Competency Development Monitoring Tool

We would like to ask you to shortly state your previous experience (year, name of project) and rate your competencies in each area scoring between 1-5, and if necessary other verbs on the list added at the end of this part which more defines your proximate competence (1 minimum knowledge (aware), 2 experienced/exposed, 3 skilled (independent user), 4 able to teach, 5 expert). This competency assessment is based on main domains of core competencies of EUPHEM programme and activities within the core competencies but consist of more details (sub-domains, activities and methodological examples). When assessing the performance/activities please take to account relation to the main domains and subdomains.

Name: _____ Training Site(s):_____

Core domains				
1. Public Health Microbiology Management and Communication				
Tasks	Competency	**Previous experience**	**Score (1-5)**	**Other verbs/ Comments/notes**
1.1 Public Health Management				
General	Define PHM importance Understand principles of scientific communication to peers, stakeholders and media/public Identify public health priorities in Complex emergency situations (CES) Be familiar with security issues Know the role of different agencies Identify elements of stress management			
Interpret and communicate the results	Interpret and evaluate significance of results in support of clinical management and infection control Prepare interpretation and communication strategies that informs the decision making process			
Write a scientific report/ or publish a scientific paper	Provide report in support of patient management, outbreak control and epidemiological support. Write a peer reviewed paper			
Identify a problem of public health importance	Keep updated with relevant issues Review literature Consult Medline			
Knowledge of planning outbreak responses at national and international level	Identify interdisciplinary needs between health care professionals and front line responders. Planning, implementation and lessons learnt from planned exercises.			

Infection control	Plan and implement infection control process within field study			
Response to severe epidemics	Identify key elements of social mobilisation Identify basic laboratory requirements in the field			
Rapid assessment techniques	Use rapid assessment in the early phase Use relevant indicators to monitor intervention Write situation reports			
1.2 Ethics and integrity issuse				
Familiarity with ethical roles	Understand and attach to organisational ethics Conduct ethical codes binding the person to her/his principle of collaboration Follow publication ethics Understand and keep personal integrity			
Ethical principles regarding human welfare	When planning studies and / or conducting research: • Apply relevant laws to data collection, management, dissemination and use of information • Adhere to ethical principles regarding data protection and confidentiality regarding any information obtained as part of the professional activity Handle conflicts of interests			
1.3 Laboratory management				
Identify best laboratory techniques	Identify appropriate sampling strategies Identify appropriate laboratory investigation and sampling preparation techniques			
Samples transportation	Review and report on the international regulations and the role of stakeholders (i.e. IATA, IACO, Customs,) in movement of infectious materials across national boundaries Outline field microbiology needs and design packaging and transportation protocols			
Rapid assessment techniques	Identify methods for Detection of pathogen/cause of unusual events Design a protocol to grab the laboratory results			
1.4 Communication management				

Conferences	Write an abstract Attend relevant conferences Make an oral presentation Prepare a poster			
Appraise publication	Review manuscript (peer review) Present at journal club			
Peer-reviewed publication	Write a manuscript Build a scientific argument Produce a high level outline of the manuscript Write all sections of an article following the scientific writing structure Submit to peer reviewed journal Undergo editorial process Edit a manuscript after internal review Complete writing a manuscript			
Appraise publication	Review manuscript (peer review)			
Media communication	Prepare a press interview Prepare a radio interview			

2. Applied microbiology and laboratory investigations				
Tasks	**competency**	**Previous experience**	**Score (1-5)**	**Other verbs/ Comments/notes**
2.1 General microbiology				
Microbiology knowledge	Describe role of laboratory in surveillance, outbreak investigation, applied research Understand the principle and practices of bioinformatics and phylogeny Define type of analysis depending on the study design			
Obtain a peer review of the study protocol	Able to seek and take advice into account			
Establish the criteria for microbiological input and evaluation within study team.	Establish microbiological criteria and assessment Design & conduct laboratory investigations in accordance with the documented 'risk assessments'			

Collect data	Create a data entry scheme Record using appropriate IT support.			
Analyse the data	Identify and use appropriate suitable analytical & statistical techniques.			
2.2 Laboratory investigation				
Conduct an investigation	Undertake an laboratory investigation in a public health setting including: Knowledge the principles of: - the steps of an investigation - Development of a microbiological case definition - sampling strategies - laboratory techniques - Incident team coordination - environmental procedures - environmental contacts			
Engage in interaction between different disciplines	Identify needs and objectives of clinicians, laboratory, veterinary and environmental agencies, public and private sector; Think critical in pre-sampling, sampling, analysis, Reporting, documentation, feedback.			
Sample taking	Define a sampling strategy including number of needed samples; Collect, label, package and transport samples appropriately and safely.			
Samples transportation	Review and report on the international regulations and the role of stakeholders; (i.e. IATA, IACO, Customs,) in movement of infectious materials across national boundaries; Outline field microbiology needs and design packaging and transportation protocols.			
2.3 Laboratory methods and analysis				
Knowledge of phylogenetics	Identify and interpret microbiological results and			

	phylogenetic studies required to support epidemiological tracing of infection source.			
Phylogenic analysis	Understand the principles of multiple alignment Construction and interpretation of a simple multiple alignment Phylogenetic analyses techniques Create and query a local BLAST database evaluation of the software and troubleshooting			
Non-sequencing typing methodology	Design and interpret serological, PulseField and VNTR data, etc.			
Sequencing technologies	Preparation and running of automated sequencing systems Critique of the software and troubleshooting Data production and interpretation			
Database systems	Sequence retrieval and simple sequence entry Create a database using BioNumeic and batch sequence import Complex sequence entry: Trace data from automated sequencers Edit sequences by using editing programs(e.g Bioedit) analysis Sequences by using sequence databases			
Engage in interaction between different disciplines (Lab/Epi…)	Identify needs and objectives of clinicians, laboratory, veterinary and environmental agencies Critical thinking in pre-sampling, sampling, analysis, Reporting, documentation, feedback			
Sample taking	Define a sampling strategy including number of needed samples			

	Collect, label, package and transport samples appropriately and safely			
Laboratory methods	Identify key laboratory investigations relevant to selected symptoms and / or suspected pathogens Identify situations where genetic typing methods should be used Estimate sensitivity, specificity, positive and negative predictive value			
Samples transportation	Review and report on the international regulations and the role of stakeholders (i.e. IATA, IACO, Customs,) in movement of infectious materials across national boundaries Outline field microbiology needs and design packaging and transportation protocols			
3. Surveillance and outbreak investigations				
3.1 Surveillance				
Tasks	competency	**Previous experience**	**Score (1-5)**	**Other verbs/ Comments/notes**
Plan method	State objectives of surveillance and action / intervention resulting from a surveillance List indicators chosen Identify data needed			
Describe process	Describe type of surveillance Describe data sources Draw a flow chart Evaluate system attributes			
Analyse surveillance data	Perform a capture-recapture study Measure sensitivity of reporting			
Operate microbiological support on surveillance system	Actively participate in the operation of a surveillance system Perform routine analysis of surveillance data			

	Write regular surveillance reports for stakeholders / those who need to know Implement improvements to the system			
Output	Assess feedback procedures Analyze use of information Write a report			
Prevalence **Incidence** **proportion** **Incidence density** **Secular trends**	Choose free word			
Cohort study design **Case control study design** **Cross-sectional design** **Ecological studies** **Case-cohort design** **Other designs**	Choose free word			
Sampling methods **Sample size/power calculation** **Questionnaire design**	Choose free word			
Bivariate analysis **Stratified analysis** **Survival analysis** **Non-parametric methods of analysis** **Multivariate analysis**	Choose free word			
Significance testing **Bias** **Confounding** **effect modification** **Standardization** **Measures of effect** **Measures of impact**	Choose free word			
Causality	Choose free word			
Computers	Choose free word			

Statistical analysis package (SAS, STATA, SPSS) **EPIINFO** **EPIDATA** **Word processing** **Graphic package** **GIS software** **Other multivariable analysis package** **Email, WEB**				
3.2 Outbreak investigation				
Respond to initial call	Evaluate and record relevant outbreak data set Review and understand on-call protocols Establish response requirements			
Prepare for investigation	Plan the investigation Identify investigation team requirements General knowledge of investigation design			
4. Quality Management				
Tasks	competency	**Previous experience**	**Score (1-5)**	**Other verbs/ Comments/notes**
Review international quality guidelines/standards	Understand the principles and practices of quality assurance according to those outlined by international & EU Directives			
External quality assurance (EQA)	Describe efficacy of quality assurance. Assess and experience different standards Understand and apply the concepts of EQA			
Preparing EQA	Collect set of isolates/samples for EQA Write protocols Identify related ISO standards			

Collecting Data	Design template for collecting data Integrate collected data Interpret integrated data			
Preparing report	Crate tables and figures Draft the EQA report Make conclusion and recommendation			
Accreditation Audit	collect data on the origin and type of specimen and the dates and times when (i) the sample was taken (ii) the specimen was received in the laboratory (iii) the report was signed by the microbiologist; (iv) the report was sorted by the laboratory clerical staff (v) The final report was received on the ward Estimate the cumulative time from sampling to a result arriving on the ward			
Accreditation Procedure	Familiar with accreditation procedure Involved in accrediting procedure Responsible for accreditation			
5. Biorisk Management				
Tasks	competency	**Previous experience**	**Score (1-5)**	**Other verbs/ Comments/notes**
Review international biosafety guidelines	Understand and apply the principles and practices of biosafety according to those outlined by WHO & EU Directives			
Personal Protective equipment	Describe variation and efficacy of PPE strategies. Assess and experience different PPE systems			

	Understand and apply the concepts of 'Operational protection Factors'			
Decontamination & waste control strategies.	Understand the principles and practices associated with decontamination processes associated with infection control, equipment decontamination etc. Plan and produce decontamination and waste disposal protocols.			
Biosecurity	Understand the principles and practices of biosecurity according to those outlined by WHO & EU & national Directives			
6. Applied PHM Research				
Tasks	Skills/competency	**Previous experience**	**Score (1-5)**	**Other verbs/ Comments/notes**
Study design	Design a research study			
Study protocol/ relevant questions	Identify critical questions Design protocols Exercise realistic timelines Identify limitations Judge possible risks and delays			
Method identification	Identify relevant methods by literature review/discussion with supervisor-colleagues			
Knowledge of relevant methods	Get Familiar with laboratory methods Isolation (culture) (Agar plate/colonies, Liquid media) Identification after culture Perform, Implement, Execute biochemical (physiological) tests Genetic tests (genomics) – PCR Sequencing – Restriction digestion			

	– DNA-DNA homology (probes) Immunological test – Antigen detection – ELISA – Hybridization assay – Fatty acid profiling – Protein profiling (proteomics) Advance molecular methods – Microarray – RT-PCR – MOLDI Specific diagnostics – Gram staining – Cell culturing – Antibiotic susceptibility Fingerprint-based methods: – RFLP – PFGE, – AFLP Character-based methods – MLVA Multiple Loci VNTR(Variable Number of Tandem Repeats) Analysis(), – ribotyping, – microarray's Sequence-based methods: – MLST – SNP analysis Bioinformatics-whole genome sequencing analysis etc			
Implementation of new methods	Implement new methods in a study Identify usefulness of the methods in particular research study			
Trouble shooting	Able to solve technical and practical problems			
Drafting results	Scientific design of the draft Make tables and figures			

	Interpret results Present results in a scientific way Discuss the results Draw conclusions Make recommendations			
7. Teaching				
Tasks	Skills/competency	**Previous experience**	**Score (1-5)**	**Other verbs/ Comments/notes**
Identify training needs	Carry out needs assessment and identify specific initiatives			
Give lectures	Communicate and training for a range of healthcare professionals Define learning objectives Assess own performance through feedback assessments Re-evaluate delivery and content			
Moderate case studies	Moderate a case study Guide participants to the answer Explain epidemiological/microbiological/clinical concepts surrounding the disease or outbreak			
Plan and organise a course	Plan training activities as: Define course objectives Outline learning outcomes Describe core competences Develop curriculum Identify teaching and assessment methodologies Adopt training tools Develop a reflective learning strategy Create an assessment survey			
Pedagogical teaching	Give lectures (with discussion, etc.)			

	Perform interactive teaching and learning methods as: Problem Based Learning (PBL), Case Studies, Panel of Experts, Cooperative Learning, Project Based Learning, Brainstorming, etc. Manage adults groups Design case study Prepare presentations			
Give and direct a seminar	Deliver seminar to multidisciplinary audience Record reflective learning			

List of actions verbs

	A	B	C	D	E	F
1	count	associate	Add	analyse	categorize	generate
2	define	Compute	Apply	Arrange	Combine	plan
3	Describe	convert	Calculate	Breakdown	Compile	produce
4	Draw	Defend	Change	Combine	Compose	assemble
5	Identify	Discuss	Classify	Design	Create	construct
6	Labels	Distinguish	Complete	Detect	Derive	create
7	List	estimate	Compute	Develop	Design	design
8	Match	explain	Demonstrate	Diagram	Devise	develop
9	Name	Extend	Discover	Differentiate	Explain	formulate
10	Outlines	Extrapolate	Divide	discriminate	Generate	change
11	point	Generalize	Examine	Illustrate	Group	Combine
12	quote	Give	Graph	Infer	Integrate	Hypothesize
13	read	Infer	Interpolate	Outline	Modify	Predict
14	Recall	Paraphrase	Interpret	point out	Order	Invent
15	Recite	Predict	Manipulate	relate	Organize	improve
16	recognize	rewrite	Modify	Select	Plan	
17	Record	summarize		Separate	Prescribe	
18	Repeat	Examples		Subdivide	Propose	
19	Reproduces			utilize	Rearrange	

20	Selects				Reconstruct	
21	State				Relate	
22	Write				Reorganize	
23	duplicate				Revise	
24					Rewrite	
25					Summarize	
26					Transform	
27					specify	
28					Appraise	
29					Assess	
30					Compare	
31					Conclude	
32					Contrast	
33					Criticize	
34					Critique	
35					Determine	
36					Grade	
37					interpret	
38					Judge	
39					Justify	
40					Measure	
41					Rank	
42					rate	
43					support	
44					test	