



HEPATITIS C: THE INVISIBLE VIRUS PRODUCING VERY VISIBLE PROBLEMS

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Penetration of the hepatitis C virus (HCV) into the Australian community has generated a major public health problem. Estimates of Australians infected with hepatitis C range from 50,000 to 100,000. As this virus may take from 10 to 25 years to produce cirrhosis and liver cancer, even if we stop its spread completely we may still expect to see 600 cases of cirrhosis presenting for the first time each year for the next 20 years.

Recently, there has been publicity in the NSW media that up to one in every 250 Australians is a carrier of the HCV.

How did so many people become infected? HCV is spread by blood-to-blood contact. In the Australian community the highest prevalence of hepatitis C seropositivity appears to be in the injecting drug user (IDU) population and people who received a blood transfusion before the introduction of screening of blood for hepatitis C antibodies in February 1990.

A recent study in Victoria showed that among those individuals who regularly inject drugs, or did so at some stage of their life, 68 per cent have hepatitis C antibodies¹. The potential for spread of this virus by sharing of injecting equipment is obvious. Recent data estimate that 80,000 current and former IDUs have antibodies to hepatitis C. Therefore, we can expect 8,000 to 10,000 new hepatitis C infections annually among IDUs based on this research.

Sexual transmission and transmission in the household setting appears to be less common. Mother to baby transmission (vertical transmission) can occur². In studies relying on abnormal liver function tests and the presence of antibodies to HCV in serum, it appears that the transmission rate is less than 5 per cent. Recent studies using a polymerase chain reaction to detect HCV-RNA have revealed a vertical transmission rate close to 33 per cent.

Most people have subclinical illness in the initial stages of hepatitis C infection; acute hepatitis and jaundice are less common.

Long-term sequelae include chronic active hepatitis, cirrhosis and liver cancer. The HCV is toxic to liver cells (hepatocytes). Liver function tests may be mildly abnormal (increase in serum ALT levels) and people may suffer chronic ill-health. Fifty per cent of people with HCV are believed to progress to chronic infection. Symptoms are often vague; excessive fatigue, mild abdominal discomfort and intermittent nausea.

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Hepatitis C: The invisible virus

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Public health strategies include:

- education of the community;
- testing of those at risk of infection; and
- needle and syringe exchange programs.

Blood product recipients (including renal dialysis patients) and organ recipients before February 1990, male homosexuals and sex industry workers may be tested for hepatitis C. Medical practitioners should consider hepatitis C in the differential diagnosis of abnormal liver function.

People infected with the hepatitis C virus should:

- not donate blood or organs;
- not share needles or syringes;
- not share personal articles such as toothbrushes, razors, or combs;
- advise health care workers, including doctors and dentists, that they are hepatitis C positive;
- clean up blood spills using household bleach;
- cover cuts or wounds with a dressing;
- safely dispose of blood-stained tissues, sanitary napkins and other dressings; and
- reduce their alcohol intake.

Interferons are anti-viral agents that are normal products of the healthy immune system. Research is continuing into the use of alpha interferon in the management of chronic hepatitis C. The drug is expensive — a six-month course of interferon costs about \$3,000. The community cost for the management of a patient with end-stage liver disease is at least \$100,000. Therefore, the cost of managing one patient with end-stage liver disease is approximately equivalent to the cost of treating 33 patients with interferon³.

1. Crofts N, Hopper JL, Bowden DS, Breschkin AM, Milner R, Locarnini SA. Hepatitis C virus infection among a cohort of Victorian injecting drug users. *Med J Aust* 1993; 159:237-241.

2. Kuroki T, Nishiguchi S, Fukuda K et al. Vertical transmission of hepatitis C (HCV) detected by HCV-RNA analysis. *GUT* 1992; 34:S52-S53.

3. Farrell GC. Interferon treatment for chronic viral hepatitis in Australia: is it worth it? *Med J Aust* 1992; 156:873-876.

EDITORIAL COMMENTS

This article highlights the state of knowledge of hepatitis C in Australia.

Current tests do not distinguish between incident and prevalent cases, and the long-term sequelae of HCV infection in Australia are still unclear.

While more than 60 per cent of Australians who are hepatitis C positive are injecting drug users or received a blood transfusion before February 1990, there remains a large group of people with unidentified risk factors for hepatitis C.

Interferon has been approved for marketing but has not been approved for listing on the Pharmaceutical Benefits Scheme.

Public health actions are undertaken by NSW Health and other agencies such as NUA (NSW Users and AIDS Association), ACON (AIDS Council of NSW), CEIDA (Centre for Education and Information about Drugs and Alcohol), SWOP (Sex Workers Outreach Program) and Family Planning Association.

These actions include:

- screening of blood, tissue and organ donors since February 1990;
- needle/syringe exchange programs, drug counselling and treatment (such as methadone) and outreach programs;
- *Skin Penetration Guidelines* for tattooists and acupuncturists;
- education programs and access to bleach in prisons;
- adoption of universal precautions in the health care setting;
- promotion of safer sex, particularly condom use;
- information sheet for the general public;
- hepatitis C surveillance through notification system and identification of risk factors of acute cases; and
- a plan for management of hepatitis B and C in NSW in each administrative area.

The evidence on the cost-effectiveness of interferon for the treatment of hepatitis C is ambiguous. Cost-effectiveness is not an "absolute concept" and it is only appropriate to compare the alternative use of resources. Conclusions about the cost-effectiveness are only as valid as the epidemiological and natural history data available. In the case of hepatitis C there is still uncertainty about the epidemiological and natural history. In addition, the potential side-effects of interferon need to be considered.

The article refers to the fact that the cost of managing one patient with end-stage liver disease is about the same as treating 33 patients with interferon. However, the more relevant question in cost-effectiveness terms is how many patients need to be treated with interferon to prevent one case of end-stage liver disease. This is a more difficult question to answer accurately.

A Hepatitis C Task Force, convened by the National Health and Medical Research Council, is considering the epidemiology and natural history of hepatitis C, and the cost-effectiveness of disease control measures. The task force is due to report to the Australian Health Ministers Advisory Committee by October 1993.

PUBLIC COMMUNICATION IN THE MANAGEMENT OF AN OUTBREAK OF INFECTIOUS DISEASE

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PART TWO: PLANNING AND COORDINATION

Part One of this series covered issues involved in dealing with the mass media after the crisis has begun. The second and final part looks at what you can do to prepare yourself and your organisation for predictable and unpredictable crises, and examines strategic and logistic issues in coordinating the public communication response during a crisis.

1 PLANNING

Individual strategies for outbreak control must be carefully selected, well-timed and coordinated to be successful. Planning may be done in the head of a single public health officer in some cases, but in others it requires the rapid formation of a team with a well-defined command structure and an adequate communication system.

1.1 Prepare protocols in advance

In any geographic area the possibility of serious infectious disease outbreaks can be predicted. In most cities in Australia outbreaks of whooping cough, measles, bacterial food poisoning and meningococcal meningitis must be anticipated. Preparation of protocols in advance for management of these and other outbreaks is a valuable investment. While such preparation is dependent on resources, protocols for management of particular outbreaks are so valuable it is worth examining documents from other States. Protocols should be treated as interim plans to be modified for local use.

A complete protocol will contain more than a plan and a series of instructions. It should also contain drafts of media releases, letters to school principals, good quality information sheets for GPs and other materials likely to be used. An excellent example is the package prepared by the British Meningitis Trust for dealing with outbreaks of meningococcal meningitis. The package contains brochures for parents, teachers and general practitioners, a 35mm slide set and video cassette for community talks and a variety of other materials.

2 COORDINATION

Coordination of the communication strategies in an outbreak is often made difficult by the complexity of the situation, the spread of panic and the size of the problem. Coordination does not just happen — it has to be firmly put in place and actively supported.

2.1 Appoint a coordinator and a planning committee

A single officer must be identified as the person responsible for coordinating all aspects of the response to the epidemic. In some cases the setting up of a small planning committee is useful. A reporting system must be established to ensure superiors (such as the regional director, the chief executive officer and the minister) are kept informed. The need to keep key officials informed is often overlooked in the midst of all the other urgent tasks but daily briefing memos are a vital part of crisis management. Some of the key people who need to be kept informed may be in other departments or organisations, such as those dealing with local government or education. Keeping them up to date ensures they have an opportunity to cooperate or provide active support rather than complain that no-one told them what was going on.

2.2 Develop a public communication strategy and nominate a single media contact.

The first step is to decide whether to say anything at all. But even if a decision is made to keep silent, preparation should be made for dealing with situations in which a reporter hears of the problem. Once a spokesperson has been identified, ensure that all media comment is channelled through this person. The public communication strategy should take into account the separate needs of the media, the general public and health professionals.

2.3 The site visit

When the first news of an outbreak arrives there is pressure to take immediate action. The information may be confused and incorrect and is almost certainly incomplete. It is sometimes possible to gather all necessary information by telephone, but in most situations there is no substitute for a personal visit by an experienced officer. The person visiting the site can get answers to questions no-one in head office had thought of asking, and can assess the capability of local infrastructure and the availability of resources for implementation of strategies such as immunisation. The visiting officer can give accurate advice to doctors and other health workers and can arrange a public meeting to discuss community concerns. The site visitor can establish a contact network of health workers, school principals, environmental health officers, reporters and others who might have a role in local management of the outbreak.

2.4 Special communication services for major crises

The existing communication system may be adequate for small outbreaks, but in a major crisis special services will be required. In many crises the switchboard will be jammed and the command structure will collapse because normal telephone contact between health workers becomes impossible. Emergency arrangements must have been planned in advance. The most important element is to have one or more separate channels of communication available only to those managing the problem.

The easiest way for the coordinator to maintain essential contact is to have a mobile phone system to which limited people have access. A cellular phone means the coordinator is never out of contact and avoids the problem of jammed switchboards. Cellular phones can be rented.

Modern beepers with substantial capacity for messages can be used on their own or with a cellular phone. The best way is to use a beeper for incoming messages and keep the phone free for outgoing calls. Do not release the cellular phone number to more than one or two key individuals. Others can be given the number of the electronic message service and their calls can be returned when convenient.

Another useful method of indirect contact with the coordinator is by facsimile. Field officers providing information bulletins and reporters asking questions can contact the coordinator without jamming the command telephone system. However, fax machines are relatively slow and become ineffective in a crisis if many people have access to the number. One solution is to set up an emergency fax line in addition to the normal number and give the emergency number only to a limited number of people.

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EPIDEMIC ASTHMA SURVEILLANCE IN THE NEW ENGLAND REGION 1990-1992

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INTRODUCTION

An epidemic of acute asthma occurred in Tamworth and surrounding towns in the New England Region of north-eastern NSW on November 1, 1990. The epidemic was preceded by a brief thunderstorm and, over a five-day period, 110 people attended the Accident and Emergency departments (A&E) of Tamworth and Quirindi hospitals. Thirty-eight of these people required hospital admission. During the same period at least 123 people attended local general practitioners (GPs) with symptoms of acute asthma¹. Late spring epidemics of similar magnitude, but of less severity, occurred in three of the previous five years for which data were available.

A review of clinical information obtained from epidemic asthma cases, and meteorological and agronomic data, pointed to exposure to rye grass pollen as the probable cause of this and previous epidemics. The hypothesis was that tonnes of pollen were drawn up into the body of the advancing storm. They then fragmented into starch particles of respirable size which were subsequently deposited on the affected towns during the thunderstorm.

To test this hypothesis, asthma occurrence and pollen levels were again monitored in the Tamworth region during spring in 1991 and 1992. In this article, we report results of this surveillance and an assessment of the likely public health impact of this seasonal phenomenon, based on a two-year follow-up of people affected by the 1990 epidemic.

METHODS

Asthma surveillance

Surveillance systems for acute asthma epidemics in the Tamworth region were developed in 1991 and well established by spring 1992. Surveillance during 1992 included:

■ A&E surveillance

The Triage register at the Tamworth Base Hospital was examined daily for attendances for asthma from September 1 to December 1, 1992. Case notes were reviewed for all 'suspected' asthma entries.

■ GP surveillance

The New England Region Public Health Unit (NER PHU) has established sentinel GP surveillance throughout the Tamworth region. Sixteen GPs regularly participate in this surveillance and acute asthma is one of the five notifiable conditions. Of these GPs, 14 provided weekly data on the number of acute asthma attendances at their practices for the three-month surveillance period in 1992. An additional 17 GPs agreed to participate in the surveillance for the duration of the study period only and of these, 10 provided data.

■ Symptom diaries for asthmatics

In 1992, 58 asthmatics identified from the 1990 epidemic were contacted by letter and asked to participate in the symptom diary study. Using previously piloted symptom diaries, they were asked to record the severity of their asthma symptoms

from mid-October to mid-November. Symptoms of cough, wheeze, itchy and runny nose/eyes were graded on a scale of 1 (no symptoms) to 7 (worst symptoms ever) and were recorded each morning and night. These symptoms were then grouped into asthma and hayfever scores for each day. The asthmatics were again contacted by letter and telephone to return their completed diaries.

Pollen monitoring

Two pollen monitoring sites were selected in Tamworth and a third in Gunnedah for the location of the Burkard seven-day recording spore traps. Pollen grains were collected daily by impaction on the adhesive surface of traps and at the end of seven days the tapes were sent for counting and pollen typing. Pollens were grouped into grasses, plantain, cypresses/pine, Patterson's curse and miscellaneous.

Meteorology

Data were obtained from both the Australian Bureau of Meteorology (Melbourne) and a meteorology station monitored by Pacific Power a few kilometres south of Tamworth.

RESULTS

Asthma surveillance

One hundred and twenty-five people attended the A&E department of Tamworth Base Hospital for acute asthma during the three-month period – an average of 1.37 cases a day. On no day did the number of attendances exceed the 15-day moving average rate for asthma. (An epidemic day was defined as such if the number of asthma attendances exceeded the 15-day moving average with a poisson probability <0.0001). In contrast, the data for 1990 in Figure 1 show an obvious epidemic.

GP surveillance revealed 348 consultations (from 24 GPs) for acute asthma during the three-month period and graphing this data revealed no obvious asthma epidemic days. In contrast, 14 GPs recorded 123 attendances for acute asthma over the four-day epidemic period in 1990.

At the end of the 1992 study period, 30 of the 58 (52 per cent) symptom diaries sent out to the identified asthmatics were returned for analysis.

In 1990, 20 per cent of epidemic asthma cases had no prior history of asthma symptoms. When these people were followed up during the pollen season 12 months later, 60 per cent reported recurrent asthma symptoms, 47 per cent were using inhaled bronchodilators for symptom relief and 53 per cent had seen a medical practitioner for asthma management. These 'new-onset' asthmatics have similar levels of histamine airway responsiveness and airway eosinophilia to epidemic cases with pre-existing asthma but did not have mast cells in airway secretions.

Pollen monitoring

The data in Figure 2 are based on the average of total grass pollen counts of the two Tamworth pollen monitoring stations. Grass pollen levels increased dramatically in mid-October 1992 and remained high until the end of the study period.

Diary data indicates that both hayfever and asthma symptoms also tended to increase around this time. Despite several days of storm activity around November 1, there was no evidence of an asthma epidemic in this period.

FIGURE 1

DAILY ACUTE ASTHMA ATTENDANCES AT TAMWORTH BASE HOSPITAL IN RELATION TO TEMPERATURE AND RAINFALL, SPRING 1990 AND 1992

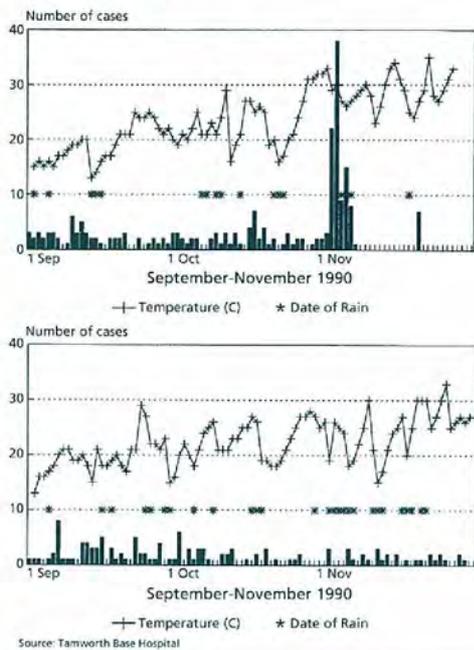
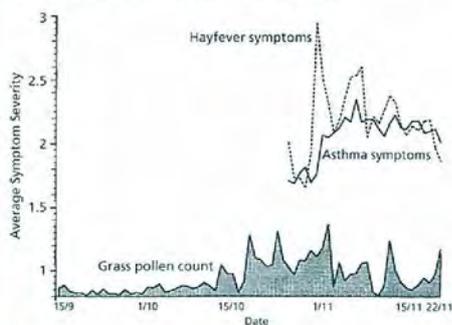


FIGURE 2

RESULTS OF THE TAMWORTH POLLEN MONITORING AND SYMPTOM DIARIES FOR SPRING 1992



Asthma score = Mean (cough on previous night+wheeze on previous night+tightness on previous night+shortness of breath on previous night+cough during day+wheeze during day+tightness during day+shortness of breath during day)

Hayfever score = Mean (eyes+nose symptoms)

Meteorology

Weather conditions in the spring of 1990 and 1992 were similar (Figure 1). As in 1990, there were several days of storm activity around November 1, 1992, although the temperatures in 1990 were higher on average. However, there were no winter rains in 1992 and these drought conditions yielded poor growth of pasture crops such as rye and barley grasses.

CONCLUSION

'Thunderstorm asthma' has been shown to be a recurrent late spring phenomenon in the Tamworth region. These

epidemics of asthma occur in people with pre-existing hayfever and allergy to grass pollens.

The dramatic epidemic of 1990 has not recurred in subsequent years. In 1991 and 1992, low winter rainfalls inhibited the growth of rye and barley grasses. The pollens of these grasses, transported and fragmented in an advancing thunderstorm, were the likely cause of the 1990 epidemic.

Asthma and aeroallergen surveillance over this period has demonstrated that asthma and hayfever symptoms become more common when levels of rye and barley grass pollen begin to increase in mid-October. Symptoms of hayfever preceded asthma symptoms and an increase in hayfever symptoms may indicate a potential worsening of asthma symptoms. Follow-up of people who developed asthma symptoms for the first time during the 1990 epidemic suggests this event had some lasting effects on symptom occurrence.

The investigation of the 1990 epidemic, and subsequent surveillance of asthma, provided an opportunity to inform and educate the community about asthma recognition and to reinforce aspects of both short-term and long-term asthma management. The local media were given a role in informing the public about asthma management and prevention, and warning the community about possible asthma epidemics. An Asthma Awareness and Information Day was held in Tamworth on March 31, 1993, with the aim of providing feedback and information to the community and health service providers. The results of the 1990-1992 investigations and surveillance were presented and the need for asthma action plans and management in the event of future epidemics was emphasised.

Community-wide surveillance of asthma symptoms and pollen counts in the Tamworth region has proved to be:

- effective and cost-efficient, and accepted and supported by both health service providers and the community as a whole; and
- useful in providing valuable information and early warning signs for appropriate public health action.

Accordingly, it has been decided to continue these surveillance activities in the region during the months of spring. Intervention trials may be initiated in 1993 if an epidemic seems likely based on prevailing agricultural conditions. There is good evidence that epidemics of asthma are not confined to the Tamworth region^{2,3}. The surveillance methods used in this study could be used to document the occurrence of asthma epidemics in other areas of NSW.

ACKNOWLEDGMENTS

We gratefully acknowledge the contributions by Ruth Toneguzzi (Newcastle Environmental Toxicology Research Unit), the staff of the New England Public Health Unit and Tamworth Base Hospital, and Pacific Power (Head Office, Sydney).

1. Corbett SJ, Hensley MJ, Gibson P, Wlodarczyk J, Bek M, Katelaris CH. Recurrent Epidemic Asthma in a Rural Australian Community *in press*

2. Suphioglu C, Singh MH, Taylor P, Knox RB. Mechanism of grass-pollen-induced asthma. *Lancet* 1992 339:569-72.

3. Smart IJ, Tuddenham WG, Knox RB. Aerobiology of Grass Pollen in the City Atmosphere of Melbourne: Effects of Weather Parameters and Pollen Sources. *Aust J Bot* 1979 27:333-42.

PUBLIC HEALTH ABSTRACTS

Professor James S. Lawson, Professor and Head of the School of Health Services Management at the University of NSW, has prepared the following public health items from the literature.

COUSIN OF HUMAN IMMUNODEFICIENCY VIRUS (HIV)

Human T-Lymphotropic Virus Type 1 (HTLV-1) is known to be endemic in Japan, Africa, the Caribbean and Papua New Guinea and there are several reports of diseases associated with infection by HTLV-1 in Australia, indicating that the virus is also endemic in Australia, principally among Aboriginal groups. Like HIV, HTLV-1 has the ability to infect T-cells (cells related to the immune response) and has a very long 'incubation' period.

There are several diseases linked with HTLV-1. These include adult T-cell leukaemia, tropical spastic paraparesis – a chronic progressive disease of the nervous system – and inflammatory arthritis, plus a range of inflammatory conditions of the skin, the iris, retina and lungs. The virus is transmitted relatively inefficiently, primarily by breast-feeding, blood transfusion and sexual intercourse, and it penetrates populations considerably more slowly than does HIV. Fortunately, the number of carriers of the virus that goes on to develop disease is very low, somewhere between 1 in 1,000 and 1 in 3,000. Further cases of diseases

associated with HTLV-1 can be expected in Australia. Diagnostic technology is now available using blood serum.

Heard RNS. HTLV-1 in Australia. *Med J Aust* 1993; 159:3-4.

AIDS – DISCRIMINATION A PUBLIC HEALTH HAZARD

In Central Africa 70 per cent of hospital beds are now occupied by patients with HIV-related diseases, and the number of AIDS-associated orphans increases daily. In the Middle East, the United States, the former Yugoslavia as well as Africa and Asia, human rights has become intimately linked with the AIDS epidemic. Discrimination against various groups has become a public health issue. For example, why should drug users in Bangkok with HIV be able to hold down steady jobs and be part of mainstream society, whereas their counterparts in the USA who seek clean syringes are promptly imprisoned? Discrimination against women is a prominent feature in every aspect of the AIDS epidemic. Their vulnerability in many societies – a condom often costs more than a prostitute – is often encouraged in political manipulations of religious practices. AIDS has become far more than an epidemic.

Editorial: Ticket to dignity beyond a brick wall. *Lancet* 1993; 341:1625-1626.

Public communication

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In a major crisis there will be hundreds or thousands of telephone inquiries from members of the public. Dealing with these inquiries is an enormous challenge. The first strategies are those which expand the capacity of the existing system — more switchboard operators, more officers to answer inquiries, and allocation of more telephone extensions to key areas. Many health departments have the capacity to set up a phone inquiry room with dedicated lines in an emergency and such facilities are also available for rental from Telecom.

The best way to deal with the public need for information is to provide what they want through other channels as soon as possible and to provide regular updates. This takes the pressure off the telephone system. The usual way to do this is with a media release and a news conference. Paid advertising can be a worthwhile alternative. The public need for information can also be satisfied by directing them to health workers such as general practitioners — as long as they have been adequately briefed.

An alternative which may be combined with paid or unpaid advertising is to publicise the number of a recorded message service, which can reduce the burden of personal telephone inquiries and also measure of public interest in the crisis.

General practitioners, pharmacists, hospital staff and other community-based health workers can satisfy public inquiries if they are adequately briefed. Their job is much easier if they are provided with information brochures to give to the public. An effective way to get information to doctors is to ask pathology laboratory services to attach a bulletin (supplied in bulk by the health authority) to pathology results being sent to the doctors. Community

pharmacists can be supplied with bulletins or brochures through daily deliveries made by wholesalers. Health professionals such as GPs can be informed through media releases which also give information to the public.

A readable brochure can be of enormous value in informing the community about how to prevent further spread in an outbreak and in giving reassurance. Brochures can be distributed through GPs, pharmacies, hospitals and health insurance offices. They can be posted from the health department on request and their availability advertised. In outlying areas without radio and television, posters can be used effectively to give information on immunisation services or preventive behaviours.

Electronic mail is useful because of its speed and ability to contact large networks. An advantage of electronic mail is the ability to transfer documents in electronic form so they can be edited for local use without retyping.

3 REVIEW

When the crisis has ended, call a meeting of all major players to review the events. A critical review can be very valuable, not only in working out how to manage the same problem in the future, but in educating all those involved in the principles and practice of crisis management. The lessons learned can be applied to other problems you will face in the future. In many cases a review will result in organisational or equipment changes such as the installation of new phone lines or the purchase of cellular phones.

The review is also an important opportunity to acknowledge participants for the job they have done. Take notes during the meeting and circulate a summary to participants. Make sure the actions identified in the review are carried out.

SUCCESSFUL USE OF PHARMACEUTICALS TO TERMINATE PREGNANCY SAFELY

The use of safe pharmaceuticals as a means of terminating early pregnancy has been a long sought-after approach. At the request of the French Ministry of Health, a combination of pharmaceuticals including mifepristone – a potent antiprogesterin – combined with a newly developed hormone – prostaglandin – has been shown in a large French study to be effective for the termination of early pregnancy in terms of success, tolerance, safety and practicality.

Peyron R, Aubeny E, Targosz V, Silvestre L et al. Early termination of pregnancy with mifepristone (RU 486) and the orally active prostaglandin misoprostol. *New Engl J Med* 1993; 328:21:1509-1513.

INFECTION ASSOCIATED WITH CANCER OF THE STOMACH

There is increasing evidence to suggest that gastric infection with the bacterium *Helicobacter pylori* is a risk factor for gastric cancer. *Helicobacter pylori* has been shown by a West Australian group to be a treatable cause of peptic ulcers. Now a multi-centre trial has demonstrated a statistically significant relationship between gastric cancer and *Helicobacter pylori* infection of the stomach and duodenum. This association is a logical one because of the association between *Helicobacter pylori* and gastritis and pre-cancerous lesions.

The Eurogast Study Group. An international association between *Helicobacter pylori* infection and gastric cancer. *Lancet* 1993; 341:1359-1362.

TOBACCO SMOKING CONFIRMED AS CERVICAL CANCER INITIATOR

Numerous epidemiological studies have shown an association between smoking and cervical cancer (this is in addition to the now well-established finding of a link between the human papilloma virus and cervical cancer). Women who smoke have up to four times higher risk of developing cervical cancer than non-smokers. A British-based study has shown that smoking damages the DNA in cervical cells.

Simons AM, Phillips DH and Coleman DV. Damage to DNA in cervical epithelium related to smoking tobacco. *Br Med J* 1993; 306:1444-1448.

COFFEE NOT LINKED TO BLADDER CANCER

More than 20 years ago a range of studies suggested a possible association between coffee consumption and development of cancer of the lower urinary tract. Because of the lack of clear evidence one way or the other, a formal review of 35 key studies of this association has been undertaken using modern statistical criteria. It has been concluded that the best available data do not suggest a clinically important association between the regular use of coffee and the development of bladder cancer.

Viscoli CM, Lachs MS and Horwitz RI. Bladder cancer and coffee drinking: a summary of case-control research. *Lancet* 1993; 341:1432-1437.

DEATH CERTIFICATES NOT ALWAYS CORRECT

The diagnosis of the cause of death as indicated on death certificates is the basic source of cause of death statistics that are widely used for planning purposes by the

Australian Bureau of Statistics and others. It is often assumed that the diagnosis is accurate. However, a study from St Vincent's Hospital in Melbourne has shown that some 12 per cent of autopsy findings indicated a major discrepancy with the cause of death listed on the death certificate. In addition, there were many other deficiencies in death certification. Missed major diagnoses included perforated intestines, metastatic prostatic cancer and metastatic breast cancer. In other cases which listed cerebrovascular accidents as the cause of the death, autopsy revealed ischaemic heart disease, pulmonary embolism and cancer of the lung.

McKelvie PA. Medical certification of causes of death in an Australian metropolitan hospital. *Med J Aust* 1993; 158:816-821.

HYSTERECTOMY IN AUSTRALIA

Hysterectomy rates vary from culture to culture. The hysterectomy rates in Canada and the United States are more than two times the rate in Britain, with Australian rates about half-way between the two. The most common cause for hysterectomy is fibroids, followed closely by uterine haemorrhage. A South Australia-based study has shown that at current rates, nearly a third of South Australian women will have a hysterectomy in their lifetime. This confirms previous studies conducted in various parts of Australia, all of which give approximately the same result. There are indications that women who have had a hysterectomy tend to be generally less healthy, with an increased probability of being overweight and having diabetes and hypertension. The reasons for these adverse associations are not known.

MacLennan AH, MacLennan A and Wilson D. The prevalence of hysterectomy in South Australia. *Med J Aust* 1993; 158:807-809.

GIVING INFANTS SOLID FOOD

There is a widespread view in Western paediatrics that infants should not be introduced to solid food before the age of three months and preferably not before four months. The stated reasons for discouraging the premature introduction of solids include the possible risk of excessive weight gain, gut infection and increased allergic disease. A British study has, however, shown that the early introduction of solid food to infants is less harmful than was previously reported. There is a slight increase in weight gain, but that is soon overcome. In addition, there seems to be a slight increase in gastrointestinal infection and eczema. The authors conclude that the problems are not great and a more relaxed approach to early feeding with solids should be considered, particularly in view of the fact that many parents ignore the advice – probably because they have not experienced harmful effects.

Forsyth JW, Ogston SA, Clark A et al. Relation between early introduction of solid food to infants and their weight and illnesses during the first two years of life. *Br Med J* 1993; 306:1572-1576.

CLARIFICATION

In the Public Health Abstracts section of the January *Bulletin* we mistakenly indicated that an abstract entitled Public Health Officer Training was presented to the first NSW Public Health Network Conference by Susan Furber. Alix Goodwin presented the abstract. Susan Furber and Isla Tooth assisted in its preparation.

INFECTIOUS DISEASES

MEASLES

During the first eight months of 1993 all Area Health Services and Regions received notifications for measles.

The annual notification rate for the State is 11.2/100,000 population. Orana and Far West Region has received notifications at a rate of 38.5/100,000 population. Western Sector Public Health Unit reported 69 notifications for August (these notifications do not appear on IDSS at the time of publication) – for a rate of 92.1/100,000 population.

Measles notifications peaked in epiweeks 6 to 10 and again in epiweeks 17 and 18. The increase in notifications that began in week 23 continues unabated.

Only 36 of 440 notifications (8 per cent) for NSW were laboratory confirmed. Of the 58 notifications registered on IDSS for August, five (9 per cent) were laboratory confirmed.

WHOOPIING COUGH

During the first eight months of 1993 all Area Health Services and Regions except South-Eastern Region, representing 97 per cent of the NSW population, received notifications for whooping cough.

The annual notification rate for the State is 8.1/100,000 population. Central West Region has received notifications at a rate of 18.7/100,000 population. Northern Sydney Area has received notifications at a rate of 11.9/100,000 population.

RUBELLA

During 1993 all Area Health Services and Regions, except Orana and Far West, representing 98 per cent of the NSW population, received notifications for rubella.

Notifications have continued at low levels. Thirty-six per cent of the year's notifications were for January. The notification rate for the State for 1993 remains at 4.5/100,000 population.

TUBERCULOSIS

One hundred and seventy-five notifications were received for the first eight months of the year, for a rate of 4.4/100,000 population. Western Sydney Area Health Service has a notification rate of 8.1/100,000 population. The Hunter Area Health Service has received notifications at a rate of 3.4/100,000 population.

TABLE 1

SITE OF INFECTION, FOR 1993 NOTIFICATIONS

Site	Number	Percentage
Respiratory	94	54
Miliary	4	2
Primary	4	2
Genitourinary	6	3
Meningitis	4	2
Bone	3	2
Gastrointestinal	2	1
Other/unspecified	58	33

A total of 89 out of 111 (80 per cent) finalised notifications have laboratory confirmed *Mycobacterium tuberculosis*.

INFLUENZA SURVEILLANCE

The incidence of influenza-like illness (ILI) in NSW continued to increase gradually into the first half of August. The State average for ILI from the NSW Sentinel GP Surveillance System was 2.1 per cent of consultations for mid-August (six PHUs). Three PHUs reported rates of about 4 per cent during August. They were South Western Sydney, New England and Western Sydney/Wentworth. School absentee rates for July/August were received from three PHUs. Although there have been sporadic reports of high absentee rates from ILI, there is no Statewide increase. Seventy confirmed cases have been reported from the Eastern Sydney Laboratory Surveillance Program, 65 per cent of which were influenza A. Demand for influenza vaccine has been disappointingly low this year, and stocks are plentiful.

LABORATORY-BASED INFLUENZA SURVEILLANCE: MAY-AUGUST 1993

The main purpose of laboratory-based influenza surveillance is to provide corroborative evidence to support trends in influenza-like illness (ILI) reported through clinical surveillance. Passive and active influenza surveillance is conducted with the assistance of laboratories involved in the Eastern Sydney Laboratory Surveillance Program. Serological diagnoses are reported by private pathology services and serology laboratories attached to the Prince of Wales Hospital and the Royal Alexandra Hospital for Children. Influenza isolates are reported by virology laboratories at the Prince Henry Hospital and the Royal Alexandra Hospital for Children. Active respiratory viral surveillance is carried out by one doctor in the Eastern Sydney General Practice Network and by Paediatric Casualty staff at The Prince of Wales Children's Hospital. Diagnoses made on viral isolation or on the basis of a fourfold or greater rise in titre are considered 'definite', while single high titres with consistent clinical notes are considered 'probable'.

Since the beginning of May 1993, 60 reports have been received by the laboratory surveillance program. Most have been based on single elevated titres of antibodies to influenza A or B. Details were available on 45 reports provided by laboratories at the Prince Henry/Prince of Wales hospitals and the Royal Alexandra Hospital for Children. Nine reports based on single high titres had notes on the request form which indicated they were either inconsistent with influenza or a more likely alternative diagnosis was available, leaving 36 definite or probable diagnoses.

Seven isolations were reported: four children with influenza A (upper respiratory tract infection [URTI], croup and broncholitis); an adult with influenza A (ILI); and two children with influenza B (URTI and acute respiratory deterioration following a bone marrow transplant). Three influenza A diagnoses were made on the basis of rises in titre: a 10-month-old girl with acute respiratory deterioration showed a rise in titre from <8 to 32; a 67-year-old man with atypical pneumonia showed a rise from 16 to 256; and a rise from 16 to ≥ 256 in a 54-year-old woman with an acute infectious exacerbation of chronic lung disease. The remaining 13 influenza A and 13 influenza B reports based on single high titres were from patients with a typical

TABLE 2

**INFECTIOUS DISEASE NOTIFICATIONS
BY PUBLIC HEALTH UNIT
CUMULATIVE 1993**

Condition	PHU																Total	
	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER		U/K
Adverse event after immunisation	1	2	1	-	5	-	1	-	-	2	-	1	-	5	-	-	-	18
AIDS	26	1	66	10	7	5	19	-	2	2	17	1	2	3	6	-	-	167
Arboviral Infection	1	1	1	1	1	1	3	1	1	24	50	26	101	13	345	4	-	576
Foodborne Illness (NOS)	6	3	-	17	23	10	-	2	6	-	-	2	11	-	5	-	-	85
Gastroenteritis (Instit)	60	6	-	9	13	3	-	-	-	39	-	16	2	20	32	-	-	200
Gonorrhoea	35	9	80	10	12	3	13	4	3	6	9	6	8	6	1	3	-	208
H. influenzae epiglottitis	2	6	1	-	-	2	4	1	2	2	1	2	1	-	2	3	-	29
H. influenzae meningitis	3	3	-	7	3	3	2	2	6	1	3	3	1	3	1	1	-	42
H. influenzae septicaemia	1	3	1	7	1	-	-	-	1	2	-	2	-	-	-	-	-	18
H. influenzae infection (NOS)	-	-	2	-	2	1	2	2	-	-	-	-	1	-	-	-	-	10
Hepatitis A - Acute viral	36	16	29	36	94	16	33	9	10	10	39	36	6	4	4	3	-	381
Hepatitis B - Acute viral	5	2	18	-	5	1	-	-	-	-	25	3	-	-	2	2	-	63
Hepatitis B - Unspecified	315	229	-	651	324	27	306	22	18	51	37	24	15	10	15	8	-	2052
Hepatitis C - Acute viral	1	-	-	-	2	-	-	1	1	-	1	3	1	-	-	3	-	13
Hepatitis C - Unspecified	444	214	415	343	326	67	336	152	107	265	220	52	19	41	66	41	-	3108
Hepatitis D - Unspecified	2	1	1	-	-	-	-	-	-	1	-	1	-	-	-	-	-	6
Hepatitis acute viral (NOS)	-	-	1	-	-	-	-	-	-	1	-	1	-	2	-	-	-	5
HIV infection	54	10	142	15	11	7	28	7	3	12	8	1	1	-	2	1	80	382
Legionnaires' disease	4	1	-	11	13	-	3	1	2	1	1	-	1	-	1	1	-	40
Meningococcal meningitis	-	2	-	7	6	1	2	2	2	2	5	2	1	1	1	5	-	39
Meningococcal septicaemia	3	5	1	1	2	3	2	-	2	1	1	1	1	-	-	1	-	24
Meningococcal infection (NOS)	-	-	1	-	-	-	-	1	1	1	-	2	1	-	-	-	-	7
Mycobacterial atypical	31	8	7	8	22	3	17	1	5	25	17	7	1	1	4	1	-	158
Mycobacterial tuberculosis	21	24	13	22	33	6	22	8	4	11	2	2	2	4	-	1	-	175
Mycobacterial infection (NOS)	6	1	1	1	1	-	8	4	6	1	2	-	1	-	2	-	-	34
Q fever	-	-	1	-	3	-	1	-	1	18	47	70	68	9	4	6	-	228
Salmonella (NOS)	19	41	41	33	18	3	42	25	8	58	43	33	22	5	10	7	-	408
Salmonella bovis morificans	-	3	-	-	2	-	2	-	-	-	10	-	-	-	1	-	-	18
Salmonella typhimurium	17	23	14	17	13	10	17	2	1	21	7	5	13	-	8	5	-	173
Syphilis	50	19	52	117	14	5	21	5	6	5	33	24	56	3	7	3	-	420
Typhoid and paratyphoid	1	1	4	-	-	2	2	-	-	1	2	-	-	1	-	-	-	14

pneumonia, ILI or acute exacerbations of chronic respiratory disease. It is noteworthy that eight of the ten definite cases (six influenza A, two influenza B) occurred in August, suggesting a late winter appearance of influenza in Sydney this year.

BUG BREAKFAST REPORT

The infectious disease seminar on August 6 considered the issue of the pertussis immunisation schedule. The National Health and Medical Research Council (NHMRC) recommends four doses as part of the diphtheria, tetanus and pertussis vaccine – at two, four, six and 18 months of age. The number of doses has been a controversial matter because of a higher incidence of minor reactions from the pertussis component and a perception that pertussis vaccine may cause brain damage. However, the National Encephalopathy Study in the UK in 1976-79 and recent reanalysis of the results have shown the risk of brain damage to be immeasurably small or zero.

Pertussis epidemics occur in three- to four-year cycles in most countries and Australia experienced its latest epidemic in the 1992-93 summer. That epidemics still occur demonstrates that vaccine-induced immunity is not sufficient to prevent the build-up of a susceptible population and consequent epidemics.

Data were presented which provide evidence to support a significant waning of vaccine-induced immunity by the time Australian children reach school age. It was concluded that there are substantial potential benefits from the addition of a preschool booster to the recommended schedule. This would complement the new legislation in NSW, requiring immunisation records to be provided on enrolment at school and day care facilities from 1994, by providing an opportunity for a booster at a time when parents will be

focused on their children's immunisation status. However, the problem of waning immunity will still exist and pertussis may not be 'finished off' until component vaccines become widely available, which are less reactive than the current whole cell vaccine, and can therefore be given as adult boosters.

HEPATITIS A AMONG CRUISE SHIP PASSENGERS

The Public Health Network and other State Health departments were involved in June in investigating an outbreak of hepatitis A among people who had been passengers on a Pacific cruise.

Active surveillance detected 10 cases – seven in NSW and three in Victoria. There were about 1,500 passengers and 500 crew on the cruise. Passengers came from all States of Australia and from New Zealand. An outbreak of diarrhoeal disease occurred during the first three days of the cruise.

Quick action was required to limit secondary transmission to other household members, sexual contacts and other high-risk contacts if cases were foodhandlers or attended child day care centres. A letter and a copy of Hepatitis A – Fact Sheet was sent to all passengers alerting them to the risk of exposure to hepatitis A and the risk of transmitting the disease to other contacts. No cases of secondary transmission related to this outbreak have been notified.

One very encouraging outcome of the investigation was the ability of the Public Health Network to detect the outbreak and quickly respond. The cooperation between State Health departments was also very effective.

Readers are alerted to NSW Health Department Information Bulletin No 93/32: Hepatitis A Immunisation, which was released on September 8.

TABLE 3

SUMMARY OF NSW INFECTIOUS DISEASE NOTIFICATIONS
AUGUST 1993

Condition	Number of cases notified			
	Period		Cumulative	
	Aug 1992	Aug 1993	Aug 1992	Aug 1993
Adverse reaction	4	2	28	18
AIDS	23	12	222	167
Arboviral infection	7	2	312	576
Brucellosis	-	1	1	5
Cholera	-	-	-	-
Diphtheria	-	-	-	-
Foodborne illness (NOS)	14	2	152	85
Gastroenteritis (instit.)	160	-	372	200
Gonorrhoea	43	5	222	208
H influenzae epiglottitis	5	2	33	29
H influenzae B - meningitis	10	4	72	42
H influenzae B - septicaemia	-	2	20	18
H influenzae infection (NOS)	5	-	23	10
Hepatitis A	66	18	330	381
Hepatitis B	289	114	2233	2115
Hepatitis C	409	120	2810	3121
Hepatitis D	-	-	5	6
Hepatitis, acute viral (NOS)	-	-	12	5
HIV infection	48	34	511	382
Hydatid disease	-	-	5	1
Legionnaires' disease	4	-	84	40
Leprosy	-	-	5	1
Leptospirosis	1	-	18	10
Listeriosis	-	-	9	6
Malaria*	10	N/A	104	N/A
Measles	24	58	264	440
Meningococcal meningitis	13	11	51	39
Meningococcal septicaemia	3	7	9	24
Meningococcal infection (NOS)	2	-	8	7
Mumps	1	-	18	1
Mycobacterial tuberculosis	28	6	299	175
Mycobacterial - atypical	25	-	392	158
Mycobacterial infection (NOS)	2	-	24	34
Pertussis	12	14	97	319
Plague	-	-	-	-
Poliomyelitis	-	-	-	-
Q fever	26	16	139	228
Rubella	16	10	50	179
Salmonella infection (NOS)	62	14	637	599
Syphilis	91	26	698	420
Tetanus	-	1	1	5
Typhoid and paratyphoid	3	-	25	14
Typhus	-	-	-	-
Viral haemorrhagic fevers	-	-	-	-
Yellow fever	-	-	-	-

* from Malaria Register

TABLE 4

INFECTIOUS DISEASE NOTIFICATIONS
BY SELECTED MONTH OF ONSET FOR 1993

Condition	Month			
	May	Jun	Jul	Total
Adverse event after immunisation	1	4	-	5
AIDS	16	16	16	48
Arboviral infection	26	17	8	51
Brucellosis	2	-	1	3
Foodborne illness (NOS)	18	12	3	33
Gastroenteritis (instit.)	64	83	14	161
Gonorrhoea	24	17	18	59
H influenzae epiglottitis	6	5	3	14
H influenzae meningitis	4	3	6	13
H influenzae septicaemia	3	1	2	6
H influenzae infection (NOS)	-	2	2	4
Hepatitis A - acute viral	66	37	40	143
Hepatitis B - acute viral	10	5	9	24
Hepatitis B - unspecified	276	273	299	848
Hepatitis C - acute viral	1	1	3	5
Hepatitis C - unspecified	446	465	477	1388
Hepatitis D - unspecified	1	1	1	3
Hepatitis, acute viral (NOS)	1	1	1	3
HIV infection	1	-	1	2
Hydatid disease	-	1	-	1
Legionnaires' disease	6	2	1	9
Leptospirosis	1	-	1	2
Listeriosis	-	1	1	2
Measles	39	61	75	175
Meningococcal meningitis	4	7	4	15
Meningococcal septicaemia	4	2	3	9
Meningococcal infection (NOS)	-	-	2	2
Mumps	1	-	-	1
Mycobacterial - atypical	22	15	3	40
Mycobacterial tuberculosis	24	27	17	68
Mycobacterial infection (NOS)	4	9	2	15
Pertussis	28	40	62	130
Q fever	33	32	29	94
Rubella	18	14	11	43
Salmonella (NOS)	53	33	36	122
Salmonella bovis moribificans	1	1	-	2
Salmonella typhimurium	25	24	14	63
Syphilis	47	57	58	162
Tetanus	2	-	-	2
Total	1282	1272	1227	3781

TABLE 5

VACCINE PREVENTABLE DISEASE NOTIFICATIONS
BY PUBLIC HEALTH UNIT, CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Measles	48	41	9	53	114	29	24	10	17	25	18	6	36	3	3	4	-	440
Mumps	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Pertussis	12	12	20	46	38	25	58	5	16	17	22	12	12	21	3	-	319	
Rubella	5	13	11	16	20	16	22	4	2	18	20	19	-	3	4	6	-	179
Tetanus	-	1	-	-	-	-	-	-	-	-	2	-	1	-	-	1	-	5

TABLE 6

RARELY NOTIFIED INFECTIOUS DISEASES
BY PUBLIC HEALTH UNIT, CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Brucellosis	1	1	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	5
Hydatid disease	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leprosy	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Leptospirosis	-	-	-	-	-	-	-	-	-	1	4	1	1	-	3	-	-	10
Listeriosis	2	-	-	2	1	-	-	-	-	1	-	-	-	-	-	-	-	6

PUBLIC HEALTH RESPONSE TO A SUSPECTED CASE OF LASSA FEVER

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ABSTRACT

The aims of our response to this suspected case of Lassa fever were to identify people with high risk exposures to the case, and to institute quarantine surveillance for contacts where necessary. We investigated the exposure histories of people in the same aircraft as the case and also the hospital staff involved in his care. No-one was found to have had a high risk exposure, defined as percutaneous or mucosal contact with the patient's body fluids. A diagnosis of Lassa fever was not ruled out until week five (the final diagnosis appeared to be leptospirosis). This incident was a good opportunity to rehearse the NSW Contingency Plan for Cases of Suspected Quarantinable Diseases. The plan worked well, but will be reviewed in light of our experience.

1. INTRODUCTION

On May 21, 1993, a 48-year-old male resident of Ghana arrived in Sydney on a flight from Amsterdam. He had collapsed on the plane and was thought by a doctor on board to have had a heart attack. He was taken to St George Hospital directly from Sydney Airport.

On assessment at the hospital he was found to be in acute liver and renal failure, having seizures and a bleeding tendency. He was mildly febrile. Given his presentation and country of origin, the attending clinicians included Lassa fever or another viral haemorrhagic fever (VHF) in the patient's differential diagnosis.

Lassa fever is endemic in rural West Africa and is generally acquired from contact with infected rats or their excreta¹. These diseases have a high fatality rate and can be transmitted to those in close contact with the patient.

The public health response to this case, following the State's Contingency Plan for Cases of Suspected Quarantinable Diseases¹, was organised by the Public Health Unit (PHU) for Central and Southern Sydney and the Epidemiology Branch, NSW Health Department.

The main aims of our response were to:

- determine whether any airline passengers or crew, or staff at St George Hospital, had had percutaneous or mucosal exposure to the patient's body fluids (i.e. a needle stick injury or a splash of the patient's body fluid onto the eyes, mouth or broken skin), as such people would be considered for prophylactic treatment with the anti-viral drug ribavirin; and
- commence quarantine surveillance of contacts (monitoring for fever for 21 days after the last exposure to the patient), and to inform them about the nature of the disease and their degree of risk.

2. THE INVESTIGATION

2.1 Air travel contacts investigation

We obtained details of the patient's flight from the airline company. The doctor and cabin crew who had assisted the patient, and two passengers sitting near him, were considered at possible risk. The airline's medical section undertook follow-up of the cabin crew, and the Northern Sydney PHU and the Victorian Health Department each agreed to conduct surveillance for a passenger residing in their area. The doctor was traced a few days before his arranged departure from Australia. He undertook to monitor his temperature for the required period and notify health officials if he became unwell.

2.2 St George Hospital staff investigation

The patient had spent time in the Emergency Department, the Radiology Department, the Intensive Care Unit and operating theatres. Also, almost all laboratory staff in the hospital had some exposure to the patient's body fluids.

We prepared a questionnaire to determine the exposure risk of staff in these areas to the patient and/or his body fluids. Any staff with definite percutaneous or mucosal exposure to the patient's body substances were defined as being at high risk; staff with possible insensible percutaneous/mucosal exposure were defined as medium risk (e.g. body fluid exposure on apparently intact skin), and those with potential aerosol exposure only were defined as low risk. A team assembled from the Public Health Network assisted us with interviews.

In accordance with contact surveillance guidelines², staff who had been in contact with the patient were requested to monitor their temperature for a period of 21 days since their last exposure and report to the Staff Health Clinic or Emergency Department if febrile (>38.3 degrees C) or acutely ill. Brief guidelines were prepared to assist these units in the assessment of any staff who reported.

Memos were distributed reminding staff who were in continued contact with the patient to practise full infection control procedures, and to report immediately any infection control accidents. Staff contacts were asked not to donate blood until further notice.

3. THE PATIENT

Diagnosis of the patient was complicated by the necessity for early and multiple antibiotic treatment and repeated blood transfusions. Acute phase sera testing showed no positive results for a range of infectious diseases including Lassa, Marburg and Ebola haemorrhagic fevers; leptospirosis; rickettsiae; hepatitis A, B and C; human immunodeficiency virus; and Cytomegalovirus. Repeated malaria blood films were negative. Toxoplasmosis and Yellow fever test results were consistent with past infection and past vaccination, respectively. Blood, cerebrospinal fluid (CSF), urine and stool culture and CSF, urine and stool microscopic examination were all negative. History from the patient's relatives revealed no definite contact with rats, although the patient had travelled to a rural region of Ghana a few days before departing for Sydney.

A VHF diagnosis was excluded after a negative convalescent phase test carried out by the Centers for Disease Control (CDC), USA, in week five of the illness. The final diagnosis appeared to be leptospirosis.

4. RESULTS OF ST GEORGE HOSPITAL STAFF INVESTIGATION

We obtained exposure information on 211 staff, of whom 173 (82 per cent) were interviewed in person. Of the 211, 193 had had some kind of contact with the patient or his body fluids. No staff reported a definite high risk exposure, 124 had been in situations of medium risk, and 53 were at low risk. A further 24 were determined to be at no risk.

Monitoring continued over five weeks. A total of four staff reported sick, one with a probable viral illness, two with upper respiratory tract infections and one with tonsillitis. When the patient's negative diagnosis for a VHF was known, all staff were advised that monitoring was no longer required.

5. DISCUSSION

There are at least 12 different types of viral haemorrhagic fever. Of these Lassa fever, Rift Valley fever, and Crimean-Congo, Marburg and Ebola haemorrhagic fevers occur in Africa. Dengue and Yellow fevers acquired in Africa can also become haemorrhagic³.

Experience with Lassa fever after it was identified in 1969 suggested the potential for aerosol transmission to health care workers or other contacts was great. CDC therefore recommended extremely high-level infection control facilities⁴. However, further research has shown the likelihood of aerosol transmission is low, and this, in conjunction with the availability of ribavirin for treatment and prophylaxis, led CDC to revise its infection control guidelines for these diseases^{5,6}. The newer guidelines primarily require universal precautions similar to those used against AIDS and hepatitis, as well as 21-day surveillance for known contacts of the patients⁷.

The possibility of a VHF case occurring in NSW is thought to be extremely low, although direct flights from Africa and South America to Sydney, and increasing international travel, make this risk real. There has been only one reported VHF in NSW: a convalescent case of Lassa fever diagnosed in a rural hospital in 1985. The occurrence of 'false positives', i.e. suspected cases which turn out not to be a VHF, is more likely¹. Malaria would be a more common

'true' diagnosis in these patients⁷.

Although Westmead Hospital has been designated the VHF treatment centre for NSW, suspected cases will most likely be identified in another hospital and may be too ill to be transferred. Therefore, all hospitals and PHUs in NSW should be prepared for the occurrence of a VHF case.

The Contingency Plan for Cases of Suspected Quarantinable Diseases, developed by the NSW Health Department's Epidemiology Branch, provides guidelines on both preparations for, and management of, a suspected VHF. If a hospitalised patient is reasonably suspected of having a VHF, the patient should be isolated and barrier nursed, universal precautions should be fully implemented (for both clinical staff managing the patient and laboratory staff handling the patient's specimens) and the NSW Health Department immediately informed.

This investigation was a good opportunity to evaluate the contingency plan. It worked well in guiding our response, however, a working party is now reviewing it in light of our experience.

ACKNOWLEDGMENT

We thank Jennifer Chipps, Wendy Manning, Rob Menzies and Bernie Towler who conducted interviews, the staff of St George Hospital, particularly those in the Intensive Care Unit, for assistance with this investigation, and Alison Kesson for comments on the paper.

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The Bulletin aims to provide its readers with population health data and information to motivate effective public health action. Articles, news and comments should be 1,000 words or less in length and include a summary of the key points to be made in the first paragraph. Please submit items in hard copy and on diskette, preferably using WordPerfect 5.1, to the editor, Public Health Bulletin, Locked Mail Bag 961, North Sydney 2059. Facsimile (02) 391 9232.

Please contact your local Public Health Unit to obtain copies of the NSW Public Health Bulletin.

LETTER TO THE EDITOR

I read *Compilation of a General Practitioner Database* in the July *Public Health Bulletin* with interest. I suspect all Public Health Units have grappled with this problem to arrive at some sort of GP listing. The systematic approach used in Central Sydney is quite remarkable. Our experience in the Hunter is consistent with that of the authors in what a useful resource an accurate GP listing is in many aspects of our work.

I wonder if the authors could elaborate on a few points that may be of further value to others in the field. Could they briefly discuss the relative merits of each source of GP data? In particular, was one source particularly better than another?

Once having established a GP database, the ongoing issue is keeping it up to date. Can the authors offer any advice from their experience as to how this might be achieved most effectively?

Peter Lewis
Hunter Public Health Unit