Evaluating a Health Event under Surveillance (PEG#3)

Public health surveillance is a fundamental tool. Whereas clinicians use the clinical history and examination, x-rays, blood tests, and other investigations to decide upon appropriate treatment and management of a patient, public health practitioners use surveillance of a health event to plan and implement public health action targeted to a specific population. The health event may be a risk factor, exposure, and/or a specific outcome.

The Canadian Field Epidemiology Program (CFEP) expects each Field Epi to identify a health event under surveillance pertinent to the placement, describe its public health importance and its prevention/control measures, identify and critically appraise the system(s) which monitor it, decide whether the surveillance objectives are fulfilled and make recommendations for improvements.

The purpose of **this evaluation project** is:

- to improve the Field Epi's competencies in public health surveillance
- to assist the placement in improving surveillance for the chosen health event

The purpose of the **evaluation** is to determine whether the:

- health event under surveillance is of sufficient importance to warrant the resources devoted to surveillance;
- surveillance system(s) meet their stated objectives;
- these objectives fit the current information needs for prevention and control activities;
- data derived from the surveillance system(s) drive public health action.

Specifically, after completing this project in the second year, the Field Epi should be able to:

- Describe the public health importance of the health event;
- Describe the action(s) required for its prevention and/or control in the population;

- Describe the surveillance system(s) which survey that health event;
- Identify and apply key attributes of the surveillance system(s);
- Draw reasonable conclusions based on the evaluation (Does the data from the surveillance system(s) drive public health actions?);
- Develop appropriate recommendations which are consistent with the conclusions;
- Organize the findings into a concise abstract, presentation and report.

Getting this project started can sometimes be challenging: it may be difficult to select an appropriate health event as well as determining the best way to evaluate it.

We recommend selecting a health event and not a surveillance system to evaluate. A health event is a disease, condition, health outcome, exposure or risk factor (e.g., influenza, smoking, encephalopathy due to pertussis vaccine). It may be part of a larger group of health events under surveillance through a common surveillance system (e.g., Notifiable Diseases Reporting System). Avoid the temptation to evaluate the whole system; it is too large an undertaking and does not allow evaluation of surveillance for action.

For example, Field Epis have tried (and failed) to evaluate provincial "communicable disease surveillance". This encompasses too many health events and the public health actions are too diverse to apply the attributes effectively. Generally, narrowing your focus to a single topic (e.g., enteric illness) and then selecting within that category (e.g., hepatitis A) helps. Concentrating on sub-populations (e.g., First Nations) or choosing illustrative examples (e.g., Shigella for bloody diarrhea and Salmonella for non-bloody diarrhea) is also useful to better delineate the scope of the evaluation. A list of surveillance evaluations completed by Field Epis since 1999 provides some examples, but is not meant to be restrictive. There are lots of health events left to evaluate in public health!

Health event examples include diseases (e.g., hepatitis A), risk factors (e.g., obesity), exposures (e.g., environmental tobacco smoke), conditions (e.g., autism), interventions (e.g., vaccine coverage, liver transplants) or outcomes (e.g., adverse vaccine events).

Once the Field Epi has identified the health event:

- What public health action(s) are needed to prevent or control this within the population of interest?
- What are the primary, secondary and tertiary prevention strategies?
- Who are the stakeholders? (i.e., who needs to take action and at which levels: local, provincial/territorial, federal, international).
- What information is needed at each level to plan and implement public health action?
- Are data collected at one level, but used at other levels as well? If so, are the right data disseminated for timely action? Are key data elements missing?

It may help to sketch out an ideal public health action plan for the health event at the different levels and then compare the data requirements to fulfil this theoretical action plan with reality.

First year (Y1) Field Epis expected to choose a health event and begin planning and implementing the evaluation. Second year Field Epis (Y2) must complete the evaluation and submit a report to their placement and CFEP.

To maximize the learning from this PEG, Field Epis present their planned (Y1) or final (Y2) evaluations and receive feedback to strengthen their capacity to perform such an evaluation. This is done during the annual Surveillance Evaluation Workshop.

Evaluating Performance

During the accredited **Surveillance Evaluation Workshop**, Y1 and Y2 Field Epis are assessed on both the content and delivery/style of their presentations.

According to the Field Epi's Evaluation of Competencies, Field Epis should be able to:

- Prepare and deliver verbal reports that are accurate, clear, concise, logical and thorough.
- Give extemporaneous verbal messages (e. g., answers to questions during a presentation) that are accurate, constructive and helpful.
- Develop presentations and reports to inform and persuade different audiences (e.g., professionals, decision-makers, the public) that epidemiologic findings are important and that the audiences should modify their behaviour appropriately.

The final presentation is made to a broad audience in a moderated session. We invite lead moderators who are content experts in the chosen surveillance domains and/or placement supervisors. The content and visuals of Field Epi's presentation and their presentation style will be assessed according to standard evaluation forms. They are also videotaped during the "dry run" and the final presentation, to provide them with objective feedback.

Getting Started

First year Field Epis begin the PEG by identifying a health event under surveillance which is relevant to your placement. Placement supervisors are expected to provide the Field Epi with direction as to what may be suitable health events to consider for this evaluation (preferably related to the placement activities which s/he can become involved in the ensuing two years).

One of the most common obstacles to this evaluation is that the objectives for the surveillance system may not have been defined when surveillance for the health event was first established. If the Field Epi needs to define objectives, remember to make

them specific, measurable, acceptable/action-oriented, realistic and time oriented (SMART). After suitable SMART objectives for the surveillance system(s) for the health event have been defined, identify stakeholders and their requirements for public health action, as this forms the basis for the data collection tool and its administration. Sketch out the flow of data within the surveillance system (conventionally data start at the bottom and flow upwards). Compare this schematic with the ideal information for public health action.

Now the Field Epi is ready to consider the seven attributes listed in the CDC guidelines (simplicity, flexibility, acceptability, sensitivity, positive predictive value, representativeness and timeliness). While all of these attributes may be relevant to some extent for the health event, in comparing theory to reality, which of these attributes are the most important? Which would make the biggest difference to public health action? Why? Typically, two to three key attributes should be selected.

If the Field Epi has an opportunity to analyse or work with the data from the surveillance system(s), s/he will be able to get a better sense of how the data are collected, stored and used. By interviewing stakeholders the Field Epi can glean their perspectives on the surveillance of the health event, as well as their recommendations for change/improvements.

In summary, after selecting a health event of interest, identify/determine the goals of disease prevention and control related to the particular health event and the interventions or public health actions required to achieve them. Then identify the data needs and the attributes of an ideal surveillance system that would help achieve the disease prevention and control goals and assess the impact of interventions. Now identify the surveillance system(s) which monitor this health event, examine the objectives and sketch out the flow of data. Compare the ideal surveillance system to the existing one. Assess whether the real surveillance system is adequate and identify any gaps. Which attributes are most important in improving the existing system? What do the stakeholders think of its performance? What are your recommendations?

In extreme cases, the Field Epi may even conclude that surveillance for a health event is not necessary or feasible because of the lack of appropriate public health actions or interventions to control it. This startling conclusion has been accepted by at least one placement, which subsequently enlisted the Field Epi's help in designing a better system!

Although following a prescriptive formula to evaluate a surveillance system helps us remember all the components we need to cover, sometimes it misleads us that the purpose of the evaluation is the surveillance system itself. We encourage you to think outside of the box - step back and see surveillance as a means to an end rather than an end in itself. The ultimate end is improved disease prevention and control.