ASSESSMENT

Country report: ECDC Public Health Emergency Preparedness Assessment for Iceland, 2025

Under Article 8 of the Regulation (EU) 2022/2371

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Contents

Tables

Abbreviations

EEA	European Economic Area
EC	European Commission
EU	European Union
IHR	International Health Regulations (2005)
SCBTH	Serious Cross-Border Threats to Health
SPAR	State Party Self-Assessment Annual Report
IHR NFP	National IHR Focal Point
PoE	Points of Entry
MAST	Icelandic Food and Veterinary Authority
MCM	Medical countermeasure
NIA	National IHR Authority
NAATs	Nucleic Acid Amplification-based Tests
IVDR	Regulation on In Vitro Diagnostic medical devices
WGS	Whole Genome Sequencing
BSL	Biosafety Level
ISAC	Icelandic Service for Accreditation
SOP	Standard Operating Procedure
NRL	National Reference Laboratory

Executive summary

Introduction

The aim of the Public Health Emergency Preparedness Assessment, as mandated in Article 8 of the Regulation (EU) 2022/2371 on serious cross-border threats to health, is to improve prevention, preparedness and response planning in EU/EEA countries through the implementation of recommendations following individual country assessments. As specified in the Regulation, each EU/EEA country will undergo an assessment every three years, with the first cycle of these occurring between 2024 and 2026.

This report presents the findings and recommendations of the first assessment conducted in Iceland. This involved a desk review of relevant documents, followed by a five-day country visit that took place between 2 June and 6 June 2025. As per the assessment methodology, all of the 16 capacities included in Article 7 of the Implementing Regulation (EU) 2023/1808 self-assessment template were assessed, with five of them considered in depth: Health Emergency Management (Capacity 6); Laboratory (Capacity 3); Surveillance (Capacity 4); Antimicrobial resistance (AMR) and healthcare-associated infections (Capacity 12) and Zoonotic diseases and environmental threats (Capacity 10).

Key findings

Iceland's health system is a state-centred, publicly funded system with universal health coverage. The main bodies responsible for health policy, financing, planning and regulation are Parliament (Althingi) and central government via the Ministry of Health (MoH) and the Ministry of Finance and Economic Affairs (MoF). The MoH has major policy-making and executive authority, while its agencies – including the Directorate of Health (DH), Iceland Health (Sjúkratryggingar Íslands), the Icelandic Medicines Agency (IMA) and the Icelandic Radiation Safety Authority (IRSA) – are responsible for executing health policy, administration, and supervision.

The Health Services Act provides for the organisation of healthcare services, which are predominantly public. The Directorate of Health supervises healthcare services in Iceland, as per the Act on the Medical Director of Health and Public Health. The Chief Epidemiologist is responsible for disease control and preventive measures against epidemics, as required under the Act on Health Security and Communicable Diseases (Act (No 19/1997) and is accountable directly to the Minister of Health. Iceland is divided into seven healthcare regions for organisational purposes with a healthcare institution, which is responsible for providing healthcare within the region and separate funding to cover for certain administrative responsibilities. Landspítali University Hospital in Reykjavik is the country's largest university hospital, while Akureyri Hospital is the back-up hospital, as mandated in regulation no. 1111/2020. This role is currently under revision.

There is a strong collaborative culture within and across sectors, resulting in the rapid exchange of information and effective public health decision-making and action in response to various types of event. Such collaborations undergo frequent testing in response to natural events, which are common in Iceland. This has resulted in a strong and consolidated mechanism for preparing and responding to all-hazard incidents with an emphasis on natural disasters. The health sector collaborates closely with civil protection at all levels. Public health preparedness and surveillance are mostly coordinated at the national level, while response activities are carried out both regionally and nationally. These preparedness and response tasks and activities are less consistently executed within healthcare services, as they are not always perceived as part of the tasks of healthcare providers and regions do not have enough human resources to assign directly to public health tasks. Furthermore, some roles and responsibilities in the country's public health infrastructure could be better defined and formalised to ensure clear accountabilities and avoid overlapping. Ways to improve the public health infrastructure of Iceland include:

- Integrate public health requirements in the routine healthcare provision process by involving district physicians more in meetings/seminars/simulation exercises, sharing of surveillance feedback, acknowledging the public health impact of their work, and planning of dedicated budget for their public health activities.
- Increase capacities for public health preparedness and response at the Chief Epidemiologist office, and the overall epidemiological workforce (e.g. by participating to EU training activities such as EPIET, EUPHEM, or MS-Track).
- Assess which of the ongoing informal collaborations require to be formalised in the pandemic preparedness plan to ensure business continuity, resilience, and timeliness across sectors.
- Ensure that roles and responsibilities for key public health functions at national and local level are formalised, including for surveillance, prevention, preparedness, response, quality assurance and evaluation.

Main recommendations for each capacity assessed in depth

Health emergency management (Capacity 6)

- Formalise the response process and communication among stakeholders (suggest checklist or standard operating procedures (SOPs)).
- Strengthen intersectoral collaboration for preparedness planning at national level by conducting a stakeholder mapping and formalising their involvement.
- Ensure that the upcoming legislation provides for regular reviews of preparedness plans at all levels based on an all-hazard all-country risk prioritisation exercise, and that it foresees cycles of simulation exercises.
- Develop or adopt/adapt a rapid risk assessment process/methodology in response to health-related events for effective communication of the risk with stakeholders (e.g. shared templates by other member states).
- Reinforce public health competence in the national operations centre and improve the situation awareness tools (e.g. bed capacity, ICU coverage, workforce, cases, deaths, tests performed etc).
- Develop tools to monitor supply and estimate demand of crisis-relevant MCM. The relevant tools should collect information for all relevant types of products that fall under the definition of crisis-relevant MCM.
- Develop a specific methodology to compile the list of items of crisis-relevant medical countermeasures to be included in a strategic stockpile.
- Develop a sustainable management plan for national strategic stockpiles of MCMs, including operational SOPs (deployment and reception of medical countermeasures).
- Continue the ongoing legislative work to support achievement of six-month supply of critical MCMs.
- Continue to participate in EU-level and global activities related to joint procurement or advance purchase agreements.

Laboratory (Capacity 3)

- The designation of the national reference laboratory (NRL) at Landspítali University Hospital should be supported by appropriate legislation and the necessary budget to fulfil its public health role in notifiable disease diagnostics and surveillance.
- Define the role of the NRL in the context of the national pandemic preparedness plan to ensure that the laboratory requirements are properly accounted for and ensure that a clear strategy for scaling up laboratory capacity in emergency situations is part of the plan.
- Create a national laboratory network through a formal cooperation framework in which the NRL shall oversee, coordinate, and support all regional public and private laboratories to ensure harmonised quality standards, reliable diagnostics, and efficient information exchange. Ensure sustainable funding for the national laboratory network to maintain and further develop laboratory capacity and capability, including training, tools, and infrastructure for next generation sequencing and bioinformatics.
- Prioritise the work of unifying the electronic laboratory systems, also connecting the regional laboratories. The same goes for the animal sector, where work needs to begin on developing and implementing an electronic reporting system that can eventually connect to the human side.
- Start the development of a national sequence database and mechanisms for sharing sequence data between the NRL and the Chief Epidemiologist, with flexibility to also expand to include all One Health sectors to allow for integrated surveillance and outbreak management.

Surveillance (Capacity 4)

- Develop standardised reporting procedures through the development of national reporting protocols aligned with EU surveillance requirements. These protocols should define disease-specific objectives, required data elements and formats, and the frequency of reporting.
- Develop a comprehensive data infrastructure and standardised process models to support interoperability, integration, and linkage between the updated clinical notification system and other key databases – for example laboratory information management systems (including the timely reports from the laboratory at Akureyri Hospital), vaccination registries, vital statistics, electronic medical records, and data needed for One Health analyses.
- A contact tracing platform should be developed and integrated into the surveillance system.
- Establish a primary healthcare-based sentinel surveillance system for acute respiratory infections, with integrated microbiological surveillance of influenza, RSV, and SARS-CoV-2 to help capture data on mild respiratory infections and enhance early detection of emerging pathogens.
- Continue monitoring the quality of surveillance data from ICD-10 codes, striving for representativeness by age and place, and conducting system evaluations when performance issues are noted.
- Reintroduce disease-specific thresholds and early warning indicators, particularly for respiratory viruses to enhance the system's ability to respond promptly to emerging health threats.

Antimicrobial resistance and healthcare-associated infections (Capacity 12)

- Secure sustainable multi-year funding and involvement of relevant Ministries to implement and monitor the One Health National Action Plan (NAP) for AMR, including the multi-sectoral programmes for 'information dissemination, education and prevention' (NAP Action 2).
- Strengthen and expand antimicrobial stewardship in all healthcare sectors, including:
  - Promotion of accredited training programs for healthcare workers including pharmacists (NAP Action 1);
  - Reinforcement and improvement of the Prescription Medicines Database and electronic feedback systems/dashboards for prescribers (NAP Action 1); and
  - Stewardship interventions for hospitals and long-term care facilities (LTCFs), e.g. at EAAD/WAAW (NAP Action 2).
- Further develop national healthcare associated infection (HAI) prevention and control programmes and policies, including establishment of sustainable and comprehensive e-surveillance, for sample types including blood.
- Renew or establish activities to ensure infection prevention and control (IPC) capacity at all healthcare facilities, such as face-to-face workshops for local adaptation of the Landspítali guidance for hospital IPC.
- Continue activities to ensure additional acute care capacity, including increasing inpatient bed capacity, to facilitate IPC, at both Landspítali and Akureyri hospitals.

Zoonotic diseases and threats of environmental origin, including those due to the climate (Capacity 10)

- Establish One Health governance to coordinate surveillance, prevention, and control of zoonotic and environmental threats by defining roles, communication, decision-making, and resource allocation across sectors and administrative levels.
- Enhance the Statutory Joint Committee for Epidemic Prevention (SSUS) to become more active and operational, involving additional sectors (e.g. the NRL for human, animal and food sector and the Icelandic Medicines Agency).
- Organise joint interdisciplinary training and exercises on surveillance, preparedness, risk assessment and risk management in response to zoonotic and environmental threats that involve public health, animal health and environment sectors, using lessons learned from real events and trainings organised by ECDC or other Agencies.
- Develop a comprehensive data infrastructure and standardised processes for the surveillance of food-, water-, vector-borne and zoonotic diseases that integrates data from the food and animal sectors, as well as vector data. This system should be built with consideration to interoperability with the public health surveillance system/databases and allowing for data-sharing among sectors.
- Integrate health related indicators and correlations to the Climate Atlas and assess the potential impact of extreme weather events in the provision of health services, proposing preventive measures for their continuity, while addressing special needs of certain population groups (e.g. migrants, elderly) in the next Icelandic Climate National Action Plan (NAP) and the next pandemic preparedness plan.

Conclusions

The update of the national legal framework, as well as the new EU Regulation on Cross-Border Threats to Health and the funding of the EU4Health programme represent opportunities that should be harnessed by Iceland public health authorities to formalise critical collaborations in the context of the national pandemic preparedness plan, to strengthen laboratory-based surveillance and the role of the National Reference Laboratory, to establish a dedicated representative surveillance system for respiratory infections integrated with laboratory data, to introduce a One Health governance guiding roles and processes, and to ensure sustainable funding for key public health priorities such as prevention of healthcare associated infections.

Key factors in the maintenance of a robust public health system are the engagement of all stakeholders, including healthcare providers, in public health functions and tasks, and the strengthening of the epidemiological and microbiological workforce, both at national and regional levels.

Introduction

The aim of the Public Health Emergency Preparedness Assessments, as mandated in Article 8 of the Regulation (EU) 2022/2371 on serious cross-border threats to health, is to improve prevention, preparedness and response planning in EU/EEA countries through the implementation of recommendations following individual country assessments. As specified in the Regulation, each EU/EEA country will undergo an assessment every three years, with the first cycle of these occurring between 2024 and 2026.

This report presents the findings and recommendations of the first assessment conducted in Iceland. This process involved a desk review of relevant documents, followed by a five-day country visit.

Background and legal basis

During the COVID-19 pandemic it was recognised that the legal framework for combatting serious cross-border threats to health, provided for in Decision No 1082/2013/EU, needed to be broadened and enhanced to ensure a more effective response across the European Union (EU) to deal with health-related emergencies. Hence, the European Commission developed and published on 23 November 2022 the Regulation (EU) 2022/2371 on serious cross-border threats to health[1].

Within this Regulation it is recognised that prevention, preparedness and response planning are essential elements for combatting serious cross-border threats to health. In addition to creating a Union prevention, preparedness and response plan (Article 5 of the Regulation), the Regulation also outlined the importance of updating and seeking coherence with Member States' prevention, preparedness and response plans (Article 6 of the Regulation).

To monitor the implementation of the plans, the Member States shall report to the European Commission regarding their prevention, preparedness and response planning at the national level every three years. For this purpose, a self-assessment template was developed under Article 7 of the Regulation[2], complementary to the International Health Regulation (IHR) State Party Self-Assessment Annual Report (SPAR)[3].

In order to support the assessment of these plans, Article 8 of the Regulation indicates that ECDC has the responsibility – in coordination with relevant Union agencies and bodies – to conduct assessments of all 30 European Union and European Economic Area (EU/EEA) countries every three years. The procedures, standards and criteria for the assessments of the state of implementation of national prevention, preparedness and response plans and their relationship with the Union prevention, preparedness and response plan are defined by the Commission Delegated Regulation (EU) 2024/1232, adopted in March 2024[4].

ECDC has developed a methodology for Public Health Emergency Preparedness Assessment to implement Article 8 of the Regulation (EU) 2022/2371. The assessment process addresses the 16 capacities included in the Article 7 self-assessment template and is designed to maintain consistency within the EU/EEA countries throughout the three-year cycle, while allowing for adaptation of plans if the national circumstances require.

Aim and objectives

The aim of the ECDC Public Health Emergency Preparedness Assessment process, drawn from Article 8 of the Regulation on serious cross-border threats to health, is to improve prevention, preparedness and response planning in EU/EEA countries through the implementation of recommendations following individual country assessments. Countries are asked to provide an action plan addressing the proposed recommendations of the assessment within nine months of the receipt of the ECDC report.

[1] European Commission (EC). Regulation (EU) 2022/2371 of the European Parliament and of the Council of 23 November 2022 on serious cross-border threats to health and repealing Decision No 1082/2013/EU. Brussels: EC; 2022. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R2371&from=EN

[2] European Commission (EC). Commission Implementing Regulation (EU) 2023/1808 of 21 September 2023 setting out the template for the provision of information on prevention, preparedness and response planning in relation to serious cross-border threats to health in accordance with Regulation (EU) 2022/2371 of the European Parliament and of the Council. Brussels: EC; 2023. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1808

[3] World Health Organization (WHO). IHR (2005) States Parties self-assessment annual reporting tool, 2nd ed. Geneva: WHO; 2021. Available at: https://www.who.int/publications/i/item/9789240040120

[4] European Commission (EC). Supplementing Regulation (EU) 2022/2371 of the European Parliament and of the Council as regards assessments of the state of implementation of national prevention, preparedness and response plans and their relation with the Union prevention, preparedness and response plan. Brussels: EC; 2024. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401232

The specific objectives of the assessment process are to:

- Assess the countries' self-assessments of preparedness in the 16 capacities covered by the outputs from the most recent International Health Regulation State Party Self-Assessment Annual Report and the Article 7 template.
- Collaborate with countries to identify good practice, challenges, bottlenecks, gaps or areas for improvement concerning the 16 capacities referred to in Article 7 (a list of the capacities assessed is available in Annex 1).
- Encourage the inclusion of key elements within the prevention, preparedness and response planning structure such as cross-sectorial and cross-border coordination, crisis management, response governance, communication, plan testing, evaluation and regular reviews, according to the lessons identified from the response to public health emergencies.
- Use the opportunity of a standardised approach to the assessment process to contribute to the improvement of EU/EEA prevention, preparedness and response capacities by promoting a common understanding of key elements and a coordinated approach.
- Provide support to countries in enhancing their national prevention, preparedness, and response capacities through recommendations based on the assessment, and provide targeted assistance upon request.

Assessment process

An ECDC-led team composed of eight ECDC experts and three experts from the European Commission (DG SANTE and DG HERA) and the World Health Organization Regional Office for Europe was assembled to conduct the assessment, in collaboration with the country focal points and a national public health expert from Cyprus. The assessment process consisted of a desk review phase and a country visit that took place between 2 June and 6 June 2025.

As per the established process, the team reviewed Iceland's responses to the Article 7 self-assessment questions, with five of them considered in depth: Health Emergency Management (Capacity 6); Laboratory (Capacity 3); Surveillance (Capacity 4); Antimicrobial resistance (AMR) and healthcare-associated infections (Capacity 12) and Zoonotic diseases and threats of environmental origin, including those due to the climate (Capacity 10).

The assessment mission was conducted with an open and transparent approach from the host country, including the prompt sharing of relevant documents, engaging in a productive, open discussion and providing clarifications or additional documentation as needed or requested.

Further details regarding the practical aspects of the mission are available in Annex 2.

Main findings and overarching recommendations

There is a robust culture of collaboration both within and across sectors, which significantly enhances the timely exchange of information and supports effective public health decision-making and implementation in Iceland. This collaborative environment is a key strength in the national public health landscape. A well-established and integrated mechanism is in place for the preparation and response to all-hazard incidents, with a particular focus on natural disasters. This system reflects a high level of consolidation and readiness to manage a broad range of emergencies. However, some essential public health functions – such as preparedness, surveillance, and response – are not consistently executed within the healthcare delivery system. These inconsistencies may hinder the overall effectiveness of public health interventions. Furthermore, the current public health infrastructure in Iceland would benefit from clearer delineation of roles and responsibilities. Ambiguities in accountability and overlapping duties among institutions and stakeholders (such as the tasks of the various intersectoral committees, the roles of Points of Entry, the roles of district physicians, etc.) may reduce operational efficiency and responsiveness during public health events.

Recommendations

- Integrate public health requirements in the routine healthcare provision process by involving more the district physicians in meetings/seminars/simulation exercises, sharing of surveillance feedback, acknowledging the public health impact of their work, and planning of dedicated budged for their public health activities.
- Increase capacities for public health preparedness and response at the Office of the Chief Epidemiologist, and the overall communicable disease workforce (e.g. by training in epidemiology of communicable diseases through participating in EU training activities such as the EPIET/EUPHEM programmes).
- Assess which of the ongoing informal collaborations require to be formalised in the pandemic preparedness plan to ensure business continuity, resilience, and timeliness across sectors.
- Ensure that roles and responsibilities for key public health functions at national and local level are formalised, including for surveillance, prevention, preparedness, response, quality assurance and evaluation.

Findings and recommendations per capacity

A list of the capacities that were included in the assessment is available in Annex 1. Annex 3 includes findings and recommendations that the country considered confidential and/or sensitive information that the country provided.

Capacities assessed in depth

Health emergency management (Capacity 6)

Management of health emergency response

Iceland shared multiple documents in the area of health emergency response, including legislation on the control of communicable diseases and civil protection, national plans (National Pandemic Plan, Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNe) threats plan, National Mass Burn Incident Plan), and the review of the governmental crisis management during the COVID-19 pandemic.

The generic pandemic and CBRNe plans are well structured, outlining the responsibilities of the various actors at the different administration levels: national, regional, and local, as well as the three alert levels: uncertainty, hazard/danger, and emergency. The Chief Epidemiologist and the National Commissioner of the Icelandic Police collaborate and mutually decide on the activation of plans. Municipalities and local healthcare facilities are responsible for developing their own preparedness plans and both a regulation on what the plans should address and a template for a healthcare contingency plan (2018) was also shared. Using such templates is a good practice to help local and regional levels develop their contingency plans. Both the Department of Civil Protection and Emergency Management and the Directorate of Health oversee these preparedness plans with a 'soft' overview and monitoring mechanism, as there is no mandated/legislated timeline for updating or exercising these plans.

The government's policy on civil protection and security is defined by the Civil Protection and Security Council for a period of three years, and according to Civil Protection representatives the existing national plans cover the risks identified. However, risk prioritisation is largely not regularly updated to be subsequently reflected in all the contingency planning in the country.

There is a strong response culture at all levels in the country, local regional and national, where all stakeholders know each other and have worked and responded to multiple incidents. The response system is the same in all incidents at all levels, and assisting in an emergency is embedded in Icelandic culture, so that even members of the public respond promptly in emergencies. Having one response system makes it easy to come together at the National Crisis and Coordination Centre (NCCC) for the coordination of the response in any type of crisis. This is hugely helped by the fact that human resources are limited in number, meaning a few specific people are involved at each level. The multiple all-hazard incidents occurring in the country (mostly natural disasters) have established and reinforced personal communication lines among the major players. However, these are rarely formalised (e.g. with SOPs, checklists or other tools), which makes it risky when new staff enter service or when the main response players are missing for any reason.

The Civil Protection system has four response levels: Green, Yellow, Red, and Black in increasing severity and involvement of administration levels. In addition, it works in three alert phases – uncertainty, hazard/danger, and emergency. A manual on 'Health Services and Civil Protection' (2017) outlines how the two sectors work together in the different types of disaster and at different levels. Civil protection has a well-established incident management system for the response phase, which is currently under revision; follow up with training all the stakeholders and levels in the country is expected.

Iceland is in the process of revising their legislation on the control of communicable diseases, as well as on civil protection. According to the discussions, intersectoral collaboration on these pieces of legislation is occurring at the ministry level.

Iceland has strong ties to the other Nordic countries in the Svalbard Group, the Nordic co-operation group on health preparedness. Specific agreements allow for cross-country assistance for rare or severe cases or in the event of a Burn Casualty Incident when Iceland's surge capacity is exceeded. Under such circumstances, patients in need of highly specialised care can be transferred to other collaborating Nordic countries. The relevant plan was also shared with the experts and is well developed describing the activation and prioritisation processes.

Public health measures are proposed by the office of the Chief Epidemiologist according to their mandate (Act on Communicable Diseases 19/1997) based on data available and scientific advice, and are negotiated/agreed with other sectors at the ministerial level rather than being co-developed at the technical level.

As the National University Hospital in Reykjavik, Landspítali plays a central role both in preparing and responding to public health threats. Clinician specialists provide advice to the Office of Chief Epidemiologist and the NCCC and take part in public health activities (e.g. contact tracing) as needed. According to the discussions, the hospital is operating at very high capacity for a variety of reasons, and this would limit its capacity to respond in case of large events, e.g. mass casualties or another pandemic. The hospital coordinator has a daily overview of the bed

capacity and its coverage, however this is not reflected in the NCCC, although data can be requested. In addition, Landspítali lacks currently a High-Level Isolation Unit (HLIU), which limits the capacity of the country to manage potential patients with highly infectious diseases. The hospital is working on setting up a temporary HLI unit until the new hospital will be operational around 2030.

Recommendations

- Formalise the response process and communication among stakeholders (suggest check list or SOPs).
- Strengthen intersectoral collaboration for preparedness planning at national level by conducting a stakeholder mapping and formalising their involvement when developing the plan.
- Ensure that the upcoming legislation provides for regular reviews of preparedness plans at all levels based on an all-hazard all-country risk prioritisation exercise, and that it foresees cycles of simulation exercises.
- Develop or adopt and adapt a rapid risk assessment process in response to health-related events for effective communication of the risk with stakeholders (e.g. discuss/adapt formats used by other countries).
- Reinforce public health competence in the NCCC and improve the situation awareness tools as regards the health sector capacities and operations in a crisis (e.g. bed capacity, ICU coverage, workforce, cases, deaths, tests performed, etc).
- Continue efforts to establish a temporary HLIU at Landspítali, until the new university hospital becomes operational.

Emergency logistic and supply chain management

Iceland has legal and regulatory frameworks in place for identifying the stockpile of critical medicines and delineating related responsibilities at the national level. The list of critical medicines is included in the *Regulation on Infection Prevention Control Measures* – No. 817/2012. A working group designated by the Ministry of Health is currently preparing a proposal for an updated list and legislative efforts are underway to establish regulations defining minimum stock levels for both institutions and wholesalers. Currently, wholesale authorisation holders are obliged to maintain sufficient stock of specific necessary medical products based on a list produced by the Icelandic Medicines Agency (IMA).

The Chief Epidemiologist is responsible for maintaining a national stockpile of certain medications (as per the regulation), vaccines, and intravenous fluids. This stockpile is physical and primarily held by individual wholesalers. However, some medications are also stored at the Landspítali University Hospital. The size of the stockpile generally corresponds to one month's supply. While institutions and wholesalers are expected to maintain a minimum quantity of stock, there are currently no specifications regarding required quantities.

The Chief Epidemiologist is also responsible for a national stockpile of personal protective equipment (PPE). The stockpile is physical, and while its current contents are known, there is no clear definition of which types of PPE should be included nor of the quantities to be maintained. It was deployed during the COVID-19 pandemic and proved effective as there were no shortages of PPE during that period.

Beyond medications and PPE, there are no stockpiles of other categories of medical equipment, and no corresponding obligations on institutions or wholesalers to maintain such products, except where specified in individual purchasing contracts.

The emergency logistics and supply chain management mechanism in Iceland is developed and capable of providing adequate support during national health emergencies. Nevertheless, the reliance on a very limited number of pharmaceutical wholesalers represents a vulnerability for stockpiling security.

Iceland currently monitors supply and estimates demand for crisis-relevant medical countermeasures (MCMs) on an ad hoc basis. For example, the monitoring system was activated during the COVID-19 pandemic and in response to volcanic eruptions. However, the country lacks a real-time monitoring platform for medicine availability and a formal inventory system for PPE. While IMA can request information from wholesalers, the data provided are limited to general product availability and does not include specific quantities except on wholesale level. In specific cases, the agency has requested information about quantities from pharmacies and hospitals.

Furthermore, Iceland currently lacks a formal reception and distribution plan for MCMs during emergencies. Although informal procedures exist, there is no Standard Operating Procedure (SOP) outlining deployment logistics.

Finally, the country has limited domestic pharmaceutical manufacturing capacity, with the exception of medical oxygen, which is produced in a factory on the Reykjanes peninsula. Most MCMs are imported. Icelandic authorities have participated in EU joint procurement initiatives and advance purchase agreements for influenza pandemic vaccines.

Recommendations

- Develop tools to monitor supply and estimate demand of crisis-relevant MCM. The relevant tools should collect information for all relevant types of products that fall under the definition of crisis-relevant MCM.
- Develop a specific methodology to compile the list of items of crisis-relevant medical countermeasures to be included in a strategic stockpile.
- Develop a sustainable management plan for national strategic stockpiles of MCMs, including operational SOPs (deployment and reception of medical countermeasures).
- Continue the ongoing legislative work to support achievement of six-month supply of critical MCMs, most notably by introducing a provision in the Pharmaceuticals Act specifying the required stock levels of essential medicines to be maintained by wholesalers.
- Continue to participate in EU-level and global activities related to joint procurement or advance purchase agreements.

Laboratory (Capacity 3)

The microbiology laboratory capacity for emergency preparedness, response, and communicable disease surveillance in Iceland is primarily centralised at the Department of Clinical Microbiology at Landspítali Hospital, with a smaller contribution from the laboratory at Akureyri Hospital. In addition, several smaller regional laboratories – both public and private – provide primary diagnostic services within regional health districts. However, these smaller laboratories operate in the absence of formal oversight, highlighting the need for centralised coordination and a formalised laboratory network.

The Department of Clinical Microbiology at Landspítali is designated as the national reference laboratory (NRL) for human samples. However, under the current legislation, it is not formally recognised as a national public health laboratory, with public health functions, which restricts its access to dedicated funding and limits its formal responsibilities in public health activities such as notifiable disease diagnostics and surveillance. Complementing the NRL on the human side, the Institute for Experimental Pathology at Keldur, University of Iceland, is designated as reference laboratory for animal samples. In addition, Matís – a government-owned, independent research institute – is designated as NRL for food and environmental samples.

The molecular laboratory at Landspítali has expanded its capabilities and capacity through investments in advanced technologies, including next-generation sequencing. These developments have strengthened its ability to respond to emergency situations and support the surveillance of communicable diseases. The laboratory is able to implement new nucleic acid amplification tests (NAATs) within two to four weeks when needed. Following these investments made during and after the COVID-19 pandemic, it is now essential to secure sustainable funding. This support is critical to maintain and further develop current capabilities for the national laboratory network, including training, equipment, and infrastructure for next-generation sequencing and bioinformatics.

A challenge in the capacity of implementing rapidly new diagnostic methods for a novel pathogen with pandemic potential is aligning with the EU regulation on in vitro diagnostic medical devices (IVDR, 2017/746). This EU regulation limits medical microbiology laboratories from performing in-house testing, due to demanding requirements. This is likely to significantly affect capacity, know-how and expertise in such laboratories in developing and validating new methods; this is a capacity that is crucial during a public health emergency with a novel pathogen. The ability for microbiological laboratories to retain the necessary expertise on NAATs to set up such in-house tests on short notice is crucial for ensuring a nationwide test capacity and making use of NAATs as a major countermeasure for effective control of emerging microbiological threats. The laboratory at Landspítali also operates its own media and substrate production facility, which could serve as a significant advantage during a pandemic situation; its continued operation will however also be affected by the requirements of the IVD regulation.

In addition to the molecular capabilities at the Landspítali laboratory, both Keldur and Matís possess facilities for molecular diagnostics and whole genome sequencing (WGS). While there is strong and active – albeit informal – collaboration among the three sectors, particularly in response to foodborne outbreaks, data-sharing remains limited and lacks automated or standardised protocols. Formalising this collaboration could be further explored during preparedness planning to enhance the national laboratory capability and capacity.

During the COVID-19 pandemic, the scale-up of laboratory testing was successful. This was achieved through investments in testing platforms, method development, facility reorganisation, staff reallocation and new hires, and collaboration with a private company. The main bottlenecks identified were shortages of sampling materials and reagents and the lack of stockpiling. However, no formal plan or organisation for scaling up testing in the event of a public health emergency has been established since. It is essential to clearly define the role of the NRL within the national pandemic preparedness plan to ensure that laboratory needs are adequately addressed. In addition, a clear strategy for scaling up and down laboratory capacity during emergency situations should be included in the plan.

On the human side, Iceland has the capacity to report microbiological laboratory testing results for national surveillance through an electronic reporting system, although not all small regional laboratories currently have this capability. In contrast, the animal health sector still lacks such a system, underscoring the need to develop and

implement an electronic reporting system that can eventually be integrated with the human health system. In addition, the electronic laboratory information system at Landspítali needs to be updated, and efforts to unify electronic systems – including investigating the possibility to connect regional laboratories – should be prioritised. Beyond electronic reporting, there is also a need to establish a national sequencing database to facilitate the sharing of genomic data between the NRL and the office of the Chief Epidemiologist. This database should also support data exchange across sectors to enable integrated surveillance and effective outbreak response.

The Ministry of Health is responsible for issuing licenses to laboratories that investigate diseases listed in Regulation 221/2012 on the reporting of infectious diseases. Accreditation is mandatory for laboratories conducting such analyses. The Icelandic Service for Accreditation (ISAC) is the national accreditation body. To support accreditation in areas where ISAC has not yet attained mutual recognition through the European co-operation for Accreditation, a framework agreement is in place between ISAC and SWEDAC (Sweden). The Landspítali laboratory is accredited under this arrangement, and it is important to recognise the significant effort, resources, and compliance requirements involved in obtaining and maintaining this accreditation. Smaller regional laboratories conduct diagnostic tests such as urine and throat cultures, as well as antibiotic susceptibility testing, but only one is licensed. None of these laboratories are accredited, and in the absence of formal oversight, there is limited insight into their overall quality, testing capacity and the completeness of their reporting to national authorities.

There is currently no standardised national system for transporting specimens, including official standard operating procedures (SOPs) for the packaging and shipping of referral samples. The NRL at Landspítali provides guidance on packaging and the information required for samples, which is accessible to other laboratories. However, the shipment of specimens – both within Iceland and internationally – could be more formalised through agreements with transportation companies, supported by national guidelines.

Recommendations

- The designation of the NRL at Landspítali should be supported by appropriate legislation and the necessary budget to fulfil their public health role in notifiable disease diagnostics and surveillance.
- Define the role of the NRL in the context of the national pandemic preparedness plan to ensure that the laboratory requirements are properly accounted for and ensure that a clear strategy for scaling up laboratory capacity in emergency situations is part of the plan.
- Create a national laboratory network through a formal cooperation framework in which the NRL shall oversee, coordinate, and support all regional public and private laboratories to ensure harmonised quality standards, reliable diagnostics, and efficient information exchange. Ensure sustainable funding for the national laboratory network to maintain and further develop laboratory capacity and capability, including training, tools, and infrastructure for next generation sequencing and bioinformatics. (Please also refer to recommendations under Surveillance (Capacity 4) and Zoonotic diseases and threats of environmental origin including those due to the climate (Capacity 10)).
- Prioritise the work of unifying the electronic laboratory systems connecting also the regional laboratories. The same goes for the animal sector, where work needs to begin on developing and implementing an electronic reporting system that can eventually be connected to the human side.
- Start the development of a national sequence database and mechanisms for sharing sequence data between the NRL and the Chief Epidemiologist, with built-in capability to expand to all One Health sectors to allow for integrated surveillance and outbreak management.

Surveillance (Capacity 4)

Surveillance of communicable diseases in Iceland is a core public health function, legally grounded in the Icelandic Act on Health Security and Communicable Diseases. This Act authorises the Ministry of Health to determine which diseases require notification and mandates the Chief Epidemiologist to maintain a central infectious disease registry. Further provisions, including a list of reportable diseases, are set out in the Regulation on Infection Control Reporting. Guidelines based on Act No. 19/1997 and Regulation No. 221/2012 instruct physicians, hospitals, and laboratories on how to report. However, the list of notifiable diseases in the electronic medical records has not always been up to date. Although it covers a broad range of pathogens, it lacks specific surveillance objectives and case definitions. Furthermore, the data submission is not yet digital.

The surveillance system is mainly based on daily updated laboratory results, but also ICD-10 codes submitted daily from the primary care and hospitals to the national register. ICD-10 codes reflect diagnoses at primary care visit or at discharge from hospital, but if a diagnosis is changed after the codes have been submitted to the national register the update is not captured and the initial code remains unchanged.

A further challenge associated with ICD-10 coding is the potential for overreporting or misclassification. This can occur when clinicians fail to use sufficiently specific codes or apply incorrect ones, which can compromise the accuracy of the surveillance data. This issue is relevant to all surveillance systems based on ICD-10 codes. Although each patient has a unique identifier that could link surveillance data with electronic health records, vaccination registries, and mortality data, this integration was not often implemented until recently when the

permission process regarding linkage was facilitated. Data received by the Directorate of Health are anonymised, and re-identification requires authorisation. A strength of the system is the timely availability of laboratory data, which is key for effectively using these data for surveillance.

When more detailed clinical information is needed, physicians are supposed to complete paper forms that are manually entered into a separate database. This process is expected to be replaced by an electronic system supported by an EU4Health grant, which also explores direct access to the national ICD-10 database, and builds on the vaccination registry to support future outbreak responses.

Laboratory-based data are primarily received from Landspítali and Akureyri Hospitals, with daily submissions on notifiable and weekly Excel reports with additional aggregated information on non-notifiable respiratory viruses and number of tests performed. A semi-automated system, including manual validation steps, ensures code accuracy before submission to the National Communicable Disease Register. Around 90% of national testing is conducted in the laboratories at Landspítali and Akureyri hospitals, while the remaining 10% comes from smaller, often non-reporting, private or regional labs whose diagnostic capacity is unclear. Differences in laboratory information systems – even within hospitals – complicate integration. For instance, the Landspítali uses the GLIMS system, managed by an external vendor in Belgium, leading to delayed updates and communication issues. Akureyri Hospital struggles to maintain regular reporting, even of mandatory notifiable diseases. A technical solution for the laboratory is needed to send lab results to the Chief Epidemiologist. Landspítali reviews admissions daily for respiratory infections and weekly for other conditions, submitting findings via Excel during influenza season.

Paediatric clinical surveillance data are incomplete. Significant proportion of paediatric outpatient consultations occur at a private clinic not integrated with national systems. While severe cases are referred to Landspítali, mild-to-moderate cases are underreported.

There is no integrated sentinel surveillance for mild acute respiratory infections, resulting in limited sampling from primary care. This affects the representativeness of lab results and delays detection of emerging pathogens, while limiting availability of samples for characterising circulating influenza and SARS-CoV-2 strains.

Centrally, automatic validation detects errors and flags duplicates, if multiple reports occur within a defined time window.

Surveillance data are regularly shared with Landspítali. Weekly summaries – based on an interactive dashboard tracking notifiable respiratory diseases – are published in both Icelandic and English, interpreting key trends. The team also conducts weekly reviews of this dashboard and an internal report on additional respiratory infections not covered in the public platform. In recent years no specific thresholds have been used for respiratory virus activity in the community, however new thresholds for influenza activity are being calculated and will be introduced before the 2025/2026 season.

The system's sensitivity and specificity are difficult to assess due to the lack of a gold standard and gaps in population coverage, such as among children and institutionalised elderly people. During a pandemic, shifting system objectives or changing clinician reporting habits could be difficult without a national coordination network or ongoing communication mechanisms. Although data extraction and reporting are timely, the lack of an overarching digital infrastructure prevents interoperability between key systems, such as lab databases, EHRs, vaccination records, vital statistics and veterinary surveillance. These structural issues reduce the overall efficiency of the surveillance system.

The system demonstrated resilience, flexibility, and adaptability during the COVID-19 pandemic. Daily phone calls were made to COVID-19 patients by Landspítali Hospital, with the support of retired physicians and quarantined health workers. Testing capacity was rapidly expanded through primary care and a private laboratory. A digital platform managed test scheduling, result delivery and contact tracing. Contact tracing was supported by over 100 temporary staff including nurses and police. However, after the COVID-19 pandemic, no contact tracing platform remained, and this should be considered for development and integration into the surveillance system.

Surveillance during the pandemic included a digital passenger locator form and daily hospital reviews tracked deaths, ICU and ventilation needs. Telemedicine was also widely adopted. ICD-10 codes were also used to follow up real-time the effects of other threats, such as the volcanic eruption in Grindavík.

Modelling capacity is not part of the surveillance capacities due to limited national resources. During the Covid 19 pandemic Iceland relied on external models developed by universities and neighbouring countries to project case numbers, transmission, and hospital admissions, including in ICUs. While data specialists are in place, the Directorate lacks in-house statisticians, and no formal evaluation of the surveillance system is planned.

Primary care contact tracing remains underfunded, with primary healthcare centres covering the costs without dedicated budgets. Testing is expected to be managed within existing resources. Hospitals typically detect clusters and report them to the Chief Epidemiologist. Primary care services and hospitals handle routine contact tracing, while the Chief Epidemiologist coordinates broader responses in serious cases. However, the Chief Epidemiologist does not have manpower or budget to conduct contact tracing activities unless an emergency/pandemic is declared – leaving frontline staff to carry them out.

Recommendations

- Develop standardised reporting procedures through the development of national reporting protocols aligned with EU surveillance requirements. These protocols should clearly define disease-specific objectives, required data elements and formats, and the frequency of reporting.
- Develop a comprehensive data infrastructure and standardised process models to support interoperability, integration, and linkage between the updated clinical notification system and other key databases – for example laboratory information management systems (including the timely reports from the laboratory at Akureyri Hospital), vaccination registries, vital statistics, electronic medical records and contact tracing systems, other One Health data. (Please also refer to recommendations under Laboratory (Capacity 3) and Zoonotic diseases and threats of environmental origin including those due to the climate (Capacity 10)).
- A contact tracing platform should be developed and integrated into the surveillance system.
- Establish a primary healthcare-based sentinel surveillance system for acute respiratory infections, with integrated microbiological surveillance of influenza, RSV, and SARS-CoV-2 to help capture data on mild respiratory infections and enhance early detection of emerging pathogens.
- Continue monitoring the quality of surveillance data from ICD-10 codes, striving for representativeness by age and place, and conducting system evaluations when performance issues are noted.
- Reintroduce respiratory disease-specific thresholds and early warning indicators to enhance the system's ability to respond promptly to emerging health threats.

Antimicrobial resistance and healthcare-associated infections (Capacity 12)

The One Health National Action Plan (NAP) on Antimicrobial Resistance (AMR), 2025–2029, was published in July 2024, after completion of the Article 7 questionnaire. The political commitment for the NAP is exemplified by it being co-signed by the Minister of Health, the Minister of Food, Fisheries and Agriculture, and the Minister of Environment, Energy and Climate. Its detailed cost estimate identifies that 30.1% of the anticipated costs are funded through budget that is already being allocated to the relevant institutions. However, 'additional funding' will be needed for 69.6% of the planned activities, through negotiated annual budgeting, and so the long-term sustainability of the NAP is uncertain. A cross-sectoral working group would be useful at least for the duration of the NAP (2025–2029) to monitor its implementation for its governance, and to support preparation of the subsequent NAP. The mechanism for relevant organisations to apply for NAP funding is not specified in the document.

The NAP presents six 'Actions' for 10 national public sector stakeholders, in a One Health approach. The Actions are valid and proportionate for the AMR, healthcare-associated infections (HAIs) and infection prevention and control (IPC) challenges in Iceland. These are well described in the 'Annual report of the infection control unit of the National Hospital, 2023', and the 'Annual report on antibiotic use and antimicrobial resistance in humans and animals in Iceland, 2023'.

Each Action in the NAP is considered in detail, with sub-objectives that have output indicators and granular activities that aim to achieve benchmarks, and, where relevant, quantitative targets for 2029 compared to 2022. The quantitative targets note relevant EU activities, such as the Council Recommendation on stepping up EU actions to combat antimicrobial resistance in a One Health approach' (2023/C 220/01), and match ambition with realism.

The NAP information dissemination and education plan (Action 2) is exemplary. Like many countries, it includes a survey for healthcare workers and the public, matched with standard campaigns in legacy and social media and participation in international awareness campaigns during World Antibiotic Awareness Week. However, it also prescribes education for the public regarding the risk of infection during international travel, for parents with children in daycares and infant healthcare, for primary and secondary schools, and for tourists. This recognises the increasing risk and rate of importation of infections, including multidrug-resistant pathogens, from countries with higher rates of AMR than Iceland, and is likely to help prevent outbreaks and endemicity.

The rate of antimicrobial consumption in Iceland exceeds that of its Nordic neighbours, and Iceland recognises the need for reinforced antimicrobial stewardship activities, including the community, hospitals, general and private practice, and long-term care facilities (LTCFs); within specialties such as dermatology; and among non-specialist clinicians. A 'STRAMA' working group, similar to the groups in Sweden, tackles this among other challenges, providing GPs with peer-comparison reports, holds regular meetings, and updates clinical guidelines. However, stewardship efforts in hospitals face challenges with limited representation in hospital governance, no formal accreditation for training, and sustainability challenges with, for example, hospital pharmacologists leaving the public sector. There is an electronic information system in place for primary care physicians, 'Gagnasýn' via the Saga medical record system, which can provide feedback on antibiotic prescribing practices to individual physicians, for each clinic and region. However, the Gagnasýn system has suboptimal support for technical maintenance or development and may become obsolete in the near future.

By contrast, there is currently no electronic system/dashboard in place for the hospital and LTCF sectors to provide feedback on antibiotic prescription practices to physicians at the individual, ward, institution or regional levels. The NAP for AMR (2025–2029) includes development of dashboards/data visualisation for antibiotic prescription feedback to doctors in all sectors, including hospitals and LTCFs; and further development of interactive statistics on antibiotic prescriptions at the Directorate of Health, for all sectors.

Iceland has strong practices for the screening of admitted patients, based on risk assessment. The Chief Epidemiologist maintains a dashboard to track trends in diagnoses of MRSA and extended-spectrum beta lactamase (ESBL)/AMPC-containing organisms. The dashboard was felt to be not optimally accessible, requiring several manual steps to locate information online. In addition, Landspítali has real-time monitoring of diagnoses of Vancomycin resistant enterococci (VRE) and carbapenemase-producing bacteria. Iceland's participation in the E-BSI project, for blood samples, highlighted the potential of electronic HAI surveillance in general and for efficiency savings that might enable additional focus on the prevention and control of ESBLs/AmpC and MRSA.

Prior to the COVID-19 pandemic, healthcare facilities throughout Iceland directly shared practical experience on their IPC practices across a national network of health-care workers working in IPC in all health districts during meetings and face-to-face workshops. During and following the COVID-19 pandemic, IPC guidance was shared for local use and/or adaption, such as the IPC guidance for Landspítali hospital.

IPC training opportunities for nurses and other healthcare professionals are scarce within Iceland, which was not unexpected considering the country's population size. Some opportunities for such training exist within Nordic universities and via international societies. Looking forward, a two-year University training programme for nurses in Iceland that took place in 2021/2022 may be repeated in 2026/2027.

The two largest acute care hospitals, the Landspítali and Akureyri hospitals have dedicated IPC staff, and participated in the ECDC point prevalence survey (PPS) of HAIs and antimicrobial use in European acute care hospitals, 2022–2023 (ECDC PPS). Iceland also participated in the antimicrobial use in European long-term care facilities study 2023–2024 (ECDC HALT), and continues to actively engage in international activities relevant to prevention and control of AMR and HAIs, such as EU-JAMRAI 2. Iceland is building additional acute care capacity for IPC, through provision of a new Landspítali hospital, and by seeking to match the Landspítali IPC capacity at Akureyri hospital.

Recommendations

- Secure sustainable multi-year funding and involvement of relevant Ministries to implement and monitor the One Health NAP for AMR, including the multi-sectoral programmes for 'information dissemination, education and prevention' (NAP Action 2).
- Strengthen and expand antimicrobial stewardship in all healthcare sectors, including:
  - Promotion of accredited training programs for HCWs including Pharmacists (NAP Action 1);
  - Reinforcement and improvement of the Prescription Medicines Database and electronic feedback systems/dashboards for prescribers (NAP Action 1); and
  - Stewardship interventions for hospitals and LTCFs, e.g. at EAAD/WAAW (NAP Action 2).
- Further develop national HAI prevention and control programmes and policies, including establishment of sustainable and comprehensive e-surveillance, for sample types including blood.
- Renew or establish activities to ensure IPC capacity at all healthcare facilities, such as face-to-face workshops for local adaptation of the Landspítali guidance for hospital IPC.
- Continue activities to ensure additional acute care capacity, including increasing inpatient bed capacity, to facilitate IPC, at both Landspítali and Akureyri hospitals.

Zoonotic diseases and threats of environmental origin, including those due to the climate (Capacity 10)

In Iceland, several institutions contribute to surveillance, preparedness and response to zoonotic diseases. The ministries involved include the Ministry of Health, the Ministry of Industries (responsible for Food, Agriculture and Fisheries) and the Ministry of the Environment Energy and Climate. The main organisations involved are the Chief Epidemiologist at the Directorate of Health, the Icelandic Agency for Environment and Energy, the Icelandic Food and Veterinary Authority (MAST), Landspítali Hospital (National Reference Laboratory), Matís and Keldur Institute for Experimental Pathology (NRLs for food and animal health, respectively) and Health inspectorates at regional and local level.

According to Article 11 of the Act on Communicable Diseases nr. 19/1997, the Chief Epidemiologist shall be notified by the animal, environmental and radiation authorities about any potential risk of infection or threat due to toxic chemicals or radio-nuclear substances to public health, as the Chief Epidemiologist is responsible for their management. In turn, the chief epidemiologist notifies to those authorities any events that may concern the animal, radio-nuclear or the environmental sector.

The Minister of Health has established a collaborative committee responsible for organising response for events from animals, food borne diseases, chemicals and radiation that can pose a serious threat to public health. This is the Statutory Joint Committee for Epidemic Prevention (abbreviated SSUS in Icelandic), chaired by the Chief Epidemiologist. The Food and Veterinary Authority is represented by two specialists, one in zoonotic diseases and one in food safety; the Environmental Agency brings two specialists in toxic chemicals and food safety; and the Radiation Authorities have one representative. This Committee meets on an ad hoc basis, often once or twice per year.

Since the Act details the importance of cross-sectorial collaboration and how it should be arranged, a formal memorandum of understanding has not been established. However, the Chief Epidemiologist has published guidelines on the management of food- and waterborne disease outbreaks that clearly outline each stakeholder's role in the investigation and management of foodborne outbreaks. Intersectoral foodborne outbreak investigation teams are formed and meet frequently, sharing files among sectors and producing joint reports. Notifications of cases of suspected foodborne diseases are usually shared through a joint online channel and discussed at monthly cross-sectoral online meetings. The most recent cross-sectoral simulation (table-top) exercises were held in 2022 and 2024 with a scenario of a foodborne disease outbreak, to clarify roles and prompt discussions on how to improve the overall outbreak investigation process.

Priority diseases in humans are listed in regulation 221/2012 about reporting on communicable diseases. Priority diseases in animals are listed in regulation 52/2014 about diseases in animals that are mandatory to register and report. A joint list of shared priority diseases in the human and animal/food sectors is not available.

The analysis of animal health and zoonoses laboratory data is conducted manually, without a database or platform that allows data-sharing among sectors. Due to short communication pathways, most notifications between sectors on zoonotic events start with a phone call or an email and are usually followed up with a virtual meeting of relevant stakeholders. The Icelandic Food and Veterinary Authority has a general contingency plan for serious animal diseases, including zoonotic diseases. Several disease-specific operational plans and other supporting documents have also been published. The authority regularly holds exercises and training sessions, as well as after-action reviews. Other parties (e.g. practising veterinarians and the Environment and Energy Agency) are involved in the development of recommendations and training on how to work in case of a new zoonotic threat. The Icelandic Food and Veterinary Authority has also developed a draft contingency plan for avian influenza, which is not yet public.

The country has not yet published a One Health Strategy for Zoonotic diseases, or a document that presents the governance and communication flow among relevant sectors at national or regional levels, or procedures to for joint emergency response in the case of emerging zoonotic diseases. However, the OH AMR National Action Plan shows the commitment to engage in the One Health approach.

The intention is to update the preparedness and response plan for CBRNe events, considering the One Health approach, and therefore the necessary coordination and involvement of different sectors, complementing it with intersectoral disease specific operational plans.

Iceland's frequent geological events, such as volcanic eruptions, earthquakes, avalanches, may have heightened its awareness about the health impact of extreme weather and environmental threats.

A Scientific Committee on Climate, led by the Ministry of Environment and Climate and involving all Ministries and the association of local health authorities, has produced a recent scientific report on climate effects on the country.

Building on the National Adaptation Strategy 2021, a National Adaptation Plan for climate change is being drafted, which aims to increase the number of indicators related to public health, climate and environment, conducting health and impact assessments and increasing the knowledge and response capacity of the healthcare system.

Early warning systems in place for natural disasters (e.g. volcano eruptions) and mechanisms for exchange of information through coordination groups are highly valuable in the communication to the population to help them prepare for the health impacts of such emergencies (e.g. volcanic gases). The Icelandic Meteorological Office, the Environment and Energy Agency, the Chief Epidemiologist, Landspítali Hospital, the Food and Veterinary Authority and the Civil Protection have worked very closely with local health authorities (via the Association of Public Health Authorities), raising awareness, and this has been crucial to reduce the health impact. The Chief Epidemiologist leads a cross sectorial group that monitors acute health hazards to the public from air pollution from volcanoes and issues guidance and advice. The group has produced collaborative publications and meets regularly when an eruption is ongoing.

A Climate Atlas, based on scenarios, presents current environmental and meteorological data and projections; it covers the possible impact of climate change in the risk of importation of vectors or occurrence of vector-borne diseases. Iceland's intense maritime tourism and relatively high number of ports implies a potential vulnerability.

Recommendations

- Establish One Health governance to coordinate surveillance, prevention, and control of zoonotic and environmental threats by defining roles, communication, decision-making, and resource allocation across sectors and administrative levels.
- The SSUS could be enhanced to become more active and operational, producing guidance and procedures, developing and engaging in simulations, and involving additional organisations (e.g. the Icelandic Medicines Agency and the NRL for human and animal/food sectors).
- Organise joint interdisciplinary training on surveillance, preparedness, risk assessment and risk management in response to zoonosis and to environmental threats that involves the public health, animal health and environment sectors, using lessons learned from real events and trainings organised by ECDC or other Agencies. Organise cross-sectoral simulation exercises for priority zoonotic threats, using the experience from food and waterborne diseases as a model.
- Develop a comprehensive data infrastructure and standardised processes for the surveillance of food-, water- and vector-borne and zoonotic diseases that integrates food, animal and vector data, with consideration for interoperability with the public health surveillance system/databases allowing for data-sharing among sectors. This could lead in the future to an annual Icelandic One Health zoonoses report. Environmental data could also be considered for certain diseases and analysis. (Please also refer to the recommendations under Laboratory (Capacity 3) and Surveillance (Capacity 4)).
- Assess the potential impact of extreme weather events in the provision of health services (e.g. disruption due to destruction or malfunction of health facilities, electricity, potable water, other), proposing measures for continuity and considering the lessons learned from COVID and other environmental crises (e.g. volcano eruptions) when addressing special needs of certain population groups (e.g. migrants, older people).
- The Climate Atlas should incorporate health related indicators and correlations, informing the Icelandic NAP for climate change, which should be cross-referenced with the next pandemic preparedness plan.

Other capacities not assessed in-depth

Policy, legal and normative Instruments to implement the International Health Regulations 2005 (Capacity 1)

The Act on Health Security and Communicable diseases (nr. 19/1997) allows the Minister of Health to implement the International Health Regulations (IHR 2005) at all levels and outlines the responsibilities of the Chief Epidemiologist as the designated National IHR Focal Point (NFP). Following the COVID-19 pandemic, the Act was reviewed and amended, most notably in 2021. A new bill aimed to further strengthening of the Act is in the works and has been announced to be presented to parliament this coming autumn. Additional amendments to the Act may however be considered following the finalisation of the ongoing review of the implementation of the 2024 amendments to the IHR (2005), including Iceland's designation of the National IHR Authority (NIA).

The IHR NFP function of Iceland holds a generic email account and a telephone number. It is the Chief Epidemiologist who holds the main responsibility to uphold the 24hr/7d communication requirement under Article 4 of the IHR (2005). During traditional work hours, the Chief Epidemiologist is supported with managing this function by an alternative duty officer. This set up makes the system vulnerable through personal dependence, while also reflecting Iceland's challenge of having limited human resources available. The office of the Chief Epidemiologist conducts internal surveillance meetings on a weekly basis where both national and international events are covered. Multisectoral meetings with other IHR implementing entities are held on ad hoc basis only.

Multisectoral implementation of the IHR (2005) in Iceland from an all-hazards approach is largely based on informal communication, while the foundation for establishing multisectoral coordination and collaboration mechanisms are provided for in the Act on Health Security and Communicable diseases (nr. 19/1997). A list of focal points for technical areas under the IHR (2005) is available but not incorporating or reflecting all-hazard/all-threats approach of the IHR (2005) and the SCBTH regulation. There is a need to assess available capacities at ports in Iceland and update the list of designated Points of entry (PoE) under the IHR (2005) (please also see recommendations in Points of Entry and border health (Capacity 9)).

The presence of an IHR advocacy mechanism was not documented during the assessment meeting. Cross-sectoral collaboration between IHR implementing sectors is currently reactive rather than proactive.

Recommendations

- Develop a list of IHR implementing entities at national and regional level, including contact points and their contact details, for each core capacity area, to serve as the formal reference and basis for coordination and collaboration on IHR implementation.
- Utilise the list of IHR implementing entities to formalise a mechanism/process to ensure multisectoral involvement in the mandatory annual State Party Annual Reporting (SPAR) process under Article 54 of the IHR (2005), and the triennial Article 7 reporting under the SCBTH regulation.

Financing (Capacity 2)

Iceland has a highly centralised administrative and governance system that ensures high access to primary healthcare, regardless of ability to pay, thereby promoting equity and social solidarity. While the health budget is determined annually by the Ministry of Finance and Economic Affairs, the Ministry of Health (MoH) is responsible for managing it centrally and overseeing its allocation through regular coordination meetings. The budget has remained stable over the past four years and constitutes approximately 26% of the annual government budget.

The Ministry of Health can seek increased budgetary appropriations to respond to unforeseen health emergencies through a Supplementary Budget Act procedure. The Ministry of Finance and Economic Affairs allocates these additional funds on an ad hoc basis, usually requiring strong justification. There is usually an opportunity to request supplementary budget allocations once a year, but there is some flexibility to this (e.g. during the COVID-19 pandemic such requests were made more frequently, up to five times a year). While these procedures can be complex and challenging, and despite the lack of formal procedures, the Ministries in Iceland are approachable and respond quickly to budget requests during times of crisis.

In case of a health emergency at the regional level, the affected region is expected to redistribute resources and reallocate funds internally to manage the emergency. If additional funding for unforeseen expenses because of the emergency is necessary, a special request is sent to the Ministry of Health to inform them about the situation and request official support – usually the Ministry is very understanding about such requests. There is a small amount of contingency funding available at the Ministry of Health level, but if this is insufficient, the ministry may engage in formal interministerial discussion with the Ministry of Finance to request additional funds through the supplementary budget act procedure.

With regards to private sector involvement in responding to health emergencies, the MoH can outsource services to the private sector or academic institutions through agreements. Iceland Health (Sjúkratryggingar Íslands) has the authority to negotiate agreements and contracts with the private sector within the terms of reference and budgetary constraints set out by the Ministry of Health. The agency administers health insurance and handles negotiations and payments for healthcare services (e.g. surge capacity for certain services or 'quarantine hotels' during the COVID-19 pandemic) as required.

Financing for IHR implementation is included in the annual budget of the Ministry of Health. No issues are foreseen for allocating additional funds to satisfy the requirements of the 2024 amendments to the IHR (2005) (e.g. establishment of a National IHR Authority).

Recommendations

- Formalise the procedure for re-prioritising and/or requesting additional financial resources in the national and regional preparedness plans.

Human resources (Capacity 5)

Although Iceland has good capacity in terms of human resources for health and public health, several challenges exist. Specialised medical services are provided mostly in the capital, and each Healthcare District and specialised hospital assesses its capacity to deliver healthcare services based on the volume of visitors within its jurisdiction. The country faces shortages of registered nurses and licensed practical nurses and recruitment and retention of medical staff in rural areas remains challenging with no straightforward solutions to address this issue. A limited number of public health professionals shoulder multiple critical roles; the Chief Epidemiologist, for example, plays central role across infection prevention and control, toxic chemicals and radiation health threats. District physicians, as well, absorb public health responsibilities alongside their clinical duties. The reliance on few experts covering several roles makes the system highly dependent on individuals and structurally vulnerable.

While there is a legal requirement for each institution to maintain a preparedness plan, several were updated after the COVID-19 pandemic. Most plans reference 'business continuity' without offering concrete guidance on how to manage it in practice, and existing plans are largely mass-causality focused. Human resource monitoring framework exists but requires technical improvements and funding to achieve near real-time oversight, which is essential for effective staff management and continuity of care during crises.

The importance of providing continuous professional training to experts that work in Iceland is acknowledged and mechanisms are established by law. The National Commissioner of Police leads training on civil protection,

including field and operational management as well as training Red Cross representatives within the Civil Protection and Coordination Centre, while Icelandic Red Cross trains its own field units. In healthcare, a master's programme on crisis management at Bifröst University commenced in 2021 in response to the growing need for structured crisis prevention and preparedness, response and rehabilitation. However frontline training in risk assessment and health emergency risk management is limited.

The recommendations related to this capacity are presented jointly under the area Health Service Provision (Capacity 7) below.

Health service provision (Capacity 7)

Iceland has a strong culture for resilience for emergencies, both institutionally and among the public. However, healthcare services can be strained during a significant event due to limited surge capacity. A map showing healthcare bed availability is manually and irregularly updated. The declining number of acute care beds per capita was stated to be a concern for Iceland, especially given the aging and increasing population and large number of tourists visiting the country – many with age-related health issues – often travelling to relatively remote areas with healthcare capacities that are adapted to their permanent resident population. In addition, Landspítali hospital is operating regularly around and sometimes over 100% capacity.

Collaboration between national, regional and local levels was reported to be generally good, although there are commonly very few people at each organisational layer, which implies fragility and imposes a need for flexibility and adaptability. District physicians, similar to clinical laboratories, absorb public health activities, such as contact tracing, within their routine healthcare work. This was reported to make it difficult for them to prioritise public health tasks, because their standard duties often had to pause.

According to the Organisation for Economic Co-operation and Development (OECD) in 2021 Iceland had 15 nurses (registered nurses and licensed practical nurses) per 1 000 population, above the EU average of 8.5 nurses per 1 000 population, and 4.38 doctors per 1 000 population, which was the tenth highest rate among OECD countries.[5] Nevertheless, Iceland faces a significant shortage of licensed practical nurses, which impacts day-to-day care, e.g. Landspítali hospital was short of approximately 400 licensed practical nurses last year.[6] The proportion of GPs was 12.9%, far below the EU average (20.4%). During the assessment, Iceland noted that nursing staff retention is an ongoing challenge, particularly as many leave for other sectors and the Ministry of Health has identified a need to improve nurse recruitment and retention.

In recent years, the recruitment of foreign-trained nurses – particularly from the Philippines – has increased significantly. Although no formal Icelandic language requirements are in place for licensing by the licensing body, proficiency in Icelandic is seen to be essential for safe and effective nursing practice in Iceland. To support this transition, Landspítali has implemented a two-year professional development program for international nurses working in Landspítali. This includes integration into the Icelandic healthcare system, Icelandic language training, and professional support. After completing the program, nurses enter Landspítali's continuing education system for nurses, which provides 40 hours of annual training. Landspítali is also developing a similar continuing education program for licensed practical nurses.

Iceland also relies on overseas healthcare transfers (through the Nordic Cooperation) for less common procedures and rare disease management, as well as surge capacity for severely burned patients but that capacity is very limited. According to the OECD, in 2023 there remained a backlog of cataract, knee replacement and hip replacement surgeries.[5]

During the response to the COVID-19 pandemic, surge capacity was provided by recently retired professionals, those with reduced clinical duties, students, and, particularly for contact tracing by quarantined healthcare workers. The 'Bakvarðasveitin' register tracked the available healthcare workforce during the pandemic but is not operational anymore. Barriers to maintaining such a system for preparedness purposes include the challenges with maintaining its accuracy and data protection issues. While aspects of the Civil Protection law can be activated to recruit Icelandic citizens, voluntary healthcare worker recruitment was considered sufficient for healthcare emergencies.

To strengthen future preparedness, Iceland could consider establishing a national surge capacity framework by institutionalising the *'Bakvarðasveitin'* initiative as a legally anchored, regularly updated registry. This framework should extend beyond hospital care to encompass essential public health functions. A phased implementation could begin by piloting the integration of data from relevant sources (e.g. licensing authorities, insurance agencies, and professional associations) to create a real-time dashboard that maps health professionals by specialty and geographic location, enabling rapid and targeted deployment during public health emergencies.

[5] 'State of Health in the EU Iceland Country Health Profile 2023'; OECD and World Health Organization (acting as the host organisation for, and secretariat of, the European Observatory on Health Systems and Policies) 2023. Available at: https://eurohealthobservatory.who.int/publications/m/iceland-country-health-profile-2023

[6] https://www.ruv.is/frettir/innlent/2025-07-03-vantar-morg-hundrud-sjukralida-447580

The act on Civil Protection No. 08/2008 and regulation No 323/2010 (Iceland Department of Justice) require agencies to create their own preparedness plans for business continuity and response to serious events, aligned with an overarching national plan, using a standardised format. Several such plans were presented, although there appeared to be no recent plan for business continuity and continuity of care in primary care.

Training and continuous professional development (CPD) programs for emergency preparedness and response remain uneven across regions and healthcare roles. Our assessment supports the findings of a number of studies, for example, a 2023 study in rural Iceland found that over 40% of healthcare workers had never participated in mass casualty exercises, and 43% lacked disaster preparedness training. Establishing a mandatory, comprehensive training framework; including practical simulation exercises, role-specific SOPs, and prioritisation protocols, would strengthen preparedness and ensure that all personnel can effectively respond to public health crises.

Recommendations for Human resources (Capacity 5) and Health Service provision (Capacity 7)

- Enhance engagement of district physicians with public health activities through measures such as financial incentives or leave compensation.
- Develop long-term strategies to increase and retain an adequate nursing and HCW workforce, including in rural areas. Expand access to training abroad, improve the recruitment and integration of foreign-trained healthcare workers, particularly nurses, and address attrition among trained staff.
- Develop the system for managing national surge capacity for HCWs and other critical sectors within the national preparedness and response plan to be able to re-create a list of eligible HCWs that can be called in an emergency (e.g. *Bakvarðasveitin* during COVID-19).
- Establish plans to ensure continued delivery of primary healthcare and non-urgent medical procedures during emergencies of varying duration. This may be facilitated by updating the hospital preparedness plan template.

Risk communication and community engagement (Capacity 8)

Iceland's capacity in Risk Communication and Community Engagement (RCCE) including Infodemic Management (IM) is based on a strong inter-agency collaboration, a pragmatic culture of transparency, and a population with high levels of institutional trust. The country benefits from its small size and close interpersonal communication channels within the administration, which allows for rapid information flow and coordination during emergencies.

There is no standalone Risk Communication Plan in Iceland; instead, risk communication is generally included as a chapter within broader preparedness plans, and each sector holds the primary responsibility for communication within its remit. During officially declared public health emergencies, coordination of communication is centralised through the National Crisis and Coordination Centre (NCCC), with regional police chiefs, health institutions, and municipal actors ensuring harmonised messaging and strategic alignment across sectors. National risk communication has been effective, with tailored and transparent messaging via traditional and social media, healthcare providers, press briefings, and a 24/7 national hotline operated by the Icelandic Red Cross. During the COVID-19 pandemic, this hotline also served as a channel for public feedback, allowing authorities to identify common concerns and adjust messaging accordingly.

A key strength of the country's RCCE approach lies in high public trust gained through demonstrated commitment to transparency and empathy in crisis communication, which has been sustained during the pandemic through consistent and explicit communication and updates including addressing scientific uncertainty. Service Centres jointly operated by Civil Protection and the Red Cross are set up and opened temporarily after a disaster. They serve as one-stop-shops for residents, offering access to social and psychological support as well as other practical and necessary support, such as insurance and general information.

Iceland has made efforts to ensure inclusive communication with vulnerable groups. For people with special needs, authorities engaged directly with organisations such as the Disability Association and the Deaf Association to help ensure no one is left behind. To reach migrant and immigrant communities, who often live in clusters, have limited access to mainstream Icelandic media, and face integration barriers, COVID-19 response efforts included engagement with foreign employers and the use of the Multicultural Information Centre. For individuals experiencing substance abuse, mobile outreach teams were deployed. However, in the absence of a national RCCE strategy, these efforts remain ad hoc. In addition, the engagement of high-profile community leaders for many hard-to-reach communities, was notably lacking.

In addition, Iceland's preparedness planning should account for the substantial seasonal influx of tourists and integrate tourism-specific RCCE considerations, particularly in municipalities where cruise ship arrivals may double or even triple the local population. This dynamic presents unique communication and coordination challenges that require the involvement of local tourism authorities, municipal governments, and port health services.

Social listening is conducted through traditional means such as monitoring media reports, collecting feedback from Red Cross hotlines, and analysing public opinion polls. There is increasing awareness of the need for more structured infodemic management approaches and a National Infodemic Management strategy, which include strengthening partnerships with academia and involving social and behaviour scientists in risk assessments and RCCE efforts. During the pandemic, universities played an active role in countering misinformation through

scientific publications. Several master level theses have examined lessons learned from the COVID-19 communication response. However, this body of evidence has not yet been formally synthesised or institutionalised into public health emergency preparedness frameworks.

A critical capacity gap exists due to the lack of dedicated RCCE-IM staff within institutions. RCCE responsibilities are integrated into broader administrative or operational roles, restricting the ability to scale up during emergencies and hampering sustained, coordinated community engagement during peacetime.

Recommendations

- Formalise RCCE-IM strategy at both national and regional levels, with clearly defined roles, responsibilities, and intersectoral coordination mechanisms, including SOPs to guide RCCE in both routine and emergency contexts.
- Strengthen human resource capacity by appointing permanent RCCE-IM focal points for RCCE-IM functions in the Directorate of Health, Civil Protection, and other relevant bodies. And provide ongoing training in RCCE-IM methods including on Infodemic Management
- Improve outreach to vulnerable groups by jointly developing a stakeholder engagement plan, led by the Directorate of Health and Civil Protection, with active involvement of community and religious leaders.

Points of Entry and border health (Capacity 9)

Iceland has four airports which are designated Points of Entry (PoE) under the IHR (2005), and 30 seaports, of which some meet the requirements as designated PoE under the IHR (2005). Since Iceland is an island, the country has no ground crossings. Keflavík International Airport is the main aviation hub that receives the majority of international passengers. Of the 30 maritime PoE, 24 are authorised to issue ship sanitation control exemption certificates, in accordance with the provisions of the IHR (2005) while only five are authorised to issue quarantine certificates and conduct inspections for vector borne diseases in vessels. Regional health committees, in consultation with the Icelandic Transport Authority, are responsible for health surveillance on vessels. Each committee can issue quarantine exemption certificates for several ports within their respective region. It was unclear how many of the 30 ports are able to implement routine core capacities with an all-hazard contingency plan, including vector surveillance. Multisectoral approach integrated into the national surveillance system, and training for inspectors at the district level is sporadic. In addition, there seems to be a discrepancy between the PoE reported in the SPAR and those listed in the relevant legislation, which further sheds light on the need for a review of these ports and their availability of core capacities as outlined in Annex 1 of the IHR (2005).

National preparedness plans for public health incidents are in place for both maritime and aviation PoE, supported by relevant legislation. The two national plans define the organisational crisis structure that is activated during relevant health emergencies. They contain operational checklists, standard operating procedures and lines of communication for the relevant stakeholders involved and are complemented by operational health emergency contingency plans specific to each PoE. Stakeholder communication within and between the regional and national levels is efficient and straightforward; standard operating protocols are in place and routinely followed. Preparedness at PoE is occasionally tested through actual events, including natural disasters, however the revision and updating of the preparedness plans – to integrate lessons learned since their publication – has been challenging and can benefit from more regular simulation exercises.

The Ministry of Health is responsible for decision-making around travel-related public health measures. These are based on recommendations from the Chief Epidemiologist, who also represents Iceland in the EU Health Security Committee (HSC). The HSC would be informed of such planned border measures, but currently there is no dedicated step to formally consult with the HSC prior to their implementation as per Article 21 in Regulation 2022/2371 on serious cross-border threats to health. Requirements to notify WHO on measures which may interfere with public travel and trade as per Article 43 of the IHR (2005) is acknowledged in Article 13 in the Act on Health Security and Communicable Diseases (No 19/1997).

Recommendations

- Map out the available core and routine capacities available at PoE and update the list of ports designated under the IHR (2005).
- Revise and update preparedness plans for PoE at ports and airports based on the experience from past events, including the pandemic.
- Conduct simulation exercises to test all-hazard preparedness and contingency plans at PoE, including for CBRNe threats and mass gathering events (e.g. cruise ships anchoring in small municipalities).
- Enhance national and regional competence (training) to ensure that designated PoE have the required core and emergency IHR capacities, including for ship sanitation inspections for vector-borne disease agents.

Chemical events (Capacity 11)

Several documents were provided to the expert team on the mechanism of response to chemical events in Iceland. Both the Act on Communicable Diseases and the National CBRNe Plan (2019), describe the involvement of different stakeholders at the local and national levels and the health sector in the response to chemical incidents. The response follows the general preparedness structure as with any other large-scale emergency. In addition, a CBRNe handbook (2019) was shared with the expert team, that is used for the training of first responders who may come in contact with CBRNe events.

In principle, smaller events (e.g. small spills, etc) are handled at the local level by local first responders, while district physicians may be required to provide guidance to the public. However, the role of district physicians in those events is often unclear to first responders. Larger chemical events would trigger the activation of the CBRNe plan and potentially a civil protection emergency situation. Coordination will be from the National Crisis and Coordination Centre as well as regional emergency operation centres, involving multiple stakeholders e.g. the national police, the Capital Area Fire Brigade and the Coastguard.

Decontamination facilities and capabilities are provided by three hospitals in the country (Landspítali, Akureyri and Suðurnes hospitals), while in addition, the Capital Area Fire Brigade and some other fire brigades have mobile decontamination equipment. A field exercise simulating the release of a chemical agent was conducted in 2023 ahead of the Reykjavik Summit of the Council of Europe meeting hosted by Iceland, which was perceived useful by the participants.

Landspítali also hosts the National Poison Information Centre (Eitrunarmiðstöð), which is led by one clinical toxicologist and staffed by trained clinical pharmacists and emergency medicine physicians and residents. The National Poison Information Centre is considered a source of scientific advice and has managed to provide services 24/7 despite resources being scarce. It has close ties to the poison centres of the other Nordic and Baltic countries and there are unofficial routes of consultation among the toxicologists in that network, which are considered helpful.

No systematic syndromic surveillance for the exposure to chemical substances is implemented, as is the case in most EU countries. However, due to the size of the country and the fact that a limited number of staff are working in the poison centre, they have had success with identifying contaminants and other exposures from connecting the information from clinicians and the telephone calls to the poison centre help line.

Roughly 20 sites in Iceland fall under the Regulation on the Prevention of Major Accidents Involving Dangerous Substances, which transposes EU Directive 2012/18 (the Seveso Directive) into Icelandic law. These sites are primarily fuel storage facilities, as there is little chemical production in Iceland that falls within the scope of this regulation. Operators of such sites are required to report to the Administration of Occupational Safety and Health, which is under the Ministry of Social Affairs and Housing in collaboration with the Ministry of Environment and Natural Resources. The Administration is responsible for supervising, inspecting, and monitoring the facilities' emergency plans, which must be submitted every five years. At present, there is no formal obligation to inform district physicians about these sites, and the national Civil Protection authorities, including the National Crisis and Coordination Centre, do not have direct oversight of them or their emergency response plans – although some staff members are aware of them through their participation in the Committee on the Prevention of Major Accidents in Industry (Samráðsnefnd um stórslysavarnir í iðnaði).

Recommendations

- Develop a National CBRNe strategy, including the update of the CBRNe plan in a multisector collaboration with the involved sectors and stakeholders, outlining the corresponding processes and roles for multisectoral response, the cycle of exercises, and stockpiling of critical medicines and other equipment.
- Enhance training in healthcare and public health staff in relation to CBRNe event recognition and management by taking advantage of European and international events (e.g. participation in simulation exercises, train with other Nordic countries, etc).
- Support the National Poison Centre to fulfil its role as a trusted source of advice for clinicians and the public by strengthening its human resources and formalising consultation processes with other Nordic countries (e.g. through collaboration agreements, etc).

Union level coordination and support functions (Capacity 13)

The Chief Epidemiologist Office is responsible for ensuring coordination with the EU level across the various public health functions. This role covers the interactions with the European Commission, ECDC, and other relevant EU institutions. The Chief Epidemiologist is member of the senior-level HSC taking responsibility for the implementation of possible recommendations from the HSC and is the director and coordinator of the ECDC competent bodies from Iceland. Iceland participated to HSC working group on early warning and response, preparedness, AMR, civil and military collaboration when the implications of the SCBTH on surveillance, early warning and response and preparedness were discussed. Due to limited resources, it is challenging for Iceland to participate to all EU initiatives and to dedicate resources for national or EU simulation exercises. Nonetheless, Iceland has been very active in reporting and contributing to discussions in EWRS and EpiPulse.

The new Act on Communicable Diseases under preparation will entail the operationalisation and integration of the Union Prevention, Preparedness and Response Plan (under development by EC) with the national preparedness plan as well as the alignment to the EU Regulation on SCBTH (2022/2371/EU).

The possibilities of the EU Health Task Force and the Union Civil Protection Mechanism (UCPM) for providing assistance and technical support to the country were discussed during the meeting.

Recommendations

- Prioritise and finalise the alignment of Iceland's national preparedness plans with the Regulation on SCBTH 2022/2371 (SCBTH) with prioritisation on activities related to cross-border and intersectoral collaboration and coordination with the EC and the HSC, in line with Article 21.
- Plan resources for participating in EU exercises and relevant preparedness training events.

Research development and evaluations to inform and accelerate emergency preparedness (Capacity 14)

Research is currently not formally included in Iceland's national preparedness and response plan, but the chapter on pandemic monitoring and epidemic analysis acknowledges the importance of studying the clinical features, spread, or burden of disease, when dealing with an emerging pathogen. The assessment of the effectiveness of medical countermeasures, or the impact of public health and social measures are proposed in the plan.

During the COVID-19 pandemic, collaboration with the University of Iceland supported modelling and statistical analysis, where epidemiologists provided the data. Given the limited capacity within the epidemiology team to incorporate research effectively, the Directorate of Health maintains a contract with the Department of Public Health Sciences at the university to support statistical analysis. This partial agreement between the government and academic institutions, when activated, can help bridge capacity gaps

Data ownership resides with the Directorate of Health, and data are primarily pulled from the national health registries. There are no major concerns about the use of data, especially when used for public health purposes. Linking data from different registries is possible with permission from the Data Protection Authority, specifically for public health research. However, researchers at the university must apply for access to health data. Applications are reviewed by a dedicated committee and, when approved, data are provided in anonymised form. Data access is also subject to ethics committee approval and university review processes.

Iceland actively participates in Nordic countries research through NordForsk, an organisation under the Nordic Council of Ministers that provides funding and facilitates research cooperation, sharing data and contributing to projects on public health and social measures, and modelling. While Iceland does not lead any project due to limited capacity, it is committed to participating in such collaborations.

Iceland also contributes data to surveillance projects led by ECDC and WHO, when opportunities arise. In the event of cross-border health emergencies, the rapid risk assessments provided by ECDC are considered valuable, as well as the access to guidance or joint study protocols.

Recommendations

- Include research in emergency preparedness and response as a core capacity in the preparedness and response plan. This could involve updating collaboration processes with university/-ies and exploring the possibility of incorporating university-based human resources to enhance research capacity. Besides epidemiological operational research that addresses public health assessment and response needs, behavioural science studies and modelling to develop preparedness scenarios could be considered.
- Maintain the existing collaboration within the Nordic Research Preparedness Strategy group of countries, a strong partnership where Iceland can play a key role and benefit from the joint drafting of study protocols or data-sharing agreements.

Recovery elements (Capacity 15) and Actions taken to improve gaps found in the implementation of prevention, preparedness, and response plans (Capacity 16)

Iceland has participated in several EU-level and European multi-country simulation exercises, including the annual WHO EURO Joint Assessment and Detection of Events (JADE) exercise. A national plan dedicated to recovering from public health emergencies is not available, but several municipalities have a recovery plan in place to rebuild their services after a health emergency. The Civil Protection Act (2008) provides a legal basis for the establishment of temporary Service Centres at the municipal level in situations where contingency plans have been activated. These are 'one-stop shops' that provide information and services to the public, thereby facilitating the recovery process in the affected communities.

The national preparedness and response plan and other plans refer to a process of evaluation that identifies lessons from public health emergencies. The legal basis for this process (Articles 28 and 29 of the Civil Protection Act, 2008) is currently being revised and strengthened. However, not all health emergencies undergo a review process, in part due to human resource limitations and competing priorities. The board of the National Crisis and Coordination Centre can request that an after-action review (AAR) is carried out in case of emergencies where the National Civil Protection Plan has been activated. For other events, an AAR can be carried out at the prerogative of the Steering Committee established to manage that event. The Ministry of Justice can also commission an external review following a health emergency. According to the Civil Protection Act 2008, the National Commissioner of Police is responsible for ensuring that recommendations from AARs are implemented and that preparedness and response plans are improved, although no timeframe for implementation is specified.

An SOP for evaluation of events that have required the involvement of the Civil Protection Department is in place and has been used multiple times. This usually takes the format of a two-hour meeting where invited stakeholders discuss what went well and what could be improved. However, a relevant methodology for health emergencies is not employed. More comprehensive AARs have also been carried out (e.g. on the response to the volcanic activity in Grindavík, and the review of the governmental crisis management during the COVID-19 pandemic), whereas AARs can also be done on an ad hoc basis for localised regional events.

Recommendations

- Ensure alignment between relevant legislation and provisions in future national and regional preparedness plans to regularly conduct AARs and implement any recommendations with a relevant action plan.
- Develop trigger criteria and procedures for conducting internal AARs following public health emergencies coordinated by the Centre for Health Security and Communicable Disease Control.
- Enhance national competence and human resources to conduct AARs by training a pool of experts in AAR methodology. Experts from other sectors or academia can assist in organising such events to decrease the burden on the government staff.

Conclusions

During the assessment, and in light of the documentation provided, the relevant authorities in Iceland demonstrated strong abilities to react to public health emergencies promptly, collaboratively and effectively. Significant strengths are the resilience of the national response structure, the timely availability of data on disease cases by near real-time reporting of laboratory results, and the significant financial resources dedicated to health. The response system, including the public health system and the capacities and capabilities of national hospitals and laboratories, are often stressed by the occurrence of natural or weather-related events.

The upcoming update of the national legal framework, as well as the new EU Regulation on SCBTH (2022/2371) and the funding of the EU4Health programme, represent opportunities that should be harnessed by Iceland to formalise critical collaborations in the context of the national pandemic preparedness plan, to strengthen laboratory-based surveillance and the role of the National Reference Laboratory, to establish a dedicated representative surveillance system for respiratory infections integrated with laboratory data, to introduce a One Health governance guiding roles and processes, and to ensure sustainable funding for key public health priorities such as prevention of healthcare associated infections.

Key factors in the maintenance of a robust public health system are the engagement of all stakeholders, including healthcare providers, in public health functions and tasks, and the strengthening of the epidemiological and microbiological workforce, at national, regional and local levels.

Annex 1. List of capacities included in the assessment

Table 1A. List of capacities included in the assessment

Capacity no.	Capacity name
Capacity 1.	International Health Regulation (IHR) implementation and coordination
Capacity 2.	Financing
Capacity 3.	Laboratory
Capacity 4.	Surveillance
Capacity 5.	Human resources
Capacity 6.	Health emergency management
Capacity 7.	Health service provision
Capacity 8.	Risk communications and community engagement (RCCE)
Capacity 9.	Points of Entry (PoEs) and border health
Capacity 10.	Zoonotic diseases and threats of environmental origin, including those due to the climate
Capacity 11.	Chemical events
Capacity 12.	Antimicrobial resistance (AMR) and healthcare-associated infections
Capacity 13.	Union level coordination and support functions
Capacity 14.	Research development and evaluations to inform and accelerate emergency preparedness
Capacity 15.	Recovery elements
Capacity 16.	Actions taken to improve gaps found in the implementation of prevention, preparedness and response plans

The five capacities that were assessed in-depth are:

1. Capacity 3. Laboratory
2. Capacity 4. Surveillance
3. Capacity 6. Health Emergency Management
4. Capacity 12. Antimicrobial resistance (AMR) and healthcare-associated infections (HAIs)
5. Capacity 10. Zoonotic diseases and threats of environmental origin, including those due to the climate.

*The fifth capacity has been chosen by the country and agreed with ECDC.

Annex 2. Practical arrangements for the assessment process

This annex outlines the main practical arrangements for the Public Health Emergency Preparedness Assessment (PHEPA) in Iceland, conducted under Article 8 of Regulation (EU) 2022/2371 on serious cross-border threats to health. The country visit took place from 2 to 6 June 2025 at the Directorate of Health and Harpa Hall in Reykjavik. This section aims to identify the experts who were members of the assessment team, the national focal point and the national experts who participated in the assessment and provides the agenda for the mission.

The assessment team

Members of the assessment team			
Name	**Institution (ECDC/other agencies …)**	**Role in the team (team leader/expert)**	**Capacities assessed**
Bruno Ciancio	ECDC	**Team Lead**	Surveillance, IHR, Union level coordination and support functions
Pete Kinross	ECDC	Expert	ARHAI, Laboratory, Health Service Provision
Jessica Beser	ECDC	Expert	Laboratory, ARHAI, Zoonotic diseases
Juliana Reyes	ECDC	Expert	Surveillance, Laboratory, Financing,
Daniel Cauchi	ECDC	Expert	Financing, PoEs, Zoonotic diseases, Recovery elements, Actions taken to improve gaps in the implementation of PPR plans
Carmen Varela Santos	ECDC	Expert	Zoonotic diseases, Research, RCCE, Chemical Events
Agoritsa Baka	ECDC	Expert	Health Emergency Management, Human Resources, Chemical Events
Zara Taha	ECDC	Expert	Human resources, RCCE, Health Emergency management, PoEs
Cinthia Menel-Lemos	DG-SANTE	Expert	Union level Coordination, IHR, Health Emergency management, Health Service Provision, Actions taken to improve gaps in the implementation of PPR plans
Sebastiano Lustig	DG-HERA	Expert	Health Emergency Management (MCM)
Valentinos Silvestros	Country Expert (CY)	Country Expert (Cyprus)	Health Emergency management, Health service Provision, PoEs, Recovery elements, Actions taken to improve gaps in the implementation of PPR plans
Sandra Lindmark	WHO-EURO	Expert	IHR, RCCE, Health Emergency Management, Recovery Elements

The country focal points

Country focal point(s) and experts involved in the document sharing process		
Name	**Email address**	**Organisation**
Guðrún Aspelund – Landl	gudrun.aspelund@landlaeknir.is	Directorate of Health
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The national experts

National experts participating in the assessment process			
Name	**National institution**	**Role in the assessment (Coordinator, Expert)**	**Main capacity to assess**
Aðalheiður Jónsdóttir	The Icelandic Red Cross	Expert	RCCE
Andrea Klara Hauksdóttir	Suðurnes Hospital and Health Center	Expert	Health Emergency Management
Anna Margrét Guðmundsdóttir	Directorate of Health	Coordinator	Surveillance
Anna Margrét Halldórsdóttir	Directorate of Health	Coordinator	Laboratory, Zoonotic Diseases and threats of environmental origin, ARHAI
Ástþóra Kristinsdóttir	Development Centre for Primary Healthcare in Iceland	Expert	Human Resources
Bjarni Sigurðsson	Ministry of Health	Coordinator	Health Emergency Management
David Dominic Lynch	Department for Civil Protection	Expert	Health Emergency Management
Elísabet Eik Guðmundsdóttir	Matís	Expert	Laboratory
Erla Björnsdóttir	Akureyri Hospital	Expert	Human Resources
Ester Petra Gunnarsdóttir	Ministry of Health	Coordinator	Human Resources
Eyjólfur Þorkelsson	The Health Institute of East Iceland – Regional Physician	Expert	PoE
Fjölnir Freyr Guðmundsson	Suðurnes Hospital and Health Center	Expert	Health Emergency Management, PoE
Friðfinnur Freyr Guðmundsson	ISAVIA – National Airport and Air Service Provider in Iceland	Expert	PoE
Gígja Gunnarsdóttir	Directorate of Health	Expert	Zoonotic Diseases and Threats of Environmental Origin
Gísli Rafn Ólafsson	The Icelandic Red Cross	Expert	RCCE
Guðjón Hauksson	The Health Institute of East Iceland	Expert	Health Service Provision
Guðlaug Rakel Guðjónsdóttir	Suðurnes Hospital and Health Center	Expert	Health Emergency Management, PoE
Guðrún Lísbet Níelsdóttir	Landspítali Hospital	Expert	Health Emergency Management, PoE
Guðrún Svanborg Hauksdóttir	Landspítali Hospital – Department of Clinical Microbiology	Expert	Laboratory, Surveillance
Harpa Ingólfsdóttir Gígja	Ministry of Health	Coordinator	Financing
Helena Líndal	Landspítali Hospital	Expert	Chemical Events
Helga Harðardóttir	Ministry of Health	Coordinator	Health Service Provision
Helga Kristín Jónsdóttir	Akureyri Hospital	Expert	Human Resources
Helgi Þór Leifsson	Akureyri Hospital	Expert	Health Service Provision
Hildigunnur Anna Hall	Directorate of Health	Expert	Surveillance
Hildur Helgadóttir	Landspítali Hospital	Expert	Health Emergency Management
Hrólfur Sigurðsson	Matís	Expert	Laboratory, Zoonotic Diseases and threats of environmental origin
Hulda Ringsted	Akureyri Hospital	Expert	Health Service Provision
Inga Stella Pétursdóttir	Akureyri Hospital	Expert	Laboratory
Ingibjörg Jónsdóttir	Icelandic Food and Veterinary Authority	Expert	Laboratory
Ingunn Steingrímsdóttir	Landspítali Hospital – Department of Infection Control	Expert	Surveillance, ARHAI
Jón Brynjar Birgisson	The Icelandic Red Cross	Expert	RCCE,
Jón Steinar Jónsson	Development Centre for Primary Healthcare in Iceland	Expert	Human Resources
Júlíana Jóna Héðinsdóttir	Directorate of Health	Expert	
Kamilla Sigríður Jósefsdóttir	Directorate of Health	Expert	

National experts participating in the assessment process			
Name	**National institution**	**Role in the assessment (Coordinator, Expert)**	**Main capacity to assess**
Karen Ósk Lárusdóttir	Department for Civil Protection	Expert	Health Emergency Management, PoE
Katarina Tina Nicolic	Ministry of Food, Agriculture and Fisheries	Expert	Zoonotic Diseases and Threats of Environmental Origin
Katrín Guðjónsdóttir	Icelandic Food and Veterinary Authority	Expert	Zoonotic Diseases and Threats of Environmental Origin
Kjartan Hreinn Njálsson	Directorate of Health	Expert	RCCE,
Kristján Orri Helgason	Landspitali Hospital – Department of Clinical Microbiology	Expert	ARHAI
Már Kristjánsson	Landspítali Hospital	Expert	Health Emergency Management
Maríanna Þórðardóttir	Directorate of Health	Expert	Laboratory, Surveillance
Nanna Sigríður Kristinsdóttir	The Health Care Centre of the Capital Area	Expert	Surveillance
Ólafur Guðbjörn Skúlasón	Landspítali Hospital	Expert	Human Resources
Ólafur Guðlaugsson	Landspítali Hospital – Department of Infection Control	Expert	Surveillance, ARHAI
Ólöf Elsa Björnsdóttir	Landspítali Hospital	Expert	Health Service Provision
Ólöf Sigurðardóttir	Akureyri Hospital	Expert	Laboratory
Ólöf Þórhallsdóttir	Icelandic Medicines Agency	Expert	Health Emergency Management
Óskar Ísfeld	Health Inspectorate of Reykjavík	Expert	Zoonotic Diseases and Threats of Environmental Origin
Rafn Benediktsson	Landspítali Hospital	Expert	Health Service Provision
Ragnheiður Halldórsdóttir	Akureyri Hospital	Expert	ARHAI
Ragnheiður Ósk Erlendsdóttir	Primary Health Care of the Capital area	Expert	Health Service Provision
Rögnvaldur Ólafsson	National Commissioner of the Icelandic Police	Expert	Chemical Events
Rut Guðbrandsdóttir	Akureyri Hospital – Infection Control Nurse	Expert	Surveillance, ARHAI
Sigríður Dóra Magnúsdóttir	Primary Health Care of the Capital area	Expert	Health Service Provision
Sigríður Magnúsdóttir	Icelandic Environment and Energy Agency	Expert	Zoonotic Diseases and Threats of Environmental Origin, Chemical Events, ARHAI
Sigrún Guðmundsdóttir	Health Inspectorate of South Iceland	Expert	Zoonotic Diseases and Threats of Environmental Origin
Sigurborg Daðadóttir	Ministry of Food, Agriculture and Fisheries	Expert	Zoonotic Diseases and Threats of Environmental Origin
Þórgunnur Hjaltadóttir	Directorate of Health	Expert	Human Resources
Þórunn Rafnar Þorsteinsdóttir	Keldur, Institute for Experimental Pathology	Expert	ARHAI
Tinna Rán Ægisdóttir	Landspítali Hospital	Expert	Health Emergency Management,
Tómas Þór Ágústsson	Landspítali Hospital	Expert	Health Service Provision
Vigdís Tryggvadóttir	Icelandic Food and Veterinary Authority	Expert	ARHAI, Zoonotic Diseases and threats of environmental origin
Vilhjálmur Svansson	Keldur, Institute for Experimental Pathology	Expert	Laboratory, Zoonotic Diseases and threats of environmental origin

The mission agenda

Public Health Emergency Preparedness Assessment - Iceland 2 - 6 June 2025

	Monday - Directorate of Health	Tuesday - Directorate of Health	Wednesday - Harpa, Conference Hall	Thursday - Harpa, Conference Hall	Friday - Directorate of Health
08:30					
08:45	Welcome & Registration	Registration	Registration	Registration	
09:00	Opening Remarks (country)	C.2 Finance, C.5 Human Resources and C.7 Health Service Provision	Visa, Harpa - **C.3 Laboratory** *(Assessment of in-depth capacities)*; Stemma, Harpa - **C.6 Health Emergency Management** - planning, IMS, risk profiling, PHSM *(Assessment of in-depth capacities)*	Visa, Harpa - **C.4 Surveillance** *(Assessment of in-depth capacities)*; Stemma, Harpa - **C.10 Zoonotic diseases and environmental threats** *(Assessment of In-Depth Capacities)*	Internal assessment team meeting
09:15					
09:30	Overview and key aspects of the assessment process (ECDC)				
09:45					
10:00	Overview of the country public health structure, prep and resp mechanisms and generic and specific plans available relevant to the				
10:15					
10:30					
10:45	Break		Break	Break	Registration
11:00					
11:15	Assessment of Cross-Cutting Aspects Scenario based discussion	Break	Visa, Harpa - **C.3 Laboratory** *(Assessment of in-depth capacities)*; Stemma, Harpa - **C.6 Health Emergency Management** - planning, IMS, risk profiling, PHSM *(Assessment of in-depth capacities)*	Visa, Harpa - **C.4 Surveillance** *(Assessment of in-depth capacities)*; Stemma, Harpa - **C.10 Zoonotic diseases and environmental threats** *(Assessment of In-Depth Capacities)*	Main findings, conclusions, recommendations and next steps (ECDC presentation and discussion with Country)
11:30					
11:45		Buffer - C7			
12:00					
12:15		C.8 RCCE			
12:30					
12:45	Lunch	Lunch	Lunch	Lunch	Concluding remarks (country)
13:00					Debrief on the ECDC assessment process (structure, preparation, organization)
13:15					
13:30					**OPTIONAL** - Lunch
13:45	C.1 IHR C.13 Union level coordination	Arranged Transportation; Site Visit to the National reference laboratory; C.11 Chemical Events	Visa, Harpa - **C.12 AMR/HAIs** *(Assessment of In-Depth Capacities)*; Stemma, Harpa - C.7 **Health Emergency Management** - Medical Counter Measures *(Assessment of in-depth capacities)*	Buffer for further in-depth dicussion Wrap-up session	
14:00					
14:15					
14:30					
14:45		C.14 Research			
15:00	Break		Break	Internal assessment team meeting	
15:15					
15:30					
15:45	Buffer - C.13	Break	Visa, Harpa - **C.12 AMR/HAIs** *(Assessment of In-Depth Capacities)*; Stemma, Harpa - C.7 **Health Emergency Mangement** - Medical Counter Measures *(Assessment of in-depth capacities)*		
16:00					
16:15	C.9 - POE	C.15 Recovery and C.16 Action plan			
16:30					
16:45					
17:00					
17:15	Wrap-up Day 1 (ECDC together with country)	Wrap-up Day 2 (ECDC together with country)	Wrap-up Day 3 (ECDC together with country)		
17:30					

Plenary
Breakout
Site visit
Break

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