

Preparedness needs of German municipal public health authorities: a qualitative analysis of the 2025 DGÖGB symposium on Population Health Preparedness for Crisis

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The three authors are board members of the German Society for Public Health and Population Medicine (DGÖGB).

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Abstract

Background Recent crises have shown how complex threats to population health have become. Disease outbreaks, climate-related disasters, geopolitical tensions and disruptions to critical infrastructure do not occur in isolation: they overlap and reinforce one another, straining existing preparedness systems. In Germany, municipal public health authorities (“Gesundheitsämter”) are central to crisis response, yet their operational preparedness requirements are not clearly defined.

Objectives We aimed to identify cross-cutting preparedness needs of German municipal public health authorities based on expert contributions presented at the 2025 DGÖGB symposium on Population Health Preparedness for Crisis (“Bevölkerungsmedizinische Vorbereitungen auf die Krise”).

Sample and Methods We qualitatively analysed submissions from eight of the nine symposium speakers, extracting each contribution’s main argument, thematic focus, and operational recommendations, checking AI-assisted summaries against the original documents and grouping recurring themes relevant to German municipal public health authorities. A post hoc step mapped the emergent domains onto the 2026 WHO/IANPHI framework.

Results We identified five cross-cutting domains: governance and health security; institutional coordination and a common operating picture; critical infrastructure and digital resilience; workforce capacity and operational readiness; and continuity of essential health services and protection of vulnerable populations. Mapping showed the strongest alignment for legal authority, coordination, emergency management, workforce development, public health and social measures, and clinical care guidance.

Take-home message for students Crisis preparedness is a core public health task. Municipal public health authorities improve outcomes when they plan for health security, coordinate across sectors with a shared situation picture, protect critical infrastructure and digital systems, ready their staff, and sustain essential as well as mental-health services for vulnerable groups.

Conclusions Population health crisis preparedness requires a systemic approach integrating public health, civil protection, healthcare delivery, and critical infrastructure resilience, all domains involving municipal public health authorities. Strengthening their institutional capacity should therefore be central to German health security policy.

Introduction

The first decades of the twenty-first century have seen an increasing overlap of threats to population health: Infectious disease outbreaks, natural disasters, armed conflicts and climate-related hazards no longer unfold as separate events, they often occur at the same time and reinforce one another. The COVID-19 pandemic made this clear and exposed vulnerabilities even in well-resourced health systems, underscoring the need for public health authorities' solid preparedness planning and coordinated crisis response (Diener and Condrau 2023).

Geopolitical tensions have recently added further strains since the commencement of Russia's war on Ukraine in 2014 and Russia's full-scale invasion in 2022. The war has created humanitarian and public health challenges in Ukraine that extend beyond the immediate conflict zones. These include large-scale displacement, economic pressure, disrupted supply chains and contribute to growing concerns about the resilience of critical infrastructure across Europe in general (Coccia and Benati 2024b; European Centre for Disease Prevention and Control 2025; Hayes et al. 2024).

Global climate change adds another layer of risk, as heatwaves, floods and other extreme weather conditions are becoming more frequent and more severe, placing additional demands on public health services and emergency response systems.

These interconnected developments potentially constitute a “polycrisis”, in which overlapping threats deepen existing systemic weaknesses (Kuhlmann et al. 2024). For the public health systems, future polycrises are likely to become more frequent, driven by increasing system complexities and lack of resources of all kinds.

In Germany, municipal public health authorities play a key role in crisis management. They conduct epidemiological surveillance, implement health protection measures, communicate risks and coordinate between healthcare providers and other public agencies. Yet the operational demands these institutions face in complex crisis situations have received limited attention in the German context (Arnold et al. 2025; Höglund-Braun and Tinne-mann 2025; Zeeb et al. 2025)

In light of these developments, the “Deutsche Gesellschaft für Öffentliche Gesundheit und Bevölkerungsmedizin e. V.” (DG-ÖGB, German Society for Public Health and Population Medicine) held its third annual symposium on “Population Health Preparedness for Crisis” in Frankfurt am Main in November 2025. Various experts from Germany and abroad, working in public health, disaster medicine, civil protection, risk analysis, and military medicine, representing different scientific professional societies, examined current challenges and discussed strategies to strengthen crisis preparedness.

This study synthesises the various expert contributions and perspectives from that symposium and draws out implications for the further development of population health preparedness policy in Germany.

Sample and Methods

We reviewed comprehensive materials from the third annual symposium on “Population Health Preparedness for Crisis”

(German title “Bevölkerungsmedizinische Vorbereitungen auf die Krise”), organized by the DGÖGB, in Frankfurt am Main on 14 November 2025. Nine speakers presented at the symposium. They were invited based on the identification of their expertise, availability and willingness to join the symposium. None received any funding or other remunerations for their participation. By the end of 2025, eight speakers had submitted their presentation, background materials or manuscripts to the authors for further analysis. We included these together with the official symposium program in the present review; listed in Table 1.

We conducted a qualitative analysis of the symposium-related submissions focusing on the crisis preparedness needs of municipal public health authorities in Germany. For each submission, we recorded the main argument, central thematic focus, and operational recommendations. ChatGPT 5.4 and Claude Opus 4.8 supported preliminary summaries of the submitted materials. The authors checked these summaries against the original documents and corrected them where needed. Assisted by the same LLMs, we then compared the material across speakers, identified recurring themes, and grouped them into the cross-cutting domains shown in Table 2. All authors reviewed the final thematic structure independently and resolved differences mutually through discussion.

We then contextualised the symposium findings using selected academic literature on population health preparedness, disaster preparedness and health system resilience published between 2010 and March 2026, with particular attention to work published after Russia’s full-scale invasion of Ukraine in 2022 and concerning Europe. As deductive and post-hoc interpretive steps, we compared the emergent domains with the (World Health Organization 2026)/IANPHI framework for health

emergency preparedness and response capabilities for national public health agencies, since it offers an institution-focused capability model for public authorities that lead or support emergency functions (World Health Organization (WHO) and International Association of National Public Health Institutes (IANPHI), 2026).

Results

Eight symposium speakers had submitted materials, and all these were included in the present synthesis, whereas a ninth speaker did not submit materials in time and was therefore not included; the omission reflects non-submission rather than a content-based exclusion.

Across the reviewed expert opinions, five cross-cutting domains emerged that were directly relevant to municipal public health authority crisis preparedness. These domains and their operational implications for municipal public health authorities are summarised in Table 2.

Sander: “Strategic health security and governance”: Speaker Leif Erik Sander argued that health security should be understood as a task for the health system as a whole, not as the responsibility of individual hospitals or institutions. Drawing on the experience of the COVID-19 pandemic, he pointed to weaknesses in coordination, governance and digital infrastructure within the German health system. He also noted that Germany’s role as a NATO logistics hub creates significant new demands, including the need to prepare for mass casualty situations in the context of collective defence. In response, he called for a federal health security framework, a national centre for threat analysis and crisis planning and closer cooperation between civilian and military medical services (Sander 2026).

Holtherm: “Civil-military integration and mass-casualty preparedness”: Hans-

Ulrich Holtherm, commander of the German Federal Armed Forces' Medical Academy (Sanitätsakademie der Bundeswehr), set out a four-phase escalation scenario ranging from persistent hybrid conflict through a NATO collective-defence crisis to national defence, in which Germany would serve as the strategic medical hub

("Drehscheibe Deutschland") for allied forces while simultaneously absorbing large refugee movements. He argued that planning must anticipate a casualty influx of up to a thousand critically injured patients per day, requiring a scalable national surge model that integrates Bundeswehr, trauma, and university hospitals

Table 1 Included speaker submissions

Speaker	Contribution theme	Extracted theme
Derkach, L.	Mental health and psychosocial vulnerability	Crises create severe psychosocial strain, functional impairment and reduced learning capacity in young adults. Preparedness must include mental health surveillance and low-threshold psychosocial support for vulnerable groups.
Fekete, A.	Infrastructure resilience and cascading risks across national, local and individual levels	Health services depend on resilient power, water, transport and digital systems. Preparedness must identify single points of failure and common-mode failures, then test cross-sector resilience under cascading scenarios.
Falconer Hall, T.	Defense public health and civil-military interoperability	Security crises require close civil-military interoperability, mass casualty planning, prolonged patient movement pathways, medical logistics and infectious disease prevention across the full care cycle. Whole-of-society resilience depends on integrating military and civilian health systems and maintaining surveillance and essential care under disruption.
Follmann, A.	Personnel vulnerability and digital transformation	Civil protection capacity is limited by workforce shortages, volunteer availability and dual-role conflicts. Telemedicine, resilient communications, standardized incident data and structured workforce planning can strengthen response capacity.
Holtherm, H.-U.	Civil-military integration and mass-casualty preparedness	Preparedness must address a phased escalation from hybrid threats to alliance and national defense. Public health authorities need defined roles in coordination, reserve planning and mass casualty response.
Naujoks, F.	Networked crisis management and systemic resilience	Municipal public health authorities need a networked crisis management model with business continuity planning, escalation levels, interagency coordination, secure communication and a whole-of-city approach.
Sander, L.-E.	Strategic health security and governance	Health security is a national security task. Germany's health system remains vulnerable because of legal fragmentation, delayed digitalization, weak civil-military preparedness, and under protected clinical infrastructure.
von Schreeb, J.	Population-health priorities in disaster response	Disaster response must follow population health needs, not specialist reflexes. WASH, primary care, chronic disease management, local capacity, and context-specific assessment determine outcomes more than highly specialized surge care alone.

(a “5+9+X” hub-cluster concept) and an estimated 15,000 beds. Because the military medical service would be committed to the operational theatre, he stressed that civilian hospitals would carry the main clinical burden, making deep civil-military integration essential. He called for a National Health Security Reserve of strategic medical stockpiles, a modern Health Security Act to clarify civil-military command and legal authority, legally mandated joint exercises and a reserve- or conscription-based mechanism to augment medical workforce capacity (Holtherm 2026).

Naujoks: “Networked crisis management and systemic resilience”: Frank Naujoks argued for a paradigm shift in the public health service: away from siloed, reactive crisis plans toward an integrated,

whole-of-society model in which the public health authority takes a central coordinating role. Drawing on the Public Health Authority Frankfurt (Gesundheitsamt Frankfurt am Main) as a case study, he described a scenario-agnostic business continuity approach (including remote-work capability, secure mobile communications and offline “red-folder” fallbacks for IT blackouts), a city-wide critical-infrastructure network operating under the principle of “joint planning, joint action,” and a legally grounded four-level escalation framework. Among the operational needs he identified were crisis-proof patient-flow management, secure interoperable information platforms and the problem of dual-assigned personnel, i.e. staff with parallel obligations to different civil-protection organizations,

Table 2 Final cross-cutting domains and operational recommendations for municipal public health authorities

Final cross-cutting domain	Resulting operational recommendations for municipal public health authorities
Governance and health security	Define a municipal health security plan with named leads, deputies, trigger levels, and legal interfaces. Integrate the public health authority into the city crisis staff. Review the plan annually and after each exercise or incident. Embed public health within whole-of-society health security planning and define interfaces for civil-military health coordination.
Institutional coordination and common operating picture	Build a standing crisis network with hospitals, emergency medical services, fire service, police, social services, utilities, laboratories, pharmacies, nursing homes, refugee services, and relevant NGOs. Standardize situation reporting, liaison functions, and patient flow coordination. Maintain secure digital communication and offline fallback procedures. Include joint planning for casualty reception, patient movement interfaces, and interoperable information exchange between civilian and, where relevant, military actors.
Critical infrastructure and digital resilience	Map dependencies on electricity, water, wastewater, fuel, IT, telecommunications, transport, laboratory services, and medical supply chains. Identify single points of failure and common-mode failures. Keep paper forms, offline contact lists, redundant communication channels, backup power and cyber incident procedures ready. Run blackout and cyberattack stress tests.
Workforce capacity and operational readiness	Maintain a staffing matrix for essential public health functions, with deputies and surge options. Record dual-role conflicts for staff who also work in critical infrastructure or emergency response. Cross-train staff, plan rest and psychosocial support and run regular multi-agency exercises with realistic scenarios. Prepare reserve staffing, task-shifting and dual-role personnel policies for prolonged mass casualty scenarios.
Continuity of essential health services and protection of vulnerable populations	Prioritise surveillance, outbreak control, shelter and refugee health, vaccination, medication continuity, WASH oversight, chronic disease support, maternal and child health and mental health support. Keep target-group plans for nursing home residents, people with disabilities, socially disadvantaged groups, migrants, and students or young adults. Prepare targeted risk communication for each group. Include vaccination prioritisation, infection prevention and control, antimicrobial stewardship, and medical logistics plans for disrupted supply chains and high-volume casualty or displacement scenarios.

which he argued must be resolved through clear rules of precedence (Naujoks 2026).

Fekete: “Infrastructure resilience and cascading risks across national, local and individual levels”:

Alexander Fekete examined how the health system’s dependence on critical infrastructure creates cascading vulnerability, building from concrete German cases up to the national and civil-defence levels. The 2005 Münsterland winter storm, resulting in a power outage lasting up to seven days, showed how a single failure propagates to heating, communications, water and home-based medical care; the 2021 Erftstadt flood showed a hospital becoming not merely a service provider but an endangered entity in its own right, simultaneously losing internal capacity and being cut off from outside help. He stressed the identification of “single points of failure” and “common-mode failures”, where a backup fails because it shares the same threat as the system it protects, e.g., a backup generator sited in a floodable basement, or an alert chain that depends on a single person. He linked these technical principles to the shift from voluntary to legally mandated resilience under the planned German Critical Infrastructure Umbrella Act (KRITIS-Dachgesetz, 2026) and to regular, cross-sector stress testing. Notably, he argued that national and local infrastructure resilience must be complemented by individual resilience — flattening rigid hospital command hierarchies so that junior staff and capable bystanders are heard and integrated, rather than overlooked, during a crisis (Fekete 2026).

Follmann: “Personnel vulnerability and digital transformation”: Andreas Follmann addressed the fragility of Germany’s largely volunteer-based civil-protection workforce and the role of digital tools in offsetting it. He drew on empirical findings that only about one-third of registered volunteer responders are reliably available

during a major incident, with civilian professional obligations and, most critically, employment within critical infrastructure itself among the main reasons for non-availability, producing a “dual-role” paradox in which the same people are simultaneously needed for crisis response and for keeping essential services running. Compounded by demographic change and uneven legal protections across organisations, this leads to a systematic overestimation of true staffing capacity. He called for a uniform national legal status for responders, systematic registration of dual roles and critical-infrastructure affiliation and stronger employer incentives and retention measures. In parallel, he argued for digital transformation as a “force multiplier”: telemedicine and the tele-emergency-physician model, resilient power and communications including satellite connectivity, a standardised mass-casualty-incident register and predictive triage tools — while cautioning that current AI systems cannot yet replace human judgement in safety-critical decisions (Follmann 2026).

Falconer Hall: “Defence public health and civil-military interoperability”: Thomas Falconer Hall addressed the consequences of Europe’s changing security environment for public health related to military defence. He argued that sound preparedness must include mass casualty care along prolonged and contested evacuation routes, infection prevention across the full care pathway and the maintenance of medical logistics under disrupted supply conditions. He also stressed that wider societal resilience depends on close cooperation between military and civilian health systems, including joint planning, compatible information systems and shared public health surveillance (Falconer Hall 2026).

Von Schreeb: “Population-health priorities in disaster response”: Johan von Schreeb argued for a shift in disaster

medicine away from the reflexive deployment of surgical teams and field hospitals toward a population-health response grounded in epidemiological evidence. He illustrated a recurring mismatch between two “pyramids”: the broad base of actual need in a disaster, such as water, sanitation, shelter, food and the continued management of chronic conditions, against an inverted pyramid of resources that funnels specialized surgical capacity toward the narrow apex of severe trauma. Empirical data underpinned the point: after the 2023 Turkey earthquake only about a tenth of medical consultations concerned earthquake trauma, the remainder being respiratory, skin, diarrhoeal and chronic conditions, while in Gaza some 3.5 million general consultations far outnumbered surgical procedures. He also noted that in protracted conflicts indirect mortality, i.e., from collapsed health services, disrupted supply chains, failures of water, sanitation and food, runs several times higher than deaths from direct violence. He therefore identified the continuity of essential and primary healthcare, the strengthening of local capacity, and accredited, standardised response (as in the WHO Emergency Medical Team system, for which the Robert Koch Institute is Germany’s national focal point) as the core priorities for crisis response (Schreeb 2026).

Derkach: “Mental health and psychosocial vulnerability”: Lidiya Derkach presented an empirical, longitudinal study of Ukrainian university students (aged 18–24) living under war, examining the psychological toll of sustained conflict and “cognitive warfare.” She reported that nearly 60% of students showed clinically relevant distress — predominantly anxiety, depression and chronic stress — alongside high rates of functional and psychosomatic symptoms and a troubling normalisation of wartime conditions. While she noted a parallel adaptive resilience among many

students, she argued that it risks collapse without support and called for low-threshold, needs-oriented psychosocial interventions integrated directly into institutional (e.g., university) structures. Her work illustrates how war concentrates psychological harm in a specific population, namely young adults, and why continuity of mental health services and equitable access belong in preparedness planning (Derkach 2026).

Synthesising across these contributions, we consolidated the recurring themes into five cross-cutting domains relevant to municipal public health authorities (Table 2). Governance and health security drew chiefly on Sander’s case for a federal health-security framework and Holtherm’s call for national health-security legislation and a strategic reserve. Institutional coordination and a common operating picture rested mainly on Naujoks’s networked crisis-management model, reinforced by the civil-military interoperability emphasised by Holtherm and Falconer Hall. Critical infrastructure and digital resilience combined Fekete’s analysis of cascading infrastructure failure with Follmann’s work on digital transformation. Workforce capacity and operational readiness followed primarily from Follmann’s findings on volunteer availability and dual-role conflicts, together with the reserve- and surge-staffing concerns raised by Holtherm and Naujoks. Continuity of essential health services and protection of vulnerable populations was anchored by von Schreeb’s evidence on indirect mortality and Derkach’s focus on vulnerable groups and mental health, complemented by the mass-casualty care, infection prevention and medical-logistics requirements identified by Holtherm and Falconer Hall.

Discussion

The expert contributions demonstrate that preparedness for population health crises requires a multidimensional and multiprofessional approach. Sound preparedness requires more than clinical surge capacity. Recent preparedness literature converges on the same core dimensions of public health emergency readiness: governance and legislation, cross-sector coordination, critical infrastructure and data systems, workforce and resilient delivery of essential services.

Health system resilience depends on effective crisis management by government authorities, enabling them to sustain essential societal functions during prolonged phases within disasters. Building these capacities requires coordinated action across public health, civil protection, infrastructure management and social services (Kancleré et al. 2024; Kruk et al. 2015; Leaning and Guha-Sapir 2013; Nimako and Kruk 2021; Schutte et al. 2024; World Health Organization 2019).

Our findings demonstrate that municipal public health authorities are not merely peripheral administrative actors. They are essential actors in the health security framework of institutions dealing with crisis coordination and system resilience.

At the same time, some staff members simultaneously hold roles in multiple emergency organisations, which complicates staffing and surge planning during crises and can lead to a misleading overestimation of available staffing resources. This reinforces the view that health system resilience is a whole-of-society task. Similar patterns have also been described in several European countries. Work on resilient health systems links effective crisis response to the ability to absorb shocks, operate under uncertainty and preserve core public health system functions during

phases of prolonged disruption (Kruk et al. 2015; Nimako and Kruk 2021). Research on local crisis governance and cross-sector collaboration in Europe points in the same direction: overlapping risks are managed most directly at the municipal level. Here, coordination failures, fragmented responsibilities and sectoral boundaries become visible in practice (Kuhlmann et al. 2024; Nussbruch and Girschik 2025).

This is particularly relevant in Germany: its public health system is very heterogeneous in staffing, has a broad local responsibility with uneven resources, variable preparedness arrangements and still limited links between public health practice, academic expertise and strategic preparedness planning (Arnold et al. 2025; Heudorf and Gottschalk 2026; Höglund-Braun and Tinnemann 2025; Zeeb et al. 2025). These findings support a broader understanding of preparedness: municipal public health authorities need more than medical and epidemiological expertise. They also need institutional authority, interoperable information systems and stable cross-sector relationships to coordinate effectively during prolonged crises (Vandenbroucke and Facon 2024).

Basic infrastructure resilience emerged as another central theme in our analysis, because healthcare depends on electricity, water, digital communication and transport. Disruptions in these systems will quickly and significantly impair the delivery of healthcare services.

Workforce capacity is another critical issue, particularly the availability of sufficiently trained personnel. In Germany, as in many countries, disaster response still relies heavily on volunteers. This model remains important, but demographic change and labour market shifts raise doubts about its long-term sustainability. In addition, many volunteers hold dual roles across institutions, leading to an overestimation of their actual availability during crises.

Falconer Hall's presentation adds an important security dimension to this discussion: Security crises place demands on public health that go well beyond clinical surge capacity. Prolonged patient movement routes, mass casualty reception, disrupted supply chains and conflict-related infectious disease risks place simultaneous pressure on surveillance, infection prevention, logistics and cross-sector coordination. For municipal public health authorities, this means crisis preparedness plans should define clear interfaces with hospitals, emergency medical services, laboratories and, where relevant, military actors, while protecting routine civilian care (Falconer Hall 2026; Sander 2026). This underlines that health system resilience is a whole-of-society task. Public health authorities need interoperable digital information systems, preferably open-source to ensure digital sovereignty, joint planning structures and robust preventive capacities to ensure they function effectively during compound crises (Kuhlmann et al. 2025).

Our findings also underline the importance of maintaining essential municipal healthcare services during crises. Disaster research has repeatedly shown that a large share of the health burden during and after disasters and other crises arises indirectly through interruptions in chronic disease care, mental health services and other routine services following large-scale single-cause crises or polycrisis (Derkach 2026; Kuhlmann et al. 2024; Leaning and Guha-Sapir 2013; Pindelski and Barłóg 2025).

The five emergent domains map onto the 2026 WHO/IANPHI capability framework (World Health Organization (WHO) and International Association of National Public Health Institutes (IANPHI), 2026) in Table 3, with clear points of convergence. The strongest alignments concern legal authority, coordination, emergency management, workforce development, public health and social measures and clinical

care guidance, whereas financing, laboratory and diagnostic systems, risk communication and community engagement and countermeasure research and deployment were less prominent. This reflects the symposium's operational focus on local coordination, infrastructure dependencies, digital resilience and service continuity rather than the lesser importance of those capabilities.

Against this background, we argue that five policy implications are of significance for crisis preparedness policy in Germany:

1. Strengthen institutional capacity:

Germany should strengthen the institutional capacity of its municipal public health authorities. They play a key role in coordination during crises, yet they often lack sufficient staffing, digital infrastructure and legal authority (Heudorf and Gottschalk 2026; Kleinschmidt et al. 2025).

2. Develop a system perspective:

Preparedness policy should adopt a system perspective that reflects the interdependence of health services and critical infrastructure. Although often overlooked, healthcare delivery heavily depends on reliable electricity, water, communication networks and transport. Protecting population health systems therefore also requires significant investments in critical infrastructure resilience (Coccia and Benati 2024a).

3. Integrate public health into national security:

Public health authorities should be integrated more firmly into national security and civil protection planning, because current preparedness guidance treats health emergency management as a whole-of-government and whole-of-society task and includes explicit linkage between public health and security authorities. International health security frameworks place increasing emphasis on cooperation among health authorities, private companies, non-profit organisations, emergency response

services and security institutions (World Health Organization 2021; World Health Organization 2024b; Kamga et al. 2025; Khatri et al. 2023; Lee et al. 2023; Nussbruch and Girschik 2025; OECD 2023; Vandenbroucke and Facon 2024).

4. Focus on vulnerable populations:

Preparedness strategies should place greater emphasis on vulnerable populations, because recent WHO and ECDC guidance shows that people living in vulnerable or

marginalised situations are disproportionately affected during crises and require community-centred, age-responsive, disability-inclusive planning, continuity of essential services and tailored risk communication. Comprehensive preparedness planning should therefore address the social determinants of health and provide for practical training formats that reflect these realities (Ervin and Raphael 2026; EuroHealthNet 2024; European Centre for Dis-

Table 3 Compact matrix mapping the five emergent domains to the 2026 WHO/IANPHI preparedness capabilities

	WHO/IANPHI capability				
	Governance and health security	Coordination and common operating picture	Infrastructure and digital resilience	Workforce and operational readiness	Continuity of services and vulnerable populations
Foundational capabilities					
Legal authority	P				
Evidence generation and use for policy	S	P			
Secure and flexible financing					
Technical capabilities					
Coordination	S	P			
Emergency management	P	P	S	S	
Workforce development				P	
Surveillance and intelligence		S			P
Laboratory and diagnostic systems		S	S		
Risk communication and community engagement					S
Public health and social measures					P
Clinical care guidance					P
Countermeasure research and deployment			S		S

Legend: P = primary alignment. S = secondary alignment. Blank = not explicit in the symposium materials. Column labels are shortened versions of the Table 2 domains.

ease Prevention and Control 2025; Levin et al. 2014; Şimşek et al. 2024; Stewart and Bertulfo 2026; World Health Organization 2024a).

5. Strengthen cooperation through digitalisation:

Digitalisation strengthens crisis response as a cross-cutting enabler through telemedicine, interoperable data platforms and digital communication tools. At the same time, policymakers must address digital sovereignty to control the growing risks posed by cyberattacks and failures of digital infrastructure (Gesetz zur Umsetzung der Richtlinie (EU) 2022/2557 und zur Stärkung der Resilienz kritischer Anlagen (BGBl. 2026 I Nr. 66); Giancotti et al. 2025; Gomez et al. 2025; Savaskan et al. 2026).

These five domains are largely scenario-agnostic, which delivers on the “polycrisis” framing invoked by the broader existing literature.

Figure 1 shows the eight contributions synthesised into the five domains and anchored to the 2026 WHO/IANPHI framework.

Read against the WHO/IANPHI framework, the synthesis also exposes persistent interface problems between public health authorities, civil protection, healthcare providers and, in security scenarios, military structures. It further underlines the need to strengthen population-level resilience competencies through practical preparedness formats and targeted risk communication, especially for vulnerable groups.

This study has several limitations, as its coding was inductive. First, the comparison with the WHO/IANPHI framework was applied deductively and post-hoc and served to contextualise the findings rather than to guide speaker selection or the primary thematic analysis. Second, it draws on expert contributions from a single symposium and therefore reflects the views of a defined group rather than the full range

of stakeholders involved in crisis preparedness. Their selection and invite as speakers to the symposium was through the symposium organiser’s network, the DGÖGB e.V., which may have led to overrepresentation of certain perspectives such as defence and security and simultaneously may have caused underrepresentation of areas such as, but not limited to, outpatient and primary care, frontline Public Health practitioners, patient and community voices, climate/environmental health, data-protection and ethics. Moreover, the prominence of certain domains partly reflects who presented rather than their inherent weight for the average municipal authority. Third, the qualitative analysis is interpretive and based on spoken and written materials and summaries rather than on primary empirical data. Fourth, the symposium focused on conceptual debate rather than empirical research, so the findings identify strategic priorities but do not provide quantitative evidence on preparedness capacities. Fifth, the one-day format limited the depth with which individual topics could be examined. Sixth, the strong focus on the war in Ukraine shaped the discussion more toward security and war-like conflict scenarios than toward natural or biological disasters. And seventh, the analysis targets the German public health system. Many of the issues identified here are potentially relevant beyond Germany, especially Europe, but institutional settings differ across countries and their respective public health systems.

Future research should broaden and complement analyses based on expert input with empirical studies on preparedness capacity, infrastructure resilience and workforce availability in public health systems.

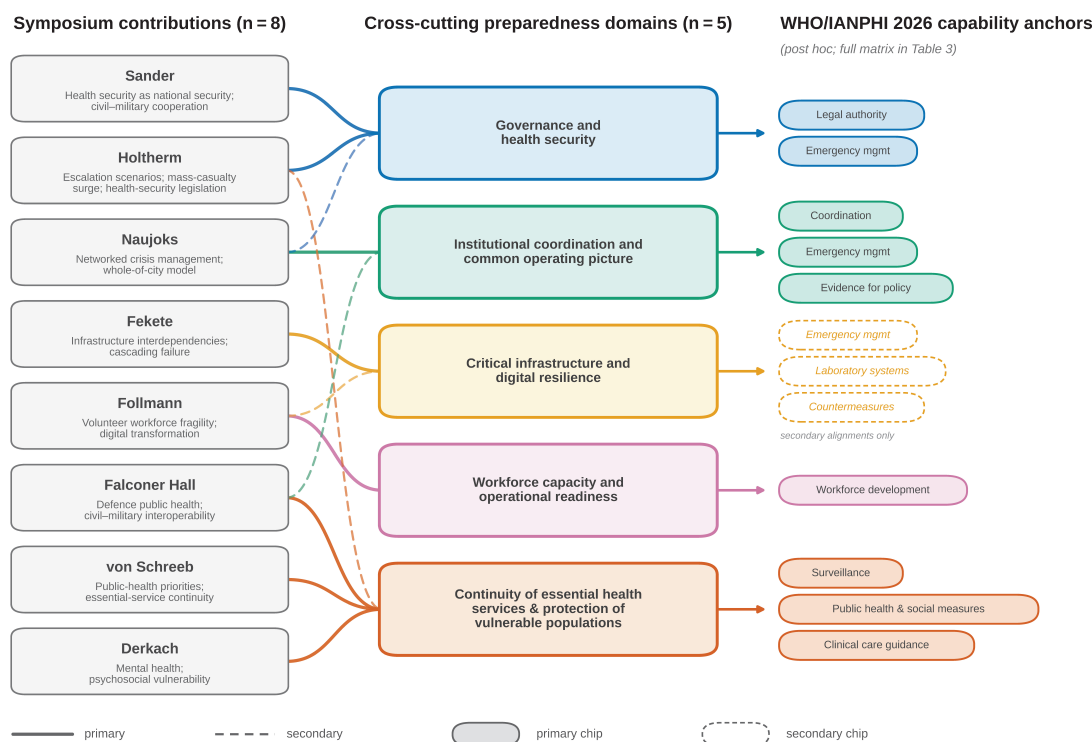


Figure 1 Derivation of the five cross-cutting preparedness domains. Each of the eight symposium contributions (left) was synthesized into five cross-cutting domains relevant to municipal public health authorities (centre row; see also Table 2). Solid connectors denote a contribution’s primary thematic alignment and dashed connectors a secondary alignment. As a post-hoc interpretive step, each domain was mapped onto the 2026 WHO/IANPHI framework for health emergency preparedness and response capabilities for national public health agencies (right); labels give each domain’s principal capability anchors, with the full matrix in Table 3. Critical infrastructure and digital resilience aligned only secondarily with framework capabilities.

Conclusion

Population health crisis preparedness and health security are pressing policy and administrative challenges in Germany. The symposium contributions identify recurring priorities across five domains: governance and health security; institutional coordination and a common operating picture; critical infrastructure and digital resilience; workforce capacity and operational readiness; and continuity of essential health services and protection of vulnerable populations — with municipal public health authorities at the centre. Future policy and funding should strengthen and integrate them more firmly into health system resilience planning at federal, state and local levels. Further research should examine how these priorities can be trans-

lated into operational practice within the German public health system.

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Ethical approval

Ethical approval was not required because this study synthesised symposium materials and speaker manuals and did not involve human participants or personal health data.

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