Manual for the ECDC Fellowship Programme
EPIET and EUPHEM paths
Cohort 2017

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# Abbreviations

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<tr>
<td>CDMT</td>
<td>Competencies Development Monitoring Tool</td>
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<td>DD</td>
<td>Director’s Decision</td>
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<td>EAN</td>
<td>EPIET Alumni Network</td>
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<td>EAP</td>
<td>EPIET-associated programme</td>
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<td>ECDC</td>
<td>European Centre for Disease Prevention and Control</td>
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<td>EEA</td>
<td>European Economic Area</td>
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<td>EPIET</td>
<td>European Programme for Intervention Epidemiology Training</td>
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<td>ESCAIDE</td>
<td>European Scientific Conference for Applied Infectious Disease Epidemiology</td>
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<td>TSF</td>
<td>Training Site Forum</td>
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<td>EUPHEM</td>
<td>European Public Health Microbiology Training</td>
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<td>EU</td>
<td>European Union (28 Member States)</td>
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<td>EU-track</td>
<td>EU-track of EPIET (fellows trained in a country other than their country of citizenship/s)</td>
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<td>EVA</td>
<td>ECDC Virtual Academy (e-learning platform)</td>
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<td>FETP</td>
<td>Field Epidemiology Training Programme</td>
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<td>FFB</td>
<td>Fellowship Faculty Bureau team (ECDC)</td>
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<td>FSC</td>
<td>Fellowship Scientific Coordination team (ECDC)</td>
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<td>LMS</td>
<td>Learning Management System</td>
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<tr>
<td>MS-track</td>
<td>Member State-track (fellows trained in their country of residence)</td>
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<tr>
<td>NFP-T</td>
<td>National Focal Point for Training</td>
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<td>PAE</td>
<td>German Postgraduate Training for Applied Epidemiology</td>
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<td>PHT</td>
<td>Public Health Training (ECDC)</td>
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<tr>
<td>SOPs</td>
<td>Standard Operating Procedures</td>
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<td>TNS</td>
<td>Training Network Strengthening (ECDC)</td>
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1 Introduction

The legal basis for all ECDC training activities is Regulation (EC) No 851/2004 of the European Parliament and of the Council of 21 April 2004 (ECDC Founding Regulation) and the Decision No 1082/2013/EU on serious cross-border threats to health. Based on this legislation, an ECDC Public Health Training Strategy was endorsed by the ECDC Management Board in June 2015.

The European Programme for Intervention Epidemiology Training (EPIET) was created in 1995. Its purpose was to create a network of highly trained field epidemiologists in the European Union, thereby strengthening the public health epidemiology workforce at EU Member States and EEA level. Current EPIET alumni are providing expertise in response activities and strengthening capacity for communicable disease surveillance and control inside and beyond the EU. In 2006 EPIET was integrated into the core activities of ECDC. The practical training continuous to take place at competent and experience national and regional centres for surveillance and control of communicable disease including public health laboratories.

The European Public Health Microbiology Training Programme (EUPHEM) was initiated by ECDC in 2008. It provides training and practical experience in public health microbiology in training sites at national and regional centres for surveillance and control of communicable diseases, laboratories with public health functions or training sites with a consortium of different laboratories in the EU/EEA.

The 2015 ECDC Public Health Training Strategy outlines one fellowship programme, with two paths, one for field epidemiology (EPIET) and one for public health microbiology (EUPHEM), and for each path one EU-track and one Member State-track (MS-track). Both ECDC and the Member States contribute resources to operate the fellowship programme, in a spirit of shared ownership.

The Strategy further establishes that all ECDC training activities are based on agreed and well-defined lists of discipline-specific core competencies needed for effective preparedness, prevention, detection, assessment and control of communicable disease threats with cross-border dimension. Indeed, the curriculum and learning objectives for the Fellowship Programme are based on defined core competencies for field epidemiologists and public health microbiologists, respectively. However, EPIET and EUPHEM fellows might achieve the same learning objectives based on different activities and methodologies to achieve their specific core competencies.

The primary aim of the ECDC Fellowship Programme is to strengthen the capacity of the workforce in the EU by providing state-of-the-art training in field epidemiology and public health microbiology related to communicable diseases. Fellows apply epidemiological and microbiological methods to a wide range of public health problems in Europe and elsewhere. The main emphasis of the programme is on the development of discipline-specific competencies through public health service. As fully-fledged professionals, fellows deliver products and are engaged in activities that contribute to prevention of disease, death and disability and protect the EU against communicable disease threats. In addition, ECDC sees the programme as a way to facilitate the advancement towards new standards and contribute to the development of national programmes in field epidemiology and public health microbiology that requires experienced and competent training sites.

Fellows’ competencies are built through public health assignments at dedicated Training Sites. Participation in the Introductory Course and subsequent training modules provides the basic induction required to acquire competencies through practice. Training site supervisors are closely linked to the training activities of the fellows and play a key role in their acquisition of competencies. Supervisors provide technical supervision and mentoring of the fellow through the fellowship and might participate in the delivery of its specialised training modules. As part of the ECDC Continuous Professional Development Programme (CPDP), ECDC supports supervisors offering technical workshops and trainers’ activities (i.e. participation in ECDC Summer School and facilitation at modules), participation at the yearly ESCAIDE conference and senior exchange visits. In addition, supervisors are invited to accompany coordinators to site visits and site appraisals in order to get familiar with work of other training sites.

Fellowship Programme Training Sites contribute resources to the programme in several ways, including access to field assignments, on-site supervision, engagement in the peer review process of site visits, and facilitation in training modules.

The ECDC Fellowship Programme is composed of two administrative tracks: the EU-track and the MS-track. ECDC funds salaries and training modules for EU-track fellows who are assigned to countries other than their own. In the case of MS-track fellows, Member States fund the salaries of fellows undergoing the fellowship in their own countries while ECDC funds their participation in training modules.

The ECDC Fellowship Programme works in close collaboration with a number of EPIET-associated programmes (EAPs). EAPs are Field Epidemiology Training Programmes (FETPs) run and governed by the Member States. In 2016, EAPs included the German Postgraduate Training for Applied Epidemiology (PAE) and the Field Epidemiology Training Programme in the United Kingdom (UK-FETP), and Austria (Austria FETP). EPIET and EAPs share scientific content based on the curriculum of EPIET and collaborate based on an agreement signed by ECDC and the EAPs. Further, in this manual, experts responsible for EAPs are designated as ‘EAP scientific coordinators’ even though titles may differ by country (e.g. scientific coordinator, senior scientific coordinator, director).
In this manual, the term ‘fellow’ refers to participants on the ECDC Fellowship Programme (EU-track and MS-track) and EAP fellows who are recruited into a fellowship programme administered in accordance with this manual, follow the EPIET/EUPHEM curriculum, and receive an ECDC fellowship programme (EPIET/EUPHEM) diploma upon satisfactory completion of the two-year training course.

1.1 Purpose and users

This manual aims to give a detailed overview of the ECDC Fellowship Programme intended learning outcomes, training activities (modules, field and international assignments), supervision and coordination of the training. As such, it is an ECDC Work Instruction.

The intended audiences of the manual are the applicant and fellows of Cohort 2017, national supervisors in the Training Sites and the Scientific Coordinators.

The manual also makes reference (as annexes) to other documents, like the core competencies for EPIET fellows and core competencies for training of public health microbiologists, standard operating procedures (SOPs), templates for progress reports, selection process of fellows, etc.

2 Programme Objectives

The Fellowship Programme has the following programme objectives:

- To strengthen the surveillance and control of infectious diseases and other cross-border health threats or issues of public health concern in the EU/EEA Member States and at EU level, supporting the implementation of Decision 1082/2013/EU;
- To enhance response capacities for effective field investigation and communicable disease control at national and community level to meet public health threats;
- To strengthen the European network of public health professionals through use of shared standards and methods, good practices and common public health objectives;
- To support cascading of training and capacity building within the Member States;
- To facilitate multi-disciplinary cooperation in the above fields.

3 Competencies and intended learning outcomes

The Programme consists primarily of learning by doing training and practice through delivery of services, based on defined discipline-specific core competencies (Annexes 1 and 2). Fellows begin the programme with a three-week Introductory Course. Specialised modules during the fellowship offer further training opportunities to develop core competencies. The Programme or the Training Sites can offer additional training opportunities when other training needs have been identified by the competency assessment.

3.1 Core competencies

The ECDC Fellowship Programme is a competency-based programme. The curriculum for discipline-specific paths is based on core competencies developed in consultation with relevant stakeholders.

A competency is a combination of knowledge, skills and abilities/attitudes considered critical to perform a task effectively.

For each core competency, the fellowship objectives are achieved by facilitating the acquisition of knowledge, skills and abilities/attitudes. The competency-based learning objectives in this document comprise both, generic and discipline-specific competencies. The minimum expected level for fellows to achieve during the fellowship is indicated in front of each key competency domain and are described as three levels:

- **Aware:** Individuals are able to identify the concept but have limited ability to perform the task/s independently (basic).
- **Skilled:** Individuals are able to perform the tasks independently (intermediate).
- **Competent:** Individuals are able to synthesise, critique and teach the acquired skills (advanced).

Fellows’ acquisition of competencies will be assessed on an individual basis, and compared to the initial competency assessment during the course of the programme.

The Fellowship Programme uses the core competencies as a reference framework to:
define the pre-requisites for selecting candidates and the objectives to be achieved by the end of the two-year fellowship (with input from the TSF);

develop, organise, and update the curriculum, including modules; and

monitor the progress of fellows’ acquisition of competencies and aid the planning of learning activities.

The Head of the Fellowship Programme and Head Scientific Coordinators of each path (EPIET and EUPHEM) may update the core competencies to be achieved through the programme in collaboration and consultation with the relevant advisory committees (EAP programme directors, NFPs, Training Site forums, etc.). However, the current curriculum and core competencies apply until Cohort 2017 graduates.

3.2 Programme-common intended learning outcomes

The Fellowship learning activities are grounded in their service in public health settings, mostly at epidemiology departments or public health laboratories. During the two-year training programme, all fellows work to reach the following programme-common intended learning outcomes.

However, the individual competencies acquired may vary between fellows in the EPIET and EUPHEM paths, where the fellows in the EPIET path focus more on the epidemiological aspects, while the fellows in the EUPHEM path focus more on the microbiological aspects of a public health issue.

The expected level of competency to be acquired for each learning activity is indicated by its verb (design, analyse, conduct, etc.). Each of the following headings in this chapter represents a key competency domain or complex learning activity, where the levels of competence that fellows are expected to achieve are presented in parentheses. In some cases, the learning outcome may be accepted as achieved regardless of the level. For example, one particular fellow may become skilled or competent in surveillance, depending on the opportunities available for projects and the combination of interest and dedication to the surveillance assignment, while another fellow may have some previous experience in surveillance, be more motivated, or have more opportunities for surveillance projects, leading to a learning outcome of “competent on surveillance”.

Given the nature of the field assignments and the modules undertaken by the two paths, and the baseline levels of competence at recruitment, it is likely that field epidemiology and public health microbiology path fellows may reach different levels of the common competencies by the end of their fellowship.

Surveillance (skilled/competent)

- Design and implement surveillance systems (including syndromic, event-based, and/or laboratory-based systems)
- Analyse surveillance data, interpret them to generate information for action and write a surveillance report
- Evaluate an existing surveillance system
- Provide epidemiological (EPIET) or microbiological (EUPHEM) advice on improvement or maintenance of surveillance systems
- Combine epidemiological and microbiological knowledge and information in surveillance systems or unusual events

Outbreak investigation (skilled/competent)

Lead (EPIET) or participate/play a key role (EUPHEM) in outbreak investigation/s and contribute to the investigation with specific epidemiological and/or microbiological skills

Applied public health research (competent)

- Conduct all stages of a research project, from planning to writing a scientific paper

Typically, applied epidemiology research is conducted by EPIET fellows and applied public health microbiology research by EUPHEM fellows.

Public health microbiology and laboratory investigations (aware (EPIET)/competent (EUPHEM))

- Apply concepts of virology, bacteriology, parasitology/mycology and immunology to public health disciplines
- Determine the use and recognise the limitations of diagnostic and typing methods and interpret their results in light of patient diagnosis, outbreak investigations, surveillance and epidemiological studies
- Recognise specific issues related to the use of laboratory methods in investigations of rare and emerging diseases
- Design and/or apply safe sampling strategies for disease surveillance and for outbreak investigation and control, in humans, animals, and the environment

Public health management and communication (aware/skilled)

- Apply the rules of local, national and international organisations involved in infectious disease control
• Asses risks to respond to a potential health threat
• Coordinate response through use of communication mechanisms and other tools
• Communicate effectively with scientific experts from a multidisciplinary background, authorities, the public and the media in the form of publications, reports, interviews, and oral presentations

**Training and Teaching (skilled/competent)**
• Identify training needs in a particular target group
• Plan and organise training events
• Design and develop training materials, including case studies based on previous experience (i.e. surveillance systems, outbreak investigation and epidemiological studies)
• Moderate case studies
• Give lectures applying didactic/pedagogical techniques
• Plan and conduct evaluation of training

**Biostatistical analysis (skilled/competent)**
• Acquire the principles of statistical analysis and related software
• Apply basic concepts of probability
• Calculate and interpret point estimates and confidence intervals of measures of central tendency and dispersion, disease frequency, association and impact, significance tests
• Apply basic concepts and identify situations that require use of multivariable analysis
• Select the multivariable analysis that is adapted to the study objective /design (linear regression, logistic regression, Poisson, Cox, etc.)
• Identify the relevant variables needed to build an optimal regression model
• Control for confounding and effect modification at the analytical level
• Interpret the results of a regression model: meaning of parameters and the corresponding inferences

### 3.3 Discipline specific learning outcome (EPIET)

**Advanced statistical analysis (skilled)**
• Analyse and interpret the time component of surveillance data
• Describe patterns of disease dynamics by modelling a time series
• Use time series techniques to establish epidemic thresholds, identify outliers, for forecasting, prediction, and to evaluate the impact of an intervention

### 3.4 Discipline specific learning outcome (EUPHEM)

**Quality management in the laboratory (skilled/competent)**
• Describe quality assurance in the lab
• Assess and experience different laboratory standards;
• Apply the concepts of external quality assurance (EQA)
• Perform, evaluate or analyse results of an EQA
• Perform internal audit of a laboratory with regards to international standards

**Laboratory management (skilled)**
• Design, organise and manage a public health microbiology laboratory

**Biorisk management (skilled)**
• Apply national, European and World Health Organization (WHO) rules and regulations regarding biosafety and biosecurity and understand how these may influence response to an outbreak or similar events
• Use appropriate decontamination strategies/ personal protection and their applicability in field situations
• Determine the need for quality management, biosecurity management, and crisis response as core elements of management of a public health microbiological laboratory

### 4 Content of the programme

#### 4.1 Introductory course
Shortly after the start of the fellowship, fellows attend a 3-week introductory course that provides basic knowledge and skills in intervention epidemiology/public health microbiology and aims to strengthen their skills and their motivation for fieldwork.

4.2 Further training modules

In addition to the introductory course, fellows attend seven weeks of training modules organised by the Programme and in collaboration with EAP partners. The content of the modules is tailored to address the competency-based learning objectives of the programme. The modules support the acquisition of competencies and complement the learning-by-doing at the training site. Modules are also opportunities to develop or strengthen the network and engage training site supervisors.

Generally, public health emergencies (e.g. outbreak investigations) are of higher priority than modules for fellows when they occur. This may result in a fellow being authorised not to attend a module, assuming that other opportunities may be sought (online training or attendance to the next edition of that module) Otherwise, attendance to modules is compulsory. The head scientific coordinators of the Fellowship Programme/EAP make the final decision on an individual basis. The Fellowship Faculty Bureau (FFB) is to be informed by the fellow immediately in case of non-attendance.

Current modules

1. Introductory course (three weeks, face-to-face)
2. Outbreak investigation methods (five days, face-to-face)
3. Multivariable analysis (five days, face-to-face)
4. Project review (yearly, five days, face-to-face)
5. Rapid assessment and survey methods (six days, face-to-face)
6. Time series analysis (five days, face-to-face)
7. Vaccinology (five days, face-to-face)
8. Bio-risk and quality management (blended format, five days, face-to-face)
9. Initial public health management and leadership/teamwork (blended, five days, face-to-face)

The list of modules and course content may be modified from time to time, using an agreed process, in order to adapt to new training needs.

4.3 Programme-common field assignments

To develop the required competencies, fellows engage in a number of field assignments (projects) based on the learning needs of the fellow and the public health service needs of the training sites. They deliver professional quality products. The Fellowship Programme uses a number of quality standards to evaluate these products and determine whether field assignments are satisfactory and constructively aligned. All products/deliverables of the field assignments are subject to the role of the fellow, which are based on discipline specific competencies for each path (EPIET and EUPHEM), and the rules on contributions, authorship, clearance and acknowledgements (Annex 3).

4.3.1 Project proposal

Every field assignment initiated during the fellowship will be described in a short proposal, stating background, objectives, learning objectives addressed, work plan (methodology), and proposed outcomes including public health importance, local/national/EU added value and evidence for decision makers (Annexes 4A and 4B). This proposal also states the specific supervision for each project and has to be agreed by the frontline coordinator before initiation of the assignment. Outbreaks, given their urgency, may be exempt from this requirement.

Throughout the two-year fellowship, projects will be selected in an attempt to cover a wide range of technical aspects and infectious disease themes whenever possible.

Protocols and draft reports related to each project are shared at an early stage with local supervisors and the frontline coordinator/s.

4.3.2 Investigate outbreaks

Outbreak investigations represent one of the most stimulating and challenging activities. Time constraints, media attention, and the need for adequate methodology place the professionals under pressure when the need for rapid action conflicts with the need for accurate and valid investigation and results.

Fellows are expected to be actively involved in all stages of an outbreak investigation.
As part of the outbreak investigation, the fellows should also acquire a basic understanding of the role of the laboratory in surveillance and outbreak investigation, understand the principles and uses of bioinformatics and phylogeny, and identify situations where genetic typing methods should be used.

**Description of the assignment**

Fellows will investigate outbreaks using the classic 10-step field epidemiology approach. Analytical epidemiological investigations are desirable in order to develop relevant competencies.

Upon completion of the fellowship, fellows should have investigated at least one outbreak with an analytical epidemiological method as a primary investigator (EPIET/EAP) or actively contributed within all steps (EUPHEM) of the investigation. Alternatively, experience may have been acquired working on several outbreaks with various levels of responsibility.

**Product/deliverable**

To complete the outbreak assignment, fellows need to produce at least one final outbreak report (Annex 5). Additionally, the fellow might submit a manuscript to a peer-reviewed journal as first author.

### 4.3.3 Conduct surveillance projects (design, implementation, data analysis or evaluation)

Communicable disease surveillance systems depend both on epidemiological as well as on laboratory investigations. Public health epidemiologists and microbiologists need to be able to set up and/or manage day-to-day surveillance system activities, and evaluate surveillance systems including the role of the laboratory. The pedagogical objective of this activity is to acquire competencies in the design and implementation process of a new system and/or analysing data coming from an existing surveillance system and/or evaluating a surveillance system according to a set of attributes. This activity should support the training site in using information from surveillance systems for action in light of the strengths and limitations of the data.

**Description of the assignment**

The surveillance project includes at least one of the following:

- Design or implement or evaluate a new surveillance system, by:
  - designing the surveillance system (public health importance, action/intervention available, objectives of the system, case definition, indicators, data collection, source of information, transmission of information, software and hardware, data analysis, feedback procedures, recipients, use of information);
  - developing a case report form and obtain clearance from appropriate individuals or offices;
  - obtaining support for the surveillance system from the individuals who will be responsible for ensuring that the system is implemented; and
  - conducting a pilot study if necessary;

  OR

- evaluate an existing surveillance system, by:
  - describing the public health importance of the health event, and the public health strategy;
  - describing the system;
  - evaluating the system for each of the following criteria: Simplicity, flexibility, acceptability, sensitivity, positive predictive value, representativeness, timeliness;
  - describing the resources used to operate the system; and
  - listing conclusions and recommendations

  OR

- analyse and interpret data from a surveillance system to generate information for action, by:
  - checking incoming surveillance reports for plausibility and collection of missing information;
  - conducting regular data analysis of surveillance data;
  - interpreting current trends in the surveillance data and develop corresponding recommendations;
  - participating in regular feedback of surveillance data to stakeholders;
  - writing a scientific report using the analysed data; and
  - if the findings of the surveillance system indicate the need for prevention or control measures, or further investigation, make appropriate recommendations for the improvement of the surveillance system (such as new questionnaires, better feedback)

**Product/deliverable**
To complete the surveillance assignment, fellows need to produce a study protocol for the surveillance assignment and a final report; and submit a full manuscript on the surveillance project to a peer-reviewed journal as a first author if applicable.

### 4.3.4 Conduct an operational research project

Applied public health research is correlating basic science with clinical and epidemiological/microbiological practice through addressing relevant public health questions. This should enable fellows to relate epidemiology or microbiology to public health. The pedagogical objective of this activity is to acquire the skills necessary to plan, conduct and analyse a public health epidemiology and/or microbiology study and to interpret and communicate its results.

The research project is chosen in collaboration with the training site supervisor and should be part of the usual work carried out by the training site. It should be necessary and useful for the training site, and not merely an academic exercise. It is recommended that fellows participate in all steps of the research project -- from planning the project to writing a scientific paper -- as this offers the best opportunity to acquire public health research competency.

**Description of the assignment**

Fellows will conduct an operational research project that includes:

- Assessing information needs
- Framing a research question
- Formulating epidemiological/public health microbiological objectives
- Outlining the analysis plan
- Writing a complete study protocol
- Seeking ethical approval (if necessary)
- Preparing the data collection instrument (e.g. questionnaire) or laboratory methods
- Collecting, collating and cleaning data
- Analysing data
- Formulating conclusions
- Proposing recommendations
- Engaging stakeholders in next steps (for example, further research and public health recommendations)

Research projects involving human subjects that require ethical committee clearance must be subject to these procedures, in accordance with the rules and regulations of the training site.

**Product/deliverable**

To complete the research assignment, the fellows need to deliver products documenting their involvement in all aspects of operational research. Because research may take more time than the duration of the fellowship, this may be done through more than one project (e.g. writing a protocol for a study that will be implemented by others and analysing data in order to write a paper using data generated with a protocol written by others).

### 4.3.5 Training and teaching public health professionals

Cascading of knowledge through teaching is corner stone of the ECDC Public Health Training Strategy. By engaging the fellows in teaching, they learn current pedagogical concepts related to adult learning in using appropriate teaching methods that help learners to improve their ability to acquire knowledge and skills. The focus will be on the role of the learner and the teachers’ professional development, learning as a cognitive process, different teaching methods and their effect on learning, evaluation at different levels.

**Description of the assignment**

The aim of the training assignment is to develop and employ learning tools according to pedagogical techniques suitable for adult learners.

This may include:

- Preparing learning activities (e.g. interactive lecture, case study, problem-based learning, full course design, workshops, others);
- Conducting learning activities (e.g. interactive lecture, case study, problem-based learning, full course or workshops, others).
• Evaluating learning activities
• Conducting training needs assessment

**Product/deliverable**
To complete the teaching assignment, the fellow needs to produce a new or updated learning tool/course and/or a report reflecting on the training activities conducted (e.g. results of the training evaluation, summary of the instructional design process).

### 4.3.6 Public health management and communication
Public health management here is defined as the capacity to identify and prevent/control threats to the health of the public caused by communicable diseases or their products (e.g. toxins), and to construct evidence for policies and strategies that support improvement of the population’s health.

Communication skills include diverse levels of communication (local/national and international). Communication of public health epidemiology and microbiology information is a crucial task for appropriate public health action.

The aim of the assignment is to communicate effectively with other public health professionals.

**Description of the assignment**
Fellows will communicate with the scientific community by:

• Writing and submitting abstracts to the European Scientific Conference on Applied Infectious Disease Epidemiology (ESCAIDE) or similar international conferences
• Preparing a scientific report/paper (which includes one or more of the following):
  – Field investigation (outbreak);
  – Short article/s in /epidemiological/ microbiological bulletin/journal;
  – Scientific paper for a peer-reviewed journal (as first author);
  – Make scientific oral and poster presentation at an international conference;
  – Appraise a scientific abstract/article;
  – Review scientific work of others and give constructive feedback.

Other activities may include:

• Communication with the media and general public, by:
  – contributing to the preparation of a press release;
  – responding to journalists’ interview requests (newspaper, radio or TV) if appropriate
  – engaging in social media; and
  – preparing a questions and answers briefing (frequently asked questions), or a ‘lines to take’ document.

**Product/deliverable**
To complete the scientific communication assignment, the fellows need to:

• submit at least one abstract to ESCAIDE or similar conference (as first author);
• give at least one oral presentation (Annex 6A) or at least one poster presentation (Annex 6B) within a structured, moderated poster session at an international, peer-reviewed, English-language conference (primarily ESCAIDE, alternatively e.g. Epidemic Intelligence Service (EIS) or Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), or European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) as first author); and
• submit at least one English language manuscript, cleared by scientific coordinator/s, to a peer-reviewed journal (as first author, preferably open-source indexed in Medline).

### 4.4 Path specific field assignments (EUPHEM)

#### 4.4.1 Biorisk Management

The scope of biorisk management is to apply requirements necessary to control risks associated with the handling, storage and disposal of biological agents and toxins in laboratories and facilities.

**Description of the assignment**
Fellows are expected to apply biorisk management rules in controlling or minimising the risk to acceptable levels in relation to employees, the community, and others as well as the environment, which could be directly or indirectly exposed to biological agents or toxins.

**Product/deliverable**
To complete the assignment, the fellows need to:

- Produce a protocol on appropriate laboratory investigations and sampling preparation techniques based on biosafety level;
- Report on the assessment of use of international regulations (i.e. International Air transport Association (IATA), International Civil Aviation Organization (ICAO), customs) in movement of infectious materials across national borders;
- Protocols on packaging and transportation;
- Protocol on methods for detection of pathogen/cause of unusual events;
- Produce protocol on decontamination plan in BSL3 and / or BSL4 laboratories.

### 4.4.2 Laboratory Quality Management

In laboratory medicine, control measures are essential for diagnosis, risk assessment, examination and treatment of patients. Methods applied in diagnostic approaches must be accurate, precise, specific and comparable among laboratories. Insufficient or incorrect analytical performance has consequences for the patients, the health-care system and consequently for the health of the public.

**Description of the assignment**
To ensure reliability, reproducibility and relevance of laboratory test results, quality management programmes are essential. Fellows are expected to organise/participate in an External quality assessment (EQA) and internal quality control (IQC). In addition, they are expected to undertake/participate within a laboratory audit according to international standards and using the Biorame programme. During the two years, they must participate/organise at least within one accreditation process of a laboratory or a method.

**Product/deliverable**
- An EQA report or published paper
- Audit report
- Accreditation report

### 4.4.3 Applied Microbiology and laboratory investigation

Applied microbiology is the understanding of the basis and limitations of laboratory methods and the application of these methods in a public health setting (e.g. outbreaks, surveillance, complex emergency situations, and unusual events). This includes general microbiology, laboratory investigation, laboratory methods and analysis, and could be part of an outbreak investigation as described under programme common field work.

**Description of the assignment**
Fellows are expected to conduct laboratory investigation/s during the fellowship. This includes:

- identifying key laboratory investigations relevant to selected symptoms and/or suspected pathogens;
- collecting, labelling, packaging and transporting samples appropriately and safely;
- identifying needs and objectives of clinicians, veterinary and environmental agencies in the public and private sector in relation to laboratory investigations;
- defining the type of microbiological analysis depending on the study design;
- defining a sampling strategy including number of needed specimens;
- giving advice in pre-sampling, sampling, laboratory analysis, reporting, documentation, feedback; and
- performing evaluation studies of diagnostic test accuracy (sensitivity, specificity, positive and negative predictive value).

**Product/deliverable**
To complete this assignment, the fellows need to deliver products documenting their involvement in different aspects of laboratory investigation (e.g. writing a protocol, producing a report, guidelines, linelist or a manuscript).

### 4.5 Matrix of EUPHEM
The matrix of two years training for EUPHEM is planned both vertically and horizontally (Annex 7). In the horizontal part of the matrix seven core competencies (eight domains) are located. In the vertical part different disease group are allocated. At least four compulsory projects (main field assignments) are to be performed by the fellow. Three are mandatory within outbreak investigation, surveillance and research. The forth one can be selected within any other competency domain (applied PH microbiology and laboratory investigation, biorisk management and quality management). These projects should not be within the same disease group but different. However, a fellow might have an outbreak investigation project in the same disease group as other projects due to the unpredictability of outbreaks. Public health microbiology management and teaching can also be covered in any of the disease groups, without limiting the possibility of additional projects in the same area. Beside projects fellows will also have activities that can be allocated to any disease group. However, it is recommended that fellows avoid more than one activity within the same disease group. This will contribute to a wide range of skills in the different disease programmes. Each project and main activities should result in an output in form of a manuscript, guidelines or a report.

If a fellow has previously worked in one disease specific group this group should not be chosen for the projects of the fellowship. However, fellows are recommended to provide their skills within specialised areas when requested (e.g. outbreak investigation). MS-track fellows may contribute in the same subject or disease group as before the fellowship up to 20% as service to the training site in case of emergencies or outbreaks.

4.6 Annual ESCAIDE conference

Fellows participate at the annual European Scientific Conference for Applied Infectious Disease Epidemiology (ESCAIDE) three times: the year they join the programme, in the middle of the fellowship and at the end of the fellowship. Fellows are expected to submit abstracts and present their projects at ESCAIDE. Subject to availability of funding, fellows may also submit abstracts and present their work at other conferences. Before deciding to submit any abstract to a conference, fellows are required to discuss this with their training site supervisors and EPIET/EUPHEM/EAP scientific coordinators (see the SOP for submission of abstracts to conferences Annex 8).

4.7 International assignments

Occasionally, institutes including WHO, ECDC, Ministries of Health (MOH) or Centres for Disease Control (CDCs) in different countries, Non-Governmental organisations (NGOs), and private agencies/institutes request assistance and offer fellows opportunities for international assignments. ECDC/EAP encourages this participation, as long as the assignments offer experience appropriate to the training objectives. Usually, the assignments (deployments) last approximately four-six weeks. However, the duration of the assignment may vary depending on the project. An SOP for International Assignments (Annex 9) governs the conditions under which fellows can be deployed to the missions. For international assignments identified and organised by training sites a different procedure might apply.

In general, the requesting agency/organization cover for the costs of deployment, including travel, accommodation, per diem, medical insurance, and repatriation.

The Head Scientific Coordinator/s together with the team of fellowship scientific coordinators will:

- review all requests and their terms of reference, and evaluate the suitability of the mission, including supervision in the field, medical, security, and insurance issues. Every request needs a final approval of the Head Scientific Coordinator/s; and
- check potential conflict of interest, commercialism, double funding, unfair competition, etc. based on ECDC values and principles.

Supervision of the fellow during the assignment is the responsibility of the requesting agency and will be overseen by the Head Scientific Coordinator. Distant supervision may be delegated to another EPIET/EUPHEM frontline coordinator/s.

5 Governance, management, roles and responsibilities

5.1 Governance

The ECDC Fellowship Programme is governed by the rules and regulations of ECDC, while the EAPs are governed by the rules and regulations of the institutes that host them. ECDC and the national partner institutes are in turn subject to their respective governance structures. The organisation and governance of the Fellowship Programme builds on consultations in 2015 and 2016 with the National Focal Points for Training (NFP-T), the Advisory Forum (AF), the ECDC Management Board and the Training Sites Forum (TSF).
The ECDC Management Board takes decisions involving resource allocation.

The Programme is working with overall guidance of the NFPTs, representing the Member States interests, the ECDC Advisory Forum (AF) advising ECDC on scientific matters and EU added value, and the TSF advising on issues of relevance to the Training Sites. More specifically:

1. The AF advises on:
   a. programme objectives from an EU perspective;
   b. overall quality criteria and performance indicators for the programme;
   c. principles for recruitment and site allocation of fellows from an EU perspective;
   d. the balance between the epidemiology and public health microbiology paths of the programme from an EU perspective.

2. the NFPTs advise on:
   a. programme objectives from a Member State perspective;
   b. the core competencies in field epidemiology and public health microbiology, forming the basis of the programme (together with other relevant stakeholders);
   c. national training needs and how these training needs should best be converted into the content of the programme curricula;
   d. principles for recruitment and site allocation of fellows from a MS perspective;
   e. the balance between the epidemiology and public health microbiology paths of the programme from a Member State perspective.

3. the TSF consists of one representative per path of each of the acknowledged training sites.* They advise on how agreed objectives and principles for the programme are best translated into an operationally effective and efficient training programme, notably but not exhaustively, training objectives, curricular content including topics of the modules, graduation criteria, site visit process, timing of the programme cycle, and any other topic of relevance to the sites. On discipline-specific issues, the TSF may work in subgroups for epidemiology and microbiology. Representatives of the fellows from the Cohorts under training and representatives of the EPIET Alumni Network are invited to the TSF meetings as observers. When possible, this implies one representative for each path (field epidemiology and public health microbiology).

Within ECDC, the Programme is organised by the Public Health Training Section (PHT) in the Public Health Capacity and Communication Unit (PHC) under the leadership of the Head of Section PHT and receives administrative support from the Resource Management and Coordination Unit (RMC). Within ECDC there are the following specific roles and responsibilities:

4. **Head of Unit PHC:** Strategic leadership of ECDC training activities and authorising officer for all expenses related to the fellowship programme. The Head of Unit is the main ECDC interface to the AF and the ECDC Management Board on the strategic issues related to the fellowship programme.

5. **Head of Section PHT:** Operationally responsible for the ECDC public health training activities and Head of the Fellowship Programme. The Head of Programme provides the overall strategic leadership to the programme, including change processes, ensuring that this is done in close consultation with the external partners above. The Head of Section is the main ECDC interface to the NFPTs and TSF on all aspects related to the organisation of the fellowship programme.

6. **Head Scientific Coordinators for EPIET and EUPHEM:** Operationally responsible for implementing the agreed training activities and ensuring a high quality support to the fellows, supervisors, and training sites. They are each responsible for their respective discipline-specific curricula and learning objectives and jointly responsible for the overall programme objectives and the common programme curricula. The Head Scientific Coordinators are the main ECDC interface to TSF on matters related to the content and curricular aspects of the programme.

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* See terms of reference for definition of acknowledged sites.
7. **Fellowship Faculty Bureau (FFB):** Responsible for the faculty bureau and logistic support to the fellows and facilitators. The FFB is the main ECDC interface to fellows and facilitators on all logistic issues related to the training modules and field missions.

8. **External Fellowship scientific coordinators:** Besides the Head Scientific Coordinators, the programme heavily relies on a team of scientific coordinators based outside ECDC, in one of the Training Sites with whom ECDC has a Framework Partnership Agreement (FPA). They are engaged through specific grant agreements and reporting to ECDC. Their role is to assist the Head Scientific Coordinators in implementing the programme by ensuring scientific quality of the products of the fellows and supporting them and their respective supervisors in the progress to achieve the foreseen programme and learning objectives. The scientific coordinators are invited as observers to the meetings with the TSF to give their views on issues related to content, curriculum and supervision of fellows.

The Programme works in close collaboration with a number of EPIET Associated programmes (EAPs). EAPs are Field Epidemiology Training Programmes (FETPs) run and governed by the Member States and using the same curricular processes as EPIET. The Heads of the EAPs are consulted on all issues related to the common curricular process, the programme content and any other aspect of the fellowship programme that may influence the EAPs.

The main guidance documents of the Programme will be the annual Director’s Decision informing the recruitment and grant processes and a common Programme Manual, which will provide further details of curricula and issues related to the overall Programme as well as the profession-specific paths.

## 5.2 Decision-making process and external consultation

All formal decisions related to the ECDC involvement in the Fellowship Programme with legal impact is made by the ECDC Director in consultation with the ECDC Senior Management Team and formulated as Administrative Decisions, a type of Director’s Decisions. Other programmatic decisions are formally at the level of Head of Unit PHC while operational and discipline-specific decisions are at the level of Head of Programme and Head Scientific Coordinators. The Head of Unit is also authorising officer by delegation for expenses related to the programme below certain thresholds.

Any decision that may have an impact on the external training partners and stakeholders in the Member States always follow after a consultation process where the external partners and stakeholders, provide advice and input according to their respective roles and responsibilities (outlined above). In this process ECDC always aims at reaching as much as possible a broad consensus, and always consider and take into account all views received before making any final decisions.

If possible, consultations will take place during the regular face-to-face meetings with the AF, the NFPTs and the TSF. Consultations between the meetings will be done via e-mail, without excluding other platforms (community of practice in FEM-Wiki). For urgent issues, or when appropriate, the NFPT Coordination Committee (NFPT CC) may be consulted as representatives of the whole NFPT network. In those cases the NFPT CC is responsible for appropriate reporting back to the network.

## 5.3 Roles and Responsibilities

### 5.3.1 Head of Programme

The Head of the ECDC Public Health Training Section is also Head of the Fellowship Programme. The responsibilities of the Head of Programme includes:

- Providing the strategic direction and development of the programme in alignment with the developing needs of the Member States;
- Being responsible for change management;
- Being the main face of the programme to the key stakeholders (including the NFPTs and the TSF) and partners (including ASPHER and TEPHINET);
- Ensuring synergy between the programme and other training efforts inside and outside ECDC;
- Representing the programme in relevant meetings and conferences.

### 5.3.2 Head Scientific Coordinators

ECDC manages the scientific coordination of the programme. The Head Scientific Coordinators (EPIET and EUPHEM) based at ECDC, manage all scientific aspects of the Fellowship Programme under the leadership of the
Head of the Public Health Training (PHT) section, who is the overall Head of the Fellowship Programme. The role of the Head Scientific Coordinators is to have regular contact with the Scientific Coordinator team based in the Member States, fellows and supervisors, and together oversee that fellows achieve their training or learning objectives. The Head Scientific Coordinators also chair the selection committee, identify new potential Training Sites and organise initial site appraisals, and advise on strategic development of the programme. They also organise regular site visits to existing Training Sites or delegate the task to another scientific coordinator. The Head Scientific Coordinators facilitate opportunities for fellows to partake in international assignments and monitor their progress during the assignment.

They are responsible for the scientific curriculum of the specialised training modules for fellows and work closely with the scientific coordinators organising the module to develop the syllabus and identify suitable facilitators. The Head Scientific Coordinators will take a moderating role in case of conflicts between the fellow and the site supervisor. Respective path-specific Head Scientific Coordinator and main supervisor sign the diploma of the fellows.

5.3.3 Fellowship Scientific Coordination team

The Fellowship Scientific Coordination team manages the scientific aspects of the curriculum jointly with EAP scientific coordinators. The Head Scientific Coordinators of EPIET and EUPHEM jointly manage a team of Fellowship Scientific Coordinators based in selected national public health institutes in Europe. The scientific coordinators manage the specific scientific aspects of the programme, mentor the fellows, and organise the specialized training modules throughout the fellowship. The coordinators are also responsible for ensuring that core competencies and public health relevance of the projects are followed. The Fellowship Scientific Coordinators act as one team when ensuring the quality and monitoring of the achievement of learning objectives and outcomes, bringing their respective competencies (epidemiology or public health microbiology) to the team. The frontline coordinators. At the same time all coordinators collaborate to meet the scientific needs of all fellows, regardless of path, when needed.

EAP scientific coordinators are responsible for EAP fellows.

Under the Head of Programme, the broad pedagogical activities of the fellowship programme scientific coordinator team (Head Scientific Coordinators and Frontline Scientific Coordinators) are:

- organising and developing of training programme content and methods,
- monitoring progress, advising and counselling fellows;
- providing distance-tutoring for fellows;
- promoting and advocating the programme;

In particular, these activities encompass the following areas:

- Develop and propose training or learning objectives
  - develop and update documents describing training objectives related to the core competencies;
  - collaborate with training site supervisors and fellows to ensure that individual training objectives are developed and reviewed regularly during the 23-month assignment.
- Organise courses and training modules, and their subsequent evaluation:
  - plan, co-ordinate and evaluate the EPIET/EUPHEM introductory course;
  - help and support collaborating training institutes in planning and organising specific modules;
  - develop, implement and evaluate each module.
- Identify, assess and promote additional training opportunities and assignments:
  - identify suitable EU-wide investigations or research projects, and negotiate the participation of the fellows;
  - identify potential international assignments offering experience appropriate to the training objectives, and negotiate participation of the fellows;
  - establish and maintain contacts with other public health training worldwide in order to exchange training material, trainees and trainers.
- Monitor and promote training site developments
  - disseminate information about the programme to all potential training sites;
  - identify potential training sites, and conduct initial site visits;
  - regularly perform training site appraisals in each training institute;
  - involve training site supervisors as facilitators in the various training modules.
- Develop training skills and techniques among actual and potential trainers at training sites, and among fellows
- regularly organise and improve training the trainers modules;
- use all fellowship courses and modules as opportunities to strengthen the training skills of the fellows and training institute's supervisors.

- Identify and develop training materials for coursework and for distant learning
  - identify and review material developed by groups involved in distance learning;
  - identify new relevant training material (case studies, video, computerised exercises) used in other training programmes;
  - encourage the development of new training material by training institutes;
  - promote and supervise the development of new training material by fellows.

- Promote EU-wide participation of national institutes in the programme
  - systematically involve senior epidemiologists and microbiologists from collaborating institutes in the various training sessions;
  - promote the development and hosting of training modules in collaborating institutes;

Because of the nature of the programme, where competencies are mainly acquired through on-the-job assignments, scientific coordinators teach by example, as role models, demonstrating with their attitudes and values the importance of collaboration and team spirit in a multidisciplinary environment.

Requirements of scientific coordinator

5.3.4 Frontline coordination

Each fellow is assigned to one of the scientific coordinators who is then their frontline coordinator. However if the frontline coordinator identifies the need of input from other coordinators she/he will engage the relevant coordinator. Frontline coordinators will be part of a triangular interaction with the fellow and the Training Site supervisors. The specific role of the frontline coordinators is to provide support to the fellow and supervisors, in particular by:

- reviewing the initial competency assessment;
- reviewing specific training objectives as needed (midterm review and exit review);
- giving input and reviewing protocols, reports, manuscripts, presentations as needed;
- helping identify and provide relevant literature when needed;
- facilitating exchanges of information and products between EUPHEM and EPIET and EPIET Associated programmes (EAP) fellows;
- responding or identifying appropriate responses to queries from the fellows;
- reviewing fellows’ projects throughout the fellowship
- regularly organising meetings or phone calls with supervisor and fellow;

5.3.5 Training sites and supervisors

5.3.5.1 Training sites

Fellows are placed at Training Sites that have a mandate to work on communicable disease surveillance, outbreak response, epidemiology or/and public health microbiology and the provision of public health advice at international, national and sub-national levels in the European Union (EU) and EEA (European Economic Area) countries.

Training sites need to offer the following:

- Access to field epidemiology or/and public health microbiology activities and data sets as detailed in the site appraisal/visit guide;
- Technical and personal on-site supervision by a team of at least 2 field epidemiologists/public health microbiologists, for an average of at least four hours per week per fellow throughout the training;
- Adequate work space and communication facilities for the fellow, including PC or laptop; access to international telephone, fax, internet, and an institutional e-mail address: access to library facilities or institutional online access;
- Access to statistical support (not necessarily on site, possibly through academic links);
- Commitment to share all outputs of the fellow, including early drafts, equally between fellow, supervisors and coordinators (documents are treated as confidential);
- Administrative support that includes a dedicated focal point for contractual issues and provision of funds for travels within country to support outbreak investigation and control;
• Collaboration with epidemiological and microbiological sectors, as well as environmental and animal health sectors;
• Sufficient protected time for the fellow to engage in fellowship-related activities, as the fellowship is a full-time training programme.

Training Sites commit to work with the ECDC Fellowship Programme in accordance with the principles described in this manual. Specific guidance for coordinators and supervisors on continuous quality assurance at Training Sites, site appraisals and site visits is available separately (Annexes 10A and 10B).

5.3.5.2 Role of the supervisor

Fellows are placed under the responsibility of a main supervisor who is experienced in field epidemiology and/or public health microbiology in one of the Training Sites. The supervisor must guide and closely follow the fellow during his/her fellowship, acting as his/her mentor. An assigned co-supervisor will assist the main supervisor in scientific and practical issues. Besides the main and co-supervisors, a dedicated epidemiology supervisor for EUPHEM should be assigned to support and supervise the EUPHEM fellows with epidemiological competencies respectively and strengthen the link between the two disciplines. For EPIET fellows (when relevant) a microbiology supervisor should be assigned to help the fellow with microbiological content of her/his projects.

Additionally other experts responsible for specific projects should be available to guide the fellow on selected projects (Project supervisors).

Overall, a fellow should benefit from approximately four hours of supervision with training site supervisors (i.e. primary and project supervisors) every week, allowing for some variation, depending on fellows and supervisors; and on the moment or status of projects. The primary supervision functions may be shared among more than one individual.

The main Training Site supervisor is responsible for:

- assessment of training needs;
- facilitation of learning activities;
- access to field assignments;
- monitoring of the work plan of the fellow to ensure that all field assignments are completed;
- coordinating collaboration at the training site and liaising with all supervisors to identify suitable projects;
- review of progress towards acquisition of core competencies;
- supervision of projects or identification of project supervisors that will be responsible for supervising the fellow in specific projects; and
- guidance for scientific production (e.g. protocols, data collection instruments, manuscripts, etc.).

Supervisors ensure that early drafts of outputs are shared (confidentially) with the front line coordinators in a spirit of peer review, continued learning and quality improvement. This enables the coordinator to monitor the progress and competency acquisition of the fellows. Supervisors further contribute to the programme through:

- participating in site visits to other training sites;
- teaching during the introductory course and/or at modules;
- participating in TSF meetings and workshops;
- reviewing programme-related documents; and
- participating in training courses directed toward senior experts (e.g. ECDC Summer School).

The main Training Site supervisors should:

- be in a long-term contract position to ensure continuity;
- have held their current position or equivalent for at least one year to be sufficiently familiar with the local setting of applied epidemiology in their country;
- have at least 3 years of professional experience in intervention/public health/field epidemiology [including areas of peer-reviewed publication, but excluding EPIET-like training (EPIET)] and 9 years in public health microbiology (EUPHEM);
- be graduates of a health science, with experience in public health or a related topic;
- have a good understanding of the Fellowship Training Programme and be aware of the requirements and guidance documents;
• have a sufficiently senior position to manage a fellow, coordination of fellowship activities within the training site, and open opportunities for projects within the training site;

• have at least two years (EPIET) or five years (EUPHEM) of experience in the training and supervision of post graduate junior professionals;

• be willing to contribute to fellowship-related activities (i.e. participate in meetings, site visits, supervisor training courses, facilitate in modules, comment on fellowship-related documents); and

• be able to speak and write English at minimum B2 level (which is the minimum level of English for a fellow).

5.3.6 Fellows

Fellows in training are considered to be competent professionals and as such, they are expected to:

• work as part of the team at the Training Site and meet the professional standards expected of other staff members;

• time-manage their work plan;

• comply with deadlines issued by the training site or the fellowship, including deadlines for submission of abstracts and manuscripts for review and clearance (Annex B);

• share all early drafts with training site supervisors and scientific coordinators alike;

• revise drafts as many times as necessary; share with coordinators until quality standards are met;

• upload all final products (e.g. final reports, protocols, training material, submitted abstracts and manuscripts, etc.) to ECDC's online training platform to document their achievements in the form of an 'e-portfolio' (EAP fellows follow the requirements of their programmes);

• make themselves available for public health emergencies; and

• comply with scientific, administrative and logistical requirements, as communicated by EPIET/EAP scientific coordinators, the Fellowship Faculty Bureau and EAP programme offices.

All activities carried out by the fellows must comply with the administrative regulations and codes of conduct that apply to the training site. While not always explicitly stated, attitudes related to professionalism, ethics, and team work are core competencies and values of the programme.

5.4 Site visits

Training site visits are currently organised by the scientific coordinators, who are usually accompanied by a supervisor from another training site, at least every two years or more often, if needed. The site visits are intended to support fellows and supervisors through a detailed formal appraisal of the training site. The objectives of the site visits are to review:

• training environment, including logistical and administrative aspects;

• supervision of the fellow on-site;

• training objectives and outcomes for the fellow.

Further purposes of the site visit are to optimise interaction between the fellow, the supervisor and the frontline coordinator. Additionally, it provides an opportunity to identify training needs of supervisors and assess if the choice of projects of fellows addresses the training objectives (Annexes 10A and 10B). These visits are scheduled to ensure that every fellow receives at least one site visit during their fellowship. Unless it is impossible for logistic reasons, site visits for EPIET and EUPHEM in the same country/institute should be done in the context of one combined visit. Site visits are ideally but necessarily organised at the same time as the midterm review of the fellows.

5.5 Fellowship Faculty Bureau (FFB)

The Fellowship Faculty Bureau (FFB) in ECDC's Public Health Training (PHT) section is responsible for the managerial and logistical aspects of the programme- and fellowship organisation (excluding grant management). It provides support to the scientific team. EAPs have their own managerial and logistical support.

5.6 EPIET Alumni Network (EAN)
The EPIET (and EUPHEM) Alumni Network (EAN) provides scientific opinion to EPIET, EUPHEM and EAPs training content and participate in the selection of EU track fellows. Furthermore, fellows benefit from EAN resources provided to all the members (e.g. weekly jobs/courses bulletin, Newsletter, workshops/mini-modules).

6 Prerequisites and selection

The Call for Applications for the ECDC Fellowship Programme (EU-track and MS-track) specifies the formal eligibility criteria and selection processes each year. The Administrative Decision (AD) on Rules governing the EU-track and MS-track of the ECDC Fellowship Programme, epidemiology path (EPIET) and public health microbiology path (EUPHEM) and this manual with related annexes are an integral part of the Call for Applications for ECDC Fellowship Programme.

6.1 Prerequisites

The training is aimed at professionals with a minimum of:

• post-secondary education (at the level of Graduate diploma or Masters’ diploma) in medicine, epidemiology, biology, microbiology, veterinary medicine, pharmacology, biomedicine, public health or other health sciences, and
• at least three years of relevant professional experience; or
• PhD degree or equivalent in a field relevant to the fellowship.

For applicants with a background in laboratory sciences, previous experience in public health and epidemiology is an advantage.

6.2 Selection of fellows

Fellows in the EU-Track are selected among nationals of Member States of the European Union and the European Economic Area countries. For the MS-Track, fellows are selected among nationals of Member States of the EU and the EEA countries, or individuals living in an EU/EEA Member State for at least 3 years with residency and working permit. They are selected based on the selection criteria regarding professional and personal characteristics / interpersonal skills. These are defined by ECDC with advice from the TSF and included in the call for application.

Candidates are selected through an open and transparent process as described in Annex 11.

7 Monitoring progress

7.1 Acquisition of core competencies

ECDC Fellowship Programme/EAPs monitor the acquisition of core competencies as an initial assessment conducted during the introductory course, at 12 months (midterm review) and during the exit review, using tools based on ECDC's core competencies (Competencies assessment Tool, CAT), or equivalent. Competencies are documented on the basis of experience and quantified on a scale of 1 (basic) to 5 (competent).

The fellow initiates the process through a self-assessment (Competency Development Monitoring Tool, CDMT, Annexes 12A and 12B); thereafter the training site supervisor provides input on this self-assessment. Fellow and training site supervisor document the assessment on the basis of the fellow’s experience and scientific production (e.g. theoretical exposure through academic degrees or projects and products included in the fellowship portfolio).

The fellow and training site supervisor share the output with the frontline coordinator.

Fellows should share all their written production (protocols, reports and manuscripts) with their supervisors and frontline Coordinators and with a copy to the respective Head Scientific Coordinator (EPIET or EUPHEM)

* http://epietalumni.net/
at an early stage. This will provide the opportunity to the supervisors and coordinators to assess the progress of the fellows towards the training objectives.

The frontline coordinators monitor and advise on the content and conduct of the local training activities. Their tasks include:

- to regularly check if fellow’s activities are addressing their learning objectives;
- to provide the fellows and trainers with additional methodological support, if needed; and
- to offer support by reviewing protocols, reports and scientific articles or presentations made by fellows and to monitor their progress.

### 7.2 Competency development and monitoring of field assignments

The programme monitors progress in the completion of the field assignments by means of an incremental progress report, IPR (outline available in Annex 13A and 13B), or equivalent tools (EAPs) structured in accordance with the field assignments and competencies to be developed during the two-year training. The tool tracks progress in the activities, both in terms of competency development and field assignments.

#### 7.2.1 Incremental progress report

For monitoring and information purposes, all fellows are required to regularly update an incremental progress report (IPR) and discuss it with their supervisor. The IPR helps to document and monitor the progress of individual fellows in achieving the training objectives and to share this information with other fellows, training supervisors and the programme coordinators. They may also be used for administrative purposes such as presenting the outputs/results of the programme, and therefore justifying the continuation of funding.

The specific objectives of the reports are:

- to help training site supervisors and frontline coordinators to monitor the progress of each fellow towards achieving the training objectives, and to define future objectives;
- to inform all training site supervisors of the training activities in other training sites;
- to provide documentation which may inform internal training site appraisals, and future external evaluation of the programme.

The report should reflect the results of regular meetings held between the fellow and the training site supervisor to review the fellow’s progress against a detailed set of specific training objectives. The incremental progress report should be updated each time a new activity has been started, major progress in the training has been achieved or at least every month (EPIET/EUPHEM). The fellow should send the incremental progress report to the frontline coordinator and his/her training site supervisor.

### 7.3 Supervisor-Fellow-Coordinator triangle

For each fellow there is a designated frontline coordinator and a main Training Site supervisor which form a triangle for the two years training. This triangle is mutually beneficial for all three. Sharing of early documents, thoughts and ideas in this team is stimulating and supporting for all. Triangular teleconferences between the fellow, the supervisor, and the coordinator are to be arranged regularly, to ensure that the supervisor, coordinator and fellow share the same understanding of the situation.

### 7.4 Mid-term review

Fellowship programme /EAP coordinators conduct a mid-term review after the first year of the fellowship by means of a site visit (for EUPHEM) or a telephone conference (for EPIET/EAPs) with the fellow and his/her supervisor/s. The objective is to review:

- Acquisition of core competencies;
- Progress in field assignments;
- Training needs for the second year of fellowship;
- Prioritisation of the training activities for the second year.
Upon completion of the mid-term review, the coordinator and the supervisor evaluate how the fellow is doing with respect to the field assignments. Consensus during the review determines whether the fellow is (1) ahead, (2) on track, (3) in need of follow-up or (4) at risk. Fellows requiring follow-up are monitored on a routine basis and are offered additional reviews at 15 and 18 months (Annexes 14A and 14B).

7.5 Portfolio

At the end of the fellowship, each fellow produces a ‘fellowship portfolio’ in the form of a report (Annexes 15A-EPIET and 15B-EUPHEM) that reflects the overall experience of the fellowship and documents achievements. This fellowship portfolio focuses on deliverables (e.g. abstracts) and includes the contributions of the fellow in each of the achievements as well as a reflection by the fellow, main supervisor and coordinators. Publications and communications are referenced in Vancouver format at the end of the document. Upon completion of the fellowship, ECDC uploads all portfolios onto its website. A published portfolio is not equivalent to a diploma.

The final portfolio will be build based on the individual projects conducted during the two-year fellowship. Portfolios are a reflective learning tool for the fellow where the strengths and competences acquired. In addition, they serve as a document to present the outputs and impact of the fellowship, becoming a tool for measuring the performance of the programme.

7.6 Exit review

Fellowship programme/EAP scientific coordinators and supervisors conduct an exit review of the fellow’s achievements a few months before the end of the fellowship (Annexes 16A and 16B). During this review, coordinators assess whether competencies were acquired and whether field assignments were completed with deliverables that meet programme quality standards.

In addition, an interview is organised to receive feedback from the fellow on the programme, learning objectives, possible challenges, and scientific coordinators and training site supervisors. The fellows are asked to provide feedback on the modules and possible recommendations for improvement of the programme.

Scientific coordinators also check if the fellow has uploaded all deliverables to ECDC’s online training platform.

In case of not-achieved training objectives, the Fellowship Programme/EAP coordinators may grant extensions for a fellow to complete any of the graduation requirements. Extensions are decided on a case-by-case basis by ECDC Authorising Officer after discussion in the coordinator team. A fellow requiring an extension to complete his/her fellowship must request the extension in writing to the Head Scientific Coordinator /Director of their EAP, specifying assignments to be completed and expected termination date.

Towards the end of the two-year fellowship, fellows are requested to fill out an online survey in which they can give anonymous feedback to the Fellowship Programme regarding their experience. The survey contains questions about their Training Site, the supervision on site, the support by the coordinator team and the faculty bureau, how they perceive their competency development, time management issues, any difficulties they might have experienced in achieving their objectives, the specialized training modules, and any suggestion for improvement of the programme.

7.6.1 Requirements for completion of fellowship and Diploma

Fellows who complete the full-time training period and comply with the graduation criteria receive a diploma.

Head Scientific Coordinators are responsible to check with frontline coordinators and supervisors if the fellow has achieved the requirements for completing the fellowship. Fellows who terminate the fellowship before 23 months or do not comply with the training objectives, do not receive a diploma.

Conditional to graduation, the portfolio presented by the fellows will be reviewed and evaluated by the scientific coordinators. Minimum requirements are:

1) Performing all the following field assignments:
   - Conducting surveillance project with responsibility for one or more specific tasks relevant for training as indicated in the field assignments for surveillance, and in the case of EUPHEM fellows in the portfolio matrix;
   - Participation in an outbreak investigation (ten steps) as primary investigator (EPIET/EAP) and with responsibility for one or more specific tasks relevant for EUPHEM training (EUPHEM) and write an outbreak report;
Plan, develop, conduct and report an operational research project (on applied epidemiology research or applied public health microbiology research, depending on the respective path (EPIET or EUPHEM) based on a study protocol addressing a public health problem; and

Conduct Project or activities relevant to microbiological techniques or with laboratory based surveillance or outbreak investigations or a project related to core competencies not listed above (EUPHEM).

2) Submit a written manuscript on one of the above field assignments for publication as first author in a peer-reviewed journal;

3) Present a project at a scientific conference (oral or poster);

4) Conduct at least three teaching activities including lecturing and facilitation; development of a case study or other training materials (i.e. problem-based learning); design and/or implementation of a training event on topics related to the scope of the programme; and writing a reflective note for those activities;

5) Participation in the training modules.

If one or more training objectives are not met, the fellow receives a certificate of completion related to the activities conducted during the fellowship but not the diploma.

7.7 External fellowship review

Bi-Annually, ECDC organises an external cohort review where the outputs of the fellows are evaluated against the objectives of the Fellowship Programme. EAP fellows are included in this review. With this review, ECDC seeks advice from a panel of external reviewers that evaluates the fellowship portfolios, the exit survey, and other documents reflecting processes for the last two outgoing cohorts.

The panel gathers different individuals, for example representatives of: a) the training site supervisors, b) ECDC experts involved in public health practice, c) the board of the EPIET Alumni Network (EAN), d) FETPs that are member of TEPHINET, e) representatives from European Schools of Public Health and f) former Fellowship Programme scientific coordinators.

The panel uses standardised criteria to assess the graduation decisions formulated by Fellowship Programme- /EAP- scientific coordinators and make internal recommendations in the form of a short report to the scientific coordinators and to the Head of the Fellowship Programme for quality improvement of the programme.

8 ECDC’s Virtual Academy (EVA) – The online training platform

The fellowship programme relies on ECDC’s Virtual Academy (EVA), as the learning management system. Each fellow will be requested to set up his/her own profile. During the fellowship, fellows share all documents (e.g. protocols, reports, abstracts, presentations and manuscripts) via their respective personal folders. EAP fellows will follow their programmes requirements, which might differ.

The uploaded products constitute an e-portfolio that documents whether or not the fellow meets the criteria necessary for graduation. Hence, it needs to contain all final versions of the field assignments. In addition, EPIET fellows upload to EVA their incremental progress reports every month. During the fellowship, these reports may be accessible to all fellows in training, training institute supervisors, and scientific coordinators. ECDC offers to host the progress reports prepared by the EAPs’ fellows in EVA.

9 References

ANNEXES see separate documents

01. Core competencies for EPIET fellows
02. Core competencies for training of public health microbiologists
03. Contributions, clearance, affiliation, and acknowledgements
04A. EPIET project proposal form
04B. EUPHEM project proposal form
05. Guidelines for writing outbreak investigation reports
06A. Guidelines for giving oral presentations
06B. Guidelines for making poster presentations
07. EUPHEM Matrix portfolio
08. Guide for preparation and review of EPIET and EPIET associated programmes [EAPs] abstracts for scientific conferences
09. International Assignments, Standard Operating Procedures
10A. EPIET Site Appraisal Manual
10B. EUPHEM Site Appraisal/Visit Manual
11. Selection process for the ECDC Fellowship Programme: EU-track and Member State (MS)-track
12A. EPIET Competencies Development Monitoring Tool
12B. EUPHEM Competency Development Monitoring Tool
13A. EPIET Incremental Progress Report
13B. EUPHEM Incremental Progress Report
14A. EPIET Midterm review form
14B. EUPHEM Template for midterm review
15A. EPIET Fellowship Portfolio Report
15B. EUPHEM Fellowship Portfolio Report
16A. EPIET Exit interview form
16B. EUPHEM Exit interview form