

A case study of the evaluation of a public health intervention

Bradley Forssman, Leena Gupta and Graham Burgess

Abstract

Large public health interventions to control infectious disease outbreaks are common, but rigorous evaluation to improve the quality and effectiveness of these is rarely undertaken. Following a large community-based clinic to prevent a hepatitis A outbreak, a multifaceted and multidisciplinary evaluation was conducted involving consumers, health professionals and industry partners. The results of this evaluation were used to produce practical operational guidelines for the planning and conduct of future interventions. These guidelines have been distributed to all public health units in New South Wales and may be included in the next edition of the *NSW Health notifiable diseases manual*. The evaluation approach can be applied to all public health interventions across NSW and Australia to assist in the development of operational guidelines, in order to increase the quality of public health action in outbreak prevention.

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THE EMERGENCE OF DISEASES such as severe acute respiratory syndrome (SARS) and the threat of pandemic influenza from the recent rapid spread of highly pathogenic avian influenza in Asia and Europe have highlighted the importance of effective public health control measures.^{1,2} These measures are also essential in preventing other, more common infectious disease outbreaks, such as

What is known about the topic?

Public health interventions are essential in preventing outbreaks of infectious diseases, yet there are few guidelines available to assist in the planning and implementation of large-scale public health interventions.

What does this paper add?

This paper describes the evaluation of a public health intervention designed to prevent a hepatitis A outbreak, and the development of guidelines for future incidents.

What are the implications for practitioners?

The authors suggest that this evaluation comprising documentation, focus groups of participants, a consumer survey of people attending the clinic, active surveillance, and testing of the model through submission to a peer-reviewed journal was effective for gathering the information required to develop guidelines for future incidents. ♦

hepatitis A, meningococcal disease and measles.³ This may involve holding clinics to rapidly administer medications or vaccines to large numbers of people within at-risk communities. The implementation of such clinics is complex, with the involvement of a wide range of stakeholders including government departments, the community and industry partners (for example, commercial food suppliers and retail outlets). In New South Wales, despite this complexity, there have been no guidelines to assist in the planning and implementation of large-scale public health interventions. In order to develop such guidelines, rigorous and multifaceted evaluation of past interventions should be undertaken to understand where opportunities for improvement exist, and to identify strategies that are effective. Formal evaluations to assess infectious disease outbreak prevention have rarely been undertaken in the past.

This project aimed to implement a multidisciplinary and multifaceted evaluation of an inter-

Bradley Forssman, MB BS, MPHTM, Medical Officer
Leena Gupta, MB BS, MPH, FAFPHM, Director
Graham Burgess, AdvDipHServ, Senior Environmental Health Officer
Public Health Unit, Sydney South West Area Health Service, Sydney, NSW.

Correspondence: Dr Bradley Forssman, Public Health Unit, Sydney South West Area Health Service, PO Box 374, Camperdown, Sydney, NSW 1450.
bradley.forssman@email.cs.nsw.gov.au

vention to prevent a hepatitis A outbreak in order to develop operational guidelines to improve the quality and consistency of future public health interventions.

Setting

In December 2003 our inner-urban public health unit (PHU) conducted a mass vaccination clinic to prevent a hepatitis A outbreak associated with an infected food handler in a club. A detailed description of the rationale for and design and implementation of this clinic have been published elsewhere.⁴ While large vaccination clinics such as this have occurred internationally,⁵ this was the first of its kind reported in Australia. It was set up within 48 hours of the notification and 768 of 1161 people attending were treated with preventive immunoglobulin vaccine. In order to conduct and evaluate this clinic, a multidisciplinary team was formed, consisting of medical, nursing, environmental health, and administrative staff from the PHU. We also sought input from NSW Health, consumers and industry partners.

It was evident during the process that there was a lack of operational guidelines to guide decision making related to the planning of the clinic and its subsequent implementation. Further, there was no guidance on how to ensure optimal engagement with the community, industry and other health professionals. In order to redress this vacuum, we devised a multifaceted and multidisciplinary evaluation system that was used to develop the much needed guidelines. This case study describes the development of this evaluation system.

Methods

Our evaluation system involved five major aspects, comprising both qualitative and quantitative methods. First, detailed documentation of the process undertaken in this inaugural clinic was prepared by undertaking semi-structured interviews with key staff members involved. Second, a focus group debriefing was held in Febru-

ary 2004, and attended by representatives from the community club, the local hospital, NSW Health and the PHU. The focus group aimed to identify what aspects of the clinic were effective, and obtain suggestions for improvement from key stakeholders.

Third, a consumer evaluation survey was developed to ensure that those who were most affected by this issue had input into this process. The survey was developed through a brainstorming process by PHU staff and then further refined by pilot testing with a random sample of consumers. The survey covered consumer perceptions, self-reported behaviours (such as personal hygiene and dining out), satisfaction with the clinic, understanding of the information we provided, and the consequences of our intervention. It was mailed to all adults who had attended the clinic, with follow-up of non-responders through the use of two further mail-outs over the ensuing 2 months to maximise the response rate. Returned surveys were coded and analysed using SPSS for Windows (Release 12.0, SPSS Inc, Chicago, Ill, USA).

Fourth, active surveillance for ongoing transmission of hepatitis A was undertaken to evaluate the effectiveness of the intervention. Emergency departments, local doctors and laboratories were contacted to rapidly detect new cases of hepatitis A possibly linked to the club, and we thoroughly investigated the reasons why these cases occurred despite the intervention. Finally, the design and implementation process was subject to peer review through submission of a manuscript to a peer-reviewed journal and through formal presentations at scientific meetings.

Outcomes

The detailed documentation process formed the backbone of the guideline that was subsequently developed, and results from the focus groups assisted in providing a number of practical suggestions for future action, such as increasing liaison between health agencies, the community and industry.

There were 624 consumer surveys returned (response rate 60.5%). Over 90% of respondents

were satisfied with their experience of the clinic and found the information they received to be useful. However, 30% sought advice from their general practitioner immediately following the clinic. There was a doubling of the proportion of people who, after attending the clinic, perceived their risk of hepatitis A infection as unlikely (compared with their perception before attending the clinic), and there were changes in self-reported behaviours as a result of being involved in the clinic. This was reflected by 66.8% of subjects responding yes to the statement "I am now more careful with my personal hygiene" and 63.3% responding yes to the statement "I am now more careful where I eat".

Active surveillance revealed four cases of hepatitis A linked to the initial case. On detailed investigation, it was found that the reasons for the apparent failure of this intervention to prevent these infections were related to either the individuals declining the preventive vaccination, or it being too late for the preventive vaccination to be effective. A manuscript describing the rationale for and the design and implementation of this intervention was published.⁴ In addition, presentations about the clinic, the evaluation and the outcomes have been given to local councils, the NSW Public Health Network and communicable diseases conferences.

This multifaceted evaluation was used to develop practical guidelines for planning and conducting large-scale public health clinics. These have been circulated to NSW public health units for local adaptation and implementation and may be incorporated into the next edition of the *NSW Health notifiable diseases manual*.⁶ Constructive feedback about these guidelines has been received from other public health unit staff and this has been used in a continuous improvement process.

Discussion

This multifaceted evaluation system was effective in the appraisal of our public health response to the threat of a hepatitis A outbreak, and proved useful in developing operational guidelines. In

particular, the involvement of a wide range of stakeholders, including consumers and industry partners, was essential in providing valuable input into ensuring the guidelines were appropriate through the use of focus groups and the consumer survey.

This process did have some limitations. The data collection and analysis of the consumer survey was not completed until about 9 months after the intervention, and issues such as recall and selection bias may have occurred. However, due to the high response rate and questions included within the survey to ensure validity, these biases are likely to have been kept to a minimum. In the future, however, it would be preferable to conduct such surveys as soon as practicable following a public health intervention.

Active surveillance revealed four cases of hepatitis A that were linked to the index case. This is far fewer than would be expected considering the initial risks of an outbreak before the intervention. This risk was demonstrated in a recent hepatitis A outbreak in the United States, where mass vaccination clinics were not initially undertaken following the notification of hepatitis A in a food-handler, resulting in 46 cases in restaurant patrons.⁵

The results of the survey showing 30% of participants sought medical advice from their own GP following the intervention indicate the importance of local health providers in public health strategies. In addition, the change in participants' perception of their risk of infection as well as their self-reported change in behaviour would imply that the consumer education process that was undertaken as part of the intervention was effective. These findings were used to further refine the guidelines, with additional sections being included on communication with GPs and consumers.

Conclusion

Multifaceted, multidisciplinary evaluations of this kind can be used in future outbreak prevention throughout the NSW health system. Our guide-

lines can be used to guide service provision throughout the state, and further evaluation of their effectiveness will be encouraged. The guidelines are not only applicable to hepatitis A prevention, but may be used in prevention of influenza pandemics, meningococcal disease outbreaks and bioterrorism responses.

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Competing interests

The authors declare that they have no competing interests.

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