evaluate

Lessons learned

Findings

methods

design

justify

engage

analysis

conclusions

flexibility

Data quality

credible

report
design

usefulness

attributes
evidence

share

Evaluating an NCD-Related Surveillance System

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DEPARTMENT OF HEALTH & HUMAN SERVICES·USA

CDC
CENTERS FOR DISEASE
CONTROL AND PREVENTION

Evaluating an NCD-Related Surveillance System

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Introduction

LEARNING OBJECTIVES

1. At the end of the classroom training, you will be able to:
   - Plan for evaluating a surveillance system in your country
   - Assess the attributes, conclusions and recommendations of a sample surveillance system evaluation

2. When you return to your job, you will be able to:
   - Complete the six steps to evaluating a surveillance system
   - Follow the Field Guidelines to write an evaluation report
   - Create a PowerPoint presentation

ESTIMATED COMPLETION TIME

The module should take approximately 12 hours to complete. Additional time should be set aside to complete the final skill assessment – evaluating a surveillance system – when participants return to their job.

TARGET AUDIENCE

The module is designed for Field Epidemiology Training Program (FETP) residents who specialize in NCDs; however, you can also complete the module if you are tasked to evaluate a communicable disease surveillance system.

PRE-WORK AND PREREQUISITES

Before participating in this training module, participants must complete the pre-work assignment. The activities for the assignment include:
- Select an NCD-related surveillance system in your country to evaluate
- Bring to class as much information you know about the surveillance system, including:
  - Purpose and objectives of the system
  - Health-related event under surveillance
  - Components of the system (e.g., population under surveillance, what data are collected and how they are collected)

In addition, participants should have completed training on the following topics:
- NCD Data Sources

- NCD Surveillance in Public Health

OPTIONS FOR FACILITATING THIS TRAINING

There are two options for facilitating this training:

1. <u>Individual mentor-directed</u>: A mentor helps the participant complete the training. The mentor's main responsibility will be to review the mentee's work and provide feedback.

   A mentor will meet with the participant a minimum of two times. At the first meeting, the mentor should orient the participant to the training, provide examples and direction indicated, answer questions, and set future modes of contact and meeting time(s). Very small groups (fewer than 5 individuals) may choose to work on the training together and find individual or collective mentor(s).

2. <u>Classroom</u>: There are two options for classroom training. For option a, participants read the training material *prior* to attending class and then review what they read in class.   For option b, participants read the training material *during* class.

   a. **Participants read training material *prior* to attending class**. At the start of each module section, the facilitator reviews key points. (**Note:** The facilitator may prepare PowerPoint slides for a brief presentation of key points, lead an informal discussion about the reading, or ask participants to answer questions individually or in small groups about what they read. Appendix A contains sample questions.) After each review, participants will complete practice exercises and skill assessments as directed.

   b. **Participants read training material during class:** The facilitator directs students to read the training material and complete the exercises as indicated in the workbook. The facilitator leads group discussions to review what participants have read and reviews participants' answers to the exercises and skill assessments.

MATERIALS

For the Facilitator or Mentor:
- Facilitator / Mentor Guide
- Flip chart and markers

For the Participant:
- Participant Workbook
- Activity Workbook
- Field Guidelines for Evaluating Surveillance Systems

ICON GLOSSARY

The following icons are used in this guide:

Image Type	Image Meaning
	Book – participants read a section in the participant workbook
	Pencil - an activity, exercise, assessment or case study that participants complete
	Group – a group discussion that you will lead, either to review key points or answers to an activity
	Flip chart – write responses during facilitator-led discussions or debriefs

PREPARATION

Prior to facilitating the module, complete the following:

- Read the Participant Workbook;
- Review the Activity Workbook;
- Review the questions and answers to all the practice exercises and skill assessments and be prepared to assist participants, as needed;
- Read the Facilitator / Mentor guide and ensure you understand your role in facilitating the module;
- Prepare to introduce the module topic; and
- Write on a flip chart the main tasks of Evaluating Surveillance Systems (and hang on the wall).

ACKNOWLEDGEMENTS

How to Facilitate This Module

FACILITATOR/MENTOR RESPONSIBILITIES

This training module is self-paced. Participants learn the content by reading their workbook and participating in group discussions. They apply what they learn by completing practice exercises and skill assessments. Participants use a sample surveillance system evaluation for the practice exercises and one of the skill assessments. For the other skill assessments, participants use information about an NCD surveillance system from their own country.

As a *facilitator*, you will *facilitate* or assist in the participants' learning. Your main roles will be as follows:

- **Introduce** the module topic.
- **Lead** group discussions to review or elaborate on what participants read.
- **Answe**r questions that participants may have during the training.
- **Review** participants' work and provide feedback.
- **Be a timekeeper**, ensuring participants stay within a general schedule.

As a *mentor,* you will perform the same tasks and play a more active role in supporting the learner *after* the training with his or her field work.

CLASS INTRODUCTIONS AND SECTIONS 1 - 3

Total Estimated Time: 1 hour, 40 minutes
Workshop introduction and overview: 30 minutes
Readings: up to 20 minutes
Skill Assessment #1: 30 minutes
Debrief: 20 minutes

Session Type/Duration	What To Do/What To Say

Group Discussion
 	
30 minutes
	Workshop Introduction and Overview
	
	• Introduce yourself and ask participants to introduce one another by providing:
	  o Their name
	  o Where they work
	  o Experience evaluating surveillance systems
	  o Expectations for the module
	
	• Distribute the Participant Workbook, Activity Workbook and Field Guidelines for Evaluating Surveillance Systems.
	
	• Explain how participants will learn the skills by reading the participant workbook and apply what they have learned by completing 11 practice exercises and 6 skill assessments.
	
	  1. Explain that the skill assessments will measure how well they have mastered the module objectives and that the practice exercises prepare them for those assessments. Explain that the 7th skill assessment – conducting a surveillance system evaluation and preparing a report and presentation – will be conducted after the training in the field.
	
	  2. Make sure participants brought with them to class information about a surveillance system in their country that they will evaluate. Note: if participants did not bring this prerequisite information, you can pair them with someone who did; however, recognize that they will not be able to fully master the module objectives.
	
	• Provide an overview of what they will learn in the module and how the skills and knowledge they acquire will help them evaluate surveillance systems in their country.
	
	• Ask participants questions such as:

Session Type/Duration	What To Do/What To Say
	o What is public health surveillance? o What is the purpose of public health surveillance? o What types of surveillance systems do you have in your country?
Reading **20 minutes**	**Readings** Tell participants to read sections 1, 2 and 3.
Activity **20 minutes**	**Skill Assessment #1** Tell participants to spend approximately 20 minutes *individually* completing task A of the evaluation process using the information they brought to class about a surveillance system in their country.

Group Discussion
 	
 20 minutes
	Debrief
	
	 • Ask for volunteers to share their answers with the rest of the class. They should first provide the class with some background information about the surveillance system they plan to evaluate.
	 • Participants should have considered some or all of the following when identifying stakeholders:
	     o who is funding the evaluation system
	     o who will use the information derived from the evaluation system
	     o whether the political/organizational environment will allow them to influence the evaluation

SECTION 4: TASK B. DESCRIBE SURVEILLANCE SYSTEM

Total estimated time: 1 hour, 50 minutes
Readings: up to 20 minutes
Practice Exercise #1: 20 minutes
Practice Exercise #2: 20 minutes
Skill Assessment #2: 50 minutes (including a 20 minute review)

Session Type/Duration	What to Do/What to Say
Reading **20 minutes**	**Readings** Tell participants to read section 4 and complete the practice exercises (see below).
Activity **20 minutes**	**Practice Exercise #1** • Tell participants to complete the exercise individually or with a colleague. • Make yourself available to answer any questions and to ensure participants are completing the work. • Participants are instructed to review their answers with those in Appendix B; however, if time permits, you may review responses with the class at the end of the section (prior to Skill Assessment #2).
Activity **20 minutes**	**Practice Exercise #2** • Tell participants to complete the exercise individually or with a colleague. • Make yourself available to answer any questions and to ensure participants are completing the work. • Participants are instructed to review their answers with those in Appendix B; however, if time permits, you may review responses with the class at the end of the section (prior to Skill Assessment #2).

Session Type/Duration	What to Do/What to Say
Activity **30 minutes**	**Skill Assessment #2** Tell participants to spend approximately 20 minutes *individually* completing task B of the evaluation process using the information they brought to class.

Group Discussion
 	
20 minutes
	Debrief
	• After participants complete their work, review their responses and provide them with feedback.
	
	• Ask for a few volunteers to present their responses to the class.
	
	  a. Participants should have considered some or all of the following when identifying the parameters to describe **public health importance**:
	    • indices of frequency
	    • indices of severity
	    • disparities or inequities associated with the health-related event
	    • costs associated with the health-related event
	    • preventability
	    • potential clinical course in the absence of an intervention
	    • public interest
	
	  b. Participants should have considered some or all of the following when identifying methods to describe **purpose and operation**.
	    • Purpose and objectives of the system
	    • Planned used of the data from the system
	    • Health-related event under surveillance
	    • Legal authority for the data collection
	    • Where in the organization(s) does the system reside
	    • Level of integration with other systems
	    • Flow chart of the system
	    • Components of the system
	
	  c. Participants should have considered funding sources, personnel requirements and other costs such as travel, training and supplies.

SECTION 5: TASK C. FOCUS THE EVALUATION DESIGN

Total estimated time: 50 minutes
Readings: up to 10 minutes
Skill Assessment #3: 40 minutes (including a 10 minute review)

Session Type/Duration	What to Do/What to Say
Reading **10 minutes**	**Readings** Tell participants to read section 5.* *__Teaching Point:__ You may want to ask participants whether they think the evaluation design descriptions on page 18 are thorough, and if not, how they would improve them. For example, the GYTS evaluation includes only the purpose, while the NYRBSS evaluation also includes the sources used.
Activity **30 minutes**	**Skill Assessment #3** Tell participants to spend approximately 30 minutes *individually* completing task C of the evaluation process using the information they brought to class.

Group Discussion
 	
 10 Minutes
	Debrief
	 • After participants complete their work, review their responses and provide them with feedback.
	
	 • Ask for a few volunteers to present their responses to the class.
	
	 Participants should include information such as:
	
	    • purpose of the evaluation,
	    • intended users of the evaluation,
	    • what will be done with the information generated from the evaluation,
	    • the questions that will be answered by the evaluation, and
	    • the standards for assessing the performance of the system.

SECTION 6: TASK D. GATHER CREDIBLE EVIDENCE

Total estimated time: 6 hours
Readings and **Practice Exercises #3 – 10:** 2 ½ hours
Skill Assessment #4: 1 ½ hours
Skill Assessment #5: 1 ½ hours
Debrief: 30 minutes

Session Type/Duration	What to Do/What to Say
Activity **Reading** **3 hours**	**Readings (and Practice Exercises #3-10)** Tell participants to read section 6 (about 18 pages) and to complete the 8 practice exercises. **Note:** If in a classroom setting, encourage participants to find a colleague with whom to complete these practice exercises; however, since they need to read sections in their workbook before and after each exercise, they should find someone who can work through the materials at a similar pace. **You may want to ask participants to stop after completing the first 3 or 4 exercises so that you can debrief as a group.**
Activity **1 ½ hours**	**Skill Assessment #4** • Participants should spend approximately 1 ½ hours answering questions about usefulness and system attributes for the surveillance system they are planning to evaluate. • As participants complete their work, review their responses and provide them with individual feedback. (**NOTE:** Because of the time it will take to review participants' responses, it is recommended that there is at least 1 facilitator for every 5-10 participants.) *Possible answers:* 1. Participants should include information such as: *Reviewing the objectives of the surveillance system and considering the system's effect on policy decisions and disease-control programs.* 2. Participants should include information such as:

Session Type/Duration	What to Do/What to Say
	Simplicity*: amount and type of data necessary to establish that the health-related event has occurred, amount and type of other data on cases, number of organizations involved in receiving case reports, method of collecting the data, or time spent on maintaining the system.* ***Flexibility:*** *how the system has responded to a new demand, for example, adding questions to a Behavioral Risk Factor Surveillance System (BRFSS).* ***Data Quality:*** *reviewing hardcopy or electronic surveillance forms for clarity, data management, performance of screening and diagnostic tests for the health-related event, or examining the percentage of "unknown" or "blank" responses.* ***Acceptability:*** *subject or agency participation rate, interview completion rates and question refusal rates, completeness of report forms, or timeliness of data reporting.* ***Sensitivity:*** *collection of or access to data external to the system to determine the true frequency of the condition in the population under surveillance and validation of the data collected by the system.* ***Predictive Value Positive:*** *reviewing a record of the number of case investigations completed and the proportion of reported persons who actually had the health-related event under surveillance* ***Representativeness:*** *compare characteristics of reported events to all such actual events* ***Timeliness:*** *examine the speed between steps in the surveillance system.* ***Stability:*** *examining the number of unscheduled outages and down times for the system's computer; the percentage of time the system in fully operating, the desired and actual amount of time required for the system to release data, collect or receive data, or manage the data.*

Session Type/Duration	What to Do/What to Say
Activity **1 ½ hours**	**Skill Assessment #5** • Participants should spend approximately 1½ hours answering questions about usefulness and system attributes for the surveillance system they are planning to evaluate. • As participants complete their work, review their responses and provide them with individual feedback.
Group Discussion **30 minutes**	**Debrief** If time permits, ask for volunteers to share their responses with the rest of the class. *Possible answers:* 1. Participants should include information such as: ***Usefulness:*** **Conclusions:** • *Usefulness is high because it contributes to the prevention and control of arthritis.* • *Data can be useful in contributing to performance measures, including health indicators.* **Recommendations:** *No improvements in usefulness are recommended at this time.* ***Simplicity:*** **Conclusions:** *Standardization of the different components of the survey makes it easier for researchers to implement analyses and make conclusions.* **Recommendations:** *No improvements in simplicity are recommended at this time.* ***Flexibility:*** ***Conclusions:*** *This surveillance system is relatively flexible.* ***Recommendations***: *No improvements in flexibility are recommended at this time.* ***Data Quality – Validation Study 1:*** **Conclusions**: *The case definitions based on self-reported*

Session Type/Duration	What to Do/What to Say
	chronic joint symptoms and doctor-diagnosed arthritis appeared to be sensitive in identifying arthritis, but specificity for chronic joint symptoms was lower than desirable for those under age 65 years. **Recommendations**: *Doctor-diagnosed arthritis may be a better case definition for identification of arthritis.* **_Data Quality – Validation Study 2:_** **Conclusions:** *Specificity and sensitivity of self-reported doctor-diagnosed arthritis and self-reported chronic joint symptoms did not vary. However, the reliability of doctor-diagnosed arthritis was very high.* **Recommendations:** *Based on these observations the doctor-diagnosed arthritis case definition may be the better tool for identification of arthritis cases.* **_Acceptability:_** **Conclusions:** *Acceptability for the NHIS Arthritis Surveillance System is high.* **Recommendations:** *No improvements in acceptability are recommended at this time.* **_Sensitivity:_** **Conclusions:** *The doctor-diagnosed definition of arthritis appears to be more specific compared to the definition of chronic joint symptoms.* **Recommendations:** *The doctor-diagnosed arthritis case definition may be the better tool for identification of arthritis cases.* **_Predictive Value Positive (PVP):_** **Conclusions:** *The PVP is higher for doctor-diagnosed definition of arthritis compared to the definition of chronic joint symptom for those aged 45-64 years. However, the results are in the opposite direction for those aged ≥65 years.* **Recommendations:** *The doctor-diagnosed arthritis case definition may be the better tool for identification of true arthritis*

Session Type/Duration	What to Do/What to Say
	cases among those ages 45-64 years. The opposite is true for those age ≥65 years. ***Representativeness:*** **Conclusions:** *NHIS is a survey that produces arthritis estimates that represent the U.S. population.* **Recommendations:** *Use this surveillance system to generate national estimates of arthritis.* ***Timeliness:*** **Conclusions:** *Timely availability of data.* **Recommendations:** *Continue to provide timely data for analyses.* ***Stability:*** **Conclusions:** *Because of the stability of the NHIS surveillance system and the case definition of arthritis, we are able to analyze cross-sectional and trend data with confidence.* **Recommendations:** *Changes in case definition and survey methodology could hamper future analyses. Maintenance of system is imperative.*

SECTION 7: TASK E. JUSTIFY AND STATE CONCLUSIONS, AND MAKE RECOMMENDATIONS

Total estimated time: 1 hour

Readings: up to 5 minutes

Practice Exercise # 11: 15 minutes

Skill Assessment #6: 30 minutes

Debrief: 10 minutes

Session Type/Duration	What to Do/What to Say
Reading **5 minutes**	**Readings** Tell participants to read section 7 (1½ page) and to complete the practice exercise (see below)..
Activity **15 minutes**	**Practice Exercise #11** • Tell participants to complete the exercise individually or with a colleague. • Make yourself available to answer any questions and to ensure participants are completing the work. • Participants are instructed to review their answers with those in Appendix B; however, if time permits, you may review responses with the class at the end of the section (prior to Skill Assessment #6).
Activity **30 minutes**	**Skill Assessment #6** • Participants should spend approximately 30 minutes reading the conclusions and recommendations from the arthritis surveillance system evaluation and answering 2 questions. • As participants complete their work, review their responses and provide them with individual feedback.
Group Discussion	**Debrief** Ask for volunteers to share their responses with the rest of the class. *Possible answers:* o *The conclusions are primarily based on two validation studies that provide supporting evidence for the case definition that is*

Session Type/Duration	What to Do/What to Say
10 minutes	*currently used. Despite this validated case definition it is clear for those ages 45-64 years that sensitivity and specificity can still be improved. One way of improving the sensitivity would be to expand the case definition. The other recommendation is related to making other arthritis questions mandatory and annual. This would improve the stability and usefulness of these questions by providing more scientific evidence of their prevalence and change over time.* o *Arthritis has a high prevalence in the population, therefore a more specific case definition would capture a higher percentage of true positives.; this would result in a more accurate annual arthritis prevalence can be estimated.* o *CDC's arthritis program can be confident of the arthritis estimates when performing analyses, writing manuscripts, and communicating findings related to the burden of arthritis in the US.* *Arthritis Foundation, American College of Rheumatology, and Healthy People 2010/2020 can be confident about national prevalence estimates of arthritis and can use the findings from the surveillance system evaluation to provide evidence of the burden of arthritis in the US.* *State and local health departments can use the arthritis prevalence estimates to communicate to the public the burden of arthritis and use the data to help implement evidence-based interventions that target those with arthritis.* *(How can you ensure intended users take action?) Perform studies with a new arthritis case definition and provide evidence that is more sensitive and specific compared to the prior case definition.* *Convince NHIS to add these optional questions to the core component of the NHIS survey and administer these questions annually at no cost. If not possible, persuade the CDC arthritis program or other partners to help support these questions.*

SECTION 8: TASK F. ENSURE USE AND SECTION 9: CONCLUSION

Total estimated time: 75 minutes
Readings: up to 45 minutes
Group discussion: 15 minutes
Conclusion: 15 minutes

Session Type/Duration	What to Do/What to Say
Reading **45 minutes**	**Readings** Tell participants to read section 8 (1 page), section 9 (1 ½ pages), and the Field Guidelines for Evaluating a Surveillance System (22 pages).
Group Discussion **15 Minutes**	**Group Discussion** • Lead a group discussion on the field guidelines. • Make sure that participants know what should be included in the evaluation report and the presentation, and how their mentor will assess their work.

Flip chart
 	
 Group Discussion
 	
 15 Minutes
	Conclusion
	 • Show participants skill assessment #7 in their activity workbook, and explain that they will complete it after this training.
	 • Conclude the module by asking participants for key points they learned in the module. (Record on a flip chart).
	 • Ask participants what they have learned, such as:
	    1. How will you apply what you have learned today back at your job?
	
	    2. Are there any challenges you foresee in applying what you have learned today? Can you overcome these obstacles?