



# Newsletter

Issue No. 2 - December 2016

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## Editorial

The Joint Action EMERGE is now already running for 1.5 years and is thus entering the second half-time. Almost all Work Packages (WPs) are displaying the planned activities, deliverables and milestones in time despite the relatively late start of the activities due to administrative issues.

The website has been launched and is used to provide interesting up-to-date information, like recommendations for specific diagnostics, laboratory capabilities, and biorisk management. Both, bacterial and viral parts of the network, have each carried out an External Quality Assurance Exercise (EQAE), as foreseen (Work Package 6). The results were satisfactory, although further improvement is needed.

Early recognition and diagnosis are crucial pillars of response to emerging disease outbreaks that can come as surprise, challenging a country's capacity for diagnosis and outbreak support. The stated goal of EMERGE is to improve generic operational preparedness for infectious disease outbreak response of diagnostic and research laboratories, with collaborative

work agreed among the participating laboratories, and focussing on risk group 3 and 4 pathogens. At EU and international level, however, many more groups, laboratories, and networks are active in this field. WP4 of EMERGE is charged with liaising with other networks, in order to understand their expertise, foster collaborations, and share experiences. A key partner network is the EVD-LabNet, which is under coordination of ECDC and linking the main clinical diagnostic laboratories working on Arboviruses and other rare zoonotic viruses. As the majority of emerging infectious diseases are introduced from zoonotic reservoirs, veterinary reference laboratories also may provide crucial expertise, biobanks, and protocols when dealing with the EID outbreak. WHO collaborating centres and networks funded through DG RTD complete the list. In order to get to know our colleagues in these different networks, and their views regarding emerging disease preparedness, we have invited the coordinators for a joint meeting, to be held November 30<sup>th</sup> 2016 in Amsterdam. The aim of this first meeting is to explore the focus of activities in the different networks and reference centres, as a first step to further collaboration.

*The Editors*

## Recent meetings

### Consortium Meeting in Thessaloniki / 10<sup>th</sup> - 12<sup>th</sup> of October 2016



2<sup>nd</sup> project meeting in Thessaloniki, 10-12 October 2016

The second EMERGE meeting was held in Thessaloniki from 10 to 12 October 2016. It was organized by Anna Papa-Konidari and her team from the Greek partner institute Aristotle University of Thessaloniki. Due to an announced strike of Greek air controllers during the meeting period, only 22 of the 38 project partners, incl. the Coordinator, could attend the meeting. The European Commission was represented as well. In spite of the uncertain conditions under which the meeting started due to force majeure, it was a very successful, well organized and smoothly running project meeting.

During the sessions, the progress of activities performed by the seven Work Packages and three Working Groups (WGs) was outlined, emphasizing diagnostic methods, data analysis and outcomes of the first bacterial and viral EQAEs<sup>1</sup> (WP6). Recent cases of Lassa virus infection, CCHF<sup>2</sup> and Brucella were additional topics.

<sup>1</sup> External Quality Assurance Exercise

<sup>2</sup> Crimean-Congo hemorrhagic fever

The major part of presentations could be held as planned, among others, a new member of the consortium from Romania presented his institute via videoconference.

## Recent developments

### Bacterial EQAE

In the framework of the Joint Action the first bacterial EQAE took place in May, 2016 with the principle aim to assess, maintain and improve European laboratory diagnostic activities for real outbreak situations. The participating laboratories are specialized in the diagnosis of highly infectious bacteria belonging to risk group 3 microorganisms. For the exercises, living and inactivated test items, spiked with target or non-target bacteria, were dispatched to participants that aimed to identify the target(s) inside the test items using standard procedures, newly established or modified methods. Relevant, (re-)emergent bacteria for this exercise were already identified and selected according to the assessment of health threats in WP4 and WP5 and comprised *Bacillus anthracis*, *Francisella tularensis* and *Brucella* spp.

A total of 5 distinct living and 5 inactivated test items were sent to about 29 laboratories of the consortium, situated in 25 different European countries. The test items were provided together with a short fictitious clinical history, which was welcomed by the partners to assess the range of “unknown samples”. Further, as an

additional task, Antimicrobial Susceptibility Testing (AST) was performed during the exercises to evaluate newly developed Standard Operational Procedures (SOPs).

To summarize the bacterial EQAE, within a timeframe of 26 days, all participants submitted their results successfully using a web interface designed by QuoData. Thereby, time critical results that are equal to rapid diagnostic findings were already provided within a mean timeframe of 7.3 hours after test item reception, showing the well-established preparedness of European diagnostic laboratories. Through the comparison of individual laboratory performances, best laboratory practices became visible and will be exchanged within the network.

It can be concluded, that continuous exercises are essential to maintain and further to improve the high quality level of European diagnostics for highly infectious pathogens.

### Viral EQAE

In the framework of the first viral EQAE 11 inactivated samples were sent to 17 laboratories of the consortium in May 2016. One part of these samples could be identified as New World Arenavirus samples and the other part as Old World Arenavirus specimen by given travel history and symptoms. Within the given timeframe of 28 days all laboratories could submit the results by use of the web interface designed by QuoData. All

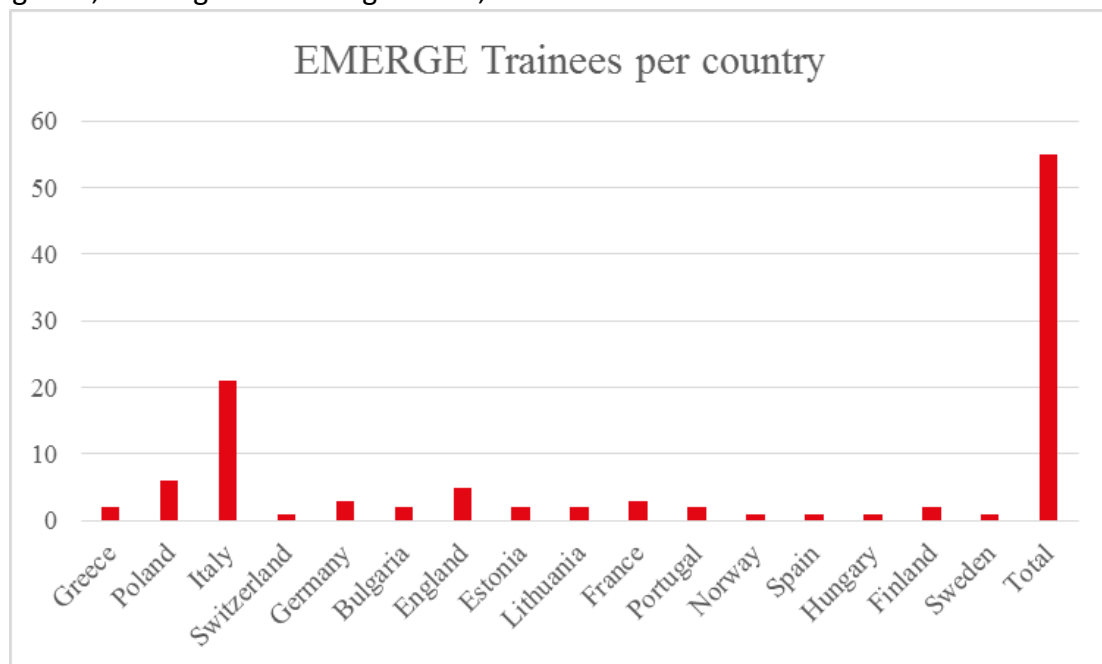
laboratories participated in this exercise successfully!

The EQAE was a good opportunity for the consortium to evaluate the established protocols and to design and test new protocols. Furthermore, the viral EQAE allowed comparing the performance of the laboratories, thereby identifying the most sensitive protocols, which finally enable each laboratory to improve and complete their diagnostic procedure. The EQAE was used by many partners as part of validation procedures for new protocols.

### Trainings

At the start of the project a survey was conducted assessing the partners' needs for training and each partner was also encouraged to develop/provide one or more courses. Subsequently, 18 courses were created based on the needs of the partners (see below). The course program is divided into 4 different categories; diagnostic algorithms,

laboratory methods, biorisk management and establishment of field diagnostics with mobile laboratory infrastructure (see below for details). The majority of the courses are within the sub theme laboratory methods. The course organizers are from 7 different institutes spread over 7 countries. In 2016, the first of 18 courses was held while the majority will take place during the second year of the Joint Action. Before the 2<sup>nd</sup> Project Meeting in Thessaloniki, 10-12 October 2016 the course organizers had received in total 56 applications from 16 different countries (see figure below). In order to improve the training courses by providing feed-back to course organizers, a survey addressing the quality of each course will be distributed to all those whom participated.



## **Work package & Working group activities:**

### **Coordination of the Joint Action (Work Package 1 (WP1))**

WP leader: Robert Koch-Institute (RKI) Germany.

Coordination comprises a broad range of administrative issues to ensure the successful implementation of the Joint Action. Recent activities, amongst others, were the submission of the first periodic report, co-organization of the project meeting together with the perfect local organization provided by Anna Papa-Konidari and her team, finalization of the Consortium Agreement, regular telephone conferences with Steering Committee and DG SANTE / CHAFAEA, and regular update of official project website (<http://www.emerge.rki.eu>). One of the next steps is the amendment of the Grant Agreement caused by the late beginning of the project.

### **Dissemination of the Joint Action activities (Work Package 2 (WP2))**

WP leader : Institut National de la Santé et de la Recherche Médicale (Inserm), France.

The WP2 aims at achieving efficient and effective visibility, awareness and acceptance of the EMERGE project to external stakeholders and to broader general public.

Its objective is also to ensure coherent

internal and external communication of EMERGE activities, progress and achievements.

The 1<sup>st</sup> EMERGE newsletter has been created and sent to all EMERGE partners and to CHAFAEA. It has also been made available on the EMERGE website.

Inserm is developing in partnership with all the consortium members an up to date contact database of key organizations and contact persons to be informed regularly by JA EMERGE on its activities, its results and the added value created.

These stakeholders include so far all EMERGE partners, EC, ECDC, the National Focal Points (NFP) and the Health Security Committee (HSC).

The contribution of all EMERGE partners for fulfilling this database is essential to have an updated document and to communicate to the relevant stakeholders about EMERGE.

### **Evaluation of the Joint Action (Work Package 3 (WP3))**

WP leader: Department of Health - Public Health England (PHE).

Work Package 3 is responsible for the evaluation of the Joint Action. We have recently evaluated the 2<sup>nd</sup> EMERGE meeting with a questionnaire to assess the quality of the meeting. The meeting was well received and 96% of responses were 'very good' or 'good' despite travel disruptions to some of the participants.

In EMERGE there are 32 Deliverables

and Milestones that need to be achieved within the project duration. In the latest evaluation exercise in September, the WP leaders have reported that all are on target or have been met with no significant delays, showing the Joint Action is making good progress.

The next evaluation exercise will be performed in March 2017.

#### **Networking of networks for laboratory response (Work Package 4 (WP4))**

WP leader: Erasmus Medical Center (EMC) and co-leader: Istituto per le malattie infettive “Lazzaro Spallanzani” (INMI).

The deployment of laboratories by the international community has been one of the pillars in the emergency response to the EVD epidemic in the region. During the heights of the epidemic, laboratories from eight European organizations/initiatives were deployed in West-Africa. The European Commission had asked for an evaluation of the European Ebolavirus mobile laboratory response in West-Africa through WP4 and the evaluation of the Ebola virus laboratory response in Europe. The questionnaires have been developed and address various topics relevant for the target group, aimed at gaining insight in decisions and compromises made in the deployment process, the identification of potential areas for improvement and of priority topics for further “peace-time” preparedness planning. The final results

will be presented in the coming months.

To evaluate the response in European laboratories a questionnaire was sent in July 2016 to all EMERGE and EVD-LabNet (ECDC-funded laboratory network for emerging viral diseases) associated laboratories. The questionnaire closed 5 September 2016. Fifty-one laboratories in 31 countries filled in the questionnaire with 34 laboratories in 23 countries indicating that they have implemented EBOV diagnostics. The questionnaire identified operational biosafety levels, quality assurance and main obstacles encountered for implementation and running of EBOV diagnostics. The results of the evaluation will be presented in the coming months.

One of the goals of EMERGE WP4 is to improve generic operational preparedness for infectious disease outbreak response of microbiological diagnostic and research laboratories. At EU and international level, different laboratory networks, institutions and agencies as well as clinical networks are contributing to outbreak preparedness and response often focused on special pathogens or groups of pathogens. It is important to coordinate, harmonize and connect the activities of these key players to make clear the responsibilities beforehand of outbreak situations in order to establish an efficient cooperation and to avoid duplications. Therefore WP4 will provide a platform and propose approaches to support the



improvement of the required interoperability among the key laboratory and clinical management response networks in Europe. With this goal, an outbreak preparedness and response network coordinators meeting was organised at the end of November 2016.

### **Rapid capabilities for diagnoses (Work Package 5 (WP5))**

WP leader: Istituto per le malattie infettive “Lazzaro Spallanzani” (INMI) and co-leader: Public Health Agency of Sweden (FoHM).

The aim of WP5 is to select pathogens with cross border potential and to identify the best diagnostic methods available for these agents, to improve capabilities within Emerge partners.

During the first months of the project a strategy to determine which pathogens should be the focus of EMERGE was established, and a four-tiered scoring system for prioritizing agents of highly infectious diseases was developed. This prioritizing strategy has been described in a submitted paper entitled “Prioritization of High Consequence Viruses to Improve European Laboratory Preparedness for cross-border health threats”.

Taking into account the list of agents based on this objective scoring system the first year of project activities was focused on Arenaviruses, CCHF and Orthopoxviruses, and *Bacillus anthracis*,

*Francisella tularensis*, *Coxiella burnetii*.

In the framework of WP5, a document containing instructions for handling and transport of samples from LASSA suspected cases, for diagnosis or confirmation of preliminary results, was drafted.

In order to improve capabilities for rapid laboratory diagnosis of new or emerging pathogens, an update of existing diagnostic capabilities within the Emerge members was inventoried and presented in a report entitled “Update of diagnostic procedures available” (Milestone 18).

This report highlighted that, while molecular assays are frequently used, serological tests are less commonly applied for viruses and bacteria. Implementing serological methods to improve diagnostic capacity is therefore a priority.

Within WP5, 3 Working Groups were established to address particular aspects of pathogen diagnostics:

#### WG1

The Antimicrobial Susceptibility Testing (AST) Working Group has met in Munich where the Bundeswehr Institute of Microbiology (BwIM), provided special plates to perform AST testing.

#### WG2

Inserm has sent a questionnaire to all partners to collect information concerning metagenomics approaches used (i.e. from sample preparation,

bioinformatic pipelines, NGS platform used).

The next steps will be the sharing of specific protocols for each technique used for deep sequencing; the classification of the protocols used for each technique and analysis of the differences in methods used by different partners; and the organization of an exercise (EQAE) of deep sequencing.

### WG3

A new diagnostic PCR for Lassa virus is under development and will be produced on a small scale and distributed to NIV partners for evaluation. A questionnaire related to some main procedures to be performed at biocontainment level-4 will be prepared and distributed to NIV partners in order to evaluate and compare them. A dedicated space will be allocated for the discussion on these issues at the next general meeting

### **Quality assurance of laboratory diagnostics (Work Package 6 (WP6))**

WP leader: Robert Koch-Institute (RKI) and co-leader: Philipps University of Marburg (UMR).

A special focus on EQAE is presented in the section “recent developments” of this EMERGE newsletter.

### **Training on diagnostics and biorisk management (Work Package 7 (WP7))**

WP leader: Public Health Agency of Sweden (FoHM) and co-leader: Public Health of England (PHE).

WP 7 supports practical and theoretical training with special focus on emerging pathogens belonging to risk group 3 and 4 pathogens.

A special focus on training under the EMERGE project has been presented in the section “recent developments” of the EMERGE newsletter.

To continue monitoring the need for trainings within EMERGE, a new survey will be distributed before summer 2017 to all partners. Thereafter, the training program will, if needed, be adjusted by including additional courses.



## Recent publications

Carla Nisii<sup>1</sup>, Roland Grunow<sup>2</sup>, Andreas Brave<sup>3</sup>, Giuseppe Ippolito<sup>1</sup>, Daniela Jacob<sup>2</sup>, Pontus Jureen<sup>3</sup>, Barbara Bartolini<sup>1</sup>, Antonino Di Caro<sup>1\*</sup>, and the EMERGE Viral Pathogens Working Group#. “Prioritization of High Consequence Viruses to Improve European Laboratory Preparedness for cross-border health threats” **Advances in Microbiology, Infectious Diseases and Public Health**

<sup>1</sup> ‘L. Spallanzani’ National Institute for Infectious Diseases (INMI), Rome, Italy

<sup>2</sup> Robert Koch Institute, Berlin, Germany

<sup>3</sup> Public Health Agency of Sweden, Solna, Sweden

#Other members of the EMERGE Viral Pathogens Working Group:

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Cinthia Menel-Lemos – European Commission, Luxembourg

Hervé Raoul – Laboratoire INSERM Jean Mérieux, Lyon, France

Caroline Carbonnelle - Laboratoire INSERM Jean Mérieux, Lyon, France

Kerstin Falk - Public Health Agency of Sweden, Solna, Sweden

Richard Vipond – Public Health England, Porton Down, United Kingdom

Robert Watson – Public Health England, Porton Down, United Kingdom

Roger Hewson – Public Health England, Porton Down, United Kingdom

Markus Eickmann – Philipps Universität Marburg, Marburg, Germany

## Coming soon

- First Outbreak Preparedness and Response Coordinators meeting on Wednesday 30 November 2016 in Schiphol Airport from 10.00 – 17.00, Amsterdam.
- The next EMERGE meeting will take place in Lisbon in 2017.
- The next issue of the newsletter is planned for April 2017.