

Health security in Germany: Assessing and enhancing crisis and disaster resilience in the healthcare system

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Abstract

Health security is a vital pillar of German national security. While the COVID-19 pandemic was a stress test, high expenditure failing to yield superior health outcomes reveals structural inefficiency in the German healthcare system. The current "fair-weather system" is hampered by fragmented responsibilities, a lack of digitalisation and under a multi-threat landscape including chemical, biological, radiological, and nuclear (CBRN) incidents and hybrid warfare. Recent hospital reforms cutting crisis-relevant specialties like infectious diseases. Five core demands are proposed including enacting a Federal National Health Security Act, establishing a National Centre for Health Security, formalizing civil-military medical cooperation, investing in infrastructure resilience and reversing cuts to emergency expertise. Ultimately, a paradigm shift is required to move from reactive mechanisms to a proactive, integrated and data-driven resilient infrastructure.

Take-home message for students Health security is a strategic foundation of national stability, extending beyond clinical care. Future professionals must advocate for a "whole-of-society" approach, bridging the gap between medical expertise and structural resilience.

Redefining security in the 21st century

The traditional parameters of national security, focused primarily on military and territorial defence, have proven insufficient in the face of the globalised and interconnected threats of the 21st century. Today the stability and functionality of modern societies are equally dependent on the resilience of their critical infrastructures, paramount among which is the healthcare system. "Health Security" should therefore be viewed as a critical dimension of national security and should be a centre of strategic deliberation. Health security, as defined by the German Federal Government's Expert Council on Health & Resilience, is the totality of "the capabilities, resources and structures that enable societies to protect themselves from security-relevant events with negative impacts on human health, or to minimise their effects" ([ExpertInnenrat der Bundesregierung "Gesundheit und Resilienz" 2026](#)).

This definition implies a proactive, whole-of-society approach that extends far beyond the curative provision of medical care. The German healthcare system, when measured against its standard, exhibits significant structural and conceptual deficits. Fundamental reforms of the system and modernisation of its infrastructure are urgently needed to improve efficiency and resilience.

The COVID-19 pandemic as a diagnostic stress-test scenario

The COVID-19 Pandemic served as an unforgiving stress test that exposed systemic weaknesses in the health care system in Germany. The dramatic scenes

from Wuhan, Bergamo and New York City demonstrated with harrowing clarity the exponential dynamics and overwhelming potential of a global health crisis. The statistically tangible shock manifested in a global decline in average life expectancy of 1.6 years, a historical event that laid bare the universal vulnerability of modern societies.

Amid this global crisis, Germany implemented largely reactive mechanisms to establish situational awareness and operational control. A decisive step was the launch of the DIVI Intensive Care Register in March 2020, which for the first time enabled near-real-time visibility of intensive care capacity and supported data-driven allocation of critical care resources nationwide. At the regional level, the SAVE Network Berlin/Brandenburg operated by the Charité University Hospital, coordinated the allocation of intensive care patients across a metropolitan area of more than six million inhabitants, helping to optimize the use of existing capacities and ensure the best possible care under conditions of extreme system stress.

The COVID-19 crisis made clear that organizational innovation and care provision, while necessary, are not sufficient to ensure effective crisis response. Meaningful population engagement through credible and transparent crisis communication is a prerequisite for the successful implementation of public health countermeasures. Resistance to or non-adherence with evidence-based interventions, such as vaccination and infection control measures during the pandemic, can substantially erode crisis management capacity. These observations point to a more fundamental conclusion: health system resilience is not solely a technical or logistical attribute. Rather, it is critically shaped by effective communication strategies, public trust in science and state institutions and collective adherence to public health policies.

The internal system analysis: Structural deficits and the paradox of inefficiency

The lessons learned from the pandemic gave rise to demands for comprehensive modernisation of the health care system. The Federal Government's Expert Council stated as early as January 2022 the unconditional necessity of systematic digitalisation to enable "efficient, data-driven management of health crises" ([ExpertInnenrat der Bundesregierung zu COVID-19, 2022](#)). Recent legislative initiatives, such as the Digital Act (DigiG) and the Health Data Utilisation Act (Gesundheitsdatennutzungsgesetz, GDNG), are necessary but grievously belated steps in this direction. And the implementation of digital data platforms such as the electronic healthcare record (called "ePA" in Germany) is experiencing flaws and delays.

A core problem of the German health-care system, however, is revealed in a fundamental paradox of inefficiency. With healthcare expenditure accounting for 12.8% of its Gross Domestic Product and a density of 58 hospital beds per 10,000 inhabitants, Germany ranks highest among the high-income countries internationally. Yet, this massive deployment of resources does not correlate with superior health outcomes; life expectancy, for instance, remains merely average by European countries standards. This disparity between extremely high input and mediocre output is an undeniable indicator of severe structural inefficiencies.

These inefficiencies are further aggravated by a confluence of challenges. Demographic change is leading to a dramatically worsening shortage of skilled professionals. Simultaneously, the number of elderly, multi-morbid and thus treatment- and care-intensive individuals is rising. This demographic pincer grip drives up costs,

whilst a deficient digital infrastructure, inefficient processes and a decrepit physical infrastructure suffering from a colossal investment backlog further paralyse the system.

These cumulative deficits are most trenchantly summarised in the 2023 report by the Expert Council for the Assessment of Developments in the Healthcare System. Its verdict is unequivocal: the German healthcare system is characterised as "highly complex and fragile," a "not very responsive, poorly adaptable 'fair-weather system', which in a crisis is not only inadequately coordinated but also frequently delivers poorer results than expected, given the high level of resource deployment" ([Sachverständigenrat zur Begutachtung der Entwicklung im Gesundheitswesen 2023](#)).

The expanded threat horizon: From pandemics to comprehensive civil-military defence

The analysis of internal weaknesses must be situated within a realistic assessment of external threats. The spectrum of scenarios relevant to health security has expanded dramatically. In May 2024, the Federal Government's Expert Council called for urgent preparedness across a multi-threat landscape extending well beyond pandemics. This spectrum includes natural and environmental disasters, terrorism, chemical, biological, radiological and nuclear (CBRN) incidents, accidents, military and hybrid conflicts and the deliberate disruption of critical infrastructures. The central challenge arises from the potential simultaneous and cascading occurrence of such crises, which can rapidly overwhelm even

well-resourced health systems (ExpertInnenrat der Bundesregierung „Gesundheit und Resilienz“. 2024).

A scenario of particular strategic relevance is that of collective defence within NATO. In the event of a military conflict on NATO's eastern flank leading to the invocation of NATO Article 5, Germany, owing to its geostrategic position, would become the central logistical hub for allied forces. This necessitates the activation of the concept of "Gesamtverteidigung", comprehensive defence or sometimes referred to as total defence, in which the civilian sector and particularly the healthcare system as the provider of "medical services", is obligated to support the armed forces. The civilian healthcare system thereby becomes a strategic resource of importance for national defence policy.

The practical implementation of this civil-military cooperation, however, is massively hampered by the extraordinary complexity and fragmentation of the German healthcare system. A multifaceted landscape of federal and state competencies, self-governing bodies, professional associations, insurance systems, strict separation of in- and out-patient sector and a multitude of service providers with divergent interests and incompatible systems, combined with poor digital infrastructure, presents a formidable obstacle to a rapid, coordinated crisis response (ExpertInnenrat der Bundesregierung „Gesundheit und Resilienz“. 2024).

The necessity of rehearsing these complex interactions is self-evident. Collaborations such as those between the Charité-Universitätsmedizin Berlin and the Bundeswehr Krankenhaus in Berlin, a large academic medical centre and a military hospital, large-scale exercises and real-world events such as suspected CBRN incidents underscore the complexity of the required coordination. Health security incidents regularly demand the seamless interplay

of civilian hospitals, police, special forces, scientific institutions like the Federal Office for Radiation Protection and military experts. Complex interplays like this are doomed to fail without established structures and regular joint training.

Political, legal and infrastructural barriers: Systemic failure and an impending regression

The roots of this lack of resilience lie deep within Germany's political and legal architecture. The constitutional division of powers between the Federal Government (responsible for civil protection) and the federal states (responsible for disaster response) creates ambiguous responsibilities and friction. More serious still is the absence of a clear federal competence for general crisis preparedness. Existing laws, which are contingent upon the declaration of a "Spannungsfall" (state of tension) or "Verteidigungsfall" (state of defence), prevent proactive and mandatory preparatory actions in peacetime. The creation of a Gesundheitssicherstellungsgesetz (GSIG, National Health Security Act), which would provide the legal basis for efficient civil-military cooperation, stockpiling and exercise planning, is therefore a matter of urgent necessity. Nevertheless, despite mounting pressure, the legislation has remained under development for years.

In parallel, the physical and digital infrastructure of the healthcare system is itself not resilient. Hospitals are inadequately protected against physical attacks, sabotage, or cyber-attacks. Shelters and hardened medical facilities, systematically dismantled after the end of the Cold War,

are lacking, as are widespread decontamination capabilities and the associated training. Persistent deficiencies in digitalisation continue to prevent the generation of the valid, real-time situational pictures that are indispensable for effective crisis management.

Despite the urgency, health security does not seem to be high on the list of priorities of political decision makers. The current draft bill for the hospital reform act (Krankenhausreformanpassungsgesetz, KHAG) can be regarded as directly counterproductive to health security. It proposes the complete abolition of the designated “Leistungsgruppen” (service groups) of “Infectious Diseases” and “Emergency Medicine”, which were classified by the German Armed Forces as highly relevant to military medicine. The planned structural weakening of this expertise serves neither quality nor efficiency and certainly not national resilience.

Conclusion

The preceding analysis leads to an unambiguous conclusion: the German healthcare system is inadequately prepared for the complex crises of the 21st century. An immediate and fundamental paradigm shift is required. The necessary measures are profound: they include the creation of clear legal frameworks and responsibilities at the federal level, the development of an integrated national concept for health security overseen by a central coordinating body, institutionalised and regularly rehearsed civil-military cooperation and massive investment in the hardening, modernisation and digitalisation of the healthcare infrastructure. The counterproductive elimination of crisis-relevant medical specialities must be reversed forthwith.

The unavoidable imperative for a paradigm shift

Health must be viewed as a dimension of national security. It is not merely a social benefit or an isolated policy field, but the strategic foundation for stability, welfare and sovereignty of the Federal Republic of Germany. It must be treated with the same gravity and strategic foresight as foreign and domestic security.

Four core demands for national health security

Based on this comprehensive analysis, the following four demands represent the minimum necessary actions to begin rectifying the identified critical deficits and to build a genuinely resilient healthcare system for Germany:

1. **Enact a federal national health security act:** Establish a robust legal framework that clarifies federal and state responsibilities for crisis preparedness and response. This act must grant the Federal Government the necessary authority to mandate national standards for preparedness, including strategic stockpiling, infrastructure protection and mandatory participation in national-level exercises, independent of a declared state of defence.
2. **Establish a national centre for health security:** Create or appoint a body with the authority and resources to lead a national health security strategy. The Centre would be responsible for integrated threat analysis, health crisis preparedness planning, the coordination of cross-sectoral exercises, education and policy advice.
3. **Institutionalise civil-military medical cooperation:** Formalise partnerships between the civilian healthcare

system and the Armed Forces medical services. This must include the creation of joint planning committees, the development of integrated patient transfer protocols for mass casualty events, the shared use of specialised infrastructure and the implementation of a regular, mandatory programme of joint civil-military medical exercises.

Launch a national health infrastructure resilience programme: Initiate a dedicated, long-term federal investment fund to modernise and "harden" critical healthcare infrastructure. This programme must prioritise enhancing the physical security and cyber-security of hospitals, re-establishing protected and self-sufficient medical facilities and financing the nationwide implementation of a standardised, interoperable digital health

Author contribution

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