

Report of
the FIRST EVALUATION OF EUPHEM
2012

Conducted November 2012 – January 2013

Report submitted 29 January 2013

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First evaluation of EUPHEM, 2012

A – Executive Summary

1. Introduction and background

- EUPHEM, the European Programme for Public Health Microbiology, began in 2008, to complement the European Programme for Intervention Epidemiology Training (EPIET), that had started in 1996. Initially launched within the Collaborative Laboratory Response Network of the European Network for Diagnostics of “Imported” Viral Diseases (ENIVD-CLRN), and in close collaboration with EPIET, in 2010, EUPHEM came under the ECDC’s full responsibility.
- EUPHEM’s mission is to:
 - Strengthen communicable disease surveillance in the European Union through integrated public health microbiology (PHM)-field epidemiology networks;
 - Sustain outbreak detection, investigation and response nationally and internationally;
 - Develop a European Network of Public Health Microbiologists;
 - Develop a response capacity for PHM together with other disciplines inside and beyond the European Union;
 - Foster future leaders in PHM in Europe
- The above are accomplished by a synergy of ECDC-based central administration, funding and logistics, together with host training sites across Europe that receive and train fellows in specified PHM competencies, through projects and courses. The fellows are also offered additional teaching modules, and the opportunity of international projects. A chief coordinator, supported by scientific coordinators, as

well as host site supervisors and additional course faculty, ensure, review, and evaluate the fellows' training.

- In 2011, the Advisory Forum of the ECDC recommended an evaluation of EUPHEM. Despite reservations expressed in May 2012 by the EUPHEM Forum, due to the programme's early stage and small size, the ECDC decided to proceed with an evaluation similar to that conducted in 1999 for EPIET, then of a similar 'age'.

2. Aim, method, and limitations of the evaluation

- Given the aforementioned reservations and limitations, it was decided that the present evaluation of EUPHEM would only address the question: "Is EUPHEM adequately fulfilling its aims?", but with the background question of "Should it be expanded, and how?" – or, more generally: "How should it develop henceforward?"
- Therefore, it was intended that its conclusions would be used to propose an outline for EUPHEM progression, as well as possible improvements to its format and administrative aspects.
- Based on all of the above, the ECDC directed that the evaluation method to be used should be that of the 'logic model description', whereby the programme's elements –broken down to input, process, output, outcome and impact– are described, in order to assess their appropriateness with respect to the programme's stated aims.
- However, due to EUPHEM's small age and size, only input, process and output would be evaluated, with a parallel attempt being made to address post-output elements through targeted interviews. A team of six technical and strategic reviewers was appointed.
- This evaluation presents some evident limitations, such as its imposed short time-span (one and a half months), and the absence of site visits and interviews with stakeholders (with the exception of EUPHEM graduates), these interviews being explicitly precluded by current ECDC policy.

3. Key findings and key recommendations

N.B.: *In the report that follows, recommendations are not limited to the section of the same title, D, but are scattered throughout the evaluation. They should eventually be considered in their totality.*

Input

- EUPHEM enjoys increasing support from EU MS, demonstrated by an increasing number of –applying and accepted– host sites in MS. Nevertheless, there is still room for pro-active measures to involve an even larger number of MS. For example, “training the trainers” initiatives could be undertaken in MS with no host site. Forming consortia of training sites within a MS could be an alternative approach.
- The EUPHEM Forum (advisory committee) consists of one representative from each host site (whether active or accepted), an EPIET representative (EPIET’s chief scientific coordinator), the Head of section for Public Health training at ECDC and EUPHEM’s chief scientific coordinator. It might nevertheless be useful to include one or two ‘external observers’, amongst interested stakeholders (e.g. PH microbiologists, PH administrators) not directly involved in EUPHEM, who could offer an interested and informed outsider’s view on how EUPHEM might best serve EU PH.
- EUPHEM appears adequately staffed within the ECDC, and the gradual recruitment of Scientific Coordinators to assist its Chief Coordinator is a welcome development, especially once a clear delineation of responsibilities between them, as well as among them and host site supervisors, is put in place.
- Applicants to the programme have been increasing in number (from 15 to 72), but 7 of the 27 EU MS are still not represented among them. Every effort should be

made to redress this balance (e.g. through wider advertising), especially with regard to MS that would benefit most from capacity-building in PHM.

- Whilst a detailed review of the programme's logistics and funding was clearly beyond the scope of the present evaluation and therefore no numbers were reviewed, they both appeared satisfactory. Nevertheless, such a an investment might yield better profits if more fellows were allowed to benefit from it. In addition, it may be appropriate to consider the current funding being supplemented by MS' (especially the 'wealthier' ones) contributions, to specifically fund foreign fellows being trained in these MS' host sites.
- EUPHEM cultivates links with various international PH-related bodies, and in various ways. However, increasing these further would not only increase EUPHEM's –and therefore also the ECDC's– international visibility, but also provide enhanced opportunities for EUPHEM fellows to be involved in international projects.

Process

- The procedures followed by EUPHEM are defined in documents such as the Scientific Guide, the Administration Guide, the Site Appraisal Guide, the Competency Assessment, etc. Whilst these are comprehensive, they would greatly benefit from a thorough review for rational structure, English usage and style, and general reader-friendliness.
- The process of selecting candidates changed in 2012 and, very appropriately, now includes a 'matching process' with host sites, where successful candidates have a say. Candidates' qualifications also seem to have progressively risen with time, but a more analytical approach to what constitutes a Ph.D. in different MS would perhaps allow a fairer comparison. Nevertheless, unsuccessful candidates should still be informed of the reasons for their failure.
- Host sites are selected according to uniform criteria, but there is room to further unify different institutions' perceptions of EUPHEM, and their corresponding practices.

- EUPHEM fellows’ learning objectives are defined, with the help of host site supervisors and coordinators, in a training matrix, and appropriate projects and courses performed and followed. The group that, together with the fellows, had defined their training matrix, must also be involved in their final evaluation.
- Training is structured around the core competencies of:
 1. Public health microbiology management and communication
 2. Applied microbiology and laboratory investigations
 3. Epidemiological investigations (surveillance and outbreak investigation)
 4. Biorisk management
 5. Quality management
 6. Applied public health microbiology research
 7. Teaching and pedagogic
- Of the above, the last, “Teaching”, may be over-ambitious for this target group, and appears to be the least used by EUPHEM graduates. On the other hand, they would welcome more and improved modules specifically tailored to PHM, and including laboratory work. In addition, a more structured approach –e.g. through the adoption of specific guidelines– to the processes of evaluating and modifying courses and modules, would be beneficial.
- As regards fellows’ projects, it should be checked whether too much time isn’t spent on various reporting activities, to the detriment of time devoted to the projects themselves, and whether fellows’ previous expertise shouldn’t be exploited and built on more constructively, in addition to them being exposed to new fields.
- A greater regularity in reviewing fellows’ evolving learning needs and reviewing their progress would also be welcome, through their Incremental Progress Report, that might be renamed to, e.g. ‘logbook’, to increase the sense of ownership.
- Finally, with respect to coordinators and host site supervisors –who do not necessarily belong to educational institutions–, while the specific role of ‘mentoring’ may be too much to ask from them, a regular and structured assessment of, and (re-)training in, their educational role must be seriously considered.

Output

- Six EUPHEM fellows have graduated to this day.
- Their portfolios were reviewed, while further details on their publications were sought by an email questionnaire.
- The portfolios would benefit from a structure that would directly reflect achievements related to the core competencies; that would correspond to their learning matrix; and that would be more uniform among all fellows. Sections on problems encountered and points for improvement should be added, and the generic introduction on EUPHEM eliminated (we are aware that this would necessitate two versions of the portfolios: one 'internal' but reflecting each fellow's complete experience from the training programme, and one public.)
- Fellows' projects ranged from 3 to 14, other activities from 1 to 8, and publications from 4 to 7. The latter, giving an average of 2 publications (excluding conference abstracts) per fellow per year, with an 'average' of 4 co-authors, and an average impact factor of 4.62, testify to a satisfactory research performance. However, the reasons behind the much wider range in the number of projects and 'other activities' should be looked into.

Post-output

- Despite the reviewers' and the ECDC EUPHEM Evaluation Project teams' best efforts, regrettably, it proved impossible to interview NMFPs' (that would represent various categories of stakeholders in senior PH professional positions) on their perceptions regarding EUPHEM. In contrast, all six EUPHEM graduates were interviewed by email using a questionnaire with closed- as well as open-answer questions.

- The first gap was –but only in a very small part– compensated by the NMFPs’ (together with other senior stakeholders, e.g. involved in EPIET) participation in the 2012 “EPIET/EUPHEM consultation survey”, from which replies to two questions pertaining to EUPHEM were shared in the present evaluation. In this survey, opinion was almost equally split in regarding EUPHEM’s current size as “too small” or “just right”. However, almost 2/3 of respondents thought that “new training tracks should be developed”, though there was no consensus as to their potential nature.
- On the other hand, EUPHEM graduates would unanimously recommend EUPHEM to their peers, deeming that it helped them improve in all core competencies, and considering it beneficial to their own careers, even though only two of them are currently employed in the PHM field. However, they would also welcome greater flexibility, if not indeed autonomy, in defining and executing their projects; greater exposure to various fields of PHM and its international dimensions; as well as a greater integration with EPIET.
- The above findings suggest that EUPHEM is fulfilling its aims to a satisfactory extent, but they also indicate the need to synchronise EUPHEM’s potential expansion with the growth of employment opportunities in PHM in the various MS. At the same time, the potential risk of a ‘brain drain’ (only one graduate is working in her/his MS of origin), defeating the stated EUPHEM –and indeed ECDC– aim of capacity-building and -maintaining, must be urgently addressed.

The future

- On the question of EUPHEM’s development, in addition to the aforementioned possibility of MS contributing to its EU track, a MS-track could be initiated. This could reduce the ‘brain drain’ risk, as well as build capacity in training within MS.
- The MS-track could be offered with the option of a three months’ per year stay in another MS’s host site, resulting in a ‘MS-mobility-track’.
- Equally, consideration should be given to the option that participants of disease-specific programmes could receive EUPHEM training focused in their area of interest. Last but not least, EPIET-EUPHEM integration should be strengthened

further, e.g., through (more) joint projects and international assignments, as well as joint ESCAIDE presentations.

B – INTRODUCTION: Background and approach

1. Short relevant background history

In 2008, after the European Centre for Disease Prevention and Control's (ECDC) National Microbiology Focal Points (NMFPs) had agreed by consensus on the definition of public health microbiology (PHM), ECDC initiated a pilot two-year postgraduate fellowship programme in public health microbiology, EUPHEM, to complement the European Programme for Intervention Epidemiology Training (EPIET), started in 1996. EUPHEM therefore was launched within the Collaborative Laboratory Response Network of the European Network for Diagnostics of "Imported" Viral Diseases (ENIVD-CLRN) and in close collaboration with EPIET. Two fellows were selected and placed in two ENIVD collaborating centres as host sites, followed by a further two in 2009. The scientific coordination of the pilot programme was ensured through the EUPHEM Training (Sites) Forum, including representatives of the EUPHEM training sites and the steering committee of the ENIVD-CLRN. In December 2010, ECDC assumed full responsibility of EUPHEM, by assigning a full-time chief scientific coordinator to the programme, based at ECDC. In September 2010, the two first fellows graduated; and, in 2011 and 2012, the second and third cohorts, with another two fellows each.

The NMFPs consensus definition of PHM was as "a cross-cutting area that spans the fields of human, animal, food, water, and environmental microbiology, with a focus on human health and disease" and whose "primary [] function [would be] to use microbiology to improve the health of populations in collaboration with other public health disciplines, in particular with epidemiolog[y]."i

According to its Scientific Guideii, EUPHEM's own mission is to (the italics are ours):

□ *Strengthen communicable disease surveillance* in the European Union through *integrated public health microbiology (PHM)-field epidemiology networks*

- Sustain *outbreak detection, investigation and response* nationally and internationally;
- Develop a European *Network* of Public Health Microbiologists;
- Develop a *response capacity* for PHM together with other disciplines inside and beyond the European Union
- Foster *future leaders* in PHM in Europe

In 2011, the Advisory Forum of the ECDC recommended an evaluation of EUPHEM before any extension to more member states and any increase in the number of fellows. In May 2012, the EUPHEM Forum expressed the belief that it was too early for an evaluation, due to the short history and, so far, small size of the programme. However, an evaluation similar to that conducted in 1999 for EPIET –which was then of a similar ‘age’– was accepted as fair, and it was decided to conduct it.

2. Purpose of the evaluation

The 1999 Evaluation of EPIET that was considered –as mentioned above– as a ‘model’ of the present one, nevertheless has two significant differences from the present one:

a) On page 4 of that documentⁱⁱⁱ, it is stated that:

“The evaluation team was asked to address several issues. These include:

- To what extent does EPIET fulfill its objectives?
- Is EPIET good value for the price it costs to run the programme?
- Does the training meet the standards required to provide appropriate and effective learning?
- Can the training be adapted to other disciplines (e.g. environmental health)?
- Are there alternative models to accomplish the training objectives (e.g. through an institution)?
- What impact does EPIET have on other international organisations?”

In contrast, at the present instance, only one issue is to be addressed, namely: “Is EUPHEM fulfilling its aims?”, but with the background question of “Should it be expanded, and how?” – or, more generally: “How should it develop henceforward?”

b) Further down in the 1999 EPIET evaluation, we read: “The team conducted the evaluation reviewing documents provided by EPIET management; selected site visits to Paris, Brussels, Berlin, Madrid, London (including Wales & Scotland), & Geneva; telephone interviews to Sweden and Finland. People interviewed included officials, trainers, and fellows, alumni and other relevant stakeholders. These activities occurred over a period of approximately eight months.”

In contrast, the present exercise had to be conducted under markedly more restricted resources in every respect:

- timewise: from 15 November 2012 to 31 January 2013
- and in the absence of site visits or a large survey (strictly discouraged by the Advisory Forum for all activities related to the ECDC, and not only for those coming directly from the ECDC)

Therefore, in view of the limitations just described, as well as the few years that EUPHEM has been running, the principal purpose of the present evaluation is to assess how well the available evidence supports the programme’s aims and procedures.

It will therefore be addressing

- the training programme, in terms of its input, process, and output;

but will also attempt to touch upon

- EUPHEM’s role in EU PHM, trying to look, in addition, and as much as is possible at this young stage, at outcome or “post-output” indicators of this training programme.

It was postulated that this evaluation's conclusions would be used to suggest paths for progress, and ways to improve the training programme's (TP) format as well as administrative aspects of the fellowships^{iv}.

C – METHOD

1. The “logic model”

For the reasons already stated, the EUPHEM Forum agreed on a modest evaluation scheme, more accurately, a review of EUPHEM’s stated aims and procedures, whose appropriateness and success would be tested against collected evidence for input, process and output. The ECDC EUPHEM Evaluation Project Team therefore proposed the use of a “logic model”, as both appropriate and useful in locating areas for improvement. Using a “logic model”, we can describe the procedures of which the training programme consists, in order to suggest changes in them^v. This description can be made by synthesizing the main programme elements into a picture of how the programme is supposed to work, e.g. by asking the following questions:

where do we intend to go – or, what is already invested, i.e.: input

how will we get there – or, what is being done, i.e.: process

what will tell us that we’ve arrived – what are the results so far, i.e.: output, outcome, and impact

However, again as mentioned, in the present evaluation, we will concentrate on input, process and output; outcome and impact will only be briefly touched upon, as ‘post-output’ aspects.

The logic model to be used in this evaluation can be schematically summarised thus:

Input	Process	Output
1. Support within MS' PH systems	9. Selection of applicants and host sites	16. Achievements of graduates (incl.: services to EU (and beyond) PH (projects, recommendations and guidelines); communications)
2. EUPHEM Forum (advisory committee)	10. Field work done by fellows	
3. Staff (programme office & national level)	11. Curriculum (objectives, core competencies)	« Post-Output »
4. Applicants (qualifications & numbers)	12. Course/modules	17. Pertinent results of the “EPIET/EUPHEM Consultation Survey”
5. Certification process	13. Assessment of fellows	
6. Logistics	14. Supervisors	18. EUPHEM graduates’ views
7. Funding	15. Structured mentoring	
8. International collaborators (TEPHINET WHO, GOARN, CDC)		

The description of EUPHEM according to this logic model will be verified against evidence gleaned from

- a) a variety of documents (scientific guide, annual report of EUPHEM 2011, portfolios – executive summary- of fellows and alumni, publications of alumni, administrative guide of the programme, and summary report of the number of applicants per cohort, framework partnership agreements for coordination, etc.) provided by the ECDC team (see below),
- b) an ongoing ‘written interview’ with the ECDC team, conducted by email, regarding questions arising from the study of the above documents during the evaluation

in order to assess input, process and output,

as well as

c) targeted questionnaires to, and responses from:

- EUPHEM graduates; these were sent and returned by email
- NMFPs, who were invited to fill them in using MonkeySurvey, following their meeting at the ECDC, on 12 December 2012,

in order to address 'post-output' aspects.

An additional document was also provided by the Chief Coordinator of EUPHEM for the Strategic Reviewers' consideration; this, together with all of the above materials (except for the NMFPs' interviews, that had to be abandoned due to only 2 responses being received) can be found in the Annexes.

2. The evaluation team

The EUPHEM Forum decided on an evaluation team representing different key stakeholders, and consisting of two collaborating sub-teams, with distinct but complementary roles:

a. A technical perspective sub-team, composed of:

- a representative from TEPHINET Europe – Brigitte Helynck (France)
- a EUPHEM alumna – Satu Kurkela (Finland)
- a microbiologist outside of the ECDC – Panayotis T. Tassios (Greece)

who will:

- review the description of the programme, provided by the ECDC EUPHEM Evaluation project team
- compare the description of objectives of the programme with the evidence gathered as indicators of the different elements in the logic model (input, process,

output, outcome and impact) via the collection of documents and the results of interviews

- participate in teleconference(s) as needed, as well as in the “Evaluation of EUPHEM” pre-conference meeting at ESCAIDE, 23 October 2012, Edinburgh
- contribute to the consolidation of the report, providing input and comments to different versions;

and

b. A strategic perspective sub-team, composed of:

- a training expert from the EC – Frank van Loock (European Commission)
- a Microbiology National Focal Point – Guido Werner (RKI, Germany)
- an Advisory Forum Representative – Darina O'Flanagan (HPS-HPSC Ireland)

who will

- participate in teleconference(s) as needed, as well as in the “Evaluation of EUPHEM” pre-conference meeting at ESCAIDE, 23 October 2012, Edinburgh
- review the technical report prepared by the sub-team of ‘technical reviewers’
- write a section of discussion for the final report, including recommendations for the future of the EUPHEM TP.

At the outset, it was agreed that Panayotis Tassios would be the overall co-ordinator and writer of the report, whilst Darina O’Flanagan would oversee the writing of the strategic reviewers’ conclusions, to be incorporated in the final evaluation report. Brigitte Helynck and Satu Kurkela, with some assistance by Panayotis Tassios, prepared the questionnaires for the interviews with EUPHEM graduates and NMFPs.

3. The ECDC EUPHEM Evaluation Project Team

The ECDC team –that introduced the framework of the evaluation at the first meeting (at the Edinburgh ESCAIDE), facilitated the two teleconferences (on 7 and 21 November 2012), and prepared and supplied documents required for the evaluation– was composed of:

- Aftab Jasir, Chief Coordinator of EUPHEM
- Arnold Bosman, Head of Section for Public Health Training
- Carmen Varela Santos, Public Health Training section

4. Timeline and tasks

The following timeline and tasks were agreed on in early November 2012.

Tasks

- *Panayotis Tassios* (PTT) would coordinate all steps of the evaluation process, write the technical review report, and be responsible for finalising it, by incorporating into it comments and corrections from all team members, and merging it with the strategic review report.
- *Satu Kurkela* (SK) and *Brigitte Helynck* (BH) would look into the EUPHEM-related “EPIET/EUPHEM consultation survey” (kindly supplied by Arnold Bosman), as well as other documents on the Extranet, in order to assess what additional information -if any- needed to be collected by short, targeted interviews, only with the most immediately affected stakeholders. They would then develop appropriate questionnaires, as needed, to collect the identified additional information.
- *Darina O’Flanagan* (DOF), *Frank van Loock* (FvL) and *Guido Werner* (GW) would write the Strategic Review / Comments and Recommendations Section, under DOF’s coordination.

Timeline

Wed, 14 Nov: PTT sends to all the proposed outline / 'skeleton' of the Evaluation Report (that will eventually consist of the combined Technical Review and the Strategic Review Reports)

Mon, 19 Nov: All send PTT comments and/or approval regarding the outline / 'skeleton' of the Evaluation Report – upon which, PTT commences writing of the Technical Review Report

Wed, 21 Nov: 2nd teleconference (with both technical (Trvs) and strategic reviewers (Srvs)) to assess progress (e.g. on putative interviews with stakeholders, etc.)*

Tue, 11 Dec: PTT sends the first version of the Technical Review Report (Trpt-1) to all**

Fri, 21 Dec: All (but certainly the technical) reviewers send PTT their comments to Trpt-1

Wed, 9 Jan: PTT sends to all Trpt-2 (addressing everybody's comments to Trpt-1) for approval

Mon, 14 Jan: All send PTT their approval of Trpt-2

Tue, 15 Jan: PTT sends Srvs the final Trpt (together with analysed, tabulated data from the targetted stakeholders' interviews – if they will be done eventually), in order for them to write their Strategic Review / “Comments and Recommendations” section

Tue, 22 Jan: Srvs send PTT their Strategic Review / “Comments and Recommendations” section

Fri, 25 Jan: PTT circulates Frpt to all for final approval

Mon, 28 Jan: All send approval of Frpt to PTT

Tue, 29 Jan: PTT submitting the Frpt to the ECDC

Notes:

* More TCs to be scheduled as needed

** Srvs can already start planning their Strategic Review / “Comments and Recommendations” section now

Summary Timeline Table

	BH	DOF	FvL	GW	PTT (“P” below)	SK	ECDC Team
14 NOV					Outline to all		
19 NOV	Comment / approve outline to P*	Comment / approve outline to P	Comment / approve outline to P	Comment / approve outline to P		Comment / approve outline to P	
21 NOV	2 nd TC	2 nd TC	2 nd TC	2 nd TC	2 nd TC	2 nd TC	2 nd TC
11 DEC					Trpt-1 to all		
21 DEC	Comments on Trpt-1 to P	Comments on Trpt-1 to P	Comments on Trpt-1 to P	Comments on Trpt-1 to P		Comments on Trpt-1 to P	
9 JAN					Trpt-2 to all		
14 JAN	Approval of Trpt-2 to P	Approval of Trpt-2 to P	Approval of Trpt-2 to P	Approval of Trpt-2 to P		Approval of Trpt-2 to P	
15 JAN					Trpt-3 to D, F, G		
22 JAN		Strategic Review to P	Strategic Review to P	Strategic Review to P			
25 JAN					Frpt to all		
28 JAN	Approval of Frpt to P	Approval of Frpt to P	Approval of Frpt to P	Approval of Frpt to P		Approval of Frpt to P	
29 JAN					Frpt to ECDC		

* PTT

D – RESULTS: Review and of the evidence – evaluation and specific recommendations

1. EUPHEM description according to the logic model vs. performance indicators

This part of the evaluation will follow the following structure:

For each element of the logic model presented above, its description –in Tahoma pt11 font, and preceded by a “D”– will be presented *verbatim*, taken from the “Summary Report to describe the EUPHEM Programme according to the Logic Model”^{vi}, prepared by the ECDC team. This description will then be followed by a review and specific recommendations –in Times New Roman pt12 font, and preceded by an “E”– regarding available evidence (“performance indicators”) related to each element of the logic model. Occasionally and wherever more appropriate, our evaluation and specific recommendations will appear –in the habitual Times New Roman 12pt font, but indented further right, and preceded by three asterisks, “***”– interspersed within the text of the description. In this case, the section is preceded by the indication “D & E”.

In addition to the “Summary Report to describe the EUPHEM Programme according to the Logic Model”, the following kind of texts will also appear in Tahoma pt11 font:

- sections from other documents (referenced) that were provided by the ECDC Team to the Evaluation Team;
- written responses (unreferenced) of the ECDC Team to questions of the Evaluation team, arising during the process of the evaluation.

1.1. Input

D: The Programme is supported by different investment in terms of capacities (human resources), funding, logistics and international collaboration as described below.

1.1.1. Support within MS' PH structures

D: One of the objectives of EUPHEM is to develop a European Network of Public Health Microbiologists. Training centres as part of EUPHEM forum will build up an association of supervisors as well as institutional networks.

During 2008-2012 national public health systems in member states increasingly expressed their interest in hosting EUPHEM fellows and becoming part of the network. The number of host sites was increased from 2 in 2008 to 13 in 2012. Eight sites are hosting a fellow, while 5 other are waiting for hosting one in the future. Meanwhile site supervisors are offered different training by ECDC in order to update their skills in PHM and supervision. Evaluation from participants indicated positive expression and appreciation in terms of capacity building in PHM. Due to limited number of the seats offered per cohort, it was decided by ECDC not to increase the number of sites. Therefore 5 sites are in waiting list until possibilities will allow. Contribution and ambition of National health systems in Member States in development and maintaining the programme is an important indicator for the sustainability of the programme.

Current partners of EUPHEM network in National health systems (institutes/consortiums) contributing to EUPHEM are listed below

– *Host sites*

There are eight active sites, already hosting or having hosted (a) fellow(s):

1. Health Protection Agency (HPA) - Microbiology Services Division, Colindale, London, UK

2. The National Institute of Public Health and the Environment (RiVM), Bilthoven, the Netherlands,
3. Robert Koch Institut (RKI), Berlin, Germany,
4. Statens Serum Institut (SSI), Copenhagen, Denmark,
5. Instituto de Salud Carlos III (ISCIII), Majadahonda, Madrid, Spain
6. Groupement Hospitalier Est and for the Biology labs in the HCL, Lyon, France
7. Terveyden ja hyvinvoinnin laitos (THL), Helsinki, Finland
8. National Institute of Public Health (NIPH), Prague, Czech Republic

In addition, the following five have been appraised positively but haven't hosted any fellows yet:

9. National Centre for Epidemiology (NCE), Budapest, Hungary
10. National School of Public Health (NSPH), Athens, Greece
11. Istituto Superiore di Sanità (ISS), Rome, Italy
12. Smittskyddsinstitutet (SMI), Stockholm, Sweden
13. Institute Pasteur (IP), Paris, France

Of the remaining 15 MS, the following five have asked to become host sites, but were turned down, since the EUPHEM Forum cautioned against further expansion: Norway, Portugal, Belgium, Estonia, Romania (a second site from Germany, Stuttgart, has also been proposed). It is not known what has kept the remaining 10 MS from applying for a host site. Related to that, there is currently no plan about MS who may feel 'unable to host'. A need assessment should be performed. A scheme of "training the trainers" might prove a useful path in encouraging these MS to apply for host sites. Another option, already in place (Greece), is the possibility to form consortia: instead of a single host site, several, with distinct capabilities / specialities, can form a consortium. The consortium option also allows the 'unification' of multiple applications from single MS. Therefore, the following clarifying remark about the presence of two sites within one MS, France, is in order: the second site (Pasteur Institute, Paris) had applied at a very early stage of the programme (in fact, was the first applicant), but found it difficult to recruit fellows due to administration problems.

One final point about training: Since October 2012, ECDC has a new structure to communicate with Member States: the Coordinating Competent Bodies (CCB) are the central coordinator in each Member State (managed by the National Coordinator). The CCB may delegate specific tasks to National Focal Points, e.g. for Training: NFP-T. CCB and NFP focus on strategic and planning issues that represent the interest of the Member State. Operational issues and technical work will be done through 'Operational Contact Points' (OCP). ETSF & EUPHEM Forum will be considered Operational Contact Points for Training: OCP-T.

While it is not known at the moment how these new structures will operate, it is expected that CCB of each Member State will have appointed National Focal Points for Training by the end of 2012 (to be confirmed).

E: We note the increase both in interest in EUPHEM, and in ability to offer a host training site among MS' PH institutions, but would recommend some pro-active measure in order to involve a larger number of MS in applications for hosting sites. As rightly stated, this will not be easy, and has to approach the issue from several angles at once, but clearly falls within the ECDC's mandate for capacity-building and EUPHEM's aims.

Where a programme of "training the trainers" would clearly and immediately be useful is for supervisors of existing host sites. As these are not usually educational establishments, it is not given that the supervisors will possess all educational skills necessary for their role towards fellows.

1.1.2. EUPHEM Forum (advisory committee)

D: EUPHEM forum consist of one representative from each host site (whether active or positively appraised but still inactive) in Member States. In addition an EPIET representative (chief scientific coordinator), head of section for Public Health training at ECDC and chief scientific coordinator of EUPHEM are part of the forum.

The host site representative is usually the main supervisor chosen by the each host site in a MS. Nevertheless, it is up to the host site to decide who will represent them in the Forum; the ECDC has no say in this. There are new Terms of Reference for 'Operational Contact Points' under way, specifying the new formal status of the Forum Representative is.

The role of the forum is to advise ECDC in the content and development process of the programme. To achieve this, questions, documents, and enquiries are circulated by e-mail among forum members or discussed during monthly teleconferences (t/cs), or during the forum meetings – depending on the urgency and nature of each issue. For example, development of the core competencies list was progressed by sending the documents in advance, discussing at t/cs and having a two day meeting at ECDC. Important issues are discussed mostly during forum meetings (twice a year). Such advice from the forum is followed almost always, unless it goes against ECDC rules or limitations.

A standing committee from the forum with specific role is assigned to act on behalf of the forum in different activities related to the programme.

The standing committee has consisted of only a chairperson (Marion Koopmans) and co-chairperson (Androulla Efstratiou). So far, there has been no specified / detailed procedure for this, just that "the forum can appoint a standing committee, that will represent the Forum in ad hoc advice to ECDC on urgent matters where the entire forum cannot be gathered". However, according to the Terms of Reference proposed in Edinburgh in October 2012 but still under discussion, one EPIET representative and one more EUPHEM forum member will be added to the committee. No ECDC personnel will be part of the standing committee.

The standing committee's members are selected by voting in the EUPHEM forum. They are either self-nominated or nominated by other forum members.

The standing committee justifies its activities at least once a year in the plenary forum meeting, in order to ensure that the forum can evaluate the standing committee's actions.

E: We note positively the representation of all host sites on the EUPHEM (Advisory) Forum. However, since this forum is thus entirely composed of stakeholders directly implicated in the activities of EUPHEM, we believe it might be useful to include one or two ‘external observers’, selected amongst interested stakeholders (e.g. PH microbiologists, PH administrators) not directly involved in EUPHEM. Their role would be to offer an interested and informed outsider’s view on how EUPHEM might best serve European PH. As for the standing committee, since this is ‘delegated’ by the EUPHEM forum, we fail to see why members outside of this forum should belong to it, and how their presence would be legitimised.

1.1.3. Staff (programme office & national level)

D:

– *At ECDC*

PH training section at ECDC consists of

- Head of Section (Arnold Bosman) who is daily involved in progress of the programme,
- Scientific coordination team consist of two EPIET coordinators (Yvan Hutin chief scientific coordinator of EPIET, Marion Muehlen, scientific coordinator of EPIET) and EUPHEM chief scientific coordinator (Aftab Jasir);
- A training network strengthening team consist of two senior experts (Carmen Varela Santos and Sonsoles Guerra Liaño) and two experts (Vladimir Prikazsky and Liliya Todorova-Janssens), covering adult learning methods and capacity building work with Member States;
- A fellowship programme office consist of four logistic and administration officers (Anna Bohlin, Heidi Jung, Claudia Metz-Ruffer, Kristina Mittag-Leffler); and
- One secretary (Laura Campagnoli)

In addition PH capacity and communication has a resource team who are also involved in administration of the programme.

Nevertheless, it is difficult to calculate the extent (e.g. % of their working time) that each one of the above works specifically for EUPHEM – wit the exception of the Chief Coordinator, Aftab Jasir, at 100%. As regards others, there are suggestions of,

for example, 20% for Yvan Hutin and 10% for Marion Muehlen. One person from the programme office is at all times available to EUPHEM; however, this person may vary. In addition, many activities are common for both EPIET and EUPHEM (induction workshop, introductory course, common EPIET/EUPHEM modules, summer school), and this makes it difficult to calculate for the entire team.

– ***Coordinators:***

The scientific coordination of the programme is ensured by ECDC. It's conducted by the EUPHEM and EPIET chief scientific coordinators based at ECDC. Chief scientific coordinator of EUPHEM has the main responsibility of ensuring that training to achieve specific PHM competencies is provided.

The role of the EPIET coordinator is advising on the epidemiological aspects of the EUPHEM programme and coordinating the review of the epidemiology content in the output of fellows. Both EUPHEM and EPIET coordinators work closely to align two fellowship programmes in process and development plans.

The EUPHEM coordinator/s is in regular contact with fellows and supervisors and together with supervisors makes sure that fellows are adhering to the objectives. The coordinator/s is also responsible for ensuring that core competencies and public health aspects relevant to the projects are considered.

The EUPHEM chief coordinator chairs the selection committee, identifies (in alignment with ECDC Coordinating Competent Bodies) new potential training sites and organises initial site appraisals. She also organises regular site visits to already existing EUPHEM training sites. Furthermore, the EUPHEM chief coordinator facilitates opportunities for EUPHEM fellows to partake in international assignments and monitors their progress during the assignment, and she organises or co-organises training modules for EUPHEM fellows. The EUPHEM coordinator will take a moderating role in case of conflicts between the fellow and the site supervisor. The diploma of the fellows will be signed by the ECDC Director, EUPHEM Chief Scientific Coordinator and the main supervisor.

– ***At Member States***

Host site coordinators: the EPIET fellowship has 7 dedicated coordinators who contribute to the programme by organising and facilitating common modules for EPIET and EUPHEM fellows. It is nevertheless difficult to calculate the extent (e.g. %) to which their working time is dedicated to EUPHEM exclusively. EUPHEM shares 7 weeks of modules with EPIET, and the organisation and delivery of content of these modules are a major role of coordinators

One of the EPIET coordinators (Steen Ethelberg) is 70% recruited to assist chief coordinator of the EUPHEM in supervision of fellows and other relevant activities. In addition, from February 2013, two EUPHEM coordinators^{vii} will be working with EUPHEM only, at 50% of their time, besides the EPIET coordinators. The EUPHEM Scientific Coordinators' tasks, collaboration with the Chief Coordinator, and their integration in the programme, are described in the Call for Proposals for these positions^{viii}.

EPIET/EUPHEM coordinators (until 2012)

1. Alicia Barrasa
2. Costas Danis
3. Ioannis Karagiannis
4. Biagio Pedalino
5. Pawel Stefanoff
6. Helen Maguire (50% for EPIET)
7. Steen Ethelberg (70% for EUPHEM; 30% for EPIET)

E: We note positively the co-involvement and -progression of EPIET and EUPHEM. However, we wonder whether the EUPHEM Chief Coordinator (CC) is not being taxed with far too many duties, some of which might be more efficiently (both with respect to time, and educational outcome) be delegated to host site supervisors, and/or a team, smaller than the EUPHEM Forum, that would directly assist the CC. We also understand that this role is at the moment being filled by Steen Ethelberg, and that, after a call for Scientific Coordinators of EUPHEM (SCs) launched in May 2012, two EUPHEM-dedicated coordinators, each at 50% of their time, will be assisting the

ECC. This is a most welcome development. We do note, however, that, in the Call for Proposals for these Positions, whilst the tasks of, and requirements from the SCs are relegated to Annexes, there are other Eligibility, Selection and Award criteria, pertaining to their institutions, that are mentioned in the main text of the Call. This seems to us an imbalance that could be amended.

1.1.4. Applicants (qualifications & numbers)

D: The training is aimed at EU citizens with a

- post-secondary education (diploma) in microbiology or a related subject (medicine, veterinary, pharmacology, biomedicine etc.), with at least three years of experience of microbiology (any microbiology disciplines); or
- post-secondary education (diploma) and a PhD degree in microbiology or equivalent (clinical microbiology specialist); and
- previous experience in public health and a keen interest in epidemiology;

Cohort 2008

15 applicants (summary of qualifications, **Annex 3**)

Cohort 2009

34 applications (summary of qualifications **Annex 4**)

Cohort 2010

31 applications (summary of qualifications **Annex 5**)

Cohort 2011

40 applications (summary of qualifications **Annex 6**)

Cohort 2012

72 applications (summary of qualifications **Annex 7**)

E: We note positively the increasing numbers of applicants, as well as their consistently, if not indeed increasingly, high-level qualifications.

The number of applicants, w.r.t. to their country of origin / nationality, as well as their country of residence at the time application, is summarised in the following table:

COUNTRY OF NATIONALITY / APPLICATION	C15 (Anx4)	Cohort 3 (Anx5)	Cohort 4 (Anx6)	Cohort 2012 * (Anx7)
Albania		1		
Austria		0	2 / 1	
Belgium	1	1		
Bulgaria	2			1
Canada			0 / 2	
Czech Republic	1 / 0			1
Denmark			1	
Finland	1	2 / 1	2	1
France	2 / 1		0 / 1	1
Germany	4 / 3	8 / 6	5 / 4	10
Greece			1 / 0	3
Hungary	1	1		3
India				1
Ireland	1 / 2	1	1	3
Italy	5	3 / 4	5	9
Lithuania	1			
Netherlands			1 / 0	3
Poland	1			2
Portugal	5 / 2	1	4 / 3	8
Romania		1	1	3
Spain	7 / 5	11 / 10	15 / 14	17
Sweden		0 / 1	1 / 2	4
Ukraine				1
United Kingdom	2 / 6	1 / 2	1 / 3	
USA	0 / 1			
TOTAL	34	31	40	72

* Only country of origin indicated.

From the above, we note that:

- Seven of the 27 MS are not represented at all. Furthermore, though without taking country population size into account, we may note that:
- Several other MS –and especially those with not necessarily a long tradition in PHM– are poorly represented. In contrast, some of the most prevalent MS are those where PHM is already strong (Germany, Italy, Spain; in contrast, nevertheless, for example,

to the UK and Netherlands). A concerted effort, therefore, should be made to remedy this, according to the ECDC's mandate and EUPHEM's aim for capacity-building. There are several applications from already mobile scientists, i.e. where their country of origin is distinct from the country of residence at the time of application. This raises the important question: after training, will these scientists return to their MS of origin and contribute to the advancement of PHM there, as stipulated by EUPHEM's scope? Or will they remain abroad? This concern of a possible "brain drain" could perhaps, at least partly, be addressed by following EPIET's example in developing a MS-track, where EUPHEM fellows would be trained in their own MS.

- Advertising the call for candidates through the widest possible appropriate channels (e.g. journals, websites) apart from the ECDC website, competent bodies and NMFPs, could only be advantageous to raising the quality of candidates, and increase transparency.

1.1.5. Logistics

D: The logistics of the programme are managed by either ECDC fellowship programme office or at host sites. Major part of the fellowship's logistical work is done at ECDC by FPO. However, since fellows' accommodation at the site is organised by the host site, all logistical preparations regarding accommodation are done by the host site. In addition, logistics for fellows at their host site includes allocating a working desk, internet, e-mail address, registration to the institute and other relevant administrative entities, employment process. etc.

E: This is deemed satisfactory.

1.1.6. Funding

D: ECDC is funding the programme by paying the salary of the coordinators (framework partnership agreements), fellows, costs of the modules and courses, travel and lodging for the fellows and supervisors to participate in the courses and ESCAIDE conference. From cohort 2012 ECDC pays the salary of the fellows directly

to the host sites and fellows will be employed by the host sites according to the national rules including insurance and pension (Annex1A and B , Cal for EUPHEM fellowship and Director Decision 2012). The provision of ensuring pension and insurance for fellows is new. Before that, fellows had to arrange for their insurance and pension on their own; and diversity in different European countries caused difficulties to organise for a secured pension and insurance.

E: While this appears satisfactory in the absence of precise numbers, we wonder whether the, by necessity, laudably high investment in infrastructures and personnel should not and could not benefit a larger number of fellows than are currently being recruited.

1.1.7. Relations with international collaborators (TEPHINET WHO, GOARN, CDC)

D: Occasionally, institutes including WHO, ECDC, Ministries of Health (MOH) or Centres for Disease Control (CDCs) in different countries, Non-Governmental organisations (NGOs), and private agencies/institutes request assistance and offer fellows opportunities for international assignments. EPIET, EUPHEM and the EPIET Associated Programmes (EAP) encourage this participation as long as the assignments offer experience appropriate to the training objectives. According to those, all fellows should perform core activities (including outbreak investigations, surveillance projects, operational research projects and training of public health professionals) to acquire the necessary skills and experience in field epidemiology or public health microbiology during their fellowship. Usually assignments last for two to four weeks. However, their duration may vary depending on the project. A Standard Operating Procedure (SOP) for international assignments has been developed and has been used in assigning fellows to the missions (Appendix 12 of the Scientific Guide).

E: Although these SOP's properly belong to "Process" below, we can commend, at this stage, their detail and comprehensiveness. Nevertheless, we note the lack of evidence regarding the mechanisms by which opportunities for international

assignments can be increased, i.e. how EUPHEM is advertised internationally, so that more potential opportunities for international collaborations may arise.

1.2. Process

1.2.1.a. Selection of applicants

D: Fellows are selected from nationals of Member States of the European Union and other EEA countries (Iceland, Liechtenstein and Norway). They are selected based on the selection criteria regarding professional and personal characteristics/interpersonal skills. These are defined by ECDC with advice from the EUPHEM Training Forum and included in the call for applications.

Candidates are selected through a call for applications advertised on the ECDC website, through competent bodies for training and through NMFPS^{ix}. The call is also usually communicated to major universities, the ECDC networks, and announced in the weekly electronic epidemiological journal, *Eurosurveillance*. However, there are no strict rules for advertisement beside these unofficial contacts.

A EUPHEM Selection Panel is appointed by the director of the ECDC and includes the EUPHEM and EPIET Chief Coordinators, and representatives of the current training sites (chair and co-chair of the forum). The EUPHEM Selection Panel is in charge of the selection procedure. Selection of the fellows of cohort 2008-2011 was different from cohort 2012. In the first four cohorts fellows were selected in two rounds:

- A. i) Selection of ten top candidates by host sites representatives and chief coordinators of EUPHEM and EPIET
- B. ii) Face to face interview by host site representatives and chief coordinators of EUPHEM and EPIET

A reserve list was prepared in case of withdraw or declines of the offers.

Cohort 2012 was selected following EPIET selection process for the EU track.

Namely, as is mentioned on p6 of the "Administrative Guide (2011)"^{ix}:

First Round - Eligibility check by ECDC, interview by CBT

ECDC reviews CVs and supporting letters of all candidates for basic eligibility. Eligible candidates' application documents are sent to the EUPHEM Selection Panel members for review.

Second Round - Selection by EUPHEM selection panel

The EUPHEM Selection Panel will review the CVs of all candidates using the selection criteria as a guideline and select a list of candidates to be called in for face-to-face interviews. If at any stage of the process it appears that a candidate is ineligible, his/her application will no longer be considered for participation. Final decisions on training sites are made by ECDC. Candidates will be informed about the available host sites within 3 weeks after the interview.

Third Round - Interviews

The EUPHEM selection panel will interview and rank all candidates. The candidates with the highest scores will have priority for placement. The Director of the Centre makes the final selection of applicants, based on the proposal of the EUPHEM selection panel that resulted from the face-to face interviews.

For the latest cohort call^{xi}, the eligibility criteria were:

A level of post-secondary education (diploma) in microbiology or a related subject (medicine, veterinary, pharmacology, biomedicine etc.), with at least three years working experience of microbiology

or

A level of post-secondary education (diploma) and a PhD degree in microbiology or equivalent

Previous working experience in public health and a keen interest in epidemiology.

Thorough knowledge of at least two official languages of the European Union;

Be a national of a Member State of the European Union or Iceland, Liechtenstein

or

Norway;

Be entitled to his or her full rights as a citizen;

Meet the character requirements for the duties involved;

Be physically fit to perform the duties linked to the post.

In addition, in the EUPHEM Administrative Guide 2011 (version of 20 June 2011), we also find one criterion that is not a requirement but is considered “advantageous”:

- It will be advantageous for candidates to have a PhD in Microbiology.

According to the 2012 call^{xiii}, the selection criteria are:

Professional skills and experiences

- Good scientific skills and a good knowledge of microbiology
- Proven experience in public health and/or epidemiology
- Good computer skills

Personal characteristics/interpersonal skills

- Strong commitment to continue the field of public health microbiology in EU after the two-year fellowship
- Good organizational skills
- Ability to work under pressure and manage responsibilities
- Good command of English, oral and written

Advantageous

- Sense of independence and inventiveness which would enable a personal input into the programme
- Sufficient international exposure to interact cautiously with the different cultures, laws and requirements in the Member States

Cohorts 1, 2, 3, and 4, eventually comprised of 2, 2, 4 and 4 fellows, respectively. There was no particular rationale behind this progression, except that the programme was in pilot status for cohorts 1-3. Then, in 2011, the ECDC Director decided (after a recommendations by the ECDC Advisory Forum) to increase the numbers of further cohorts to 4.

Specific reasons of non-acceptance of candidates are not habitually fed back to them; only if they ask, are they provided with notes from the selection and evaluation process. Unsuccessful candidates have been known to re-apply, after having improved their qualifications (e.g. by obtaining one year's experience in Public health or epidemiology).

E: With respect to how the call for applications is advertised, we wonder whether it shouldn't be disseminated more, through other routes also, to ensure fairness and equity for the largest possible number of prospective candidates.

As regards the *selection process*, we have the following comments:

1. The phrase “The EUPHEM Selection Panel will review the CVs of all candidates using the selection criteria as a guideline” suggests that other criteria may come into play. If this is so, these should be spelt out; otherwise, this sentence should be rephrased, to avoid putative misunderstandings.
2. Further, we read: “Final decisions on training sites are made by ECDC.” We believe that both candidates and the host sites should be given a say in this, by selecting, for example, their three top preferences, before a ‘cross-matching’ is attempted. Especially for candidates, this would make great sense and show them the appropriate respect in their own decision-making, since they are, after all, 'mid-career' adult learners. But, since each fellowship is essentially a three-way educational contract (ECDC – host site – fellow), the host sites should also have a say regarding the fellow(s) they wish to host.
3. Further: “The Director of the Centre makes the final selection of applicants”. It is unclear to us why the Director, who has not been involved in the selection process so far, and has already delegated these decisions to the Selection Panel, by appointing it, should now be forced to take such a decision. If the SP, however, cannot arrive at a unanimous or majority decision, and one person's view must become decisive, it would seem that the Chief Coordinator would be best placed for this role.

With respect to the *selection criteria* applied:

4. We wonder what, if any, incentives could be offered so that “Strong commitment to continue the field of public health microbiology in EU after the two-year fellowship” is realised, and graduates choose to return to their Institute of origin, to complete the circle of capacity-building, and ensure that the benefits of networking are reaped by each MS. Of course, graduates that pursue their career in other EU MS also in part fulfil the aims of EUPHEM. Finally, such movements –even outside of the EU– are to be expected by young scientists in mid-career, and are often temporary and reversible; therefore the risk of a “brain drain” may not be as serious as it might appear at first.
5. We also wonder whether “Sufficient international exposure to interact cautiously with the different cultures, laws and requirements in the Member States” isn’t a double-edged selection criterion, since one of the functions of the programme is precisely to expose fellows to an international environment, and teach them to “interact cautiously with the different cultures, laws and requirements in the Member States”. The latter would constitute a major educational objective in the difficult, important, but neglected area of attitudes, given that knowledge and skills are adequately covered for.
6. In the Director’s Decision 85/2011, rev. 1, regarding EUPHEM^{xiii}, Article 2.1. Eligibility (p3), we also encounter the following clause: “Applicants are selected on the basis of qualifications; an appropriate geographical distribution will be maintained.” That such a non-meritocratic principle may come into play must be made transparent in the call.
7. In the same document and page, 3.2. Selection Procedure, we read: “Applications, preferably in English...”. We feel that –since all modules, supervision, reports and communications will be in English– so should the applications.
8. Finally, we note that a PhD degree means different things in different MS. Therefore, evidence of the extent of research already done by the candidates would be a more valid measure.
9. At any rate, all of the above selection criteria must also be mentioned in the Scientific / Administrative Guides.
10. Last but not least, we believe that providing detailed feedback as to the reasons of rejections should be automatically provided to all unsuccessful candidates, even though we appreciate it would increase workload in the case of many applicants .

1.2.1.b Selection of host sites

D: The initial host sites were part of ENIVD network. However in 2011 a host site appraisal guide was developed in order to guide the sites to become a host for EUPHEM fellows. (Annex8).

– *Site appraisal guide*

This manual aims to give a detailed overview of the assessment of training sites. The document comprises the criteria for becoming a training site, procedures to arrange a site visit, questions to be asked during a site visit and an example of a site visit report. The present manual should help to standardise the site visits and can be shared with the training sites before the visit in order to assure a good preparation. The document addresses both the initial site appraisals and follow-up site visits.

In the “EUPHEM Site Appraisal Guide (2012)”^{xiv}, we read:

To be available as a EUPHEM training site, the public health institute or organisation will need to confirm that the following context can be offered:

- To provide access to activities in public health microbiology in covering different microbiology disciplines (Bacteriology, virology, parasitology/mycology) and areas of surveillance, outbreak investigations.
- To provide access to datasets and vital records.
- To provide personal supervision to a EUPHEM fellow by a senior public health microbiologist as main supervisor, a co-supervisor and a field epidemiologist, for at least 4 hours per week during the 23 months of the training. This includes regular supervision meetings and review of the fellow’s work plans and output.
- To provide an adequate workspace for the fellow, including use of a laptop computer with sufficient office software, access to telephone, fax, internet and an e-mail address.
- To have funding for travels within the country to outbreak investigations etc

- To share all communication by e-mail on output, including early drafts, equally between fellow, supervisors and EUPHEM coordinators. This communication will always be considered confidential.
- Maintain good relationships within health department and access to other units in order to guarantee different projects.

There is no media advertisement about applying to become a EUPHEM host site. Calls related to EUPHEM are disseminated through its homepage and NMFPs' meetings. Sites usually apply based on information they find on the ECDC and EUPHEM homepages. An expression of interest by e-mail is followed by a site visit according to the guide. Once the time comes for placement of fellows, both EPIET and EUPHEM issue a closed call: only those sites already approved by a site appraisal participate. The Procurement Unit of ECDC sends to the site information about the call.

E: Overall, the “Site Appraisal Guide” is very well designed and must be commended for clarity, as well as stressing a supportive attitude towards potential sites, and the importance of transparency. A few specific comments follow:

- The 5th and 6th points in the text above highlight the very extensive information flow going back and forth. We therefore wonder if too much precious time is not spent on reporting and getting approvals on different aspects. In addition, fellows are travelling on average every month, thus increasing the amount of time spent on other aspects than their actual projects.
- p4 (of the “Site Appraisal Guide”): it isn't particularly useful to ‘link’ mycology to parasitology with a “/”.
- p4: “Maintain good relationships within health department and access to other units in order to guarantee different projects.” – this is a very important issue and we acknowledge its presence as a selection criterion with great satisfaction.
- p6, “Visiting team”: What is the “EUPHEM Training Site Forum”? Presumably identical to the “EUPHEM Forum”?
- p8: “Follow-up visits – Objectives”: “However, in case of the first fellow in a new training site, an early visit is warranted to recognise any potential

problem in the training site at an early stage.” – this provision is to be congratulated.

1.2.2. Placement of (field work done by) fellows

D: Fellows were/are assigned to host sites according to this list:

1. Sabine Dittrich, Rijksinstituut voor Volksgezondheid en Milieu (RIVM), Bilthoven, the Netherlands
2. Satu Kurkela, Health Protection Agency, London, United Kingdom
3. Jessica Vanhomwegen Institute Pasteur, Paris, France
4. Camille Escadafal, Robert Koch institute, Berlin, Germany
5. Katherina Zakikhany, Health protection Agency, London, United Kingdom
6. Giovanna Jaramillo-Gutierrez, RiVM, Bilthoven, the Netherlands
7. Daniel Eibach, Hospices Civil de Lyon, France
8. Maria Dolores Fernandez Garcia , Centro Nacional de Microbiologia – Instituto de Salud Carlos III (CNM-ISCIII), Majadahonda, Spain
9. Andrea Sanchini, Robert Koch institute, Berlin, Germany
10. Lieke van Alphen, Statens Serum Institut, Copenhagen, Denmark
11. Rita (Marques) de Sousa, Rijksinstituut voor Volksgezondheid en Milieu (RiVM), Bilthoven, the Netherlands
12. Amy (Frances, Wahid) Mikhail, Health Protection Agency, London, United Kingdom
13. Pieter W. Smit, National Institute for Health and Welfare, Helsinki, Finland
14. Nina Stock, National Institute of Public Health (NIPH), Prague, Czech Republic

Before 2012, fellows could express their preferences only in the application and during the interview. However, since 2012, due to availability of more sites, a ‘matching round’ was provided: sites and candidates meet before and a list of preferences is made. In the matching round, fellows’ preference is prioritised higher than that of the host sites.

E: We note with satisfaction that fellows now have an active say in the host site they are offered, and that these placement decisions also involve the host sites. It is highly important, in our view, that all three interested parties –the ECDC, the host sites, and the fellows– are involved in this cardinal stage of their ‘contract’.

1.2.3. Curriculum (objectives, core competencies)

Note: In this section, left-indented triple asterisks, “***”, interspersed within the logic model description, indicate evaluation remarks.

D + E: – Development of basic guidelines

To build a common constitution and a solid foundation of the programme, different directories and guidelines were developed in order to facilitate for host the sites and fellows to follow objectives of the programme on agreed principles and bases which were required.

One advantage of a structured programme is distinct lines of command. Individuals will specialize and departments have more propensities to develop common understanding and knowledge across the groups. There is also an advantage to individuals in that career paths can be fairly and easily defined. For that reason, different directories and guidelines (listed below) were developed to facilitate enhancement of the programme.

*** We think that the above two paragraphs need rephrasing to make their meaning clearer to all readers.

For that reason, different directories and guidelines (listed below) were developed to facilitate enhancement of the programme.

i) Scientific guide (Annex9)

The scientific guide aims to give a detailed overview of the training objectives, training content, supervision and coordination of the training.

After consultation with NMFP and EUPHEM, main domains of core competencies for the programme were agreed. In October 2011, a document named "scientific guide" was proposed by the chief coordinator of EUPHEM to the forum for their comments/suggestions and modifications/ agreements. This document was prepared based on different consultations with the National microbiology focal points (NMFP), EUPHEM forum, and experience from the EPIET programme and in alignment with the EPIET core competencies where appropriate.

In November 4-5th 2011 during the forum meeting in Stockholm, the contents of the document were reviewed, intensively discussed and finally agreed as a working document for 2011-2013. The document was reviewed by PH microbiology cooperation team at ECDC, NMFP, the EUPHEM forum and the EPIET new chief coordinator Yvan Hutin. The document might be subject to modification after new consultations with NMFP, microbiology cooperation at ECDC and other relevant professionals. However, these modifications will not affect the current cohorts. The scientific guide consists of all the necessary information on the programme, but it also contains various guidance addressing fellows and host sites.

Every year, the SG will be updated based on comments or proposals received from the forum, the fellows, and according to changes in rules and regulations (new ECDC recruitment rules, advisory rules, new developed SOPs, etc). These update suggestions are circulated to the forum members for comments. If the changes are minor, they can be agreed on by the forum during a TC or by e-mail. If the changes are major (e.g. change in curriculum, new modules) the changes have to be agreed on during the forum's formal annual meeting.

E: Overall Evaluation of the Scientific Guide

This is a comprehensive, highly information-rich document. Given its crucial role as an instrument and guide for EUPHEM, we feel that a greater effort should be made to

make its style more uniform and more reader-friendly. A review by expert readers of educational material might be helpful.

1. Since this document, amongst its other uses, will be one of the first documents about EUPHEM that fellows will come across, a more ‘welcoming’ tone would be desirable. Even better, a separate version could be prepared for the exclusive use of EUPHEM fellows, to form the basis of their ‘educational contract’ with the programme. A more general version, for information of other bodies and users, can remain more impersonal and strictly technical.
2. The whole guide should be reviewed for English usage, as well as for typographical or other errors (e.g. p5: “Important uses include: [...] Potential users are not...”; the last sentence on the same page leaves us wondering; etc.)
3. There needs to be a more structured approach to the contents and sections – e.g. an activity “2.12. International assignment” should not follow from “2.11. Teaching”, a core competency. A more rational way of arranging these would be : “2.4.7. Teaching” > “2.5. International assignment”.
4. More consistent terminology should be used: e.g. “core competencies” are referred to as “core objectives” on p7.
5. Technical terms specific to the programme (e.g. p4, 1.4, “incremental progress report”) should first be introduced in plainer language.
6. The appendices could be grouped in a more rational order, e.g.:
 - documents to be used during the fellowship
 - additional material

D + E:

– *Scope of EUPHEM*

The long-term mission of EUPHEM is to:

- strengthen communicable disease surveillance in the European Union through integrated public health microbiology field epidemiology networks;
- underpin outbreak detection, investigation and response nationally and internationally;
- develop a European network of public health microbiologists;
- develop a response capacity for public health microbiology together with other disciplines inside and beyond the European Union; and
- foster future leaders in public health microbiology in Europe;

– *Training content*

The training primarily consists of **learning by doing**. Modules and courses are additional training opportunities. The fellows shall start with the three-week EPIET/EUPHEM introductory training course that takes place at the end of September each year. In total, each fellow must participate in 10 module weeks of which 9 are compulsory and one is optional. Additional training courses will be chosen depending on the skills assessment of the fellows. Sites should provide these courses or facilitate participation of the fellows to the courses when other training needs have been identified by the skill assessment. Fellows will participate in some of the mandatory epidemiology (EPIET/EUPHEM) training modules.

EUPHEM fellows currently participate in 7 weeks of common modules with EPIET, including the three weeks of the introductory course. These common modules have been modified to include PHM content. The introductory course was modified in 2012 by the addition of a full PHM track; the Outbreak Investigation module with a new case study containing microbiology; and the Vaccinology module with microbiology and immunology content. The remaining modules are under revision.

Modules more tailored to the laboratory background are also offered.

– *Main domains and activities of public health microbiology core competencies in EUPHEM training*

A competency is a combination of knowledge, skills and attitude/abilities that are critical to perform a task effectively.

*** “Ability” is, in such a context, synonymous to “skill”; it is “attitudes” that form the third aim of any educational programme, together with knowledge and skills.

The domain of a core competency is the set of all possible skill/s and abilities which allows the function of the competency. Sub-domains are set of activities within a particular domain which allows the function of the domain.

*** We are not sure how desirable it is to subsume concrete notions, such as “skills and knowledge”, into abstract ones, such as “domain” and “sub-domains”. We also note that these terms (with a couple of exceptions for “domain”) do not re-appear elsewhere in the documents with which we were provided. Regardless of their possible theoretical validity, we would therefore question their utility in such documents that also serve as guides.

Activities are performance which leads to skills or abilities

Core competencies listed in scientific guide and in this document are defined for mid-career and more senior professionals. Fellows should be trained in all main domains and their respective sub-domains. However, not all listed activities will need to be covered. The precise activities for each fellow are designed based on her/his skill assessment and her/his ability to develop. While minimum requirements exists, the maximum depends upon each fellow’s capacity. The level of expectations (minimum requirements) for EUPHEM fellows are indicated in the front of each learning objectives in the SG, using following levels:

Aware: Individuals are able to identify the concept but have limited ability to perform the skill independently (basic).

Skilled: Individuals are able to apply the skills (intermediate).

Competent: Individuals are able to synthesize, critique or teach the skills (advanced).

Fellows will be assessed on an individual basis regarding the acquired competencies compared to the initial skills assessment. Mid-career is defined as at least three

years of experience in the area of microbiology after post- graduate studies (Master or equivalent) or having a PhD in microbiology or equivalent (clinical microbiology specialisation).

An example of a professional profile after training would be that of a head of a laboratory within a public health microbiology institute (e.g. reference diagnostics, surveillance, preparedness, response activities, etc.).

*** We would think that envisaging EUPHEM graduates as heads of PHM laboratories, as the first example mentioned, is a rather high claim and a distant goal. Perhaps choosing a more modest professional role to illustrate this aim would be more in line both with graduates' immediate careers, and the nature of this document.

Despite the risk of creating artificial categories, this approach was chosen in order to facilitate the process.

*** Perhaps rephrasing the above would help to render its meaning clearer.

The term 'core' indicates that the competencies should be a minimum pre-requisite for all public health microbiologists, regardless of the administrative level (international, national, subnational, local, etc) he/she occupies in the public health system. They should be common to all professionals in this field.

– ***Core competencies in the public health microbiology training programme:***

1. Public health microbiology management and communication
2. Applied microbiology and laboratory investigations
3. Epidemiological investigations (surveillance and outbreak investigation)
4. Biorisk management
5. Quality management
6. Applied public health microbiology research
7. Teaching and pedagogic

*** We note that the above are not exactly replicated in the Director's Decision 85/2011, rev. 1, regarding EUPHEM^{xv}, p2, where, in "1.4. Assignment of fellows", their (nine) tasks are described. We would venture to propose that this breakdown in nine points is more descriptive and effective. At any rate, we suggest that all documents pertaining to EUPHEM should describe the key learning objectives of EUPHEM fellows –be these termed "core competencies" or "tasks"– in a uniform manner.

– **Core learning objectives**

During the two-year training programme, the fellows work to meet the following core learning objectives:

Public health microbiology management and communication

- Design, organise and manage a public health microbiology laboratory;
- Apply the roles and responsibilities of local, national and international organisations involved in infectious disease control;

*** Please rephrase to eradicate the unclear meaning of: "*apply the roles and responsibilities of [] organisations*"? (our italics)

- Respond to a potential health threat by preparing a risk assessment;
- Coordinate response through using communication mechanisms and other tools;
- Communicate effectively with persons from a multidisciplinary background, authorities, the public and the media in the form of publications, reports, interviews, and oral presentations;

Applied microbiology and laboratory investigations

- Apply concepts of virology, bacteriology, parasitology/mycology and immunology to the public health disciplines;

*** Although both deal with eukaryotic organisms, 'joining' mycology with parasitology by a "/" is not particularly constructive, and creates the wrong impression about these distinct microbiological branches.

- Identify the use and limitation of diagnostic and typing methods and their interpretation in patient diagnosis, outbreak investigations, surveillance and epidemiological studies;
- Recognise the specific issues with the use of laboratory and epidemiological methods in investigations of rare and emerging diseases;
- Design and apply safe sampling strategies for disease surveillance and for outbreak detection and control, both in humans and animals;

Epidemiological investigations (surveillance and outbreak investigation)

- Set up surveillance systems (syndromic and laboratory based systems);
- Analyse surveillance data;
- Evaluate an existing surveillance system;
- Operate microbiological support on surveillance systems;
- Apply combined microbiological and epidemiological knowledge in outbreaks, surveillance, or unusual events;
- Play a part in an outbreak investigation;

Applied public health microbiology research

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

Quality management

- Understand and describe efficacy of quality assurance;
- Understand, assess and experience different standards;

*** Unclear meaning: “*experience* [] *standards*”?

- Apply the concepts of external quality assurance (EQA);
- Perform, evaluate or analyse results of an EQA;

*** We would suggest: “Perform, *analyse*, and evaluate”

Biorisk management

- 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;
- Use appropriate decontamination strategies/ personal protection and their applicability in field situations;

*** “and [verb?] their applicability”

- Determine the need for quality management, biosecurity management, and crisis response as core elements of management of the of a public health microbiological laboratory;

Teaching

- Identify training needs, planning and organising courses;

*** “Organising courses” seems to us rather too much to ask of fellows at this stage of their career. Some level of some form of teaching should be sufficient.

To moderate case studies, give lectures and perform pedagogical teaching;

*** “Identify training needs, *plan and organise* courses”; “pedagogical teaching” is a pleonasm; “teaching” would be quite enough

E: We also have the following additional comments regarding points on the indicated pages of the SG:

p6, 2.2: Courses provided at different host sites: Do they follow a uniform format or not? If yes, how is this secured?

p24, 4.5: Please define “regularly”, wrt to updating the incremental progress report (IPR).

p25, Mid-term interview:

- It might be advantageous that the Chief Coordinator conduct this together with one or two other members of the EUPHEM forum: the advantages would include a more rounded view of the fellow’s progress, as well as a cross-awareness among EUPHEM forum members.
- During site visits, do the coordinators sit in during supervision sessions? This might be useful, though delicate.
- Does reviewing “training objectives and outcomes of the fellow” really require a site visit, or can it be dealt with efficiently from a distance?

p25, “Exit interview”: How is supervision evaluated? Is there a procedure for feedback to the supervisors regarding their own role?

p31, “Competency assessment”:

- Instructions:
 - o The use of “verbs” is unclear
 - o In general, these instruction could bear some improvement. This is such a critical, and long, document, and it gets used for the first time so early in the educational process, that every effort must be made to make it reader- (i.e. fellow-)friendly.
- It would be better if column headings were repeated at every page
- “1.1. Public Health Management”: a confusion is bound to arise here with the abbreviation “PHM” which has so far been used to refer to Public Health Microbiology, but could be construed as referring to Public Health *Management* here. Please make this distinction clear.
- “List of actions” (p43): The use and rationale of this is unclear. These lists are useful for those who define and compile "aims and objectives", for example, but we do not quite see how they might be helpful to the fellows struggling to fill in this questionnaire.

p45, “IPR”

- Unless we are mistaken, this is in essence a 'logbook' of activity. Perhaps re-naming it to this effect would make it more fellow-friendly, as it would increase the sense of ownership by the fellows, rather than indicate that they are only "reporting" their "progress" to someone else.

p77, "Guidelines for giving oral presentations or preparing a poster": The quality of English and general style of this Appendix are markedly different from the overall SG. Does it have a distinct source, and, if so, should this source be acknowledged separately?

p85, "Matrix portfolio": The logical order for this is straight after the competency assessment.

p87, "Project proposal": "Which of the following learning objectives will the project meet?" - Shouldn't these relate back to the core competencies directly? They don't fully, at the moment.

p88: "Thank you" might be a more appropriate salutation at the end of the templates for both interviews; "Good luck" suggests a procedure in which there is a distinct possibility of failure, and an important involvement of, well, luck.

Finally, again, overall, there seems to be a lot of and frequent reporting being communicated amongst various parties. We therefore wonder how time-efficient this is, and note that it is important that it should not 'steal away' fellows' time from work on their actual projects.

D: ii) Administration guide (annex10)

The EUPHEM training programme is administrated by ECDC. All activities and administration in ECDC for the EUPHEM programme are governed by the EU rules, the mandate of the Centre and the internal procedures of ECDC. This guide aims to give a general overview of the administrative rules, routines and forms that fellows can encounter during EUPHEM fellowship. It is in no way intended to be exhaustive nor complete.

E: This is a helpful document, but, as with the SG, some effort to make its style more uniform and more reader-friendly might be beneficial.

D: iii) Project description template (Annex11)

Before the start of any project, fellows together with supervisors will identify the objective of the project in alignment with the objective of the programme. Each new project will be described in a short (two-pager) proposal, stating background, objectives, learning objectives addressed, work plan, proposed outcomes. This proposal will also state the specific supervision for each project. Protocols and draft reports should be shared with local supervisors, scientific programme co-ordinator and ECDC training liaison person.

E: As this was included as an annex to the Scientific Guide, we have no further specific comments.

D: iv) Matrix of the training (Annex12 and 9)

The matrix of the two-year training is planned both vertically and horizontally. In the horizontal part of the matrix seven core competencies (eighth domains) are located. In the vertical part different disease specific programmes are allocated.

At least four projects are expected to be performed by the fellow. Three are mandatory to be in outbreak investigation, surveillance and research. The fourth one can be selected in any other competency domain (applied PH microbiology and laboratory investigation, biorisk management and quality management). This project should not be within the same Disease Specific Programme (DSP) but different.

However a fellow might have an outbreak investigation project in the same disease as other projects due to unpredictability of the outbreaks. Public health microbiology management and teaching can also be covered in all areas of the DSP without preventing to have additional projects in the same area.

Beside the projects fellows will have activities which can be allocated in any DSP. Activities are not mandatory. However, in order to fulfil objectives of the training a matrix should be covered. At least one project or activity is expected in each core competency and disease group (only 4 projects are mandatory). Activities are short-term (between 3 days to 3 weeks); projects are much longer (3-6 months)

However it is recommended to avoid more than one activity within the same DSP. This will contribute to a wide range of competencies in different diseases.

Each project and main activities should result in an output in form of a manuscript or a report. If the fellow has previously worked in one specific group of diseases this group should not be chosen for the projects of the fellowship. However fellows are recommended to provide service based on their previous competencies to special needs when requested (e.g. outbreak investigation).

E: Further to our previous remarks, we are not quite certain of the need to create an eighth domain. It seems to us that breaking “outbreak investigations” and “surveillance” into two competencies would create greater clarity and consistency. Although subsequently explained by the ECDC team (see above), it was initially unclear to us how many “activities” were compulsory, and how they are distinguished from “projects”.

In addition, previous knowledge of the fellow should and could be exploited in some of the projects; this would allow the fellow opportunities to work with greater independence and thus gain experience in management and leadership, that are also learning objectives. Since fellows are not ‘normal’ students but adult learners, they should be encouraged and be able to apply their existing skills in new environments.

1.2.4. Course and modules

D: (Annex13A,B1,B2,and C)

EUPHEM fellows must participate in ten weeks of modules.

They start with a 3-week introductory course together with EPIET fellows. In addition EUPHEM shares 4 other modules with EPIET; therefore all modules have been subject to modifications in order to suit both programmes. In 2012 the Introductory Course was modified by adding a full track on PHM to the course (please see **annex13C**).

Vaccinology and outbreak modules are under revision in order to include microbiology contents.

In 2012 two EUPHEM-specific modules were developed and offered to the fellows and supervisors (Modules in bold below: **annexes B1-B2**). The balance between modules common with EPIET and EUPHEM-specific modules is decided by the EUPHEM forum.

Current EUPHEM compulsory modules:

- EPIET/EUPHEM introductory course (three weeks)
- Computer tools in outbreak investigation (five days)
- Vaccinology (five days)
- **Biorisk and quality control/quality management (five days)**
- **Initial management and leadership/teamwork (five days)**
- Project review (two x five days)

Current optional modules:

- Multivariable analysis (five days)
- Rapid assessment of complex emergency situations and mass gathering (five days)
- Communication and scientific writing (five days)
- Virus discovery in the clinical setting (five days)

The list of compulsory and optional modules can be modified from time to time in order to adapt the training needs to the EUPHEM programme.

E: Although in everyday EUPHEM parlance, the term “modules”, on its own, is understood, we suggest that, in written documents at least, these be referred to as “teaching” or “learning modules”.

We deem very positive:

- a) the balance between lectures and hands-on sessions,
- b) the development of EUPHEM-specific modules,
- c) the detailed evaluation questionnaires provided for fellows to fill in upon completion of each module,
- d) the accreditation of each individual module (cf. 1.2.8.)

but also wonder:

d) what is the structure for reviewing and modifying modules. What assessment tools are used for guidance? Are there additional (i.e. outside of EUPHEM Forum) stakeholders implicated?

In addition, we have the following specific comments for certain learning modules^{xvi}:

- “EPIET/EUPHEM Introductory Course”: Aren’t some of the prospected “Acquired skills” a little too ambitious for three weeks’ training (e.g. “Learn how to teach”)?
- “Multi-variable analysis” and “Sampling methods”: Why isn’t this offered to EUPHEM fellows too? Five days would be good for acquainting them with this area, so that they can make informed decisions in their future projects. Of course, EPIET fellows will have the opportunity to practice more and go in depth during their own projects.

1.2.5. Assessment of fellows

D: Skill assessment (Annex9)

A skills assessment tool was developed in January-February 2011. Fellows together with supervisors will complete the skill assessment tool at the start of the programme, to assess competences and training needs. This document was updated in May and November 2011 in order to adapt to the main domain of the core competency and activities within the domains.

Developing a curriculum and plans for projects will be discussed and evaluated together with the EUPHEM scientific coordinator on a regular basis. Every time a fellow starts a project s/he submits a project description proposal that will be reviewed by the scientific coordinator. If the project is according to programme's objectives as well as the matrix portfolio, it will be approved and embarked upon. During the project, the fellow will update her/his progress on the IPR, and the coordinator and supervisor will make comments or give advice as required.

In case a fellow is found not to be in line with the objectives, a site visit, teleconference or e-mail communication with the main supervisor and the fellow in question is organised, and a progress plan developed. If a fellow has not reached the objectives at the end of month 23, an extension of three months (non-salaried) can be offered. However, this has not happened in EUPHEM yet.

E: This is a very valuable process. We wonder, however, if, apart from the project proposal, approval and review process, a more systematic review and modification of each fellow's 'personalised curriculum' might be beneficial. We would suggest at 6 and 12 months, for a 2-year training period. During this process, at least, the presence of an 'external' supervisor or coordinator, member of the EUPHEM Forum –in addition to the Chief Coordinator and the supervisor– might also be implicated, even if only as a reflecting observant.

1.2.6. Supervisors

D: (Annex 14)

D: At each host sites at Member States a main supervisor is dedicated to be directly involved in the programme. In addition a co-supervisor, an epidemiology supervisor and a number of project supervisors are engaged in the training of the fellow but also in contributing to the introductory course of EPIET/EUPHEM and other training modules and courses.

The fellows will be assigned to a senior laboratory staff member of the hosting institute who will be the main supervisor and primary contact.

The main supervisor will monitor the progress according to the programme objectives, and will be the contact person for ECDC, programme office and EUPHEM forum. A co-supervisor, in collaboration with main supervisor, will guide the day-to-day work of the fellow.

When a host site applies to become a host site, a full record of all supervisors (CV including publication list) is submitted to the ECDC. EUPHEM-EPIET courses are offered to supervisors who need to update their skills and competencies. Besides that, ECDC offers courses tailored to the supervisors themselves.

The training site should ensure the fellow at least 4 hours per week of total supervision time which can be used for discussion and guidance through the projects. It is also main supervisor's responsibility to ensure that the core competencies are met within the two year programme and to act as the mentor to the fellow.

Supervisors are trained in mentorship during the induction workshop and introductory course. However, a majority of EUPHEM supervisors are very senior and have a track record of mentoring and supervising at educational entities.

Each site contributes also with administration at site, providing desk and working tools to the fellows.

Site supervisors are trained indirectly by their (non-compulsory) participation / observation in:

- Induction workshop and summer school
- EUPHEM modules
- Introductory course
- Discussions during and following site appraisals and site visits

Training site supervisors should^{xvii}

- Be familiar with and understand the training program
- Have the responsibility and authority to manage a fellow
- Be in a permanent/long term contract position and
- Have the current position for at least one year or more to be sufficiently familiar with local setting of public health microbiology and epidemiology in their state
- Have the skills and experience as scientist and practitioner (including areas of publication)
- Be skilled as teacher and mentor
- Have experience and desire to supervise mid-career professionals
- Have an adequate experience in epidemiology
- Contribute to EUPHEM training modules as facilitators

E: While we note with pleasure criteria 7 and 8 above, the process of host site selection including potential supervisors (see “Input” above), as well as the existence of a courses specifically for supervisors, we still wish to emphasise the following:

a) As per their position in Public Health Institutes, supervisors’ knowledge and skills, will be indisputable, but how often are their educational skills and attitudes evaluated (apart from the exit interviews), and how? What is the consequence of a poor assessment?

b) How is mentoring assured, apart from it being a small component of the course supervisors? Are host supervisors trained in mentorship (which is a distinct skill from supervision) in other ways? Even, is it really their role to act as mentors, as well as supervisors?

1.2.7. Structured mentoring

Note: In this section, left-indented triple asterisks, “***”, interspersed within the logic model description, indicate evaluation remarks.

D & E: Incremental progress report (IPR, Annex15)

EUPHEM fellows should share all their written outputs (protocols, reports and manuscripts) with their supervisors and with a copy to the EUPHEM and EPIET chief coordinators at an early stage. This will provide the opportunity to the supervisors and coordinators to assess their progress towards the objectives. For that reason an incremental progress report (IPR) template was developed.

For monitoring and information purposes, all fellows are required to regularly update –i.e. at least once a month, though some fellows prefer to update their IPR on a weekly basis, as recommended by coordinators– their IPR and discuss this with their supervisor. All IPR updates are also shared with chief coordinator/s and front line coordinator.

The IPR helps to document and monitor the progress of individual fellows in achieving the EUPHEM learning objectives and to share this information with other fellows, training supervisors and the programme coordinators. This may also be used for administrative purposes such as justifying the release of funds for the EUPHEM programme.

Weekly meetings will be held with the local supervisor to monitor progress, with a longer meeting on a quarterly basis coinciding with presentations on the annual EUPHEM meeting (combined with ESCAIDE) and the quarterly report. Such a report is asked for by the when the IPR updates are not sufficient to judge a fellow’s progress. The reciprocal mid-term and final evaluation will be conducted by ECDC (Annexes 16-19) and a training forum representative.

The training site supervisor is responsible for planning mentoring and following up of the progress of the fellow. This includes:

- performing a detailed initial skills assessment of the fellow, in order to identify projects and training activities that address the training needs before the introductory course
- repeating the skills assessment at the end of the first year and before the end of the fellowship to assess the acquired skills and what training needs remain;
- agreeing with the fellow and the coordinators on the choice of the optional module;
- formulating a specific work plan to facilitate the choice of activities and subsequent evaluation of the training programme itself every five years
- regularly reviewing the fellow’s progress towards the training objectives;

*** This seems redundant: it should be (and is) included in the assessment (2nd point above)

- reviewing the fellow’s protocols and any type of oral or written communication;
- supervising the development of any project, investigation, evaluation or data analysis the fellow is conducting;

For day-to-day supervision the co-supervisor may assist the main supervisor in activities performed by the fellows.

The supervisor and the director of the training institute assume legal responsibility for the work carried out by the fellows. Thus all activities of the fellows must comply with host country administrative regulations and codes of conduct. The supervisor needs to ensure that all the training objectives are addressed within the two-year period.

E: 1) We would strongly recommend not to confuse *supervision* with *mentoring*. Mentoring implies fostering an environment of trust, with the view of guiding the mentee along a career path. This, though desirable, is probably too much to ask of supervisors. Therefore, the title of this section is slightly inappropriate.

2) Again, we deem it important that some kind of regular assessment / evaluation of supervisors’ contribution –in addition to the relevant section of the Exit Interview – is planned and agreed to.

3) Perhaps the IPR could start with a section of the type “Overview: briefly highlight your sources of satisfaction and instances of frustration with respect to your expectations and initial plans” - as an indicator of attitudes (since knowledge and skills are adequately covered), as well as an emotional stamp of ownership of the progress report.

4) Why should IPRs not be sufficient, and a (separate and distinct) quarterly report be sometimes required? After all, the IPRs are monthly, and checked by supervisor and coordinators.

4) If “The reciprocal mid-term and final evaluation will be conducted by ECDC (Annexes 16-19) and a training forum representative”, we consider it important that the identical persons are also involved in the initial skills assessment and matrix also. In every educational ‘contract’, it is important that those who plan and agree on the educational course to be followed are all involved (possibly with other, ‘external’ observers) in assessing its outcome.

1.2.8. Certification process

D: All the courses are accredited according to European Accreditation Council for Continuing Medical Education (EACCME). Successful participation in the courses will be rewarded by a certificate indicating the content of the course, length, and number of credits.

In the end of the programme fellows who fulfilled the objectives will be awarded a Diploma (Annex 20-21 example of certificates and Diploma)

E: This is satisfactory.

1.3. Output

1.3.1. Achievements of graduates

Note: In this section, left-indented triple asterisks, “***”, interspersed within the logic model description, indicate evaluation remarks.

D & E: Graduates are expected to produce an executive summary of their projects and activities related to all the core competencies (annexes22-27).

Conditional to graduation, the portfolio presented by the fellows will be reviewed and evaluated by two scientific coordinators.

Minimum requirements are:

- 1) Involvement in 4 projects (3 compulsory and one optional):
 - Participation in a surveillance project with responsibility for one or more specific tasks relevant for EUPHEM training as indicated in the portfolio matrix
 - Participation in an outbreak study, with responsibility for one or more specific tasks relevant for EUPHEM training as indicated in the portfolio matrix
 - Plan, develop and conduct a laboratory based research study addressing a public health problem
 - Experience with relevant microbiological techniques or with laboratory based surveillance or outbreak investigations

The compulsory and optional projects are defined with respect to the matrix, that horizontally displays the seven core competencies and eight domains. Vertically, it presents different disease groups (DG). The fellow must complete at least four projects. Three must cover (1) outbreak investigation, (2) surveillance and (3)

research. The fourth one can be selected in any other competency domain (i.e., applied PH microbiology and laboratory investigation, biorisk management and quality management). These projects should be in different DG. However, since outbreaks are unpredictable, a fellow may have an outbreak investigation project in the same DG as another project. Public health microbiology management and teaching can also be addressed in any field without blocking additional projects in the same DG. Beside projects, fellows will have activities that can be allocated in any DG. However, to develop more skills/abilities in different disease programmes, it is recommended to avoid more than one activity within the same DG. Each project and activities should result in an output in form of a manuscript or a report. If the fellow has previously worked in one disease group, this group should not be chosen for the projects of the fellowship. However fellows should make their skills available for special needs when requested (e.g., outbreak investigation).

2) Develop a course and teach specific aspects of PHM to epidemiologists

*** “Develop[ing] a course” seems to us unnecessarily over-ambitious. Whilst we acknowledge the usefulness of nurturing eventual trainers in PHM, we find that even “teach[ing] specific aspects of PHM” is probably a stringent requirement (how exactly is it met? How is it assessed?) – developing a whole course seems beyond the scope of such a training programme.

- 3) Complete (submit) a written report on one of the topics above for publication as first author
- 4) Present a project at a scientific meeting (oral or poster)
- 5) At least 10 hours of teaching and/or preparation of a teaching

*** If this is related to (2) above, it should be merged with it

6) Participation in 10 weeks of training modules according to scientific guide

In addition, during their training, fellows might contribute to construction/development of recommendation or guidelines (please see executive summary of fellows)

The work of fellows is communicated through different ways. The most common communications involve presentations at scientific conference and peer reviewed publications in biomedical journals. However fellows might communicate their work in form of reports, book chapters, seminars or interviews.

For details please see executive summary (port folio of fellows)

E: There have been six EUPHEM graduates to date.

To supplement the description and evidence provided by the “Summary Report to describe the EUPHEM Programme according to the Logic Model”, used in the previous sections, and given the lack of uniformity and other weaknesses in the presentation of graduates’ portfolios (see comments below), we thought it useful to gather additional information through interviews with the alumni (see later section).

The following table (collating data from both the portfolios and the interviews) summarizes graduates' activities. It is bound not to be fully representative of the truth, and –given the aforementioned weaknesses in portfolio presentation– may even on occasion give an unintentionally unfair impression of graduates' achievements:

No. of projects / ave. (range)	No. of publications / ave. (range)*	Other activities / ave. (range)	External project / ave. (range)	No. of conference presentations / ave. (range)	Other presentations
8 (3-14)	5 [excluding conference abstracts] (4-7)	3 (1-8) – these included: - Teaching: 7 - Bacteriological rotation: 3 - Promotion of EUPHEM: 2 - Writing of reports: 7	1 (0-2) – destinations included each of the following, once: ECDC, Thailand, Greece, Laos, CNRL, Tajikistan	4 (2-7)	- Not mentioned: 4 graduates - 9: one graduate - 5: one graduate

The following table lists total original publications (and impact factors), manuscripts in preparation, review articles, book chapters and conference abstracts, stemming from alumni's EUPHEM fellowship (i.e. for which work was initiated during their EUPHEM fellowship):

Publications	Total number for all six alumni	Average number per alumnus/a	Average impact factor of journals where published
Original publications already published	17	2,83	4,62
Original publication manuscripts in preparation	8	1,33	
Review articles	3	0,50	
Book chapters	2	0,33	
Conference abstracts	22	3,67	
Total	52	8,67	

Combined number of different co-authors in the above-mentioned publications (if the same co-author appears in several publications, she/he is counted only once):

- Total for all EUPHEM graduates: 193
- Ave. per graduate: 32
- Ave. per graduate per publication (the above divided by the average of publications and conference presentations): 4 (since co-authors appearing in several publications have only been counted once, this is an under-representation, but may give a measure of fellows' average interactions during their projects and writing-up).

Evaluation comments

- *Graduates' portfolios.* The graduates' portfolios allow them to summarise the output of their projects and activities and are meant to make it easy to assess the graduates' achievements. However, we can mention some weaknesses:

- lack uniformity in presentation

- no mention of problems or of points for improvement is made; this should be a compulsory section. We appreciate that portfolios currently appear on the ECDC website, and therefore such a section would be sensitive. However, we deem it important that a portfolio should gather and summarize, in a single document, a fellow's experience. A 'public' version could then be made for publication on the ECDC website.

- conversely, the generic introduction about EUPHEM should be eliminated; the introduction should be as person-specific as the conclusions.

- no distinction between projects and activities is being made: this must be amended

- projects should be mentioned according to the core competencies; even better, the (final) 'matrix of training' could also be included in the final report

- The range of both 'projects' and 'activities' seem to us rather wide. Although we recognize that there are only minimum requirements in these, we think it might be useful to enquire as to the reasons of these ranges: were they due to differing amounts of opportunities? To fellows' or supervisors' varying willingness to engage in different areas? etc.

- Regarding publications:

- Presentations should be divided into peer-reviewed ones (at conferences) and other.

- The average of two original articles per fellow per year, combined with the very decent average impact factor, as well as the average of nearly two conference abstracts per fellow per year, give a satisfying reflection of graduates' work during their EUPHEM training.

1.4. Post-output

1.4.1. Pertinent results of the “EPIET/EUPHEM consultation survey”

D + E: An excerpt of the “EPIET/EUPHEM consultation survey” was communicated to the evaluation team by Arnold Bosman, Head of the Section for Public Health Training, ECDC. This survey was conducted in 2012, and its respondents included both EPIET Forum members (over 30) and EUPHEM Forum members (13). Therefore, it cannot be considered exactly representative. However, its responses to two questions pertaining to EUPHEM are summarised below:

1.4.1.1. How do you perceive the current size of EUPHEM?

Too small:	72
Too large:	5
Just right:	61
No answer:	6

It should be noted at the outset that, among respondents, there were only 6 EUPHEM fellows, 4 EUPHEM alumni, 5 NMFPs, and 13 EUPHEM forum members.

From respondents’ distribution, it was apparent that groups that clearly thought EUPHEM size is “too small”, included NMFPs, EUPHEM Forum, EPIET and EUPHEM Fellows.

Other groups of respondents (incl. ETSF, EPIET and EUPHEM Supervisors, and EPIET and EUPHEM Alumni) were more or less equally split between “too small” and “just right”. Overall, therefore, there was a small advance of “too small” over “just right”.

Amongst the comments provided by respondents, the following seemed to us pertinent to this evaluation:

Numbers should be more balanced to EPIET – 8 would be more appropriate

Need to observe how the career options for EUPHEM fellows develop.

Seems small, but we don't have a clear idea of the actual needs at the EU level, given the importance of epi surveillance at the EU level, the epi component should remain a priority.

To really nurture collaboration between EUPHEM and EPIET (and thus PHM and epi) there need to be a few more EUPHEM fellows and integration needs to be much improved (joint projects, joint missions etc). Don't expand too much too soon though as the EUPHEM programme is still very much in its infancy, with all the start-up challenges that entails. ECDC should make sure it does not attempt to run before it can walk.

Need to observe how the career options for EUPHEM fellows develop.

There is an increasing demand for laboratory-epidemiology collaboration that should start already with the training

Not sure whether Europe needs so many.

Too early to expand

I am not capable of answering his question due to lack of knowledge concerning the need for this education/ training

I would recommend 6.

We have no experience to respond this question. MS-track should be developed.

Numbers should be more balanced to EPIET – 8 would be more appropriate

We have no experience to respond this question. MS-track should be developed.

Need to observe how the career options for EUPHEM fellows develop.

*** Therefore, it seems to us that what needs to be considered is not the dilemma to expand EUPHEM or not, but, rather, under what conditions it would be desirable to increase EUPHEM cohort size.

1.4.1.2. **Should new training tracks be developed? Develop new tracks:**

D + E: Responses were as follows:

No: 50

Yes: 84

n/a: 2

Therefore, overall, the ratio of yes:no was approximately 2:1. However, the question did not specify what kind of tracks, e.g. EUPHEM versus EPIET, member state tracks, etc. Nevertheless, the following respondents' comments seemed to us pertinent to the present evaluation:

Uncertain on the relative importance of EUPHEM candidates to the general training as specialists in microbiology. Need some more time to sort that out.

To increase the number of EUPHEM fellowships

Too confusing already with all the tracks!

EUPHEM Member State Track (4x)

Not until the evaluation of the MS track for EPIET has been demonstrated to function according to its objectives.

EUPHEM Member State Track (2x)

As long as the mandate of ECDC remains in the field of Infectious Diseases Epidemiology, if ECDC would tackle all threats, ECDC and the EPIET programme would be very well positioned to extend EPIET to other threat than Infectious Diseases Epi.

EUPHEM MS track(7x)

Without an evaluation of either EUPHEM or sufficient time for the MS-track to exist prior to evaluation, I think the rapid development of additional courses is not as valuable as we might like.

This is essential for the smaller and less economically viable member states in Southern and Eastern Europe.

I think too much fragmentation is risky

The need for such a track has been expressed many times

It would be appreciated by member states.

Not yet, EUPHEM EU track needs to be well established first

It is important to consider the capacity of the countries to work with this personal in the future.

Not at this time, e.g. EUPHEM curriculum should be developed together with training sites and standardised

I don't see any reason for the EUPHEM programme not having the same valences as the EPIET training

I could see the need to avoid the "brain drain" for EUPHEM as well as for EPIET – but take care not to develop any new tracks until the recent ones have been properly established and evaluated as truly workable and adding value

To meet more specific needs of e.g. field epidemiology, public health, tropical diseases, disaster, environmental changes, etc.

This would benefit the training of new professionals in public health microbiology without previous training in the EUPHEM EU-track

*** The only conclusion we wish to draw from the above is that, clearly, some of these comments corroborate the need for the present EUPHEM evaluation.

1.4.2. EUPHEM graduates' views

In order to assess EUPHEM graduates' views on their experience from EUPHEM training, the following questionnaire was devised by Brigitte Helynck and Satu Kurkela (with some input by Panayotis Tassios). Satu Kurkela then proceeded to interview all six EUPHEM alumni by email, and their responses are also provided below, after each question:

“Questions to EUPHEM graduates

In the context of the 1st evaluation of the EUPHEM training programme, we would particularly appreciate your feedback on the following 12 questions:

1. Are you currently employed?

- Yes 6 / No 0

If “Yes”, please fill in:

a. Employment:

- Permanent 1 / Temporary 5

b. What is your country of current employment?

- Country of origin 1 / Country of EUPHEM training 2 / Other 3

c. Do you currently work as a Public Health microbiologist? 2

d. Do you currently work in another kind of microbiology-related job? 3

e. Other? 1

2. Do you believe EUPHEM training has increased your opportunity to be employed?

- Yes 6 / No 0

Evaluation commentary: From the above, it is obvious that:

- Even though all six alumni deem their EUPHEM training professionally beneficial, career opportunities specifically in the PHM sector have materialised –at least so far– for only two of them, despite their appropriate training.
- Only 1 out of 6 has returned to her/his country of origin.

3. Please list the 3-5 most important outcomes regarding yourself, after completing your EUPHEM fellowship:

(Please see Annex 31 for interviewees’ exact statements; what follows is a tabulation by Satu Kurkela:)

Theme	Number of times mentioned
Networking	5
Skills and knowledge in PHM and epidemiology	11
Contextual skills and experience	4
ECDC-related	2
Professional opportunities	1
Language	1

Evaluation commentary: That both networking as well as knowledge and skills in PH microbiology and epidemiology are mentioned by nearly all suggests that

EUPHEM's principal aims are felt to have been fulfilled by those for whom EUPHEM training was designed.

4. How often do you use skills and knowledge specifically gained during your EUPHEM fellowship?

- Very often 4 / Often 2 / Sometimes 0 / Rarely 0 / Never 0

Evaluation commentary: That all graduates use skills and knowledge acquired during their EUPHEM training often or very often is positive, even though they are not always using them –at least in their current jobs– within a PH context.

5. How much did your two-year EUPHEM fellowship improve each of your competencies below? Please use a scale of 1 to 5 (1 = not at all; 5 = very much; averages of interviewees' scores are presented below:)

- Public health microbiology management and communication 4.33
- Applied microbiology and laboratory investigations 3.67
- Epidemiological investigations: surveillance and outbreak investigation 3.75
- Biorisk management 3.58
- Quality management 3.75
- Applied public health microbiology research 3.58
- Teaching and pedagogical skills 3.42

Evaluation commentary: The small differences above do not allow us to draw any firm conclusions, other than to note the successful (all ratings above 3) improvement of all EUPHEM competencies. Since the question addresses relative improvement and not absolute level, it is possible that the alumni's background in PHM-related investigation and research was higher than their ability to communicate and manage PHM-related matters, resulting in the relatively better scoring of the latter competency.

6. Please indicate the two (2) competencies that you use **more** often in your current work (the times each competency was mentioned by interviewees is shown below):

- Public health microbiology management and communication 2
- Applied microbiology and laboratory investigations 2
- Epidemiological investigations: surveillance and outbreak investigation 2
- Biorisk management 0
- Quality management 1
- Applied public health microbiology research 5
- Teaching and pedagogical skills 1

Evaluation commentary: Given that only 2 of the alumni currently work in a PHM-related environment, it seems reasonable that something as wide as “research” comes first.

7. Please indicate the two (2) competencies that you use *less* often in your current work:

- Public health microbiology management and communication 0
- Applied microbiology and laboratory investigations 0
- Epidemiological investigations: surveillance and outbreak investigation 2
- Biorisk management 3
- Quality management 2
- Applied public health microbiology research 1
- Teaching and pedagogical skills 4

Evaluation commentary: The above results may suggest re-visiting the emphasis and time spent on the EUPHEM competency of “Teaching and pedagogical skills”, that we have had occasion to note before.

8. Please give 3-5 short (one-sentence) suggestions on how to ensure or improve the competency of fellows graduating from the EUPHEM programme:

(Please see Annex 31 for interviewees' exact statements; what follows is a tabulation by Satu Kurkela:)

Theme	Number of times mentioned
Modules/courses	5
Training objectives	3
Evaluation of fellows	2
Projects	4
Lab-epi collaboration	2
International assignments	2
Coordination of the programme	2
Appraisal of the programme	2
Identity of EUPHEM fellow	1

Evaluation commentary: Irrespective of the frequency of mention, but based rather on what we perceive as importance for EUPHEM quality, we note that the EUPHEM alumni expressed the wish for:

- Provision as well as improvement of (more) modules specifically addressed to microbiologists.

- Greater uniformity in the definition of PHM, understanding of the EUPHEM programme's aims, and respect for the specific needs of EUPHEM fellows, across all host sites.
- A more precisely defined periodicity in the evaluation of both EUPHEM fellows' progress and learning requirements.
- Greater flexibility, if not indeed autonomy, in the choice and direction of their projects – and a more varied exposure to different aspects of PHM, as well as international collaborations.
- Greater EPIET-EUPHEM integration with respect to both supervision and host site visits (presumably by coordinators).
- More numerous, committed, and inspiring coordinators.
- A programme evaluation involving both external evaluators and the alumni themselves.

9. How often do you directly benefit from the professional network you created during your EUPHEM fellowship?

- Very often 1 / Often 4 / Sometimes 1 / Rarely 0 / Never 0

Evaluation commentary: This is very satisfactory, since building a network is one of EUPHEM's principal aims.

10. Would you recommend a EUPHEM fellowship to someone interested in a career in Public Health Microbiology?

- Yes 6 - because (there follow the interviewees' reasons verbatim):

- Because it is a unique way of learning and experiencing true public health oriented work using scientific methods.
- Network: the network gained through close collaboration / connection to EPIET, ECDC and the host side is extremely valuable for future career development; Experience: the unique opportunity to increase and grow experience, knowledge, expertise in a safe, supporting and constructive environment; Exposure: Through the fellowship one has the opportunity to get deep insights into the structure / organization / procedures of another Public Health institute which, for me, was of outstanding value
- Yes, as to my knowledge there is no other professional training program (academic or fellowship) to provide such a complete and applicable training in public health microbiology in Europe.
- Yes I did recommend the program several times because I benefited greatly from my EUPHEM experience and I think the program gets better year after year as our advices are taken into account by the supervisors and coordinators of the host sites and ECDC. I really hope it will continue this way.
- Yes. It provides a unique opportunity for professional networking as well as to be involved in a wide range of different projects in a relatively short period of time.

- No 0

Evaluation commentary: It is very positive to see such unanimous endorsement, again, we should note, despite the lack of immediate professional involvement with PHM.

(Answers to the following two questions have already been used in a previous section:)

11. Please list all original publications (and state their impact factors), manuscripts in preparation, review articles, book chapters and conference abstracts, stemming from your EUPHEM fellowship (i.e. for which work was initiated during your EUPHEM fellowship).

Publications	Total number for all six alumni	Average number per alumnus/a	Average impact factor of journals where published
Original publications already published	17	2.83	4.62
Original publication manuscripts in preparation	8	1.33	
Review articles	3	0.50	
Book chapters	2	0.33	
Conference abstracts	22	3.67	
Total	52	8.67	

12. Please state the combined number of different co-authors in the above-mentioned publications (if the same co-author appears in several publications, please count her / him as one):

- Total for all interviewees: 193
- Ave. per interviewee: 32

Thank you for your co-operation!

The EUPHEM-Evaluation Team”

E – CONCLUSIONS AND TECHNICAL RECOMMENDATIONS

N.B.: As stated beforehand, the previous section already contains specific recommendations based on the evaluation presented there. Therefore, should this Report be eventually used to examine and possibly amend specific aspects of the Programme, the recommendations already spelt out in the previous section should be taken into account in the detailed manner in which they are phrased there. In the present section, on the other hand, we have tried to condense and synthesise, making use of elements from various parts of the previous section, to which recourse should still be made for details.

Starting from the end, as it were, it was confirmed that the small number of EUPHEM alumni (6) so far, and the even smaller portion (1/3) of them currently in a PHM-related job, render it impossible to address EUPHEM’s outcomes and impact on European PHM and PH in general. Therefore, as per the already stated and accepted aims of this evaluation, we will comment on the key findings regarding input, process and output of EUPHEM, based on its description according to the “logic model”.

However, we wish, at the outset, to declare what we believe are limitations of the present evaluation:

- Its small time-frame (mid-November 2012 to end of January 2013).
- The difficulties (dictated by ECDC policy and decisions) in interviewing one important group of ‘end-users’ of the EUPHEM training programme, namely employers in the field of PH, and, more generally, NMFPs. An attempt was made in this direction –using a short online MonkeySurvey questionnaire (see Annex 29)– but only 2 replies were received. Therefore, the exercise had, regrettably, to be abandoned.
- The lack of appropriate instruments to measure even some of the benefits that EUPHEM alumni self-reported, e.g. networking.

However, the following conclusions regarding input, process and output can indeed, we feel, be drawn:

Input

- While there is increase both in interest in EUPHEM, and in ability to offer training at host sites in MS' PH institutions, some pro-active measures aiming to involve a larger number of MS in applications for hosting sites would be welcome. This would of course be a multi-factorial endeavour, but clearly within the ECDC's mandate for capacity-building and in accordance with EUPHEM's aims.
- It is appropriate that all host sites, whether currently active or inactive, are represented on the EUPHEM (Advisory) Forum. However, it might be beneficial to the programme to include one or two 'external observers', selected amongst interested stakeholders (e.g. PH microbiologists, PH administrators) not directly involved in EUPHEM. Their role would be to offer an interested and informed outsider's view on how EUPHEM might best serve European PH.
- With respect to the EUPHEM Advisory Forum standing committee, since this is delegated directly by the EUPHEM forum, we do not see why it should include a member outside of this forum (namely, an EPIET representative), nor how her/his presence would be legitimised in representing a body to which (s)he does not belong – unless, of course, this EPIET representative is the one that is already a member of the EUPHEM Advisory Forum.
- We welcome the gradual recruitment of EUPHEM(-dedicated) Scientific Coordinators (SCs) to assist the Chief Coordinator (CC) in her numerous tasks. With this opportunity, we suggest that a clear delineation of responsibilities –e.g. in the form of 'job descriptions'– should be made to clearly define and distinguish the roles of the CC, the SCs, the host site supervisors, and the course faculty members (when they do not already belong to one of the three previous categories).

- A reshaping of the Call for Proposals for SCs would be welcome, so that the tasks, expertise, and requirements from the SCs are not relegated to Annexes (whilst other Eligibility, Selection and Award criteria, pertaining to their institutions, are included in the main text of the Call), in contrast to those of their host institutions, but, instead, receive equal prominence with the latter.
- The increasing number of EUPHEM applicants –as well as the consistency, if not increase in their qualifications– is positively noted. However, given the different nature of Ph.D.’s in different MS, more direct measures of research conducted should be sought and applied.
- Nevertheless, 7 of the 27 MS have still not presented a single applicant. Other MS, not necessarily from MS with a long-standing tradition in PHM, are poorly represented, in contrast to some MS (e.g. Germany, Italy, Spain) that already do have a good capacity in PHM. Again, some proactive measures (e.g. more widespread advertising of positions, through media and routes in addition to those already used) to seek to redress this balance, would be welcome.
- With respect to funding, we would recommend a specific expert study on making the best of the current resources that might be used more efficiently if addressed to a larger number of EUPHEM fellows, it seems to us.
- While the terms for international collaborations with other PH bodies are clear enough, actively seeking to increase these collaborations would make EUPHEM, and therefore the ECDC, more internationally visible, as well as benefit its fellows through increased opportunities for international projects.

Process

- An important and over-arching recommendation we have is for a thorough review (including by experts in educational materials for adult learners) of the Scientific Guide, the Competency Assessment, the Administration Guide, and other documents, for

- the most appropriate and consistent English usage,
- typographical and other errors,
- plainer language as well as consistent, uniform terminology,
- a strictly rational structure, and
- general reader/user-friendliness

in order to eradicate instances of critical ambivalences (please refer to E(valuation) points 1, 4, 5, 6, 7, 9 in section 1.2.1.a above) and with the view of possibly merging them all, to form a single “EUPHEM Handbook”.

- The possibility of providing two versions of this “Handbook” –one for its users within EUPHEM, and another for general information– could also be envisaged.
- Following from two related points in “Input” above, we believe that a wider dissemination, through additional media and routes, of calls for candidates for EUPHEM fellowships would greatly benefit the programme itself.
- We fully support the latest development through which selected applicants, as well as the host sites, should come to a mutual agreement, sanctioned by the ECDC, as to who is hosted by which.
- Non-selected applicants should be informed of the reasons for their non-selection.
- It seems that a more rational apportioning of the time fellows spend on reporting as opposed to actually working on their projects, in favour of the latter, could be sought.
- While new knowledge and skills should be acquired through fellows’ projects, their previous experience should also be taken into account and exploited.
- The “Teaching” competency seemed to us too ambitious. It was also the competency least used by the interviewed EUPHEM alumni. We appreciate the double aim behind this –i.e. to train PH microbiologists not only to efficiently communicate, but also to teach others in their turn– but

believe that this second aim should be treated separately, in distinct “training the trainers” activities.

- The evaluation team wondered about, and the interviewed alumni commented on, some lack in uniformity of perceptions and practices among different host sites and coordinators. We appreciate that this may partly be an effect of the time needed to build a common ‘culture’, but recommend that this apparent weakness is actively sought out, studied, and amended, through specifically targeted actions.
- The evaluation team wondered about, and the interviewed alumni commented on, the desirability of some regularity in the evaluation of fellows’ progress (through the IPR, which we propose to rename to “logbook”, to review its structure and role) as well as their (possibly evolving) educational needs.
- EUPHEM graduates clearly expressed a desire for more and better modules specifically tailored to PH microbiology. While we acknowledge that this is being actively developed, we observe, on the other hand, a clear lack of structure to the process of reviewing, evaluating, revising and modifying course content. We would strongly encourage that guidelines in this direction (including a definition of assessment tools and the roles of specific stakeholders that should be involved in the process) be laid down and followed.
- Since most host sites are not educational establishments, and their senior experts not necessarily trained in education, it is important to secure and regularly evaluate supervisors’ and programme coordinators’ educational skills.
- The functions of supervision and mentoring should not be confused. It remains an open question for us whether a mentoring role should even be expected from supervisors.
- It is essential –as in every educational contract– that the parties involved in co-defining each fellow’s learning matrix be also involved in each fellow’s final evaluation.

Output

- Fellows' portfolios must urgently be revised to:
 - Ensure uniformity among fellows, as well as a structure concordant with the core competencies and the 'training matrix'
 - Include a section on problems encountered and points for improvement
 - Eliminate the generic and almost identically re-iterated introduction about EUPHEM, which does not seem to add anything – if it doesn't indeed 'distract' from fellows' specific paths and achievements

- It might be beneficial to the programme to seek out and study the reasons behind the wide range in projects and activities carried out by the fellows.

- The average two original articles per fellow per year, combined with a satisfactory average impact factor, as well as the average of two conference abstracts per fellow per year, are a positive reflection of graduates' achievements during their EUPHEM training.

Post-output

- Respondents to the 2012 "EPIET/EUPHEM consultation survey" were almost equally split in finding current EUPHEM size "just right" or "too small", but generally expressed either an inability to judge or diverging views on how it might be expanded. It is our opinion that, given that only two of the current six EUPHEM alumni are currently working in the PHM field, in which they were trained, further EUPHEM expansion should ideally go hand in hand with increasing employment opportunities in PHM in MS.

- Respondents to the 2012 "EPIET/EUPHEM consultation survey" found, in a ratio of almost 2:1 that "new training tracks should be developed", but without reaching a consensus as to their nature. This, combined with EUPHEM graduates' unanimous recommendation of

EUPHEM to their peers, clearly indicates that this possibility could therefore be explored for EUPHEM, but taking into account the point just above, as well as other issues this evaluation has highlighted (e.g. the risk of a “brain drain”, etc.)

- When all six current EUPHEM graduates were interviewed, the most salient points were that:
 - While they all deemed EUPHEM beneficial to their careers, only two are currently employed in the PHM field, and only one in his/her MS of origin.
 - Their self-perception of improvement in the core competencies, as well as their self-report of using them (with the exception of “teaching”) indicates that EUPHEM is fulfilling its stated aims, at least as far as this stakeholder group is concerned.
 - Among the points for improvement they mentioned and that have not been covered by our previous recommendations, we wish to draw attention to the following:
 - ✓ Greater flexibility, or even autonomy, in the choice and direction of fellows’ projects
 - ✓ More varied exposure to different aspects of PHM, including international collaborations.
 - ✓ Greater EPIET-EUPHEM integration with respect to both the learning process and its evaluation.
- Last but not least, there remains the open question of a possible ‘brain drain’ of EUPHEM graduates away from their countries and institutes of origin. It is understandable that such highly qualified mid-career scientists should seek employment in the best international institutions, but providing some motivation for their eventual return to their own MS would fit EUPHEM’s aims and, of course, the ECDC mandate for capacity-building (and -maintaining). Developing –as has been done for EPIET– a MS-track of EUPHEM training might be a possible move in this direction.

F – STRATEGIC RECOMMENDATIONS

Overall conception of the EUPHEM programme

The European Public Health Microbiology (EUPHEM) Training Programme has been developed to address the need to strengthen communicable disease surveillance in the EU through integrated public health microbiology – field epidemiology networks. European preparedness for responding to new or emerging infectious disease threats requires a sustainable infrastructure of PHM laboratories which play a central role in detection, monitoring, outbreak response, and providing scientific evidence to prevent and control infectious diseases. PHM is required to provide access to experts with expertise/experience of the important communicable diseases at the regional, national and international level for mounting a rapid response to emerging health threats.

EUPHEM was established in 2008, with a pilot training of 2 fellows in 2008. By 2012, 6 fellows had graduated. Cohorts 3 and 4 were expanded to include 4 Fellows entering the programme each year. The number of high calibre applicants for the programme increased year by year, with 72 applicants for cohort 2012. The number of host sites has increased from 2 in 2008 to 13 in 2012 (8 active sites and 5 approved sites). In 10 MS, no application has been made to become a host site.

Four years into the programme, it is clear that the original vision of strengthening a Europe-wide response to emerging threats remains valid and necessary. However, a long term strategy now requires a needs-based assessment in Member States (MS) to ensure the programme delivers capacity where it is most required. In addition to the current EU track of EUPHEM, other options of enhancing capacity in MS should be pursued.

Recommendation

The EUPHEM EU track programme should continue and expand to meet its objectives. It is possible that some of the “wealthier” host sites may be able to fund salaries of fellows received. This would enable a more rapid expansion of the EUPHEM EU track, without total dependence on EU funding. One drawback might be that the more “wealthy” MS capable of co-financing such a cohort and application

might not be the ones requiring these activities the most. So, the right balance between EU and MS funding should be established.

Structure of EUPHEM

It is regrettable but, in the current economic climate, understandable, that of the 6 current graduates of the programme only 2 are currently employed in PHM. Only 1 of the Fellows has returned to her/his country of origin. Therefore, we recommend that, in addition to the current EU EUPHEM track, a EUPHEM MS track be initiated, similar to the MS track of EPIET. This will enable mid-career microbiologists who already have permanent positions to enter EUPHEM. This has the advantage of ensuring EUPHEM-trained Fellows return to their home MS. This also develops capacity for future training sites in all MS, as hopefully these EUPHEM-trained microbiologists will in turn become supervisors in host sites within their member state.

A variant of this EUPHEM MS track (EUPHEM MS – mobility track) could include an opportunity to spend up to 3 months per year in different MS hosting sites. This variant will endeavour to capture some of the merits of the full EUPHEM EU track, enabling exposure to learn about approaches to laboratory management systems, surveillance systems, outbreak investigation, microbiological methodologies and techniques, in different MS. Preferably, ECDC will fund mobility costs and top up salary for these 3-month sojourns outside of the Fellows' own member states. Overall, a right balance between the EU and MS track should be established.

Recommendation

A EUPHEM MS track should be initiated in 2013. The number of places should be based on a needs assessment and expression of interest from Member states. Priority should be given to those MS that have not had any Fellows accepted in the programme but can provide acceptable host site and supervision in their country. In addition, a variant of the EUPHEM MS mobility track should be offered to those on the MS track who are able to travel outside their own MS for 3-month training periods.

In addition, we recommend regular (at least bi-annual) monitoring of the professional positions held by EUPHEM alumni in order to continuously evaluate the effectiveness of the programme.

Disease-Specific Training

Consideration should be given to programmes which enable those already working in a disease-specific programme (DSP) to receive EUPHEM training focused on that disease-specific area of expertise. This could take the form of short exchanges for 3-6 months or a longer training of 2 years, but focusing all competencies on the disease of choice. This would enable professional collaborations. Fellows could also spend 3 months in the DSP in ECDC during this training period.

Recommendation

The feasibility of EUPHEM Disease-specific training should be explored.

Training the Trainers

Special attention should be given to encourage countries who are not yet applying to host Fellows. A scheme of training-the-trainers may facilitate those who have not yet applied. In addition, the possibility of consortia within MS, whereby several sites combine to ensure suitable opportunities, should be explored. This will ensure the quality of training across all sites.

Recommendation

Training the trainers for EUPHEM should be provided.

Advocacy and training for trainers should state clear programme objectives to demonstrate synergy but also difference between EPIET and EUPHEM. Lab work – and not only evaluating and calculating lab data– should have a substantial part in all EUPHEM activities.

Collaboration between EUPHEM and EPIET

While EUPHEM and EPIET Fellows share many of the modules, we recommend more opportunities for joint projects and international assignments. We recommend that ESCAIDE should continue to be used for joint presentations of these projects and assignments.

There are also several other EU public health microbiology networks in operation, whose potential involvement in EUPHEM has not (yet) been pursued, leaving potential room for growth in this area. Advocacy to, and participation of the fellows in certain (EU or international) activities of these networks could provide ad-hoc opportunities and potentially foster closer collaboration for the future.

Recommendation

Increase opportunities for joint projects/ international assignments for EPIET/EUPHEM fellows

Post-output performance

It is clear from the interviews with the 6 graduates of the programme that all perceive improvements in their key competencies and would recommend the programme to their peers. It is a little early to comment on the networks between supervisors, fellows and others working in public health microbiology. It is clear that the concept of public health microbiology is more developed in some MS than others. Increasing the profile of the fellows through presentations and publications at both international and national venues will improve understanding of and support to the EUPHEM programme.

Recommendation

Fellows and supervisors in the EUPHEM training have both to ensure that they give the proper public health dimension and impact in their training and in their output, and, where possible, their particular EU dimension should be adequately addressed.

Referenc

- i Evaluation / Review of EUPHEM, 2012.
- ii EUPHEM Scientific Guide, 2012.
- iii EPIET evaluation 1999
- iv Evaluation / Review of EUPHEM, 2012.
- v Centers for Disease Control and Prevention. Framework for program evaluation in public health. MMWR 1999;48(No. RR-11)
- vi “Summary Report to describe the EUPHEM Programme according to the Logic Model”
- vii Call for proposals for EUPHEM Scientific Coordinators 2012
- viii Call for proposals for EUPHEM Scientific Coordinators 2012

- ix Annex 1 A, DD 85_2011 Rev1 EUPHEM Fellowship 2012 signed

- x EUPHEM Administrative Guide 2011 (version of 20 June 2011)
- xi Call for EUPHEM C2012
- xii Call for EUPHEM C2012
- xiii Annex 1 A, DD 85_2011 Rev1 EUPHEM Fellowship 2012 signed
- xiv EUPHEM Site Appraisal Guide (2012)
- xv Annex 1 A, DD 85_2011 Rev1 EUPHEM Fellowship 2012 signed
- xvi Annex13- Modules
- xvii EUPHEM Site Appraisal Guide (2012)

*** End of the Report ***