Abstract

The human population is confronted with emerging and re-emerging infectious pathogens that can cause serious cross-border outbreaks. Examples are the Ebola and Plague outbreaks in Africa requiring strong diagnostic, clinical, and public health measures in Europe and abroad to get these incidents under control. The Joint Action (JA) EMERGE is in compliance with the European policy (Decision No 802/2013/EU) where the need for an efficient, rapid and coordinated response to high threat pathogens is defined. It comprised a European network with about 40 diagnostic laboratories focused on risk group (RG) 3 bacteria and RG 4 viruses. The JA acted in a so-called inter-epidemic mode (IEM), which could be switched into an outbreak response mode (ORM) on request by the Health Security Committee, to direct all activities to the outbreak management. Due to non-activation of the network, an ORM simulation exercise (Salutem) was carried out. EMERGE provided a platform for coordination and effective response to infectious disease outbreaks at EU level and abroad (WP4). State-of-the-art and new diagnostic methods for high threat pathogens, including in-house and commercial kits, were evaluated for their applicability and were recommended in outbreak situations when suitable (WP5). Additionally, five externally quality assurance exercises (EQAEX) were performed to ensure best approaches for laboratory responsiveness in outbreak situations (WP6). These activities were supported by appropriate training to share best practices of diagnostics and biorisk management (WP7). In conclusion, the general objective was to ensure an efficient response to serious natural or intentional cross-border outbreak events by reinforcing the existing EU network of Biosafety Level (BSL) 3 and BSL 4 laboratories. The JA EMERGE was finalized in March 2019. However, the established Network of Infectious Bacteria (NIB) and the Network of Infectious Viruses (NIV) will work further together in the upcoming JA SHARP (Strengthened International Health Regulations and Preparedness in the EU) which will start mid 2019.

General Objectives

- Efficient response to serious naturally or intentionally caused cross-border outbreaks was ensured
- A coordinated and effective response to outbreaks was developed by linking up laboratory networks and institutions
- 5 external quality assurance exercises and 19 appropriate training courses (82 trainees) were performed to ensure best laboratory responsiveness, diagnostics and biorisk management
- 2 modes: inter-epidemic mode (IEM) and outbreak response mode (ORM)

Outcomes

- Production of protocols and guidelines for outbreak management
- Increase of diagnostic capabilities for high threat pathogens and for diagnostics in outbreak situations
- Assessment of status quo and recommendations for improvement of laboratory capabilities and quality to diagnose highly pathogenic agents
- ORM simulation exercise Salutem was developed to mimic a situation of cross-border outbreak
- Validation and improvement of biorisk management
- Maintenance and further development of the existing repositories of reference strains
- Improvement of the European capability to detect highly pathogenic agents by training

Work Packages

Core Work Packages

WP 1 Coordination of the JA; RKI (D) & INMI (IT)
   > to ensure the implementation of the JA as planned and budgeted
   > representation of the network and its interest on EU and international level

WP 2 Dissemination of the JA activities; INSERM (FR)
   > development of dissemination strategies
   > to ensure a pro-active visibility and on-time information about the JA (i.e. logo, website, bi-annual newsletters, leaflet, publications...)

WP 3 Evaluation of the JA; PHE (UK)
   > development of evaluation strategies
   > evaluation of work packages activities every quarter and after each project meeting

Horizontal Work Packages

WP 4 Networking of networks for laboratory response; EMRC (NL) & INMI (IT)
   > establishment, strengthening the cooperation between networks
   > identification of relevant networks and agencies for collaboration

WP 5 Rapid capabilities for diagnoses, INMI (IT) & FoHM (SE)
   > sample sharing, identification of relevant pathogenic threats
   > identification, evaluation of best diagnostic approaches and methods

WP 6 Quality assurance of laboratory diagnostics; RKI (DE) & UMR (D)
   > to test, to improve the network’s capacity for diagnostic preparedness
   > to develop “Gold Standard”: standardizing European laboratory diagnostic strategies - reference material

WP 7 Training on diagnostics and biorisk management; FoHM (SE) & PHE (UK)
   > evaluation of training needs, establishment of a training curriculum
   > web lab exercises on best diagnostic practices and biorisk management

Targets

- Bacteria
  - Anthrax (Burkholderia)
  - Francisella tularensis
  - Yersinia pestis
  - Brucella spp.

- Viruses
  - Arenaviruses
  - Bunyaviruses
  - Paramyxoviruses
  - Filoviruses
  - Coronaviruses
  - Parvoviruses
  - Hepatitis viruses
  - Borna disease virus
  - HPV
  - EBV
  - influenza viruses
  - CMV
  - rotavirus
  - coxsackie viruses
  - poliovirus
  - echoviruses
  - enteroviruses

Mode of Action

Coordinator: RKI, Germany
Co-coordinator: INMI, Italy
Associated Partners:
AGSE Austria
CODA-CERVA, Belgium
NCPS, Bulgaria
NCTR, Bulgaria
HUG, Genève
SUICHIO, Czech Rep.
GTU, Denmark
TA, Estonia
TR, Finland
INSERM, France
DGA, France
BiM, Germany
FU, Germany
UMR, Germany
BNMT, Germany
AUST, Greece
NCE, Hungary
Collaborating Partners:
IZISP, Italy
NIKA, Greece

EMERGE Partners

39 Partners from 25 European countries
1 Main Partner
34 Associated Partners
4 Collaborating Partners

Acknowledgements

We are very grateful to the European Commission and the CHIEFIA for financially and technically supporting this Joint Action (Agreement No 677 066), and we would also like to thank the Advisory Board for their very helpful and active comments and suggestions

Contact person: Prof. Dr. Roland Grunow, e-mail: Grunow@rki.de

Disclaimer: This presentation has been produced with the support of the European Commission’s Consumers, Health and Food Executive Action EMERGE/EUR-004. Its content is the sole responsibility of Robert Koch Institute, Centre for Biological Threats and Special Pathogens, and can in no way be taken to reflect the views of the European Union or any other body of this European Union.