1. Influenza surveillance 1971/2. Mortality, sickness benefit claims and influenza virus isolations, first quarter 1972. —, Deaths from all causes per 100,000 population; ----, Percentage increase in sickness benefit claims over average for last 13 weeks of 1971; ▨, Influenza A virus isolated. Week 2 ending 15 Jan. 72, week 4 ending 29 Jan. 72, week 6 ending 12 Feb. 72, week 8 ending 26 Feb. 72, week 10 ending 11 March 72, week 12 ending 25 March 72.

readily available to laboratories in rural areas. When obtained, these figures showed the same trends as new claims for sickness benefit from Social Security offices. Figures for deaths from all causes were easily obtained, but attempts to separate a coherent group of respiratory deaths foundered upon difficulties of definition and interpretation. New claims for sickness benefit have long been used as an index of morbidity in the insured working population (Report, 1960) and were readily made available.

General practitioner consultation rates for acute respiratory illness proved much less difficult to secure than might have been expected. Even the initially daunting task of compiling practice age and sex registers proved manageable when tackled

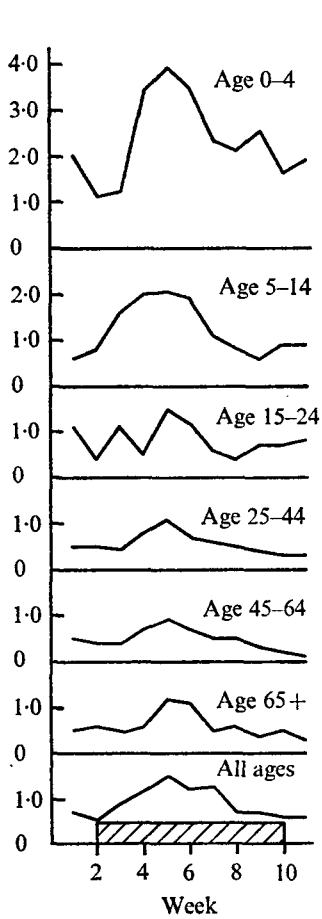


Fig. 2

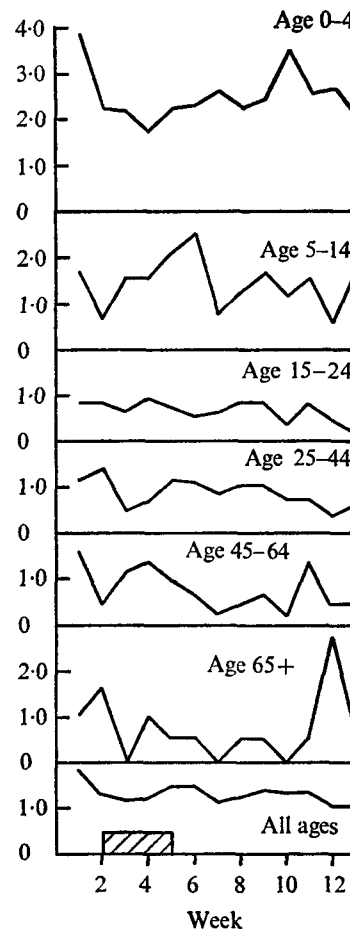


Fig. 3

Fig. 2. General practice consultation rates, Nottingham. First quarter 1972. Respiratory infections per 100 at risk. ▨, Influenza A virus isolated.

Fig. 3. General practice consultation rates, Cardiff. First quarter 1972. Respiratory infections per 100 at risk. ▨, Influenza A virus isolated.

by interested colleagues. In some instances help was given by laboratory office staff when a register was being prepared for the first time during a busy period. The recognition of cases as being primarily respiratory infections was left to the clinical judgement of the general practitioners. No advantage was found in attempting a precise definition of the term.

Influenza virus isolation rates were easily provided by the laboratories since all were engaged in routine monitoring of acute respiratory infections for influenza. The only additional obligation was that of reporting the total number of nasopharyngeal swabs examined as well as the number of positive cultures obtained.

The data for mortality, sickness benefit claims and influenza A virus isolations are shown in Fig. 1. Figs. 2 and 3 show examples of the patterns for general

practitioner consultations at Nottingham and Cardiff. Similar diagrams were prepared at the other centres.

DISCUSSION

The investigation could not be started sufficiently early to secure a full picture of the behaviour of influenza throughout the winter. The conclusions drawn are thus tentative and the full value of the project is not likely to appear until records are available for several successive years.

In this survey the indices found most useful were influenza virus isolations, G.P. consultation rates, deaths from all causes and new sickness benefit claims. The other statistics considered proved unsatisfactory for inclusion in a national collaborative study. Thus, school sickness absence records are not collected with sufficient accuracy or reliability, while the availability of hospital admission data depends on local arrangements for medical emergencies. Again, industrial sickness absence rates could not readily be collected in rural areas and offered no additional information beyond what is implicit in new claims for sickness benefit.

Records of influenza virus isolations were valuable. They are needed to give precision to clinical records, since the range of response to influenza virus is wide and overlaps that of other respiratory viruses (Report, 1960). Thus, rhinovirus and parainfluenza virus were isolated from patients regarded clinically as typical influenza cases while proved influenza virus infections sometimes presented with nausea and vomiting, followed only later by respiratory symptoms. The virus appeared early and persisted at Nottingham and Leicester although death rates and sickness benefit claims were only moderately affected. Bath and Exeter appeared to share broadly similar experience, but at Cardiff virus was isolated for only a short period and was not accompanied by any rise in mortality or sickness benefit claims. This suggests that the pattern of events varies between different communities and is not necessarily synchronous over wide areas. It should be noted that nowhere did sickness benefit claims show the large increase regarded as indicating epidemic influenza (Report, 1960).

With regard to G.P. consultation rates, only at Nottingham was there a clear-cut rise in association with isolations of influenza virus. There was no general rise at Bath, Exeter or Cardiff, although at Exeter consultation rates for the age group 25–44 were higher when influenza virus was isolated than at other times. This might be expected if influenza is more likely than other viruses to produce severe infection amongst adults. At Cardiff there was no discernible response from this age group.

The diagrams used in presenting these data were found to be a practical way of keeping weekly records, that could easily be copied and circulated, so helping to maintain the interest of the collaborating practices as well as providing a check on the arrival of data.

By carrying out widespread studies it is hoped to obtain useful information on differences between communities in respect of the timing and impact of influenza, on differences between outbreaks and on the relative vulnerability of different age

groups. In the past much information may have been concealed by the aggregation of local data on a national scale and by the lack of records of virus isolations to confirm clinical diagnoses.

REFERENCE

REPORT (1960). The influenza epidemic in England and Wales 1957–58. *Reports on Public Health and Medical Subjects*, no. 100. London, H.M.S.O.