

## **Training module in analytical epidemiology — ready for implementation**

I first became involved in public health surveillance in the Solomon Islands, where I was director of provincial health services, first for Temotu and subsequently for Malaita province. I worked with Dr Tom Kiedrzyński to implement a National Health Information System in these two provinces. I also developed a computerised inpatient data collection and analysis system, and subsequently a computerised tuberculosis data collection and analysis system, for Malaita province.

However, the sustainability of these systems was threatened by the lack of epidemiological expertise needed to interpret the data and act upon the results. When the opportunity arose for me to return to the Pacific for a short-term secondment from my position in the United Kingdom, I was delighted when it was suggested that I could help develop the training module in analytical epidemiology.

Two training modules—level one, 'Basic' and level 2, 'Advanced'— in 'Public Health Surveillance and the use of EpiInfo 6 Software' have already been developed by the Public Health Surveillance and Communicable Disease Control Section (PHS & CDC) of SPC on behalf of PPHSN. Many public health practitioners throughout the Pacific have attended, enjoyed and benefited professionally from the workshops based upon these modules.

To complete the training programme, a module on the use of analytical epidemiology in the investigation and control of outbreaks has been developed. The module was designed in accordance with the concepts presented in the report 'Service-Oriented Training in Public Health.'<sup>1</sup> The student is led through the steps involved in dealing with an outbreak, in a way that makes the exercise a true reflection of the 'real thing.' The module is complementary to the first two training modules and it reinforces many of the concepts presented previously. To make it relevant to the region, the scenario is based on an outbreak of cholera on a Pacific Island. As well as learning about analytical epidemiology, the student will also learn about the epidemiology, prevention and control of cholera, with a particular focus on the Pacific.

This third module is an example of computer-assisted learning. At the core of the module is an exercise that the students can do either individually or in small groups with a facilitator. The exercise has been developed using the DOEPI training package that is available for EpiInfo. One big advantage of using this tool is that it is fully integrated with EpiInfo. It is therefore possible to construct a truly interactive exercise in which the student can create EpiInfo questionnaires, check files, manipulate data and perform analyses from within the exercise. As students progress through the exercise, resources become available to them through links to documents and presentations. A major part of the exercise is the analysis of data from a real outbreak, using EpiInfo 6.

In Part 1 of the exercise, the student will perform descriptive analyses on hospital and clinic/community-derived data. This provides a revision of those skills developed through the 'advanced' second module. In Part 2 of the exercise, the student will plan an analytical study and analyse the data from a real investigation. The student will interpret the data and make recommendations for public health actions. Throughout the exercise, hints and other background information are available to the student through links to key documents that consist of WHO monographs, reports, and notes on the various concepts in epidemiology and medical statistics that are dealt with in the module.

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<sup>1</sup> Patel, M. S. October 1998. Service-Oriented Training in Public Health: A model for Enhancing Public Health Surveillance in the Pacific. A report to the Secretariat of the Pacific Community and the Pacific Public Health Surveillance Network.



After completing Part 1 of the exercise, the students should be able to:

1. describe epidemiological data by time, place and person characteristics;
2. understand what incidence and incidence rate are, and how and when to calculate them;
3. use the commands of EpiInfo to import, view, analyse and produce graphs from data;
4. understand the stages involved in managing an outbreak;
5. be able to translate descriptive data into information and interpret it for public-health action.

After completing Part 2 of the exercise, the students should be able to:

1. decide when an analytical epidemiological study will be useful;
2. choose an appropriate study type, understanding the advantages and disadvantages of each one;
3. calculate the sample size for a study, using STATCALC in EpiInfo;
4. develop a study protocol and prepare written questionnaires;
5. understand the difference between matched and unmatched designs, and when to use them;
6. understand the concepts of bias, confounding, effect modification and interactions;
7. perform appropriate analyses and understand the need for statistical significance testing;
8. perform a basic logistic regression analysis;
9. interpret the results of the analyses appropriately;
10. demonstrate a good knowledge of the main epidemiological features of cholera;
11. demonstrate a good knowledge of the measures needed to prevent and control outbreaks of cholera in Pacific countries.

As well as the module itself, a computer application has also been developed within the PPHSN for the Windows environment that will enable health educators to more easily produce new exercises relevant to the needs of public health practitioners in the Pacific, using DOEPI. It should also make it easier to adapt these training modules for distance learning over the World Wide Web.

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