



Newsletter

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Editorial

Dear Reader,

After the approval of an 8 months extension, the EMERGE network is able to continue its various activities until beginning of next year. The overall objective is to provide a common, coordinated and effective response to infectious disease outbreaks in Europe. The relevance of such a unique laboratory network targeting at the detection of high-threat bacteria and viruses is demonstrated by the current outbreak of Ebola in the DR Congo where again strong concerted diagnostic and clinical measures are required to regain control.

At least at European level, fortunately, no serious outbreak of this kind occurred during the project period so far. That is why a simulation exercise will be carried out in November 2018 to practice for a potential outbreak. The third External Quality Assurance Exercise (EQAE), that ambitiously required the analysis of sample sets containing bacterial AND viral samples, served as a very good preparatory "training".

During the final meeting to be held in Brussels 27-28 November 2018, the results and benefits of EMERGE are going to be discussed and summarized to be projected into a future era as part of the Joint Action SHARP - Joint Action to strengthen preparedness in the EU and support the implementation of International Health Regulations (IHR), coordinated by the Finnish National Institute for Health and Welfare (THL) and co-coordinated by the Robert Koch Institute and the National Institute for Infectious Diseases "L. Spallanzani", responsible for the laboratory part.

As this will be the last Newsletter published by the EMERGE Network, we would like to thank you for your interest and say goodbye.

The Editors

Recent developments

Future of EMERGE

The continuity of the network of laboratories specialized in the diagnosis of highly pathogenic bacteria and/or viruses will be covered in a new Joint Action (JA) SHARP – “Strengthened International Health Regulations and Preparedness in EU” to be started in March/ April 2019. The JA is meant to bring more closely together Preparedness, International Health Regulations implementation capacities, with diagnostic laboratories. Currently, the structure and tasks of the new JA SHARP are being defined, and budget negotiations are ongoing.

No cost extension

For the JA EMERGE a cost-neutral extension was recently granted to ensure a continuation of the JA activities until 31 January 2019.

Ebola outbreak in the Democratic Republic of Congo (DRC)

The Government of the DRC declared a new outbreak of Ebola virus disease (EVD) on the 1st of August 2018.

EMERGE partner institutions have been involved in field and preparedness activities in Africa and EU respectively. They participated to several teleconferences dedicated to outbreak response in the framework of WHO and EU Commission expert’s consultation.

Wet lab exercise to come

EMERGE will be running an exercise in November to detect pathogens and then activate the Outbreak Response Mode (ORM) that was devised in EMERGE to be activated in time of major cross border threats to health. The planning is well under way and the exercise, which will be led by Public Health England, is planned for the 7-8th November 2018.

Work Package & Working Group progress

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

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

This WP is ensuring the systematic and timely implementation of the JA. In this context, the second amendment of the Grant Agreement, comprising the above-mentioned cost-neutral extension, was approved by the European Commission, teleconferences were arranged to foster interaction and exchange of information among Work Packages, Working Groups, Steering Committee members, the Advisory Board and the European Commission, represented by DG SANTE and Chafea. The coordinator and the co-coordinator represented the network and its interests at EU and broader international level during several meetings, as outlined below. The extension period will also be used to perform an ORM simulation exercise (please, see further details in WP6 and WP7) based on the plan for transition from Inter-Epidemic Mode (IEM) to Outbreak Response Mode (ORM), established by WP1.

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

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

This WP continues to give efficient and effective visibility of the EMERGE project to external stakeholders and to the broader general public by supporting EMERGE partners in communicating and disseminating their work.

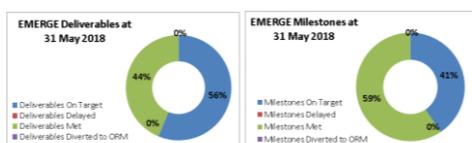
EMERGE consortium members participated to recent meetings of interest:

- On behalf of the EMERGE-consortium Antonino Di Caro participated to the workshop on “Interoperability of Laboratory Research Preparedness and Response to Infectious Disease Outbreaks” in Amsterdam the 18 June 2018.
- On behalf of the EMERGE consortium Roland Grunow has participated to the Athens IHR conference “Best Practices in Implementing the International Health Regulations” that took place in Athens, Greece on 7 and 8 June 2018, available at: <http://ec.europa.eu/chafea/news/news612.html>
- Presentation of a summary of the Brucella melitensis results at the 70th Annual Meeting of the German Society for Medical Microbiology and Hygiene in Bochum, Germany.

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

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

At the last evaluation of the EMERGE Joint Action in June 2018 all of the Deliverables and Milestones were either met or on target, showing the Joint Action is on target to meet its Objectives.



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).

On Monday 18 June 2018 a one-day workshop on Interoperability of Laboratory Research Preparedness and Response to Infectious Disease Outbreaks was organised between EMERGE, EVD-LabNet and representatives from several OIE Reference Laboratories at Amsterdam Schiphol Airport. This workshop was organised as a sequel to the workshop, held in November 2016 with stakeholder networks from within the human health domain (laboratory, clinical management, public health authorities and EC funders). Given the one-health dimension of ID outbreak preparedness and response, the aim of the second workshop was to expand the efforts from the human health domain

to relevant actors from the animal health domain in order to identify synergies and opportunities for aligning laboratory preparedness and response activities in a one-health context, using mock (zoonotic) ID outbreak scenarios. The workshops resulted in an inventory of the lines of communication between actors and we are now working on recommendations for further steps to improve the interoperability between all actors.

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 final evaluation of diagnostic capabilities and capacity available among the EMERGE partners is ongoing. A detailed list of reagents and diagnostics will be reported.

EMERGE Inter-Institutional Comparative Study for Ebola Neutralization Tests:

The study is ongoing. All participating laboratory have received materials (human plasma samples from convalescent EVD patients and anti-Ebola IgG preparations from animal origin as well as negative control sera, antibody interim standard to Ebola virus, which will be provided by the National Institute for Biological Standards and Control). Participants are requested to perform three independent assays on different days for NT testing against Ebola virus.

Working Groups activities:

WG1 “Metagenomics”

A metagenomics EQAE has been organized by INSERM with the help of RKI and UMR in March 2018 to test the deep sequencing approaches of the EMERGE partners. 14 of them have participated.

11 partners out of 14 succeeded in the identification of *Francisella tularensis* holarctica.

13 partners out of 14 succeeded in the identification of the Ebola Virus.

The Metagenomics Working Group has collected information concerning metagenomics approaches used among partners (from sample preparation, bioinformatic pipelines, NGS platform used) and is working on a comparison of the approaches taking into account the results of the metagenomics EQAE.

WG2 “diagnostic procedures for RG4 pathogens”

Lassa virus is on the priority list of pathogens, and the development and evaluation of Lassa virus real-time PCR assays is a demanding task due to the high variability of the virus. The primary output of RG4 pathogens detection and characterization methods working group (lead by BNITM) is the evaluation of real-time PCR assays for Lassa fever developed by Altona Company (Hamburg, Germany) to improved diagnostic capabilities in Europe by the EMERGE partners.

The Lassa virus real-time RT-PCR assay consisting of two separate reactions, targeting S and L segment of the virus. The kit is already evaluated by BNITM together with the US Centers for Disease Control and Prevention, Atlanta, and Nigerian partners, and prototypes are now available to EMERGE partner laboratories for verification of the method under their conditions.

19 Institutes/Laboratories among EMERGE agreed in participating to the validation.

The prototypes will be circulated before the end of September '18 together with controls and protocol. Comparison with in-house methods is part of the verification.

WG3 “Antimicrobial Susceptibility Testing (AST)”

The members of the AST working group finalized the inter-laboratory validation of the microdilution method for the last remaining agent (*Brucella melitensis*) at nine partner sites and the data of all agents were analyzed. The results were discussed among the partners, and the next steps were planned after consulting EUCAST representatives. A reading guide for the microdilution method was prepared, discussed with EUCAST and distributed to the WG members. A summary of the *Brucella melitensis* results was presented at the 70th Annual Meeting of the German Society for Medical Microbiology and Hygiene in Bochum, Germany. Further publications of the data are under preparation.

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

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

In the framework of the JA EMERGE, the third EQAE round has been performed in March 2018. To foster the active collaboration between the partner laboratories specialized in the diagnostic of highly pathogenic bacteria and viruses, EQAE samples were spiked either with inactivated bacteria or viruses, and blank samples were also included. One sample set comprised 10 inactivated samples positive or negative for target bacteria such as *Yersinia pestis*, *Francisella tularensis* or target viruses such as Ebola virus, Marburg virus and others. For the laboratory analyses as well as for the transmission of results, three weeks were foreseen. The overall task of the exercises consists in the identification of target bacteria/viruses in EQAE samples. For the identification, the participants were asked to use their diagnostic standard operation procedures used and available in the laboratories. In contrast to former bacterial EQAEs, the correct diagnostic of *Brucella* species and *Francisella tularensis* subspecies was not requested. A total of 36 specialized laboratories participated in the third exercise, among them 13 laboratories performing both, bacterial and viral diagnostics, 17 performing only bacterial diagnostics, and 6 laboratories performing only viral diagnostics. Anonymized individual and overall results were summarized in reports and

provided to all participants in June. Results are going to be discussed in detail during the upcoming final EMERGE meeting in Brussels in November this year.

Additionally, the ORM simulation exercise "Salutem" will be supported by WP6 by providing samples for analyses to 10 appointed laboratories. The exercise will comprise the organization of sample shipment and the reporting of laboratory results. Also, WP6 will provide a short summary about laboratory results of this ORM simulation wet-lab.

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

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

Up until August 2018, a total of 23 training courses have been carried out within the frame of EMERGE. The courses have covered the four overarching topics: laboratory methods (16 courses), biorisk management (5 courses), diagnostic algorithms (1 course) and field laboratory training (1 course). Twenty five partners (out of 34) and 2 (out of 4) collaborating partners have participated in at least one training session and 8 partners (including 1 collaborating partner) have organized at least one course. In total 76 trainees have participated in the training program.

Upcoming training sessions during the fall of 2018 includes MinION sequencing

of high containment viral pathogens (late September) at PHE, UK and Training in BSL4 methodology at NPHI in Hungary.

Recent publications

- Grunow R, Appelt S, Jacob D, Rohleder A, Di Caro A, Ippolito G, et al. Is Europe prepared? Detection of high-threat pathogens at EU level, SciTech Europa; 2018. 260 p.
- Manuscript on CCHF accepted: Bartolini B. et al "Critical aspects of laboratory management of Crimean-Congo haemorrhagic fever virus infections" Eurosurveillance (eurosurveillance-D-18-00093) in press;
- A support has been given with EVD LabNET to ECDC, as experts, to a revision of Rapid Risk Assessment of Ebola (<http://ecdc.europa.eu/sites/portal/files/documents/17-05-2018-RRA-first-update-Ebola%20haemorrhagic%20feverDemocratic%20Republic%20of%20the%20Congo.pdf>) and Monkeypox (not yet published)
- The Health Threats Brochure is available on the Chafea website publications http://ec.europa.eu/chafea/documents/health/health-threats-2018_en.pdf

- Health at a glance: https://ec.europa.eu/health/stat/e/glance_en
- Workshop - State of play of preparedness for serious cross-border threats to health in the EU, June 2018, https://ec.europa.eu/health/preparedness_response/events/ev_20180425_en
- The mid-term evaluation report of the Health Programme 2014-2020 refers to EMERGE as one of the actions with EU added value, https://ec.europa.eu/health/sites/health/files/programme/docs/2014-2020_evaluation_study_en.pdf

Coming soon

- Simulation exercise, 7 and 8 November 2018;
- A Final EMERGE JA consortium meeting will be held in Brussels 27-28 November 2018.