



ASSESSMENT

ECDC Public Health Emergency Preparedness Assessment for Liechtenstein, 2025

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Country report: ECDC Public Health Emergency Preparedness Assessment for Liechtenstein, 2026

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



Contributing authors

Luis Alves de Sousa, Margot Einoder-Moreno, Jevgenijs Golovcuks, Andreas Hoefer, Favelle Lamb, Aikaterini Mougkou, Marieke van der Werf, Julia Langer (DG SANTE), Silviu Ciobanu (WHO Euro), Pierre-François Baulieu (DG HERA), and Bart Hoorelbeke (Belgium country expert).

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Abbreviations

AAR	After-Action Review
AMC	Antimicrobial Consumption
AMR	Antimicrobial Resistance
ANRESIS	Swiss Centre for Antibiotic Resistance (Swiss national AMR/AMC surveillance system)
AMS	Antimicrobial Stewardship
BSL	Biosafety level
CH-ELM	Swiss Electronic laboratory reporting system
DON	WHO Disease Outbreak News
EARS-Net	European Antimicrobial Resistance Surveillance Network
EBS	Event-based surveillance
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
ECHA	European Chemicals Agency
EEA	European Economic Area
EFSA	European Food Safety Authority
EIS	WHO Event Information Site
eLR	Electronic laboratory reporting (eLR) system
EpiPulse	European surveillance portal for infectious diseases
Epi+	ECDC Epi Plus, multi-hazard, event-based surveillance platform for EU/EEA Member States, developed by ECDC
ESAC-Net	European Surveillance of Antimicrobial Consumption Network
EU	European Union
EUHTF	EU Health Task Force
EWRS	Early Warning and Response System
FONES	Federal Office for National Economic Supply (Switzerland)
HAIs	Healthcare-Associated Infections
IAR	In-Action Review
IES	Information and Deployment System
ILI	Influenza-like illness
IHR	International Health Regulations (2005)
IPC	Infection Prevention and Control
ISM	Informationssystem Meldungen; Communicable diseases information system
KATAMED	Disaster Medicine Network (Switzerland)
LTCF/LTFs	Long-term care facility/ies
MCM	Medical Countermeasures
MoSAJ	Ministry of Social Affairs and Justice
MRDO/MRDOs	Multidrug-resistant organism/s
NASURE	National Surveillance & Response platform that will replace the communicable diseases information system (ISM, Informationssystem Meldungen)
NFP	National IHR Focal Point
NGO/NGOs	non-governmental organisation/s
NIA	National IHR Authority
PH	Public Health
PHEIC	Public Health Emergency of International Concern
PHEOC	Public Health Emergency Operations Centre
PHEPA	Public Health Emergency Preparedness Assessment
PoE	Points of Entry
PPE	Personal Protective Equipment
OPH	Office of Public Health (Amt für Gesundheit)
PPR	Prevention, Preparedness and Response Plan
RCCE	Risk Communication and community engagement
RSV	Respiratory Syncytial Virus
SARI	Severe acute respiratory infection
SARS-CoV2	Severe acute respiratory syndrome coronavirus 2 (virus responsible for COVID-19)
SCBTH	Serious Cross-Border Threats to Health
SOP/s	Standard Operating Procedure/s
SimEx	Simulation Exercises
SPAR	State Party Self-Assessment Annual Report
SSI	Surgical-site infection

Executive summary

Introduction

The aim of the Public Health Emergency Preparedness Assessment (PHEPA), 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 European Union/European Economic Area (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 Liechtenstein. This involved a desk review of relevant documents, followed by a five-day country visit that took place between 2 March and 6 March 2026. 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: Laboratory (Capacity 3); Surveillance (Capacity 4); Health Emergency Management (Capacity 6); Antimicrobial Resistance (AMR) and Healthcare-Associated infections (Capacity 12); and Union Level Coordination and Support Functions (Capacity 13).

Key findings

Liechtenstein is one of the smallest countries in the world, located between Switzerland and Austria. As a small country, healthcare infrastructure is limited. However, there are robust agreements in place for citizens to use healthcare services both in Switzerland and Austria and for the transport/transfer of patients when needed.

Liechtenstein's health system has a strong collaboration with Switzerland through the Customs Union Treaty, relaying extensively on Swiss guidance, operational tools, technical capacities and specialised expertise. This long-standing reliance is embedded in bilateral agreements and shared systems, ensuring that Liechtenstein has access to robust structures that would be difficult to maintain domestically. While this arrangement provides significant benefits, it also creates an inherent reliance on Swiss strategic decisions, which can delimit Liechtenstein's scope for autonomous action in matters falling under the customs treaty.

Cross-border collaboration extends to Austria at national and regional level and with Germany through regional mechanisms. These partnerships support surveillance, crisis communication and operational coordination.

The country operates within a well-aligned multi-layered legal framework. National legislation is closely interconnected with Swiss, EU/EEA, and international requirements, particularly in areas such as surveillance, crisis management and implementation of the International Health Regulations (IHR 2005). It is recommended to analyse the support roles, functions, and instruments of EU entities to establish links with the national emergency prevention, preparedness, and response (PPR) plan.

In terms of public health, Liechtenstein benefits from functional and timely national cross-sectoral collaboration, supported by short communication pathways and agile government. This enables rapid coordination and decision-making, particularly valuable in public health emergencies as demonstrated in the COVID-19 pandemic.

Liechtenstein operates with limited human resources for public health activities; many functions depend on small teams with broad mandates. These constraints place high pressure on the system's capacity to sustain routine activities while simultaneously preparing for and responding to emergencies. To strengthen resilience, the country should map sufficient human resources across all capacities to sustain current and future routine activities. Human resources should be planned to be scalable under crisis.

The national PPR is under development, with close cross-sectoral collaboration. This plan is expected to benefit from lessons learned from previous emergencies and the findings of the PHEPA assessment. When it is completed, it is expected to formalise structures, strengthen governance and consolidate existing formal and informal arrangements.

Liechtenstein would benefit from planning, conducting and/or participating in regular simulation exercises on national and international level to test plans, procedures, cross-sectoral collaboration and communication across multiple capacities.

Main recommendations for each capacity assessed in depth

Health emergency management (Capacity 6)

- Further develop and finalise the prevention, preparedness and response plan in consultation with other stakeholders, with predefined roles, leadership, and responsibilities described. The public health response should be embedded in the existing national emergency management structure with clear mechanisms for cross sectorial coordination and collaboration described.
- Formalise and operationalise the interdisciplinary health staff for special and extraordinary crisis situations, including simulation exercises for different health-related scenarios.
- Set up the public health emergency operations centre (PHEOC) located at the Office of Public Health and operationalise it under the interdisciplinary health staff.
- Develop a methodology to update the list of medical countermeasures (MCMs) included in the national stockpiles (e.g. in the framework of the Interdisciplinary Health Staff): define criteria and stakeholders involved to determine the MCMs and volumes.
- Assess the feasibility of a mixed system for national stockpiles. While retaining a share of state-owned physical stockpiles, develop virtual stock for relevant MCMs to minimise costs and wastage.
- Monitor recommended stockpiles for healthcare institutions, e.g. during routine visits.

Union level coordination and support functions (Capacity 13)

- To strengthen the national capacity for assessing public health threats, Liechtenstein should develop a standard operating procedure to support the analysis of notifications within the Early Warning and Response System (EWRS).
- Liechtenstein should establish a regular monitoring mechanism for new guidance, updates, and planned scientific publications from the ECDC, and ensure that these outputs are systematically reviewed, assessed, and where relevant integrated into national public health practice.

Laboratory (Capacity 3)

- Establish formal contractual arrangements with private laboratories delivering diagnostic services and develop complementary agreements with additional cross-sector laboratories to enhance diagnostic surge capacity and resilience during periods of exceptional demand.
- Strengthen mechanisms for the timely and appropriate referral of high-threat pathogens to designated reference laboratories by implementing a formal plan, updating procedures as needed, and ensuring full implementation and accessibility for all relevant stakeholders.
- Review the wastewater surveillance common data model and analytical approaches, evaluate the inclusion and exclusion criteria for indicators and pathogen targets, and define additional targets that can be rapidly activated in response to evolving epidemiological needs to maximise public health impact.

Surveillance (Capacity 4)

- Identify and document the governance and responsibilities of the existing wastewater monitoring system, and evaluate its outputs, including the inclusion and exclusion criteria for indicators, its public health impact, cost-effectiveness, and the benefits and limitations of the system compared with standard surveillance systems.
- Make a proposal in the reporting Notification Working Group on the future communicable diseases information system (ISM) development (i.e. NASURE, the new platform that will replace ISM) regarding clinical digital reporting, for defining minimal required fields for surveillance data reporting.
- Provide feedback, awareness, and updates on reporting guidelines to reporting clinicians, associations and institutions, and review yearly notifications.
- Use available health data sources, e.g. insurance claim data, to support the monitoring and evaluation of public health measures, including vaccine monitoring and coverage.
- Document, in a SOP or equivalent, the process of data retrieval, validation, analysis, concerning required and repeated surveillance data reporting tasks.
- Continue participation in the Epi+ project to develop a country-based multi-hazard, event-based surveillance platform, interoperable with EU EpiPulse platform.

Antimicrobial resistance and healthcare-associated infections (Capacity 12)

- Ensuring that data already collected by Switzerland under existing cross-border agreements are systematically requested, retrieved and analysed at national level, to strengthening national oversight of antimicrobial resistance, antimicrobial consumption and healthcare-associated infections.

- Operationalising a structured national framework for infection prevention and control (IPC) and antimicrobial stewardship (AMS), with clear objectives, indicators and timelines aligned with the adopted Swiss National Action Plan to provide coherence and direction to capacity-building efforts. Implement routine IPC and AMS training across healthcare facilities and progressively integrate it into continuing professional development.

Conclusions

Liechtenstein public health emergency preparedness and response is supported by effective cross-sectoral collaboration, agile decision-making and strong cooperation with neighbouring countries. Informal coordination mechanisms work well, but require formalisation to strengthen business continuity, planning and transparency.

The country's close collaboration with Switzerland provides access to advanced healthcare services, specialised expertise and shared operational tools, but also delimits the scope for autonomous action during some emergency situations.

Limited human resources place considerable pressure on the system's ability to maintain routine functions while responding to crises. Strengthening resilience will require mapping and allocating sufficient staff across capacities, with scalable arrangement for surge situations.

Further developing the national prevention, preparedness and response (PPR) plan is essential to formalise governance, streamline coordination, embed lessons learned and ensure systematic follow-up.

Additional priorities include analysing the support roles and instruments offered by relevant EU entities and linking these to the national PPR plan and regular national or international simulation exercises would help test procedures and strengthen cross-sectoral coordination.

Cross-cutting needs identified across capacities assessed in depth include, surge planning, formalising processes for medical countermeasures stockpiles, surveillance digitalisation and improving national oversight of antimicrobial resistance and consumption and healthcare-associated infections.

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 Liechtenstein. 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 health¹.

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 Regulation², complementary to the International Health Regulations (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 relation with the Union prevention, preparedness and response plan are defined by the Commission Delegated Regulation (EU) 2024/1232, adopted in March 2024⁴.

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, taking into account national respective circumstances.

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 Regulations 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 seven ECDC experts, three experts from DG SANTE, WHO EURO, and DG HERA and a national expert from Belgium was assembled to conduct the assessment, in collaboration with the country focal point. The assessment process consisted of a desk review phase and a country visit that took place between 2 March and 6 March 2026.

As per the established process, the team reviewed Liechtenstein's responses to the Article 7 self-assessment questions, with five of them considered in depth: Health Emergency Management (Capacity 6); Union level coordination and support functions (Capacity 13); Laboratory (Capacity 3); Surveillance (Capacity 4); and Antimicrobial resistance (AMR) and healthcare-associated infections (Capacity 12).

The assessment mission was conducted with an open, transparent and empathic approach from the host country, including the sharing of relevant documents and engaging in a productive discussion, which enabled the assessment team to prepare for the visit, and understand the structures and prevention, preparedness and response activities. The wide range of stakeholders invited from different sectors and disciplines enriched the productive dialogue, by bringing diverse perspectives, in-depth knowledge and relevant context, supported by concrete examples and clarifications.

The country focal points participated in all the discussions and delivered presentations for each capacity, ensuring consistent and accurate understanding of the country's organisational structure and operational context. The knowledge, availability and kindness of all participants were greatly appreciated, given the challenges of engaging a large number of stakeholders in a small country.

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

Main findings and overarching recommendations

Liechtenstein is one of the smallest countries in the world. With a population of around 40 000 inhabitants and an area of 160 km², it lies between Switzerland and Austria. It is divided into 11 municipalities, and the capital Vaduz has around 6 000 inhabitants. One third of the population are foreign nationals, mainly from neighbouring countries, and almost 60% of workforce are cross-border commuters. It has a diverse economy with a strong industrial sector and finance services.

Healthcare insurance is mandatory for all inhabitants. As a small country, healthcare infrastructure is limited. There is one hospital located in Vaduz, with 35 beds and no intensive care unit. However, there are robust agreements in place for citizens to use healthcare services both in Switzerland and Austria and for the transport and transfer of patients when needed through Red Cross services. The outpatient care is mainly provided by about 120 private doctors. Patients have free choice of medical treatment within the regulated system. In addition, there are two private clinics, one for ophthalmology and one for mental health, and there are six public pharmacies.

An important feature of Liechtenstein's healthcare system is its strong collaboration with Switzerland, both at national and regional levels. This collaboration is legally framed by the Customs Union Treaty signed in 1923. The country relies extensively on Swiss guidance, operational tools, technical capacities and specialised expertise. This long-standing reliance is embedded in several bilateral agreements and shared systems, ensuring that Liechtenstein has access to robust structures that would be difficult to maintain domestically. While this arrangement provides significant benefits, it also creates an inherent reliance on Swiss strategic decisions, which can limit Liechtenstein's scope for autonomous action in matters falling under the customs treaty.

Furthermore, cross-border collaboration extends to Austria, both at national and regional level, and with Germany through regional mechanisms. These partnerships support surveillance, crisis communication and operational coordination. The regional partnerships of Liechtenstein, Switzerland, Austria and Germany through the International Lake Constance Conference (Internationale Bodensee-Konferenz (IBK)) enhance the regions' capacity to address public health challenges collectively.

Liechtenstein became a member of the European Economic Area (EEA) in 1995. The country operates within a well-aligned multi-layered legal framework. National legislation is closely interconnected with Swiss, EU/EEA, and international requirements, particularly in areas such as surveillance, crisis management and implementation of the International Health Regulations. This alignment provides a legal basis to define roles and responsibilities and supports coherence between national public health measures and those of neighbouring countries.

In terms of public health, Liechtenstein benefits from functional and timely national cross-sectoral collaboration, supported by short communication pathways and agile government. This enables rapid coordination and decision-making, particularly valuable in public health emergencies as demonstrated in the COVID-19 pandemic.

A notable strength identified during the assessment is the country's use of ad hoc networking, including informal components, which has proved highly effective in responding to complex situations. However, the need to formalise these procedures has been highlighted by the assessment team. Formalisation would enhance the robustness of processes, ensure business continuity, and prevent potential gaps that could arise from reliance on informal arrangements.

Liechtenstein operates with limited human resources for public health activities; many functions depend on small teams with broad mandates. Prioritisation is a key activity that the Office of Public Health performs daily. These constraints place high pressure on the system's capacity to sustain routine activities while simultaneously preparing for emergencies. This pressure intensifies when emergencies occur, increasing demands on already limited capacity.

The country is in the process of developing its national prevention, preparedness and response (PPR) Plan, with close cross-sectoral collaboration. This plan is expected to benefit from lessons learned from previous emergencies and the findings of this PHEPA assessment. Once completed, it is expected to formalise structures, strengthen governance and consolidate existing formal and informal arrangements. This plan will further strengthen Liechtenstein's ability to manage health emergencies effectively.

Recommendations

- Map sufficient human resources across all capacities to sustain current and future routine activities. Human resources should be planned to be scalable during a crisis.
- Perform an analysis of the support roles, functions, and instruments of the relevant Union institutions, agencies, and bodies that are available to Liechtenstein and establish links with the national emergency prevention, preparedness, and response plan.
- Plan, conduct and/or participate in regular simulation exercises on national and international level to test plans, procedures, cross-sectoral collaboration and communication across multiple capacities e.g. International Health Regulations (IHR 2005), One Health, medical countermeasures, health emergency management.

Findings and recommendations per capacity

A list of the capacities that were included in the assessment is available in Annex 1.

Capacities assessed in depth

Health emergency management (Capacity 6)

Management of health emergency response

Health emergency management in Liechtenstein is supported by a multi-layered legal base: the EU/EEA, international (with special focus in Switzerland), and national regulations. Due to its small size, Liechtenstein has short communication channels between authorities and healthcare actors enabling rapid informal coordination during crisis.

There are a wide range of actors across sectors including: the Parliament, the government, the Ministry of Social Affairs and Justice (MoSAJ), the Office of Public Health (OPH), the Food and Veterinary Office, the Environmental Office, the Office of Civil Protection, national hospital and healthcare providers, emergency medical services, police and fire services, municipal authorities, non-governmental organisations (NGOs) and volunteer organisations such as the Red Cross. Critical infrastructure providers (energy, water, transport, telecommunications) also play a role in maintaining essential services during crises.

Liechtenstein uses a scalable emergency management system, activates different structures depending on the type, magnitude or severity of the event. This mirrors the health emergency management structure in Switzerland:

- **Normal** – No crisis, routine operations are maintained, or minor public health situations managed within own jurisdiction by Office of Public Health under MoSAJ leadership.
- **Special** – Larger public health crises beyond routine activities where additional resources and cross-sector coordination is needed, managed by OPH (and to be managed by the Interdisciplinary Health Staff once it will be formalised) under MoSAJ leadership.
- **Extraordinary** – Highest crisis coordination level in Liechtenstein and ensures cross-sector strategic coordination under the Civil Protection-coordinated National Emergency Management Staff (Landesführungsstab), under the Ministry of Interior leadership.

During the COVID-19 pandemic, Liechtenstein did not have a prevention, preparedness and response plan, and the Swiss Influenza preparedness plan was not applicable to the COVID-19 context and therefore could not be adapted for use in Liechtenstein. Therefore, the Ministry of Social Affairs established a dedicated team of technical experts, under the existing national emergency management system, to bridge public health, healthcare providers, civil protection and operational actors. This Pandemic Staff functioned well and as a result is now being formalised to function as an integral part of public health response during special and extraordinary crisis in Liechtenstein. The roles and functions of the interdisciplinary health staff will be described in the prevention, preparedness and response plan that is under development.

The Office of Public Health, located within the Ministry of Social Affairs and Justice, is the main authority responsible for surveillance, preparedness, outbreak management and implementation of public health and response measures. Liechtenstein does not yet have a permanent public health emergency operations centre (PHEOC), but once established this will be a core function of the interdisciplinary health staff during special and extraordinary crisis situations. The staff will coordinate surveillance and epidemiological analysis, healthcare system coordination, logistics and resources management (e.g. MCM), risk communication and public information.

Due to its small size and geographic location, cross-border cooperation is essential for Liechtenstein emergency preparedness and response. Daily cross-border movement of workers, patients, and goods means that public health threats cannot be effectively managed at national level alone. Liechtenstein is closely interconnected with Switzerland and Austria, with strong operational links to the surrounding regions. Cross-border collaboration is managed through pre-established liaison structures between Liechtenstein authorities and corresponding Swiss cantonal and federal bodies, as well as competent authorities in Austria and relevant EU networks. These partnerships allow Liechtenstein to complement their limited national capacity and ensure access to specialised healthcare services. Designated contact points and liaison officers enable rapid escalation, direct communication, and timely decision making during evolving public health emergencies.

Key mechanisms include:

- Direct collaboration with Swiss Federal Offices, cantonal authorities (e.g. St. Gallen, Graubünden), including through shared platforms (e.g. Information Management System, Alertswiss app).
- Direct collaboration with Austria at national and regional level and collaboration with Germany at regional level (with Bavaria and Baden-Württemberg) through the International Lake Constance Conference.
- Participation in European Union public health platforms, such as the ECDC EpiPulse (European surveillance portal for infectious diseases), the European Commission (EC) Early Warning and Response System (EWRS), EC Health Security Committee (HSC) meetings, ECDC networks, and global IHR platforms, such as WHO Event Information Site (EIS) / Disease Outbreak News (DON).
- Mutual aid arrangements for laboratory testing, specialised treatment, and intensive care capacity.

Hazard and risk analysis has been conducted in 2012 and updated on a national level in 2024, by applying the methodology used in Switzerland based on likelihood and impact of events and includes potential scenarios for each hazard. Public health authorities are directly accountable for biological threats and heatwaves. However, there is a potential need to conduct an additional risk ranking/prioritisation for health threats to better focus the limited resources on activities that are most relevant for Liechtenstein.

Liechtenstein is connected to key Swiss crisis systems, and has regular interactions with:

- The Federal Office of Civil Protection (FOCP), for coordination of major emergencies;
- The Network for Disaster Medicine (KATAMED), used during mass casualty events;
- The Federal Office for National Economic supply (FONES), for collaboration on supply of food, energy shortages, pharmaceuticals;
- The electronic situation reporting system for natural hazards (ELD-NAZ); and
- The Incidence Emergency System (IES), used for resource management, situational reporting, and inter-agency communication in crises.

Public health and social measures of surrounding countries and the EU are taken into consideration and generally aligned with Switzerland. During the pandemic, when resources were not sufficient e.g. to conduct contact tracing, the Office of Public Health contracted members of the crisis intervention team, this is an independent foundation under professional management that is regularly trained and supports in areas like social services. They were able to provide resources that could support the Office of Public Health and with this support it was possible to maintain contact tracing throughout the whole pandemic.

Once the interdisciplinary health staff is established the plan is to formalise the hiring procedures and contracts to support surge capacity in crisis situations.

Recommendations

- Further develop and finalise the prevention, preparedness and response plan in consultation with other stakeholders, with predefined roles, leadership, and responsibilities described. The public health response should be embedded in the existing national emergency management structure with clear mechanisms for cross sectorial coordination and collaboration described.
- Formalise and operationalise the interdisciplinary health staff for special and extraordinary crisis situations, including simulation exercises for different health-related scenarios.
- Set up the public health emergency operations centre (PHEOC) located at the Office of Public Health and operationalise it under the interdisciplinary health staff.

Emergency logistic and supply chain management

Liechtenstein holds national stockpiles covering an extensive list of medical countermeasures (MCMs). These stocks are physical, publicly owned, and located in several domestic facilities. However, the country lacks an established methodology to update the list of MCMs to be stockpiled and reported difficulties with the management of stockpiles as some MCMs had to be discarded when their shelf-life expired.

In addition to these national stocks, healthcare institutions are recommended to hold medical stockpiles to cover their needs for 12 weeks. The National Hospital in Vaduz has strong links with the Graubünden Cantonal Hospital in Chur, Switzerland. This hospital (which offers a wide range of medical and surgical services) can provide assistance in case of need, for example by welcoming patients or by offering ad hoc support to address a temporary shortage of certain MCMs.

Liechtenstein benefits from strong cooperation with Switzerland on security of supply. In particular, the country is associated to Switzerland's National Economic Supply system (NES), a partnership between the state and the private sector which is responsible for preparing and implementing measures to address shortages. Under this framework, the Federal Council of Switzerland makes the storage of certain essential goods (including therapeutic products) compulsory. For each of these goods, the FONES determines the necessary volumes and concludes contracts with the companies concerned to ensure the storage of such goods. In case of imminent or existing severe shortages, the Federal Council of Switzerland can request the release of these stocks.

This system also includes the monitoring of supply of critical goods, and the FONES provides Liechtenstein with information on medicines shortages, which includes in particular foreseen shortages durations and therapeutic alternatives when they exist. Finally, Liechtenstein is included in the Swiss procurement processes, which allowed the country to receive vaccines deliveries during the COVID-19 pandemic.

Although this extensive coordination with Switzerland allows Liechtenstein to benefit from a comprehensive supply security and procurement framework, it entails dependence on Switzerland's approach. For example, in some cases, Switzerland may choose not to procure specific vaccines for national reasons, although these vaccines could still be relevant for Liechtenstein. This issue is significant, since it is difficult for Liechtenstein to procure medicines independently as it typically does not meet the volumes required to procure directly from pharmaceutical companies or wholesalers. Even though the country signed the EU's Joint Procurement Agreement in 2020, the volume issue prevents it from participating in most European joint procurement processes. Negotiations are underway with the EU with a view to Liechtenstein (together with Iceland and Norway) being associated to the Emergency Framework Regulation. This would allow the country to participate in procurement under Article 8 of this regulation.

Regarding the deployment of MCMs, Liechtenstein successfully organised the deployment of vaccines provided by Switzerland during the COVID-19 pandemic. SOPs were developed, if relevant, they can be adapted to respond to another crisis. However, no deployment exercise has been organised, which may cause delays in case of crisis, even if the size of Liechtenstein makes deployment less of a challenge than in other European countries.

The country has specific provision concerning iodine tablets. They are provided by the Swiss Army and stockpiled in Liechtenstein. This cooperation is governed by a specific agreement which requires Liechtenstein to notify Switzerland of the stockpiles' locations. The Office of Public Health is responsible for the decision whether to deploy stocks, with the Office of Civil Protection taking responsibilities for the logistics.

Finally, there is currently no systematic mapping of companies that could switch their production to MCMs in case of crisis. Even if the country has a small economy that does not produce crisis-relevant MCMs, it is highly

industrialised and some domestic production capacity could possibly be temporarily repurposed to produce MCMs in case of crisis (e.g. hand sanitizer, personal protective equipment (PPE), spare parts for ICU).

Recommendations

- Develop a methodology to update the list of MCMs included in the national stockpiles (e.g. in the framework of the Interdisciplinary Health Staff): define criteria and stakeholders involved to determine the MCMs and volumes.
- Assess the feasibility of a mixed system for national stockpiles. While retaining a share of state-owned physical stockpiles, develop virtual stock for relevant MCMs to minimise costs and wastage.
- Monitor recommended stockpiles for healthcare institutions, e.g. during routine visits.

Union level coordination and support functions (Capacity 13)

Liechtenstein's cooperation with the European Union in the field of public health takes place outside the four freedoms of the Internal Market. The Decisions of the EEA Joint Committee No 180/2024 and No 181/2024 extend the cooperation of the Contracting Parties to the EEA Agreement to include Regulation (EU) 2022/2370 amending Regulation (EC) No 851/2004 establishing a European centre for disease prevention and control and Regulation (EU) 2022/2371 on serious cross-border threats to health. Council Regulation (EU) 2022/2372 currently does not apply to EEA or EFTA States. Consequently, EEA and EFTA States are not eligible for membership of the Health Crisis Board and, depending on the procurement mechanism, may currently not be able to participate in relevant procurement procedures or other health emergency measures. Entry into force of the extended cooperation of the Contracting Parties to the EEA Agreement to include Regulation (EU) 2022/2370 is to take place once constitutional requirements are met in all EEA countries, with Liechtenstein having already finalised its national process. As a result, Protocol 31 and Protocol 37 to the EEA Agreement were amended to enable this expanded cooperation.

While preparedness and response to serious cross-border threats to health fall within the scope of legislation covered by the EEA Agreement, measures related to medical countermeasures are governed by Union policies in the economic and monetary sector, which largely lie outside the scope of the EEA Agreement. As a result, Council Regulation (EU) 2022/2372 on a framework for ensuring the supply of crisis-relevant medical countermeasures in the event of a public health emergency at Union level currently does not apply to EEA and EFTA States. Consequently, EEA and EFTA States are not eligible for membership of the Health Crisis Board and, depending on the procurement mechanism, may currently not be able to participate in relevant procurement procedures or other health emergency measures.

Liechtenstein participates fully in the Health Security Committee as a Member and has the same rights and obligations as EU Member States, except for voting rights. The Health Security Committee member for Liechtenstein is appointed by the Government and is based in the Office of Public Health. According to the national classification system, participation of the Liechtenstein representative in the Health Security Committee is not ranked as obligatory. Nevertheless, the role of the Health Security Committee member is well known and recognised within the national administration.

There is a clear and well-established information flow from the Health Security Committee representative to relevant national actors, including the option to update political leadership on a biweekly basis. The Office of Public Health coordinates inputs from various sectors and decides whether issues need to be brought to the attention of the Health Security Committee. Other staff members of the office take part in technical working groups on preparedness and response, as well as in the Early Warning and Response System. Despite limited human resources, Liechtenstein has expressed interest in participating in all established working groups.

The Office of Public Health serves as the main interface between Liechtenstein's national systems and the Union's public health crisis management mechanisms. It is responsible for participation in the Early Warning and Response System, with several trained staff having access to the platform. Monitoring of notifications is conducted regularly, though detailed analysis occurs when relevant. It was noted that, to better support the business continuity and analysis of notifications, particularly in periods of increased activity, it would be helpful to introduce a monitoring and analysis system described in a standard operating procedure.

Liechtenstein presented several examples of how it makes use of coordinated action and adopted HSC opinions or guidance, as well as ECDC resources. Using the case of Mpox guidance and booster vaccination recommendations, Liechtenstein explained the dilemmas that arise when scientific advice from the EU and Switzerland shows slight discrepancies. In such situations, Liechtenstein gathers additional scientific evidence and conducts analyses tailored to the national context.

When integrating EU guidance, the Office of Public Health disseminates the guidance—or a summary of it—directly to medical staff and other relevant sectors. The Office of Public Health also makes use of other ECDC products, such as updates on misinformation in science.

Regarding the various EU support functions and tools relevant for public health, Liechtenstein reported having made use of the EU Health Task Force and being generally aware of risk assessments produced by ECHA and EFSA. However, further analysis is required to determine how these inputs can be linked to the country's forthcoming

prevention, preparedness and response plan. As this national plan is still under development, no connection has yet been established with the Union's prevention, preparedness and response plan.

Recommendations

- To strengthen the national capacity for assessing public health threats, Liechtenstein should develop a standard operating procedure to support the analysis of notifications within the Early Warning and Response System.
- Liechtenstein should establish a regular monitoring mechanism for new guidance, updates, and planned scientific publications from the ECDC, and ensure that these outputs are systematically reviewed, assessed, and where relevant integrated into national public health practice.

Laboratory (Capacity 3)

Liechtenstein has established a modern, technically robust, and interoperable laboratory-based surveillance system that has evolved significantly in recent years. The Swiss electronic laboratory reporting (eLR) system, i.e. CH-ELM, is one component of the ISM, forms the backbone of national laboratory notification processes. Reporting via CH-ELM is mandatory, and the system is both technically and semantically interoperable. Laboratories submit structured information using a harmonised format built around the laboratory test-sample-pathogen triplet, enabling the automated recognition of laboratory criteria and uniform interpretation of reported results.

The system incorporates clear legal obligations for rapid reporting. In situations involving an unknown pathogen, an unexpected laboratory finding, or an unusual observation, laboratories must notify the Liechtenstein Office of Public Health within two hours. This ensures early situational awareness and rapid initiation of public health actions for potentially emerging threats. A dedicated Working Group on surveillance systems development working on ISM has also defined pathogen-specific case-episode durations, supporting consistent case aggregation and helping to prevent overcounting of repeated tests or clinical episodes.

Although electronic laboratory reporting existed previously through an electronic form (2012–2023), Liechtenstein's fully interoperable digital surveillance architecture has only been operational since 2024. Throughout 2024, the system underwent regular updates informed by the Working Group's discussions and the needs identified during implementation. Compared with earlier partially digital approaches, the current system represents a substantial improvement in timeliness, data quality, and standardisation.

Liechtenstein does not operate its own public diagnostic laboratory infrastructure and relies on a well-established network of private domestic laboratories for routine diagnostic services, one of these laboratories is responsible for most national diagnostics. These laboratories are further supported by specialised diagnostic capacity from partner laboratories in Switzerland. In practice, access to Swiss public reference laboratories, including for high-threat pathogens, is achieved primarily through referrals made by private Liechtenstein laboratories, and to a lesser extent through direct referral from the national hospital and medical clinics. There are currently no formal plans for transporting and packaging samples of highly hazardous pathogens between the regional hospital and reference laboratories; any transport would therefore need to be arranged on an ad hoc basis. This cross-border model has long functioned effectively, ensuring access to high-quality diagnostics and advanced testing capacity without the need for a domestic public laboratory sector.

During the COVID-19 pandemic, Liechtenstein showed strong financial agility by rapidly securing diagnostic devices, tests, and service capacity. Respiratory samples were sequenced during the pandemic, although this activity has since ceased. While the model of relying on one primary contracted laboratory has worked well, much of this collaboration remains informal rather than embedded in structured public health preparedness arrangements.

Liechtenstein also benefits from access to high-containment laboratory capacity abroad. Biosafety level 3 (BSL-3) and level 4 (BSL-4), facilities in Switzerland can be used when necessary, enabling the country to manage high-risk pathogens without needing such infrastructure domestically. This cooperative arrangement is well established and provides a reliable pathway for specialised confirmatory diagnostics when required.

Wastewater surveillance (WWS) forms another component of Liechtenstein's national surveillance system. The nationwide WWS approach is proactive and provides population-level insights that complement clinical surveillance. However, the inclusion criteria, data model, and analytical processes used in WWS could be further aligned with evolving EU standards and emerging technical approaches to ensure optimal comparability, analytical robustness, and public health utility. Together with additional pathogen targets that can be activated rapidly based on epidemiological need, this would further strengthen the system's responsiveness.

Taken together, Liechtenstein's laboratory and surveillance capacities demonstrate considerable technical maturity, strong interoperability, and effective reliance on cross-border partnerships. The system has undergone substantial modernisation since 2024, and its performance is reinforced by close cooperation with Swiss partners, agile procurement mechanisms, and clear legal obligations for rapid reporting of priority findings. Opportunities remain to formalise some operational aspects, further harmonise wastewater surveillance methodologies, and enhance strategic preparedness for high-demand or high-risk scenarios.

Recommendations

- Establish formal contractual arrangements with private laboratories delivering diagnostic services and develop complementary agreements with additional cross-sector laboratories to enhance diagnostic surge capacity and resilience during periods of exceptional demand.
- Strengthen mechanisms for the timely and appropriate referral of high-threat pathogens to designated reference laboratories by reviewing existing pathways, implementing a formal plan, and ensuring full implementation and accessibility all relevant stakeholders.
- Review the wastewater surveillance common data model and analytical approaches, evaluate the inclusion and exclusion criteria for indicators and pathogen targets, and define additional targets that can be rapidly activated in response to evolving epidemiological needs to maximise public health impact.

Surveillance (Capacity 4)

Liechtenstein has dedicated legal frameworks and technical guidelines for public health surveillance of communicable diseases, regulating their early detection, mandatory reporting, monitoring, and control. They include a list of 56 compulsory notifiable diseases, as well as the possibility to report novel conditions representing a serious threat to public health. Guidelines define case definitions and criteria, reporting duties (i.e. clinical laboratories, and doctors working in hospitals, community practices and long-term care facilities), minimum data reporting obligations (i.e. clinical, laboratory, and epidemiological data), along with mode and timeliness of reporting. Both frameworks and guidelines can be adapted and modified quickly to adapt to a new public health threat, as demonstrated during the COVID-19 pandemic.

For case-based surveillance, Liechtenstein has a specific communicable diseases information system (Informationssystem Meldungen, ISM). It includes both case reporting and electronic laboratory reporting components, with deduplication and integration of data at case level. It abridges reporting entities at all healthcare levels. Case reporting is not yet entirely electronic and digitalised; however, it allows clinicians to submit reporting forms via a web interface. Notably, it is limited by low completeness and reporting delay, either at first case reporting or for subsequent supplementary updates reporting. Currently, there is no feedback mechanism to clinical reporting entities on notifiable case reporting, and the output of epidemiological investigation.

Electronic laboratory reporting to ISM is compulsory for all laboratories, using a standardised and interoperable system. Technologically, it uses a health data standard that is both adaptable and scalable, which ensures surge capacity. It can automatically recognise laboratory criteria for case definition and allows for deduplication of laboratory tests into case-episodes, as well as for monitoring of laboratory test throughput.

The Office of Public Health actively participates in the Working Group revising ISM operations, maintenance, and regular updates. It has also been quick to adapt to needed changes in data requirements for either case and laboratory reporting components, as showcased during the extent of the COVID-19 pandemic. By 2028, a new version of the ISM (i.e. NASURE) is expected to fully digitalise case reporting and further cross-sectoral integration of data.

For event-based surveillance (EBS), Liechtenstein authorities have access to the European Commission's EWRS and the European surveillance portal for infectious diseases EpiPulse (ECDC) platforms. In addition, Liechtenstein performs daily EBS by a team of rotating on-duty officers at the Public Health Office, following up on events of interest via a dedicated mailbox (International Health Regulations national focal point mailbox) and on international platforms (e.g. EC/EWRS, ECDC/EpiPulse, WHO EIS/DON). Outside of office hours and on holidays, the 24/7 function is ensured through the Police's Emergency Command and Dispatch Centre ensuring triage and dispatching of actionable urgent messages. Liechtenstein is also involved in the development of the Epi+ pilot project, in which ECDC is developing a multi-hazard, event-based surveillance platform for EU/EEA Member States, and interoperable with EpiPulse.

Regarding respiratory virus surveillance, currently, there are no surveillance systems in place for influenza-like illness (ILI), acute respiratory infection (ARI), or severe acute respiratory infections (SARI). Liechtenstein participated in the sentinel surveillance system for influenza and other respiratory viruses from Switzerland, and although recruitment of sentinel doctors is currently ongoing, it intends to continue to take part in the Swiss sentinel surveillance system (Sentinella). For SARI surveillance, most patients are admitted and treated abroad, for which clinical case reporting is limited to ISM mandatory notifiable diseases. Nonetheless, respiratory virus surveillance relies on the existing mandatory reporting system to identify laboratory-confirmed influenza and severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) cases (COVID-19). These cases are included in a weekly surveillance analysis and report on respiratory virus surveillance, which is integrated with the equivalent system in Switzerland. It also contributes to the regular publication of respiratory virus surveillance data in a public infectious diseases dashboard.

Albeit case and laboratory reporting components of surveillance are quite digitalised, relevant steps of surveillance data collection, reporting, and analysis, such as secondary reporting obligations to ECDC and international organisations, are still very manual and undocumented. Incidentally, although there is a high uptake of electronic

health records systems across healthcare levels, they are de-centralised, which hinders the use and potential automation of digital elements to support surveillance systems operations.

During the COVID-19 pandemic, surveillance systems had capacity to scale up on several attributes of its surveillance systems and healthcare. Testing resources, including laboratory capacity and reporting, could be expanded (i.e. implemented a drive through testing facility), with quick implementation and adaptation. Data was collected routinely (daily or weekly, depending on pandemic phase and data type) and for the whole country. The scale up of healthcare resources was monitored using the Information and Deployment System (IES), gathering data on availability of medical and nursing staff in hospitals, total hospital capacity, dedicated bed capacity for COVID-19 patients, as well as for intensive care patients.

Liechtenstein has implemented wastewater-based surveillance to complement respiratory virus surveillance, which is funded by the Office of Public Health and supported by the Ministry of Social Affairs and Justice. It is based on three times per week sampling of one wastewater treatment plant, that serves the entire country, using 24-hour composite sample collections at influent point. It monitors influenza, SARS-CoV2, respiratory syncytial virus (RSV), and norovirus. Since its implementation, in the early stages of COVID-19, it was used to support analysis of epidemiological data, as well as public health policy and measures. Data from wastewater-based surveillance is integrated with other public health surveillance data and is included in the public infectious diseases' dashboard. The system does not use a common data model for wastewater-based surveillance and is not part of any related EU initiative.

Liechtenstein has no established plans to retrieve and assess relevant parameters of disease during a public health emergency, including through studies, on routes of transmission, transmissibility, and effective reproduction number, and forecasting through mathematical modelling. Nonetheless, some of these parameters can be retrieved and assessed in collaboration with Switzerland. Specifically for the assessment of severity of disease, the Office of Public Health can retrieve death certificate data, albeit linkage with case reporting data is limited. Further assessment of disease severity is limited to reporting completeness on clinical case reporting. Assessment of vaccine effectiveness is also very limited. Liechtenstein does not have a vaccination register or other surveillance system to monitor population immunisation e.g. seroprevalence, which limits its capacity to monitor vaccination coverage and evaluate public health interventions on vaccination or natural immunization through infection. Nevertheless, secondary use of existing health data sources, such as insurance claims data, is possible. As health insurance is mandatory, population coverage of this data source is very high, although out-of-pocket dispensation and past vaccination records are not abridged.

Recommendations

- Identify and document the governance and responsibilities of the existing wastewater monitoring system, and evaluate its outputs, including the inclusion and exclusion criteria for indicators, its public health impact, cost-effectiveness, and the benefits and limitations of the system compared with standard surveillance systems.
- Make a proposal in the reporting Notification Working Group on the future ISM development (i.e. NASURE) regarding clinical digital reporting, for defining minimal required fields for surveillance data reporting.
- Provide feedback, awareness, and updates on reporting guidelines to reporting clinicians, associations and institutions, and review yearly notifications.
- Use available health data sources, e.g. insurance claim data, to support the monitoring and evaluation of public health measures, including vaccine monitoring and coverage.
- Document, in a SOP or equivalent, the process of data retrieval, validation, analysis, concerning required and repeated surveillance data reporting tasks.
- Continue participation in the Epi+ project to develop a country-based multi-hazard, event-based surveillance platform, interoperable with EU EpiPulse platform.

Antimicrobial resistance and healthcare-associated infections (Capacity 12)

Liechtenstein actively participates in the Swiss One Health AMR Strategy, and experts from the Office of Public Health consistently contribute to the working groups responsible for its development. Liechtenstein has also endorsed the Swiss One Health Action Plan StAR 2024–2027, which a multidisciplinary committee (including Liechtenstein's OPH) reviews and updates every three years. Nevertheless, operational One Health collaboration across the human, animal, and environmental sectors within the country remains limited. This persists despite the active engagement of national representatives from all sectors in the Swiss One Health AMR working groups. Liechtenstein has no dedicated budget line for AMR-related activities; however, financial resources are allocated on an ad hoc basis to support priority actions as required.

Liechtenstein participates in the Swiss surveillance systems for AMR, AMC and HAIs, but has not submitted data to the ECDC AMC and HAI networks, apart from EARS-Net, since 2022. Blood cultures and other clinical samples from the Liechtensteinisches Landesspital, the National Hospital in Vaduz, and community doctors are electronically reported via the Information System Management to the Swiss AMR, AMC and HAI surveillance system ANRESIS (the Swiss Centre for Antibiotic Resistance). Since 2022, the Office of Public Health has collaborated with the Institute for Infectious Diseases of the University of Bern to report blood culture data to EARS-Net.

Liechtenstein does not have a national reference laboratory; Swiss laboratories provide reference diagnostics and surveillance activities under the coordination of Liechtenstein's OPH. AMR data are comprehensive across sample types, but the integration of data into Swiss datasets prevents visibility of Liechtenstein-specific results. Novel pathogens and outbreaks are notifiable to the OPH, but for multidrug-resistant organisms (MDRO), only carbapenemase-producing bacteria require reporting. The Office of Public Health does not conduct analyses of laboratory and epidemiological data for priority MDROs, although this is essential for identifying epidemiological risk factors in Liechtenstein.

The Swiss surveillance system collects antibiotic consumption data, but Liechtenstein's OPH does not consistently receive the reports needed to monitor AMC or contribute data to ESAC-Net. The hospital pharmacy submits antimicrobial consumption data once per year to the ANRESIS system, but no reports are returned to the OPH, hindering national monitoring and assessment. There are currently no established feedback mechanisms for hospital or community prescribers, nor is there a system to systematically assess prescribing practices or monitor adherence to clinical guidelines. Although guidelines adherence it is assumed to be good, this is not systematically documented.

In both the human and veterinary sectors, antibiotics can be dispensed only with a prescription. Community-level antibiotic prescribing is generally well regulated, with limited exceptions, such as pharmacist-initiated treatment for urinary tract infections or eye-antibiotic drops for eye infections (six pharmacies operate in the country). Antibiotic consumption data is recorded via health insurance schemes and transmitted to the competent authorities for monitoring purposes. Only privately paid prescriptions escape the monitoring system. In the veterinary sector, practitioners must record antimicrobial use in the national electronic system. Some doctors hold dual licences allowing them both to prescribe and dispense antibiotics directly to their patients. Occasional shortages of medicines and antibiotics are reported.

Swiss IPC and AMS guidelines are available across the human and veterinary sectors in Liechtenstein. However, IPC and AMS programmes in the country's only hospital are only partially implemented. The National Hospital of Liechtenstein has 35 beds, including two to four intermediate care beds, but no intensive care unit. A newly appointed 40%-time IPC professional is re-establishing IPC and AMS programmes, forming multidisciplinary teams, training nurses and conducting hand hygiene observations and surgical site infection (SSI) surveillance. No other IPC professional is available, and no functional IPC or AMS committees currently exist. The IPC professional reports that surgical prophylaxis guidelines are adequately followed. SSI data are submitted to the Swissnos HAI surveillance system, though the hospital has never participated in the ECDC Point Prevalence Surveys (PPS). Given the low number of hospital beds and volume of surgical procedures, urinary or central venous catheter use is uncommon. Swissnos-recommended MDRO screening is inconsistently applied, particularly for patients arriving from abroad.

Across the long-term care facility (LTCF) network (over 350 beds in seven municipalities), trained link nurses oversee IPC activities. They rely on Swiss IPC and AMS guidelines and can consult an infectious diseases specialist from a neighbouring Swiss hospital when needed. Outbreaks in LTCFs are reported to be rare.

The country has no medical or nursing school, and all healthcare professionals are trained abroad. A considerable proportion of the healthcare workforce resides in neighbouring countries and commutes daily to provide services. No IPC and AMS training opportunities for healthcare professionals exist within Liechtenstein, which was not unexpected, considering the country's population size. Some training opportunities exist within neighbouring country universities.

At the national level, applicable Swiss indicators and targets are not systematically monitored. Although AMR, AMC, and HAI data are collected through the Swiss surveillance system, there is no dedicated national oversight structure responsible for compiling, reviewing, or analysing Liechtenstein's data. As a result, trends are not assessed, performance against targets not evaluated, and the available information not consistently used to inform planning, resource allocation, or improvement actions. This lack of coordinated oversight limits the country's ability to measure progress, identify gaps, and ensure accountability.

While the applicable Swiss national AMR strategy and action plan are coherent, their effective implementation remains significantly constrained by structural limitations inherent to Liechtenstein's context. Given the small health system with only one small hospital, the absence of advanced care services, and full reliance on external laboratories and surveillance systems, there is currently no internal mechanism responsible for actively monitoring the country's epidemiological situation or assessing AMR-related risks. As a result, although data on AMR, AMC, and HAIs do exist through external systems, they are not being reviewed, analysed, or used to guide national action. This represents a critical gap, as the country lacks real-time situational awareness and the ability to make evidence-based decisions.

Recommendations

- Ensuring that data already collected by Switzerland under existing cross-border agreements are systematically requested, retrieved and analysed at national level, to strengthening national oversight of AMR, AMC and HAI.
- Operationalising a structured national framework for IPC and AMS, with clear objectives, indicators and timelines aligned with the adopted Swiss National Action Plan to provide coherence and direction to capacity-building efforts.
- Implement routine IPC and AMS training across healthcare facilities and progressively integrate it into continuing professional development.

Other capacities not assessed in-depth

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

Liechtenstein became a State Party to the IHR in 2009 and incorporated the IHR into Annex II of the Customs Treaty with Switzerland. All requirements introduced by the amended IHR have already been implemented. A dedicated cooperation agreement between the two countries defines the National IHR Focal Points (NFP) and roles, describing the procedure on cooperation in the field of risk assessment and reporting of events according to the IHR under the auspices of the World Health Organization.

The cooperation agreement establishes a specific framework and sets out the key principle that the Swiss National IHR Focal Point reviews and assesses the reports received from the Liechtenstein IHR Focal Point on behalf of the Government of the Principality of Liechtenstein. Afterwards, the Liechtenstein IHR Focal Point decides on any further communication in accordance with the relevant IHR articles. The Swiss IHR Focal Point must be included in all communication between the Liechtenstein NFP, WHO IHR Contact Point in Europe, and other NFPs.

As mandated by IHR, NFP Liechtenstein has access to the information about events that might constitute a public health emergency of international concern (PHEIC) under IHR art.11 through WHO's confidential Event Information Site (EIS) and public-facing Disease Outbreak News (DONs). Event-related urgent communications under IHR, including reporting of notifiable events, as defined in Annex II decision-making instrument, can be performed by NFP Liechtenstein under IHR art.6-10 directly or via NFP Switzerland. Moreover, Liechtenstein can notify the EC through its EWRS system to comply with EU Regulation 2022/2371 on Serious Cross-Border Threats to Health (SCBTH).

The National IHR Authority (NIA) of Liechtenstein is based at the Ministry of Social Affairs and Justice, while the National IHR Focal Point is at the Office of Public Health. Regarding the mandatory NFP functions under IHR, it should be noted that the 24/7 availability requirement is ensured via the National Emergency Command and Dispatch Centre of the Police, whereas the collection of information in the country from other authorities, and the dissemination of information from IHR secretariat to the national authorities is performed by the NFP Liechtenstein at the Office of Public Health. National IHR Focal Point of Switzerland will perform the function of risk assessment and event-related communications under IHR on behalf of Liechtenstein. The National IHR Focal Point of Liechtenstein (NFP IHR FL) also communicates directly with the WHO, following prior clarification with Switzerland.

The discussion highlighted that the NIA is viewed as a key enabler of cross sectoral coordination under IHR and is expected to further strengthen this capacity. Interdisciplinary health staff will be integrated into the existing structure and will contribute not only to response efforts but also to preparedness activities, including simulation exercises, where available. This approach is intended to address the current gap created by the lack of regular simulation exercises in public health related areas. Liechtenstein participated in one of the WHO's Joint Assessment and Detection of Events (JADE) table-top simulation exercises in the past and the main lesson learned was a need for closer collaboration with other sectors in order to be able to fulfil IHR requirements. Annual participation in the JADE exercise, or similar simulation exercises (SimEx), is encouraged to further enhance intersectoral coordination.

Recommendations

- Develop a formal framework for intersectoral cooperation enabling NIA and national IHR focal point to plan and execute public health emergency preparedness activities, interconnectable with the Interdisciplinary Health Staff, and the National Emergency Management Staff.

Financing (Capacity 2)

All residents have mandatory health insurance as required by law. This health insurance allows seeking care in Liechtenstein or in other countries, mainly Switzerland and Austria.

The Liechtenstein Public Finance Act (Finanzhaushaltsgesetz [FHG]) states that any public expenditure requires a statutory basis and may be incurred only within the limits of duly authorised budgetary appropriations. As a general rule, appropriations in the form of budgetary estimates are granted by the Liechtenstein Parliament for the forthcoming financial year. If the necessary appropriations for essential expenditures or investment spending are lacking or insufficient, supplementary credits may be requested from Parliament (Art. 10 FHG). This can be implemented in a few days. In addition, the FHG provides for an urgency clause (Art. 11 FHG), under which the

Government may approve credits for urgent projects if a postponement would have adverse consequences for the country or if the expenditure is based on a final and binding court decision. Approvals using Article 11 can be done in hours. Both Articles apply in the context of emergency financing in the health sector, and were used during the COVID-19 pandemic.

No specific tests for contingency funding for response to health threats have been done. However, the COVID-19 pandemic demonstrated that the established mechanisms functioned effectively and that budget could be made available for implementation of the necessary measures within a short time frame. If the Office of Public Health identifies a need, they can contact the Ministry of Social Affairs and Justice and submit a request. Normally, there are weekly government meetings but in times of crisis meetings can be set up quickly and decisions taken rapidly. For example, during the COVID-19 pandemic medical counter measures were paid for applying Article 11. Pay outs using these mechanisms could be checked easily. It should be noted that the country holds substantial liquid reserves, which can be drawn upon when required to finance measures without the need for external borrowing.

There is no separate budget for implementation of International Health Regulations (IHR) capacities; this is covered by the general budget.

Recommendations

- No recommendations.

Human resources (Capacity 5)

Surge capacity was demonstrated during the COVID-19 pandemic. During the pandemic, when the borders closed, Liechtenstein provided letters to their healthcare workers and cross-border workers, which stated that they are essential workers and are allowed passage. However, there is no documented plan for ensuring sufficient human resources in the event of a public health emergency. There is also no mapping of what type and number of staff would need to be available for different scenarios.

During the pandemic, additional staff for contact tracing was made available by reallocating government staff, by temporarily employing people, and by involving members of the crisis intervention team. Testing centres were staffed by the Liechtenstein Medical Association, and by hiring of additional personnel, and doctors, nurses and administrative staff manned the vaccination centres. The main laboratory used for COVID-19 testing could recruit new laboratory staff during the pandemic. Furthermore, the national prevention, preparedness and response plan that is currently under development will include a plan for ensuring surge capacity.

Organisational capacity for public health emergencies is provided by the Office of Public Health. After the COVID-19 pandemic it was decided to establish an interdisciplinary public health staff under the umbrella of the National Emergency Management Staff. This interdisciplinary public health staff will provide internal and external surge management and organisational capacity in emergencies.

The country has limited domestic infrastructure, with one national hospital providing basic care and with some intermediate care beds. Outpatient care is mainly provided by private doctors. There are approximately 120 medical doctors in the country, all of whom are registered with the Liechtenstein Medical Association. In addition, there are long-term care facilities with 339 beds, which could be extended to 680 beds. From the mid-1950s onwards, family support associations began to be established in the municipalities. In 2022, Family Aid Liechtenstein was established to provide outpatient care and support and to coordinate the service providers involved. Most healthcare providers depend on medical staff from other countries, mainly Austria and Switzerland. The country has agreements with Austria and Switzerland on mutual assistance in the event of disasters or serious accidents which can be activated in extraordinary situations.

Recommendations

- Formalise processes for surge capacity and business continuity and document the effective instruments developed during the COVID-19 pandemic and include these in the national prevention, preparedness and response plan.
- Establish the interdisciplinary staff under the umbrella of the National Emergency Management Staff and perform exercises to ensure sufficient organisational capacity in a crisis situation.

Health service provision (Capacity 7)

During the COVID-19 pandemic, Liechtenstein demonstrated capacity and capability in ensuring continuity of service for the different levels of health services provision.

Healthcare institutions, such as the national hospital and LTCFs, have dedicated business plans for continuity of health service, including mechanisms for prioritisation and management of specific healthcare resources, such as healthcare professionals, facilities, medicines, and equipment, and accounting for different threats. The national hospital also has an alert and response plan for public health emergencies. As established practice, these plans are reassessed regularly and have since been tested annually. Staff training in this regard is also mandated. Additionally, the Red Cross, as the sole ambulance service provider, has established plans for handling staff training and staff shortages. As part of mass casualty incident management, a volunteer-based emergency response unit is under development, which will

cooperate with services in Austria and Switzerland for major events. Overall, the coordination of stakeholders in a health crisis is assigned to the interdisciplinary National Emergency Management Staff.

Liechtenstein has a dedicated tool (i.e. IES system) to timely monitor health services and resources in a public health emergency scenario. It can collect data on hospital bed capacity, healthcare workers capacity, and healthcare equipment stockpiles (e.g. PPE). Indicators can be analysed and integrated with Switzerland, allowing broader resource monitoring and planning. During COVID-19, the system showcased operational capacity, supporting healthcare resources monitoring and planning. An update of the IES tool is expected by late 2026.

Several long-standing agreements with neighbouring countries ensure provision of specialised hospital-level healthcare as well as medical transfer of patients, for a wide range of care conditions. This provision of care includes the public health emergency scenario, as demonstrated during COVID-19, in which a substantial proportion of severe patients were transferred and treated abroad.

Recommendation

- Adopt new versions of the IES system, including regular training and reporting.

Risk communication and community engagement (Capacity 8)

While Liechtenstein has established a crisis management plan, the absence of a corresponding 'peace-time' risk communication and community engagement (RCCE) framework limits its capacity to sustain preparedness and to ensure coherent, proactive communication outside emergency situations. Communication practices remain largely reactive and continue to rely heavily on few key individuals and external partners, without the support of formal structures such as defined roles, standard operating procedures, distribution lists, or systems for monitoring rumours and public sentiment. Social media presence is still limited and not supported by systematic listening or analysis tools.

The country benefits from strong intersectoral relationships that support rapid informal coordination and the ability to quickly activate hotlines and an emergency alert application used by a large share of the population. These mechanisms provide fast channels for disseminating information and capturing public concerns during emergencies. However, key weaknesses persist, notably the absence of formal RCCE structures and SOPs, which makes operations dependent on specific individuals and increases the risk of discontinuity, as well as limited in-house communication capacity and reliance on neighbouring-country expertise and ad-hoc actions.

Recommendations

- Develop formal RCCE guidelines and SOPs. These should define communication roles, workflows, templates, and distribution lists to support continuity and strengthen multisectoral coordination.
- Expand proactive communication capacity through systems for social media monitoring, rumour tracking, and dynamic listening. Together, these measures would significantly improve the country's ability to communicate effectively before, during, and after public health events.

Points of Entry and border health (Capacity 9)

The discussion on points of entry capacity took into account the Switzerland–Liechtenstein Customs Treaty of 29 March 1923, which integrated Liechtenstein into the Swiss customs territory and continues to serve as the legal basis for Switzerland's responsibility over Liechtenstein's border matters, including at the border with Austria. The arrangement also stipulates that, in situations involving medical or food safety issues at the border, the Liechtenstein Office of Public Health and the Liechtenstein Food and Veterinary Office would be consulted.

Liechtenstein shares land borders with Switzerland and Austria; however, the country has no international airport, seaport, or motorway. Its single train station primarily serves local trains used by daily commuters from neighbouring countries.

It is noteworthy that Liechtenstein receives daily circa 25 thousand cross border workers, roughly half from Switzerland and half from Austria, making up also a considerable proportion of the country's health workforce. Travel or trade restrictions due to a PHEIC, if imposed by Switzerland, would not be applicable to Liechtenstein (as per Customs Treaty), but may affect the free movement of goods and/or people, if implemented on the Austrian side of the border, warranting consideration for contingency plans for Liechtenstein should the country's needs exceed existing capacities in Switzerland.

Reflecting on the experience of the COVID 19 pandemic, experts noted that Liechtenstein can obtain travel data from relevant points of entry—most notably from Zurich Airport, the nearest international airport. Liechtenstein is able to share this information via the Early Warning and Response System, should this be required. During a pandemic, the border between Switzerland and Liechtenstein would remain open, and any additional public health measures would aim to align with the Swiss approach.

Although Liechtenstein participates in the Health Security Committee, there is currently no defined step requiring consultation with the Committee before implementing travel measures at a point of entry. The existing legal framework with Switzerland governing border matters explains the absence of such a consultation need.

Recommendations

- No recommendations.

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

Liechtenstein is progressively strengthening its One Health implementation through an informal yet consistently effective cross-sectoral system of collaboration. Although the structures are not always formalised in legislation or standing agreements, the operational reality is characterised by close and trusted cooperation between the Office of Public Health and the veterinary, food-safety, agricultural, and environmental sectors. These relationships have developed over many years of working together on both routine surveillance activities and joint responses to emerging events, creating a high degree of mutual awareness, direct communication, and shared problem-solving capacity.

In practice, One Health collaboration is regularly demonstrated during exercises, investigations, and the development of joint reports. When preparing or conducting cross-sectoral exercises, the OPH works with the Food and Veterinary Office and the Office of Environment, and other relevant actors from the earliest planning stages through implementation and post-exercise review. However, while these collaborations function very effectively during ad hoc activities such as investigations or exercises, the sectors do not meet regularly outside of event-driven interactions. Formalising some of the existing pathways and establishing more routine exchange mechanisms could further strengthen predictability, continuity, and long-term coordination across the One Health system.

The strength of the approach is illustrated in several recent cross-sectoral initiatives. The development of the national climate change adaptation strategy involved close consultation between human and animal public health, environmental protection, agriculture, and ecosystem management experts. Public health considerations, such as heat impacts, water quality, vector proliferation, and ecological changes influencing zoonotic spillover, were integrated, resulting in a comprehensive set of climate-related risk assessments and joint planning measures. Another example is the national mosquito monitoring report, in which human health, veterinary, and environmental specialists worked together to assess vector presence, evaluate ecological conditions influencing vector establishment, and interpret potential implications for pathogen transmission. These collaborative products have helped foster a shared situational understanding of ecological and zoonotic risks and strengthened preparedness for emerging vector-borne threats.

Liechtenstein's small size contributes to an inherently agile One Health system. Lines of communication between sectors are short, and professional networks are well established, enabling rapid mobilisation when needed. Informal mechanisms—such as direct person-to-person contact, shared working groups, and long-standing professional relationships—function efficiently as pathways for information exchange and coordination. This agility is particularly relevant for zoonotic risks, where early detection in animals or the environment is essential for timely public health response.

While many of the arrangements remain informal, cross-sectoral cooperation generally works well when it is needed. When a potential zoonotic or environmentally linked signal emerges, the OPH can contact veterinary and environmental authorities to explore exposure pathways, animal reservoirs, ecological conditions, or possible food chain implications. Likewise, veterinary and environmental agencies may share relevant surveillance observations, such as wildlife events, vector activity, food safety issues, or environmental quality findings, when they appear pertinent to human public health. Although this exchange is not standardised or routinely scheduled, it provides a useful basis for understanding cross-sectoral risks and supports the country's ability to interpret and respond to signals at the human–animal–environment interface.

Cross-border cooperation also plays a significant role in Liechtenstein's One Health landscape. Given the country's connection with Switzerland, especially in the areas of veterinary diagnostics, laboratory analysis, wildlife management, and environmental monitoring, many risks are jointly observed and interpreted with Swiss partners. This embedded cross-border dimension further amplifies Liechtenstein's surveillance and response capability, ensuring access to expertise and broader situational awareness for zoonotic and environmental threats.

Overall, Liechtenstein demonstrates a functional, integrated approach to One Health that is proportionate to its size and risk profile. Through ad hoc intersectoral collaboration, shared activities, joint analyses, and clear recognition of the connection of human, animal, and environmental health, the country has built a cooperative system that works well in practice and supports effective preparedness for and response to zoonotic and environmental threats.

Recommendations

- Formalising 'One Health' implementation: this process would benefit from regular cross-sector meetings during routine periods.

Chemical events (Capacity 11)

Management of health threats of chemical origin falls within the remit of the fire brigade, as stipulated in the Fire Brigade Law. Civil protection preparedness and response plans contain information on sites with potential chemical hazards. It should be noted that, for larger chemical incidents or accidents involving an unknown substance, support is provided by the chemical fire brigade from the Swiss Chemical Emergency Response Unit Werdenberg South. Swiss experts would also be called upon to assist with detection and analysis, relying on Swiss infrastructure. During the discussion, an example of a chemical incident that occurred a couple of years ago was presented, illustrating the response actions taken, notification of the population, and evacuation procedures. As the national hospital is not equipped to treat severe injuries resulting from chemical exposure, patients are transferred to hospitals in neighbouring countries.

When discussing the procedures for conducting a health risk assessment in the event of a chemical origin health threat, it was noted that no formal procedure, template, or trigger for initiating such an assessment currently exists. At present, such an assessment may only be requested by the National Emergency Management Staff in the event of an extraordinary situation. In these cases, the Office of Public Health, the Office of Environment, and the Food and Veterinary Office would be involved; however, their respective roles and actions are not clearly defined. Chemical plant accidents and dangerous goods incidents are included in Liechtenstein's Hazard and Risk Analysis, with the Office of Environment designated as the lead authority. Experts found the available cross sectoral risk assessment methodologies useful, such as those provided by the European Chemicals Agency or European Environmental Agency.

In case of intoxication, the Swiss advisory service Tox Info Suisse is available to the public and healthcare institutions 24/7 (emergency number 145). If extraordinary or frequent cases occur, the institutions involved (hospitals, doctors' offices) contact the Office of Public Health directly by phone or email. Depending on the situation, other authorities (e.g. the Food and Veterinary Office in cases of food poisoning) or partner organisations in Switzerland may be asked for support, or patients may be transferred to Swiss or Austrian hospitals for special treatment. If the case could pose a risk to the general population, the interdisciplinary health staff or national emergency management staff and in particular the information and communication unit of the government are called upon to ensure timely and coordinated action.

Recommendations

- Develop a procedure for conducting a cross sectoral health risk assessment following any incident or accident involving chemical substances.

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

Liechtenstein has well-established legal frameworks, under the Customs Treaty and the EEA Agreement, to conduct human research and participate in research and innovation studies carried out by Switzerland. During the COVID-19 pandemic, Liechtenstein showcased capacity and capability to carry out and contribute to several research projects, in many scientific domains (e.g. population-based diagnostics, immunobiology, and wastewater epidemiology), and involving several stakeholders.

As a small country, Liechtenstein-based institutions conduct their own research while also benefiting from emergency and innovation research initiated and carried out by institutions in Switzerland and Austria, including the opportunistic participation in studies from international research networks or infrastructures. An ethics committee's agreement is in place to conduct human research, albeit terms and conditions for expedited authorisation under a public health emergency scenario are not formally defined. Nonetheless, it did not represent an operational obstacle during the COVID-19 pandemic. Currently, there is no documented strategy for emergency research and innovation, during public health emergencies, including the definition of partnerships, roles, and responsibilities of research, mobilisation of funding, or the use of predesigned protocols and common data models.

Recommendations

- Include a research section in the prevention, preparedness and response plan including potential priority research areas and relevant stakeholders across academia, research networks, and public health institutions.

Recovery elements (Capacity 15)

In Liechtenstein, civil protection (non-health) crisis recovery is understood as an integral part of crisis management rather than a separate phase, meaning that operational responsibility continues until regular procedures and services are restored. For example, for natural disasters such as flooding, recovery may extend as long as infrastructure and housing remain affected with insurance actors playing an important role in the recovery phase (e.g. in relation to economic damage). These actors are closely integrated into coordination mechanisms. Civil protection frameworks and operative documents, therefore, include clear requirements for recovery and the need for systematic reflection of what happened to gather lessons learned to make improvement for future crisis.

Following the COVID-19 pandemic, a comprehensive national review was conducted and prepared for Parliament. This externally produced review report included a critical analysis of crisis management, documented strengths and

areas for improvement, and provides an important evidence base for future crisis. It represents a valuable instrument for strategic learning and system improvement.

Within the health sector, systematic planning and conducting lessons learned activities (e.g. IAR, AAR) is foreseen as part of the ongoing development of the public health emergency structures and the PPR. However, to date, lessons learned activities have not been systematic and have not followed standardised methodology (e.g. self-developed/ECDC/WHO), which would strengthen consistency and documentation. Consideration on how to take lessons learned into account and embed them into practice should be outlined in the PPR plan (e.g. incorporating them into an action plan).

Continued strengthening of systematic lessons learned activities in the health sector based on the well-established and functioning civil protection framework and involving the Interdisciplinary Health Staff to be formalised in 2026, will enhance the countries' overall resilience during special and extraordinary crisis situations.

Recommendations

- Include a recovery section in the PPR plan that includes the need to systematically plan and conduct lessons learned activities using standardised methodology, and include a mechanism for embedding lessons into practice.

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

Civil protection in Liechtenstein implements a systematic cycle of exercises at national and international levels and these are embedded in the integrated emergency management cycle and are consistently accompanied by structured evaluation processes. For example, external observers assess major exercises, formal reports are produced, weaknesses are identified, and concrete recommendations are mandated and followed up. Implementation of recommendations is reported to government and followed up on a regular basis.

Under the National Emergency Management Staff, there are regular SimEx organised for the special and extraordinary crisis situations, while 'milder' incidents are systematically followed by debriefings, with minutes developed. Major gaps identified during those exercises inform review of internal regulations, and other measures, as warranted, and follow-up on those.

While public health authorities have participated in national and international simulation exercises and international capacity building exercises on an ad hoc basis, there should be provisions within the PPR plan to conduct regular internal and multisectoral simulation exercises to test the functioning of the emergency management system in Liechtenstein.

The national action plan that will be developed following the PHEPA, should serve as the central instrument for consolidating lessons identified through exercises, debriefings, pandemic reviews and real incidents. It should specify how lessons will be translated into concrete measures, including responsible entities, timelines and any resource limitations. Monitoring mechanisms should ensure follow-up and accountability.

Recommendations

- No recommendations.

Conclusions

Liechtenstein demonstrates a solid foundation for public health emergency preparedness, characterised by close cross-sectoral cooperation, short and agile decision-making paths and extensive collaboration with neighbouring countries. Informal coordination channels and personal networks have repeatedly proven effective, but their formalisation is needed to enhance business continuity, planning and transparency.

The assessment highlights a public health system that functions effectively within a high reliance on Switzerland, with access to their healthcare system, specialised expertise, diagnostics and shared operational tools. While this arrangement provides significant benefits, it also creates an inherent reliance on Swiss strategic decisions that delimits Liechtenstein's scope for autonomous action during some emergency situations.

Liechtenstein operates with limited human resources for public health activities; many functions depend on small teams with broad mandates. This places high pressure on the system's capacity to sustain routine activities while simultaneously preparing for and responding to emergencies. To strengthen resilience, the country should map and allocate sufficient human resources across all capacities to sustain current and future routine activities. Human resources should be planned to be scalable under crisis.

One of the main recommendations is the further development of the national prevention, preparedness and response plan (PPR), which represents a critical opportunity to formalise and reinforce the internal coordination, documentation and planning processes and to consolidate and harmonise structures across sectors. Incorporating

clear governance arrangements, defined procedures, and mechanisms for regular training and exercises will enable more coordination in crises. Embedding lessons learned from previous emergencies and this Public Health Emergency Assessment recommendations into this plan, together with systematic follow-up mechanisms will help to ensure continuous improvement across the emergency management cycle.

In addition, it is recommended to perform an analysis of the support roles, functions, and instruments of the relevant European Union institutions, agencies, and bodies that are available to Liechtenstein and establish links with the national PPR plan.

To strengthen the PPR plan, Liechtenstein would benefit from planning, conducting and/or participating in regular simulation exercises on national and international level to test plans, procedures, cross-sectoral collaboration and communication across multiple capacities.

Across the capacities assessed in depth, several cross-cutting needs were identified: establishing structured surge arrangements, formalising processes for updating medical countermeasure stockpiles, enhancing surveillance digitalisation and strengthening mechanisms for systematic national oversight of antimicrobial resistance, antimicrobial consumption and healthcare associated infections data.

Other recommendations are to formalise and operationalise the interdisciplinary health staff for special and extraordinary crisis situations, to set up the public health emergency operations centre (PHEOC), strengthen mechanisms for the timely and appropriate referral of high-threat pathogens to designated reference laboratories, use available health data sources, e.g. insurance claim data, to support the monitoring and evaluation of public health measures, including vaccine monitoring and coverage; and continue participating in the Epi+ project to develop a country-based multi-hazard, event-based surveillance platform, interoperable with EU EpiPulse platform.

There are opportunities to reinforce existing strengths and ensure that preparedness efforts are proportionate to Liechtenstein's size and its high level of integration with neighbouring countries.

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

Annex 2. Practical arrangements for the assessment process

This document aims at describing the main practical arrangements before the assessment process takes place regarding the PHEPA (under Article 8 of the SCBTH Regulation).

The arrangement refers to the country visit to Liechtenstein that took place from 2 to 6 March 2026, in the Office of Public Health, Vaduz, Liechtenstein.

The five capacities that were assessed in-depth in this cycle are:

- Capacity 3. Laboratory;
- Capacity 4. Surveillance;
- Capacity 6. Health Emergency Management;
- Capacity 12. Antimicrobial resistance (AMR) and healthcare-associated infections (HAIs); and
- Capacity 13. Union level coordination and support functions.

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

Assessment team and national experts

Assessment team

The experts involved in this assessment are detailed in the table below.

Members of the assessment team			
Name	Institution (ECDC/other agencies...)	Role in the team (team leader/expert)	Capacities assessed
Marieke van der Werf	ECDC	Team leader	C.2, C.4, C.5
Aikaterini Mougkou	ECDC	Team member	C.8, C.10, C.12
Andreas Hoefler	ECDC	Team member	C.3, C.4, C.10
Luis Alves de Sousa	ECDC	Team member	C.3, C.4, C.5, C.7, C.14
Favelle Lamb	ECDC	Team member	C.6, C.7, C.14, C.15, C.16
Margot Einoder-Moreno	ECDC	Team member	C.6
Jevgenijs Golovcuks	ECDC	Team member	C.1, C.9, C.11, C.13
Julia Langer	EC/SANTE	Team member	C.2, C.6, C.11, C.13
Pierre-Francois Baulieu	EC/HERA	Team member	C.6 MCM
Bart Hoorelbeke	EU Member State expert from Belgium	Team member	C.1, C.3, C.6, C.8
Silviu Ciobanu	WHO	Team member	C.1, C.6, C.9, C.15, C.16

National experts supporting document sharing

Country focal point(s) and experts involved in the document-sharing process	
Name	Organization
Carla Visscher	Office of Public Health, Liechtenstein
Esther Walser-Domjan	Office of Public Health, Liechtenstein
Silvia Dehler	Office of Public Health, Liechtenstein

National experts participating in the assessment process

National experts participating in the assessment process			
Name	National institution	Role in the assessment (Coordinator, Expert)	Main capacity to assess
Eva Maria Mödlağl	Office of Public Health	Coordinator and Expert	C.1. IHR (Expert) C.2. Financing (Coordinator) C.5. Human Resources (Coordinator) C.6. Health emergency management (Expert) C.7. Health Service Provision (Coordinator) C.8. RCCE (Expert) C.13. Union Coordination (Coordinator) C.15. Recovery elements (Expert) C.16. Actions taken to improve gaps found in the implementation of prevention, preparedness and response plans (Expert)
Silvia Dehler	Office of Public Health	Coordinator and expert	C.1. IHR (Coordinator) C.2. Financing (Expert) C.5. Human Resources (Expert) C.6. Health emergency management (Coordinator) C.7. Health Service Provision (Expert) C.8. RCCE (Expert) C.9. Points of Entry (PoEs) and border health (Coordinator) C.10. Zoonotic diseases and threats of environmental origin, including those due to the climate (Coordinator) C.11. Chemical events (Coordinator) C.13. Union Coordination (Expert) C.15. Recovery elements (Coordinator) C.16. Actions taken to improve gaps found in the implementation of prevention, preparedness and response plans (Coordinator)
Carla Visscher	Office of Public Health	Coordinator and expert	C.1. IHR (Expert) C.2. Financing (Expert) C.3. Laboratory (Expert) C.4. Surveillance (Expert) C.5. Human Resources (Expert) C.7. Health Service Provision (Expert) C.8. RCCE (Expert) C.9. Points of Entry (PoEs) and border health (Expert) C.10. Zoonotic diseases and threats of environmental origin, including those due to the climate (Expert) C.11. Chemical events (Expert) C.12. Antimicrobial resistance (AMR) and healthcare-associated infections (HAIs) (Expert) C.14. Research development and evaluations to inform and accelerate emergency preparedness (Coordinator) C.15. Recovery elements (Expert) C.16. Actions taken to improve gaps found in the implementation of prevention, preparedness and response plans (Expert)

National experts participating in the assessment process			
Esther Walser-Domjan	Office of Public Health	Coordinator and expert	C.1. IHR (Expert) C.2. Financing (Expert) C.3. Laboratory (Coordinator) C.4. Surveillance (Coordinator) C.5. Human Resources (Expert) C.7. Health Service Provision (Expert) C.8. RCCE (Expert) C.9. Points of Entry (PoEs) and border health (Expert) C.10. Zoonotic diseases and threats of environmental origin, including those due to the climate (Expert) C.11. Chemical events (Expert) C.12. Antimicrobial resistance (AMR) and healthcare-associated infections (HAIs) (Coordinator)
Gabriela Rüdiger	Office of Public Health	Expert, Law	C.1. IHR C.6. Health emergency management C.13. Union Coordination
Irene File	Office of Public Health	Expert, European Law	C.1. IHR C.6. Health emergency management C.13. Union Coordination
Vlasta Zavadova	Office of Public Health	Expert	C.6. Health emergency management C.9. PoEs
Fabian Kurzemann	Office of Public Health	Expert	C.6. Health emergency management
Martin Stricker	Office of Public Health	Expert	C.6. Health emergency management C.9. PoEs
Deborah Matt	Office of Public Health	Expert	C.8. RCCE
Monika Büchel-Marxer	Senior Advisor to the Ministry of Social Affairs and Justice, Health	Expert	C.1. IHR C.4. Surveillance C.6. Health emergency management C.14. Research
Michael Winkler	General Secretary, Ministry of Social Affairs and Justice	Expert	C.2. Financing C.13. Union Coordination
Andreas Gritsch	Head of Office of Finance	Expert	C.2. Financing
Markus Biedermann	Head of Migration and Passport Office	Expert	C.9. PoEs
Werner Brunhart	Head of Food and Veterinary Office	Expert	C.4. Surveillance C.10. Zoonotic diseases and threats of environmental origin, including those due to the climate
Emanuel Banzer	Head of Office of Civil Protection	Expert	C.5. Human Resources C.6. Health emergency management C.7. Health Service Provision C.8. RCCE C.11. Chemical events C.15. Recovery elements C.16. Actions taken to improve gaps found in the implementation of prevention, preparedness and response plans
Albert Kölbener	Office of Environment	Expert	C.11. Chemical events
Daniel Keller	Office of National Economy	Expert	C.9. PoEs

National experts participating in the assessment process			
German Bell	Office of Civil Protection	Expert	C.11. Chemical events
Janine Köpfli	Information and Communications Unit of the Government	Coordinator	C.8. RCCE
Samuel Barwart	EEA Coordination Unit	Expert	C.13 Union Coordination
Sarah Weber	Office of Environment	Expert	C.10. Zoonotic diseases and threats of environmental origin, including those due to the climate
Heimo Biedermann	National Police, Emergency Command and Dispatch Centre	Expert	C.1. IHR C.6. Health emergency management
Milena Bosshard	National Police, Emergency Command and Dispatch Centre	Expert	C.1. IHR C.6. Health emergency management
Sandro Eberle	Liechtenstein Red Cross	Expert	C.5. Human Resources C.6. Health emergency management C.7. Health Service Provision
Tomas Vasken Karajan	National Hospital of Liechtenstein	Expert	C.5. Human Resources C.6. Health emergency management C.7. Health Service Provision
Seada Habibic	National Hospital of Liechtenstein	Expert	C.12. Antimicrobial resistance (AMR) and healthcare-associated infections (HAIs)
Kurt Salzgeber	Long-term Care Facilities Liechtenstein	Expert	C.5. Human Resources C.7. Health Service Provision
Nikolaus Frick	President of the Liechtenstein Association of Pharmacists	Expert	C.6. Health emergency management
Petra Miescher	Crisis Intervention Team	Expert	C.8. RCCE
Stefan Rüdissler	Liechtenstein Medical Association, CEO	Expert	C.6. Health emergency management
Jürgen Schwarz	Municipal Management bodies	Expert	C.6. Health emergency management
Andreas Kronenberg	Professor, Principal Investigator, University of Berne	Expert	C.12. Antimicrobial resistance (AMR) and healthcare-associated infections (HAIs)
Lorenz Risch	Private University in the Principality of Liechtenstein (UFL)	Expert	C.6. Health emergency management C.10. Zoonotic diseases and threats of environmental origin, including those due to the climate C.14. Research
Martin Risch	Laboratory Dr Risch	Expert	C.3. Laboratory C.4. Surveillance C.5. Human Resources C.10. Zoonotic diseases and threats of environmental origin, including those due to the climate C.12. Antimicrobial resistance (AMR) and healthcare-associated infections (HAIs)

Agenda for the country visit

Monday	Tuesday	Wednesday		Thursday		Friday
Welcome & Registration	Registration	Registration		Registration		
Opening Remarks (country)	C.5 Human Resources	Breakout room 1 - C.3 Laboratory	Breakout room 2 - C.6 Health Emergency Management - planning, IMS, risk profiling, PHSM	Breakout room 1 - C.12 AMR/HAI	Breakout room 2 - C.6 Health Emergency Mangement - Medical Counter Measures	Internal assessment team meeting
Overview and key aspects of the assessment process (ECDC)						
Overview of the country public health structure, prep and resp mechanisms and generic and specific plans available relevant to the assessment (country)	C.7 Health Service Provision					
Break	Break	Break		Break		1 hour session to pre-view of the recommendations with country core team
Assessment of cross-cutting aspects - Scenario based discussion	C.2 Financing	Breakout room 1 - C.3 Laboratory	Breakout room 2 - C.6 Health Emergency Management - planning, IMS, risk profiling, PHSM	Breakout room 1 - C.12 AMR/HAI	Breakout room 2 - C.6 Health Emergency Management - Medical Counter Measures	Main findings, conclusions, recommendations and next steps (ECDC presentation and discussion with Country)
	C.11 Chemical events					
Lunch	Lunch	Lunch		Lunch		Concluding remarks (country)
						Debrief on the ECDC assessment process (structure, preparation, organization)
C.1 IHR	C.10 Zoonotic diseases and threats of environmental origin, including those due to the climate	Breakout room 1 - C.4 Surveillance	Breakout room 2 - C.13 Union level coordination and support functions	Buffer for further in-depth discussion		OPTIONAL - Lunch
C.9 PoE				OPTIONAL - Pre-view of the recommendations with country core team		
	Break	Break		Wrap-up session		OPTIONAL - Placeholder for debriefing with senior national representatives
Break	C.14 Research	Laboratory site visit	Breakout room 1 - C.4 Surveillance	Breakout room 2 - C.13 Union level coordination and support functions	Internal assessment team meeting	
C.8 RCCE	C.15 Recovery					
	C.16 Action plan					
Wrap-up Day 1 (ECDC together with country)		Wrap-up Day 3 (ECDC together with country)				
		19:30 Dinner				
Plenary						
Breakout						
Break						

**European Centre for Disease
Prevention and Control (ECDC)**

Gustav III:s Boulevard 40
169 73 Solna, Sweden

Tel. +46 858 60 10 00
ECDC.info@ecdc.europa.eu

www.ecdc.europa.eu



Publications Office
of the European Union