

Folder eCC\_00014010 is in stage Expired\_No\_Redesignation

**Name of the University, Hospital, Research Institute, Academy or Ministry**

Robert Koch Institute

**Name of the Division, Department, Unit, Section or Area**

Zentrum für Biologische Gefahren und Spezielle Pathogene/Centre for Biological Threats and Special Pathogens (ZBS)

**City** Berlin **Reference Number** DEU-135

**Title** WHO Collaborating Center for Emerging Infections and Biological Threats

**Report Year** 04-2019 to 04-2020

**1. Annual report on the agreed workplan**

**Describe progress made on the agreed workplan. For each activity, detail (1) the actions taken, (2) the outputs delivered, as well as (3) any difficulties that may have been encountered. Three responses are expected. [maximum 200 words per activity]. Indicate, if an activity has been completed previously, has not yet started or has been placed on hold.**

**Activity 1**

Title: Support diagnostics for known emerging infections and biological threats

Description: RKI holds specialized units on highly pathogenic bacteria, viruses and toxins. For some pathogens (anthrax, tularemia, smallpox) and toxins (Clostridium botulinum) it also holds the consultant laboratories for Germany. The units have in place evaluated diagnostics including isolation and cultivation of causative pathogens under BSL3 conditions, molecular identification and characterization, whole genome sequencing, PCR, and serology with best practice approaches. The units are experienced in analysing clinical and environmental samples. These diagnostics will be offered on WHO request for the laboratory confirmation of clinical diagnosis of emerging infections and biological threats under BSL 3 and in the future BSL4 requirements. Further, advice on patient care as well as outbreak management could be given.

Status: ongoing

In accordance with the work plan agreed between WHO and RKI, in the framework of the Joint Action "Efficient response to highly dangerous and emerging pathogens at EU level" (EMERGE; <http://www.emerge.rki.eu>; see Activity 23423), RKI supports the networking of laboratory networks to provide surge diagnostic capacities and laboratory diagnostics in outbreaks caused by highly pathogenic bacteria and viruses throughout Europe and to support outbreak management outside Europe. Laboratory and networking capacities are available upon requests of WHO (see also Activity 23423). This Joint Action was completed end of February 2019, but the laboratory network on highly pathogenic infectious agents is maintained in the framework of the new Joint Action "Strengthened International Health Regulations and Preparedness in the EU – Joint Action (SHARP)" which started 1st April 2019 and is running for three years. RKI is leading work package 7 on "Laboratory Preparedness and Responsiveness". In this function, RKI/ZBS 2 conducted an EQAE on highly pathogenic bacteria with about 30 laboratories in Europe in February 2020. During the COVID-19 pandemic, the laboratory network is exchanging diagnostic experiences in close cooperation with the ECDC led network EVDLabNet. Beyond laboratory activities, the aims of this new Joint Action are also to support the implementation of the International Health Regulations (IHR) 2005 in Member States of the European Union (EU) and to support the preparation of Member States to the Joint External Evaluation conducted by the WHO.

In addition, the RKI is coordinating and conducting the 3-years project "German Contribution to Strengthen the Reference Laboratories Bio in the UNSGM (RefBio)" which started in 2018 and is financed by the German Federal Foreign Office. The aim of this global project is to strengthen nominated UN laboratories to get

activated in an event of alleged usage of biological weapons in response to the UN Secretary-General's Mechanism. In October 2019, an EQAE on Bacillus anthracis, provided by ZBS2, and an EQAE on Poxvirus provided, provided by ZBS1, were successfully conducted with more than 25 laboratories worldwide. In November 2019, a first EQAE on ricin, provided by ZBS3, was performed with 15 laboratories worldwide. The results of all three very ambitious and complex EQAEs were discussed with the participants during workshops at the beginning of 2020. It was concluded that these activities are very helpful for all participants and shall be maintained. Currently, an additional exercise on SARS-CoV-2 is planned and more than 25 laboratories worldwide have expressed their interest to participate.

After the visit of laboratories and clinical institutions in Madagascar by two scientists from the RKI in February 2019, first cooperative activities have been established. Specifically, a COVID-19 request for diagnostic support by Madagascar's Ministry of Public Health was received and responded. A long term collaboration is under discussion at the RKI.

Upon request, RKI provided the WHO Regional Office for the Americas (PAHO/WHO) with reference materials (quantified molecular standards and positive controls) for the molecular diagnosis of West Nile virus and an External Quality Assurance (EQA) panel for the molecular detection of dengue viruses as part of the response to the upsurge of dengue cases in the American region during the last year.

RKI staff attended the EYE (Eliminating Yellow Fever Epidemics) Strategy General Meeting co-organized by World Health Organization's Eliminate Yellow Fever Epidemics (EYE) Secretariat, UNICEF and GAVI - The Vaccine Alliance in Brasilia, Brazil (28-30 October 2019), and the EYE Laboratory Technical Working Group Meeting held in Rotterdam, The Netherlands (24-26 June 2019). Staff of RKI actively participates in the activities of the EYE Expert Laboratory Technical Working Group. During this period, RKI staff provided expert advice to the preparation of the definite global yellow fever diagnostic algorithm, that has been finalized and agreed by the members of the Algorithm Advisory Group and will be released by WHO in short. RKI Staff has also contributed to the finalization of target product profiles for serologic and molecular yellow fever diagnostic test kits for use in yellow fever diagnostic laboratories, and to the discussion of a potential plan for biobanking samples to facilitate development of external quality assurance panels and assessment of diagnostic test kits. Additionally RKI Staff coordinates the External Quality Assessment (EQA) and Quality Control (QC) programme of the EYE Expert Laboratory Technical Working Group, and during this period an EQA subgroup has been assembled for the development of a serological yellow fever EQA coordinated by the RKI and CDC Fort Collins.

RKI staff has participated in the organization and implementation of two workshops for strengthening the diagnosis and surveillance laboratory capacity and management for yellow fever in Africa. The workshops were organized by WHO, CDC Fort Collins, and APHL (Association of Public Health Laboratories) in Yaoundé, Cameroon (22-26 July 2019) and Dakar, Senegal (29 July-02 August 2019). The workshops were organized in partnership with the two host institutions, Institut Pasteur du Cameroun, and Institut Pasteur de Dakar. A total of 47 participants from 35 institutions in 33 African countries were invited to participate in the workshops. Participants were selected from national reference laboratories within the GYFLN in African countries considered at moderate to high risk for YF transmission. RKI Staff coordinated the molecular diagnostics part of the workshops, and to that purpose RKI provided panels of positive and negative samples as training materials.

Likewise, RKI participated in the organization of a third workshop on yellow fever diagnostics organized by PAHO/WHO, the Directorate of Public Health Surveillance of the Ministry of Health of Mexico, CDC Fort Collins, and APHL in Mexico City (2-6 February 2020). The workshop aimed at strengthening the capacities for diagnosis and detection of cases of yellow fever in the Americas, and was organized in partnership with the PAHO/WHO Collaborating Center for Arboviruses at the Institute for Diagnostics and Epidemiological Reference (InDRE) in Mexico. Officials from 13 public health laboratories in 11 countries of the Americas attended the workshop. As in the African workshops, RKI Staff coordinated the molecular diagnostics agenda of the workshop, and materials for training were provided by RKI.

RKI is member in the diagnostic expert group for SARS-CoV-2 and WHO reference laboratory for SARS-CoV-2.

## **Activity 2**

Title: Support identifying unknown pathogens and developing specific diagnostic tools

Description: Identification of infectious agents with a focus on viruses in clinical specimens from WHO Member States and facilitated by WHO. Applied techniques would include Electron Microscopy, PCR, Multiplex PCR, Next Generation Sequencing to identify the pathogen(s).

Status: ongoing

RKI organizes and conducts lab courses on “Electron microscopy in infectious diseases” at the RKI to implement and to improve the diagnostic standards in this particular field of pathogen detection. In April 2019 participants from Singapore, Czech Republic, Ireland and Germany attended the 26th basis lab course, which provided instructions on the preparation of samples for the rapid identification of pathogens based on morphology. An advanced course on rapid thin section electron microscopy for tissue samples was held for the first time in November 2018 and will be offered on a regular basis in future.

The External Quality Assurance program for Electron Microscopy of Virus Diagnostics (EQA-EMV) completed the 31st run end of March 2019. Six samples were sent out to 86 participants in 30 countries, including South Africa, Brazil, Singapore and Japan. RKI received about 69% correct diagnoses. However, only 19% of the participants reported correct results for all samples of the panel. This result is partially due to the complexity of the samples, but also due to changes among participants. Some participants handed over the participation at the EQA-EMV to their successors, which are obviously less experienced. In parallel, we recognize a slight increase in requests for our courses, which could be associated with this fact. The final report about the results and the sample panel focus on the faults and difficulties of the diagnosis and should finally help to improve the diagnostic performance of the participants.

Both activities, the lab courses on “Electron microscopy in infectious diseases” and the EQA-EMV program, represent worldwide unique activities supporting the identification of unknown pathogens and development of specific diagnostic tools, which are organized and conducted by RKI.

### **Activity 3**

Title: Support establishing and managing of laboratory networks to develop guidance, tools and specific diagnostic capacities

Description: Supporting and consolidating of laboratory networks including institutions and organizations, e.g. the European Centre for Disease Prevention and Control (ECDC) and WHO to initiate worldwide quality assurance measures, harmonization of detection methods, production of reference materials, identification of best practices, and capacity building in an international context. Besides laboratory based outbreak management, training on specific diagnostic approaches and laboratory risk management could be provided.

Status: ongoing

In accordance with the work plan agreed between WHO and RKI, the “EMERGE Laboratory Network” (<http://www.emerge.rki.eu>; CHAFEA n° 677 066), funded by the EU with the duration 1 June 2015 – 31 May 2018, has further been strengthened in the framework of work package 7 (WP7) of the new EU funded Joint Action (JA) SHARP (April 2019 – March 2022), including about 40 European diagnostic laboratories specialized in highly pathogenic infectious agents, consolidating a European network on outbreak response against these biological agents. The main objectives of WP7 in SHARP include:

- Strengthen laboratory preparedness and responsiveness to detect highly pathogenic infectious agents by performing External Quality Assurance Exercises (EQAEs).
  - Evaluation of diagnostic approaches to ensure best practices used in partner laboratories of the JA.
  - Improving and consolidating biosafety procedures and biorisk management in partner laboratories of the JA.
- Furthermore, the above-mentioned RefBio project was continued aiming to set up a global laboratory network serving the UNSGM in case of an alleged use of bioweapons (see also Activity 23421).

Since June 2017, the RKI coordinates the EuroBioTox project (“European programme for the establishment of validated procedures for the detection and identification of biological toxins”; <https://www.eurobiotox.eu>). This project brings together 60 expert institutions – laboratories, industrial partners and end users – from 23 countries from the health, food and security sectors to improve detection and identification methods for biological toxins which could be misused as potential biothreat agents. The project addresses the need for standard analytical tools and procedures, reference materials, state-of-the-art training and will establish a European proficiency testing scheme. In this context, EuroBioTox organized two proficiency tests on biological agents in 2018 which highlighted the status quo of technical capacities and the need for further improvement. Additionally, three training courses on detection methods for biological toxins were conducted. Toxin reference materials for three selected biological toxins were produced, filled and are currently under characterization with the goal to develop certified reference materials. Overall, the project strengthens laboratory capacities for the detection of prioritized biological toxins which are available for WHO requests.

RKI is member of the WHO ACVVR and is involved in the re-establishment of the smallpox laboratory network.

#### **Activity 4**

Title: Support the identification of antimicrobial resistance (AMR) mechanisms

Description: Support the implementation of national AMR surveillance by building on experience from a project with 4 sub-Saharan African countries including strengthening national laboratory capacities in identifying pathogens and antimicrobial susceptibility testing according to international recognized standards and identification of resistance mechanisms; and through the Global Antimicrobial Resistance Surveillance System (GLASS) implementation and regional collaboration by sharing best practice experiences.

Status: completed

Actions reported here are given as completed within the WHOcc of Emerging Infections and Biological Threats. The AMR research group applied to become a separate WHOcc in 2020.

As a Collaborating Centre, the RKI is a member of a WHO Network dedicated to supporting the Global Antimicrobial Resistance Surveillance System (GLASS), called the WHO AMR Surveillance and Quality Assessment Collaborating Centres (WHOAMRCC) Network. The RKI became the coordinator of the Network in late summer 2019. One of the Network's goals is to provide technical support to strengthen laboratory capacity in order to enable antimicrobial susceptibility testing and identify AMR mechanisms.

The Network as a whole produces work that is relevant to Activity 23424. It made the following progress in these areas in the last few months: The Network delivered external quality assurance (EQA) programmes and training on Laboratory Quality Management Systems (QMS) in several regions around the world, drafted guidance on National Reference Lab (NRL) best practices to support AMR surveillance, and published an NRL assessment tool. As coordinator of the Network, the RKI has oversight of the work to ensure coherence and has been supporting members to achieve these goals through regular liaising with the project leads to track progress and make sure that each of the project groups is sufficiently supported.

As a member of the Network, the RKI leads and directly contributes to several other Network project activities. One of the projects that the RKI is leading is a short document describing some of the current issues with linkage between lab-based and hospital/clinic-based data. This issue varies between countries but has wide relevance for national and local surveillance systems. The document is intended to better explore areas for improvement.

Other projects that the RKI is leading or directly contributing to as part of the WHOAMRCC Network are described below in Activity 23429.

#### **Activity 5**

Title: Support provided to the WHO clinical network EDCARN through the inclusion of the German Permanent Working Group of Competence and Treatment Centres for patients with highly infectious life-threatening diseases (STAKOB) and RKI into the EDCARN

Description: The responsible unit within RKI will contact the treatment centres of the German Permanent Working Group of Competence and Treatment Centres for patients with highly infectious life-threatening diseases (STAKOB). The unit will highlight the advantage for treatment centres to join the Emerging Disease Clinical Assessment and Response Network (EDCARN). On behalf of RKI, the responsible unit will join EDCARN. In case EDCARN needs in depth support, e.g. detailed information, collection of expert opinions, technical meetings, the responsible unit within RKI will coordinate the process, e.g. contact experts, collect information/opinions, organize and host technical meetings to support STAKOB in fulfilling WHO request.



Status: ongoing

RKI coordinates the permanent working group of competence and treatment centers in Germany (STAKOB). In response to international outbreaks, RKI and STAKOB clinical experts offered their support to WHO and to the Global Outbreak Alert and Response Network (GOARN) to strengthen clinical management:

- STAKOB experts (treatment center Düsseldorf, Frankfurt, Hamburg) were sent to NGA during the Lassa fever outbreak to support clinical management.
- STAKOB expert (training centre Würzburg) was sent to DRC during the EVD outbreak to assess clinical management
- STAKOB experts (training centre Würzburg) were sent to BFA, SEN as well as to LBR (HCID training) for the training of health care worker in management of high consequence infectious diseases (HCID).

An international meeting of STAKOB with international experts was held in January 2020. Experts from WHO-Geneva, Netherlands, Belgium, United Kingdom, and United States among others participated. Topics covered were:

- Management of high consequence infectious diseases (HCID) from clinical perspective with a focus on Lassa fever and the beginning Coronavirus-outbreak in China
- Orthopoxvirus

In cooperation with STAKOB, preparedness for Ebola Virus Disease in Rwanda was supported by the EFFO-project (Efficiency by Edification) in close cooperation with the Rwanda Biomedical Centre by the following activities:

- Refresher "Training-of-Trainers" for Ebola Virus Disease (June – November 2019)
- Support of training activities for frontline health care workers for EVD-preparedness (July 2019 – January 2020)
- Construction of temporary isolation units, initially planned for the isolation of EVD-patients, since January 2020 adaption for COVID-19 (since August 2019)
- Support of laboratory training and supply for SARS-CoV-2 (since January 2020)

Also in cooperation with STAKOB, the EFFO-project supported a mission by the German Epidemic Preparedness Team (SEEG) in Sierra Leone for clinical management in the context of Lassa fever (February 2020).

### **Activity 6**

Title: Support for WHO's normative functions in development of guidelines and tools. RKI will host and facilitate, in collaboration with WHO, an international workshop to draft a global guideline (interim guideline) for Crimean-Congo haemorrhagic fever

Description: The responsible unit within RKI will organize an international workshop for Crimean Congo Hemorrhagic Fever (CCHF) together with WHO. Relevant treatment centers, public health authorities, research laboratories and experts from affected countries will be identified and invited. The workshop will allow experts to exchange information, e.g. on treatment, clinical management, hospital preparedness, and to identify research and knowledge gaps. The meeting report will be provided by the unit. A WHO guideline will be drafted afterwards and consolidated by participants (working group) following WHO recommendations. WHO will be the main partner/co-leader in the whole process to assure that documents fulfill WHO requirements.

Status: completed

RKI offered subject matter experts to WHO for the development of plague guidelines as well as hosting a WHO Guideline Development Group Meeting in Berlin in 2019.

### **Activity 7**

Title: 2.3. Provide expertise in outbreak response to the field

Description: On request of WHO, GOARN or related WHO networks, RKI will provide technical support and expertise in outbreak and/or emergency response including support and assessment missions for WHO Member States.

Status: ongoing

On 15 March 2019, the World Health Organization has designated the Information Centre for International Health Protection (INIG, ZIG1) at the Robert Koch Institute as a WHO Collaborating Centre for Global Outbreak Alert and Response – GOARN.

As a member of GOARN, RKI continued to participating in the efforts of preventing and controlling infectious diseases outbreaks globally. Following GOARN requests for assistance, RKI staffs provided technical support in the following operations:

- From July to December 2019, RKI staff joined the GOARN operation on Ebola Virus Disease outbreak in Democratic Republic of the Congo (North Kivu)
- From December 2019 to January 2020, RKI staff joined the GOARN operation on Measles outbreak in Pacific Island Countries and Areas
- Between February 2020 and March 2020, two RKI staffs supported the COVID-19 response in Malina (Philippines) and Tehran (Iran)

In addition, RKI staff followed the request of WHO:

- To join a lab assessment on high threat pathogen (HTP) lab diagnostic capacities in the Ukraine (November 2019) and in Georgia (December 2019)
- To participate in a Mission to Armenia on HIV (November 2019)
- To discuss Hepatitis B Serosurvey with institutions involved in Turkmenistan (November 2019) and in Kirgizstan (February 2020).

### **Activity 8**

Title: Develop training modules on epidemic intelligence exchange and outbreak response

Description: The responsible unit within RKI will develop training modules that will guide participants in implementing systems on how to gather and exchange epidemic intelligence for early warning. Units with experience both from implementing this work in Germany and from supporting partner countries will guide the development of the training materials. The training could involve study visits, workshops and follow up direct support to WHO Member States.

The training modules for outbreak response will focus on developing national guidance documents on structured outbreak responses. This work will be conducted through workshops by using scenarios and follow up support.

Status: ongoing

Under the aegis of the WHO's Pandemic Influenza Preparedness (PIP) framework, RKI collaborates with the WHO Regional Office for Europe (WHO EURO) to improve the capacities of countries of Central Asia and the Caucasus to rapidly detect and investigate outbreaks of influenza viruses with pandemic potential and other emerging respiratory pathogens. A generic outbreak response training package, based on previously developed national outbreak response plans, was developed by the RKI in collaboration with partner countries (Armenia, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). It consists of a 4-day Outbreak Investigation and Response (OIR) training module and a 1-day Training-of-Trainers (ToT) module. Prior to the implementation of the training, modifications were made to tailor the training package to each country's specific needs. Following this, RKI epidemiologists trained national health experts in the package via ToT methodology in Armenia, Uzbekistan, Turkmenistan, Tajikistan and Kyrgyzstan. The originally planned RKI support for two cascade trainings that were planned for the second half of 2019 could unfortunately not be implemented.

Further, the RKI collaborates with a number of partner countries in African and Southeast Europe in the areas of infectious disease epidemiology and surveillance in consultation with WHO EURO and/or WHO Country Offices to strengthen health care systems and provide support with implementation of the IHR (2005). The objectives of these partnerships are to rapidly detect unexpected events linked to infectious diseases, to prepare for infectious disease outbreaks by improved preparedness planning and to enable the implementation of targeted control measures in order to stop further spread through fast and efficient response to the outbreak. This is achieved through the development and implementation of training courses, support to process and tools development to strengthen national detection and response capacities. In the frame of event-based surveillance, a weekly national epidemiological telephone conference to allow both horizontal and vertical exchange on infectious disease events among all states and RKI was established in Germany in 2009. This procedure has been adapted and successfully implemented in some partner countries with RKI support, and is being prepared for launch in others. In order to facilitate a structured and standardized process for the investigation and response to infectious disease outbreaks to ensure an effective and coordinated approach, the RKI has supported the development of outbreak investigation and response guidelines in several partner countries. Currently RKI epidemiologists are also supporting activities related to the setting up and running of emergency operations centers in collaboration with partners.

RKI epidemiologists have also developed and delivered other training modules, when possible applying a One Health approach comprising analysis of surveillance data, descriptive epidemiology, application of case definitions, data management during outbreaks, outbreak investigation and response including laboratory involvement, event-based surveillance and rapid risk assessment in several partner countries.

### **Activity 9**

Title: Support national antimicrobial resistance (AMR) surveillance systems including AMR and healthcare associated infection (HAI) outbreak detection and response

Description: Support the implementation of national AMR surveillance by building on experience from RKI's work in sub-Saharan African countries. Support and strengthen epidemiological capacity in data collection and analysis; national-level GLASS implementation; and regional collaboration by sharing best practice experiences. Support national activities to detect and respond to AMR and HAI outbreaks and provide technical support to AMR/HAI outbreak investigations in Member States upon request by WHO.



Status: completed

Actions reported here are given as completed within the WHOcc of Emerging Infections and Biological Threats. The AMR research group applied to become a WHOcc in 2020.

As mentioned above in Activity 23424, the WHOAMRCC Network supports the delivery of GLASS. This involves both the development of the GLASS Manual and its supporting guidance documents, as well as the provision of AMR surveillance technical assistance to countries in order to improve the reach and robustness of GLASS worldwide. The Network particularly supports low-resource settings to build laboratory- and epidemiology-capacity as well as improve operational research and guideline setting. As coordinator of the WHOAMRCC Network, the RKI is supporting the revision of the new GLASS 2.0 manual and some of its supporting documents. Together, these will be used worldwide to build and sustain good surveillance systems. In particular, the RKI is leading on the development of selected specific guidance documents, together with several members of the WHO AMR CC Network. One will be a short guide with strategies on how to ensure that data on AMR and antibiotic use are considered effectively in decision-making. The purpose of the guide is to make sure that surveillance data leads to improvements in policy and practice. Another document will be a generic protocol for the integrated surveillance of AMR and health care associated infections (HAI) for low-resource settings. The first draft protocol was completed at the beginning of 2020. This project is in collaboration with other WHO regional partners.

In addition, the RKI provides support to two African surveillance networks or collaborations which contribute to country-capacity building for AMR surveillance implementation. In Cote d'Ivoire, Burkina Faso, DRC, and South Africa, the "African Network for improved Diagnostics, Epidemiology and Management of Common Infectious Agents" (ANDEMIA) aims to build capacities for the surveillance of acute respiratory tract and gastrointestinal infections, acute febrile disease of unknown cause and antimicrobial resistance. A large range of technical support was given for the development of bacteriology and AMR surveillance standard operating procedures (SOPs), their implementation and quality control including various trainings, technical document review, regular mentorship and procurement assistance. Second, RKI supports a collaboration with the Nigerian Centre for Disease Control and Prevention and RKI including a sub-project that specifically focuses on support for the development of their national AMR surveillance system. As a result of this experience in international collaborations, the RKI has developed resources that are valuable for the Network's toolbox. A goal of the network is to continue to compile a set of capacity-building resources that can effectively be used in a variety of settings.

### **Activity 10**

Title: Support IHR implementation activities of WHO and its Member States

Description: Self-assessment of the implementation of IHR core capacities is required annually by WHO. As necessary RKI can serve as an external, independent partner to participate in Member States assessment bringing specific expertise in order to provide relevant recommendations to the requesting countries.

RKI has a long standing experience in the area of infectious diseases and aviation. The importance of Points of Entry (PoE) core capacities for IHR is increasing with increasing air travel worldwide and RKI can assist countries seeking advice and support in implementing the relevant measures at the points of entry in close collaboration with WHO and ICAO.

All rights to the data and information provided by a Member State hereunder will exclusively be and remain vested in that Member State. RKI will treat such data and information as strictly confidential, and use them only for the purpose of performing the work hereunder. In this regard, RKI shall provide the data and information only to those persons in RKI who have a need to know for the aforesaid purpose, and are bound by appropriate obligations of confidentiality and restrictions on use. It is explicitly understood and agreed that any other use by RKI of the samples and information, as well as any disclosure other than to the aforesaid persons, shall be subject to the express advance approval in writing of WHO and the Member State concerned.

With the exception of any pre-existing intellectual property rights of RKI, all rights to the results of the work performed by RKI hereunder shall also exclusively be owned by the Member State concerned.

Status: ongoing

RKI has supported the implementation of the IHR (2005) at national and subnational level in numerous countries in Europe, Asia and Africa.

The IHR Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation (WHA 68/22 Add.1) recommended "...to move from exclusive self-evaluation to approaches that combine self-evaluation, peer review and voluntary external evaluations involving a combination of domestic and independent experts." In light of this, WHO in collaboration with partners and initiatives, such as the Global Health Security Agenda (GHTA), developed the Joint External Evaluation (JEE) process as part of the IHR 2005 Monitoring and Evaluation Framework (IHRMEF). The JEE tool is intended to assess country capacities to prevent, detect and respond to public health threats independently of whether they are occurring naturally, deliberately or accidentally.

Countries can voluntarily request a JEE mission to help them identify the most urgent needs within their health system. The JEE will facilitate engagement with stakeholders and partner initiatives to support the country's national outbreak and health emergency preparedness, based on a tool revised in 2018

(<https://extranet.who.int/sph/sites/default/files/document-library/document/9789241550222-eng.pdf>).

Since 2016, RKI has provided experts for numerous JEEs to evaluate core capacity implementation and lead several of the 19 specified technical areas including that of "point of entry". During the present reporting period in total 5 RKI colleagues were deployed to the following missions:

- North Macedonia: 11-15 March 2019
- Montenegro: 27-31 May 2019
- Georgia: 10-14 June 2019

In collaboration with partners, such as the respective WHO Country Offices, the German Corporation for International Cooperation (GIZ; WHO CC for Health System Strengthening) and national Ministries of Health, RKI has supported planning, execution and evaluation of context-adjusted simulation exercises of different formats to test current national health emergency response plans (Tunisia 2016 and 2019, Sudan November 2018). More exercises are currently under development.

In September 2019, the RKI participated in North Macedonia's IHR-PVS (Performance of Veterinary Services) Pathway National Bridging Workshop. Its main objective was to provide an opportunity to the national human and animal health services to build on the reviews of performance, gaps and discussions for improvement conducted in their respective sectors, and to explore options for improved coordination between the sectors, to jointly strengthen their preparedness for, and control of, the spread of zoonotic diseases.

In November 2019, RKI scientists co-organized the kick-off meeting of a Joint Action on strengthened IHR and Preparedness. The overall objective is to improve the capacity of participating countries to respond to cross-border biological and chemical threats, and thus improved health security. In the frame of this, curricula for basic and advanced face-to-face training courses will be developed and implemented.

### **Activity 11**

Title: Organise an IHR summer school with a focus on emerging infectious diseases

Description: The aim of the summer school is to strengthen surveillance, alert and response systems for public health events by introduction of IHR concepts to epidemiologists in relevant positions in the public health system of various countries for strengthening IHR core capacity implementation.

The methodology of the summer school will consist of a broad range of interactive teaching methods, such as didactic lectures, e.g. on legal aspects, structural requirements and basic principles of radiological, chemical and biological hazards, input presentations from the participants, e.g. concerning their experiences and specific obstacles in IHR implementation, group discussions, and table top exercises, e.g. scenario simulation of an unexpected event with application of IHR, exercise of inter-sectorial and international cooperation. A field trip to a point of entry (PoE), e.g. the Hamburg harbour and airport will provide insights to the working of different points of entry at the local level in Germany.

The Summer school will be open to representatives from all Member States, focusing primarily on the WHO European Region to allow some exchange of similar experiences. Ideally information about the summer school should be sent through the WHO European Regional Office to the respective NFPs with the offer to identify people with experience in the IHR relevant topics like Surveillance, Coordination, Point of Entries or Chemical/Radiological threats.

Status: ongoing

From 2017 onward, the RKI organizes an annual 5-day IHR Summer School in Berlin. The aim of the IHR Summer School is to strengthen the IHR core capacities of interested partner countries especially regarding infectious disease surveillance, early warning and response systems.

Although the focus is on the identification and management of biological hazards, inter-sectoral collaboration and communication remains a core element of the course. In addition, the training course intends to foster national and regional networks and exchange of experiences and knowledge. During the IHR Summer School, the main topics are taught via reciprocal presentations, case studies and group discussions (peer-peer learning). Each year, the course content is adjusted to the participant profiles and includes an excursion to a designated Point of Entry (air or sea port) is part of the programme. Despite the name "Summer School", the course offers a platform for horizontal, collegial exchange. Concrete examples are invited from participating countries to help explain and compare different methods and procedures. Relevant key experts from RKI, WHO Regional Offices and other relevant partners are invited to facilitate, chair sessions and share experiences about implementation of the IHR in Germany and abroad as well as the challenges to be overcome.

The first summer school was held between 4-7 July 2017 with 23 participants from the Southeast Europe region (Albania, Bosnia & Herzegovina, Kosovo, Montenegro, Macedonia, Serbia). The 2018 IHR Summer School, held 25-29 June 2018, included 23 public health professionals from Burkina Faso, Morocco, Nigeria, South Africa, Sudan, Tunisia, as well as two representatives from the Economic Community of West African States (ECOWAS) Regional Center for Surveillance and Disease Control. From 2 to 6 September 2019, the third IHR Summer School was held with 20 participants from Southeast Europe. The course evaluation in all three years was extremely positive from both, participants and facilitators. The objectives and participants' expectations were met and the interactive teaching methods utilised were very well received. Based on the feedback received, a similar format will be used for future IHR Summer Schools.

## 2. Annual report on other activities requested

**Should WHO have requested activities in addition to the agreed workplan, please describe related actions taken by your institution [maximum 200 words]. Please do not include in this report any activity done by your institution that was not requested by and agreed with WHO.**

## 3. Resources

**Indicate staff time spent on the implementation of activities agreed with WHO (i.e. those mentioned in questions no. 1 and no. 2 above). Do not include any data related to other activities done by your institution without the agreement of WHO. Please indicate staff time using the number of "full-day equivalents" – a day of work comprising 8 hours (e.g. 4 hours work per day for 7 days should be recorded as 3.5 full-day equivalents).**

**Number of staff involved (either partially or fully)**

Senior staff	Mid-career staff	Junior staff, PhD students
28	11	3

**Number of full-day equivalents, total for all staff involved**

Senior staff	Mid-career staff	Junior staff, PhD students
1226	867	82

Implementation of the agreed workplan activities (i.e. those mentioned in questions no. 1 and no. 2 above) normally require resources beyond staff-time, such as the use of laboratory facilities, purchasing of materials, travel, etc. Please estimate the costs of these other resources as a percentage of the total costs incurred (e.g. if you incurred costs of USD 100 and the value of your staff time was USD 50 which makes the total of USD 150, please report 33.3% and 66.7%).

Percentage of costs associated with staff time	Percentage of costs associated with other resources	Total
82.00	18.00	100.00

#### 4. Networking

**Describe any interactions or collaboration with other WHO Collaborating Centres in the context of the implementation of the agreed activities. If you are part of a network of WHO Collaborating Centres, please also mention the name of the network and describe your involvement in that network [maximum 200 words].**

On 15 March 2019, the World Health Organization has designated the Information Centre for International Health Protection (INIG, ZIG1) at the Robert Koch Institute as a WHO Collaborating Centre for Global Outbreak Alert and Response – GOARN. The WHOcc for Emerging Infections and Biological Threats collaborates with GOARN in outbreak response.

- In December 2017, RKI led the preparation of a review on Yellow Fever diagnostics, amongst others in cooperation with Erasmus University Hospital Rotterdam (WHO CC for Arbovirus and Haemorrhagic Fever Reference and Research) and BNITM (WHO CC for Arbovirus and Haemorrhagic Fever Reference and Research; see also Activity 23421). Additionally, RKI organized together with Erasmus University Hospital Rotterdam an external proficiency testing activity on Yellow Fever molecular diagnostics for the EVD-LabNet Network.
- In June 2018, together with colleagues from GIZ (WHO CC for Health System Strengthening) and the BNITM, RKI staff supported development of EVD diagnostics and preparedness in the Republic of the Congo.
- Following joint planning and preparation, in June 2019 in cooperation with GIZ (WHO CC for Health System Strengthening) and colleague in Tunisia, RKI implemented and evaluated a context-adjusted simulation exercise to test national crisis management and communication as well as intersectoral collaboration in Tunisia (see also activity 23430).
- In the framework of AMR, RKI participated at the meeting of the WHO AMR Surveillance and Quality Assessment Collaborating Centres Network on 17-19 February 2019 in Egypt, including a back-to-back meeting with other WHO CC on Surveillance of Antimicrobial Resistance and Healthcare Associated Infections (see also Activities 23424 and 23429). In addition in February 2019, an AMR training workshop was held on the national implementation of AMR surveillance in Nigeria. This was jointly coordinated by the WHO CC Network and lead by the WHO CC in South Africa, RKI and WHO HQ.