Ethiopia Field Epidemiology Training Program

Manual for Field Supervisors and Mentors

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Acronym and Abbreviations

AAU-SPH	Addis Ababa University-School of Public Health
AC	Advisory Council
AFENET	African Field Epidemiology Net work
AJE	American Journal of Epidemiology
AJPH	American Journal of Public Health
BMJ	British Medical Journal
CDC	Center for Disease control and prevention
EFETP	Ethiopia Field Epidemiology Training Program
FMOH	Federal Ministry of Health
IRB	Institutional Review Board
IMMRaD	Introduction, Material, Methods, Result and Discussion
IJE	International Journal of Epidemiology
MMWR	Morbidity and Mortality Weekly Report
MoH	Ministry of Health
MRCZ	Medical research Council of Zimbabwe
PHEM	Public Health Emergency Management
TEPHINET	Training programs in Epidemiology and public health Interventions Network
WHO	World Health organization
SFELTP	South African Field Epidemiology and Laboratory Training Program

Section 1. Background

1.1 Overview of the Ethiopia Field Epidemiology Training Program

The Field Epidemiology Training Program (FETP) is an in-service training program in field epidemiology adapted from the United States Centers for Disease Control and Prevention (CDC) Epidemic Intelligence Service (EIS) program. There are several such programs in Africa, and the programs are networked through AFENET (African Field Epidemiology Network). The program is designed to assist the Ministry of Health in building or strengthening health systems by recruiting promising health workers and building their competencies through on-the-job mentorship and training. Because trainees work in active public health teams that are tackling the most serious and acute problems of the population, their work is exciting and leads to improvements in program implementation even as the trainees are learning.

Field epidemiology training resembles a traditional medical residency program because trainees spend an extended period of time practicing and developing their skills in a "hands on" manner. For this reason program trainees are referred to as "residents".

Ethiopia adopted the Field Epidemiology Training Program to help improve leadership within Public Health Emergency Management. The EFETP provides residents a Master of Public Health in Field Epidemiology after they complete two years of supervised work in applied or field epidemiology.

The Ethiopia FETP is a member of AFENET and works closely also with the Training in Epidemiology and Public Health Interventions Network (TEPHINET).

1.2 Vision, Mission, Goal and Objectives of the Program

Ethiopia adopted the Field Epidemiology Training Program to help improve leadership within Public Health Emergency Management. EFETP provides residents a Master of Public Health degree in Field Epidemiology after they complete two years of supervised work in applied or field epidemiology.

Vision: To see healthy, productive, and prosperous Ethiopians.

Mission: To train a cadre of skilled public health professionals who provide in-service assistance to advance and protect public health and contribute to evidence-based decision-making.

Goal: to strengthen the Ethiopian Public Health Emergency Management system by:

1. Improving public health event detection and response;
2. Creating a robust disease surveillance system;
3. Building capacity in field epidemiology;
4. Enhancing evidence-based decision making for public health practice; and
5. Reducing morbidity and mortality associated with priority diseases.

Objectives:

1. Build public health capacity by developing a cadre of health professionals with advanced skills in applied epidemiology and laboratory management;
2. Increase national and regional capacity to respond to public health emergencies such as outbreaks, natural disasters, and other unusual public health events including those that could be a result of chemical or biological terrorism;
3. Strengthen national surveillance systems;
4. Prepare field epidemiology residents to take part in the leadership of Public Health Emergency Management centers at national, regional, and sub-regional levels as well as other health related institutions;
5. Contribute to research activities on priority public health problems;
6. Strengthen laboratory participation in surveillance and field investigations;
7. Improve communications and networking of public health practitioners and researchers in the country and throughout the region;
8. Promote the sustainability of the EFETP; and
9. Assure active use and dissemination of public health data supported by EFETP staff and residents

1.3 Program Administration

The EFETP is owned by the MOH. The program Director is the Deputy Director General of Ethiopian Health and Nutrition Research Institute (EHNRI) and Head of PHEM Center. The program Co-Director is the Dean of Addis Ababa University School of Public Health (AAU-SPH). The Ethiopian Public Health Association (EPHA) Executive Director is the secretary of the Program. There is also a Memorandum of Understanding (MOU) between these partners to jointly administer the EFETP. The Program Coordinator is from EHNRI and the Academic Coordinator is from AAU-SPH. The EPHA provides administrative support and manages financial resources. The U.S. Centers for Disease Control and Prevention (CDC) provides technical support through Resident Advisors and financial support.

There is an Advisory Council (AC) composed of representatives from EHNRI (Co-chair), AAU-SPH (the chair of the Advisory council), the Federal Ministry of Health, the EPHA (Secretary), WHO country office, and CDC-Ethiopia. This council advises the decision making regarding the operation of the EFETP. The council also provides consultations and directions with regard to overall activities and communication with other authorities.

1.4 Field Bases

EFETP field bases have been established within the PHEM center at EHNRI and at four Regional Health Bureaus: Amhara, Oromia, SNNPR, and Tigray. These bases provide opportunities for field experience in epidemiology for the residents. Agreements have been made between the field bases and the EFETP to ensure that residents receive adequate supervision and support during their two-year program. There is regular monitoring and appraisal of these sites to determine if they are meeting the needs of the

individual residents and the broader objectives of the program. To accommodate the needs of the Regional Health Bureaus, residents may be asked to use their newly acquired skills and expertise to assist their sponsoring regions with investigations. Field bases were chosen based on population size, existence of required facilities, and field opportunities. Additional field bases may be added in the future depending on program needs.

Section 2. Overview of Supervisory Responsibilities and Expectations

2.1 Definitions and Roles of the EFETP Leadership:

There are four position types, which maintain effective leadership, guidance, and mentoring on a day-to-day basis for the EFETP:

Field Supervisors (Field Base Supervisors) are from the respective regional health bureau or EHNRI and are delegated by the office to oversee the field base activities and do routine supervision of residents assigned to their field bases.

Mentors are university faculty or individuals delegated by the university to mentor residents in attaining expected academic competencies.

Program Coordinators are from three stakeholder institutions (Ministry of Health/EHNRI, Addis Ababa University-School of Public Health, and the Ethiopian Public Health Association). Coordinators are employed or delegated by the program to do academic and administrative program coordination.

Resident Advisors are advisors from the CDC who provide technical and related support for the program, its coordinators, and the residents.

2.2 Ideal Qualities of Field Supervisors and Mentors

Field supervisors and Mentors play major roles in the professional development of residents. They are responsible for providing a supportive environment in which the resident can learn and practice public health. Field supervisors and Mentors are asked to treat residents fairly, keep an "open-door" policy, create support for operating within the rules, and establish reasonable standards for performance and conduct. Field supervisors and Mentors, in so doing, will earn the respect of the residents.

A good Field Supervisor and Mentor are asked to:

- help the resident widen his/her network of professional colleagues by introducing the resident to key persons throughout the public health system;

- project a caring interest at a variety of professional levels, including concern about resident activities, future goals, interpersonal relations with ministry or health staff, and even such "simple" matters as how to survive the bureaucracy;

- not compete with the resident for choice assignments, opportunities, projects, or authorship of scientific reports, publications and/or presentations. Residents should get full credit for their work, including being lead author on publications for which they have done the majority of work; and

- encourage presentations of the resident's work, meet regularly with the resident, allocate substantial time to supervision, and provide constructive feedback on the resident's performance.

2.3 Selection of Field Supervisors and Mentors:

It is advisable that the head of the Public Health Emergency Management centers act as the Field Supervisor for residents at field bases, as the Field Supervisor has the power to handle administrative and bureaucratic challenges that might arise during field activities and outbreak investigations. However, it is ultimately the responsibility of the regional health bureau to assign an appropriate person as a supervisor, and those who have completed similar courses are ideal.

EFETP Mentors are public health specialists with extensive experience or background in epidemiology and are university based or university affiliated. Mentors are willing to provide continuous guidance and support and are reliably available for residents. Mentors are chosen by the Program Coordinators.

2.4 Field Supervisor Responsibilities

Supervisors are critical in maintaining the success of the program and are required to:

Attend trainings and an orientation program for Mentors and supervisors: The supervisor must attend a full day orientation workshop that will be given at the national level. This occurs annually prior to the deployment of residents to their field bases. The training covers supervision; the scope of work for public health residents; technical and administrative aspects of the assignment; and standard measurable objectives and outputs.

Prepare for the resident's arrival: It is critical for supervisors to develop potential tasks and projects for the resident *prior* to their arrival (i.e. supervisors should have specific projects that can be initiated when the resident arrives on-site). A list of proposed tasks and projects, which can assist the public health authority perform its mission and simultaneously meet the EFETP requirements, should be prepared and given to residents. There also are standard assignments that all residents will be expected to do such as evaluating a data set and evaluating a surveillance system. The supervisor should prepare necessary materials so that they can be given to the resident upon the start of the program.

Conduct an orientation for the resident*:* When residents arrive for their work assignment, it is important that the field base staff and supervisor provide an orientation session. The supervisor should provide the resident all available background material about the office of assignment. The supervisor also is responsible for providing the resident with appropriate office space, a telephone, standard office supplies and equipment, and necessary administrative support. The resident should be shown the photocopier and facsimile machines, the storage area for supplies, and all other relevant aspects of the office routine. Residents should also be shown frequently used forms (e.g. case reports) and pertinent guidelines. During this tour, all other staff members should be introduced to the resident and

their functions should be explained. Staff should be notified in advance of the arrival of the resident and should be prepared to spend time with the resident if s/he has specific questions related to their area of expertise.

Provide opportunities for field investigations and access to data: Field supervisors should provide opportunities for field investigations and access to data to ensure residency outputs are of the highest quality. Field activities such as outbreak investigations and surveillance data analysis and scientific communications such as the Epidemiologic Bulletin will be provided to the Regional Health Bureau in order to link the activities of the resident to those of the Regional Health Bureau.

Arrange for substitute supervision: When Field Supervisors are unavailable, they should ensure that an alternate contact is available for residents. This substitute supervisor should be named when the resident arrives and should be included in as many supervisory roles as possible. In particular, the substitute supervisor should attend meetings to discuss the resident's performance, should share responsibility for finding training opportunities, and should assist in reviewing reports for presentation and/or publication.

Maintain regular contact and provide good communication*:* It is critical that supervisors are regularly available for the residents. Supervisors should consider:

- **Keeping an "open door policy"** where the resident is able to meet with the supervisor as needed.
- **Scheduling appointment times with the resident*.*** This works best if the supervisor is able to minimize interruptions and cancellations.
- **Planning trips with residents.** Time spent traveling is often a rich source of insight for residents, and an opportunity for them to seek input and ideas on projects in a less formal environment.
- **Delegating authority to other staff.** For some duties or tasks, the resident will receive substantial input from other staff members. However, unless it is clearly indicated by compelling circumstances, the residents should be delegated to work with, rather than under, other staff members with supervision remaining the primary role of the supervisor.

Provide and encourage training opportunities: Supervisors should encourage residents to undertake other activities that will complement their professional development including:

- participating in training opportunities offered through PHEM or in the MoH;
- presenting work at seminars;
- providing opportunities to attend meetings.

Evaluate the performance of the resident: Ongoing evaluation is a critical component to the EFETP. See Section 4 for a more complete description of the evaluation requirements but, in brief, the Field Supervisor is required to:

Every month monitor the monthly reports from the residents: Throughout the training program, residents are expected to provide the EFETP with a monthly report of their activities. These reports should be brief and in the format that succinctly highlights their activities. The supervisor should read the report and meet with the resident to discuss progress and problems. Supervisors must ensure the resident is using the report template provided in Appendix 1 and that the reports are being submitted to the Program Coordinators, the Resident Advisors and the Mentor.

Every year complete the detailed performance evaluation: Upon completion of each residency (usually around April of the Gregorian Calendar) the Field Supervisor shall complete a Detailed Performance Evaluation. After the Supervisor completes the Evaluation the document shall be reviewed and signed by the resident and the resident's Mentor. Lastly the document shall be forwarded to the Program Coordinators and the Resident Advisors who will review and sign. See Appendix 1 for the Detailed Performance Evaluation and signatory sheets for the resident, Mentor, and Program Coordinators.

2.5 Mentor Responsibilities

As the field epidemiology training program is a competency based, "learning by doing" training model, the role of Mentors is vital. Mentors act as role models for the residents and help them become independent learners with confidence and focus. Each FETP resident is assigned a personal mentor, who provides guidance and support throughout field trainings. Mentors can have more than one resident depending on availability.

Mentor Activities and Responsibilities. Mentors will be involved from the beginning of the field residency and assist with all outputs beyond the epidemiologic projects. Mentors should:

Participate in an annual orientation. Mentors will participate in a full day mandatory orientation together with residents and Field Supervisors at the beginning of each year (usually around January of the Gregorian Calendar each year).

Sign a mentorship contract agreement. Mentors need to be committed to the mentorship and will be financially compensated per a contractual agreement. Mentors should regularly report to Academic Coordinators and failure to abide by mentorship agreements will result in termination of the contract. Mentors who are unable to continue with the program should notify the Program Coordinators in writing.

Provide technical and methodological support during the planning and implementation of field investigations.

Comment and evaluate the resident's outputs. Mentors should provide prompt feedback and critical evaluation on all assignments, proposals, reports, and presentations – especially if residents are not meeting program expectations. Continuous communication is mandatory, and mentors should plan to use face to face communications, meetings, e-mail, telephone calls and onsite supervision.

Every quarter make field evaluations. Mentors are encouraged to make quarterly field site evaluations of residents at their field bases and assist with supervisory roles. Field visits can be coordinated with the Program Coordinators and costs will be covered by the program.

Every year complete the Detailed Performance Evaluation. Upon completion of each residency (usually around April of the Gregorian Calendar) a Detailed Performance Evaluation (see Appendix 1) will be initiated by the Field Supervisor who will complete Part 1 Section A -General Work Quality and Section B - Evaluation Summary after which this will be reviewed with the resident who will complete Part 2. After Part 2 is completed, the Field Supervisor will forward the document to the Program Coordinators and the Resident Advisors who will complete Part 3, after which it will be forwarded to the Mentor who will complete Part 4 Section C - Detailed Performance Evaluation of Outputs and Evaluation of Six Core Competencies.

At the conclusion of the FETP assist in the final evaluation process and complete a final Detailed Performance Evaluation and review and comment on the compiled Body of Works.

Submit reports to the Program Coordinators and Resident Advisors. Program Coordinators and Resident Advisors should receive copies of pertinent and significant communications that the Mentor has with residents including final editions of all outputs.

Assist in the development of abstracts and manuscripts. The Mentor should help the resident prepare all abstracts and at least one article for publication in a peer-reviewed journal or in a Ministry of Health periodical. The Mentor must be conversant with the review and clearance procedures for publications and should instruct the resident on these protocols. Mentors should also assist in the development and approval of the final 'Body of Work'.

Attend EFETP presentations and seminars and accompany the resident during defense of final project.

2.6 Summary of Resident Activities and Supervisor/Mentor Responsibilities

The following table provides a concise summary of core resident learning activities and Field Supervisor and Mentor responsibilities. A more detailed description of the activities and responsibilities is provided after the table in section 3 below.

Resident Activity	Field Supervisor's/Mentor's Responsibility
Residents must conduct at least two outbreak or emergency epidemiologic investigations as the primary investigator. Examples include: • Epidemic or outbreak investigation • Unusual cluster or case • Response to a toxic chemical or contaminated product • Disaster response • Surveillance of refugees	*Before resident goes to the field,* ***mainly Field Supervisor:*** 1. Confirm the activity meets the requirements of an emergency epidemiologic investigation and ensure the Field Supervisor's Office approves the project. 2. Confirm the resident's role and responsibilities in the investigation and determine who the local administrative contact will be. 3. Review the necessary preparations for initiating the investigation. *During the field investigation,* ***mainly Field Supervisor:*** 4. Review plan for collecting and analyzing data 5. Ensure there is a plan for protecting confidential information. 6. Review questionnaires or other documents. 7. Review data. 8. Review the analysis and conclusions. *If it is determined at this point that an analytic study is needed, complete steps 4-8 again for the analytic study.* *After the investigation,* ***mainly Mentor:*** 9. Assist resident in identifying appropriate references. 10. Review recommendations. 11. Ensure resident completes appropriate reports. 12. Assist resident in identifying the need for possible additional investigations. 13. Consider opportunities for publications.

Resident Activity	Field Supervisor's/Mentor's Responsibility
Residents must conduct at least one surveillance evaluation	***Mainly Field Supervisor:*** 1. Assist resident in identifying an appropriate surveillance evaluation project in consultation with the Coordinators and Resident Advisors. ***Mainly Mentor:*** 2. Review written proposal. 3. Review feasibility of proposed project. 4. Review plan of action and timeline. 5. Assist in securing support and funding (if needed). 6. Assist in developing plan for documenting project activities. 7. Review analysis of data. 8. Assist in identifying appropriate references. 9. Review recommendations including implementation plan and/or continuation of surveillance activities.
Residents must conduct at least one field study	***Mainly Mentor:*** 1. Assist in selecting an appropriate topic for field study in consultation with the Coordinators and Resident Advisors. 2. Review written proposal. 3. Assist in identifying appropriate reference literature. 4. Review plan of action and timeline. 5. Assist in securing support and funding (if needed). 6. Review plan for collecting and analyzing data. 7. Review questionnaires or other documents. 8. Review data. 9. Review analysis and conclusions. 10. Review recommendations for action.

Resident Activity	Field Supervisor's/Mentor's Responsibility
Residents must conduct at least one health profile assessment	***Mainly Field Supervisor:*** 1. Assist resident in identifying appropriate projects in consultation with the Coordinators and Resident Advisors. ***Mainly Mentor:*** 2. Review written proposal. 3. Review feasibility of the proposed project. 4. Review plan of action and timeline. 5. Assist in securing support and funding (if needed) 6. Assist with plan for documenting project activities. 7. Review data analysis 8. Assist resident with identifying references. 9. Review recommendations.
Resident should perform surveillance analyses on a regular basis	***Mainly Field Supervisor:*** 1. Ensure resident is regularly collecting and reviewing surveillance data and attending weekly surveillance meetings. ***Mainly Mentor:*** 2. Assist resident in identifying patterns in disease occurrence by time-place-person or trends in disease activity.
Resident must make a presentation in at least one seminar and one conference	***Mainly Mentor:*** 1. Assist resident in selecting presentation topics 2. Review content and format before the presentation. 3. Assist resident with rehearsal of the presentations.
Resident must produce at least one manuscript	***Mainly Mentor:*** 1. Assist resident in selecting an appropriate topic for manuscript development. 2. Assist in identifying appropriate journals for submission. 3. Review outline for the manuscript. 4. Review resident's selection of public health literature to support background, discussion, recommendations and conclusions. 5. Review all draft and final manuscripts.

Section 3. Details of Supervisor & Mentor Responsibilities

3.1 Responsibilities for Outbreak or Emergency Epidemiologic Investigations

Supervisors and Mentors should review and work with residents on the following items prior to, during, and after a field investigation.

Before the resident goes to the field it is mainly the responsibility of the Field Supervisor to:

1. Confirm the activity meets the requirements of an emergency epidemiologic investigation and ensure the Field Supervisor's Office approves of the project. Examples of appropriate investigations include:

   Outbreak investigations such as:
   - A report of an unusual or newly emerging disease
   - A report of an excess number of cases of a notifiable disease
   - Review of surveillance data that shows an excess number of cases of a given disease in a population for a specific time period and geographic region

   Emergency investigations such as:
   - Cancer clusters or other environmental investigations
   - Disasters (floods, cyclones, etc.)
   - Occupational outbreaks

2. Confirm roles and responsibilities in the investigation and determine who the local administrative contact will be. It is important to clearly delineate the resident's role in the investigation, identify local administrative contacts, and clarify the involvement of local staff, police, community members and other possible partners.

3. Review preparations for initiating the emergency investigation. Supervisors should give the resident an opportunity to make preparations for the emergency investigation and review those preparations prior to departure. Residents should be connected with local resources such as libraries, networks, and other experts. The following is a list of important questions to consider:
   - Does the resident have adequate information about the type of disease or emergency to be investigated?
     - Has the resident researched other outbreaks or emergencies of a similar nature?
     - Does the resident have resource materials related to the disease or emergency that would be useful in the investigation (e.g. textbooks or review articles, content from the Control of Communicable Diseases Manual, guidelines from the MoH/EHNRI or Regional Health Bureaus)

- Does the resident have adequate supplies and equipment for the investigation such as:
    - Computer with appropriate software
    - Protective clothing
    - Office supplies
    - Maps of the area, including electronic copies for analysis
    - Sample collection supplies suitable for the type of investigation
- Have the necessary travel arrangements been arranged including accommodations and meals?
- Have the methods been clearly defined? (e.g. identifying risk factors for illness, identifying the source of illness, developing methods to prevent new cases and control the outbreak, developing methods to measure vaccine effectiveness.)

During the field investigation it is mainly the responsibility of the Field Supervisor to:

4. Review the plan for collecting and analyzing data and ensure there is a plan for protecting confidential information. Some important questions to consider regarding data collection and analysis:
    - Does the plan for collecting data address confidentiality? Is there a need for review by the Ethical Committee, Institutional Review Board (IRB) or other human subject committees?
    - Has the resident considered the number of cases that may be discovered and interviewed?
    - During an outbreak investigation:
        - What plan does the resident have to identify other cases in the community?
        - What case definition is the resident using to identify cases? Is it too broad or too narrow?
        - Does the case definition include the following four criteria: person, place, time, and clinical?
        - Does the resident present a coherent hypothesis that adequately explains the distribution of the cases by time, place, and person?
    - Will other persons be involved in collecting data? If so, has the resident planned for hiring and training these additional persons? Generally with a case-control study it is preferable that one person collects all the data or, alternatively if an assistant is required, that assistant does not collect the entire data set for the control or study group; bias can be introduced if one person collects all data for controls and another collects all data for cases.
    - Has the resident adequately estimated the time needed to cover the area and number of persons to be interviewed and the transportation required?
    - Will more than one person be involved in entering data? If so, has the resident planned training for these additional persons?
    - Does the resident need to prepare a study protocol or an interviewer manual?

- If it appears that the investigation will develop into a case-control or cohort study, has the resident used an appropriate sample design and planned for an appropriate analysis?
- Will the resident be solely responsible for analyzing data or will others be involved?
- Has the resident created table shells (aka “dummy tables”) to ensure that the necessary data will be collected correctly?

5. Review questionnaires or other documents the resident prepares, and consider whether the resident has:
   - Included the requisite descriptive data? (e.g., date of onset, age, sex)
   - Reviewed related questionnaires or documents used in similar investigations?
   - Included typical questions used for such investigations?
   - Included questions that relate to the hypothesis?
   - Avoided using awkward or leading questions?
   - Used open and closed-ended questions properly? (e.g. are there so many open-ended questions that it would be difficult to conduct the analysis? Are closed-ended questions too limiting?)
   - Included scales that are appropriate?
   - Pilot tested the questionnaire?
   - Prepared the data entry screens in Epi Info (or other software) correctly and has included logic checks and range checks?

6. Review a sample of questionnaires or other data collection instruments after data has been collected. Preferably, supervisors will have contact with residents in the field and review data as it is being collected. If there are concerns, the study protocol can be modified before the completion of the investigation. Some questions to consider:
   - Have the questionnaires been prepared correctly and completely? If not, is there an explanation for missing data?
   - Is there consistency or inconsistencies between questionnaires?
   - Is there any indication that the data are inconsistent with expected results?

7. Review the data analysis and consider the following questions:
   - Is the dataset “clean?”
   - Has the resident done a univariate and bivariate analysis of all the variables and corrected data as appropriate?
   - Did the resident analyze the appropriate risk factors?
   - Are the variables appropriately coded and grouped?
   - Have the measures of association and other tests been conducted appropriately?
   - Is the analytic approach appropriate for the study design? (e.g. matched analysis for a matched case-control study.)
   - Has the resident identified the limitations of their study and discussed the potential effect of these limitations on their results?

8. Review conclusions drawn from the data.
    - Are the resident's conclusions and interpretations consistent with the findings?
    - Were the conclusions biologically plausible?
    - Do the conclusions address the objectives of the investigation or the study?

Note: Steps 4-8 below apply to an outbreak investigation, and, if at the completion of step 8, it is determined that an analytic study is required, repeat steps 4-8 for the analytic study.

After the field investigation it is mainly the responsibility of the Mentor to:

9. Assist the resident in identifying appropriate references to support the conclusions and recommendations. Mentors should recommend relevant journals such as:

    - Emerging Infectious Diseases, MMWR, WHO Bulletin (available from the internet)
    - Ethiopian Journal of Health and Development, Ethiopian Medical Journal, Central African Medical Journal, East African Medical Journal, Tropical Doctor, American Journal of Epidemiology (AJE), International Journal of Epidemiology (IJE), American Journal of Public Health (AJPH), British Medical Journal (BMJ), Lancet, Journal of the American Medical Association (JAMA), New England Journal of Medicine, Journal of Health and Population in Developing Countries, and other specialty journals (e.g., occupational or environmental health journals).
    - Internet Based: Emerging Infectious Diseases, MMWR, WHO
    - Local and Regional: Ethiopian Journal of Health and Development, Ethiopian Medical Journal, Central African Medical Journal, East African Medical Journal, Journal of Health and Population in Developing Countries, additional African journals found at: *indexmedicus.afro.who.int/**Journals**/Indexj.htm*
    - Specific to Epi: American Journal of Epidemiology (AJE), International Journal of Epidemiology (IJE), American Journal of Public Health (AJPH), additional Epi journals found: *http://www.jhsph.edu/_archive/2009.11.24_epi/EpiJournals.html, http://ip-science.thomsonreuters.com/cgi-bin/jrnlst/jlresults.cgi?PC=MASTER&Word=Epidemiology*
    - Clinical: British Medical Journal (BMJ), Lancet, Journal of the American Medical Association (JAMA), New England Journal of Medicine, Tropical Doctor, Tropical Medicine and International Health, American Journal of Tropical Medicine and Hygiene, International Journal of Tropical Medicine and Public Health
    - Other specialty journals (e.g., occupational or environmental health journals)

10. Review recommendations for public health action. Here are some questions to consider:
    - Are the recommendations consistent with the findings of the investigation?
    - Are the resident's recommendations feasible in terms of cost, time, and available resources
    - Are the resident's recommendations specific enough so that action can be taken?

11. Ensure the resident completes appropriate reports. The resident should complete a report for all projects and use the templates provided in this manual. Additionally, the resident are also be asked to complete reports requested by the EHNRI or RHBs.

12. Assist the resident in identifying the need to conduct further studies or additional activities based on the findings of the investigation. For example, it may be beneficial to conduct further studies to find the source of an outbreak, develop follow-up surveillance activities, correct problems with an immunization program, or modify a public health procedure.

13. Determine whether the resident may be able to use the investigation and results to develop a manuscript or presentation. Note Appendix 2: Standard Operating Procedures (SOP) for Wider Distribution of Residents' Works (abstracts, presentations, manuscripts, and other documents).

3.2 Responsibilities for Surveillance Evaluations

Field supervisors should review and work with residents on the following items prior to, during, and after a surveillance evaluation.

1. Assist the resident in identifying an appropriate surveillance evaluation project, in consultation with the Coordinators and Resident Advisors which:
    - addresses a disease or condition that is a priority for the public health authority;
    - is of direct use to existing public health programs; and
    - is of great importance so that there will be sufficient commitment to take action on the results of the project.

Mentors should review and work with residents on the following items prior to, during, and after a surveillance evaluation.

2. Review the resident's written proposal. In addition to addressing the questions above, the evaluation should:
    - potentially result in the modification or improvement of a surveillance system or encourage important public health action;
    - be completed with available or potential resources;

- follow established principles and purposes of public health surveillance as recommended by the CDC and WHO.

3. Review the feasibility of the proposed surveillance evaluation project and consider the following questions:
   - Will the resident have enough time to complete the project?
   - How much time will it take you, as the supervisor, to complete the evaluation?
   - How much work is the project going to require of others?
   - How many health department resources will it require?
   - Will the health department take action based on the findings?

4. Review the resident's plan of action and timeline for conducting the project and consider the following questions:
   - Has the resident outlined a plan that addresses the successive stages of the project (Gantt Chart)?
   - Has the resident noted the resources required to complete the project?
   - Has the resident allowed a reasonable length of time to complete each stage of the project?

5. Assist the resident in developing an approach to document project activities. With the resident, develop a timeline for preparing and submitting documents to the supervisor and Mentor. Ensure the timeline contains the following elements:
   - the proposal,
   - data analysis,
   - draft report including recommendations, and
   - a final report.

6. Review the resident's analysis of data and consider the following:
   - Is the dataset "clean?"
   - Are the variables appropriately coded and grouped?
   - Has the resident summarized the data correctly (e.g. used rates appropriately?)
   - Do the graphs and tables describe the data effectively?

7. Assist the resident in identifying appropriate references to support the conclusions and recommendations. Mentors should recommend relevant journals (see above).

8. Review the recommendations for public health action and consider the following questions:
   - Do the recommendations address the objectives of the proposal?
   - Are the recommendations consistent with the findings of the investigation?
   - Are the resident's recommendations feasible in terms of cost, time, and available resources?

- Are the resident's recommendations specific enough so that action can be taken?
- Is the health department capable of performing and implementing these recommendations?

3.3 Responsibilities for Field Study and Epidemiologic Projects

Mentors should:

1. Assist the resident in selecting an appropriate topic, in consultation with the Coordinators and Resident Advisors, which should meet the following criteria:
   - be a high priority public health topic.
   - focus on preventable morbidity and mortality.
   - be of direct use to existing or proposed public health programs.
   - are of great enough importance to generate commitment to take action on the results of the project.

   If the project does not meet these criteria then supervisors should assist the resident in revising the project so that each of the criteria is met.

2. Review the proposal and consider its feasibility by answering the following questions:
   - Will the resident have enough time to complete the project?
   - How much time will it take you, as the supervisor, to complete the evaluation?
   - How much work is the project going to require of others?
   - How many health department resources will it require?
   - Will the health department take action based on the findings?

3. Assist the resident in conducting a literature review to assist with the epidemiologic study. Supervisors should recommend relevant journals (see above). The literature review can help identify gaps in knowledge about a particular public health problem and can help clarify the objectives. It can also assist with identifying risk factors and developing appropriate questions for the questionnaires and survey instruments.

4. Review the resident's plan of action and timeline for the project and consider the following questions:
   - Has the resident outlined a plan that addresses the successive stages of the project (Gantt Chart)?
   - Has the resident noted or found the resources required to complete the project?
   - Has the resident allowed a reasonable length of time to complete each stage of the project?

5. Review resident's plan for collecting and analyzing data and consider these questions:

- Does the plan address the need to protect confidentiality or other sensitive information? (i.e. Is the IRB or other human subject review required?)
- Has the resident considered the number of persons to be interviewed?
- Will other persons be involved in collecting data? If so, has the resident planned for training these additional persons?
- Has the resident adequately estimated the time needed to cover the area and number of persons to be interviewed and the transportation required?
- Will more than one person be involved in entering data? If so, has the resident planned for training of these additional persons?
- Should the resident prepare a study protocol or interviewer manual?
- Has the resident planned an analysis that matches the study design?
- Has the resident used an appropriate sample design?
- Is the case definition appropriate? (e.g. Is it too broad or too narrow?)
- Does the case definition include person, place, time, and clinical characteristics?

6. Review questionnaires and other documents prepared by the resident and consider whether the resident has:
   - Included typical questions used for such investigations?
   - Included the requisite descriptive data? (e.g., date of onset, age, sex)
   - Reviewed related questionnaires or documents used in similar investigations?
   - Included questions that relate to the hypothesis?
   - Avoided awkward or leading questions?
   - Used open and closed-ended questions properly? (e.g. Are there so many open-ended questions that it would be difficult to conduct the analysis? Are closed-ended questions too limiting?)
   - Included scales that are appropriate?
   - Pilot tested the questionnaire?
   - Prepared the data entry screens in Epi Info (or other software) correctly and included logic checks and range checks?

7. Review a sample of questionnaires or other data collection instruments after data has been collected. Preferably, supervisors will have contact with residents in the field and review data as it is being collected. If there are concerns, the study protocol can be modified before the completion of the investigation. Some other questions to consider:
   - Have the questionnaires been prepared correctly and completely? If not, is there an explanation for missing data?
   - Is there consistency between questionnaires?
   - Is there any indication that the data are inconsistent with expected results?

8. Review the data analysis and consider these questions:
   - Is the dataset clean?
   - If appropriate, has the resident done a univariate and bivariate analysis of all the variables and corrected data as appropriate?

- Did the resident analyze the appropriate risk factors?
- Are the variables appropriately coded and grouped?
- Have tests, such as measures of association, been appropriately conducted?
- Is the analytic approach appropriate for the study design? (e.g. matched analysis for a matched case-control study)
- Has the resident identified the limitations of their study and the potential effect of these limitations on their results?

9. Review resident's conclusions drawn based on analysis of data and consider:
   - Are the resident's conclusions and interpretation consistent with the findings?
   - Were the conclusions biologically plausible?
   - Do the conclusions relate back to and address the objectives of the investigation?

10. Assist the resident in conducting a literature review to assist with the epidemiologic study. Mentors should recommend relevant journals (see above).

11. Review the recommendations for public health action and consider the following questions:
   - Do the recommendations address the objectives of the proposal?
   - Are the recommendations consistent with the findings of the investigation?
   - Are the resident's recommendations feasible in terms of cost, time, and available resources?
   - Are the resident's recommendations specific enough so that action can be taken?
   - Is the health department capable of performing and implementing these recommendations?

3.4 Responsibilities for Health Profile Assessment:

Field supervisors should review and work with residents on the following items prior to, during, and after a health profile assessment:

1. Assist the resident in identifying an appropriate management problem or public health program for evaluation in consultation with the Coordinators and Resident Advisors. These analyses or evaluations should meet the following criteria:
   - focus on preventable morbidity and mortality.
   - be a high priority public health topic.
   - be of direct use to existing or proposed public health programs.
   - are of great enough importance to generate commitment to take action on the results of the project.

   If the project does not meet these criteria then supervisors should assist the resident in revising the project so that each of the criteria is met.

Mentors should review and work with residents on the following items prior to, during, and after a health profile assessment:

2. Review the resident's written proposal. In addition to addressing the questions above, the evaluation should:

- potentially result in the modification or improvement of a surveillance system or encourage important public health action;
- be completed with available or potential resources;
- follow established principles and purposes of public health surveillance as recommended by the CDC and WHO.

3. Review the proposal and consider its feasibility by answering the following questions:

- Will the resident have enough time to complete the project?
- How much time will it take you, as the supervisor, to complete the evaluation?
- How much work is the project going to require of others?
- How many health department resources will it require?
- Will the health department take action based on the findings?

4. Review the resident's plan of action and timeline for the project and consider the following questions:

- Has the resident outlined a plan that addresses the successive stages of the project (Gantt Chart)?
- Has the resident noted or found the resources required to complete the project?
- Has the resident allowed a reasonable length of time to complete each stage of the project?

5. Assist in securing support and funding (if needed).

6. With the resident, develop a timeline for preparing and submitting documents to the supervisor and Mentor. Ensure the timeline contains the following elements:

- the proposal,
- data analysis,
- draft report including recommendations, and
- a final report.

7. Review the data analysis and consider these questions:

- Is the dataset clean?
- If appropriate, has the resident done a univariate and bivariate analysis of all the variables and corrected data as appropriate?
- Did the resident analyze the appropriate risk factors?
- Are the variables appropriately coded and grouped?
- Have tests, such as measures of association, been appropriately conducted?

- Is the analytic approach appropriate for the study design? (e.g. matched analysis for a matched case-control study)
- Has the resident identified the limitations of their study and the potential effect of these limitations on their results?

8. Assist the resident in conducting a literature review to assist with the evaluation. Mentors should recommend relevant journals (see above).

9.Review the recommendations for public health action and consider the following questions:

- Do the recommendations address the objectives of the proposal?
- Are the recommendations consistent with the findings of the investigation?
- Are the resident's recommendations feasible in terms of cost, time, and available resources?
- Are the resident's recommendations specific enough so that action can be taken?
- Is the health department capable of performing and implementing these recommendations?

3.5 Responsibilities for Surveillance Analysis

Field supervisors should review and work with residents on the following items prior to, during, and after a surveillance analysis:

1. Ensure the resident is regularly collecting and reviewing surveillance data and attending weekly surveillance meetings. Supervisors should work with the resident so that he or she understands:
   - How to assist the regular program in collecting data;
   - Which sources of surveillance data are to be reviewed;
   - How often to review surveillance data, and
   - For what purpose the data is to be reviewed.

Mentors should review and work with residents on the following items prior to, during, and after a surveillance analysis:

2. Assist the resident in identifying and understanding patterns of disease. Supervisors should help residents:
   - Understand trends in disease activity based on the analysis of surveillance data;
   - Identify priority diseases to be reviewed frequently for outbreak and/or trend data.
   - Interpret the patterns of disease with regard to long and short-term trends of disease, by place and person
   - Identify existing problems or issues that require epidemiologic investigation or public health action.

- Identify thresholds for disease outbreaks when data suggest that a threshold has been exceeded.
- Compare current reporting to expected levels or projections.

When conducting a more comprehensive analysis of surveillance data, review residents' time-place-person analysis of surveillance data and assist the resident in developing hypotheses and analytic studies from the analysis. Some questions to consider:

- Does the time-place-person analysis use proper rates, case definitions, geographic and time displays?
- Do the hypotheses put forth by the resident explain the observed patterns in the data
- Doe the conclusions appear logical and are consistent with the data?
- Is it practical to initiate an analytic study to test the hypotheses developed from these data?

3.6 Responsibilities for Seminar and Conference Presentations

Mentors should review and work with residents on the following items prior to, during, and after a presentation:

Well designed and implemented studies provide excellent material for presentations. Residents are required to make at least one conference and one seminar presentation. Presentations are typically timed, and the resident usually will participate in a question and answer session after the presentation. Mentors should refer to the Oral Presentation Guide in the Resources Section in Appendix 4 to assist in the development of the presentation. Mentors also should:

1. Assist the resident in selecting an appropriate topic for presentation. Consider the following questions:
   - Is the topic appropriate for the venue in which it will be presented?
   - What time is allowed for each presenter?
   - Does the topic add value to the discussion?

2. Review the resident's content and format before the presentation and consider these questions:
   - Does the resident provide an introduction that states what s/he will tell the audience?
   - Does the introduction identify the problem and its significance?
   - Are there results presented for every *material and method* section presented
   - Does the resident have a focus in the discussion?
   - Do the recommendations and conclusions relate back to the problem or the objectives?
   - Does the conclusion describe the public health importance of the results?
   - Should this be an IMMRaD or SOCO-type presentation?

The IMMRaD format for a presentation includes an (I)ntroduction, a (M)aterials and (M)ethods section, a (R)esults section, (a)nd the (D)iscussion. This format is the same as that used in writing manuscripts and focuses on building the presentation so that the audience receives the information in a logical order until a final conclusion is reached in the discussion. See the Manuscript section for more information on the IMMRaD format.

SOCO stands for (S)ingle (O)verriding (C)ommunication (O)bjective. This type of presentation begins (and concludes) with one communication objective for the audience to retain from the presentation.

The IMMRaD type of presentation may be required for certain types of scientific conferences and seminars. The SOCO type presentation may be used for persuasive presentations or when an audience is most concerned with understanding what the content means to them in simplest terms. Some audiences that might be appropriate for a SOCO presentation include the media, community members, and decision-makers.

3. Provide the resident with an opportunity to practice and receive feedback prior to a formal presentation. It is preferable to have a panel of peers or experts present for the presentation. It is important to know how much time the resident is allowed for the presentation and to take note of the length of the resident's presentation during the practice session. Consider these questions:
   - Are there additional materials that the resident needs to prepare?
   - Does the resident's presentation fit into the time allowed?
   - If this is a seminar, what is the resident's responsibility? Is the resident expected to lead or moderate any part of the seminar?

3.7 Responsibilities for Manuscript Preparation and Submission

Mentors should review and work with residents on the following items prior to, during, and after a manuscript preparation and submission. Note Appendix 2: Standard Operating Procedures (SOP) for Wider Distribution of Residents' Works (abstracts, presentations, manuscripts, and other documents).

1. Assist the resident in selecting a topic for a manuscript and identifying an appropriate journal for publication. Consider whether:
   - The results of the study are significant?
   - The journal is peer-reviewed and if it is appropriate for the content of the study?
   - The outline addresses the organizational requirements of the selected journal?

Be aware that it is not appropriate to submit the same manuscript to more than one journal at a time. The resident should prioritize the journals to which s/he would like to submit the manuscript. Only if the manuscript has been rejected from the first choice for submission should the manuscript be submitted to another journal. There is a list of biomedical peer-reviewed literature available at the web site of the World Association of Medical Editors (www.wame.org).

2. Review the resident's outline and consider whether it includes all the components of the IMMRaD format:

   Introduction
   - What is the problem?
   - Why is it important?
   - What is already known?
   - What question is the manuscript answering?

   Materials and **M**ethods
   - How is the investigation going to answer the question?

   Results
   - What did we find?

   Discussion of Recommendations
   - What do the results (findings) mean?

3. Review the resident's selection of public health literature to support the background, discussion, recommendations and conclusions.

   Determine whether the resident has done a literature search to determine if similar papers have been previously published and determine if the resident has searched back in the public health literature for an appropriate period of time. How far back the resident should search the public health literature depends on the topic. If the disease or event is a fairly common one then the resident may only need to search back one year. For disease or events that occur rarely, the resident may need to search back as many as 20 years.

   Recommend journals appropriate to the disease or emergency that the resident was investigating (see above).

4. Review resident's draft manuscript. Note Appendix 2: Standard Operating Procedures (SOP) for Wider Distribution of Residents' Works (abstracts, presentations, manuscripts, and other documents).

5. Provide the resident with the criteria that you will be using to review their manuscript *before* the resident begins writing. This will help the resident address these issues as s/he develops the manuscript. Supervisors should refer to the Manuscript Guidelines found in the Resources Section in Appendix 4 to help guide the resident.

6. Review the resident's final manuscript. The supervisor should plan to meet with the resident and review the "instructions to authors" provided by the journal to make sure that the journal's directions have been followed properly. Something as simple as forgetting to double-space the manuscript may cause it to be rejected by the journal.

Section 4: Guide to Evaluating the Resident Performance

Ongoing evaluation is a critical component to the EFETP. The Field Supervisor and Mentor are required to continuously monitor the progress of the resident and are to regularly complete standardized evaluation forms. The evaluation forms should be completed and a copy forwarded to the Program Coordinators and Resident Advisors and to the resident. The evaluation forms used by the EFETP include:

- Monthly activity reports from the EFETP resident (see form in Appendix 1);
- Quarterly reports for the Core Activities for Learning, which are completed by the Program Coordinators (see form in Appendix 1);
- Annual Detailed Performance Evaluation from the Field Supervisors and Mentors signed by Residents, Program Coordinators and Resident Advisors;
- Final reports at the conclusion of the EFETP from the Field Supervisor and Mentor (see forms in Appendix 2).

4.1 Monthly Resident Reports.

Throughout the training program, residents are expected to provide the EFETP with a monthly report of their activities. Monthly reports are to be sent by email to the Academic, EHNRI, and EPHA coordinators, Resident Advisors, the Supervisor and Mentor by the 7th day of the following month. Residents should use the template for monthly reporting found in Appendix 1. There also is an example of how a monthly report is written found at the end of Appendix 1. If a resident is unable to submit by the 7th due to fieldwork or investigation the report must be submitted as soon as possible thereafter. If a report is not submitted by the deadline for any other reason a formal explanation for the delay must be submitted to the Coordinators, Resident Advisors and Field Supervisor for consideration. The Field Supervisor should read the report and meet with residents to discuss progress and problems.

4.2 Quarterly Checklist for Core Activities for Learning (CALS)

Every quarter the Program Coordinators should complete the checklist for Core Activities for Learning (CALS), which is provided in Appendix 1. The form must be completed electronically and forwarded to the resident, the Field Supervisor, the Mentor and Resident Advisors. The CALS checklist includes the resident's quarterly evaluation of their Mentor including a detailed evaluation of the Mentor's responsibilities including availability and timeliness of communications with the resident (including email, telephone, and face to face).

4.3 Annual Detailed Performance Evaluation and Core Competencies:

Upon completion of each residency (usually in or close to April of the Gregorian Calendar) a Detailed Performance Evaluation (see Appendix 1) will be initiated by the Field Supervisor who will complete Part 1, after which it will be reviewed with the resident who will complete Part 2. After Part 2 is completed, the Field Supervisor will forward the document to the Program Coordinators and the Resident Advisors who will complete Part 3, after which it will be forwarded to the Mentor who will complete Part 4: the Detailed Performance Evaluation of Outputs and Six Core Competencies.

Upon completion of the EFETP each resident is expected to have developed six technical core competencies related to epidemiology, public health, and communications. Mentors will assess each of these six technical core competencies using a standardized evaluation tool upon the completion of each residency which will occur approximately in May each year. (see forms in Appendix 1) Mentors have the primary responsibility in ensuring that residents fulfill these program objectives. Mentors should hold periodic meetings with residents to discuss progress, and the supervisor must intervene if problems arise. Mentors also will assess the skills related to professionalism and management using another standardized supporting supervision tool.

On an annual basis, upon the completion of each residency, the Mentor should ensure that the resident is progressing. The Mentor should (1) assess progress in developing the six core competencies; (2) identify strengths and areas for improvement; and (3) provide feedback and develop a personal work plan.

The Mentor should review the acquisition of core competencies with the resident and complete the core competency checklist form found in Appendix 1. The Mentor should explain the concept of supportive supervision to the resident so that s/he understands that this process is designed to facilitate learning and acquisition of core competencies. A pleasant environment – without assigning blame – will allow confidential interactions and facilitate the discussions.

Each of the six core competencies contains a number of elements (See form in Appendix 1). For each area, the Mentor can determine the status of the acquisition of skills and knowledge using a five level scale. The Mentor should use these criteria to determine and rate the resident's acquisition of skills and competencies using this rating system:

Level	Explanation	Criteria to use
1.No acquisition	The resident has not been exposed to the topic	▪ N/A
2. Theoretical exposure	The resident has been exposed to this topic during the teaching but has not yet documented mastery of the concept	▪ Attendance / completion of the relevant course / module
3. Theoretical acquisition	The resident has been exposed to this topic during	▪ Attendance / completion of the relevant course /

	the teaching and masters the concept from a theoretical point of view.	module ▪ Exam passed / credit earned for the specific subject [1]
4.Some practical exposure	The resident has been exposed to this topic during the teaching and masters the concept. Resident has had experience putting this competency into practice in the field during an outbreak, surveillance work or project.	▪ Attendance / completion of the relevant course / module ▪ Exam passed / credit earned for the specific subject 1 ▪ Documented use of the competency in practice
5.Competency acquired	The resident has been exposed to this topic during the teaching, masters the concept, has put this competency into practice, and has delivered a product that documents the acquisition of the competency.	▪ Attendance / completion of the relevant course / module ▪ Exam passed / credit earned for the specific subject 1 ▪ Documented use of the competency in practice ▪ Evidence of appropriate use of the competency in a document (e.g., report or in a protocol).

There is a guide to assist in scoring the checklist form for the six core competencies found in Appendix 1, which provides very specific instructions for each core competency. If the resident and Mentor are unclear about the acquisition of skills in a given area, they should refer to the specific question found in that guide to better determine the residents score. This guide can help facilitate the standardization of the process and increase the quality of the evaluations conducted by Mentors.

The Mentor also should ask the resident for documentation that supports the level of acquisition of the competency (e.g., documentation of credit earned or completion of a project that required the competency).

Once the checklist has been completed, the resident examines it and provides comments and suggestions. The resident and the Mentor should reach a consensus about the progress, as the assessment will provide the basis for the analysis that will lead to a personal work plan.

[1]Theoretical acquisition can also be documented during the supervision interaction through rapid problem-based case studies (e.g., calculate an odds ratio from a 2 x 2 table, provide a sample size estimation etc.) or through successful completion of a post-course evaluation questionnaire (See Appendix).

4.4 Final Evaluations for the EFETP residents:

Field Supervisors and Mentors will participate in the final evaluations of residents by:

- Conducting a final assessment (Part of Marks for Residency I, Residency II, Project I and Project II)
- Reviewing and commenting on the compiled Body of Works

Section 5. Appendices

Appendix 1: Regular Reporting Forms and Resident Evaluation Forms

Appendix 2:Standard Operating Procedures for Wider Distribution of Residents' Works

Appendix 3: Scope of Work for Coordinators and Resident Advisors

Appendix 4: Reference Guidelines for FETP Resident Outputs

Appendix 1: Regular Reporting Forms and Resident Evaluation Forms

- Monthly Reporting Form for Residents
- Quarterly Checklist Form for Core Activities for Learning (CALS) for Coordinators
- Annual Detailed Performance Evaluation of Outputs and Core Competencies
    - Part 1 General Work Quality & Evaluation Summary for Field Supervisors
    - Part 2 Resident Review Form
    - Part 3 Program Coordinator/Resident Advisor Review Form
    - Part 4 Evaluation of Outputs and Core Competencies for Mentors
        - Detailed Performance Evaluation of Outputs
        - Annual Checklist Form for the Six Technical Core Competencies
        - Guide to Assist in Scoring the Checklist Form for the Six Core Competencies

EFETP Resident Monthly Activity Report Form

From (Resident's Name):

Email to: Field Supervisor, Mentor, Coordinators and Resident Advisor

Month/Year:
(due 7th of the month on GC (e.g. March/Megabit report due April 7th /29 Megabit)

Cohort: Field Site:

1. **Administrative Matters**
   - Comment on administrative issues relevant to program (computer, supplies, logistics, equipment needs, etc.)

2. **Field investigations**
   - Summarize all field investigations and activities that were started this month in the table below. Also write a short paragraph stating methods, results, conclusions, action taken, and recommendations for each investigation (no more than 15 lines).

Start Date	Disease or Event	Location	Estimated # Cases/Deaths	Etiology Identified?	Impact/Outcome of Investigation

3. **Surveillance Activities**
   - Summarize activities related to epidemiological surveillance; surveillance data analysis or surveillance system evaluation that were started this month. Also write a short paragraph stating methods, results, conclusions, action taken, and recommendations for each (no more than 15 lines).

Title	Month/Year Final Report	Location	Brief Results : Key Outcome	Impact of Analysis/Report

4. **Briefings, Presentations or Communications**
   - Briefings given to supervisors or higher officials; include topics
   - Seminars or presentations given to Bureau colleagues or others
   - Presentations at Conferences
   - Communication with public, journalists, media or community and answering public inquiries (write a paragraph below with details)

Date	Name of Conference or Meeting	Location	Oral or Poster	Topic of Presentation

5. **Training or teaching activities undertaken**
   - Please attach content, if you developed teaching materials

Title or Type of Training	Audience and Location	# Trainees	Date(s):	Length of Training (Days)	Key Outcomes /Learning Objectives

6. **Trainings attended:**

7. **Development of Epi Project Proposals /Protocol-based studies**

Study Title	Month/Year Final Report	Impact/Outcome of Analysis/Report

8. **Publications/ Manuscripts or abstracts written**

Citation[i]	Dates Submitted/ Published (Month/Year)

9. Any other activities that you would like to report

NB: The document should be saved as a Word Document using this following naming format: Residentname.Fieldsite.MonthYear.doc
Example: Boulanger.EHNRI.Meskerem2003.doc

At the end of the report, provide the following summary information in a table.
Summary Report

New Activities Performed in the month	Quantity	Status of the output	Remark

Example of the EFETP Resident Monthly Activity Report

From (Resident's Name): Lucy Boulanger

Email to: Field Supervisor, Mentor, Coordinators and Resident Advisors

Month/Year: Megabit2004 (EC)

Date: April 7

Cohort: Cohort 3

Field Site: EHNRI

1. Administrative Matters

- Payment of per diem for field investigation delayed due to finance office miscommunication

2. Field investigations

- Megabit1-5, investigated acute watery diarrhea (AWD) outbreak in W. Arsi Zone, Oromia Region; identified 150 cases, no deaths; created a line-list; no laboratory confirmation performed; conducted case-control study with 75 cases and controls. Analytic results suggested contaminated water as source. Distributed WuAgar and soap; recommended latrine improvements. Report written and submitted to Region and EFETP
- Megabit14-18 investigated malaria outbreak in West Wollega Zone, Oromia Region, no cases occurred after team's arrival; obtained line-list of 35 cases from district officials; CoArtem distributed; descriptive epidemiology only. Epi-curve showed sharp peak on Meskerem 17 but declined to 0 by the 18th.

Start Date	Disease or Event	Location	Estimated # Cases/Deaths	Etiology Identified?	Impact/Outcome of Investigation
Megabit1-5	AWD Outbreak	W. Arsi Zone, Oromia Region	150 cases, no deaths	No	Distributed WuAgar and soap; recommended latrine improvements
Megabit14-18	Malaria Outbreak	West Wollega Zone, Oromia Region	35 cases, no deaths	malaria	CoArtem distributed

22/2/11 GC	Outbreak of Acute Watery Diarrhea in a Rural Area of Y Zone	Village X, Zone Y	234, no deaths	Yes-Cholera	Etiologic agent identified; control measures put in place (closed affected well, delivered health education messages to village residents, chlorinated other water sources); cases decreased within one week

3. Surveillance Activities

- Megabit19-20, assisted Metu Zone with analyzing malaria data for past 2 years. Had outbreak reported from last month that was detected late. They wanted help recognizing outbreaks earlier. Visited 5 health centers to evaluate reporting system and identify problems. Report submitted to Regional Health Bureau PHEM focal person and EFETP program

Title	Month/Year Final Report	Location	Brief Results : Key Outcome	Impact of Analysis/Report
Evaluation of Malaria Surveillance System	Megabit2004	Metu Zone	The timeliness and completeness of reporting and data quality were found to be the weak system attributes. An evaluation report with specific recommendations to improve these attributes was submitted to NHB.	Based on recommendations the RHB piloted a new SMS based reporting system in the Metu Zone and began reimbursements for personal mobile phones used by HEWs for reporting if reports sent in timely manner.
Evaluation of National Tuberculosis Program Surveillance System	June 2011	FMOH/EHNRI	Timeliness of reporting and data quality were found to be the weakest system attributes. An evaluation report with specific recommendations to improve these attributes was submitted to NTP.	Based on findings and recommendations, NTP will pilot a new electronic reporting system in one province in an effort to improve timeliness of reporting and data quality

4. Briefings, Presentations or Communications

- Briefed the Regional IDSR focal person on the AWD outbreak
- Made presentation to Regional PHEM staff about the epidemiology of the AWD outbreak
- Conducted awareness raising and sensitization of kebele officials during the AWD outbreak

Date	Name of Conference or Meeting	Location	Oral or Poster	Topic of Presentation
03/12/2012	EMPHNET Conference	Sharm el Shiekh, Egypt	Oral	Prevalence of HIV/AIDS among Prisoners in District B, Country Y, 2009-2010

5. Training or teaching activities undertaken

Title or Type of Training	Audience and Location	# Trainees	Date(s):	Length of Training (Days)	Key Outcomes /Learning Objectives
Use of WHO Malaria Surveillance Guidelines	Zonal and district health officials in Shewa Zone	28	Megabit21-24	2 days	Taught health officials how to use surveillance guidelines for improved reporting
Rapid Response Team Training	District and Provincial Rapid Response Teams in Shewa Zone	44	Mar 3-8, 2012	5 days	Participants learned the fundamental principles of conducting a coordinated response to a public health event. Each team developed a response plan for a health event of their choosing.

6. Trainings attended: Megabit29, attended 1 Day WHO sponsored H1N1 Training at Oromia Regional Health Bureau Meskerem 30, literature review for background about measles vaccination practices.

7. Development of Epi Project Proposals /Protocol-based studies

Study Title	Month/Year Final Report	Impact/Outcome of Analysis/Report
Epidemiological Study of Breast Cancer in Ethiopia, 2009-2011	March 2012	This national-level study showed breast cancer affects younger women than has been reported in other countries. This has important implications for re-targeting screening and health education efforts to a younger population of women.

8. Publications/ Manuscripts or abstracts written

Citation	Date Published (Month/Year)
Adamu A, Alemayehu A, Zegeye A. Cholera outbreak in a rural community. N Engl J Med. 2012 Mar 20; 354(16):1698-705	March 2012
Boulanger L. Increased Transmission and Outbreaks of Measles, Ethiopia, 2011. ET Epi Bull. 2012 Mar 25; 1(1): 3-4	March 2012

9. Any other activities that you would like to report

- Megabit25-28, worked with a team of 10 MOH/PHEM staff to establish and equip a quarantine facility at Bole Airport to screen for potential H1N1 infected incoming passengers; collected questionnaires from 5,000 passengers, 1 presented with clinical symptoms of infection, lab test negative, patient returned to Nigeria; worked as on-site physician for 10 nights

All the files within the folders should include key words of the title of the output, first name of resident and version date (Month (in letters) – date – year)

e.g. AWDZewayAdamuAFebruary-24-2012

AnthraxAdigratZegeyeHMJanuary-12-2012

MeaslesDillaAlemayehuBOctober-11-2011

At the end of the report, provide the following summary information in a table.
Summary Report

New Activities Performed in the month	Quantity	Status of the output	Remark
Field Activities	3	1 final, 2 in process	
Surveillance Activities	1	1 in process	
Presentations	2	2 final	

Checklist of Core Activities for Learning (CALS)

This checklist is to be completed by the Program Coordinators quarterly. The form must be completed electronically and forwarded to: the EFETP resident, the Field Supervisor, the Mentor and the Resident Advisors.

Field Base:

Coordinator Name: Resident Name:

Date of Report: Dates for field placement:

Weeks already spent in the field: Weeks remaining in the field:

Core Activities for Learning (CALS)	Activity/Product	Yes	No	Comment
1. SURVEILLANCE: Design, implement, or evaluate a public health/ laboratory surveillance system	Topic chosen			
	Draft approved by Field supervisor and send to Field Coordinator			
	Local presentation of findings			
	Oral presentation to EFETP			
	Manuscript report approved by Resident Advisors			
2. DATA ANALYSIS Conduct and interpret an epidemiologic analysis of an existing data set	Topic chosen			
	Plan/Protocol approved by Resident Advisors/Academic Coordinator			
	Data collected			
	Local presentation of findings			
	Manuscript/report approved by Advisor/Academic Coordinator			

Core Activities for Learning (CALS)	Activity/Product	Yes	No	Comment
3.OUTBREAK INVESTIGATION Conduct an investigation of a serious public health problem that requires a rapid response	Field Investigation			
	Local presentation of findings			
	Manuscript approved by Field supervisor and Field Coordinator			
4. RESEARCH Design and conduct a protocol based study to assess a health problem of public health importance	Topic chosen			
	Study Protocol approved by Advisor/Academic Coordinator			
	Data collected			
	Local presentation of findings			
	Manuscript/report approved by Advisor/Academic Coordinator			
	Finalize research report and submit to UP			
5. DISASTER SITUATIONS VISITED	What was the situation visited? Data collected? Was the report made?			
6. CONDUCT HEALTH PROFILE DESCRIPTION AND PLANNING OF AN ADMINISTRATIVE LOCALITY: REGION/ZONE/DISTRICT	Data collected			
	Report submitted/			
	Feedback given			

Core Activities for Learning (CALS)	Activity/Product	Yes	No	Comment
7. ORAL SCIENTIFIC PRESENTATION Give an oral presentation at a national or an international scientific conference	EFETP seminar - Prepare and write up presentation for review - Do supervised dry-run presentations - Deliver presentation			
	National/ International conferences - Prepare and write up presentation for review - Do supervised dry-run presentations - Deliver presentation			
8. SCIENTIFIC WRITING a. Write a scientific manuscript for a peer reviewed journal	Abstract			
	1st draft			
	Final version			
b. Write a report for publication in an epidemiology bulletin	Abstract			
	1st draft			
	Final version			
9. COMPUTER USE	Set up database			
	Use graphic software to prepare presentations			
	Use word processor to prepare scientific documents and reports			
	Attend health team meetings and take minutes of meeting			
10. PUBLIC HEALTH LABORATORY ATTACHMENT	Exposure to Public lab. Settings?			
	What lessons were learnt?			
	Was there any report?			
11. TEACHING/TRAINING	Mentor other public health personnel			
	Submit summary report on teaching activities			

Core Activities for Learning (CALS)	Activity/Product	Yes	No	Comment
12. LOG BOOK	Do log entries follow the guidelines?			
	Has the log book been reviewed by Field Supervisor?			
13. ADMINISTRATIVE FINANCIAL ISSUES	Laptop computers provided			
	CDMA apparatus given			
	SIM card provided			
	Transportation and CDMA allowances sent			
	Per diem sent on time as per the request made by the Field Supervisor			
	Fuel and related expenses sent			
	Stationery sent to the field base			
	Other field base materials fulfilled			

14. RESIDENT'S EVALUATION OF MENTOR	Mentor responds to email/phone communications in a timely manner (ie: 1-2 weeks)			
	Mentor provides time for face to face meetings to review work if requested?			
	Mentor provides constructive criticism of resident's work?			
	Mentor has visited resident at field base?			
	Mentor has provided professional advice about publication of resident's work?			

Comments of the Program Coordinator on the overall performance of the resident:

Recommendations/Corrective measures made by the Program Coordinator:

Detailed Performance Evaluation Forms: Parts 1-4

This form is to be completed annually by Field Supervisors (Part I); residents (Part 2); Program Coordinators and Resident Advisors (Part 3); and Mentors (Part 4).

Part 1: Evaluation of the Quality of Work by the Field Supervisor **To be completed by the Field Supervisor upon completion of each residency**	
Name of Resident:	Evaluation Period: From:_____To: _____
Field Site:	Name of Supervisor:
	Signature of Supervisor:
If others have provided supervision, list any who have contributed to this evaluation:	_____ _____

1. QUANTITY OF WORK
   A. Consistently produces less than is expected.
   B. Sometimes falls below productivity levels.
   C. Meets standards consistently.
   D. Usually exceeds standards of productivity.
   E. Exceptionally productive; accomplishes far more than is expected.

2. PUNCTUALITY OF WORK
   A. Regularly misses deadlines.
   B. Is sometimes behind schedule.
   C. Is almost always on time with assigned work.
   D. Can be relied upon to meet all deadlines and is sometimes ahead of schedule.
   E. Is exceptionally prompt and usually ahead of schedule.

3. INITIATIVE, CREATIVITY, AND JUDGMENT
   A. Often fails to take obviously necessary actions or takes wrong ones.
   B. Sometimes fails to take steps that would solve or head off usual problems.
   C. Deals effectively with usual problems and challenges.
   D. Moves creatively to meet program objectives and solve somewhat unusual problems.
   E. Routinely recognizes and solves unusual problems.

4. COMMITMENT TO PROGRAM GOALS
   A. Seems exclusively concerned with own convenience, welfare, and advancement to detriment of program.
   B. Too often puts personal concerns ahead of program.
   C. Is generally able to balance personal and program concerns.
   D. Has worked out a relationship between personal and work responsibilities which allows a satisfactory resolution of almost all conflicts.
   E. Has achieved such an integration of personal and program interests that conflicts rarely arise.

5. ABILITY TO WORK WITH OTHERS
   A. Is not effective when work requires cooperative efforts.
   B. Performance is sometimes impaired if it requires working with others.
   C. Satisfactorily achieves objectives when working with others is required.
   D. Is able to cooperate with others in a manner that helps produce better work than any one member of the group could produce.
   E. Works with others in ways which maximize the contributions of each person and consistently produces excellent results.

6. ABILITY TO EXPRESS SELF VERBALLY AND IN WRITING
   A. Often does not get the desired response even to routine material because the message is not understood.
   B. Failure to communicate clearly sometimes causes problems.
   C. Communication failures rarely cause problems.
   D. Gets message across even when material is complex.
   E. Expresses complex and controversial material in such a lucid and persuasive way that achievement of objectives is materially aided.

7. PLANNING AND ORGANIZATION
   A. Needs continual supervision to determine priorities, resource needs, and time to be allotted for even routine tasks.
   B. Sometimes is lax in determining and adhering to priorities, available resources, and schedules.
   C. Sets and adheres to priorities, available resources, and schedules under most circumstances.
   D. Skilled planner and organizer. Grasps problems well and works out overall and detailed solutions.
   E. Exceptional skills in planning and organizing. Anticipates subtle and difficult issues and deploys resources imaginatively.

8. RESPONSE TO CRISIS
   A. During crises, performance is ineffective.
   B. During crises, performance is somewhat less effective than at other times.
   C. Performance during crises is as effective as at other times.
   D. Rises to the occasion during crises.
   E. Emerges as a superior performer and leader during crises.

9. ABILITY TO SOLVE PROBLEMS
   A. Often asks questions or presents solutions that evidence a lack of understanding of routine matters.
   B. Sometimes asks questions or presents solutions which complicate the management of routine problems.
   C. Almost always evidences understanding of routine and many more complex matters.
   D. Usually understands and presents good solutions to new and particularly difficult problems.
   E. Is a person to whom others look to for creative and thorough analyses of the most difficult problems.

10. PROFESSIONAL SKILLS IN PRESENT ACTIVITY
   A. Cannot be trusted in situations when professional judgment is required.
   B. Sometimes makes professional judgments that are not supportable.
   C Consistently makes professional judgments that are supportable and appropriate.
   D. Is looked to by others for professional advice.
   E. Is recognized by people outside his/her program as an expert in the application of professional skills.

11. SUPERVISORY SKILLS
   A. Frequently causes problems which require intervention.
   B. Sometimes makes supervisory decisions which complicate management problems.
   C. Handles most supervisory problems without difficulty.
   D. Resolves problems and improves employee's performance.
   E. Solves even difficult problems and gets the most out of even deficient employees.
   F. Resident has no supervisory responsibility.

12. GROWTH IN SKILLS DURING RATING PERIOD
   A. Performance has deteriorated.
   B. Has shown little, if any, improvement.
   C. Showed steady growth.
   D. Progressed more rapidly than most of his/her peers.
   E. Showed much more growth than almost all his/her peers.

13. RESPONSIVENESS TO SUPERVISION
   A. Usually rejects supervisory guidance without considering its merits.
   B. Sometimes rejects supervisory guidance without considering its merits.
   C. Usually considers supervisory guidance carefully and is able to apply it.
   D. Works with supervisory guidance constructively.
   E. Knows when to seek supervisory guidance and is highly creative in implementing recommendations.

14. OVERALL JOB PERFORMANCE
    A. Inadequate. This resident is a hindrance rather than an asset.
    B. Marginal. This resident is sometimes less effective than can be expected.
    C. Competent. This resident is fully effective in performing his/her job.
    D. Well above average. This resident has made a significant contribution and has enhanced the position he/she holds.
    E. Exceptional. This resident's performance is far better than can be reasonably expected and has brought credit on the resident and the program.

Evaluation Summary	(to be completed by Supervisor)
Number of "A" responses	
Number of "B" responses	
Number of "C" responses	
Number of "D" responses	
Number of "E" responses	

16. Does this resident have any limitations not identified above which might hinder his/her effectiveness?

17. Does this resident have any strengths not identified above which might enhance his/her effectiveness?

18. Other comments:

Part 2: Resident Signature Page
19. I have read this evaluation, discussed it and retained a copy. A. I concur with this evaluation. B. I disagree with this evaluation in the following ways:
Signature of resident: Date:

Part 3: Coordinator/Resident Advisor Signature Page

20. I have read this evaluation and had an opportunity to discuss it.

A. I concur with this evaluation in all respects.

B. Although this evaluation is reasonable, this supervisor is a somewhat more demanding rater than most.

C. Although this evaluation is reasonable, this supervisor is a somewhat less demanding rater than most.

D. I disagree with this evaluation in the following ways:

21. PROGRAM COORDINATOR/RESIDENT ADVISOR'S ASSESSMENT OF OVERALL JOB PERFORMANCE

A. Inadequate. This resident is a hindrance rather than an asset.

B. Marginal. This resident is sometimes less effective than can be reasonably expected.

C. Competent. This resident is fully effective in performing his/her job.

D. Well above average. This resident has made a significant contribution and has enhanced the position he/she holds.

E. Exceptional. This resident's performance is far better than can be reasonably expected and has brought credit to the resident and the program.

Comments:

Signature of Program Coordinator/Resident Advisor:

Date:

Part 4: Detailed Performance Evaluation of Outputs for Mentors (to be Completed by the Mentor Upon Completion of Each Residency)	
Name of Resident:	Evaluation Period: From:_____To: _____
Field Site:	Name of Mentor:
	Signature of Mentor:
If others have provided supervision, list any who have contributed to this evaluation:	_____ _____

Review the required activities listed below, which the resident completed during the evaluation period and calculate a point value based on the criteria of each activity.

Scoring Guidelines

A. Regularly produces work that does not meet standards of quality.
B. Occasionally produces work, which does not meet standards.
C. Produces work that consistently meets standards.
D. Produces above average work.
E. Produces exceptional work. Resident is seen as a model for others.

Resident Activity	**Criteria**	**Score**
Investigations of epidemiologic emergencies	1. The activity fulfills the requirements of an epidemiologic emergency The resident: 2. Knew what was required of him/her during the investigation and who is responsible for various elements of the investigation 3. Completed his own preparations for the emergency investigation 4. Brought adequate supplies and equipment for the investigation 5. Had a plan for data collection 6. Planned for training of additional personnel 7. Was responsible for analyzing data? 8. Created table shells for use in analysis 9. Correctly prepared the surveys 10. Completed a univariate and bivariate analysis of all the variables and corrected the data appropriately 11. Made conclusions and interpretations of data that are consistent with the results 12. Made recommendations that are consistent with and generated by the findings of the investigation 13. Completed the reports appropriately	**Comments:**

Resident Activity	Criteria	Score
Surveillance data analysis	The resident: 1. Organized the data 2. Entered the data into a system for analysis 3. Identified and interpreted patterns of data 4. Compared the current report with expected level and projections **each week** 5. The analysis of time-place-person uses appropriate formats, case definitions, graphics for interpretation 6. Established an hypothesis based on the observed patterns that is logical and consistent with the patterns in the data	**Comments:**

Surveillance project	1. The project contains the potential for resulting in modifications or improvements in the surveillance system, or in important actions in public health The resident: 2. Took into consideration the resource requirements for completing the project 3. Cleaned the data before analysis 4. Used appropriate public health literature to support his 5. Made recommendations which were connected to the findings and addressed the objective of the project 6. Made recommendations that are consistent with and generated by the results of the project	**Comments:**
Epidemiologic project	The resident: 1. Selected an appropriate theme 2. Used appropriate public health literature to support his recommendations 3. Completed each phase of the project in a reasonable amount of time 4. Was the one responsible for analysis or participated in the analysis with others 5. Created dummy tables before data collection to ensure the collection of all required data 6. Developed an appropriate survey for the project's goal 7. Conducted a pilot of the survey 8. Correctly prepared data entry screens for entering data into Epi-Info (or other software) 9. Included checks for logic and range 10. Appropriately analyzed risk factors 11. Formed conclusions and interpretations that are consistent with the results 12. Made specific recommendations that are consistent with or generated by the results of the project	**Comments:**

Reports and protocols	The resident: 1. Completed all reporting requirements for the public health activities during the evaluation period 2. Used the required format of the organization requesting the investigation 3. Included the impact on the public (e.g. those who are reviewing the protocol) in the investigation protocol	**Comments:**
Seminars and conference presentations	The resident: 1. Selected an appropriate theme for the presentation 2. Provided an introduction which establishes what the audience will hear 3. Included an introduction which identifies the problem and its significance 4. Included all the elements for the selected type of presentation (informative, persuasive, etc.) 5. Included a result for each method presented 6. Made a discussion point for each result 7. Included in the discussion recommendations and conclusions which related to the problems and objectives 8. In the conclusion, described the importance of the results to public health	**Comments** **:**
Manuscripts	The resident: 1. Selected an appropriate theme for the development of a manuscript, after conducting a literature review 2. Spent enough time on a literature search of the theme 3. Included all the components of the IMMRD format 4. Covered the required organizational structure for the periodical of submission 5. Prepared an abstract which summarizes the key information of the article	**Comments** **:**
Report of activities in surveillance and response	The resident: 1. Provided a report at least monthly 2. Developed a complete and thorough document and accurately recorded his activities	**Comments** **:**

Six Technical Core Competencies Form

Resident Name: Mentor Name:

(1) Biostatistics and Epidemiology						
Resident is to master bio-statistics and epidemiology to be able to formulate recommendations on a protocol or study report. The resident should be competent with:	1.No skills	2.Theoretical exposure	3.Theoretical acquisition	4.Practical exposure	5.Competency acquired	Comments, including documentation available or documentation to be sought
Measures of central tendency and dispersion						
Sampling methodology, including sample size estimation						
Design of studies (surveys, case control, cohorts)						
Measures of disease frequency (incidence, prevalence) and association (prevalence ratio, odds ratios and relative risks)						
Statistical testing and confidence intervals						
Standardization, stratification, bias, confounding, effect modification and matching						
Measures of impact						
Presentation of data in tables, graphs and maps						
Sensitivity, specificity and predictive values (positive and negative)						
Causality criteria						
Number of critical reviews of literature articles	*Number of reviews:*					

Resident Name: Mentor Name:

(2) Health information systems/surveillance						
Resident is to manage all aspects of health information systems including:	1.No Skills	2.Theoretical exposure	3.Theoretical acquisition	4. Practical exposure	5.Competency acquired	Comments, including documentation available or documentation to be sought
Routine management of a surveillance system						
Analysis of surveillance data						
Evaluation of a surveillance system						
Completion of surveillance project with delivery of satisfactory report	*Yes _____*			*No _____*		

(3) Outbreak investigation and response						
Resident is to lead effective responses to outbreaks, including:	1.No Skills	2.Theoretical exposure	3.Theoretical acquisition	4.Practical exposure	5.Competency acquired	Comments, including documentation available or documentation to be sought
Investigation of the source of infection						
Management sample collection, transport, biosafety; make test requests and interpret laboratory results						
Formulation of evidence-based recommendations for prevention and control						
Communication with stakeholders (e.g., decision-makers, political leaders, public and the media)						
Number of outbreaks investigated with final report produced and cleared by state and NIE supervisors	*Number of outbreaks:*					

Resident Name: Mentor Name:

(4) Epidemiologic Investigations						
Resident is to manage all aspects of an epidemiologic investigation or study including:	1.No Skills	2.Theoretical exposure	3.Theoretical acquisition	4.ractical exposure	5.Competency acquired	Comments, including documentation available or documentation to be sought
Framing research question(s) based upon public health needs and available evidence						
Writing a study protocol describing a design adapted to the research question(s)						
Designing and pilot testing data collection instruments, including questionnaires						
Collecting and analyzing data using computer tools and quality assurance measures						
Completion of special dissertation project and delivery of satisfactory report cleared by supervisors	*Yes* _____ *No* _____					

(5) Oral and poster scientific presentations						
Resident should be able to deliver a short oral scientific presentation and consider preparing a poster compatible with international scientific meetings, including:	1.No Skills	2.Theoretical exposure	3.Theoretical acquisition	4. practical exposure	5.Competency acquired	Comments, including documentation available or documentation to be sought
Writing an abstract						
Preparing an outline of talk						
Preparing a poster						
Giving a presentation						
Number of presentations given in international-level conferences	Number of presentations:					

Resident Name: Mentor Name:

(6) Scientific writing						
Resident should write a scientific manuscript of less than 3000 words using the IMRD structure with a maximum of five tables and or figures and of a quality allowing publication in an international peer-reviewed journal. Residents should:	1.No Skills	2.Theoretical exposure	3.Theoretical acquisition	4. practical exposure	5.Competency acquired	Comments, including documentation available or documentation to be sought
Write a high-level outline for the manuscript						
Produce a first draft of the manuscript						
Submit the manuscript to a peer-reviewed journal						
Obtain acceptance of the manuscript						
Number of manuscripts accepted for publication in a journal indexed in Medline or in the FETP bulletin	Number of papers:					

Guide to Assist in Scoring the Checklist Form for the Six Core Competencies

This guide provides detailed information to help in scoring the Six Core Competency Checklist.

1. Bio-statistics and epidemiology				
	Criteria to use			
1.Competencies	**2.Theoretical exposure: *Find out* if lecture was attended**	**3.Theoretical acquisition: *Test* knowledge**	**4.Some practical exposure: *Ask* for field experience**	**5.Competency acquired: *Look for* written evidence of the competency in reports**
Measures of central tendency and dispersion	▪ Lecture(s) attended	▪ Knowledge of the difference between a mean and a median ▪ Knowledge of the circumstances during which a mean or a median should be used	▪ Experience of calculation of measures of central tendency calculated in field assignments	▪ Evidence of appropriate measures of central tendency calculated correctly in field reports
Sampling methodology, including sample size estimation	▪ Lecture(s) attended	▪ Knowledge of the definitions of random, systematic and cluster samples ▪ Knowledge of the pros and cons of random, systematic and cluster samples ▪ Knowledge of the parameters that influence on the calculation of a sample size ▪ Knowledge of the methods available to calculate a sample size	▪ Experience with the design of at least one sample in field assignments ▪ Experience with the calculation of at least one sample size in field assignments	▪ Evidence of the use of a sample designed appropriately in one of the field reports. ▪ Evidence of a calculation of sample size done appropriately in one of the field reports.
Design of studies (surveys, case control, cohorts)	▪ Lecture(s) attended	▪ Knowledge of the definition of surveys, case control and cohort studies ▪ Knowledge of the circumstances that lead to choose between a case-control and a cohort study designs	▪ Experience with the design of a survey, a case control study or a cohort study during field assignments	▪ Evidence of a survey, a case control study or a cohort study chosen appropriately and designed correctly in one of the field reports

1. Bio-statistics and epidemiology				
1.Competencies	**Criteria to use**			
	2.Theoretical exposure: ***Find out*** **if lecture was attended**	**3.Theoretical acquisition:** ***Test*** **knowledge**	**4.Some practical exposure:** ***Ask*** **for field experience**	**5.Competency acquired:** ***Look for*** **written evidence of the competency in reports**
Measures of disease frequency (incidence, prevalence) and association (prevalence ratio, odds ratios and relative risks)	▪ Lecture(s) attended	▪ Knowledge of the definitions of incidence and prevalence ▪ Knowledge of the measures of association that are adapted to each study designs ▪ Knowledge of the formulas for odds ratio, risk ratio and prevalence ratio	▪ Experience with calculation of prevalence during field assignments ▪ Experience with calculation of incidence during field assignments ▪ Experience with the calculation of a measure of association during field assignments	▪ Incidence and prevalence calculated appropriately and correctly in field reports ▪ Evidence of at least one measure of association calculated appropriately and correctly in a field report
Statistical testing and confidence intervals	▪ Lecture(s) attended	▪ Knowledge of the definition of statistical testing and confidence intervals ▪ Knowledge of the methods to use to test statistical significance and to calculate confidence intervals	▪ Experience with statistical testing and / or confidence interval calculation during field assignments	▪ Evidence of statistical tests and / or confidence intervals conducted / calculated when needed and correctly in a field report

1. Bio-statistics and epidemiology				
1.Competencies	**Criteria to use**			
	2.Theoretical exposure: *Find out* if lecture was attended	**3.Theoretical acquisition: *Test* knowledge**	**4.Some practical exposure: *Ask* for field experience**	**5.Competency acquired: *Look for* written evidence of the competency in reports**
Standardization, stratification, bias, confounding, effect modification and matching	▪ Lecture(s) attended	▪ Knowledge of the definition of a confounding factor ▪ Knowledge of the definition of effect modification ▪ Knowledge of the practical ways to detect confounding and / or effect modification ▪ Knowledge of the way to handle and report effect modification ▪ Knowledge of the way to control a confounding factor	▪ Experience with a situation of effect modification and / confounding during field assignments [2]	▪ Evidence of appropriate handling of effect modification and / or confounding in a field report 2
Measures of impact	▪ Lecture(s) attended	▪ Knowledge of the definition of population attributable fraction among exposed and in the population ▪ Knowledge of the formula for population attributable fraction among exposed and in the population	▪ Experience with the calculation of a population attributable fraction during field assignments 2	▪ Evidence of appropriate and correct calculation a population attributable fraction in a field report 2
Presentation of data in tables, graphs and maps	▪ Lecture(s) attended	▪ Knowledge of the type of graph to use for each type of data (e.g., show data and ask for the appropriate graph to draw)	▪ Experience with drawing graphs and designing tables in field assignment reports	▪ Field assignment reports with less than five tables and or figures designed according to the rules.

[2] May actually not happen during the course of the two years EFETP.

1. Bio-statistics and epidemiology				
1.Competencies	**Criteria to use**			
	2.Theoretical exposure: *Find out* if lecture was attended	**3.Theoretical acquisition: *Test* knowledge**	**4.Some practical exposure: *Ask* for field experience**	**5.Competency acquired: *Look for* written evidence of the competency in reports**
Sensitivity, specificity and predictive values (positive and negative)	▪ Lecture(s) attended	▪ Knowledge of the definition and formula for sensitivity, specificity, positive predictive value and negative predictive value	▪ Experience with sensitivity, specificity, positive predictive value or negative predictive value during field assignments2	▪ Evidence of the appropriate and correct use of sensitivity, specificity, positive predictive value or negative predictive value in field assignment reports 2
Causality criteria	▪ Lecture(s) attended	▪ Knowledge of Doll and Hill causality criteria	▪ Experience with Doll and Hill causality criteria during field assignments 2	▪ Evidence of the appropriate use of Doll and Hill causality criteria in field assignment reports 2
2. Surveillance				
Routine management of a surveillance system	▪ Lecture(s) attended	▪ Knowledge of the information pathway in a surveillance system	▪ Experience with surveillance data collection, transmission and entry during field assignments	▪ Evidence of expertise in management of surveillance data in the surveillance projects (secondary data analysis and surveillance system evaluation)
Analysis of surveillance data	▪ Lecture(s) attended	▪ Knowledge of the principles of the analysis of surveillance data by time, place and person	▪ Experience of surveillance data analysis during field assignments	▪ Satisfactory secondary data analysis report
Evaluation of a surveillance system	▪ Lecture(s) attended	▪ Knowledge of the evaluation criteria for surveillance systems	▪ Experience of surveillance system evaluation during field assignments	▪ Satisfactory report for surveillance system evaluation

3. Outbreak management				
	▪	▪	▪	▪
Investigation of the source of infection	▪ Lecture(s) attended	▪ Knowledge of the steps of the investigation of an outbreak	▪ Experience with an outbreak investigation during field assignments	▪ Satisfactory outbreak investigation report
Manage sample collection, transport, biosafety, test requests and interpretation of laboratory results	▪ Lecture(s) attended	▪ Knowledge of methods to use to collect, pack and ship blood and stool samples	▪ Experience with biological sample management during field assignments	▪ Evidence of appropriate biological sample management in outbreak investigation report
Formulation of evidence-based focused recommendations for prevention and control	▪ Lecture(s) attended	▪ Knowledge of the criteria to use to formulate recommendations for control during an outbreak	▪ Experience of formulation of recommendations during a an outbreak investigation	▪ Evidence of sound recommendation for control in outbreak investigation report
Communication with all stakeholders (e.g., decision-makers, politicians, public and the press)	▪ Lecture(s) attended	▪ Knowledge of the audiences to target, media to use and communication objectives to reach during an outbreak	▪ Experience with communication during an outbreak investigation	▪ Satisfactory implementation of a communication plan during an outbreak investigation

4. Epidemiological investigations				
Framing research question(s) based upon public health needs and available evidence	▪ Lecture(s) attended	▪ Knowledge of the life cycle of an epidemiological investigation ▪ Knowledge of the elements of a research question	▪ Experience with framing a research question during field assignments	▪ Evidence of an introduction paragraph that frames a research question well in field reports
Writing a study protocol describing a design adapted to the research question(s)	▪ Lecture(s) attended	▪ Knowledge of the methods to use to go from a research question to study objectives to study design	▪ Experience with designing a study according to a research question during field assignments	▪ Evidence of a study design that meets the objectives of study objectives in field reports
Designing and pilot testing data collection instruments, including questionnaire	▪ Lecture(s) attended	▪ Knowledge of the important attributes of a data collection instrument	▪ Experience with designing and pilot testing a data collection instrument during field assignments	▪ Evidence of an appropriate questionnaire in a field report
Collecting and analyzing data using adapted computer tools and quality assurance measures	▪ Lecture(s) attended	▪ Knowledge of the steps of an analysis plan	▪ Experience with data analysis during field assignments	▪ Evidence of satisfactory data analysis in field reports

5. Oral and poster communication				
Writing an abstract	▪ Lecture(s) attended	▪ Knowledge of the format to use to write an abstract for an international level scientific journal	▪ Experience with writing an abstract for an international level scientific journal or an international level scientific conference	▪ Evidence of abstract being accepted in international level scientific conference or in international level scientific journal
Preparing an outline of talk	▪ Lecture(s) attended	▪ Knowledge of the format and requirements for a 10 minutes oral scientific presentation	▪ Experience with the preparation of an outline for a 10 minutes oral scientific presentation	▪ Delivery of a satisfactory talk in less than 10 minutes
Preparing a poster	▪ Lecture(s) attended	▪ Knowledge of the rules to use to prepare a poster presentation for a scientific conference	▪ Experience with the preparation of a poster presentation	▪ Preparation of a poster presentation
Giving a presentation	▪ Lecture(s) attended	▪ Knowledge of the rules to follow to give an oral presentation at a scientific conference	▪ Experience with giving an oral presentation at a scientific conference	▪ Delivery of an oral presentation at an international level scientific conference

6. Written communication				
Write a high-level outline of manuscript	▪ Lecture(s) attended	▪ Knowledge of the elements going into a high level outline for a scientific manuscript	▪ Experience with writing a high level outline of a scientific manuscript	▪ Delivery of a satisfactory high level outline for a scientific manuscript
Produce first draft of the manuscript	▪ Lecture(s) attended	▪ Knowledge of the International Vancouver style for scientific manuscript	▪ Experience with drafting a scientific manuscript	▪ Delivery of a first draft of a scientific manuscript
Submit manuscript to peer-review journal	▪ Lecture(s) attended	▪ Knowledge of the procedures to follow to submit a manuscript to an international level scientific journal	▪ Submission of a manuscript to an international level scientific manuscript	▪ Acceptance of a manuscript for peer review in an international level scientific journal
Obtain acceptance of the manuscript	▪ Lecture(s) attended	▪ Knowledge of the procedures to follow to respond to reviewers	▪ Experience with handling reviewers comments	▪ Acceptance of a scientific manuscript in an international level peer review journal

Appendix 2: Standard Operating Procedures for Distribution of Residents' Work

This Standard Operating Procedure(SOP) applies to all residents during the duration of their time in the program or after graduation if they will be presenting on work done while in the program. These procedures are designed to ensure that residents' work – including abstracts, presentations, manuscripts, and other documents - is of the highest possible quality which is ensured by an internal review by the EFETP prior to distribution to a wider public audience.

All oral presentations, posters, and written products including abstracts, manuscripts, field reports and other documents (from any program related activities including outbreak investigations, surveillance analysis or reports, and other epidemiological studies, including from secondary data) that will be distributed or disseminated outside of EFETP require review and approval by the EFETP Advisory Committee or its delegate. MOH/EHNRI and Regional Health Bureaus will determine nationally sensitive reports and can decide not to disseminate information. For residents placed in Regional Health Bureaus for their field assignments, approval by supervisors and Bureau health officials is also required documents be distributed outside of the programs. Failure to comply with these procedures will result in denial of travel funding and possible disciplinary action which may include dismissal from the program.

Objectives

1. To ensure that resident's work is of the highest quality to improve success of acceptance by conferences and publications.
2. To match conference submissions to appropriate presentation forums
3. To ensure adequate funds are available to support resident travel.
4. To ensure all responsible authorities are aware of the submission
5. To safeguard sensitive epidemiological data.

All residents are encouraged to educate themselves about domestic and international conferences related to public health and epidemiology. Program Coordinators will also inform residents about upcoming conferences that they may consider for submission of abstracts. It is also the resident's responsibility to identify potential conferences where they would like to present. Only first authors are considered for travel support. It is the resident's responsibility to follow the steps listed below and to start the review process by submission deadline. If the call for abstracts is made public with less than 2 weeks before the submission deadline residents must begin the process within 2 days of the notice. Late submission into the EFETP review and approval process may not be considered. In the case of "late breakers" submission must start as soon as possible after conference organizers make their announcement calling for "late-breakers".

NB: If an abstract is approved for submission to one conference, approval is only for the conference specified. To submit to another or additional conference authorization must still be obtained by requesting permission from program coordinators a second time.

Approval for submission to one conference does not imply approval for submission to any other conference(s).

Step 1
Individual residents or groups of residents may prepare a draft abstract, manuscript or similar document based on their work. For example, outbreak investigations or surveillance analysis or evaluations are common topics. If more than one resident was involved in the activity the residents will determine first author among themselves based on recognized standards of authorship. It is the resident's responsibility to format the abstract according to the conference requirements and conform to word limits.

Step 2
The document should be submitted to the academic and Program Coordinators and the Resident Advisors for initial review and comment. The document will be return to the resident to make revisions as suggested.

Step 3
After the initial review the resident will submit the revised document to EFETP advisory council members to include Academic and MOH country directors, the academic and Program Coordinators and the Resident Advisors for a second round of review. E-mail approval or denial will be confirmed with the resident.

Step 4
If approval is obtained it is the resident's responsibility to submit the abstract to the conference or journal by the required mechanism (usually web-based submission) and copy other program staff to notify them of the submission. The resident will communicate to the program about acceptance as soon as they are notified of the result.

Step 5
Acceptance documents from conference organizers or journal editors are to be shared with the program staff in order to begin travel arrangements and/or document acceptance of the document for presentation or publication.

All above mentioned procedures and steps (1-5) are also implementable at regional field base level if requested by regional officials. Regional supervisors are to be consulted and informed throughout the review process and will need to grant approval for any submissions of abstracts or manuscripts or other information based on regional health related data.

Appendix 3: Scope of Work for Coordinators and Resident Advisors

Program Coordinator (EHNRI):

- Ensure that the public health concerns addressed by the resident's activities are consistent with the needs of the PHEM;
- Help develop the resident's project ideas, troubleshoot barriers to completion of projects, and facilitate the implementation of recommendations;
- Attend and comment on the presentations made, reports submitted, and papers written by the residents;
- Plan, implement, monitor, and evaluate the activities of the residents;
- Organize, in consultation with Program Director and Resident Advisor, field visits for the residents;
- Assist in the identification of operational research agendas;
- Report to the Program Director and to the resident advisor on the progress of activities by the residents on a regular basis;
- Complete an EFETP evaluation form at a regular interval and discuss with the residents before submitting to the resident advoisor and / or program director;
- Provide technical assistance and support through the development of grant proposals to mobilize resources for PHEM;
- Provide technical input in the effort to strengthen the capacity of the health sector in terms of early warning, preparedness, prevention, detection, response, and rehabilitation of major health and nutrition emergencies through trainings and seminars;
- Assist in preparation of public health emergency guidelines manuals, standard operating procedures and formats;
- Provide technical input for the vulnerability and risk mapping and identification of reliable early warning indicators of major public health emergencies;
- Assist in developing early warning systems, perparedness, and response plans to major public health emergencies and threats;
- Perform additional activities given by the Deputy Director General.

Project Coordinator (EPHA):

- Collect, compile, analyze and disseminate information and data to support project planning, implementation, appraisal, monitoring and evaluation, and decision-making;
- Analyze approved plans, adjust activity plans and provide adaptive management for full implementation;
- Participate in negotiations regarding all grant agreements and budgets from new grant proposals;

- Produce quarterly, bi-annual and annual performance reports to the MOH and counterparts;
- Identify research agendas, and plan and undertake research works in collaboration with the research coordinator of EPHA;
- Work with all EPHA staff to assess and identify technical assistance needs with regard to technical skills, partnership and networking;
- Ensure that project activities are implemented in collaboration with Woreda, Zonal and Regional health offices and other stakeholders;
- Establish and maintain formal and informal communication mechanisms with governmental and health institutions, donors and other stakeholders;
- Participate in the documentation and dissemination of lessons learned
- Mobilize resources for the Field Epidemiology Training Program and other programs at EPHA;
- Prepare annual plans for the EFETP and other programs and produce Quarterly; Semi-annual and annual reports on EFETP and other projects.
- Participate in trainings, mentorship and quarterly supervision of EFETP residents;
- Support the field bases both technically and administratively.

Academic Coordinator (AAU):

- Develop with counterparts guidelines for and implementation of resident selection including recruitment of candidates
- Registration of the students in the university
- Provide academic advise and counseling to residents
- Plan the academic calendar and follow its implementation
- Develop curriculum for program including MPH degree
- Organize all courses – contact course instructors, follow the course implantation and feedback
- Serve as a teacher /instructor for relevant courses and lectures
- Provide supervision, mentoring, and support to residents as they complete field investigations and other FETP related projects and coursework
- Recruit, orient and monitor mentors
- Facilitate interactions between residents and mentors
- Assist in development of supervisory skills of the on-site field supervisors
- Communicate with EPHA and MOH
- Collect all grades from instructors and mentors and compile grades and get them approved by the university to be submitted to the registrar
- Recruit external examiners
- Organize external examination

Resident Advisors (CDC):

- Develop and implement, along with Ethiopia MOH and other partners, an integrated and sustainable training plan to build evidence-based public health capacity
- Develop curriculum and facilitate courses in epidemiology along with AAU faculty, MOH staff, and other guest lecturers
- Work with MOH and counterparts to develop field site guidelines and guidelines for and implementation of resident selection
- Participate in the development of supervisory skills of the on-site field supervisors and facilitate interactions between residents and field supervisors
- Participate in the monitoring of mentorship and facilitate interactions between residents and mentors
- Provide supervision, mentoring, and support to residents as they complete field investigations and other FETP related projects and coursework
- Work with residents, field supervisors, MOH and local health staff to strengthen disease surveillance, response and control programs at all levels
- Establish/ develop networks at the national (e.g., alumni, academic) and international (e.g., WHO, donors, partners) levels
- Establish information outlet for public health actions (e.g., bulletin, annual conference, Internet).
- Develop/ maintain collaboration plans (e.g., polio eradication, HIV, malaria)
- Prepare proposal for resource mobilization (technical components)
- Manage funds allocated to facilitate technical assistance, including transfer of funds to adequate cooperative agreements
- Review finances, including budget, income and expenditure reporting
- Facilitate oversight and guidance for the program (e.g., monitoring and evaluation, feedback to partners, steering committee, national partners)
- Act as a liaison to CDC Atlanta, CDC Ethiopia support staff, and other FETPs
- Introduce, develop and maintain a strategic plan with milestones and indicators
- Work with MOH and other partners to ensure sustainability of the program

Appendix 4: Reference Guidelines for FETP Resident Outputs

Includes: Outbreak Investigation Report, Evaluation of a Surveillance System, Surveillance Analysis Report, Protocol Study, Scientific Abstract, Oral Presentation, Manuscript, Bulletin

Instructions and Guidelines for an Outbreak Investigation Report

Description

FETP students should participate in outbreak investigations or other health emergencies during the two years of their training, giving them the opportunity to apply knowledge gained during the first module in Epidemiologic Methods and the second module in Public Health Surveillance. These investigations should be monitored by the officer's mentor either in person or from a distance during all stages of the investigation.

The outbreak should be a problem requiring an immediate response as a local or national threat. The outbreak investigation should focus on identifying the etiologic agent, the source of the outbreak, the mode of transmission, and the risk factors for disease. The report should provide specific recommendations, based on the analysis of data from the investigation, which have an impact on the public health of the community.

Whenever possible, the supervisor should accompany the student on at least one outbreak investigation until the descriptive and analytic phases of the investigation are complete. Throughout FETP, the officer should participate in as many outbreak investigations as possible, whether as principal investigator or part of the investigation team. The officers should consult with supervisors regularly during the program to select outbreak investigations that could have a major impact on public health and where all phases of the investigation have been completed. These should then be the investigations that are written up as a report and submitted to program staff for a final grade.

To conduct the outbreak investigation well, the officer should:

- Know how to organize and lead a multidisciplinary investigation team
- Know all the steps of an outbreak investigation
- Master descriptive statistical methods
- Develop a good case definition
- Be familiar with the epidemiologic triangle
- Know how to generate a hypothesis
- Know how to use analytic statistical methods appropriately
- Be familiar with the design of analytic studies: retrospective cohort, case-control
- Know how to appropriately organize data in tables and graphs
- Know how to use laboratory support
- Know how to give recommendations based on the findings of the investigation

Structure and Content

The officer should conduct the outbreak investigation and provide a technical report, an abstract, and an oral presentation consistent with the following features when submitting to a scientific conference:

1. **Outbreak Report**
   - **Introduction**
     - Clearly explain when the outbreak notification was sent, and from where and whom; explain who received it and what actions were taken to prepare for the investigation
     - Describe the background of the outbreak
   - **Objectives**
     - Describe the investigation objectives concerning the agent, source of infection, mode of transmission, and risk factors
   - **Material and Methods**
     - Describe where the event occurred, the population, and the process for data collection
     - Clearly describe the case definition
     - Describe the questionnaire, variables used, and laboratory methods (sample type and test type)
     - Explain the study design and statistical analysis performed
   - **Results**
     - Describe person, place and time clearly and completely
     - Include maps and graphs where necessary
     - Include number of cases and attack rates
     - In the analytic phase, describe 2 x2 tables and their results with confidence intervals, Chi-square and the *p*-value
     - Present laboratory results
   - **Discussion**
     - In the order given in the results section, discuss the reason for the results and the similarities and differences to similar outbreak research
     - Support the discussion with references
     - Do not include results
   - **Study Limitations**
     - Indicate problems encountered during the outbreak investigation
   - **Conclusions**
     - Base on the findings
     - Do not repeat the results
   - **Recommendations**
     - Base on the findings and conclusions

2. **Slide Presentation**

   See “Instructions and Guidelines for Oral Presentations”

3. **Abstract**

   See “Instructions and Guidelines for Abstracts”

12 Common Errors Found in an FETP Outbreak Investigation Report

1. It lacks order or structure of IMRD.
2. The title does not reflect the investigation; it does not describe the what, when and where; it is not engaging.
3. The introduction is disorganized, without a chronology of events; and lacks background of the outbreak, where it occurred or who received notification.
4. There are no objectives of the outbreak investigation or hypotheses.
5. The methods are incomplete or poorly described. There is no case definition or it is poorly written.
6. The controls were not described.
7. The results do not reflect the methods. Methods or discussion are included in the results section.
8. The discussion includes new results. There are no references. It does not cover the main results.
9. There are no study limitations.
10. Conclusions are very general. They have nothing to do with the investigation. The results are repeated.
11. Recommendations do not reflect the study findings, are very general, and include conclusions and results.
12. There is no bibliography.

Evaluation of an Outbreak Investigation Report: Checklist

Score	Description
5 = Excellent	The element is present, consistent with the standard described in the instructions and provided in the classroom, and is of a remarkable/outstanding quality.
4 = Good	The element is present and consistent with the standard described in the instructions and provided in the classroom.
3 = Satisfactory	The element is present and may be used even though it may not completely follow the standard described in the instructions and provided in the classroom.
2 = Poor	The element is present but flawed or of poor quality.
1 = Absent	The element is absent from the report.
N/A = Not Applicable	The element is not relevant to this study.

Category	Criteria	1	2	3	4	5	N/A
Introduction	Describes the events that led to the outbreak/how was the outbreak initially reported/how the team was put together /when the investigation began						
	Describes the situation (person, place, time)						
	Describes the organism or illness (agent, clinical characteristics, endemicity or seasonality)						
	Explains the reasons for investigating the outbreak or specifies the investigation hypothesis						
	Clearly describes the objectives of the outbreak investigation						
Methods	States study design and temporality (retrospective, prospective, bidirectional)						
	Includes a case definition and eligibility criteria						
	Describes the methods of case finding /subject recruitment						
	Describes the method of collecting data from participants						
	Methods avoid biases						
	Explains the type of sampling and calculates the simple size						
	Explains data analysis procedure, including statistical methods and software used						
	Describes the clinical and environmental sampling and						

Category	Criteria	1	2	3	4	5	N/A
	laboratory test methods						
	Includes the process used to protect human subjects (confidentiality, risks, informed consent)						
Results	Provides the number of participants with the response rate, if appropriate						
	The information is descriptive and clinical, including place/geographic distribution						
	Provides the epidemiologic curve or a description by time						
	Provides the attack rates by age, sex and other relevant variables						
	Demonstrates the effect size with measures of precision (confidence intervals) and adjusted for confounding (where appropriate)						
Discussion	Key findings are based on results						
	Conclusion is supported by the literature: explains data that do not support the conclusion						
	Describes the limitations of the data, the study design, the location of the investigation, noting possible biases						
	Reports immediate control measures used to prevent additional cases						
	Discusses the external validity of intervention study findings (Ex. To what degree can the results be generalized to other populations or places)						
	Discusses the feasibility and sustainability of a long term intervention						
	Makes suggestions on how to prevent similar outbreaks in the future, or on additional studies to needed to resolve the current outbreak						
Structure	Title (Brief and accurately reflects the outbreak)						
	Authors and contributors (including institutions)						
	Uses IMRD format						
	Results are reflected in the methods						
	Methods are not included in the results						
	The results are not repeated in the discussion or conclusion						

Category	Criteria	1	2	3	4	5	N/A
	Recommendations are based in the findings						
References	References are numbered and in the order they appear in the text						
	The number of references is appropriate for the content of the report						
	The references are up-to-date and related to the content						
	The references are formatted using Vancouver Style						
General form and clarity	Uses adequate punctuation and grammar						
	Uses proper spelling						
	Work is original and there's no evidence for plagiarism						
	The writing is in paragraph form and does not use bullets as in a presentation						
	Provides a description of acronyms before they are used						

Instructions and Guidelines for the Evaluation of a Surveillance System

Description

The evaluation of a surveillance system promotes the best use of health resources and assures that systems operate effectively. Surveillance system evaluation allows us to define whether a specific system is useful for public health and is achieving that system's objectives. Any evaluation should include recommendations for improving the quality and efficiency of the system.

The FETP officer should conduct a **surveillance system evaluation** that can evaluate one or several attributes of a surveillance system. The format for this evaluation should be similar to that of the surveillance analysis. Alternatively, he/she can **design and implement a new surveillance system.**

The officer should be supported by his/her mentor and the FETP coordinator in selecting the surveillance system to be evaluated. It can be prepared for submission for **publication** in an epidemiologic bulletin or a peer-reviewed journal. After completing the surveillance system evaluation report, he or she must prepare an **abstract** to submit to a national and international conference, as well as a **presentation** which emphasizes the most important aspects of the selected surveillance system.

Structure and Content

1. **Introduction**
    - Should give a brief description of the health problem to be evaluated (illness or event). Indicate why it is a health problem and the surveillance objectives of the selected system. Record the most salient results or the limitations found in previous evaluations of the system. Indicate the area of study (country, district, health area, municipality, etc.) and the justification for the evaluation (i.e. It has never been evaluated, specific attributes were not evaluated, or the system was not evaluated after the introduction of important changes, etc.). Conclude with the objectives of the evaluation (aspects of the surveillance system that will be evaluated—i.e. timeliness). Describe the overall approach.

2. **Methods**
    - Use the U.S. Centers for Disease Control and Prevention (CDC) Guidelines for Evaluating Public Health Surveillance. Keep in mind the suggested methods for the attribute(s) to be evaluated. The officer may choose to conduct a more in depth evaluation of a smaller number of attributes. Subtitles can be used to refer to each attribute. Indicate the design used, the population studied; the particular definitions used; the sources used or consulted, if required, to evaluate some attribute; the population or the sample (what parameters were used for its calculation); if it was a sample, the type of sampling; the type of methodology used in the evaluation of different attributes. For interviews with health workers, creating surveys may be appropriate.

- For the evaluation of usefulness indicate hot he data or information was acquired to measure this.
- Explain the indicators used to evaluate each one of the qualitative and/or quantitative attributes considered: simplicity, flexibility, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and cost.
- The methods should be appropriate and realistic in order to meet the goals outlined in the introduction.
- If the objective was to describe or quantify the system's operating cost, describe the cost of different areas of the system's operation.

3. Results

- Describe in detail the system's principal components, the population under surveillance, the case definition, the type of system, the structure of the data, the indicators used, the feedback provided and the actions taken.
- Show the results of the analysis in a logical manner.
- For each of the evaluated components or attributes, support the results obtained from the evaluation with evidence; the results should address the objectives outlined in the introduction.
- The data must be presented in simple tables, summary tables or appropriate figures; they must be numbered and placed in the text after its reference or at the end of the document.

4. Discussion

Summarize the main findings based on the objectives outlined in the study and the answers given to the research questions. If the evaluation is unable to meet the evaluation objectives, the reason they were not met must be explained. Indicate whether the objectives of the surveillance system are being met and if it is necessary to modify or continue with the system in place. Describe the most important limitations of the surveillance system evaluation (not the surveillance system itself). For each limitation, indicate the reason, the consequence of the limitation, how the limitation was addressed and how the evaluation was performed in light of the limitation. End with recommendations based on evidence, these recommendations should be realistic, specific and have a logical flow.

5. References

- The evaluation should have an appropriate amount of bibliographic references that are relevant and related to the evaluation.

6. Tables and Figures

- Include a maximum of 5 tables/figures, which should have a specific title that includes time, place and person. Each table or figure should be numbered in the order it appears and should be referred to in the text previous to the figure.

8 Common Errors Found in a Surveillance System Evaluation

1. Surveillance system objectives are not clear or not included
2. Scope of evaluation is too narrow
3. Insufficient description of the methods used
4. The system is not described
5. Key attributes of the surveillance system to be evaluated are not identified
6. Insufficient documentation of the attributes evaluated
7. Confusion between the surveillance system's limitations and the limitations of its evaluation
8. Poor or weak recommendations

Evaluation of a Surveillance System Evaluation: Checklist

Points	Description
5 = excellent	The element is present, consistent with the standard described in the instructions and provided in the classroom, and is of a remarkable/outstanding quality.
4 = good	The element is present and consistent with the standard described in the instructions and provided in the classroom.
3 = satisfactory	The element is present and may be used even though it may not completely follow the standard described in the instructions and provided in the classroom.
2 = poor	The element is present but flawed or of poor quality.
1 = absent	The element is absent from the report.
NA = not applicable	The element is not relevant to this study.

Category	Criteria	1	2	3	4	5	NA
Summary	Provides a brief description of the surveillance system						
	States the objectives of the evaluation						
	Summarizes the methods used in a few sentences						
	Presents the evaluation results						
	Provides conclusions, including recommendations for improving the surveillance system						
Introduction	Describes the surveillance system, including illness/condition under surveillance and the reason for carrying out surveillance						
	Provides sources of the surveillance data and describes how the data is used						
	Presents the results from previous evaluations of this surveillance system or the potential limitations of the surveillance system						
	Indicates the intended objectives (2-5 objectives suggested) of the current evaluation (aspects of the surveillance system to be evaluated, i.e. timeliness)						
Methods	Describes methods for the system evaluation by addressing several of the following attributes: data quality, stability, simplicity, acceptability, flexibility, sensitivity, predictive						

Category	Criteria	1	2	3	4	5	NA
	value positive, representativeness, timeliness						
	Was there a systematic way of acquiring information (i.e. using a survey instrument)?						
	Presents the measures used to answer the evaluation questions						
	Clearly specifies the sources that supplied data used to respond to the evaluation questions						
	Clearly defines the methods used to analyze the evaluation data						
	Are appropriate and realistic for completing stated objectives of the evaluation						
Results	Describes the system's principle components, population under surveillance, the case definition, the system type, the data structure, the indicators used, the feedback given and the actions taken						
	Presents analytic results in a logical manner						
	Calculations are free of errors						
	All of the stated findings are supported by the evidence for the attributes evaluated: simplicity, acceptability, flexibility, sensitivity, predictive value positive, representativeness, timeliness, cost, usefulness						
	The data are presented appropriately and are summarized in tables or figures						
Discussion	Provides conclusions that focus on the evaluation questions and are supported by the findings						
	Formulates recommendations that flow logically from the evaluation findings						
	The recommendations are realistic and achievable						
	The recommendations are specific, including the time period proposed and other points of reference						
	Addresses the limitations in the evaluation design and implementation						

Category	Criteria	1	2	3	4	5	NA
Bibliographic References	The references are numbered and in the order of how they appear in the text and in the bibliography						
	The number of references is adequate for the content of the report						
	The references are relevant to the topic						
	The references conform to Vancouver Style						
General Form and Clarity	Uses adequate punctuation and grammar						
	Uses proper spelling						
	Work is original and there is no evidence for plagiarism						
	The writing is in paragraph form and does not use bullets as in a presentation						
	Provides a description of acronyms before they are used						

Instructions and Guidelines for a Surveillance System Analysis Report

Description

Early in the FETP, officers should practice skills learned by carrying out at least one **surveillance system data analysis** on an illness or event under either individual or consolidated disease surveillance in the country. The selected illness/event should be a priority for the Ministry of Health or other health institution for whom the officer works, and there should be an expectation for the Ministry of Health to take action based on the results of the project. Depending on the sponsoring program or project (for example, influenza, tuberculosis, foodborne disease, injury, chronic disease, etc.), the officer should carry out the surveillance analysis focusing on the relevant health problem. If the sponsoring program conducts surveillance for all diseases in the municipality, district, or health region, the event used for the analysis should be prioritized with the officer's mentor and/or the FETP country coordinator.

Structure and content

The officer should design, conduct, and interpret an epidemiologic analysis based on existing surveillance data, using descriptive epidemiology (time, place, and person). The structure of the surveillance analysis for the selected disease or condition is the following:

1. **Executive summary**
   - Use between 400 and 500 words and write after completing the report**.**
   - The structure of the summary for the report is different the structure of the abstract that is submitted to a scientific conference (which has IMRD format). The summary of a surveillance analysis report should have the following structure: Problem or condition; time period the report covers; description of the system; results; interpretation; and public health actions.

2. **Introduction**
   - Give rationale for surveillance of the disease or condition.
   - Describe the area or district/department where the surveillance analysis was carried out: the population under surveillance and the key data about the area / region and the environment (depending on the disease under surveillance).
   - Give a brief description of the surveillance system analyzed (including a flow chart and relevant aspects of the system) and of the chosen disease or condition.
   - Explain the background surveillance data over the previous years, in the context of the objectives of the surveillance analysis.

3. **Methods**
   - Identify the sources of data: include the distribution of the population by age, sex, and department, for subsequent calculation of rates.
   - State the definition of health events.
   - Describe database cleaning and the process to confirm that the variables are appropriately coded and categorized.
   - Describe the statistical methods used (descriptive and analytic).
   - Describe the surveillance data collection instruments as well as the variables used.

4. **Results**
    - Identify the patterns in time, place, and person of the available data.
    - Indicate changes observed over the time period (rates in affected age groups, increase or decrease in the magnitude of the event, including changes in rates by department, behavior of the annual rates).
    - Indicate if there is seasonality or cyclical quality in the occurrence of the disease or event.
    - Record the number of outbreaks that were identified, and how many of those were investigated.
    - Create an epidemic curve and/or a map of the geographic area with rates by region, department, or municipality.
    - Create a summary table of the most salient results that were not presented in other tables or graphs.

5. **Discussion**
    - Interpret the observed patterns with respect to short and long term trends, including by place and person characteristics, to identify problems or areas that require epidemiologic investigation or public health action.
    - Identify or calculate the expected or projected level of reported disease.
    - Compare the current report with the expected or projected levels of disease.
    - State hypotheses and possible analytic studies to address them.
    - Based on the analysis, consider important public health actions.
    - Suggest specific recommendations, based on the results.
    - Include the limitations of the surveillance analysis, highlight key conclusions, and state the most important recommendations based on the data.

6. **References**
    - The references should be relevant to the surveillance analysis. The references should be referred to in the text of the report. Typically, references are cited in the introduction and discussion sections.

7. **Appendices**
    - **Glossary**. Include all definitions used.
    - **Summary of each of the outbreaks reported.** Indicate the date of the outbreak, department where it occurred, the number of cases, the number of deaths, and a brief description of the event.

12 Common Errors found in Surveillance Analysis Reports

1. Failed to state the objectives of the surveillance analysis.
2. Insufficient description of the methods used.
3. Did not describe the system.
4. Failed to identify patterns by time, place, and person, or didn't use rates.
5. Did not carry out statistical calculations (measures of central tendency and dispersion), and comparison of proportions and rates.
6. Did not indicate if there were changes in the distribution (increase or decrease) of the event by age groups, sex, department, or municipality, over the course of time.
7. There is no epidemic curve (histogram) or graph(s) are not created appropriately (such as making them three dimensional or having errors in the titles).
8. Did not use summary tables (which, as well as showing frequencies, show rates by age group and sex).
9. Insufficient documentation or review of the literature in the discussion (did not compare the findings with those of other publications).
10. Confusion between analysis and evaluation of a surveillance system.
11. Confusion between limitations of the surveillance system and limitations of the analysis; or the failure to identify the limitations of the analysis.
12. Poor recommendations (too general, or not related to the findings)

Evaluation for a Surveillance Analysis Report: Checklist

Points	Description
5 = excellent	The element is present, consistent with the standard described in the instructions and provided in the classroom, and is of a remarkable/outstanding quality.
4 = good	The element is present and consistent with the standard described in the instructions and provided in the classroom.
3 = satisfactory	The element is present and may be used even though it may not completely follow the standard described in the instructions and provided in the classroom.
2 = poor	The element is present but flawed or of poor quality.
1 = absent	The element is absent from the report.
NA = not applicable	The element is not relevant to this study.

Category	Criterion	1	2	3	4	5	NA
Executive summary	Gives a brief summary of the problem / conditions under surveillance						
	Includes the time period covered by the report						
	Gives a brief description of the surveillance system and the objectives of surveillance						
	Mentions the principal findings						
	Interprets and discusses the results obtained in the evaluation based on the data from the surveillance system						
	Recommends actions based on the results obtained in the analysis						
Introduction	Gives the clinical and biological background of the condition / organism						
	State the public health importance of the disease or condition (burden of disease, mortality, morbidity, outbreak/epidemic potential, burden to the medical system, whether the problem is increasing or decreasing)						
	Describes the system analyzed (flow chart and relevant aspects of the surveillance system) and the objectives of the system						
	States the importance of the disease or condition (cost, social burden, political						

Category	Criterion	1	2	3	4	5	NA
	importance, international importance, actual expenditures for prevention)						
	Gives the objectives of the current analysis						
Methods	Gives procedures for reporting the disease, population under surveillance, databases used, clinical and laboratory sources of information						
	Gives the case definition, defines important terminology about the disease/condition with the purpose of informing the reader about the situation						
	Gives a brief description of any laboratory procedures used for the disease or condition (if appropriate)						
Results	Statistical calculations are adequate and important calculations are not missing						
	Are given in terms of person, place, and time						
	The main results are clearly and succinctly presented						
	Are provided in the relevant categories and subcategories (demographics, level of illness, species of agent, etc)						
	Addresses the objectives described in the introduction						
	The graphs and tables summarize and illustrate the results						
Discussion	Summarizes the key results						
	Gives the public health implications of the results						
	Compares the results with previous years and/or with the literature						
	Discusses the limitations of the analysis and the data						
	Gives recommendations about the disease/condition and its control						
	Gives recommendations about surveillance for the disease/condition						

Category	Criterion	1	2	3	4	5	NA
References	The references are numbered and in the order of how they appear in the text and in the bibliography						
	The number of references is adequate for the content of the report						
	The references are current and relevant to the topic						
	The references conform to Vancouver Style						
General form and clarity	Uses adequate punctuation and grammar						
	Uses proper spelling						
	Work is original and there's no evidence for plagiarism						
	The writing is in paragraph form and does not use bullets as in a presentation						
	Ideas are presented with a logical flow						
	Provides a description of acronyms before they are used						

Instructions and Guidelines for a Protocol

Description

During the first year of enrollment in the FETP, officers should create a written protocol designed to carry out a planned study. The protocol is a tool for investigators that develop and carry out research. Even among different scientific disciplines, a written protocol uses the same scientific method to carry out studies. No matter what the exact area of research, the general elements of a scientific protocol are the same. The Excellence in Science Committee (EISC) has developed a checklist to be used as a guide to help scientists in the development of protocols. The list was designed to be useful for a variety of studies, whether laboratory, epidemiologic, or behavioral studies of the social sciences that use a number of study designs. In using the checklist, investigators should choose the elements that apply to the appropriate type of study. It is unlikely that one study would include all of the elements from the checklist.

Keep in mind the following steps in writing a protocol:

1. Identify the topic, research question, and objectives of the study
    - Identify the research question in the context of the public health need
2. Write a one-page outline (concept paper)
    - Denote the basic elements of the study using a predefined template and seek out comments and suggestions from colleagues as well as subject-matter experts
3. Create tables for results
    - Create empty tables before developing the data collection instrument to help anticipate the data that will be collected and how it will be used
4. Write a draft of the protocol
    - Write a complete draft of the protocol incorporating suggestions and revisions received on the concept paper (Appendix 1)
5. Prepare the data collection instruments and appendices
    - Create data collection instruments based on data needs identified in the results tables
6. Prepare informed consent forms to present to the relevant ethics committee using predefined templates (if necessary)
7. Send the protocol to partners for their review
    - Solicit comments and suggestions from colleagues, mentors/professors, as well as subject-matter experts
8. Present the protocol to the ethics committee
    - Incorporate suggestions from partners to create the final version of the protocol

Keep the protocol as a guide that can be used in the field and as a basis to write the final report (the manuscript).

Structure and Content

The recommended written **style** is the following:

- Serif font: Times New Roman
- Font size: 12 point
- Spacing: 1.5 lines
- Justification: left

The following **structure** is recommended:

1. **Overview of the study**
    - ***Title*****:** Summarize the main idea of the research. Should be able to "stand alone" in explaining the study. Should be brief, specific, and consistent with the topic of the research, and should contain the least number of words possible (preferably no more than 15 words).
    - ***Protocol abstract:*** Give a summary description of the study. Describe the study objectives, including the research question or hypothesis to be tested, the population, and the methods that will be used. Avoid the use of abbreviations. Include the expected benefit of the study. Should permit members of the committee to quickly and accurately identify the content of the project, as well as to select appropriate reviewers within the Committee.
    - ***Investigators/collaborators/sources of funding:*** Include the names and degrees of all investigators and their roles in the project, and the participating institution(s). Keep in mind any possible conflict of interest for each investigator, and acknowledge the sources of funding.

2. **Introduction**
    - ***Literature review/ current state of the knowledge of the research topic:*** The background of the health problem should synthesize the current research or studies on the subject, with the goal of giving the reader a sense of what has been done previously. Clearly state the problem, and clarify, judge, and interpret the health problem presented. In the reference section, include the bibliography of the sources of information used.
    - ***Justification for the study:*** Explain the scientific and public health importance of the study and the problem being addressed (magnitude, over-arching importance, feasibility, and amenability to intervention). In the context of previous research, describe the contribution of the present study.
    - ***Anticipated use of the results of the study:*** Define the principal audience(s) for the information coming from the study, and discuss the expected uses of the study results.
    - ***Study design and location(s):*** Describe the study design and give the location where the study will be carried out.
    - ***Objectives***: List clear and concise objectives that the project will undertake.

- ***Hypothesis or research questions:*** List clear, focused questions that the study will address. Present any hypotheses that will be tested.
- ***General focus***: Describe the focus of the study, whether it will be a descriptive / exploratory study (hypothesis-generating), analytic (hypothesis-testing), or whether it will focus on testing the implementation of interventions.
- ***Practicality y feasibility of the research:*** Before beginning the investigation, consider the availability of financial resources, materials, human resources (and time available), which may ultimately determine the reach that research may have.

3. **Procedures and methods**

- **Study design**
    - ***How does the study address the research questions and objectives previously indicated?*** Justify using the proposed study design for addressing the research questions and objectives indicated previously. Distinguish between procedures that are experimental and those that have been done previously. Identify the specific elements that characterize the study design (for example, a cross-sectional survey, case-control, cohort, focus groups, clinical record review, etc).
    - ***The public and stakeholders:*** Define the audience for the research. Asses who the stakeholders are and describe the ways in which they can (or cannot) participate in the study. Explain the process by which they can express their opinions, state their needs, and contribute to the project.
    - ***Timeline of the study:*** if possible, provide a calendar with the estimated dates for beginning and completing the major activities of the study.
    - ***Expedited review protocol:*** If appropriate, describe the need for a rapid review of the protocol (for example, if there is an outbreak in progress or there is a disaster or other emergency).

- **Population studied**
    - ***Description and source of the study population and the target study area:*** Define the population from which the participants, the sample, or the subjects under surveillance were drawn and to which inferences will be made. Include demographics and details relevant to the public health condition / disease of interest.
    - ***Case definition:*** Provide criteria for the disease, condition, or health event that define whether a participant will be judged to have the condition of interest.
    - ***Inclusion criteria:*** Describe the characteristics or conditions used to identify and select participants for the study, and the necessary conditions for potential subjects to be eligible for inclusion in the study.

- ***Exclusion criteria:*** Describe the characteristics that disqualify potential study subjects from participating, or other ways that they could be ineligible for inclusion in the study.
- ***Justification for excluding a population group:*** Give the reasons that any subgroup of the population (for example, defined by race/ethnicity, gender, or age) is excluded from the study. Comply with CDC policy on the inclusion of women and minorities in research, and if necessary state why these populations are excluded from the research in this study.
- ***Estimated number of participants:*** Estimate the number of participants in the study. If the study is establishing or using data from a surveillance system, this section can include the anticipated number of reported cases for epidemic and non-epidemic periods.
- ***Sampling, including sample size and statistical power:*** Describe the sampling method (e.g. convenience, population based, or other specified method). Specify the sampling units (individuals, cluster, neighborhood, etc) and the units of analysis. Estimate the size necessary to answer the research questions and to test the hypothesis based on available information from pilot studies or previous reports. Estimate the statistical power. Explain conditions in which the sampling estimates would have to be revised. If group or aggregated data will be collected (for example, from focus groups), explain how the groups will be assembled, or the procedures that will be followed to form appropriate groups.
- ***Enrollment:*** Describe how potential participants will be contacted, checked for compliance with inclusion criteria, and enrolled in the study. Describe the procedures for tracking the number of people who drop out of the study. Explain the procedures for assigning participants to different groups. Include a discussion of how any deviation from enrollment procedures will be handled and documented.
- ***Consent Process:*** Describe the procedures used to inform the participants about the study and to obtain consent.

- **Variables/interventions**
  - ***Variables:*** Briefly list and describe the categories, topics, or fields of information to be explored and the variables that should be collected. Clarify the consistency of the defined variables among data obtained from multiple sources. Traditionally, during an outbreak investigation, information on time, place and person is collected in order to develop an epidemic curve. Explain how the variables will be used and the process in which will be used to define the variables.
  - ***Study instruments, including questionnaires, laboratory instruments and analytic tests:*** Describe the strategies that will be used to obtain

information, including laboratory techniques and instruments, and an explanation of how this information will be used. Describe the attributes of these strategies/instruments as demonstrated in other studies; including the suitability, validity and reliability among the study population and sensitivity and specificity of the instruments among studies that have obtained results that can be replicated; and whether there is any controversy about the methods being used. Include a description of how changes in study instruments will be handled and documented.

- ***FDA Investigational new drug/device (IND) or investigational device exemption (IDE):*** If the study involved the use of a new investigational treatment or a new investigational device, an IND or IDE, provide the number and relevant information.
- ***Intervention or treatment:*** Describe in detail the types of intervention or treatment to be tested, including dose, administration schedule, etc.
- ***Results and minimum significant differences:*** List the anticipated results from the exposure or intervention of interest to the study (i.e. results) and the clinical or epidemiologic differences in the result measurements that are important to detect.
- ***Training of all study personnel:*** Describe the type of training that will be provided to study personnel such as: interviewing techniques, data collection and processing methods, or informed consent.

- **Analysis and data management**
  - ***Data analysis plan, including statistical methodology:*** Describe sampling methods; procedures for the collection of information, methods used to maximize response rate, test procedures and relevant statistics (i.e. variance, confidence intervals, and power based in the study data); the methods should include sufficient detail in order to be reproducible. This includes the calculation of relevant quantitative measures of tests and instruments, such as sensitivity and specificity. In outbreak investigations, it is common to use an iterative process in the analysis (which consists of hypothesis development and testing and the planning and evaluation of the intervention) to identify the source of the outbreak and its control. For projects that establish or use data from a surveillance system, this can include how and how often the surveillance system will be evaluated.
  - ***Data collection:*** Describe the data collection procedures, process and documentation. For data coming from a surveillance system, this can include the frequency in which reports are done.

- ***Information management and analysis software:*** Provide the names of the software packages and programming languages for the input, management, and analysis of the data used for the Project.
- ***Data entry, editing and management, including the handling of data collection forms, different versions of data, and the storage and disposal of data:*** Describe the general procedures for handling collected data. In the description, include the process for entry and editing of the data. Describe how the study materials, including the questionnaires, statistical analysis, notebook entries, computer programs and other electronic information systems, whether used to publish or not, will be kept available to allow future access for analysis and revision. Document the operating procedures for management and access of different versions of the data sets. Specify to whom the data belongs and the access rights and restrictions of all primary and secondary data analysis and publications. Document the related procedures regarding confidentiality of the data, including how confidentiality will be maintained during transfer, use and storage of data and the names or positions of those responsible for the technical and administrative management. Document the final disposal of the records, data, computer archives and samples, including the location of any relevant information to be stored. Records should be stored in compliance with agency directives.
- ***Quality assurance and control:*** Describe the steps taken to ensure there are no unforeseen consequences that can affect the quality of the data. Such measures may include methods for entering all data exactly as it is received; ensuring logical consistency among all parts of a record, as well as ensuring that the handling or transformation of the data (i.e. an audio tape transcribed into text) does not produce undesired changes; and the statistical verification of calculations are performed as proposed in the analysis plan. During an outbreak investigation, include verification of the diagnosis and confirmation of the outbreak. Describe the current quality control procedures for the data to ensure that the information is appropriate; is collected with the same depth, breadth and specificity; continues to be consistent within and among personnel over time; and achieves acceptable attribute levels such as validity, reliability, repeatability, sensitivity and specificity.
- ***Bias in the collection, measurement and analysis of data:*** Describe the types of bias that may occur during the collection, measurement, or analysis phases of the data; and the steps, which should be taken to avoid, minimize or account for the presence of these biases. Include factors in the study population or study personnel that could bias the results, as well as the steps taken to ensure that self-reported or observed data are valid. Include any randomization or blinding

procedures used to eliminate or minimize bias by the investigator, other study personnel or study participants (e.g. participant selection, treatment group assignment, treatment provided or received).

- ***Review and analysis during the process:*** Describe the ways in which the process will be monitored and how the study will be evaluated prior to the final evaluation of the results.
- ***Study limitations:*** Explain the factors, which may reduce the applicability of the study results. Discuss possible weaknesses or criticisms of the study, including alternative methods that could have been used.

- **Management of adverse or unexpected events**
  - ***Responding to new or unexpected findings and changes in the study environment:*** Describe the procedures for identifying and managing new or unexpected findings, and responding to changes in the study environment.
  - ***Identification, management, and reporting of adverse events:*** Describe the types of adverse events that may arise and how study personnel will be trained to react. Describe the methods used to track adverse reactions and their possible implications on the study.
  - ***Emergency care:*** Explain the steps to be taken in case an emergency develops during the study in any of the participants taking part in the investigation.

- **Dissemination, notification, and report of results**
  - ***Participant notification regarding individual results:*** Explain the process used to notify participants about their results. Include the circumstances that would drive the dissemination of urgent results and whether or not counselors will be used.
  - ***Participant notification regarding study conclusions:*** Explain if participants will be offered the option to receive general study findings and how this will be done.
  - ***Expected products or inventions resulting from the study and their use:*** List the products, including inventions, derived from the study and how they will be used.
  - ***Dissemination of the results to the public:*** Define the channels of effective communication and the best ways to disseminate the project information and results to specific audiences.

4. **References**

- List the bibliographic references used to create and define all aspects of the study.

5. **Appendices**

- ***Data collection forms:*** Include all forms and documents used to collect data or extract the data. Examples of these are questionnaires, medical records and other collection forms.
- ***Suggested tables and figures:*** Provide health tables and examples of data presentation and study results.
- ***Other relevant documents:*** Include any other complementary documentation.

10 Common Errors Found in Protocols

1. Long and ineffective introduction
2. Poor study objectives
3. Poorly defined study population
4. Inappropriate study design
5. Operational definitions are unclear
6. Inadequate sampling strategy and/or poor calculation of the sample size
7. Insufficient documentation of data collection (i.e., what data should be collected and what methods should be used to collect the data)
8. The lack of a solid and previously defined analysis plan
9. The lack of quality assurance measures
10. Insufficient documentation of measures taken for the protection of human subjects

Evaluation of a Protocol: Checklist

Score	Description
5 = Excellent	The element is present and consistent with the standards described in the instructions and provided in the classroom, and is of outstanding quality.
4 = Good	The element is present and consistent with the standards described in the instructions and provided in the classroom.
3 = Satisfactory	The element is present and may be used even though it may not completely follow the standards described in the instructions and provided in the classroom.
2 = Poor	The element is present but it has errors or is of poor quality.
1 = Absent	The element is absent.
N/A = Not Applicable	The element is not relevant.

Category	Criteria	1	2	3	4	5	NA
Overview of the study	The title is appropriate						
	The protocol abstract is acceptable						
	Includes a list of investigators, their collaborative roles and funding sources						
Introduction	Includes a literature review / current state of knowledge of the research topic						
	Presents the justification of the study						
	Gives the purpose or intended use of the findings						
	Includes the study design and location(s) of the study						
	Presents the objectives						
	Presents the research questions or hypothesis						
	Has a generally appropriate focus						
Procedures and methods: design	Includes how the study design addresses the hypothesis or fulfills the objectives						
Procedures: study population	Includes a description and source of the study population and the recruitment area						

Category	Criteria	1	2	3	4	5	NA
	Shows the case definitions						
	Describes the exclusion criteria of participants						
	Describes the inclusion criteria of participants						
	Describes the estimated number of participants						
	Gives sampling methods, including sample size and statistical power						
	Outlines the appropriate recruitment procedures						
	Describes the consent process						
Procedures and methods: variables and interventions	Provides a description of the variables						
	Describes the study instruments, including questionnaires, laboratory instruments and analytic tests						
	Provides intervention procedures or appropriate treatment						
	Describes the anticipated results and minimum for significant differences						
	Describes the training of study personnel						
Procedures and methods: Analysis and data management	Provides an analysis plan, including statistical methodology						
	Clearly outlines data collection procedures						
	Shows the management and analysis procedures for data and the software to be used						
	Outlines the procedures used for data entry, editing and management, including the handling of data collection forms, different versions of data, and the storage and disposal of data						
	Describes quality assurance and control procedures						
	Notes potential biases in the collection, measurement and analysis of data						
	Describes study limitations						
management of adverse events	Describes the management and reporting of potential adverse events, if applicable						

Category	Criteria	1	2	3	4	5	NA
Procedures and methods: dissemination, notification, and report of results	Defines individual notification of participant results						
	Shows participant notification of study findings						
	Clearly outlines the expected products or inventions from the study and their use						
	Outlines the dissemination of the results to the public						
Appendices	Data collection forms are appropriate						
	Proposed tables and figures are appropriate						
	Includes relevant documents						
References	Numbers and lists bibliographic references in the order they appear in the text						
	The number of references is appropriate for the protocol content						
	Bibliographic references are current and related to the content referenced						
	Bibliographic references follow Vancouver format						
Structure and general clarity	Uses adequate punctuation and grammar						
	Uses proper spelling						
	Work is original and there is no evidence for plagiarism						
	The writing is in paragraph form and does not use bullets as in a presentation						
	Provides a description of acronyms before they are used						

Instructions and Guidelines for a Scientific Abstract

Description

During the first and second year of the FETP program, several Scientific Abstracts are required to be written for a variety of core activities. Typically, writing a scientific abstract is required for outbreak investigation reports, protocols, manuscripts for peer review, and surveillance reports. A scientific abstract serves as a general synopsis of an entire paper. Therefore, the scientific abstract must contain information from all four sections of a paper: introduction, methods, results, and conclusions. During the FETP program, Scientific Abstracts will be submitted to national and international conferences, such as EIS and TEPHINET, and if accepted, a poster or oral presentation will be developed based on the accepted abstract.

Structure and Content

The scientific abstract is usually between 250-275 words in length. The word count excludes the subheadings of the structured abstract (background, methods, results, conclusions), title, author list, address, or keywords. A word count is easily obtained by selecting the appropriate text of the abstract and then choosing the "Word Count" command in the "Tools" menu of Word. A Scientific Abstract should contain the following seven criteria: 1) background and rationale for study, 2) appropriateness of methods, 3) presentation of results, 4) conclusions and interpretation of results, 5) significance to public health, 6) recommended intervention and estimation of public health impact, and 7) overall clarity of abstract. The following abstract format is recommended:

1. **Authors**
   - First author (presenter). Type the full first name and middle initial, if any, before the last name (e.g., Jorge L. Lopez).
   - Co-authors. List each co-author in order of contribution by typing one initial followed by the last name (e.g., G. Diaz, S. Barajas).

2. **Title**
   - Be brief. Avoid subtitles if possible.
   - Capitalize major words only. Capitalize the second component of hyphenated terms.
   - Do NOT use abbreviations or acronyms in title.
   - Give geographic location (country, state or city) and dates of study or investigation. Do not abbreviate geographic locations; separate them from the rest of the title by a dash, e.g., "outbreak of Pneumonia – Texas, 1995."

3. **Abstract Text**
   - Structure the abstract, using the following subheadings to identify each section: **Background, Methods, Results, Conclusions.**
   - Each subheading should be typed flush left, in bold font, and followed by a colon.
   - The **Background** section should address both 1) the public health significance of the subject and 2) the scientific background and rationale for the study.

- The **Methods** section is a step-by-step description of the physical work that was done. This is written in paragraph style and does not include any results.
- The **Results** section should be a plain description of what your exact results were. Discussion as to what the results mean is NOT included here.
- The **Conclusions** section discusses the results as to how they address the hypothesis/questions.
- Since an abstract is a citable document, the **Results** section must contain data. It should not include such stated as "Data will be discussed."

4. **Key Words**
   - Please include 4-6 key words; use terms listed in the Medical Subject Headings (MeSH) from the Index Medicus (http://www.nlm.nih.gov/mesh/meshhome.html).

13 Common Errors Seen in Abstracts of Field Epidemiology Training Programs (FETPs)

1. The title is neutral and is only a summary of the methods.

2. The abstract exceeds the word limit.

3. The abstract does not follow the recommended structure or the recommended format.

4. The background section is too long.

5. The methods section labels what was done instead of describing it.

6. The methods used to analyze the data are not mentioned.

7. The results do not present enough data.

8. The abstract contains references.

9. Some results appear first in the conclusion section.

10. The conclusion repeats data already presented in the results.

11. The recommendations are not based on the data presented.

12. The abstract is not self-contained.

13. The abstract is not written using complete sentences.

SAMPLE ABSTRACT

Authors: Gulmira J. Sailybayeva, A. Kaspirova, A. Kuatbayeva, S. Ajeilat, A. Jumagulova, M. Favorov

Title: Human Immune Deficiency Virus (HIV) outbreak investigation among hospitalized children—Shymkent City, Southern Kazakhstan Region, June-November 2006

Background: Between January-June, 2006, 15 HIV infected children were identified in pediatric hospitals in Shymkent in Kazakhstan. To determine the magnitude of the outbreak, the Ministry of Health conducted an HIV sero-survey in Shymkent among children aged $\leq$ 2 years with history of hospitalization after Jan 1, 2006 (n=7954). We used the sero-survey as the source for a case-control study to identify factors associated with HIV infection.

Methods: HIV status was determined based on the 1999 CDC case definition for children. Twenty-eight HIV-positive children born to HIV-negative mothers and 195 randomly selected HIV-negative children were investigated. Information on factors that might have occurred in healthcare settings and at home was ascertained from children's polyclinic charts and hospital records. Medical care providers and blood donors for the 28 infected children were screened for HIV and medical practices were reviewed. Logistic regression was used to assess associations between risk factors and HIV infection.

Results: Of the 28 infected children, 27 (96%) had received intravenous (IV) fluids, 20 (71%) subclavian vein catheterization (SVC), and 16 (57%) blood products. Twenty (71%) were males, all uncircumcised. In multivariate analysis, factors associated with infection were: receiving IV fluids (OR=8.8, 95%CI=1.03-76.2), SVC (OR=3.7, 95%CI=1.2-11.5); other factors were not significant. Medical care providers and 81 available blood donors (total 89) were HIV-negative. In hospitals, unsafe techniques for administration of IV medications and the use of reusable equipment for catheterization were observed.

Conclusion: This study indicates that the administration of IV fluids and SVC were associated with infection among children, possibly because of unsafe practices. Measures were implemented to ensure safety of the administration of transfusion materials and sterilization of reusable medical equipment.

Key Words:

Word Count:

Evaluation for a Scientific Abstract: Checklist

Score	Description
5 = Excellent	The element is present, consistent with the standard described in the instructions and provided in the classroom, and is of a remarkable/outstanding quality.
4 = Good	The element is present and consistent with the standard described in the instructions and provided in the classroom.
3 = Satisfactory	The element is present and may be used even though it may not completely follow the standard described in the instructions and provided in the classroom.
2 = Poor	The element is present but flawed or of poor quality.
1 = Absent	The element is absent from the report.
NA = not applicable	The element is not relevant to this study.

Category	Criteria	1	2	3	4	5	N/A
Background and rationale for the study	Does the background clearly state the public health problem or question that the study will help to resolve?						
	Are key antecedent data or issues presented to set the stage for the study? (If necessary)						
	Does the background clearly state the objective(s) of the study?						
Appropriateness of Methods	Are epidemiologic comparisons clearly stated?						
	Are critical definitions clearly stated or obvious (for example, case definitions, main exposure)?						
	Do the selected methods correspond with the purpose of the study and the research questions?						
	Is the sequence of methods clear and easy to follow?						
	Are the essential methods described with precision and without undefined terms or jargon?						
Presentation of Results	Do the study results follow logically from the methods described?						
	Are the study results appropriately summarized in quantitative terms? (for example, number of individuals in study, major findings on time, place, and person)						
	Are appropriate epidemiologic measures used for all direct or implied comparisons?						
	Are comparisons epidemiologically correct and free from fallacious interpretation? (for example, rates vs. proportionate frequencies,						

Category	Criteria	1	2	3	4	5	N/A
	numerical estimates of risk and impact measures vs. “high” or “low”)						
	Are sufficient and adequate data presented to allow the reader to reach a conclusion?						
	Are the results organized in a way that assists the reader to reach a conclusion?						
Conclusions and Interpretations of Results	Does the conclusion have its principal basis in the data?						
	Does the conclusion integrate the key results?						
	Does the conclusion answer the problem and objectives stated in the background?						
	Are the findings and their interpretation consistent with existing scientific knowledge?						
Public Health Significance	Does this study, in both topic and results, have an obvious application to improving public health, and is this application obvious to the reader without the need for complex explanation or extrapolation?						
	Is the study sufficiently sound (including clarity and strength of results) to serve as a basis for taking public health action?						
	Do the data solves an immediate problem or build on existing knowledge (and not simply repeat what is already known)?						
	Are clear criteria used to stress the public health significance of the problem under study?						
Recommended Intervention and Estimation of Public Health Impact	Are actions/ recommendations/ control measures practical, and derived directly from study results?						
	Are public health actions recommended or reported as undertaken? (for example, initiating or enhancing prevention or other public health programs, developing procedures, policies or legislation, implementing and strengthening public health surveillance systems)						
	Does this study effectively document the potential or actual public health impact? (for example,						

Category	Criteria	1	2	3	4	5	N/A
	reporting on process or outcome indicators: number of persons treated, amount of increased resources devoted to a prevention activity, evidence of improvements in the operation of a surveillance system, estimation of morbidity or mortality prevented, or ways in which the public health actions were innovative)						
Overall Clarity of the Abstract	Is the writing clear and brief?						
	Is there a logical sequence and cohesiveness among all abstract sections?						
	Are complete sentences used?						
	Are proper and simple terms used to describe methods and discuss findings?						
	Is the abstract 275 words or less?						

Instructions and Guidelines for an Oral Presentation

Description

During the FETP program, several oral presentations will be given in class, for respective organizations, or for national and international conferences. An oral presentation is an exercise in effective communication. Often, communication of key study findings and the importance of studies, surveillance analyses, or surveillance evaluations to a diverse audience is required. Presentations that are given at national or international conferences are usually based on acceptance of submitted abstracts. Depending on the abstract, the presentation will be expected to be delivered on PowerPoint slides or on a poster.

Structure and content

Typically, oral presentations last 10-15 minutes and are organized like a scientific manuscript with title, introduction, methods, results, discussion, and acknowledgments. The presentation should only cover the most important findings of the study, the surveillance analysis, or the surveillance system evaluation. Depending on the time allotted for the presentation, each component should be adjusted to fit the overall length of the talk. An effective oral presentation should adhere to the following six categories: 1) background, 2) methods, 3) results, 4) discussion/conclusions, 5) question and answer session, and 6) overall style and delivery. The following structure of a 10-minute oral presentation is recommended:

5. **Title Slide (10-15 seconds)**
    - Provides a concise description of the topic, location, and dates of the study, surveillance analysis, or surveillance evaluation
    - Tells the audience who the speaker is and their affiliations
    - Includes coauthors (these should be listed in the printed abstract as well)
    - Should not be confused with an acknowledgments slide
    - May include agency or company logos

6. **Introductory Comments (1-2 minutes)**
    - Engage the audience
    - Provide the rationale
    - Establish relevance to public health
    - Give only essential information about pathogens, diseases, and other background information
    - Give the objectives of the study, surveillance analysis, or surveillance evaluation

7. **Methods Section (1-2 minutes)**
    - Describe the design study, surveillance analysis, or surveillance evaluation
    - Use appropriate statistical methods for the study, surveillance analysis, or surveillance evaluation design
    - Describe essential methods with precision and avoid vague language or jargon
    - Sometimes use figures, such as flow diagrams and tables

8. **Results Section (3-4 minutes)**
    - Emphasize the most important findings of the study, surveillance analysis, or surveillance evaluation
    - Should have a combination of text, tables, figures, and occasionally photographs
    - Use text and bullets for qualitative results
    - Use tables and figures for quantitative data

9. **Discussion (2-3 minutes)**
    - Relate the findings to the objectives of the study, surveillance analysis, or surveillance evaluation
    - State and interpret main findings but do not simply restate results
    - Incorporate references from other studies, analyses, or evaluations
    - Mention only important limitations
    - Discuss public health importance of findings
    - Make specific recommendations for future work and public health response

10. **Acknowledgements Slide (10-15 seconds)**
    - Recognize coauthors and other contributors
    - Include same logos as on title slide
    - Thank the audience

Tips for Creating Slides

1. **Effective slides are:**
    - Simple
    - Clear
    - Visible
2. **Recommended typefaces and font sizes**
    - Sans serif font, like Arial and Tahoma
    - Make everything bold – all text, titles, graph labels, etc
    - Font size may vary according to typeface used
    - For Arial (bold)
        - Titles 36-40 pt
        - Main bullets 28-32 pt
        - Sub-bullets 24-28 pt
3. **Each slide should have a single focus or take-home message**
    - For multiple points, use multiple slides
    - Material divided into two slides takes no longer to present
4. **Avoid having too much**
    - Information
    - Color
    - Use of unnecessary symbols
    - Animation and clip art
5. **Avoid these elements**
    - Titles that aren't in the same location vertically on each slide
    - Too many bullets and sub-bullets – use no more than 8-10 lines of text per slide
    - Full sentences instead of key words or phrases
    - Serif Fonts (like Times New Roman)
    - Unnecessary boxes and grid lines in tables and charts
    - Different text styles from one slide to another
    - Decorative symbols, such as fancy bullets
    - Shadow text and decorative fonts
    - 3-D graphs used inappropriately
6. **Slides with bullets should**
    - Follow the order of script text
    - Keep the verb form consistent
    - Use a consistent style of bullet and spacing for each level
    - Capitalize the first word of each bullet and sub-bullet
    - Use special effects (italics, special colors) only once for emphasis
7. **Colored slides are the norm but keep the following in mind**
    - Contrast the font color with the background color; dark blue background with yellow titles and white text are safe choices
    - Keep the total number colors used to a minimum
    - Use color to enhance interpretation of the data and not for decoration
    - Avoid red and green backgrounds and text

Tips for Delivering Oral Presentations

1. **Humor**
    - A little humor is acceptable if you have a solid presentation. However, what's funny to you could be offensive to others

2. **Rehearse**
    - The best way to deliver a strong presentation is to rehearse it in front of critical reviewers
    - Practice, practice, practice!

3. **Speak slowly and project your voice**
    - Speak at a pace that is easy to understand
    - Breathd between sentences, phrases, or before advancing to the next slide to help you slow down
    - Articulate your speech, speak with energy, and make your voice reach your audience

4. **Look at your audience**
    - Maintain eye-contact
    - Speak as though you are speaking directly to a person

5. **Explain all figures to your audience**
    - Explain what the figures are showing and their significance

6. **Thank your audience when you are done**

7. **Answer questions briefly and directly**
    - Anticipate questions and rehearse ahead of time
    - Take time to make sure you understand the question
    - Avoid the urge to tell the audience everything you know
    - Do not provide unrelated information
    - Don't be afraid to say "I don't know"

Evaluation of an Oral Presentation: Checklist

Score	Description
5 = Excellent	The element is present and consistent with the standards described in the instructions and provided in the classroom, and is of outstanding quality.
4 = Good	The element is present and consistent with the standards described in the instructions and provided in the classroom.
3 = Satisfactory	The element is present and may be used even though it may not completely follow the standards described in the instructions and provided in the classroom.
2 = Poor	The element is present but it has errors or is of poor quality.
1 = Absent	The element is absent.
N/A = Not Applicable	The element is not relevant.

Category	Criteria	1	2	3	4	5	N/A
Background	The public health question (or problem) was clearly identified						
	The objectives were clear						
	The speaker captured the interest of the audience						
Methods	The study, surveillance analysis, or surveillance evaluation design was explained						
	Appropriate statistical methods for the study, surveillance analysis, or surveillance evaluation design were used						
	Essential methods were described accurately and avoided vague words or jargon						
Results	The findings were ordered logically, and clearly						
	No elements of the results section were found in the methods section						
Discussion/ Conclusion	The findings were discussed in the context of the objectives of the study, surveillance analysis, or surveillance evaluation						
	The discussion cited other studies, analysis or evaluations						
	The conclusions were stated clearly and ordered logically, e.g. most to						

Category	Criteria	1	2	3	4	5	N/A
	least important						
	The conclusions were consistent with the data presented						
	The most important limitations were explained						
	No elements of the discussion section were found in the results section						
	The recommendations followed logically from the data presented						
	The recommendations were based on the interpretation of the data						
Question and Answer Session	The questions were answered fully and appropriately						
	The answers indicated knowledge of the subject						
Overall Style and Delivery	The speaker stayed within the allotted time						
	The presentation was well rehearsed so that the speaker did not appear to be reading						
	The presenter spoke clearly, at an adequate volume and appropriate pace						
	The speaker established and maintained good eye contact with the audience						
	The slides were nicely presented and easy to read and follow						
	Graphics and figures were relevant and appropriate						

Instructions and Guidelines for a Scientific Manuscript

Description

The publication of a manuscript is the culmination of scientific method. When written appropriately, it informs the scientific community about what happened in a scientific study, why was it done, how was it done, the result of what was done, and the meaning of what was done. During the Field Epidemiology Training Program (FETP), at least one manuscript should be written for submission to a peer-reviewed journal. In scientific methodology, the manuscript represents a high level of consensus; it is the most difficult product to develop, requires a lot of individual work, should be complete and well thought-out, and with persistence, can be published in a peer-reviewed journal. When developing of a manuscript, two things should be considered: the format and the style. In the FETP the formatting should be compatible with Vancouver Group, further elaborated by the International Committee of Medical Journal Editors (ICMJE).

The following are the recommendations for manuscript format and style:

1. **Format**
    - IMRD structure (introduction, methods, results and discussion)
    - Double-spaced, column in vertical design, 12-point font, letter-size white paper (21.59*27.94 cm)
    - No more than 3,000 words, from the introduction until the end of the discussion (this equals 8-10 pages of 300-400 words)
    - No more than five tables and/or figures
    - Should contain references
    - Numbered pages

2. **Style**
    - Use the past tense to describe what has been done
    - Use the present tense for established facts
    - Be brief, using sequential sentences
    - Choose one idea per sentence
    - Be specific
    - Do not use bold type or underline
    - Do not include footnotes that refer to the text in the pages (footnotes are only used for tables and figures)

The following is the structure for a manuscript that is recommended:

1. **Title**
    - In the age of information overload and with the ease in accessing data electronically, it is very important that the manuscript title reflects the study with precision. Many times, this is the only opportunity that the author has to try and entice readers to read the manuscript. The title helps the reader understand the nature of the study and decide if they want to read it. Always think about the "readability" of the title. The title can be in the form of a statement, a question or an answer. If the study was a randomized clinical trial, this should be included in the title. Many journals limit the number of characters permitted in a title; ensure that the title does not exceed this limit.

2. **Authorship**
    - An author is generally considered someone that has made a substantial intellectual contribution to the study that is going to be published. Some journals now require and publish information about the contribution of each person named as an author of the study submitted for publication, especially for original research. Editors are strongly motivated to develop and implement a policy for authorship contribution, such as identifying who is responsible for the integrity of the work. The ICMJE has recommended the following criteria for authorship:
        - The credit should be based on: 1) substantial contributions to the idea and design, acquisition of data, or analysis and interpretation of data, 2) the drafting of the article or critical revision of intellectually important content, 3) the final approval of the published version. The authors should meet conditions 1, 2 and 3.
        - When a large multi-center group has brought the study to completion, the group should identify the individuals that accept direct responsibility for the manuscript. These individuals should clearly satisfy the criteria for authorship that the editors have previously identified. These individuals are asked to complete the authorship forms specific to each journal, such as the conflict of interest form.
        - The acquisition of grants or funds, the collection of data, or general supervision of the research group by itself does not constitute a criterion for authorship.
        - All the individuals designated as authors should qualify for authorship, and all of those that qualify for authorship should be listed as authors.
        - Each author should have participated in the effort sufficiently to be able to take public responsibility for the parts of the content.

3. **Abstract**
    - The majority of journals require a structured abstract with a limited number of words; typically 150-250 are allowed. Since many readers will only read the abstract, ensure that it contains all the important information from the manuscript. A structured abstract should contain an introductory statement that ends with a specific objective or hypothesis, followed by methods, results, and conclusions. Always avoid speculation and detailed discussion (refer to the guidelines on how to write abstracts).

4. **Key words**
    - These are for Medline searches on words utilized in similar articles.

5. **Introduction**
    - The introduction should be brief, generally limited to three or four points. The introduction should describe the current situation, the problem being researched and the work already done in the same area. It is not necessary to mention all references. The introduction should identify the gaps in the current knowledge and show the necessity of the study. The end of this section lays out the goals or objectives of the study and the hypothesis that will be tested.

6. **Methods**
    - The methods section is one of the **most important** parts of the manuscript. The purpose of this section is to provide the reader sufficient detail so that they could replicate the study. Unfortunately, in reality this part is sometimes the weakest section of the manuscript, especially for new writers. Although many readers are ready to jump directly to the conclusions, the skilled reader will usually begin with methods. As a general rule, if the methods are flawed there is no reason to continue reading the manuscript.
    - **Study design**: Describe the design utilized in the study. This should include the sampling methods, such as convenience vs. randomized. This is very important in determining whether a selection bias exists.
    - **Ethical considerations:** The majority of the journals require an approval from the Ethics Committee of the Institutional Review Board (IRB) for protection of human and animal subjects; furthermore, information about whether and how the subjects of the study gave their consent is often required.
    - **Subjects:** This section allows the reader to judge the generalizability or external validity of the study. It should detail the inclusion and exclusion criteria. For studies that include human subjects, the basic demographic information, such as age, sex, race and health status should be explained. However, the exact number of the subjects recruited, such as the breakdown of their age, race and sex, belongs to the results section.
    - **Setting:** Describe the context (rural vs. urban; academic vs. community-based; level of care such as outpatient, hospital, or emergency department) in which the study is carried out. In studies carried out in the emergency department, indicate the number of patients seen annually. If new methods or models are used, much more detail will be required; in this case, consider establishing the validity of a new model in a separate article. Provide the generic names of medication utilized, the manufacturer, the dose and concentration. For studies involving animals, describe the sedation methods and anesthesia.
    - **Interventions:** In this section the experimental protocol should be described in sufficient detail to allow the replication of the study by another investigator. If the study has been described previously or the methods have already been validated, they should be referenced. Describe the baseline conditions and subsequent measures and manipulations of independent variables, followed by measures of the dependant variables (the factors of most interest). Describe any clinical procedures that are not controlled by the protocol. State any assumptions that experimental procedures are based on.
    - **Calculations and Measurements:** Describe the variables that are measured and how the measurements are performed. When instruments are used, give the

manufacturer, including city and state, and instrument and model. It also might be necessary to justify why and how the variables are measured.

- **Data analysis plan:** Describe how the data will be analyzed and presented (for example, the average as opposed to the median) and what statistical tests were used to create inferences from the data. Indicate the significance level (type I error) and describe how the sample size was calculated. Help from a professional statistician is recommended for this section. Of course, a statistician is also very important for at the (earlier) phase of study design.

7. Results

- This is probably the most important part of the manuscript. The results section includes only data, not background or methods. It should include all the main results obtained, including the negative results. In the first paragraph, begin by describing the population in general and then describe the sub-groups. Give data that are pertinent to the principal research question; further observations may be included if they strengthen the argument. In the second paragraph, the main results should be described first, followed by secondary results or analysis of subgroups. Begin with the description of the data, and then describe the effects of the independent variables on the dependent variables. Univariate comparisons should come first, followed by multivariate analysis or interaction effects. Unexpected results should be presented at the end of the section. Be clear and concise throughout and use tables and figures when appropriate. The data included in the tables or figures should not be repeated in detail in the body of the text. Do not interpret data or present results for which the methods were not given in the methods section.

8. Discussion

- The principal objective of the discussion section is to explain the significance of the results. The majority of the journals begin this section with a brief summary of the main findings. Do not introduce any new data that has not already been described in the results. Explain why the results are important and how they relate to similar studies. This is the section where the author should try to convince the reader on the merits of the study. Do the findings of other studies support this one? Likewise, indicate how your study differs from other similar studies. Carefully select the most pertinent references. Consider alternative explanations for your findings; carefully consider all the possibilities. Always state the clinical relevance or the implications of the findings. For which population do the findings of the study apply? A separate paragraph or section should acknowledge the limitations of the study. All studies have limitations, and it is best that the author identifies them before reviewers or readers do. Suggestions for future studies can also be made. What questions remain to be answered? What new questions have emerged? Finally, end the manuscript with a brief message that summarizes everything in a conclusion. What should the reader remember? Avoid speculation and excessive and unjustified interpretation of results. Avoid the temptation of exaggerating the importance of the results. Make certain that the conclusions are completely compatible with the data. In general, you should make a direct connection between the study hypothesis, the results, and the conclusions.

9. Acknowledgements (list of contributors)

- All the contributors that do not meet authorship criteria should be listed in the acknowledgements section. For example, recognized a person that has provided technical assistance, assistance in drafting the manuscript, or a department chief that has provided only general support. The editors should ask the authors that declare if they have received assistance with the design of the study, the data collection, the data analysis, or the preparation of manuscripts. Anyone who has provided this assistance should be recognized by name supporting institution in the published article. Financial and material support should also be recognized.
- The groups of people that have contributed to the manuscript, but whose contributions do not justify the authorship that can be “clinical investigators” or “participating investigators,” and their role or contribution should be described. For example, “employed as a scientific consultant”, “critically examined study proposal”, “obtained the data”, or “cared for study patients”. These people should give written permission in order to be recognized.

10. References

- The purpose of the references section is to have a list of the sources cited in the text. Before submitting the article, be sure to review instructions for the authors and verify that the references are appropriately formatted and cited. Many new writers use a large number of references, but this is not appropriate for the majority of original manuscripts. Limit the list of references to those most relevant for the study being presented. The most common method utilized for citing references in medical journals is the Vancouver system, where references are cited in the order in which they appear, using numbered superscript. Several types of software are available to help organize the references in a manuscript, for example EndNote® and Reference Manager ®.

11. Tables and Figures

- Use the tables and figures to present the most relevant data and relationships. For many authors it is useful to prepare the key tables and figures before writing the results section. The first table should describe the baseline characteristics of the study sample group and the comparison group. The second table and subsequent tables and figures should present the results of the study. Measures of association with 95% confidence intervals offer more information to the reader than the *p* values or significance levels. Tables and figures may not be required if the results are limited or can easily be presented in the text. Ensure that the numbers in tables and figures correspond to the numbers in the text.

11 common errors found in FETP manuscripts

1. The title is not appealing or does not reflect the study.
2. The connection between objective, methods, results, and conclusions is absent or inadequate.
3. There is an incomplete, sloppy, or outdated literature review. For example, start the introduction saying, “Disease X is an important health problem.” Instead, say “Disease X is the X cause of death at a global level” and proceed to focus on the area of study.
4. There is not enough information in the methods section.
5. Proportions (percentages) are presented, but not the relevant numbers.
6. Data is reported twice, in the tables/figures and in the text.
7. Opinions are given in the results section.
8. Information from the introduction is repeated in the discussion, or new data not included in the results is mentioned in the discussion.
9. The common phrase “Further study is needed” is used. Use this phrase only if necessary.
10. Using the passive voice denotes lack of ownership and is vague. Instead, use the active voice, which is precise and reflects responsibility for the actions taken.
11. There is speculation in the discussion without support.

Phrases to avoid in a manuscript

1. Qualifiers
   Example: “This was a huge outbreak.”
2. Exaggeration
   Example: “This is the biggest outbreak to date in which **thousands and thousands** of people have been affected.”
3. Accusations
   Example: “The irresponsible behavior of health workers drove the spread of this outbreak of yellow fever”.
4. Apologies
   Example: “Due to lack of resources I was not able to.”
5. “Clearly”
   If it is evident, it is not necessary to accentuate the phrase with this word.

Evaluation for a manuscript: Checklist

Points	Description
5 = excellent	The element is present, consistent with the standard described in the instructions and provided in the classroom, and is of a remarkable/outstanding quality.
4 = good	The element is present and consistent with the standard described in the instructions and provided in the classroom.
3 = satisfactory	The element is present and may be used even though it may not completely follow the standard described in the instructions and provided in the classroom.
2 = poor	The element is present but flawed or of poor quality.
1 = absent	The element is absent from the report.
NA = not applicable	The element is not relevant to this study.

Category	Criteria	1	2	3	4	5	NA
Beginning Pages	Title (brief and reflects the exact format of the study)						
	Authors and collaborators (including their roles)						
	Abstract (in IMRD format)						
Introduction	Brief (three or four paragraphs)						
	Describes the current state and gives a brief description of the problem						
	Includes the gaps in the current knowledge and justification of the study						
	Includes statements of the study objectives or the hypothesis that will be tested						
	Documents the facts with references						
Methods	Study design and temporality						
	Subjects: inclusion and exclusion criteria and basic demographic information						
	Location/ setting where the study was conducted						
	Description of what was done in sufficient detail to replicate study						

Category	Criteria	1	2	3	4	5	NA
	Description of the variables measured and how the measurements were carried out						
	Definition of the dependant variable and the appropriateness to the study's objective(s)						
	Description of how the data were analyzed; if there were standardized procedures or tools, provide the reference						
Results	Explanation of the results of the study in simple terms						
	Provides the total numbers along with percentages						
	Statements of are supported with data ("Incidence is high" vs. "Incidence is high, at X%")						
	Information is not presented twice (results presented in tables and figures not duplicated in the text)						
	Does not repeat methods or include analysis						
	Describes the information from the tables as text subheadings - for example, "The cases and controls did not differ in respect to baseline characteristics (Table 1)"						
Discussion	Emphasizes the most important findings and explains them						
	Is focused (discusses three or four points)						
	Compares findings with those of other authors						
	Gives precise and specific conclusions						
	Mentions the limitations of the study						
	Discusses the importance of the study and suggests new ideas for research						
Bibliographical References	Lists the numbered bibliographical references in the order in which they appear on the text						
	The number of references is adequate for the content of the report						

Category	Criteria	1	2	3	4	5	NA
	The bibliographical references are current and are related to the information cited						
	The bibliographical references are registered following Vancouver style						
Tables & Figures	Gives the total numbers along with the percentages						
	Consolidated tables – for example, prevalence is shown by gender and age						
	The numbers coincide with those provided in the text, and the rows of tables are totaled						
	Footnotes are used in standard format (∗, †, ‡, §)						
	The charts and graphs are in black and white						
Format & General Clarity	Uses adequate punctuation and grammar						
	Uses proper spelling						
	Work is original and there's no evidence for plagiarism						
	The article is written in paragraph form, and does not use bullets as if it were a presentation						
	Provides a description of acronyms before they are used						

Instructions and Guidelines for Evaluating a Bulletin Article

Description

Writing a bulletin article is required as an initial activity of FETP and it is usually completed during the first year of the program. The bulletin article is generally about an epidemiologic investigation that is in process or completed. Frequently, the bulletin article serves the purpose of notifying health professionals and the public about outbreak investigations in process or that have recently occurred. A bulletin article also strives to inform the public and colleagues about outbreak prevention measures. While the sections are similar to a peer-reviewed manuscript, the requirements for a bulletin article are not as rigorous. The bulletin article should be written more quickly, during a period of days, instead of the months it takes to write a manuscript. National or regional epidemiologic bulletins are ideal for submitting this type of article, and there are other national and regional publications that could also be appropriate.

Structure and Content

The bulletin article should contain no more than 1,500 words, and should contain the following sections: 1) an opening paragraph, 2) introduction, 3) methods, 4) discussion and recommendations, and 5) acknowledgements, references and tables, if appropriate for the article. Note that there are differences between this type of article and those that appear in peer-reviewed journals. The emphasis of a bulletin article is to provide information about an event related to public health in a timely way so that action can be taken. The article should be concise and easy to read; should include the events that occurred- that led up to the outbreak; and should explain methods and immediate control measures that have been taken; and should provide a justification of the recommended control measures. The following structure is recommended:

1. **Opening paragraph**
    - The opening paragraph should summarize the main points of investigation. Similar to a newspaper article, the opening paragraph should respond to the questions who, what, where, when, and should describe any actions that have been taken. All of this should be covered in three to five sentences.
2. **Introduction**
    - The introduction provides more context about the event or disease, including the details of the events leading up to the outbreak in chronological order, recent trends of the disease, and pertinent clinical information.
3. **Methods**
    - The methods section should be concise and should not be as technical as you would expect in a scientific manuscript, but should contain the study design and the manner in which the data were obtained, including the collection of samples for analysis in the laboratory.
4. **Results**
    - Only the most relevant positive and negative results from descriptive and analytic data should be included in the results section. Specifically, the results that support the conclusions and recommendations in the discussion section should be included.
5. **Discussion and Recommendations**
    - The discussion section should interpret the data, identify the limitations and the lessons learned, and provide clear and concise recommendations. If the investigation is still not complete, the discussion should describe the remaining activities that are planned or under way.

10 Common Errors Found in Bulletin Articles

- The article is too long.
- The order of events is confusing.
- The link between the results and the recommendations is not clear.
- There is no opening paragraph.
- There are no acknowledgements.
- The methods are not concise.
- The activities remaining to be completed are not described.
- The recommendations are very general.
- The sections are mixed together (for example, the results are recorded in the discussion section).
- Too much time is taken before publishing the article, which results in information that is neither timely nor pertinent.

Evaluation for a Bulletin Article: Checklist

Points	Description
5 = Excellent	The element is present, consistent with the standard described in the instructions and provided in the classroom, and is of a remarkable/outstanding quality.
4 = Good	The element is present and consistent with the standard described in the instructions and provided in the classroom.
3 = Satisfactory	The element is present and may be used even though it may not completely follow the standard described in the instructions and provided in the classroom.
2 = Poor	The element is present but flawed or of poor quality.
1 = Absent	The element is absent from the report.
N/A = Not applicable	The element is not relevant to this study.

Category	Criteria	1	2	3	4	5	N/A
General	Was the article submitted for publication in a timely manner? 5 = within a month, 4 = within 2 months, 3 = within 3 months, 2 = within 6-12 months, 1 = after a year						
	Does the article contain no more than 1,500 words?						
	Was the article published? 5 = yes, 1 = no						
	General clarity and organization of the article						
	Are the elements in each section correct (for example, the results are not mentioned in the discussion section for the first time)?						
Opening Paragraph	Are the questions who, what, where, and when answered in 4-5 sentences?						
	Are the public health actions that have already taken place described?						
	Is the reader's attention captured so that s/he is motivated to continue reading?						
Introduction	Is the order of events described in detail?						
	Is the event placed in the appropriate context (describing previously related events) or recent disease tendencies?						

Category	Criteria	1	2	3	4	5	N/A
Methods	Is the case-definition clear?						
	Is the study design clearly stated?						
	Are the methods utilized for collecting data described?						
	Is there a description of the laboratory participation in testing samples?						
	Are the methods concise and not too technical?						
Results	Are the results limited to the most pertinent positive or negative findings?						
	Do the results contain descriptive and analytical information?						
	Are the laboratory results well-described and do they identify what still needs to be done?						
Discussion	Is there discussion about how the results are related to the study hypothesis?						
	Are the limitations of the study described?						
	Are the recommendations clear and practical?						
	Are the recommendations clearly justified in regards to the interpretation of the results?						
	Are pending efforts regarding public health control and prevention discussed?						

	If the investigation study is in process, does it describe what will need to happen in order to complete the study?						
Acknowledgements, Figures, and References	Are tables, maps, or other graphs clear and precise?						
	Are the acknowledgements listed?						
	Are the references presented in a consistent format?						

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ETHIOPIAN PUBLIC HEALTH ASSOCIATION

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION