

ECDC Fellowship Programme

Public Health Training Section

Manual for the ECDC Fellowship Programme EPIET and EUPHEM paths

Cohort 2019

This manual has been written by the ECDC Fellowship Programme team, based on the manual for Cohort 2017, which was reviewed by the National Focal Points for Training (NFP-T), members of the Training Site Forum (TSF), EPIET Associated Programmes (EAP) and ECDC Fellowship Scientific Coordinators.

Contents

Abbreviations	iii
1 Background	1
1.1 Fellowship structure and goals	1
1.2 Purpose and users	2
2 Programme objectives	2
3 Competencies and intended learning outcomes.....	2
3.1 Core competencies.....	2
3.2 Programme-common intended learning outcomes.....	3
3.3 EPIET-specific learning outcomes	5
3.4 EUPHEM-specific learning outcomes	5
4 Content of the programme.....	5
4.1 Introductory course	5
4.2 Training modules	5
4.3 Field assignments	6
4.3.1 Outbreaks.....	6
4.3.2 Surveillance projects (design, implementation, data analysis or evaluation)	7
4.3.3 Operational research.....	7
4.3.4 Training and teaching public health professionals	8
4.3.5 Public health management and communication	8
4.4 EUPHEM-specific field assignments.....	9
4.4.1 Bio-risk management	9
4.4.2 Laboratory Quality Management	10
4.4.3 Applied microbiology and laboratory investigation.....	10
4.5 Matrix of EUPHEM.....	10
4.6 Annual ESCAIDE conference and other scientific conferences.....	11
4.7 International assignments and projects tackling EU cross-border health threats.....	11
5. Roles and Responsibilities.....	11
5.1.1 Head Scientific Coordinators.....	11
5.1.2 Fellowship scientific coordination team	12
5.1.3 Frontline coordination	13
5.2. Training sites and supervisors	13
5.2.1 Training sites	13
5.2.2 Role of the supervisor	13
5.2.3 Fellows.....	14
5.3 Site visits	15
5.4 Fellowship Faculty Office (FFO).....	15
5.5 EPIET Alumni Network (EAN).....	15
6 Prerequisites and selection.....	16
6.1 Prerequisites	16
6.2 Selection of fellows	16
7 Monitoring progress	17
7.1 Acquisition of core competencies.....	17
7.2 Competency development and monitoring of field assignments	17
7.2.1 Incremental progress report	17
7.3 Supervisor-fellow-coordinator triangle.....	17
7.4 Mid-term review	18
7.5 Portfolio	18
7.6 Exit review	18
7.6.1 Requirements for completion of fellowship and diploma	18
8 ECDC's Virtual Academy (EVA) – the online training platform	19
9 References	20
ANNEXES see separate documents	21

Abbreviations

CDMT	Competencies Development Monitoring Tool
DD	Director's Decision
EAN	EPIET alumni network
EAP	EPIET-associated programme
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EPIET	European Programme for Intervention Epidemiology Training
ESCAIDE	European Scientific Conference for Applied Infectious Disease Epidemiology
TSF	Training Site Forum
EUPHEM	European Public Health Microbiology Training
EU	European Union
EU-track	EU-track of EPIET (fellows trained in a country other than their country of citizenship/s)
EVA	ECDC Virtual Academy (e-learning platform)
FETP	Field epidemiology training programme
FPO	Fellowship Programme Office (ECDC)
FSC	Fellowship scientific coordination team (ECDC)
LMS	Learning management system
MS-track	Member State-track (fellows trained in their country of residence)
NFP-T	National Focal Point for Training
PAE	German postgraduate training for applied epidemiology
PHT	Public health training (ECDC)
SOPs	Standard operating procedures
TNS	Training Network Strengthening (ECDC)

1 Background

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. In 2006, EPIET was integrated into the core activities of ECDC. The practical training continues to take place at national and regional centres for surveillance and control of communicable diseases, including public health laboratories in the European Union (EU) and European Economic Area (EEA) Member States.

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

Current EPIET and EUPHEM alumni are providing expertise in response activities and strengthening capacity for communicable disease surveillance and control inside and beyond the EU.

1.1 Fellowship structure and goals

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). 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. For MS-track fellows, Member States fund the salaries of fellows participating in the fellowship in their own countries, while ECDC funds their participation in training modules and the European Scientific Conference on Applied Infectious Diseases Epidemiology (ESCAIDE). Both ECDC and the Member States contribute resources to operate the fellowship programme, in a spirit of shared ownership.

The strategy also ensures that all ECDC training activities are based on required discipline-specific core competencies for effective preparedness, prevention, detection, assessment and control of communicable disease threats with cross-border dimensions. The curriculum and learning outcomes for the Fellowship Programme are based on defined core competencies for field epidemiologists and public health microbiologists, respectively.

The primary aim of the ECDC Fellowship Programme is to strengthen the communicable disease workforce capacity in the EU by providing state-of-the-art training in field epidemiology and public health microbiology. 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 are engaged in activities that contribute to the prevention of disease, death and disability and protect the EU against communicable disease threats. In addition, ECDC sees the programme as a way of facilitating advancement towards shared standards, and developing national programmes in field epidemiology and public health microbiology.

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.

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 develop competencies through practice. Training site supervisors play a key role in competency acquisition, by providing technical input and mentoring throughout the fellowship; supervisors may also participate in the facilitation of training modules. ECDC supports supervisors by offering technical workshops and train-the-trainers' activities (i.e. participation in ECDC Summer School and 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 gain familiarity with the structure and operation of other training sites.

The ECDC Fellowship Programme works in close collaboration with several EPIET-associated programmes. These programmes are field epidemiology training programmes run and governed by the Member States. In 2018, EPIET-associated programmes included the German postgraduate training for applied epidemiology (PAE) and field epidemiology training programmes in the United Kingdom and Norway. EPIET and EPIET-associated programmes share scientific content based on the curriculum of EPIET and collaborate through agreements between ECDC and the programmes themselves. In this manual, experts responsible for EPIET-associated programmes are designated as 'EAP scientific coordinators' even though titles may differ by country (e.g. scientific coordinator, senior scientific coordinator, director).

In this document, the term 'fellow' refers to participants in the ECDC Fellowship Programme (EU-track and MS-track) and EPIET-associated programme fellows who are recruited into a fellowship programme administered in accordance with this manual. These fellows follow the EPIET curriculum and receive an ECDC fellowship programme (EPIET/EUPHEM) diploma upon satisfactory completion of the two-year fellowship.

1.2 Purpose and users

This manual provides a detailed overview of the ECDC Fellowship Programme's intended learning outcomes, training activities (modules, field and international assignments), supervision and coordination of the training course.

The intended audiences of the manual are the applicants and fellows of Cohort 2019, training site supervisors, and the Scientific Coordinators.

The manual also makes reference (in annexes) to other documents – e.g. 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 relevant and practical learning ('learning by doing') in public health practice, based on 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 may offer additional training opportunities if other training needs are identified.

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 in order to perform a task effectively.

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 for each key competency domain:

Aware (basic): Individuals are able to identify the concept but their ability to perform the task/s independently is limited.

Skilled (intermediate): Individuals are able to perform tasks independently.

Competent (advanced): Individuals are able to apply, critique and teach the acquired skills.

Individual fellows' initial competencies are assessed at the beginning of the programme, and acquisition of competencies is assessed 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
- determine the objectives to be achieved within the two-year fellowship (with input from the TSF);

- develop, organise, and update the curriculum, including modules; and
- monitor the progress of individual fellows and aid the planning of learning activities.

3.2 Programme-common intended learning outcomes

The Fellowship learning activities are grounded in the fellows’ 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 vary between the EPIET and EUPHEM paths: fellows in the EPIET path focus more on the epidemiological aspects, while fellows in the EUPHEM path focus more on the microbiological aspects of a public health issue.

The expected level of competency for each learning activity is indicated by its verb (design, analyse, conduct, etc.). Each of the headings in this section indicates a **key competency domain or complex learning activity**, with the expected competency level presented in parentheses. In some cases, the learning outcome may be accepted as achieved regardless of the level. For example, depending on previous experience, opportunities available for projects and the combination of interest and dedication to a certain assignment, the learning outcome could be either ‘skilled’ or ‘competent’ in some domains.

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

Domain	Competency	Activity
Surveillance	(skilled/competent)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • Conduct all stages of a research project, from planning to writing a scientific paper. <p>Typically, EPIET fellows conduct applied epidemiology research and EUPHEM fellows applied public health microbiology research.</p>
Public health microbiology and laboratory investigations	(aware (EPIET); competent (EUPHEM))	<ul style="list-style-type: none"> • 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

		<ul style="list-style-type: none"> • 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)	<ul style="list-style-type: none"> • Apply the rules of local, national and international organisations involved in infectious disease control • Assess risks to respond to a potential health threat caused by communicable disease • 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)	<ul style="list-style-type: none"> • 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) • Facilitate case studies • Give lectures applying didactic/pedagogical techniques • Plan and conduct evaluation of training.
Biostatistical analysis	(skilled/competent)	<ul style="list-style-type: none"> • Acquire the principles of statistical analysis and related software • Apply basic concepts of probability • Calculate and interpret point estimates and confidence intervals for 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 • Check 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 EPIET-specific learning outcomes

Domain	Competency	Activity
Advanced statistical analysis	(skilled)	<ul style="list-style-type: none"> 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 EUPHEM-specific learning outcomes

Domain	Competency	Activity
Laboratory quality management	(skilled/competent)	<ul style="list-style-type: none"> 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 an internal audit of a laboratory in relation to international standards.
Laboratory leadership and management	(skilled)	<ul style="list-style-type: none"> Design, organise and lead or/and manage a public health microbiology laboratory.
Bio-risk management	(skilled)	<ul style="list-style-type: none"> 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, all fellows attend a three-week introductory course that provides basic training in intervention epidemiology and public health microbiology to prepare them for field work.

4.2 Training modules

Fellows attend seven additional weeks of training modules organised by the Programme in collaboration with EPIET-associated programme 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 through practical learning at the training site. Modules are also opportunities to develop the network, and engage training site supervisors.

Attendance of modules is compulsory. A fellow may be authorised to be absent from a module when public health emergencies occur (e.g. outbreak investigations), as these are deemed a higher priority than modules for fellows. Other opportunities to cover the module topic at a later stage may be sought (e.g. comparable online training, on-

site training, or participation in the next offering of that module). The Head Scientific Coordinators of the Fellowship Programme/EPIET-associated programme make the final decision on an individual basis. Fellows are instructed to inform the Fellowship Faculty Office (FFO) immediately if they are unable to attend.

Current modules

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

The modules and course content are evaluated at each offering. Topics and content may be modified to respond to emerging issues and evaluation results, in order to adapt to training needs.

4.3 Field assignments

To develop the required competencies, fellows engage in a number of field assignments (projects) based on their own learning needs and the public health service needs of the training sites. The Fellowship Programme uses a number of quality standards to evaluate these products and determine whether field assignments are satisfactory and aligned with programme objectives. All deliverables from the field assignments are subject to the role of the fellow, based on path-specific competencies, and rules and guidance on contributions, authorship, clearance and acknowledgements (as described in Annex 3).

Throughout the two-year fellowship, supervisors, frontline coordinators and fellows are encouraged to select projects to cover the widest possible range of technical issues and infectious disease themes.

Fellows are required to share protocols and draft reports related to each project at an early stage with local/project supervisors and front line coordinators to allow for technical review and to ensure alignment with programme objectives.

Fellows are required to develop a short project proposal for planned field assignments, stating background, objectives, learning objectives, 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 should also outline specific supervision for each project and must be approved by the frontline coordinator before initiation of the assignment. Given their urgency, outbreaks may be exempt from this requirement.

4.3.1 Outbreaks

Outbreak investigations are among the most stimulating and challenging activities for fellows, due to time pressure, possible public attention, and the need for technical rigour.

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 could be used.

Description of the assignment

Fellows are expected to be actively involved in all stages of an outbreak investigation, from initial detection and characterisation to dissemination of findings and recommendations.

Descriptive and analytical epidemiological and microbiological investigations are desirable in order to develop relevant competencies.

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

Product/deliverable

To complete the outbreak assignment, fellows are required to produce at least one final outbreak report (Annex 5). Submitting findings for presentation at a scientific conference, and/or a manuscript to a peer-reviewed journal as first author, is highly encouraged.

4.3.2 Surveillance projects (design, implementation, data analysis or evaluation)

Communicable disease surveillance systems depend on epidemiological and laboratory data. Public health epidemiologists and microbiologists must be able to set up and/or manage ongoing surveillance system activities, and to evaluate surveillance systems including the role of the laboratory. The pedagogical objective of this activity is to acquire competencies in the design and implementation of a new system, and/or analysing data from an existing surveillance system, and/or evaluating a surveillance system, by system objective and attributes. This activity is intended to support the training site in interpreting surveillance data with consideration for its strengths and limitations, and in using information from surveillance systems for public health action.

Description of the assignment

The surveillance project includes at least ONE of the following:

- Design or implement a new surveillance system, by:
 - designing the surveillance system (public health importance, action/intervention available, objectives of the system, case definition, indicators, data collection, information sources, transmission of information, software and hardware, data analysis, feedback procedures, recipients, use of information);
 - developing a case report form and obtaining 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
- analyse and interpret data from a surveillance system to generate information for action, by:
 - appraising surveillance data for quality;
 - interpreting trends in the surveillance data and developing corresponding recommendations;
 - participating in regular feedback of surveillance data to stakeholders;
 - writing a scientific report using the analysed data; and
 - making appropriate recommendations for the improvement of the surveillance system, including further investigation, improved processes, or prevention or control measures

OR
- evaluate an existing surveillance system, by:
 - describing the public health importance of the health event under surveillance, and the public health objectives related to the health event;
 - describing the system, including the resources required to operate it;
 - selecting relevant criteria for evaluation (simplicity, flexibility, acceptability, sensitivity, positive predictive value, representativeness, timeliness) and defining methods to assess these criteria;
 - evaluating the system for relevant criteria, and
 - formulating conclusions and recommendations.

Product/deliverable

To complete the surveillance assignment, fellows are required, where applicable, to produce a protocol for the surveillance assignment (usually for designing and evaluating surveillance systems) and to present either a final report or submit a full manuscript on the outcomes of the surveillance project to a peer-reviewed journal.

4.3.3 Operational research

Applied public health research allows fellows to apply epidemiological and microbiological knowledge and practice to address relevant public health questions. The pedagogical objective of this activity is to acquire the skills necessary to plan, and conduct a public health epidemiology and/or microbiology study, to analyse data, and to interpret and communicate its results.

Fellows will identify one or more research projects in collaboration with the training site supervisor. Projects should be driven by the public health needs of the training site, and not merely an academic exercise. It is recommended that fellows participate in all steps of the research project -- from formulating the research question and planning the project to writing a scientific paper -- as this offers the best opportunity to acquire competency in public health research.

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, fellows must deliver products documenting their involvement in all aspects of operational research. Since 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 generated from a protocol developed by others, to write a report or paper). The final products will include:

- A final study protocol AND
- Either a final report AND/OR a presentation at a scientific conference, AND/OR a manuscript submitted to a peer-reviewed journal, if applicable.

4.3.4 Training and teaching public health professionals

Cascading of knowledge through teaching is a cornerstone of the ECDC public health training strategy. By engaging in the training of other public health professionals, fellows develop skills in adult education applying appropriate teaching and evaluation methods. The focus is on learning as a cognitive process, and the alignment of instructional design and evaluation.

Description of the assignment

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

This will include:

- Conducting training needs assessment and defining learning objectives;
- Designing and preparing learning materials (e.g. interactive lecture, case study, problem-based learning, short course or workshop design);
- Conducting learning activities; and evaluating learning activities.

Product/deliverable

To complete the teaching assignment, the fellow must develop new or revise existing training materials, engage in active teaching/training (i.e. not just deliver a lecture) and produce at least one reflective report on the training activities conducted (e.g. results of the training evaluation, summary of the instructional design process, reflection on delivery of content and interaction with learners).

4.3.5 Public health management and communication

Public health management 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 formulate evidence for policies and strategies that support improvement of the population's health.

Communication skills include diverse levels of communication (local/national and international) and different modalities (scientific, technical and risk communication). Communication of public health epidemiology and

microbiology information is a crucial task for appropriate public health action. Effective communication and coordination of efforts and investigations among different professionals and disciplines involved is essential.

The aim of the assignment is to communicate effectively with other public health professionals and authorities involved in decision-making for public health interventions.

Description of the assignment

Fellows are required to communicate the results of their field (outbreak) investigations, surveillance projects and/or research projects to public health authorities or policy makers by producing written technical reports, briefings or other effective (oral and written) communication outputs.

Fellows may 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;
- Writing and submitting short article/s in /epidemiological/ microbiological bulletin/ journal;
- Writing and submitting scientific paper for a peer-reviewed journal (as first author);
- Presenting in oral or poster sessions at an international conference;
- Appraise a scientific abstract/article;
- Review scientific work of others and give constructive feedback.

Fellows may also communicate with the media and the 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, fellows must:

- Produce at least one written technical report, briefing or other oral or written communication output, based on an investigation conducted by the fellow, which reflects the interpretation of results and recommended intervention measures, and is tailored in format and style to the target audience;
- Submit at least one abstract to ESCAIDE or a similar conference (as first author);
- Give at least one oral (Annex 6A) or poster presentation (Annex 6B) during a structured, moderated session at an international, peer-reviewed, English-language conference, primarily ESCAIDE. Occasionally, and subject to budget availability¹, other relevant conferences may be identified (e.g. Global Conference of 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 and indexed in Medline).

4.4 EUPHEM-specific field assignments

4.4.1 Bio-risk management

The scope of bio-risk 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 bio-risk 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.

¹ Before submitting an abstract to any conference other than ESCAIDE, fellows must ensure that it is approved by the relevant Head Scientific Coordinator and that there are funds available to attend the conference.

Product/deliverable

To complete the assignment, the fellows must produce:

- a protocol on appropriate laboratory investigations and sampling preparation techniques based on biosafety level;
- a report assessing 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 healthcare system and subsequently 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 in a laboratory audit in accordance with international standards and using the *Biorame* programme. During the two years, they must participate in or organise at least one accreditation process of a laboratory or a method.

Product/deliverable

- An EQA report or published paper;
- An audit report; and
- An 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 the programme for 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, line-list or a manuscript).

4.5 Matrix of EUPHEM

The matrix for the two-year EUPHEM training is planned both vertically and horizontally (Annex 7). The horizontal part of the matrix contains seven core competencies (eight domains). In the vertical part, different disease groups are allocated. The fellow must complete at least four compulsory projects (main field assignments). Three are

mandatory – in outbreak investigation, surveillance and research. The fourth one can be selected from any other competency domain (applied public health microbiology and laboratory investigation, bio-risk management or quality management). These projects should not be in the same disease group. 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. In addition to 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 the 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 fellowship projects. However, it is recommended that fellows provide their skills within specialised areas when requested (e.g. outbreak investigation). MS-track fellows may contribute up to 20% in the same subject or disease group as before the fellowship in the form of service to the training site in the event of emergencies or outbreaks.

4.6 Annual ESCAIDE conference and other scientific conferences

Fellows participate at the annual European Scientific Conference for Applied Infectious Disease Epidemiology (ESCAIDE) three times: the year they join the programme, in their second year of fellowship and following completion of the fellowship. Fellows are expected to submit abstracts and present the results of their projects at ESCAIDE.

Fellows can participate in other national or international scientific conferences, if their supervisors and frontline coordinators consider them suitable in the context of their learning objectives. Before submitting any abstract to a conference, fellows must seek the approval of their training site supervisors and EPIET/EUPHEM/EAP scientific coordinators or, in the event of international assignments, from the requesting agency (see the standard operating procedure for submission of abstracts to conferences Annex 8).

Subject to budget availability, the Programme may fund fellows' participation in the conferences and will assess priorities and availability of budget on a case-by-case basis.

4.7 International assignments and projects tackling EU cross-border health threats

International organisations or agencies including WHO, ECDC, ministries of health and public health institutes of the EU/EEA Member States or Centres for Disease Control (CDCs) in different countries, non-governmental organisations (NGOs), and research agencies/institutes may request assistance and offer fellows opportunities to carry out field work in an international setting, outside of their usual training site. ECDC/EAP fellows may participate in these activities, when assignments offer experience appropriate to the training objectives. Typically, assignments (deployments) last 2–4 weeks. However, the duration of the assignment may vary depending on the project, and under special circumstances can last up to 6–8 weeks. A standard operating procedure for international assignments (Annex 9, under consultation and subject to change) governs the conditions under which fellows are deployed. For international assignments identified and organised by training sites, similar procedures apply.

5. Roles and Responsibilities

5.1.1 Head Scientific Coordinators

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 provide technical leadership and guidance to the scientific coordinator team based at ECDC and in the Member States, and to ensure that fellows achieve their training and learning objectives through regular communication with the scientific coordinator team, fellows and supervisors. The Head Scientific Coordinators chair their respective selection committees, 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 in collaboration with the scientific coordinators. The Head Scientific Coordinators facilitate opportunities for fellows to participate in international assignments, determine the suitability of international missions and monitor fellows' progress during the assignment.

They are responsible for the scientific curriculum of the specialised training modules, and work closely with the scientific coordinators organising the module to develop the syllabus and identify suitable facilitators. In the event of conflicts between the fellow and the site supervisor, the Head Scientific Coordinators will adopt a moderating role. The Head Scientific Coordinator for each path and the main supervisor sign the fellow's diploma.

5.1.2 Fellowship scientific coordination team

The Fellowship scientific coordination team manages technical curriculum and delivery jointly with the scientific coordinators of the EPIET-associated programmes. The scientific coordinators provide technical expertise in epidemiology and public health microbiology, support fellows and supervisors, and organise the specialised training modules throughout the fellowship. The coordinators are also responsible for ensuring that projects have public health relevance and are aligned with core programme competencies. The Fellowship scientific coordinators act as one team to ensure quality, monitor the achievement of learning objectives and outcomes, and collaborate to meet the scientific needs of all fellows, irrespective of path.

The scientific coordinators report for functional purposes to the Head Scientific Coordinators of EPIET and EUPHEM on all content related matters specific to the path. The Head Scientific Coordinators of EPIET and EUPHEM monitor the implementation of their scientific activities.

Scientific coordinators for the EPIET-associated programmes are responsible for EAP fellows.

The main pedagogical activities of the fellowship programme scientific coordinator team (Head Scientific Coordinators and scientific coordinators) are:

- organising and developing training programme content and methods,
- monitoring progress, advising and counselling fellows;
- providing technical guidance and feedback to fellows;
- promoting and advocating for the programme with public health partners.

In particular, these activities encompass the following areas:

- Development and proposal of training or learning objectives
 - define training objectives related to the core competencies;
 - collaborate with training site supervisors and fellows to ensure that individual training objectives are established and monitored during the fellowship.
- Organisation and evaluation of courses and training modules:
 - plan, co-ordinate and evaluate the EPIET/EUPHEM introductory course;
 - support collaborating training institutes in planning and organising specific modules;
 - develop content, facilitate and evaluate each module.
- Identification, assessment and promotion of additional training opportunities and assignments:
 - identify suitable EU-wide investigations or research projects, and negotiate the participation of the fellows;
 - identify potential international assignments appropriate to the training objectives, and negotiate participation of the fellows;
 - establish and maintain contacts with other international public health training programmes in consultation with Head Scientific Coordinators and the Head of the Public Health Training section in order to exchange training material, trainees and trainers.
- Monitoring and promotion of 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 at each training institute;
 - engage and support training site supervisors as facilitators in the training modules.
- Development of training skills among current and potential facilitators at training sites, and among fellows
 - organise and improve train-the-trainers activities;
 - use all fellowship courses and modules as opportunities to strengthen the training skills of the fellows and supervisors.
- Identification and development of training materials for coursework and distance 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.
- Promotion of 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.

5.1.3 Frontline coordination

Each fellow is assigned to a scientific coordinator who is their 'frontline coordinator'. Frontline coordinators will be part of a triangular interaction with the fellow and the training site supervisors. However, the frontline coordinator may identify a need for specific expertise and engage other coordinators for input on individual projects. The specific role of the frontline coordinators is to provide support to the fellow and supervisors, in particular by:

- reviewing the initial competency assessment;
- organising midterm review, and participating in exit reviews to assess specific training objectives as needed;
- reviewing and approving project proposals
- reviewing protocols, reports, manuscripts, presentations;
- helping identify and provide relevant literature;
- facilitating exchanges of information and products between EUPHEM and EPIET and EPIET-associated programme (EAP) fellows;
- responding or identifying appropriate responses to queries from the fellows;
- reviewing fellows' projects and providing technical and editorial feedback throughout the fellowship
- regularly organising meetings or phone calls with supervisors and fellows.

5.2. Training sites and supervisors

5.2.1 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 level in the European Union (EU) and EEA (European Economic Area) countries.

Training sites must 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 two 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 travel within country to support outbreak investigation and control;
- collaboration with epidemiological and microbiological sectors, as well as environmental and animal health sectors;
- sufficient time set aside for the fellow to engage in fellowship-related activities, as the fellowship is a full-time training programme.

Training sites commit to working 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).

5.2.2 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 at 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 day-to-day issues. In addition to the main and co-supervisors, a dedicated epidemiology supervisor should be identified for EUPHEM sites to support EUPHEM fellows with epidemiological competencies

and strengthen the link between the two disciplines. For EPIET fellows, a microbiology supervisor may be assigned to help the fellow with microbiological content of her/his projects.

Additionally, other experts (project supervisors) may be responsible for engaging and guiding the fellow on specific projects.

Overall, a fellow should benefit from approximately four hours of supervision per week with training site supervisors (i.e. primary and project supervisors), allowing for some variation, depending on fellows and supervisors; and the status of projects.

The main training site supervisor is responsible for:

- assessment of training needs;
- facilitation of learning activities;
- ensuring access to field assignments;
- monitoring 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
- reviewing progress towards acquisition of core competencies;
- supervision of projects or identification of project supervisors; 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 frontline 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 by:

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

The main training site supervisor 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 (EPIET) and public health microbiology (EUPHEM) in their country;
- have at least three years of professional experience in intervention/public health/field epidemiology (EPIET) and nine years in public health microbiology (EUPHEM);
- be a graduate 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 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).

5.2.3 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 8);

- concomitantly share all early drafts with the training site supervisors and scientific coordinators alike;
- revise drafts as necessary and 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 the scientific coordinators of EPIET, EPIET-associated programmes, the Fellowship faculty bureau and EPIET-associated 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 relating to professionalism, ethics, and team work are core competencies and values of the programme.

5.3 Site visits

Training site visits are currently organised by the scientific coordinators, who are usually accompanied by a supervisor from another training site, 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.

A further purpose of the site visit is to optimise interaction between the fellow, the supervisor and the frontline coordinator. Additionally, it provides an opportunity to identify the training needs of supervisors and assess whether the fellows' choice of projects 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. Site visits for EPIET and EUPHEM in the same country/institute will be conducted in the context of one combined visit, whenever possible. When feasible, site visits will be organised to coincide with the mid-term review of the fellows.

5.4 Fellowship Faculty Office (FFO)

The Fellowship Faculty Office (FFO) in ECDC's Public Health Training (PHT) section is responsible for the administrative and logistical aspects of the programme and fellowship organisation (excluding grant management). It provides support to the scientific coordination team. EPIET-associated programmes provide their own administrative and logistical support.

5.5 EPIET Alumni Network (EAN)

The EPIET (and EUPHEM) Alumni Network (EAN)¹ offers scientific opinion on EPIET, EUPHEM and EAP training content and participates in the TSF and the selection of EU-track fellows. Furthermore, fellows benefit from EAN resources provided to all members (e.g. weekly jobs/courses bulletin, newsletter, workshops/mini-modules).

¹ <http://epietalumni.net/>

6 Prerequisites and selection

The ECDC Fellowship Programme (EU-track and MS-track) call for applications specifies the formal eligibility criteria and selection processes each year. The Administrative Decision on Rules governing the EU-track and MS-track of the ECDC Fellowship Programme, field epidemiology path (EPIET) and public health microbiology path (EUPHEM), this manual and its annexes are an integral part of the ECDC Fellowship Programme's call for applications.

6.1 Prerequisites

Eligibility criteria

In order to be eligible for the ECDC Fellowship Programme, candidates for both paths must fulfil the following formal requirements:

- Have a thorough knowledge of at least two official languages of the EU/EEA, one of which shall be English (at B2 level or above);
- Be a national of a Member State of EU/EEA, and
- Be entitled to her or his full rights as a citizen.

In addition, depending on the path applied for, candidates must fulfil additional requirements:

Specific eligibility requirements for EPIET path:

1. Post-secondary education attested by a diploma¹ in medicine, public health, epidemiology, veterinary medicine, nursing, biology, microbiology, pharmacology, biomedicine or other health and social sciences, at graduate diploma or Masters' degree level or equivalent; and
2. At least one (1) year of work experience in public health or applied epidemiology; on a case-by-case basis experience obtained during doctoral (PhD) studies in a relevant discipline may be accepted as such professional experience.

Specific eligibility requirements for EUPHEM path:

1. Post-secondary education attested by a diploma¹ in medicine, biology, microbiology, veterinary medicine, pharmacology, or biomedicine, at graduate diploma or Masters' degree level or equivalent; and
2. At least three (3) years of working experience in microbiology; or a PhD degree in microbiology or equivalent (e.g. clinical microbiology specialisation, veterinary medicine specialisations, or a specialisation in any field of microbiology).

6.2 Selection of fellows

Fellows in the EU-Track are selected through an open and competitive process. Applicants are citizens of Member States of the European Union and the European Economic Area countries. The selection criteria presented above are defined by ECDC with advice from the TSF and included in the call for application.

For the MS-Track, fellows are selected from citizens of Member States of the EU and the EEA countries, or individuals who have been living in an EU/EEA Member State for at least three years with residency and working permit. The same selection criteria shall apply regarding professional and personal characteristics/interpersonal skills.

¹ Only diplomas and certificates that have been awarded in EU Member States or are the subject of equivalent certificates issued by authorities in the Member States shall be taken into consideration.

7 Monitoring progress

7.1 Acquisition of core competencies

ECDC Fellowship Programme/EPIET-associated programmes monitor the acquisition of core competencies as an initial assessment conducted during the introductory course, at 12 months (mid-term 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 11A and 11B); which is then shared and discussed with the training site supervisor. The fellow and the 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) at an early stage. This will provide an opportunity for the supervisors and coordinators to assess the fellows' progress towards the training objectives.

The frontline coordinators monitor and advise on the content and conduct of the local training activities, and provide support and feedback, as previously defined in this document.

7.2 Competency development and monitoring of field assignments

The programme monitors progress in the completion of the field assignments through an incremental progress report, IPR (outline available in Annex 12A and 12B), or equivalent tools (EAPs) structured in accordance with the field assignments and competencies to be developed during the two-year training course. 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 update an incremental progress report (IPR) on a monthly basis and discuss it with their supervisor. The IPR helps to document and monitor the progress of individual fellows in achieving the training objectives and share this information with other fellows, training supervisors and the programme coordinators. They are also used for administrative purposes such as presenting the outputs of the programme, thereby justifying the continuation of funding.

The specific objectives of the reports are:

- to provide information to 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 other training site supervisors of the training activities of all fellows;
- 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 or major progress in training has been achieved or at least every month. 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. This triangle is intended to be mutually beneficial: sharing early draft documents, project plans and ideas within this team is stimulating and supportive for all those involved.

Triangular teleconferences between the fellow, the supervisor, and the coordinator are to be arranged regularly, to ensure that all parties are informed and have an opportunity to freely discuss projects and progress.

7.4 Mid-term review

Fellowship programme/EPIET-associated programme coordinators conduct a mid-term review in the 12th or 13th month of the fellowship in the form of a site visit (always for EUPHEM, sometimes for EPIET) 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 or at risk will be monitored and offered additional reviews at 15 and 18 months (Annexes 13A and 13B).

7.5 Portfolio

At the end of the programme, each fellow produces a 'fellowship portfolio' in the form of a report (Annexes 14A-EPIET and 14B-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 on achievements and competencies acquired. Publications and communications are referenced in ICMJE (Vancouver) format. Upon completion of the fellowship, ECDC uploads all portfolios onto its website. **Publication of the portfolio does not automatically imply receipt of the diploma.**

The final portfolio is based on the individual projects conducted during the two-year fellowship. Portfolios serve as a documentation of the outputs and impact of the fellowship and are a tool for measuring the performance of the programme.

7.6 Exit review

Fellowship programme/EPIET-associated programme scientific coordinators and supervisors conduct an exit review of the fellow's achievements a few months before the end of the fellowship (Annexes 15A and 15B). During this review, coordinators assess whether competencies have been acquired and whether field assignments have been completed with deliverables that meet programme quality standards. Scientific coordinators also check if the fellow has uploaded all deliverables to ECDC's online training platform.

In addition, an interview (Annexes 15A and 15B) is organised a few weeks before the end of the fellowship to receive feedback from the fellow on the programme, learning objectives, possible challenges, and the interaction with scientific coordinators and training site supervisors. The fellows are asked to provide feedback on the modules and recommendations for improvement of the programme.

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

If training objectives are not achieved, the Fellowship Programme/EPIET-associated programme coordinators may grant extensions for a fellow to complete outstanding graduation requirements: extensions which have budgetary implications are decided on a case-by-case basis by ECDC's authorising officer after discussion in the coordinator team. A fellow requiring an extension to complete his/her fellowship must make a request for the extension in writing to the Head Scientific Coordinator/director of their EPIET-associated programme, specifying assignments to be completed and expected termination date.

Towards the end of the two-year fellowship, fellows will be asked 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 specialised 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 requirements receive a diploma.

Head Scientific Coordinators are responsible for checking with frontline coordinators and supervisors whether the fellow has achieved the requirements for completing the fellowship.

Before graduation, the portfolio presented by the fellow will be reviewed and evaluated by the scientific coordinators. Minimum requirements are:

- 1) Successful completion of all field assignments:
 - conducting a surveillance project, as described in the field assignments for surveillance (4.3.2);
 - participation in an outbreak investigation, as described in the field assignments for outbreak investigation (4.3.1);
 - planning, implementing and reporting on an operational research project, as described in the field assignments for operational research (4.3.3); and
 - conducting projects or activities relevant to microbiological techniques or with laboratory-based surveillance or outbreak investigations or a project related to core competencies not listed above according to the matrix (EUPHEM).
- 2) Submission of a written manuscript as output of one of the above field assignments for publication as first author in a peer-reviewed journal;
- 3) Scientific presentation of the results of one of the above field assignments at a scientific conference (oral or poster);
- 4) Engagement in teaching and training activities, as described in the field assignments for teaching (4.3.4);
- 5) Participation in all required training modules (except in justified and unforeseen circumstances).

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

8 ECDC's Virtual Academy (EVA) – the online training platform

The fellowship programme uses ECDC's Virtual Academy (EVA) as its learning management system. Each fellow is 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. EPIET-associated programme fellows will follow their programme requirements. ECDC offers to host the progress reports prepared by the EPIET-associated programme fellows in EVA.

The uploaded products constitute an e-portfolio that documents whether the fellow meets the criteria necessary for graduation. Hence, the fellow's portfolio must contain all final versions of the field assignment outputs. Fellows also upload their incremental progress reports to EVA every month. During the fellowship, these reports may be accessible to all fellows in training, training institute supervisors, and scientific coordinators.

9 References

1. European Centre for Disease Prevention and Control. Core functions of microbiology reference laboratories for communicable diseases. Stockholm: ECDC; 2010. Available at:
http://ecdc.europa.eu/en/publications/Publications/1006_TER_Core_functions_of_reference_labs.pdf
2. European Centre for Disease Prevention and Control. Fostering collaboration in public health microbiology in the European Union - A needs analysis. Stockholm: ECDC; 2010. Available at:
http://ecdc.europa.eu/en/publications/Publications/1012_TER_Fostering_collaboration.pdf
3. Regulation (EC) No 851/2004 of the European Parliament and of the Council of 21 April 2004 establishing a European Centre for disease prevention and control. Available at:
<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32004R0851:EN:HTML>
4. Biggs, JB, Tang C. Teaching for quality learning at university. Buckingham: Open University Press/Society for Research into Higher Education. (Fourth edition). Glasgow, UK: McGraw Hill; 2011.

ANNEXES see separate documents

01. [Core competencies for EPIET fellows](#)
02. [Core competencies for EUPHEM fellows](#)
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 Procedure](#)
- 10A. [EPIET Site Appraisal Manual](#)
- 10B. [EUPHEM Site Appraisal/Visit Manual](#)
- 11A. [EPIET Competencies Development Monitoring Tool](#)
- 11B. [EUPHEM Competency Development Monitoring Tool](#)
- 12A. [EPIET Incremental Progress Report](#)
- 12B. [EUPHEM Incremental Progress Report](#)
- 13A. [EPIET Midterm review form](#)
- 13B. [EUPHEM Template for midterm review](#)
- 14A. [EPIET Fellowship Portfolio Report](#)
- 14B. [EUPHEM Fellowship Portfolio Report](#)
- 15A. [EPIET Exit interview form](#)
- 15B. [EUPHEM Exit interview form](#)