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Strengthened International HeAlth Regulations & Preparedness in the EU

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Mapping of existing facilities for high-consequence infectious diseases and assessment of high level isolation units

Work Package 10 – Deliverable 10.1

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Summary

A case or an outbreak of a high consequence infectious disease, as Ebola Virus Disease (EVD) for example, in Europe demands a public health response that includes adequate isolation and clinical management of the patient(s).

Experience from providers of health care for patients with EVD in Europe and the United States in 2014–2016 demonstrated the utility of shared expertise and adequate facilities to take care of patients. This need has been reinforced during subsequent infectious disease outbreaks of international concern.

The main objectives of tasks 10.1 and 10.2 were to identify and document the locations, infrastructure, and capabilities of facilities that are relevant to preparedness of the EU member states against biological events such as outbreaks of Ebola or Marburg Virus disease. Task 10.1 aims to map existing facilities. Task 10.2 focuses on technical assessment of the identified facilities with regards to clinical capacity for high-level isolation and treatment of patients, with the aim of identifying potential areas for improvement. This report presents and discusses the objectives, methods, and results of these tasks.

We designed a survey that was disseminated to EU member states. This aimed to identify facilities that were prepared to manage patients with high consequence infectious diseases (HCIDs). We obtained responses from 16 countries, and identified 47 facilities, with a total number of at least 191 beds available. Intensive care can be provided in almost all of them. Capacity for paediatric care is less common, in fact, high-level isolation care would frequently not be available to paediatric and obstetric patients. Organization of care for HCID patients differs from one country to another. It was found that more human resources were required to guarantee adequate care, and that training activities need to be intensified in the preparation for high-level isolation care. It needs to be stressed that the access to medication for many highly pathogenic infections that the participating centres would treat, some of which may be unlicensed

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in the EU for some diseases, is generally reported to need improvement.

We recommend that

1. Every country should have a plan for identifying and isolating patients with suspected HCIDs
2. Every country should have at least one dedicated facility for treatment of patients with HCIDs
3. Collaboration across EU member states should be reinforced By sharing protocols, improving a joint procurement of medication for rare diseases and introducing collaborative approaches to facilitate training activities and diagnostic and therapeutic standards to common level.

Background

SHARP Joint Action is an EU-funded project that aims to strengthen international health regulations and preparedness in Europe.

The International Health Regulations provide an overarching legal framework that defines the countries' rights and obligations in handling public health events and emergencies that have the potential to cross borders. Even a single case of a high consequence infectious disease in Europe could constitute an event that requires apublic health response.

There is not a universally accepted definition for high consequences infection diseases. In the UK, a high consequence infectious disease (HCID) is defined according to the following criteria:

- Acute infectious disease

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- Typically has a high case-fatality rate
- May not have effective prophylaxis or treatment
- Often difficult to recognise and detect rapidly
- Ability to spread in the community and within healthcare settings
- Requires an enhanced individual, population, and system response to ensure it ismanaged effectively, efficiently, and safely

Capacity for appropriate isolation and treatment of affected persons are important both from public health, patient care, and infection prevention and control (IPC) perspectives. In this context, high-level isolation units (HLIUs) have an important role to play.

The European Network for Highly Infectious Diseases (EuroNHID) was a European Union-funded project (July 2007–December 2010). The aims of EuroNHID were to develop evidence-based checklists to assess hospital capabilities on infection control and healthcare workers safety in a network of centres involved in the management of patients affected by highly infectious diseases (HIDs). Also, EuroNHID aimed to support isolation facilities and provide appropriate infection control advice for isolation centres responsible for managing cases of emerging, re-emerging, or deliberately released HID agents. Later, the ECDC has issued checklists for Health emergency preparedness for imported cases of high-consequence infectious diseases that include designated treatment facilities for HCID case(s), i.e., HLIUs.

During 2014–2016, there were multiple importations of patients with Ebola virus disease (EVD) from the outbreak in West Africa to Europe and the USA. Some patients were medically evacuated, whereas others developed symptoms and sought healthcare only after arrival at their destinations. Management of these patients proved challenging both for clinicians and IPC personnel, as few health care workers in the receiving hospitals had prior experience with this disease.

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Even in Europe and the US, there were cases of nosocomial transmission among health care personnel involved in the care of Ebola patients. Improved preparedness, IPC procedures, and capacity for management of these patients were addressed in several international meetings.

According to the IHR core capacity requirement for surveillance and response, the State Parties are obliged to "establish, operate and maintain a national public health emergency response plan, including the creation of multidisciplinary/multi-sectoral teams to respond to events that may constitute a public health emergency of international concern". Clinical networks of experts in the management of HCIDs could have an important part to play in these national plans — that could be enhanced by contact with peers in an international clinical network, as had happen previously in 2014-2016 EVD outbreak, COVID-19, hepatitis of unknown aetiology in children and monkeypox, led by WHO Headquarters.

SHARP Joint Action WP 10 addresses case management and infection prevention and control preparedness for high consequence infectious diseases. The objective of this WP is to improve clinical and biorisk management, hospital preparedness and response to high-consequence infectious diseases (HCIDs). It aims to strengthen IHR, through the enhancement of preparedness and response within Europe to possible cross-border health threats due to the HCIDs, and to assure co-operation, communication, and exchange of information among clinicians and public health officers.

WP 10 has four tasks:

1. Mapping of existing facilities for HCIDs
2. Assessment of country hospital preparedness and capacity for HCIDs, including high-level isolation centres
3. Feasibility study for an expert clinical support service for HCIDs
4. Application of a "syndrome based" approach for prompt and early clinical management of HCIDs

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We here present SHARP Joint Action WP 10 Deliverable 10.1 – "Report on existing facilities for HCID" as result of Task 10.1 " Mapping of existing facilities" and Task 10.2 "Assessment of country hospital preparedness and capacity for HCID, including high isolation clinical units"

The main target groups for this document are European:

1. Public health professionals
2. Infectious disease experts
3. Decision makers at the EU and national level

Aims and scope

Task 10.1

The main objective of this task is to identify and document the locations of facilities that are relevant to isolate and treat patients with HCIDs.

To perform the task, the following activities were designed and conducted as part of Task 10.1:

1. Conduct A pragmatic review of previous studies on HLIUs in Europe
2. Identification of existing HLIUs by development of a web-based questionnaire on the EUSurvey platform for dissemination to member states and public health authorities. To avoid confusion in relation to the term HCID in the survey, we made use of a clinical vignette describing a fictitious patient with Ebola virus disease, i.e. a typical case that would require care in a HLIU
3. Analysis of the collected data to identify gaps, strengths, and areas for improvement.

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The scope of Task 10.1 includes all European Union member states and other European Economic Area members. The expected outcome of Task 10.1 is to provide a comprehensive understanding of the existing facilities and the capabilities of HLIUs, enabling effective preparedness and response to the challenge of treating patients with HCIDs.

Task 10.2

The main objective of task 10.2 was to provide the centres identified by task 1 with a tool to evaluate their capacities and define areas for advancing these. An electronic follow up by self-assessment questionnaire was developed and dispatched to the centres identified in task 10.1 as being the ones to potentially treat HCID patients. The assessment has also explored the availability of a specific chapter in the preparedness plans on case management of Ebola virus disease, including physical, procedural and clinical capabilities (personal protective equipment, occupational issues such as vaccination, infection control, and training). The assessment serves to assess the level of implementation of the recommendations previously released, e.g. by European Network for Infectious Diseases (EUNID)[1] and European Network for Highly Infectious Diseases (EuroNHID)[2], and to identify areas for advancement.

The following activities were conducted in the framework of task 10.2:

- In two workshops, the existing data mentioned above were reviewed and international experts were gathered to define categories for evaluation, individual items to be assessed, and the strategy for accumulating the information
- The defined criteria for evaluation were put into a questionnaire which was peer-

[1] Thiberville SD, Schilling S, De Iaco G, Fusco FM, Thomson G, Maltezou HC, Gottschalk R, Brodt RH, Bannister B, Puro V, Ippolito G, Brouqui P; EuroNHID Working Group. Diagnostic issues and capabilities in 48 isolation facilities in 16 European countries: data from EuroNHID surveys. BMC Res Notes. 2012 Sep 25;5:527

[2] Fusco FM, Schilling S, Puro V, Brodt HR, Follin P, Jarhall B, Bannister B, Maltezou HC, Thomson G, Brouqui P, Ippolito G; EuroNHID Study Group. EuroNHID checklists for the assessment of high-level isolation units and referral centres for highly infectious diseases: results from the pilot phase of a European survey. Clin Microbiol Infect. 2009 Aug;15(8):711-9

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reviewed

- Dissemination of the questionnaire on the EUSurvey website with a dedicated weblink
- Active invitation of the centres identified by task 10.1 to participate in the survey

Methods

Data Collection

The methodology employed for this task involved the distribution of a web-based questionnaire available between February and August 2023 to all 26 participant countries:

Austria, Bosnia and Herzegovina, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Moldova (Republic of), Netherlands, Norway, Poland, Portugal, Serbia, Slovenia, Spain, Sweden and United Kingdom. SHARP Joint Action WP 10 partners met and exchanged views and information in several digital meetings and two workshops as well as by e-mail to develop the task.

Key data points for task 1 included:

- Ebola and other HCID´s Response Plans: Details regarding the existing plan of action for managing patients with HCID, including identification and isolation procedures, and location.
- Isolation centre locations: Identification of the specific isolation centres or facilities designated for HCID patient isolation. This included the geographical location of these centres.
- Capacity assessment: An evaluation of the number of isolation beds available in these centres,
- Critical care and paediatric capabilities: Information on whether the identified isolation centres were capable of providing critical care and paediatric care, including the availability of specialized equipment and trained personnel.

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Key data points for task 2 included a number of individual items (N=262) grouped as follows:

- Design, material, and technical information: Capacities and surge capacities: number of patients that can be treated in non-ICU and ICU level including the availability of a plan or surge capacity and a back-up solution for units having to close down, ventilation systems, patient and staffpathways, disinfection procedures, fire safety, communication
- Equipment with laboratory capabilities and procedures
- Physical security, access management
- Stockpiling and supply chain: management of supplies, including PPE and its shelf-life, usage of PPE once activated
- Infection control: donning, doffing, spillage of biological material, sharps management, HCW monitoring, cleaning, disinfection, and patient transport
- Waste management: solid and liquid waste, autoclave availability, incineration, waste transport
- Post-mortem management: handling of the deceased, possibilities for autopsies and / or necropsies, transport of the deceased
- Staff and training: trainings structure, framework and temporal requirement, availability of treatment and care according to training of staff
- Mental health: psychological support for patients, relatives and HCWs and assessment of fears and concerns
- Emergency management: provider-down procedures (acute medical emergencies with HCW inside an HLIU) , management of the exposed and PEP
- Clinical care: level of critical care, diagnostic capabilities, guidelines, access to medication, peer-support and expert consultation, and available medical specialties

Survey Instrument

The survey questionnaires were designed to gather information regarding the status and capabilities of HLIU and high isolation clinical centres within European Economic Area

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member countries. It included a series of structured questions covering various aspects of these units. The EUSurvey platform was used for data collection.

Full questionnaire in Annex 2.

Data Analysis

The data obtained from the survey responses were analyzed to identify trends, common practices, and areas of potential concern. We assessed the responses with an awareness of the potential for response bias, which may lead to an overestimation of capabilities.

Results and discussion

Here we report the results and discussion of the above-mentioned tasks. Responses were received from 16 European countries out to 26 participant countries regarding facilities where HCID patients will be attended. In total, 47 HLIU were identified, with a total number of at least 191 beds available. The number of centres is consistent with previously reported data (BMC Res Notes. 2012 Sep 25;5:527. doi: 10.1186/1756-0500-5-527). Although data availability on critical care and paediatrics varies and are not always reported, it was determined that a significant percentage of these units are equipped to provide critical care and paediatric services. This reflects a robust preparedness to manage a wide range of clinical scenarios in the context of HCID, according to available infrastructures in countries that answered the survey.

The following table shows a summary of facilities identified.

Summary of self-reported data from EU countries about centres and capabilities for HCID

	HLUI/beds	**ICU/PED**
Austria	1/7	Yes/No
Estonia	2/NP	Yes/No
Finland	1/NP	NP/NP
France	5/NP	Yes/Yes

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Germany	7/55	Yes/Yes
Greece	2/NP	NP/Yes
Ireland	1/2	No/No
Italy	2/33	Yes/Yes
Lithuania	5/41	Yes/Yes
Malta	1/2	Yes/Yes
Norway	1/4	Yes/Yes
Portugal	3/10	Yes/Yes
Slovenia	1/2	Yes/Yes
Spain	7/17	Yes/NP
Sweden	2/4	Yes/NP
United Kingdom	4/12	Yes/Yes

HLUI: High Level Isolation Unit; ICU: Intensive Care provided at HLUI; PED: pediatric care provided at HLUI; NP: Data not provided

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It is important to acknowledge that our methodology had several limitations as:

- Response bias: The survey relies on self-reporting, which can introduce a bias as respondents may exaggerate or downplay their capabilities.
- Response rate: The response rate was below 50%, which may limit the representativeness of the data.
- Data accuracy: The accuracy of the information provided by respondents may vary, and we were unable to independently verify the reported data.
- Despite these limitations, the survey results provide valuable insights into the state of high-level isolation units in Europe.

Given that the surveys relies on self-reporting, it is important to acknowledge the potential for response bias, where respondents may be inclined to overstate their capabilities and those not responding not having any plan for HCID on place.

In the next steps, the centres named above were contacted and asked to fill in an extensive self-evaluation questionnaire as described in the methods section. It must be mentioned that amongst the 47 centres contacted, only eight had responded and provided a dataset at the time that this report was written. However, this must be put into perspective by a similar checklist that was applied to HLIUs in 2009 through the EUNID network, where five centres in Germany, France, Italy, the UK and Sweden were evaluated. The responses in this survey were from centres in Germany (n=3), Ireland, Norway, Sweden (n=2) and the UK.
The full dataset for the results could be requested from: timo.wolf@kgu.de or francesco.vairo@inmi.it.

The main outcomes are described here:

Capacity and surge capacity:
The capacity for the treatment of HLIU patients was 2–8 patients with a median of four patients. However, when it comes to ICU level treatment, only 1–3 patients could be

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treated, and one centre does not have capabilities for ICU level care at the moment. Three out of the eight centres stated that there was neither a general plan, nor specific planning for enough human resources for surge capacity for larger outbreaks, whereas the other five centres responded that they had a plan for physical infrastructure and staffing. Two centres said that this plan included the extra availability of PPE, ventilators, and waste management infrastructure. Only one centre said that they would be able to engage additional staff beyond the plan of their own institution, and this would occur by exchange with other HLIUs in different regions that are not activated. The centres univocally mentioned that the availability of staff, and the capacity to train and educate them, would be the main hindrance to developing larger surge capacities. Two centres reported that the physical infrastructure would need improvement and one centre added that the creation of surge capacities would only be possible by reducing regular, non-HLIU care capacities for compensation.

Six units had a back-up plan with other units for downtimes, and all eight would use their facilities for other case management when not activated.

Design, material, and technical aspects

Seven units use a negative pressure gradient system with airtight locks while one centre used a tent-solution. On a Likert scale of 1 to 5, with 5 being ideal, the function of the barrier methods was rated between 3 and 5 with a median of 4. Problems mentioned were frequent malfunctions.

All but one HLIUs had separate donning/doffing areas with clear circular pathways available, two stated that improvements in doffing areas are needed (incl. the one centre that did not have separation).

Fire safety and evacuation facilities were generally rated to be sufficient, but two units required improvements in the physical infrastructure to guarantee optimal safety.

HEPA filtering was available and deemed to be functional throughout, one centre however favoured improvement on exhaust air filtering.

Whereas communication systems from red to clean zone was available everywhere, two centres could not provide direct visibility into the red zone, which was evaluated as being a major problem.

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Diagnostic equipment and laboratory

All centres had point of care tests (POCT capabilities) available. The diagnostic tests and methods that can be performed are as follows below (a more detailed table can be found in Annex 1):

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	Yes	No	Data not provided
MRDT	6	2	1
Dengue RDT	4	4	1
POCT Biochemistry	7	1	1
POCT blood count	7	1	1
Clotting test	8	1	-
Microb. culture	7	1	1
Microscopy	6	2	1
Conventional radiography	7	1	1
Ultrasound	7	1	1
Cross-sectional radiography	3	3	
Endoscopy	7	1	1
Minor surgery	7	1	1
POCT-PCR (respiratory)	6	2	1
POCT-PCR (TB)	3	3	3

Stockpiling and supply chains

All centres had a system available for monitoring the supplies, mostly by an appointed coordinator. Whereas most centres stated that it is hard to estimate the PPE usage in pieces per treatment day, the estimate was between 15 and 30 per day. Given this, it was deemed difficult to estimate the treatment periods the supplies would last for, but the estimates given were between 4 and 28 days.

Donning and doffing protocols existed in all of the HLIUs and were rated between 4 and 5 on a Likert scale of 5, so protocols were generally expected to work well.

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Infection Prevention and Control

All centres had active and working protocols for glove/hand hygiene and sharps management, including the use of specificequipment to prevent sharps injuries. All centres also provided information on precisely which materials are used. However, only seven of nine HLIUs had active protocols to manage spills. The kinds of PPE used in the centres is as follows:

	PAPR/ventilated suits	N95/FFP3 standard mask with coverall	others
London, UK	Yes	No	Yes
Italy, Rome	Yes	Yes	Yes
Düsseldorf, Germany	Yes	Data not provided	Data not provided
Stuttgart, Germany	Yes	Data no provided	Data not provided
Dublin, Ireland	No	Yes	Yes
Linkoping, Sweden	Yes	Yes	No
Stockholm, Sweden	Yes	Yes	Data not provided
Oslo, Norway	Yes	Yes	Data no provided
Frankfurt, Germany	Yes	Yes	Data not provided

Five centres are still having reusable items as part of their equipment.

Concerning donning and doffing of PPE, there was a high agreement among all centres on the use of specific protocols. All used observed procedures and most of them a buddy system when inside the unit (8/9). Furthermore, seven centres mentioned that they had specific protocols available for the rescue of staff in case of accidents, the functionability of the protocols was estimated between 2 and 5 on a 5-point Likert scale (median 4). Three HLIUs however stated that they think that more staff and more intensive trainings would be helpful in improving procedures.

There were specified protocols on cleaning and disinfection procedures at most centres. However, protocols that still need to be developed in some are:

- ensuring that surfaces that are most likely to be contaminated with pathogens and surfaces that are in close proximity to the patient are prioritized for cleaning

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and disinfection

- ensuring environmental services staff are trained in routine cleaning, disinfection of environmental surfaces, and the use of PPE
- ensuring all infection control personnel are trained in infection control with verified qualifications
- having policies and procedures implemented for cleaning and disinfection of environmental surfaces as part of the hospital's infection prevention program
- having a system to assess staff periodically to ensure cleaning procedures are consistent and correct
- having a competency-based training program for environmental cleaning
- having a system to monitor and improve staff compliance with infection control policies and procedures

The availability of specific protocols on cleaning inside units, patient transport and airborne precautions were specified by the centres.

Concerning the availability of post-exposure prophylaxis (PEP) protocols, these were only available in specific forms in five centres.

Concerning waste management, all centres had procedures in place for the management of solid and liquid waste. Autoclaves were available in five centres only, and one of the fifth had only one autoclave, i.e. there was no redundancy. According to the experience of two centres, more space for storage of waste on the dirty and clean side of the autoclaves would be helpful-

A need for improvement among most centres existed in the handling of the deceased. Seven centres had specific procedures on the handling of the deceased, while two lacked those. However, only three centres had dedicated room for storage of dead bodies. There was a general need expressed that more space and cameras for direct monitoring to rooms for the deceased were necessary to enable autopsies also make it possible for relatives to see the deceased if they wish. Only three facilities had BSL 3 autopsy rooms available, and none were on site of the HLIU. Furthermore, protocols for autopsies and biopsies were not commonly available, and these procedures were possible only in a minority of centres.

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Staff and training

All centres offered training in 80% of the following categories: Rostered staff training, personnel training, just-in-time Training, exercises, staffing and occupational health. Major exercises with partners outside the unit (e.g. airports, external laboratories etc.) and complex simulation drills were considered desirable but not instituted at two centres. Upon the question "How well would you say that the trainings work overall?" (Likert scale 1-5), responses ranged from 3 to 5, with a median of 4, indicating a satisfactory to good self-evaluation of the quality of the trainings.

Six centres, however, stated they would need support, in the sense of more staff and more time / a higher number of exercises, to make improvements on the trainings.

50% of the centres had staff available 24/7 and could define the staff/patient ratio, the general need of staff for a typical treatment day, and the total number of staff. Four centres could also define this for ICU level care.

Treatment and care

Care services as provided by the HLIUs survey respondents:

	Adult care	Labour and delivery	Paediatric care	Neonatal care
London, UK	Yes	Yes	No	No
Rome, Italy	Yes	Yes	Yes	Yes
Düsseldorf, Germany	Yes	Data not provided	Yes	Data not provided
Stuttgart, Germany	Yes	Yes	No	No
Dublin, Ireland	Yes	No	No	No
Linkoping, Sweden	Yes	No	No	No
Stockholm, Sweden	Yes	No	No	Data not provided
Oslo, Norway	Yes	Yes	Yes	Yes
Frankfurt, Germany	Yes	No	Yes	Yes

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All but one centre would be capable of delivering ventilation and renal replacement therapy, but none was prepared to offer ECMO

Only a minority of the centres are prepared to care for labor, delivery, paediatric, and neonatal cases. One centre mentioned that it aims to provide these services by remote medicine.

Contact with relatives as part of the care provided is possible in all centres, although areas of improvement by better communication devices and direct visibility were identified.

Psychological services are widely available in the centres, but in two of them, it would not be a possibility to directly respond to an event occurring during isolation treatment. Also, in four centres, these services are not available for HCW families. The psychological services were rated very diversely from 2 to 5 on a Likert scale of 5, but three centres have not provided data. However, several methods of communication with HCWs to address fears and concerns have been applied in centres.

All but one centre had specified provider-down protocols, and all would be capable of caring for exposed staff within their institution. Six centres regularly train on these situations. As a means of mitigating potential harm, seven centres offer vaccinations to their HLIU staff. However, two centres stated that they do not have access to PEP medication available for all bisosafety level 4 diseases treated. Six out of nine centres did not have access to treatments for the three diagnoses Ebola Virus Disease, Lassa fever and Crimean Congo Haemorrhagic fevers, nor do they have a reliable way to obtain these drugs in proper time. This is particularly noteworthy as monoclonal antibodies against Ebola virus disease are licensed only by the FDA. Two centres also mentioned that they experience difficulties in the availability of ribavirin i.v.

All HLIUs had access to expert consultation through various networks.

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Conclusion and recommendations

Based on previous experience with Ebola virus disease and other public health events of international concern, there is a need for preparedness, and dedicated hospital infrastructures to respond.

This study provides a comprehensive overview of high-level isolation units across EU, shedding light on their distribution, capacities, and specialized care capabilities. When comparing this survey to those done earlier as part of the EUNID network, there are signs of progress in recent years. Despite the fact that the centres that responded to the self-evaluation questionnaire generally showed an advanced level of development and good self-evaluated functionality, there were several areas defined, that would warrant attention to improve HLIU care:

The services provided are not generally available for paediatric patients and pregnant women.

There seems to be a general need for more adequate staffing and time for training.

It is a very important observation, that the access to medication for biosafety level 4 diseases is difficult in many centres

The formation of surge capacities and some improvements on the physical infrastructure and laboratory capabilities were also mentioned as areas of improvement. These areas were defined by the centres, and included reliable availability of autoclaves, a satisfactory level of RDT and POCT testing, and enough space for safe waste storage.

Potential room for improvement was also seen in the handling of the deceased. The data collected underscores the significance of preparedness efforts in the European region, with a substantial number of HLIUs equipped to handle critical care and paediatric cases. This information is vital for public health authorities and policymakers as it not only demonstrates Europe's readiness to respond to high-risk infectious disease events but also highlights areas where further investments and collaboration may be needed. In an era of global health threats, this study serves as a valuable resource for enhancing Europe's resilience and capacity to effectively manage and contain outbreaks.

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ANNEX 1. Survey of self-reported diagnostic capabilities

	London, UK	Rome, Italy	Düsseldorf, Germany	Stuttgart, Germany	Dublin, Ireland	Linkoping, Sweden	Stockholm, Sweden	Oslo, Norway	Frankfurt, Germany
MRDT	Yes	Yes	Data not provided	Yes	No	No	Yes	Yes	Yes
Dengue RDT	No	Yes	Data not provided	Yes	No	No	No	Yes	Yes
POCT Biochemistry	Yes	Yes	Data not provided	Yes	No	Yes	Yes	Yes	Yes
POCT blood count	Yes	Yes	Yes	Yes	No	Yes	Yes	Data not provided	Yes
Clotting test	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Microb. culture	Yes	Yes	Data not provided	Yes	No	Yes	Yes	Yes	Yes
Microscopy	Yes	Yes	Data not provided	Yes	No	Yes	No	Yes	Yes
Conventional radiography	Yes	Yes	Data not provided	Yes	No	Yes	Yes	Yes	Yes

Ultrasound	Yes	Yes	Data not provided	Yes	No	Yes	Yes	Yes	Yes
Cross-sectional radiography	Yes	Yes	Data not provided	No	No	Yes	Data not provided	Data not provided	No
Endoscopy	Yes	Yes	Data not provided	Yes	No	Yes	Yes	Yes	Yes
Minor surgery	Yes	Yes	Data not provided	Yes	No	Yes	Yes	Yes	Yes
POCT-PCR (respiratory)	Yes	Yes	Yes	No	No	Yes	Yes	Not given	Yes
POCT-PCR (TB)	Yes	Yes	Not given	No	No	Yes	Not given	Not given	No

ANNEX 2. Survey questionnaire for self- assessment

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Strengthened International Health Regulations & Preparedness in the EU (SHARP Joint Action)

Assessment of country hospital preparedness and capacity for HCID, including high isolation clinical centers. Based on the mapping of existing facilities from WP 10.1, this electronic follow-up by self-assessment questionnaire is to be filled out by each MS and JA partners.

Data Protection

Consent is required to process your data in line with Regulation (EC) N°45/2001, of the European Parliament and of the Council of 18 December 2000 on the protection of individuals with regard to the processing of personal data by the Community institutions and bodies and on the free movement of such data.

☐ I agree and give explicit consent to the processing of my personal information included on this form, according to the above statement

Background information

* Full Name

* Professional title

* Affiliation

* Name of facility

* Contact information (email)

* Country

Design, Material, Technical information

Capacity and Surge Capacity

* 1. What is the maximum patient capacity of your facility?

* 2. How many ICU-level patients does this include?

* 3. How many regular care-level patients does this include?

* 4. Does your facility have a surge capacity plan?

- Yes
- No

* 10. Does your facility have a surge capacity plan for staff?

- Yes
- No

* 16. Is there a back-up solution for if your unit needs to be temporarily closed (i.e., an arrangement with another unit to cover)?

- Yes
- No

* 18. Is your facility used only for HCID management or is it used daily for other case management as well?

- Only HCID management
- Other case management as well

Definition of Provision of Care up to ICU Standards

19. Do you have national legislation on the provision of care up to ICU standards?

- Yes
- No

Size of Cubicles

21. Please define the size of a normal cubicle at your facility

AIRTIGHT LOCKS

22. Does your facility have controlled pressure air locks?

- Yes
- No

25. How well would you say that the barrier methods work overall?

26. What improvements could be made / how would you like to have support?

STAND-ALONE FACILITY

27. Is your facility a stand-alone or is there another separate hospital not far away?

- It is a stand-alone
- There is another separate hospital

DISINFECTION OF SURFACES AND WALLS

29. Are there specific procedures/written protocols for routine hygiene of walls and surfaces?

- Yes
- No

33. How well would you say that the hygiene protocols work overall?

34. What improvements could be made / how would you like to have support?

CIRCULAR PATHWAY / ONE-WAY PATHWAY / COLOR CODED

35. Does your facility have clearly separated donning / doffing areas?

- Yes
- No

36. Is there a clear one-way pathway set out for HCW in PPE to move through the treatment area?

- Yes
- No

37. How would you rate the risk of contact from contaminated to non-contaminated staff?

38. How clearly is the pathway visible to staff by using visual cues / color codes?

39. Is there a need for structural improvement to guarantee a one-way pathway?

- Yes
- No

41. Has your facility defined a protocol of safe pathway for evacuation? (Does the down protocol include this issue?)

42. Has your facility assessed a protocol for a security pathway in case of environmental contamination? (Does the down protocol include this issue?)

HEPA FILTERING

43. Does your facility have HEPA filtration?

- Yes
- No

45. How well would you say that the HEPA filtration works overall?

46. What improvements could be made / how would you like to have support?

AUTOMATED BEDPAN DISINFECTOR PRESENT

47. Does your facility have automated bedpan disinfectors present? If yes, please specify how many:

FIRE SYSTEM

48. What type of fire systems are in place at your facility?

49. How well would you say that the fire systems work overall?

50. What improvements could be made / how would you like to have support?

HANDS-FREE COMMUNICATION SYSTEM

51. Does your facility have a hands-free communication system?

- Yes
- No

53. What improvements could be made / how would you like to have support?

WINDOW / OUTSIDE COMMUNICATION FOR PATIENTS

54. What opportunities do patients have for outside communication?

55. Is there direct visibility from a non-contaminated service station into the patient treatment area?

- Yes
- No

Medical Equipment

AVAILABILITY OF POINT OF CONTACT (POCT) LABORATORIES

56. Is a point of contact (POCT) laboratory available at your facility?

- Yes
- No

58. What improvements could be made / how would you like to have support?

59. How well would you say that the POCT laboratory works overall (Likert scale 1-5)?

MOVING LABORATORY SAMPLES

60. Are there processes in place for obtaining clinical samples from a suspect case? Please describe.

61. How well would you say that this process works overall (Likert scale 1-5)?

62. What improvements could be made / how would you like to have support?

63. Are there processes in place to ensure that transport of clinical samples are in suitably sealed containers to internal or external laboratories for confirmatory analysis? Please describe.

64. How well would you say that this process works overall (Likert scale 1-5)?

65. What improvements could be made / how would you like to have support?

66. Are there processes in place to ensure the secure storage of samples? Please describe.

67. How well would you say that this process works overall (Likert scale 1-5)?

68. What improvements could be made / how would you like to have support?

DIAGNOSTIC CAPABILITIES

69. Can the following diagnostic tests be performed within the unit?

	Yes	No
MRDT		
Dengue RDT		
POCT Biochemistry		
POCT blood count		
Clotting test		
Microbiological cultures		
Microscopy		
Conventional radiography		
Ultrasound		
Cross-sectional radiography		
Endoscopy		
Minor surgery		
Respiratory filmarray panel		
Rapid Molecular Tuberculosis Test		

70. If the following tests are able to be performed (POCT Biochemistry, POCT blood count, clotting test, conventional radiography, ultrasound, or endoscopy), please specify which systems you use.

Physical Security, Access Management

ACCESS CONTROLLED

71. Is your facility access controlled?

- Yes
- No

73. How well would you say that the access management works overall (Likert scale 1-5)?

74. What improvements could be made / how would you like to have support?

Stockpiling & Supply Chain

SYSTEM TO MONITOR THE STOCKPILE OF YOUR PPE

75. Is there a system in place to monitor the stockpile of your PPE? If so, please describe.

76. Is there a person responsible for monitoring the stockpiled PPE?

- Yes
- No

77. How well would you say that this system works overall (Likert scale 1-5)?

78. What improvements could be made / how would you like to have support?

HOW MANY PIECES OF PPE USED PER DAY?

79. How many pieces of PPE are used during an average day?

80. Is there a sufficient amount of PPE?

HOW MANY DAYS DO YOU HAVE SUPPLIES FOR?

81. How many days could your facility go without restocking supplies?

82. How many days do you have supplies for?

SHELF LIFE OF YOUR PPE

83. What is the estimated shelf life of your PPE?

84. Is there a person responsible for monitoring the expiration dates of used/stockpiled PPE?

- Yes
- No

Infection Control

DONNING AND DOFFING PROTOCOLS PRESENT

85. Are there specific protocols present for the donning and doffing of protective equipment?

86. How well would you say that this protocol works overall (Likert scale 1-5)?

87. What improvements could be made / how would you like to have support?

HANDLING SHARP MATERIALS PROTOCOLS

88. Are there specific protocols present for the handling of sharp materials?

89. How well would you say that this protocol works overall (Likert scale 1-5)?

90. What improvements could be made / how would you like to have support?

SPLASH AND SPILL PROTOCOLS

91. Are there specific protocols present for the handling of splashes and spills?

92. How well would you say that this protocol works overall (Likert scale 1-5)?

93. What improvements could be made / how would you like to have support?

HAND AND GLOVE HYGIENE PROTOCOLS

94. Are there specific protocols present for hand and glove hygiene?

95. How well would you say that this protocol works overall (Likert scale 1-5)?

96. What improvements could be made / how would you like to have support?

97. Are there any strategies for the promotion of the correct hand hygiene practices among HCWs such as leaflets, posters, on-site exercises? Please describe

98. Do you have a specific emergency procedures in the case of gloves becoming damaged during use? Please describe

PREVENTION OF NEEDLE-STICK INJURIES

99. Are there any written protocols / official guidelines for the prevention of needle-stick injuries?

- ○ Yes
- ○ No

100. If yes, are these protocols/guidelines adopted from national or international guidelines?

101. Are these protocols/guidelines specifically developed in the facility?

102. Is there any recording system for reported needlestick accidents?

DEVICES USED FOR PREVENTION OF NEEDLE-STICK INJURIES

103. Do you use specific devices for the prevention of needle-stick injuries? If yes, please select those used in your facility

- ☐ Hypodermic needles and syringes (sliding sheath / sleeve; needle guards)
- ☐ Needleless jet injection systems
- ☐ Retractable needles / syringes
- ☐ Pre-filled syringes
- ☐ Needleless IV access – blunted cannulas
- ☐ Prefilled medication cartridge with safety needles
- ☐ Shielded or retracting peripheral IV catheters
- ☐ Central venous catheter kit with integral needle protection
- ☐ Peripherally inserted central catheter kit with integral needle protection
- ☐ Epidural / spinal needles with safety epidural needle
- ☐ Arterial blood gas syringes
- ☐ Safety engineered blood collection needles
- ☐ Safety engineered blood collection needles with tube holders
- ☐ Winged steel needle (butterfly) blood collection sets

104. Are there other devices used for the prevention of needle-stick injuries? Please describe

HCW MONITORING OFF-WORK (TEMPERATURE CHECKS, MEDICAL AND PSYCHOLOGICAL SUPPORT)

105. Does your facility have a protocol for monitoring HCW off work?

- ○ Yes
- ○ No

PPE: LOCAL REGULATIONS FOR TYPE OF PPE PRESENT

110. At your institution, is the choice of PPE regulated by any authority depending on the class of disease?

- Yes
- No

WHAT KIND PPE IS BEING USED / FOR WHICH INDICATIONS

111. What kind of PPE is being used:

	Yes	No
Ventilated suits / PAPR system		
N95/FFP3 standard with coverall		
Other		

DONNING / DOFFING ALWAYS ASSISTED AND HOW?

113. Are there specific processes in place to ensure PPE donning and doffing is directly observed and checked by another trained personnel/spotter?

114. Are there specific protocols present to ensure that appropriate additional PPE (e.g., gloves, gowns) is available to provide adequate protection?

115. Is there appropriate signage present instructing and informing people on PPE donning and removal? If so, where are they displayed?

- entrance
- infected case room
- other, please specify:

116. Are there specific protocols regarding:

	Yes	No
wearing gloves when anticipating exposure to bodily fluids of suspect/infected case		
discarding gloves after completion of task		
fit-testing HCPs with N95 mask or its equivalent		
seal checking N95 mask or respirator is performed each time to check leakage around the face piece		

having the required masks available in a variety of sizes		
ensuring that masks, eye protection and face shields are used when anticipating a procedure that is likely to generate splashes or sprays of bodily fluids		
ensuring that masks, eye protection and face shields are used when anticipating a procedure that is to be performed within 1.5m of a coughing suspect case		
providing coughing suspect/infected case with a mask if they were to leave their room		
discarding and replacing the masks when they get moist or soiled		
ensuring mask is worn by suspect/infected case and that cough etiquette is observed when transporting out of isolation room		
wearing a gown when anticipating a procedure that is likely to generate splashes or sprays of bodily fluids		
ensuring appropriate isolation gowns that conform to AAMI Levels 1, 2 or 3 are to be used for respective risks in clinical areas		
ensuring aprons and gowns are removed and discarded immediately after each use and changed after seeing each patient		

MONITORING OF HCW INSIDE UNIT

117. Does your facility have protocols for the management of accidents (staff member accident such as fainting while wearing PPE, biological accidents, chemical accidents or others?) If so, please describe

118. How well would you say that protocols for monitoring HCWs work overall (Likert scale 1-5)?

119. What improvements could be made / how would you like to have support?

BUDDY SYSTEM

120. Does your facility have a buddy system in place?

- Yes
- No

121. How well would you say that this system works overall (Likert scale 1-5)?

122. What improvements could be made / how would you like to have support?

IS THERE AN IPC COMMITTEE INVOLVED / RESPONSIBLE, IF YES WHICH DEPARMENT WOULD IT BE?

123. Please give name of the department or answer "NO" if no IPC committee is involved

124. Are the following statements true about your facility?

	Yes	No
Your facility has a protocol for IPC for HCID	○	○
Your facility usually implements/updates the protocol for IPC measures	○	○
your facility has a person responsible for supervising epidemiological bulletins/national and international websites in order to be updated about the HCID outbreaks ongoing in the world	○	○

USE OF DISINFECTANTS

125. What kind of disinfectants are used for cleaning PPE?

126. What kind of disinfectants are used for cleaning surfaces?

127. What other disinfectants are used?

PROTOCOLS FOR ROUTINE HYGIENE AND DECONTAMINATION PRESENT

128. Are there specific protocols for routine hygiene and decontamination? If so, please describe

ARE THERE REUSABLE ITEMS IN YOUR PPE

129. Does your facility have reusable PPE items?

- ○ Yes
- ○ No

PROTOCOLS FOR DISINFECTANTS IN PLACE FOR REUSABLE PPE AND MEDICAL EQUIPMENT

131. Are there specific protocols regarding:

	Yes	No
ensuring surfaces that are most likely to be contaminated with pathogens and surfaces that are in close proximity to the patient are emphasized for cleaning and disinfection	○	○
ensuring environmental services staff are trained in routine cleaning, disinfection of environmental surfaces and use of PPE	○	○
ensuring all infection control personnel are trained in infection control with verified qualifications	○	○
having policies and procedures implemented for cleaning and disinfection of environmental surfaces as part of hospital's infection prevention program	○	○
having a system to assess staff periodically to ensure cleaning procedures are consistent and correct	○	○
having a competency-based training program for environmental cleaning	○	○
having a system to monitor and improve staff compliance with infection control policies and procedures	○	○

132. How well would you say that these protocols work overall (Likert scale 1-5)?

133. What improvements could be made / how would you like to have support?

PEP PROTOCOLS PRESENT

134. What PEP protocols does your facility follow?

MONITORING AND DOCUMENTATION OF ADHERENCE TO PROTOCOLS

135. Does your facility monitor / document its adherence to protocols?

MONITORING OF QUALITY OF PPE AND EQUIPMENT

136. How does your facility monitor / ensure the quality of PPE and other equipment?

137. Do you have procedures for selection of PPE? If yes, Who does develop these procedures?

CLEANING PROTOCOL INSIDE UNIT

138. Are there specific protocols regarding:

	Yes	No
ensuring linen soiled with bodily fluids is not exposed to skin and mucous membrane	○	○
ensuring that contaminated linen is handled as little as possible to prevent gross microbial air contamination	○	○
having a system to handle contaminated linen from isolation room	○	○
following the manufacturer's recommendations for products to be used to clean and disinfect	○	○
ensuring all re-usable medical equipment are cleaned and reprocessed via disinfection or sterilization and maintained according to manufacturer’s instructions	○	○
ensuring all single-use medical equipment are not re-used	○	○
restricting where possible the use of non-critical patient-care equipment to a single patient	○	○
cleaning and disinfecting equipment in between patient use if sharing of common equipment is unavoidable	○	○
wearing appropriate PPE when handling and reprocessing contaminated patient’s equipment	○	○
having an appropriate store for reusable equipment prior to being sent for cleaning	○	○
having processes to transport, clean, and disinfect reusable equipment	○	○

PATIENT TRANSPORT (INTRA-HOSPITAL DISPOSITION)

139. Are there specific protocols regarding:

	Yes	No
having processes to avoid movement and transport of patient out of isolation room unless absolutely necessary	○	○
indicating on investigation or procedure request forms that the patient is on airborne infection isolation precautions to alert staff on the infection risk	○	○
wearing appropriate PPE when transporting patient	○	○

having a system to ensure suspect/infected case follows cough etiquette (refer to NIPC Guideline 2017, Chapter 1: Standard Precautions, for further information on cough etiquette)		
having processes to ensure transport equipment is appropriately cleaned after patient transport is complete		
having processes to restrict inter-hospital movement of healthcare workers		
having established/official protocol according to the international guidelines for safe transportation of patient with HCID		
the availability of an exclusive transportation route to isolation facility or exclusive vehicle to ensure transport of HCID		
having any stretcher isolator available on demand		
having an exclusive area large enough to wait until the diagnostic procedure has been completed		
minimizing contamination of environment and other persons during transfer by following standard precautions and appropriate infection control measures		

PATIENT TRANSPORT (INTER-HOSPITAL DISPOSITION)

140. Are there specific protocols regarding:

	Yes	No
wearing appropriate PPE when transporting patient		
having a system to ensure suspect/infected case follows cough etiquette (refer to NIPC Guideline 2017, Chapter 1: Standard Precautions, for further information on cough etiquette)		
having processes to ensure transport equipment is appropriately cleaned after patient transport is complete		
having inter hospital transportation protocol according to the national laws		
minimizing contamination of environment and other persons during transfer by following standard precautions and appropriate infection control measures		

141. Is there any restriction on transportation or imposed distance to travel on road?

AIRBORNE PRECAUTIONS IN ISOLATION ROOM

142. Are there specific protocols regarding:

	Yes	No
ensuring that the room door is kept closed after suspect/confirmed case transfer		

ensuring that the Airborne Precautions sign remains on the door until sufficient time has elapsed to allow removal of airborne microorganisms (dependent on-air changes per hour)		
waiting for sufficient air changes to clear the air before cleaning the room		
ensuring that a N95 respirator is worn during cleaning if the room is urgently needed before the air has been sufficiently cleared of the pathogen		
ensuring that the N95 respirator is removed only after leaving the anteroom and after the door has been closed		

143. How well would you say that these protocols work overall (Likert scale 1-5)?

144. What improvements could be made / how would you like to have support?

Waste management

SHARPS CONTAINERS PRESENT

145. Are containers present for sharp objects? If so, how many and where are they located?

SOLID WASTE MANAGEMENT

146. Are there specific systems/written protocols for the disposal of solid waste?

- Yes
- No

147. If yes, please specify:

	Yes	No
Is solid infected waste directly disposed of in the regular hospital waste system?		
Is solid waste transported in a secured locked container to an outside facility for incineration?		
Is solid infected waste decontaminated by autoclaving within the facility before to be incinerated?		
Is solid infected waste transported in a secured locked container to the nearby autoclave before to be incinerated?		

148. If there are other systems / written protocols for the disposal of solid waste please describe them here.

149. How well would you say that the protocol for solid waste disposal works overall (Likert scale 1-5)?

150. What improvements could be made / how would you like to have support?

LIQUID HUMAN WASTE MANAGEMENT (HEAT DEACTIVATION OR SOLIDIFICATION)

151. Are there specific systems/written protocols for the disposal of liquid waste?

- Yes
- No

152. If yes, please specify:

	Yes	No
Is liquid waste disposed of directly in the regular drain system of the hospital (without prior decontamination)?		
Is liquid waste chlorinated and then disposed directly in the regular drain system of the hospital?		
Is liquid waste solidified (jellified) and autoclaved as solid waste?		
Is liquid waste decontaminated by chlorination or other (per acetic acid) process in a specific drain system of the facility?		
Is liquid waste decontaminated by autoclaving within the facility?		

153. If there are other systems / written protocols for the disposal of liquid waste please describe them here.

154. How well would you say that the protocol for liquid waste disposal works overall (Likert scale 1-5)?

155. What improvements could be made / how would you like to have support?

AUTOCLAVE(S) PRESENT, VOLUME?

156. Do your facilities have autoclaves? If so, how many?

157. How many are located within the facility?

158. How many are located nearby (within 50m) of the facility?

159. Are there dedicated personnel with training in autoclaving and decontamination / disinfection? If so, how many?

160. Is there extra space for storing waste boxes if autoclaves overflow? If so, how many and where are they located?

161. What improvements could be made / how would you like to have support?

INCINERATION

162. Are there specific systems/written protocols for the incineration of waste? If yes, please specify:

TRANSPORT OF WASTE (BOXES) OUTSIDE UNIT

163. Are there specific systems/written protocols for the transport of waste (boxes) outside the unit? If yes, please specify:

Postmortem management

DEDICATED SPACE FOR CORPSE

164. Do you have specific procedures/written protocols for the management of corpse?

165. Is there a dedicated space for the corpse?

166. What improvements could be made / how would you like to have support?

POSSIBILITY FOR AUTOPSY UNDER SAFE CONDITIONS

167. Do you have specific procedures/written protocols for the safe performance of autopsy?

- Yes
- No

168. If yes, please specify:

	Yes	No
Is the autopsy done by a specifically trained pathologist?		
Is the autopsy done by a not-specifically trained pathologist under the supervision of an infection control expert?		
Are only needle necroscopies performed?		

169. Do you have a specially equipped (BSL3) autopsy room?

- Yes
- No

170. If yes, please specify:

	Yes	No
Is it within the facility?		
Is it close to the facility (within 100 meters)?		

171. Do you have a specially equipped (BSL3) autopsy rooms not close to the facility? If so, please specify the distance in meters

172. Do you have specific medical devices for the safe performance of autopsy (such as saw with aspirator, other devices)?

173. How possible would you say it is to conduct a safe autopsy overall (Likert scale 1-5)?

174. What improvements could be made / how would you like to have support?

NECROSCOPY / BIOPSIES POSSIBLE?

175. Do you have specific procedures/written protocols for the safe performance of necropsy?

176. Are necropsies possible?

177. Do you have specific procedures/written protocols for the safe performance of biopsy?

178. Are biopsies possible?

179. How possible would you say it is to conduct a safe necropsy overall (Likert scale 1-5)?

180. How possible would you say it is to conduct a safe biopsy overall (Likert scale 1-5)?

181. What improvements could be made / how would you like to have support?

PROTOCOLS EXIST FOR SAFE TRANSPORT TO A CREMATOR

182. Do protocols exist for the safe transport of a corpse to a cremator? Is so, please describe.

183. What improvements could be made / how would you like to have support?

WHICH COFFINS / BODY BAGS USED

184. Which coffins and body bags are used at your facility? Please describe.

CREMATION

185. Is cremation mandatory at your facility?

Staff and Training

TRAINING AND EXERCISES

186. Does your facility offer any of the following trainings?

	Yes	No
Rostered staff training	○	○
Personnel Training	○	○
Just-In-Time Training	○	○
Exercises	○	○
Staffing	○	○
Occupational Health	○	○

187. What other trainings would you like to have at your facility?

188. How well would you say that the trainings work overall (Likert scale 1-5)?

189. What improvements could be made / how would you like to have support?

190. Has your facility quantified the amount of time (number of hours necessary) for the health staff to manage HCID patient per each round? Please describe

191. Has your facility defined staff available in case of admission of HCID patient? Please describe

192. Has your facility assessed staff available 24/7 throughout the whole year? Please describe

193. Has your facility defined the total number of composition staff specifically dedicated for the management of HCID? Please describe

194. Has your facility assessed if the total number of composition staff specifically dedicated for the management of HCID are trained? Please describe

195. Has your facility assessed the timeframe of shift composition in terms of numbers hours and number of doctors to be provided for each round? Please describe

196. Has your facility assessed the timeframe of shift composition in terms of numbers hours and number of doctors in ICU care to be provided for each round? Please describe

197. Has your facility assessed the timeframe of shift composition in terms of numbers hours and number of nurses to be provided for each round? Please describe

198. Has your facility assessed the timeframe of shift composition in terms of numbers hours and number of nurses in ICU care to be provided for each round? Please describe

199. Has your facility assessed the timeframe of shift composition in terms of numbers hours and number of non-doctors non-nurses staff to be provided for each round? Please describe

200. Has your facility assessed the timeframe of shift composition in terms of numbers hours and number of non-doctors non-nurses staff in ICU care to be provided for each round? Please describe

201. Has your facility assessed a hospital plan for other surge capacity personnel? Please describe

TREATMENT & CARE

202. Does your facility offer any of the following treatments / care services?

	Yes	No
Adult care	○	○
Labor & delivery care	○	○
Pediatric care	○	○
Neonatal care	○	○

203. What other treatments / care services would you like to have at your facility?

204. What improvements could be made / how would you like to have support?

205. How well would you say that the treatments / care services work overall (Likert scale 1-5)?

INTAKE AND INTERNAL TRANSPORT

206. Does your facility offer internal transport? If so please describe the transport system (e.g. ambulance care, Epishuttle, complete closure of pathways)

Mental Health

COMMUNICATION WITH FRIENDS / RELATIVES POSSIBLE

207. Is communication with friends/relatives possible while staying at your facility?

208. How would you rate the level of communication overall (Likert scale 1-5)?

209. What improvements could be made / how would you like to have support?

PSYCHOLOGICAL SUPPORT

210. Does your unit have psychological support services for HCWs working in the facility?

211. If yes, please specify:

	Yes	No
The service is provided by the hospital	○	○
The service is provided by an external contractor	○	○
Has the service been offered in the past?	○	○
Is there clinical supervision for those providing the debriefing?	○	○
Would the service be able to respond during an event?	○	○
Does the service include HCW families?	○	○

212. How would you rate the level of psychological support overall (Likert scale 1-5)?

213. What improvements could be made / how would you like to have support?

HEALTH CARE WORKER HEALTH

214. Has your facility assessed HCW fears and concerns about HIDs?

215. If yes, what strategy did you use?

	Yes	No
Personal interview	○	○
Anonymous questionnaire	○	○
Not anonymous questionnaire	○	○
Group discussion	○	○

216. If you used a different strategy please describe

217. How well would you say that the strategy worked overall (Likert scale 1-5)?

218. What improvements could be made / how would you like to have support?

219. During an event, is the unit staff “dedicated” to the HCID patient only (does not assist other patients)?

- ○ Yes
- ○ No

220. Does your hospital have planned special insurance for staff working in the facility?

- ○ Yes
- ○ No

221. Does your unit have planned special compensation for staff working in the facility?

- ○ Yes
- ○ No

Emergency Management

PROVIDER DOWN PROTOCOL

222. Does your facility have a provider down protocol?

- ○ Yes
- ○ No

223. In case of a contamination of a staff member in a provider down situation, where would she/he be taken care of?

224. Are there regular drills on the provider down situation?

- Yes
- No

DESIGNATED CAPACITY FOR ISOLATION AND CARE IN CASE OF HIGH-RISK EXPOSURE

225. Where would persons with high-risk exposure be attended to / isolated? Please list all options in question

226. Does your facility have protocols for the vaccinations of HCWs (pre-exposure in case of smallpox, anthrax, measles, EVD) working with HCID patient?

- Yes
- No

227. Does your facility have protocols for the use of the following drugs as chemoprophylaxis (ribavirin, doxycycline, ciprofloxacin)?

- Yes
- No

228. Does your facility have plans to deliver vaccine or anti-infective therapy to HCWs in the event of an infectious disease exposure (ribavirin, doxycycline, ciprofloxacin, rifampicin, small pox vaccine, botulinum anti toxin, oseltamivir)?

- Yes
- No

PEP PROTOCOL

230. Is there an algorithm in case a needle-stick injury?

- Yes
- No

231. Is there a protocol for PEP medication? If yes for which diseases?

232. Would PEP medication be available on site?

- Yes
- No

233. Is there a written procedure for post-exposure evaluation and management of HCWs following an exposure?

- Yes
- No

234. Where does the surveillance apply (at home, hospital, isolation ward, other)?

Clinical Care

LEVEL OF CRITICAL CARE

235. What level of critical care would you be able to provide in the unit if necessary?

	Yes	No
Vasopressor treatment		
Ventilation		
Haemodialysis		
ECMO		

DIAGNOSTIC CAPABILITIES

236. Has your facility assessed a case definition criteria for HCID?

- Yes
- No

237. Does your facility have a diagnostic work-up to be followed in case of patient with suspected HCID?

- Yes
- No

238. Are you able to perform the following laboratory tests for patients in the unit?

	Yes	No
full blood count		
clinical chemistry		
microbiological cultures		
RDT bedside testing		
POCT PCR		

239. Please give machine / process used for each test you are able to perform for patients in the unit

240. Would endoscopy be possible in your unit?

- Yes
- No

241. Would ultrasound be possible in your unit?

- Yes
- No

242. Would plain-field radiography be possible in your unit?

- Yes
- No

243. Would transsectional radiography be possible? If yes, within / outside the unit?

GUIDELINES FOR SPECIFIC TREATMENT SITUATIONS

244. Has your facility assessed a written protocol to manage patients with suspected/confirmed HCID?

- Yes
- No

245. Has your facility perfomed standard protocols for the management and treatment of each HCID?

- Yes
- No

246. Has your facility assessed a syndromic approach to the diagnosis of suspected HCID?

- Yes
- No

ACCESS TO MEDICATION

247. Would you have access to specific treatments for an Ebola-, Lassa-, CCHF patient? If so, please list specific treatments available

248. Which medications do you not currently have access to but feel you should have access to?

249. Does your facility have an established mechanism to order medication needed for the treatment of an HCID patient?

- Yes
- No

250. At your facility, would you be able to access unlicensed medication for the treatment of an HCID patient?

- Yes
- No

POSSIBILITY TO COLLABORATE WITH PHARMACISTS

252. Has your facility assessed a well-known protocol to easily obtain drugs for the treatment of HCID? Is the pathway to drug request already established?

253. Is there a request form in off label or compassionate use of drugs already written to be filled for the different drugs for different HCIDs?

- Yes
- No

254. Is there a collaboration with the pharmacist of the facility to speed up any drug request for the treatment of HCID?

- Yes
- No

PROFESSIONAL STANDARD ASSESSMENT (PEER REVIEW)

255. Do you have access to an independent observation in the acute treatment period? If yes how is this done?

256. Do you have a peer review system for your standards and procedures?

- Yes
- No

ACCESS TO EXPERT CONSULTATION

257. Do you have access to expert consultation on a national / international level? If so, who specifically?

258. Has your facility assessed a protocol for case notification?

- Yes
- No

259. Has your facility defined an algorithm for notification system?

- Yes
- No

260. Which kind of communication/transmission of information has been developed between national or regional health and your hospital/health center in case of HCID?

261. Does your facility have a written/established chain of command, alert and communication in case of HCID? If yes please describe

REGULARLY TRAINED SPECIALTIES

262. Please specify which specialties are regularly trained and available?

	Yes	No
Gynaecology		
Surgery		
Endoscopy		
Paediatric		
Intensive care specialists		
Infectious disease specialists		
Gastro-enterology specialists		
Pulmonology specialists		
Microbiology specialists		
Radiology specialists		
Biologists		
Blood transfusion specialists		

Contact

Contact Form