

Recommended Competencies, Activities, and Deliverables for Residents in FETP-Advanced Programs 28 October 2016

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Other Optional Competencies (In development)

11. Mentoring

• Mentor a field-epidemiologist-in-training

12. Leadership and Management

• Under discussion

13. Operational Research / Quality Improvement Project

• Under discussion

Forward

This document is based on discussions held in April 2012 in Atlanta among Field Epidemiology Training Program (FETP) Resident Advisors and staff of the FETP Branch. It supersedes the competencies listed in the *Field Epidemiology Training Program Standard Core Curriculum* (undated).

Broadly defined, competencies are applied epidemiology skills and knowledge that enable or are required for people to perform their jobs effectively. A set of core competencies represent the "floor" or basic collection of minimum knowledge, skills, and values needed for an entry-level specialist to practice his/her discipline [1]. For the discipline of field epidemiology, the FETP community has adopted the core competency domains of public health surveillance, field investigation in response to an acute public health problem, planned epidemiologic study to answer a public health question, and communication.

Thus the core competencies included in this document reflect the minimum list of competencies that any and every graduate of an FETP is expected to have. When a potential employer sees "FETP graduate" on an applicant's curriculum vitae, the employer should be able to assume that the applicant can perform those core functions ably and competently.

A selected number of other, optional competencies are also provided in this document. An individual FETP can include some of these optional competencies or others deemed relevant for that country.

Many subcompetencies such as software / computer skills or graphing skills are essential for the satisfactory achievement of the core competencies, but are not listed individually in this document. Neither are the domains of knowledge (epidemiologic methods, disease-specific knowledge, etc.) that are necessary for the resident to know not only how to perform a task but also why and what alternatives could be considered, nor are the personal attributes and values (work ethic, ability to work with others, etc.) needed to function effectively in a public health agency setting.

The premise behind listing a competency for a training program such as FETP is that it must be measurable. Just as universities administer exams or require submission of reports that document and are used to evaluate a student's acquisition of knowledge, FETPs must have measurable outputs or deliverables to document and evaluate a resident's achievement or mastery of the competencies. Therefore, each competency listed in this document is associated with one or more deliverables that together comprise a portfolio of field products that can be used to evaluate both the residents and the program itself. "What gets measured gets done." Proposed new competencies should be held to the same standard, i.e., for any proposed new competency, what deliverable that can be achieved during the same two-year period and that reflects mastery of the competency should be required?

Finally, competencies should be routinely reviewed and updated as science evolves, morbidity and mortality trends change, or new expectations and priorities in public health practice emerge. We welcome your input to keep the FETP competencies relevant and up-to-date.

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1. Gebbie KM. Competency-to-curriculum toolkit: developing curricula for public health workers. New York: Columbia University School of Nursing Center for Health Policy and Association of Teachers of Preventive Medicine, 2004.

Competency Topic 1

Public health surveillance data analysis and summary

Competency

Following completion of the FETP program, the resident should be able to:

1. Analyze surveillance data using descriptive epidemiologic methods and describe the surveillance system operation to characterize and interpret the occurrence and distribution of a health issue

Activities

- Characterize the operation of a public health surveillance system
- Conduct a descriptive analysis of the data collected by a public health surveillance system
- Write a surveillance summary report that includes a description of the surveillance system;
 presentation of the data using appropriate text, tables, and graphs; interpretation of the findings and discussion of the credibility of the data

Deliverable (1)

- Written surveillance summary report that includes
 - Introduction
 - Description of structure and function of the surveillance system (source, data flow, etc.)
 - Results: tables, graphs, and explanatory text that summarizes the health problem by clinical features, time, place, and person
 - Discussion: highlights of the findings, limitations of the data, interpretation given limitations, and recommendations regarding of the surveillance system

Options to Fulfill

- Focus of surveillance system can be disease / morbidity (communicable or non-communicable), syndromic, mortality (Note: vital statistics system does not qualify if mortality data are not used for surveillance purposes), exposure / risk factor, laboratory, environmental / vector / or animal surveillance
- Surveillance system can be at national, regional / provincial / state, or district level

Recommended Timeframe

During first rotation in first year

Other Considerations

- Each resident must complete the work independently. A resident can address a surveillance system that has been addressed by a previous resident in the past only if the new resident makes a new contribution, i.e., analyzes two more years of data
- Resident must share reports with the official(s) responsible for maintaining the system
- If the resident is working at the district level, the resident should assess completeness of reporting by reporting sources (clinics, hospitals, etc.) and conduct 2-3 site visits to reporting sources, including 1 poor reporting site, to discuss surveillance challenges

- Meet with resident to discuss surveillance system to be described
- Review draft of reports before they are final
- Ensure that officials responsible for the surveillance system receive a copy of the report
- Arrange time for resident to present findings to those responsible for maintaining the system

<u>Alternative Competency Topic 1</u> Public health surveillance data analysis, summary, and evaluation

Competencies

Following completion of the FETP program, the resident should be able to:

- 1a. Characterize and interpret the occurrence and distribution of a health issue by analyzing surveillance data using descriptive epidemiologic methods and description of the surveillance system operation
- 1b. Evaluate a public health surveillance system

Activities

- Characterize the operation of a public health surveillance system
- Conduct a descriptive analysis of the data collected by a public health surveillance system
- Write a surveillance summary report that includes a description of the surveillance system;
 presentation of the data using appropriate text, tables, and graphs; interpretation of the findings and discussion of the credibility of the data
- Evaluate the public health surveillance system and make recommendations for improvement, if appropriate

Deliverables (1 or 2)

- Written surveillance summary report that includes
 - Introduction
 - Description of structure and function of the surveillance system (source, data flow, etc.)
 - Results: tables, graphs, and explanatory text that summarizes the health problem by clinical features, time, place, and person
 - Discussion: highlights of the findings, limitations of the data, interpretation given limitations, and recommendations regarding of the surveillance system
- Written evaluation of surveillance system based on standard evaluation criteria with recommendations that address the system's weakness(es), either combined with above surveillance summary or as separate report

Options to Fulfill

- Focus of surveillance system can be disease / morbidity (communicable or non-communicable), syndromic, mortality (Note: vital statistics system does not qualify if mortality data are not used for surveillance purposes), exposure / risk factor, laboratory, environmental / vector / or animal surveillance
- Surveillance system can be at national, regional / provincial / state, or district level
- Surveillance system must not have been previously evaluated in past 3 years

Recommended Timeframe

During first rotation in first year

Other Considerations

- Unless otherwise specified, use guidelines published in MMWR (CDC. Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group. MMWR 2001;50(RR13):1–35.)
- Each resident must complete the work independently. A resident can address a surveillance system that has been addressed by a previous resident in the past only if the new resident makes a new contribution, i.e., analyzes two more years of data
- If at the District level, resident is encouraged to assess completeness of reporting by reporting site (e.g., clinics, hospitals, etc.) and conduct 2-3 surveillance assessment site visits, including at least 1 to a poor reporting site.
- Resident must share reports with the official(s) responsible for maintaining the system

- Meet with resident to discuss surveillance system to be described
- Review draft of reports before they are final
- Ensure that officials responsible for the surveillance system receive a copy of the report
- Arrange time for resident to present findings to those responsible for maintaining the system

Competency Topic 2

Outbreak Investigation or Field Investigation of an Acute Public Health Problem

Competency

Following completion of the FETP program, the resident should be able to:

2. Conduct a field investigation of an outbreak or other potentially serious health problem that requires a timely response

Activities

 Actively participate in at least 2 field investigations of acute health events such an outbreaks, mass environmental exposures, emergencies or disasters

Deliverables (2)

• Written report of each field investigation that includes Introduction, Methods, Results, Discussion, Recommendations, and References; copy of questionnaire or data collection tool used

Requirements

- Investigation must be in response to an acute health concern, i.e., not a planned study
- Resident must have an active role in more than one aspect of each field investigation (e.g., not only interviewing patients, not only entering data, etc.)
- Resident must go into a field setting
- · Resident must collect original data, e.g., through interviews and/or chart reviews
- Resident must commit at least 5 working days to each investigation (can include planning, data collection, data analysis, and follow-up)

Options to Fulfill

- Focus of field investigation can be
 - Outbreak or cluster of disease or injury
 - Mass environmental exposure, e.g., occupational or environmental chemical release
 - Rapid epidemiologic assessment of natural or man-made disaster
 - Rapidly initiated and conducted survey or epidemiologic study in response to MoH question regarding policies, programs, practices, or health / injury events

Recommended Timeframe

First investigation during first year, second investigation later in first year or in second year

Other Considerations

- Data can be collected in person, by telephone, self-administered questionnaire, or other method
- As much as possible, resident should participate in decision-making process
- · Recommendations should be applicable and practical

- Meet with resident before he/she departs to review objectives and strategy for the field investigation; agree on how often and when to communicate while resident is in the field
- Maintain communication while resident is in the field to be kept informed and provide guidance
- Meet with resident when he/she returns to review accomplishments and plan next steps (e.g., finish analysis, write report)
- Review and provide feedback on draft of final report

Competency Topic 3 Planned Epidemiologic Study

Competency

Following completion of the FETP program, the resident should be able to:

3. Design, write a protocol for, and conduct an epidemiologic study using analytic epidemiology principles and methods

Activities

 Design, write a protocol for, and conduct a planned study, and analyze and interpret the data from the study

Deliverables (2)

- Written study protocol
- Written final report of the study

Requirements

- Focus of study must be a public health topic of interest to the Ministry of Health
- Protocol must conform to both standard scientific and human subjects protection guidelines for a scientific research protocol
- Submitted protocol must specify question or objectives, justification, and methods (including sample size calculations, study design, data analysis plan, confidentiality measures, etc.); and must include budget, timeline, data collection instruments, and informed consent forms
- Protocol must be submitted to appropriate authorities for research / non-research determination, and
 if research, to appropriate Institutional Review Board(s) for review
- Use software to manage data
- Use analytic and laboratory methods that are appropriate for study design and sample size
- Address potential biases, confounding, and effect modification in the interpretation of results
- Final report must be in form of journal manuscript, with Introduction, Methods, Results, Discussion, References, Tables, Graphs, and Acknowledgements

Options to Fulfill

- Acceptable types of studies: observational retrospective or prospective cohort, case-control, or crosssectional; intervention study (if time and resources allow)
- Acceptable sources of data: original data collection, existing data, or combination

Recommended Timeframe

Prepare and submit proposal before end of first year, conduct project as early as possible in second year

Other Considerations

- May be used to fulfill the thesis requirement imposed by universities granting Master's degree
- If recommendations are included, they should be applicable and practical

- Resident Advisor and/or Supervisor should
 - Meet with resident to discuss topic and type of analytic study
 - Meet with resident to review proposal and analytic plan, and provide feedback
 - Review final analysis for completeness and appropriateness of interpretation
 - Review and provided feedback on draft of final report

Competency Topic 4 Oral Presentation at Scientific Conference

Competency

Following completion of the FETP program, the resident should be able to:

4. Write an abstract, then develop and deliver a brief oral presentation at a scientific conference

Activities

- Write an abstract and submit it to a scientific conference
- Prepare and deliver a 5–15 minute oral presentation at a scientific conference

Deliverables (3)

- Written scientific conference abstract
- Oral presentation at scientific conference
- Printed copy of PowerPoint (or other software package) slides

Requirements

- Presentation must be at a regional, national, or international conference with a scientific, clinical, or public health audience other than the FETP program and Ministry of Health
- Presentation must be based on an investigation, analysis, or other activity conducted by the resident as part of his/her FETP experience
- Presentation must follow standard format of Introduction, Methods, Results, Discussion, and Public Health Recommendations and/or potential implications
- Format must include Question & Answer period to answer questions not known in advance

Options to Fulfill

- Established international FETP-related conference such as TEPHINET, AFENET, EMPHNET, Americas, or Southeast Asia, or International Night at EIS Conference
- Disease-specific international conference such as International AIDS Conference, ICEID, MCH Epidemiology Conference, etc.
- Established national public health or epidemiology conference, e.g., annual meeting of country's public health association
- Annual field epidemiology conference established by FETP with invitations to FETP alumni; faculty
 and students of public health, medical, and other schools; public health officials and workers; and
 others interested or potentially interested in field epidemiology and the FETP

Recommended Timeframe

Both years

Other Considerations

If resident has previously given poster presentation during FETP, he/she should request oral
presentation when submitting abstract

- Resident Advisor and/or Supervisor should
 - Meet with resident to discuss appropriate topic(s) for abstracts
 - Provide guidance and review drafts as the resident prepares the oral presentation
 - Arrange for practice rehearsal(s) with program staff

Competency Topic 5

Poster Presentation at Scientific Conference

Competency

Following completion of the FETP program, the resident should be able to:

5. Write an abstract, then prepare, display, and discuss a poster presentation at a scientific conference

Activities

- Write an abstract and submit it to a scientific conference
- Prepare, display, and discuss a poster presentation at a scientific conference

Deliverables (3)

- Written scientific conference abstract
- Poster presentation at scientific conference
- Printed copy (handout size) of poster presentation

Requirements

- Presentation must be at a regional, national, or international conference with a scientific, clinical, or public health audience other than the FETP program and Ministry of Health
- Presentation must be based on an investigation, analysis, or other activity conducted by the resident as part of his/her FETP experience
- Presentation must follow standard format of Introduction, Methods, Results, Discussion, and public health recommendations and/or potential implications

Options to Fulfill

- Established international FETP-related conference such as TEPHINET, AFENET, EMPHNET, Americas, or Southeast Asia, or International Night at EIS Conference
- Disease-specific international conference such as International AIDS Conference, ICEID, MCH Epidemiology Conference, etc.
- Established national public health or epidemiology conference, e.g., annual meeting of country's public health association
- Annual field epidemiology conference established by FETP with invitations to FETP alumni; faculty
 and students of public health, medical, and other schools; public health officials and workers; and
 others interested or potentially interested in field epidemiology and the FETP

Recommended Timeframe

Either year

Other Considerations

• If resident has previously given oral presentation during FETP, he/she should request poster presentation when submitting abstract

- · Resident Advisor and/or Supervisor should
 - Meet with resident to discuss appropriate topic(s) for abstracts
 - Provide guidance and review drafts as the resident prepares the poster presentation

Competency Topic 6 Scientific Manuscript

Competency

Following completion of the FETP program, the resident should be able to:

6. Write and submit a scientific manuscript for a peer-reviewed journal

Activities

- Write, as first author, a scientific manuscript based on work conducted as an FETP resident, for submission to a peer-reviewed journal
- Write a cover letter appropriate to the selected journal and submit the manuscript

Deliverable

• Scientific manuscript

Requirements

- Resident must be first author, with primary responsibility for the study and having the primary role in writing the manuscript
- Manuscript must be full-length article (not brief report), using standard format of Introduction, Methods, Results, Discussion, References, Tables, Graphs, and Acknowledgements
- Manuscript must be based on an investigation, analysis, or other activity conducted by the resident as part of his/her FETP experience
- Manuscript must conform to all government, FETP, and journal requirements for clearance and coauthor approval
- Manuscript must be submitted to a peer-reviewed journal and in compliance with that journal's requirements for formatting, processing, etc.

Options to Fulfill

• Full-length manuscript for publication in a peer-reviewed journal (not brief report or MMWR article)

Recommended Timeframe

Either year (usually second year)

Other Considerations

- Although resident must be first author, manuscript can have other authors in accordance with journal guidelines (i.e., persons who contributed <u>substantially</u> to the study and writing)
- Manuscript with CDC co-author must be submitted for CDC Clearance and cleared before submission to a journal

- Resident Advisor and/or Supervisor should
 - Meet with resident to discuss appropriate topic(s) for manuscript
 - Review manuscript and provide feedback on scientific content, effective writing, and policy implications (e.g., of recommendations)`

Competency Topic 7 (Optional) Brief Epidemiologic Report

Competency

Following completion of the FETP program, the resident should be able to:

7. Write and submit a brief report of an epidemiologic investigation or analysis to an epidemiologic bulletin

Activities

 Write and submit, as first author, a brief epidemiologic report based on work conducted as an FETP resident, to a public health bulletin or peer-reviewed journal

Deliverable

• Brief epidemiologic report

Requirements

- Resident must be first author, with primary responsibility for the study and having the primary role in writing the manuscript
- Manuscript must be based on an investigation, analysis, or other activity conducted by the resident as part of his/her FETP experience
- Manuscript must conform to all government, FETP, and journal requirements for clearance and coauthor approval

Options to Fulfill

- Manuscript submitted to a public health (e.g., Ministry of Health) bulletin
- Manuscript submitted to a peer-reviewed journal as a brief report

Recommended Timeframe

Either year

Other Considerations

· Letter to the Editor does not fulfill this requirement

- Resident Advisor and/or Supervisor should
 - Meet with resident to discuss appropriate topic(s) for manuscript
 - Review manuscript and provide feedback on scientific content, effective writing, and policy implications (e.g., of recommendations)

Competency Topic 8 (Optional) Teaching

Competency

Following completion of the FETP program, the resident should be able to:

8. Provide classroom teaching of an epidemiologic topic

Activities

 Prepare and deliver at least 2 lectures (or deliver at least 1 lecture and facilitate 1 case study) on different epidemiologic topics

Deliverables (2)

- Electronic copy (copies) of the lecture(s), e.g., PowerPoint files
- Evaluation forms from the lecture audience (or summary compiled by FETP staff)

Requirements

- Lecture must be scheduled for 50 minutes or longer
- Lecture must focus on an epidemiologic topic
- Lecture must be delivered at a scheduled course for FETP residents, Ministry of Health staff, or university students; audience must include at least 8 members who are not already familiar with the material
- Resident must prepare and use PowerPoint or comparable slides
- Resident must allow and answer questions from the students either during or at the end of the lecture
- Audience must be provided with evaluation forms to grade and provide feedback to the lecturer

Options to Fulfill

- Lecture can be on an epidemiologic methods topic (e.g., measures of association, introduction to surveillance) or a relevant health topic with strong epidemiologic component (e.g., epidemiology of malaria, epidemiology of diabetes)
- Grand Rounds or long oral presentation of a resident's investigation does NOT satisfy this requirement
- Facilitating an applied epidemiology case study can substitute for one lecture but not both

Recommended Timeframe

Second year

Other Considerations

- If resident uses a pre-existing presentation, resident must add or replace at least 4 slides, for example, with more recent examples or examples from his/her own country or work
- If resident uses a pre-existing case study, resident should have at least new two locally relevant examples that illustrate teaching points in the case study

- Resident Advisor and/or Supervisor should
 - Meet with resident to discuss teaching topic(s), approach, and existing materials
 - Provide guidance and review draft(s) as the resident prepares the lectures
 - Arrange for practice rehearsal(s) with program staff, if desired
 - Attend the lectures and provide feedback

Competency Topic 9 (Optional) Surveillance System Evaluation

Competency

Following completion of the FETP program, the resident should be able to:

11. Evaluate a public health surveillance system

Activities

- Evaluate a public health surveillance system using approved guidelines
- Summarize the findings in an oral presentation and written report

Deliverables (2)

- Written report that includes
 - Introduction
 - Methods
 - Results: Description of structure and function of the surveillance system (source, data flow, etc.), usefulness, attributes, and other criteria
 - Discussion and Recommendations
- 10-minute oral presentation with time for questions and answers, evaluated by at least two objective staff epidemiologists

Options to Fulfill

- Focus of surveillance system can be disease / morbidity (communicable or non-communicable), syndromic, mortality (Note: vital statistics system does not qualify if mortality data are not used for surveillance purposes), exposure / risk factor, laboratory, environmental / vector / or animal surveillance
- Surveillance system can be at national or regional / provincial / state level
- Surveillance system must not have been previously evaluated in past 3 years

Recommended Timeframe

During first rotation in first year

Other Considerations

- Unless otherwise specified, use guidelines published in MMWR (CDC. Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group. MMWR 2001;50(RR13):1–35.)
- Each resident must complete the work independently.
- Resident must share reports with the official(s) responsible for maintaining the system

- Meet with resident to discuss surveillance system to be described
- Review draft of reports before they are final
- Ensure that officials responsible for the surveillance system receive a copy of the report
- Arrange time for resident to present findings to those responsible for maintaining the system

Competency Topic 10 (Optional) Program Evaluation

Competency

Following completion of the FETP program, the resident should be able to:

13. Design, write a protocol for, and conduct an evaluation of a public health program

Activities

- Design, write a protocol for, and conduct an evaluation of a public health program
- Summarize the findings in an oral presentation and written report

Deliverables (2)

- Written program evaluation report that includes description of the program, objectives of the evaluation, findings, limitations, and recommendations for program improvement
- Oral presentation with time for questions and answers, with the program director, field supervisor, and academic supervisor present

Options to Fulfill

- Focus of evaluation can be on program of health education / health promotion, active disease prevention (e.g., nutrition, immunization), screening, training / workforce development, etc.
- Program can be directed at individuals, institutions, environment, etc.
- Program can be at national, regional / provincial / state, or district level
- Program should not have been previously evaluated in past 3 years

Recommended Timeframe

During second year

Other Considerations

- This competency is intended to target a public health program OTHER THAN surveillance. Evaluation of a surveillance system is available as a separate competency
- Selection of program to be evaluated should be meet need of the field placement agency for program evaluation
- Report should include:
 - Introduction and description of the program
 - Objectives of the evaluation
 - Methodology
 - Results
 - Discussion, including interpretation of results and data limitations, and recommendations to improve the quality and effectiveness of the program
- Resident must share reports with the official(s) responsible for directing the system

- Meet with resident to discuss program to be described
- Review draft of reports before they are final
- Ensure that officials responsible for the program receive a copy of the report
- Arrange time for resident to present findings to those responsible for directing and, if possible, operating the system (field supervisor and academic supervisor should also be present)