



# BD Healthcare Resilience Barometer Italy in focus

2024 edition





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# Foreword

In the face of unprecedented challenges, the resilience of our healthcare systems has never been more vital. The 2024 edition of BD's Healthcare Resilience Barometer shines a spotlight on the performance of the Italian healthcare system from the perspectives of patients, the healthcare workforce, and system efficiency. Created in collaboration with Federsanità and FIASO, this report highlights the importance of adaptability, innovation, and collective responsibility in building a robust and sustainable healthcare framework in Italy.

To build greater resilience, it is essential to identify problems at their source and optimise integration and service delivery to improve patient care pathways. Enhancing organisational processes and leveraging new professional roles and digital management are crucial steps. The link between health outcomes and environmental factors is vital, and we must advocate for low-impact economic solutions that better utilise our resources.

Preventing illness through a holistic One Health approach is the most effective investment strategy. Promoting a sense of health empowerment among citizens and ensuring equitable access to care are foundational to sustainable healthcare systems. Harmonisation across all levels of

the healthcare system—central, regional, and corporate—is necessary for consistent governance and aligned standards of patient care across Italy.


The BD Healthcare Resilience Barometer identifies significant challenges within the Italian healthcare system, including ensuring patient safety with particular focus on healthcare-associated infections (HAIs). Effective surveillance and infection control guidelines must be implemented to safeguard public health. Additionally, achieving a balanced workforce, and addressing extended hospital stays and the environmental impact of the sector are paramount to maintaining a resilient healthcare system capable of meeting future demands.

Federsanità, FIASO, and BD are committed to supporting the system in navigating these complexities. By fostering innovation, we can help integrate cutting-edge technologies that streamline care delivery and improve efficiency. We are dedicated to collaborating with healthcare professionals and policymakers to enhance infection control, promote environmental sustainability, and support the wellbeing of the healthcare workforce.



# Key opinion leader perspective



**It's critical to find new solutions, because there may be better ways to use our resources.** 

## Dr. Fabrizio d'Alba

National President of Federsanita, Italy

*Thanks to his role in FEDERSANITA, Dr d'Alba provides his point of view on the efficiency of the Italian healthcare system. In this conversation, Dr d'Alba discusses potential improvements to the system and how we can better meet the needs of our most vulnerable citizens.*

## How should our health systems adapt?

In his definition of health resilience, Dr d'Alba emphasises the importance of adaptability in three key areas: the national health system, professionals, and citizens. Taking a solution-focused approach to problems impacting the healthcare system globally, he believes the solution lies “in the realm of change, innovation, and system engineering.”

Firstly, he believes that it is necessary to identify the source of the problem, from which diagnostic and therapeutic solutions can be developed and delivered. To improve the system in Italy, Dr d'Alba talks about the need to optimise integration and service delivery. As a result, this would improve patient care pathways, requiring questions about

organisational processes and how services are delivered at the local level. He also talks about the push for primary care reform within the Italian health system. For Dr d'Alba, there is a need for better organisation facilitated by new professional roles, such as management engineers and logistics experts, and a digital management process.

Regarding the sustainability of the health system, Dr d'Alba says there is a link between health and where you live and work. Referring to the link between health

outcomes and integrated policies, he says that “it would be useful to be able to quantify economic returns to better understand the link between welfare and health systems.” Dr d'Alba adds that it might be worth considering new places of health care delivery, but he is realistic about this prospect due to affordability issues. “It's critical to find low-impact economic solutions, because there may be better ways to use our resources.”

## Providing performance to the most vulnerable

Ultimately, Dr d'Alba emphasises that a healthcare system must be evaluated based on its ability to care for the most vulnerable people, i.e., those with disabilities or mental health issues. In times of change, he says, it's the responsibility of politicians to be more pragmatic in their choices about how to provide care and what resources are available: “It's an allocative choice.”

In concluding the conversation, Dr d'Alba emphasises the need to recognise and prioritise the collective goal of the national health system in Italy, putting aside individual aspirations, to improve outcomes for citizens, especially the most vulnerable.





# Key opinion leader perspective



## Dr Paolo Petralia

National Vice President at FIASO, Italy


*As a stakeholder of the Italian Federation of Health and Hospital Authorities (FIASO), Dr Petralia holds valuable insights into the barriers and opportunities related to building resilience in the healthcare sector. In this conversation, he offers his perspective on the role of collective responsibility and the importance of consistent values in healthcare.*

## Health promotion and collective commitment

Discussing strategies for building stronger health systems, Dr Petralia begins by emphasising that a greater focus on health promotion and preventive measures must be an integral part of efforts to improve its sustainability. “As resources become increasingly insufficient to cover the ever-increasing costs of health services,

preventing people from falling ill is the most effective investment strategy at our disposal,” he says. Dr Petralia refers to the One Health framework, which encourages a holistic approach to healthcare and involves increasing efforts to engage citizens and promote a sense of health empowerment. “Beyond the duty to care



**Sustainable health systems should be based on a set of universal values and expectations.** 

for each and every one, we must strive to ensure that people as far as possible live in conditions of well-being, as well as the absence of disease,” he said.

Dr Petralia believes that it must be a widespread responsibility to bring about a change in the Italian healthcare system and notes that the modification of existing methods and objectives and the transition to a more sustainable model

## System-wide harmonisation

Dr Petralia stresses the need to ensure adequate governance of the system, which includes the definition and dissemination of systems of rules that are consistent with each other and can be applied with ease. Harmonisation is needed at three levels: between the central and regional levels, between the regional and corporate levels, and within the companies themselves with the various stakeholders. “The harmonisation of approaches is essential to make the various components of the social and health system work together,” says Dr Petralia.

will require individual actions that will turn into collective responsibility. “Sustainable health systems should be based on values and expectations of equity and universality in order to be sustainable,” explains Dr Petralia. “Across Italy, standards of patient care and the enforceability of essential levels of care should be aligned and patients should have the same opportunities to be taken care of and cared for,” he adds.

Importantly, health resilience cannot be achieved without “recognising and addressing limiting factors, including gaps in economic resources, human capital and the regulatory apparatus”. Dr. Petralia concludes by stating that “building resilience means above all recognising that we are not just users, but active protagonists in the construction of a new health system.”



# Executive summary

Across Europe, the Middle East and Africa (EMEA), healthcare systems are facing immense pressure to address an ever-growing list of urgent issues and topics that threaten resilience and sustainability. Italy is no exception as its healthcare system works to tackle interconnected challenges affecting the ability to deliver safe, high quality care.

The Italy edition of the BD 2024 Healthcare Resilience Barometer explores the country's performance on indicators related to three key themes – the patients, the healthcare workforce, and the efficiency of the system. In this report, Italy's performance on indicators including, healthcare-associated infections, access to care, staff burnout and availability, healthy life expectancy and health expenditure within the system, highlights target areas for improvement and recommendations that contribute to improving the overall resilience and sustainability of the Italian healthcare system.



## Patients

Italy exhibits a strong performance on indicators of patient safety, with low prevalence of sepsis and surgical site infections (SSI). Surveillance and monitoring of HAIs in the region, however, highlight a need for more widespread implementation of measures and policies across the country to ensure accurate recording and reduced instances of healthcare-associated infections (see page 18-19).



## Healthcare workforce

Ensuring an adequate ratio of nurses to doctors is critical to the safe delivery of high quality care, both for the patients and for healthcare workers (see page 21). The barometer draws attention to Italy's below EMEA performance on this indicator, suggesting a need to increase the vocation's appeal to drive recruitment and ensure a safe balance between nurses and doctors working in the healthcare system.



## Efficiency

Key to addressing HAI prevalence in Italy is the country's performance on the length of stay indicator (see page 26). An extended hospital stay can increase the likelihood of patients sustaining HAIs, as well as put added pressure on the workforce. Therefore, addressing the factors that contribute to Italy's extended length of stay can produce more positive outcomes for other issues explored in the barometer, such as the workforce's wellbeing and patient safety.



## Efficiency

To ensure the long-term sustainability of the Italian healthcare system, steps are required towards improving environmental sustainability by reducing the carbon footprint of the healthcare sector. Doing so will contribute to preventive healthcare for patients and thus lead to less strain on the workforce. Ultimately, investing in the appropriate technology and digitalisation can enhance system efficiency, reduce waste and the potential for harm.



# Methodology

## Selection of resilience indicators

This iteration of the BD 2024 Healthcare Resilience Barometer explores the resilience of the Italian healthcare system. From the perspective of three core pillars – the patients, the healthcare workforce, and the overall efficiency and sustainability of care delivery – this report measures Italy’s performance across several indicators.

According to the WHO (World Health Organisation) a resilient healthcare system is one “that can effectively prevent, prepare for, detect, adapt to, respond to, and recover from public health threats while ensuring the maintenance of quality essential and routine health services in all contexts.”<sup>1</sup>

We have adapted the methodology of the first edition of the EMEA barometer, using a new set of resilience indicators covering three thematic areas.

The indicators were selected to reflect the challenges facing healthcare systems from the perspective of the patients, the healthcare workforce, and the efficiency and sustainability of care delivery.

The 2024 EMEA Healthcare Resilience Barometer is formed of a total of 22 indicators, which are listed throughout this report. However, it is important to note that Italy does not hold scores across all of the indicators due to unavailable data.



Figure 1: 2024 BD Healthcare Resilience Barometer – Core themes

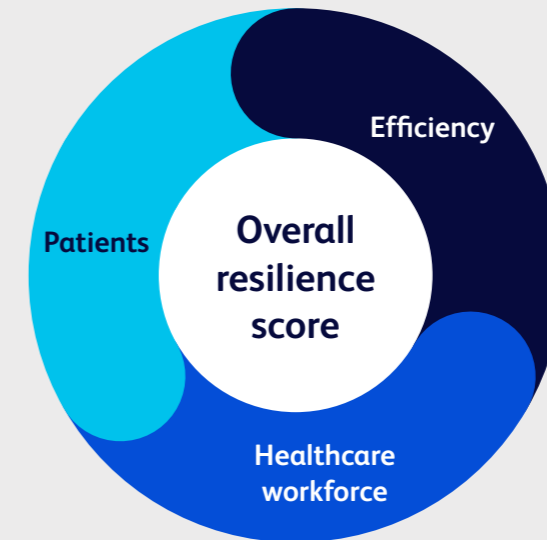


Table 1: 2024 BD Healthcare Resilience Barometer Indicators by Theme

Patients	Healthcare workforce	Efficiency
Universal health coverage	Staff to patient ratio – nurses	Inflation
Adverse effects of medical treatment	Staff to patient ratio – doctors	Health expenditure
Complications following therapeutic procedures	Ratio of nurses to doctors	Healthy life expectancy
Healthcare-associated infections (HAI)	Nurses aged 55 or above	Preventable deaths
Surgical site infections (SSI)	Healthcare staff burnout	Length of hospital stay
Sepsis	Occupational health and safety policy	Healthcare % of national footprint
AMR-related deaths		Healthcare CO2 emissions per capita
HAI surveillance		
HAI guidelines		

<sup>1</sup> World Health Organisation (WHO). *Health Systems Resilience*. <https://www.who.int/teams/primary-health-care/health-systems-resilience>

# Key findings

The BD Healthcare Resilience Barometer was developed using a selection of primary literature and secondary datasets from internationally recognised sources including the World Health Organisation (WHO), the Organisation for Economic Cooperation and Development (OECD), the Institute for Health Metrics and Evaluation (IHME), the World Bank and the European Centre for Disease Prevention and Control (ECDC). Primary research was also conducted to complement the findings. This included a multi-market survey among healthcare professionals (HCPs) and a series of

in-depth interviews with key opinion leaders in the healthcare sector in Italy.

Please note that the content of each interview reflects the perspective of the individual stakeholder on the topics discussed, and not necessarily the position of the organisation which the stakeholder represents, or of BD.

See the Appendix for detailed references, further information about the research and a full list of stakeholders consulted.

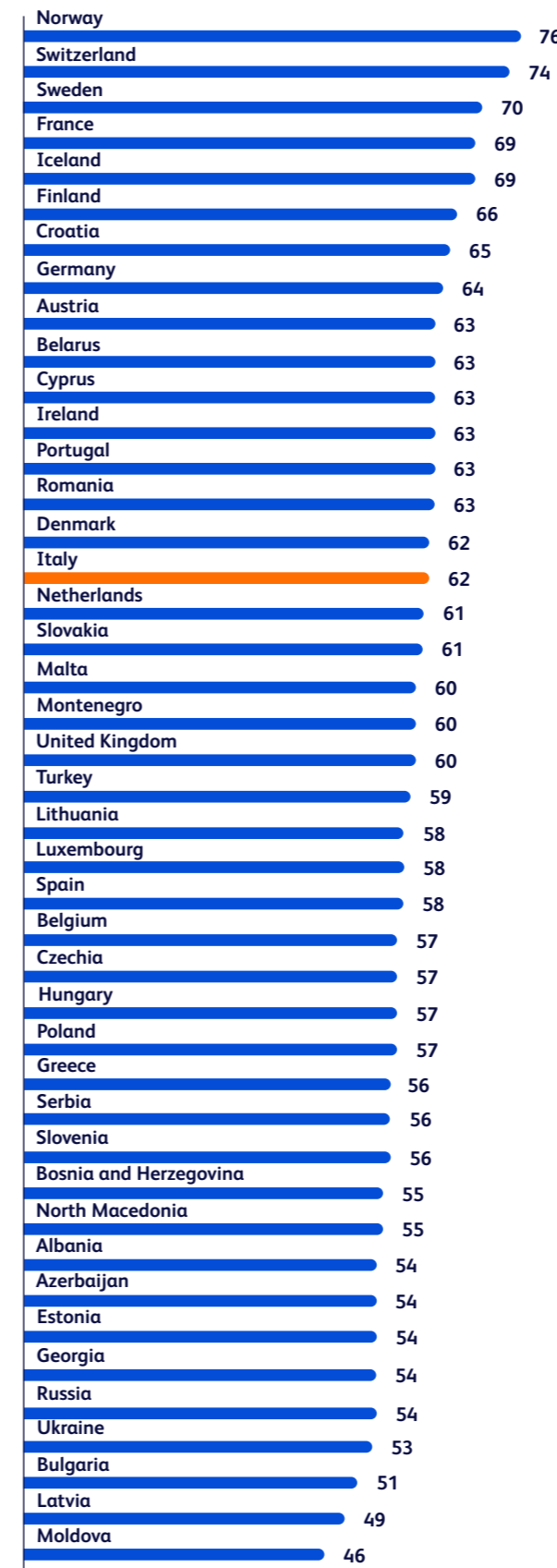
## Resilience scoring

The resilience indicators selected for the BD Healthcare Resilience Barometer were grouped into one of our three thematic areas shown above. With raw data points collected on different scales and measurements, all resilience indicators were standardised on a 0-100 scale to allow for comparison.

Within each of the three themes, indicator-specific scores were aggregated to produce a thematic score, and then to create the overall resilience score at a country level. Please note that a higher barometer score always corresponds to a stronger (positive) performance.

Further information about the data standardisation and scoring process can be found in the Appendix.

Figure 2: Overall barometer performance out of 43 European countries



In the 2024 BD Healthcare Resilience Barometer, Italy positions slightly above the European average. Italy scores higher than countries like the United Kingdom or Belgium, but lags behind Nordic nations, France, Germany and Switzerland – amongst others.

A closer look at the three thematic focus areas of the BD Healthcare Resilience Barometer reveals that Italy’s performance is strongest in the patients category, owing to a low incidence of sepsis and infections acquired during surgical procedures. However, there remain significant challenges around the efficiency of care delivery, reflected in longer than average hospital stays and the healthcare sector’s large carbon footprint.

Italy’s overall performance secures it a position of 21st out of the 100 countries across Europe, the Middle East, and Africa (EMEA) included in the BD 2024 Healthcare Resilience Barometer.

Italy position in EMEA ranking:

# 21st / 100

countries

Produced in collaboration with Federsanità and FIASO, this report explores the opportunities and challenges of building greater resilience in the Italian healthcare system.



# Chapter 1

## Patients

Although the concept of healthcare resilience can be understood and measured in different ways, some of the most important indicators of the robustness of a healthcare system are related to patients. The various strengths and weaknesses of care provision can be reflected in patient outcomes, patient safety, or patient experience. Building resilient healthcare, therefore, must be driven by the objective of creating systems that meet the needs of current and future patients in a safe and efficient way.

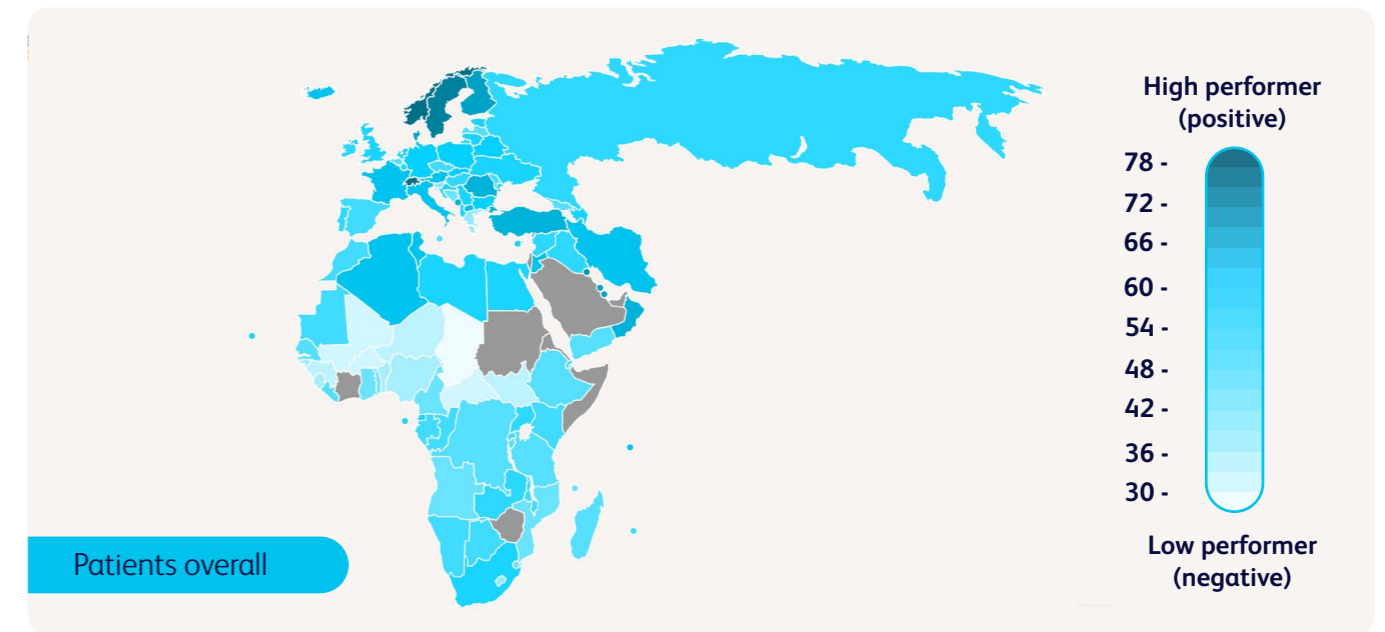
In this first chapter of the report, we explore healthcare resilience in EMEA through the lens of patients and patient safety. At BD, we believe that patient safety is critical to healthcare resilience. The vulnerabilities inherent in medical care mean that implementing innovation to minimise the risk of harm to patients must be a priority for all healthcare organisations. Raising awareness and training staff to identify and effectively mitigate risk of harm throughout the patient pathway is also essential in order to enable the sustainable delivery of safe, high-quality healthcare for current and future generations.<sup>2</sup>

Advances in medicine over recent decades have significantly improved patient safety around the world, but there remain ongoing and newly emerging threats.<sup>3</sup> The cost of unsafe care is considerable – both in terms of the health burden for patients affected, and in terms of the share of financial cost attributable to

patient safety incidents.<sup>4,5</sup> In assessing the resilience of healthcare systems in EMEA countries from a patient perspective, the BD Healthcare Resilience Barometer focuses on key issues including access to care, antimicrobial resistance (AMR), HAIs and treatment complications. While these specific topics do not comprehensively reflect all the challenges around patient safety, it is useful to delve into some of the most acute patient safety issues that represent a larger disease burden.<sup>6</sup>

Understanding the strengths and weaknesses of the Italian healthcare system from a patient perspective is fundamental to evaluating healthcare resilience. This patient-centric approach forms the basis of this year's 2024 Healthcare Resilience Barometer. Italy performs relatively well in this category compared to the other two core areas – healthcare workforce and efficiency – but still does not far outperform the EMEA average score.

Figure 3: Map showing overall 'patients' barometer performance at an EMEA level



- 2 European Union Network for Patient Safety (EUNetPaS). Use of Patient Safety Culture Instruments and Recommendations; 2010. [https://webgate.ec.europa.eu/chafea\\_pdb/assets/files/pdb/2007109/2007109\\_eunetpas-report-use-of-psci-and-recommendations-april-8-2010.pdf](https://webgate.ec.europa.eu/chafea_pdb/assets/files/pdb/2007109/2007109_eunetpas-report-use-of-psci-and-recommendations-april-8-2010.pdf)
- 3 Organisation for Economic Co-operation and Development. The economics of patient safety; 2020. <https://www.oecd.org/health/health-systems/Economics-of-Patient-Safety-October-2020.pdf>
- 4 Organisation for Economic Co-operation and Development. The economics of

- patient safety; 2020. <https://www.oecd.org/health/health-systems/Economics-of-Patient-Safety-October-2020.pdf>
- 5 Slawomirski, L, Auroaen, A, Klazinga, N. The economics of patient safety: Strengthening a Value-Based Approach to Reducing Patient Harm at National Level. <https://doi.org/10.1787/18152015>
- 6 World Health Organisation. Patient Safety: Global Action on Patient Safety: Report by the Director-General. Accessed August 3, 2022. <https://iris.who.int/handle/10665/327526>



## Towards safe healthcare for all

Italy's healthcare system scores strongly on universal health coverage (UHC) which indicates that a far greater proportion of the population has access to care compared to the standard across EMEA countries. Additionally, Italy's above-average performance on the complications indicator signifies a relatively low risk of patients experiencing complications following therapeutic procedures. A safe

post-operative recovery for patients is a key measure of the quality and reliability of healthcare services.

Italy also performs strongly on measures around sepsis incidence and surgical site infections, indicating that basic patient safety measures are implemented. These metrics are important as they reflect the system's ability to prevent severe and often life-threatening conditions.

## Infection prevention – the case for nationwide monitoring and surveillance

Despite these positive aspects, there are areas where Italy's healthcare provision is not meeting the standards that patients would need to be able to receive safe and efficient care. One notable issue is healthcare-associated infections (HAIs). Italy's performance in the BD Healthcare Resilience Barometer highlights the need for more robust HAI surveillance systems and stringent infection prevention and control guidelines that can be adopted across various care settings in the country.

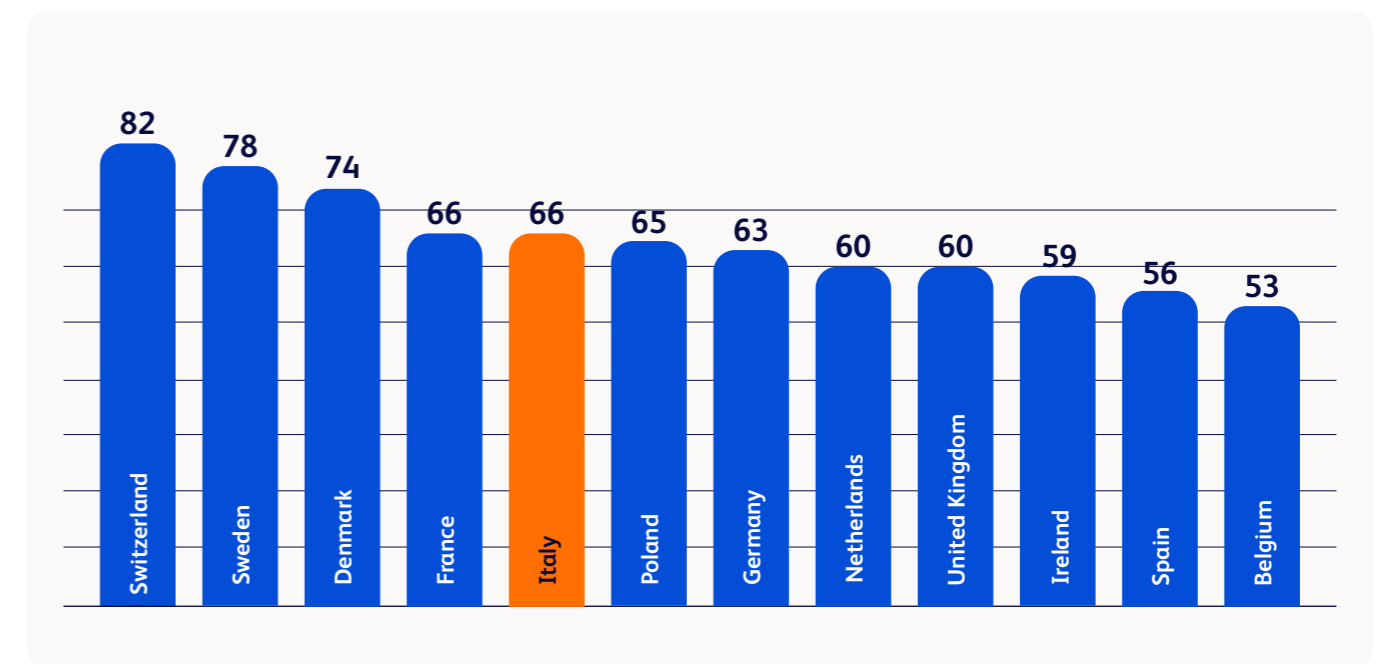
Addressing HAIs is essential to building resilience not only because they can lead to increased mortality among patients, but also because they contribute to prolonged hospital stays, and additional healthcare costs. HAI control is not just a patient safety priority – by reducing healthcare staff workload and improving the efficiency of care delivery, it contributes to a virtuous cycle of healthcare resilience.

## Turning Italy into a leader in patient safety

Italy is already among the better-performing half of European nations in terms of patient safety. The country's healthcare system shows notable strengths in areas such as sepsis incidence and surgical site infections, as well as UHC. However, there is a significant opportunity to enhance performance in key areas related to patient safety.

There is a critical need for improvement in managing HAIs by strengthening surveillance systems and implementing nationwide guidelines to contribute to better outcomes for patients and position Italy as a leader in patient safety within the European and broader EMEA context.

Figure 4: Performance on 'patients' indicators\*



Indicator	Italy score	Europe average score	EMEA average score
Patients (overall)	66/100	62/100	57/100
Adverse effects of medical treatment	60/100	64/100	63/100
Complications following therapeutic procedures	70/100	42/100	61/100
AMR-related deaths	70/100	75/100	68/100
Sepsis	90/100	76/100	54/100
Healthcare-associated infections (HAI)	30/100	51/100	51/100
Surgical site infections (SSI)	90/100	73/100	73/100
HAI surveillance	40/100	40/100	40/100
HAI guidelines	60/100	50/100	50/100
Universal health coverage	80/100	76/100	50/100

● Above EMEA average      ● Below EMEA average



# Chapter 2 Healthcare workforce

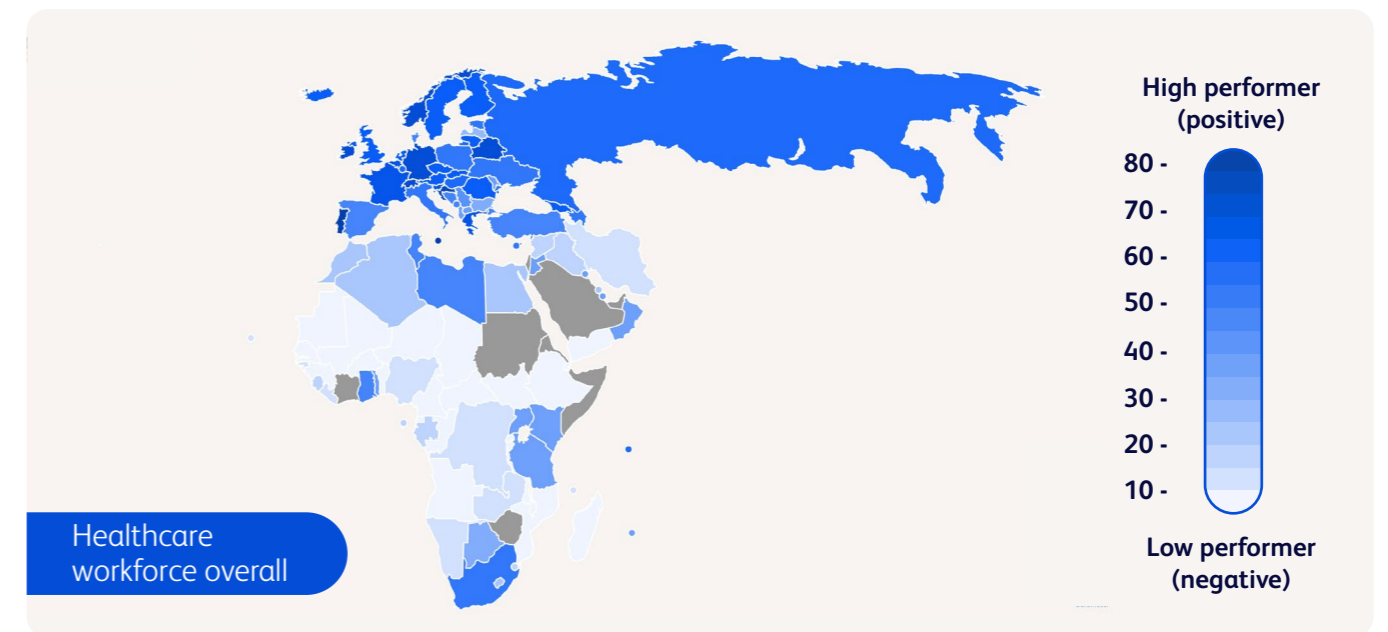
Although the discourse surrounding healthcare resilience today tends to centre around the intricacies of systems and structures, it is essential not to overlook the fundamental fact that care is ultimately delivered by individuals. Behind every medical breakthrough, every successful treatment, and every comforting word, there are healthcare professionals who have dedicated their lives to taking care of others.

Recent years have shone a glaring spotlight on the challenges faced daily by healthcare workers, whether related to working conditions, underfunding, lack of planning or other obstacles that hinder efficient and safe care delivery.<sup>7</sup> Just as patient safety is integral to healthcare resilience, so too is the wellbeing and safety of the healthcare workforce. Efforts aimed at strengthening the resilience of healthcare systems must prioritise alleviating the burden on staff and ensuring they have the support and resources necessary to deliver safe, high-quality care.

In this chapter, we examine the state of the healthcare workforce in Italy, looking at issues ranging from staff-to-patient ratios, ageing workforces, staff burnout and occupational health and safety. On overall healthcare workforce indicators, Italy is positioned as one of the poorer performing countries among major European nations – due to a combination of low staff-to-patient ratios and high levels of healthcare staff burnout.

<sup>7</sup> Michel JP, Ecartot F. The shortage of skilled workers in Europe: its impact on geriatric medicine. *Eur Geriatr Med.* 2020;11(3):345-347. doi:10.1007/s41999-020-00323-0

Figure 5: Map showing overall 'healthcare workforce' Barometer scores at EMEA level



## Staffing shortages and burnout

While the availability of nurses and doctors, individually, is above the EMEA average, it still falls short of the level that would be required to fully meet patient demand. For doctors, reasons for the shortage stem from poor planning and financial decisions in recent years. Despite the issue of the “education bottleneck” being addressed in 2019<sup>8</sup> and the resulting increased allocation of specialist training contracts, this has not been met by demand. Recent enrolment data reveals that approximately one-third of the 16,165 contracted were filled in 2023-24<sup>9</sup>

In addition, the BD Healthcare Resilience Barometer reveals a lacking number of nurses per doctor. This phenomenon

could be linked to the physician-centric model within the Italian healthcare system that has resulted in a lack of investment in the nursing workforce.

These issues are likely contributing to above-average levels of burnout among healthcare workers. The current prevalence of burnout among nursing staff is heavily influenced by the COVID-19 pandemic, with reports of high levels of work-related suffering and risks of physical and emotional exhaustion stemming from that challenging period.<sup>10</sup> From a future perspective, this affects the attractiveness of the profession and ultimately can influence the turnover and uptake of future nurses and doctors.

<sup>8</sup> Medscape. *Health Service Faces Doctor Shortage*; Published 9 December 2022. <https://www.medscape.com/viewarticle/985346?form=fpf>

<sup>9</sup> European Observatory on Health Systems and Policies. *Challenges for the Italian National Health Service in 2024. How to plan the future workforce?*; Published 1 February 2024. <https://eurohealthobservatory.who.int/monitors/health-systems-monitor/updates/hspm/italy-2023/challenges-for-the-italian-national-health-service-in-2024-how-to-plan-the-future-health-workforce>

[health-service-in-2024-how-to-plan-the-future-health-workforce](https://eurohealthobservatory.who.int/monitors/health-systems-monitor/updates/hspm/italy-2023/challenges-for-the-italian-national-health-service-in-2024-how-to-plan-the-future-health-workforce)

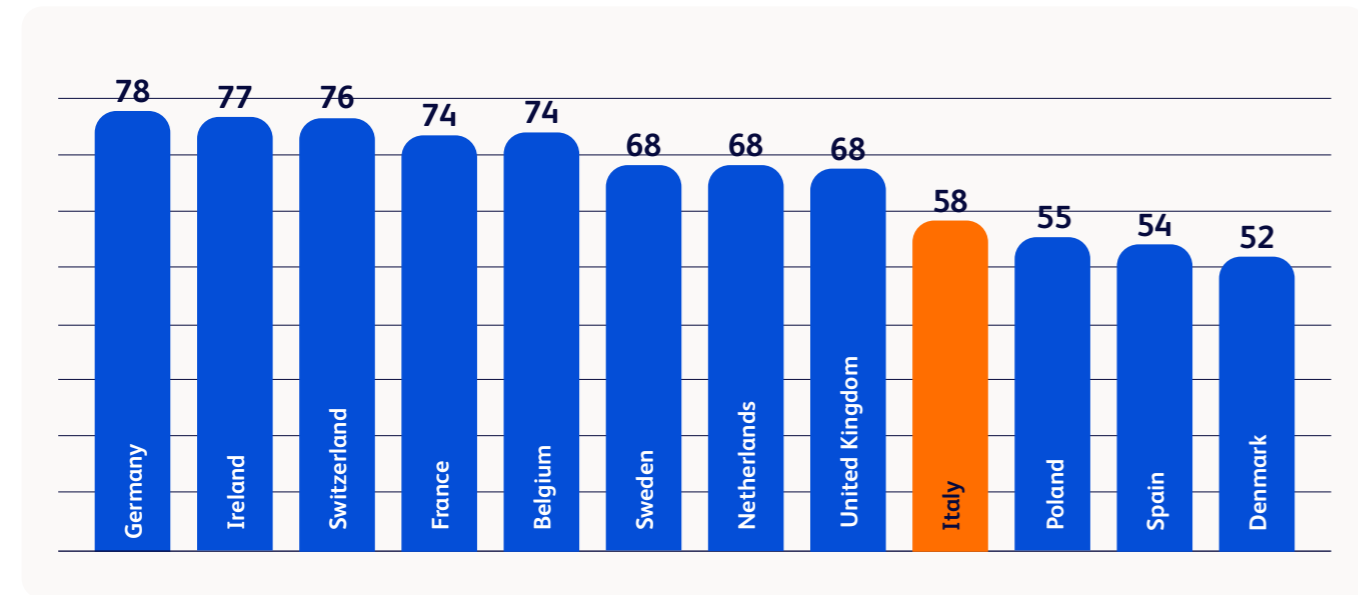
<sup>10</sup> Damico V, Murano L, Demoro G, Russello G, Cataldi G, D'Alessandro A. *Sindrome di Burnout tra il personale infermieristico italiano durante l'emergenza COVID 19*; . Indagine conoscitiva multicentrica [Burnout syndrome among Italian nursing staff during the COVID 19 emergency. Multicentric survey study]. *Prof Inferm.* 2020;73(4):250-257. doi:10.7429/pi.2020.734250.

## The need to nurture the workforce

Looking forward, increased effort is required to enhance the attractiveness of the healthcare profession to those in education. Addressing the issues contributing to burnout and implementing policies and guidance to reduce and prevent these issues can effectively

demonstrate the value observed in the work and in those who are doing the work. This, in turn can create a new foundation for people entering the workforce, and ensuring their wellbeing is cared for can ensure the provision of quality care.

Figure 6: Performance on 'healthcare workforce' indicators\*



Indicator	Italy score	Europe average score	EMEA average score
Healthcare workforce (overall)	58/100	62/100	39/100
Staff to patient ratio (nurses)	70/100	79/100	47/100
Staff to patient ratio (doctors)	60/100	56/100	32/100
Ratio of nurses to doctors	40/100	61/100	61/100
Nurses aged 55+	-	59/100	59/100
Staff burnout	60/100	56/100	56/100
Occupational health and safety	-	46/100	55/100

● Above EMEA average
 ● Below EMEA average





# Chapter 3 Efficiency

## Building healthcare resilience – why processes matter

Resilient healthcare can only be achieved if all parts of the system are working optimally and with the same mission. In the previous chapters, the spotlight was rightly cast on the two primary actors in the healthcare system – the patients and the healthcare workers. However, there is an important and often overlooked component yet to be addressed.

This chapter is dedicated to exploring the processes that shape the efficiency of healthcare delivery in Italy, and across the EMEA region. As OECD data shows that “a significant share of health spending (...) is, at best ineffective, and, at worst, wasteful”,<sup>11</sup> in this section we take a closer look at this topic, mapping out where the systemic inefficiencies occur.

Rising inflation is affecting health spending across EMEA,<sup>12</sup> with the demand for care leading already high operational costs to soar. The limitations to spending, as a result, are having a knock-on effect on healthcare systems’ resilience.

These limitations directly impact issues of healthcare workers’ pay, the daily operating costs and the financial prospect of introducing new technologies and efforts towards improving sustainability.

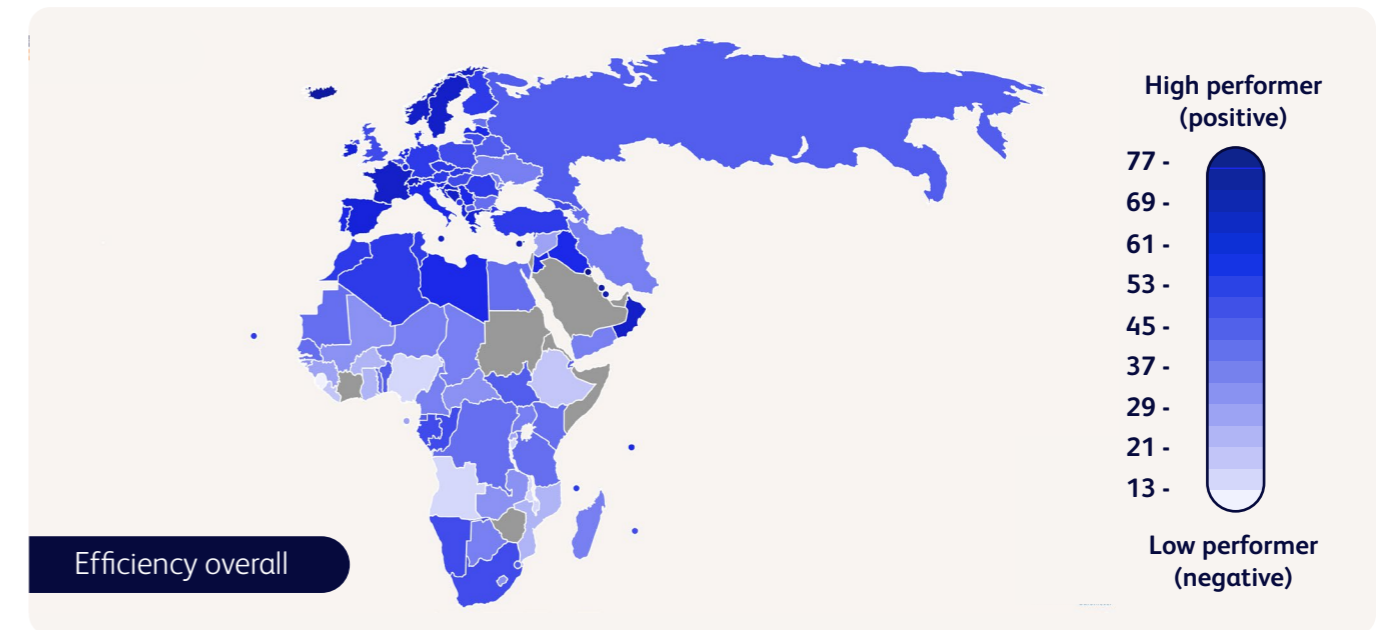
An overview by the European Commission explains that national health systems throughout Europe are trying to

secure equal access to essential, high-quality care while protecting their long term sustainability. And, with that, governments are intent on identifying ways in which they can improve their healthcare system’s efficiency while addressing this dual challenge.<sup>13</sup>

The indicators underpinning the scores in this section of the BD 2024 Healthcare Resilience Barometer were selected carefully to provide a detailed picture of efficiency. Foremost among these is healthy life expectancy (HALE), but we also look at more specific metrics like the average length of hospital stay, which reflects the efficacy of treatments and the overall quality of care. Preventable deaths are also a key indicator of how well the healthcare system is fulfilling its intended purpose.

According to the BD Healthcare Resilience Barometer, Italy’s performance on efficiency indicators is above the EMEA average but lags significantly behind countries like France or Switzerland.

Figure 7: Map showing overall ‘efficiency’ Barometer performance at an EMEA level



## Removing barriers to care and health

The results of the barometer reveal that the country is investing in areas integral to the future of patient wellbeing and to the sustainability of the system. Italy is reported to have one of the highest average life expectancies among EU countries, and also produces a high score on the healthy life expectancy measure in the barometer, indicating that people are living healthier for longer.

Italy has established nationwide health policies that allow citizens to access care

provision even if based in a different region. Sources state that Italy experiences high rates of “cross-regional mobility”, with those based in the southern regions often seeking care in the central and northern regions. This removes a barrier to access that may affect Italian residents differently depending on their location and facilitates equal opportunities to receive care regardless of regional challenges.

<sup>11</sup> Organisation for Economic Co-operation and Development (OECD). Tackling Wasteful Spending on Health. Published online 2017. <https://doi.org/10.1787/9789264266414-en>

<sup>12</sup> World Bank. Inflation, consumer prices (annual %). <https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?view=map>

<sup>13</sup> European Commission. Tools and methodologies to assess the efficiency of health care services in Europe: an overview of current approaches and opportunities for improvement; 2019. Accessed July 28, 2022.

<https://ec.europa.eu/newsroom/sante/items/650120>

<sup>14</sup> European Health Observatory on Health Systems and Policies. Italy – health system review; 2022. Page 154. <https://iris.who.int/bitstream/handle/10665/365363/9789289059305-eng.pdf?sequence=1>

<sup>15</sup> European Health Observatory on Health Systems and Policies. Italy – health system review; 2022. Page 109. <https://iris.who.int/bitstream/handle/10665/365363/9789289059305-eng.pdf?sequence=1>

## The risks of prolonged hospital stays

However, the country exhibits poor performance on the length of stay measure of the barometer. Stemming from an increase in ambulatory, or outpatient, care for low-intensity cases, an extended length of stay is likely due to inpatient cases having access to more complex care and, therefore, longer hospital stays. For patients, extended hospitalisation increases the likelihood of HAIs, which

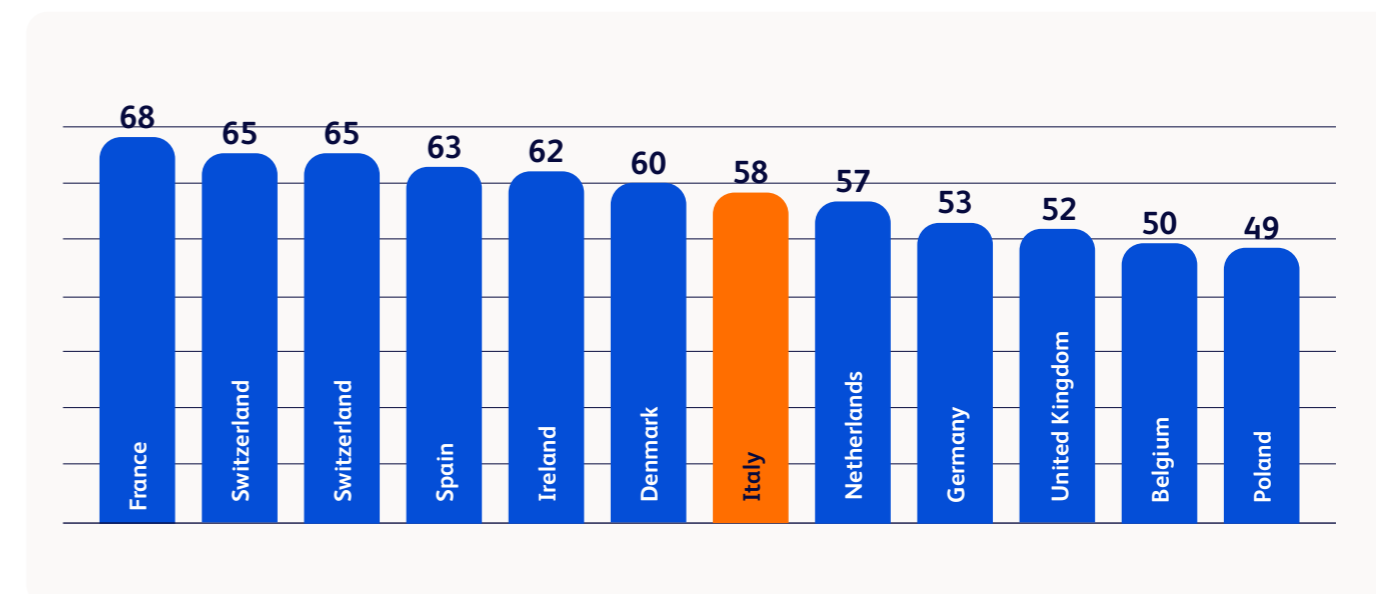
can complicate recovery, while healthcare workers face increased workloads and a heightened exposure to infectious diseases. From a system efficiency perspective, prolonged stays can contribute to hospital overcrowding, escalating healthcare costs, straining resources and potentially delaying treatment for other patients in need.

## Care beyond the hospital

To ensure the sustained performance across healthy life expectancy and improve other efficiency-related measures, Italy's National Recovery and Resilience Plan details the country's aims to strengthen primary and community care, to increase capital

investment and to fund the digitalisation of the system. Ultimately, the plan will establish Italy's intention to increase and improve the homecare assistance, especially for patients with chronic diseases and those over the age of 65.<sup>16</sup>

Figure 8: Performance on 'efficiency' indicators\*



Indicator	Italy score	Europe average score	EMEA average score
Efficiency (overall)	58/100	56/100	48/100
Inflation	60/100	51/100	55/100
Length of hospital stay	10/100	38/100	38/100
Health expenditure	70/100	65/100	42/100
Healthy life expectancy	90/100	78/100	58/100
Preventable deaths	-	51/100	51/100
Healthcare % of national footprint	50/100	43/100	43/100
Healthcare CO2 footprint per capita	70/100	54/100	54/100

● Above EMEA average
 ● Below EMEA average

<sup>16</sup> European Health Observatory on Health Systems and Policies. *Italy – health system review*, 2022. Page 83. <https://iris.who.int/bitstream/handle/10665/365363/9789289059305-eng.pdf?sequence=1to-2022.html>



# Recommendations

To ensure the resilience of the Italian healthcare system, the following recommendations outline how to approach and address the challenges facing our three thematic areas - the patients, the healthcare workforce, and system efficiency.



Develop comprehensive guidelines and robust prevention strategies for healthcare-associated infections (HAIs) to ensure patient safety and reduce infection rates across all healthcare facilities.



Improve the ratio of nurses to doctors by investing in the recruitment and training of nursing staff, ensuring a more balanced and efficient delivery of care.



Address staff burnout by implementing policies that promote a healthy work-life balance, providing mental health support, and recognising the contributions of healthcare professionals to maintain a motivated and resilient workforce.



Review and optimise care delivery processes to identify factors contributing to extended hospital stays, ensuring patients are treated effectively and discharged more quickly, thereby alleviating strain on healthcare resources and improving overall system efficiency.



Increasing investment in primary and community care through the financing and digitalisation of Italy's healthcare system can help reduce waiting lists and increase access to care.





# Concluding remarks

## Giorgio Benigni – Country General Manager, BD Italy & Greece

The meaning of resilience - intended as the ability of a system to resist even in unexpected conditions - is closely related to sustainability. During the pandemic, it shone a spotlight on the challenges facing our system like never before.

The origin of most of these challenges predated 2020: the goal is now working on an effective way to implement solutions to make our healthcare system resilient and sustainable in the long term.

In Italy, the conditions that the system is facing are linked to the historical underfunding of the national healthcare system (compared to other European countries), the need to improve the efficiency of processes and flows, and the opportunity to manage a deep change in organisational care models, moving them from the hospital to the territory.

The €20 billion investment under the National Recovery and Resilience Plan (PNRR) represents an unprecedented opportunity to make significant changes in the delivery of care in Italy and will allow our system to remain flexible and resilient, now and in the future.

The heart of the debate and possible solutions should focus on the possibility of improving the efficiency of processes - also intended as new value-based procurement models - and safety, both from patient and healthcare workers perspective.

Another relevant aspect concerns the shift of care from acute hospitals to a proximity model (Care Beyond the Hospital), which aims to provide closer healthcare assistance to patients and overcome inequalities. The new institutional and organisational structure of primary healthcare will allow the country to achieve adequate quality standards of care, in line with best European practices.

Industry has a critical role to play in ensuring these changes can come to fruition. Alongside the wider industry, at BD we can help demonstrate the value of the innovative opportunities brought about by technology and digitalisation. We see our role in spotlighting, not only the issues facing our healthcare system, but the resources with the potential to solve them. This can only be achieved if we can build partnership, respect and a sense of trust amongst the various stakeholders of our sector.

There are many challenges that await us in the next 3-5 years: from new care models to digitalisation and telemedicine, to research and training of healthcare professionals: only by encouraging open discussion and a holistic and collaborative approach towards a sustainable and resilient healthcare system, we will be able to improve outcomes for our patients, our healthcare workers, our system and for the entire country.





# Appendix

**\*Disclaimer (for the charts displaying the overall performance of each theme by selected European countries):** For the BD Healthcare Resilience Barometer report, our primary objective was to provide a comprehensive view of healthcare systems' resilience across Europe, the Middle East and Africa (EMEA). To ensure the relevance and applicability of our findings, we consulted with a wide range of key opinion leaders across the region. During our interviews, it became apparent that while a broad overview is essential, there is also a need to delve deeper into regional performance and explore how challenges in patient safety, healthcare workforce and efficiency continue to impact the resilience of more advanced healthcare systems in Europe. The inclusion of figures focused on a select group of countries serves to enrich the analysis and provide deeper insights into regional healthcare dynamics.

## Primary and secondary data sources

Full indicator descriptions & sources			
Indicator group	Indicator	Full description	Source
Patients	Adverse effects of medical treatment	<a href="#">Adverse effects of medical treatment – Deaths (per 100,000)</a>	IHME, Global Burden of Disease Study
Patients	Complications following therapeutic procedures	<a href="#">Complications following therapeutic procedures*</a>	IHME, Global Burden of Disease Study
Patients	AMR-related deaths	<a href="#">AMR Deaths</a>	IHME, Global Burden of Disease Study
Patients	Sepsis	<a href="#">Sepsis ASIR per 100,000</a>	Lancet Publication
Patients	HAI prevalence	<a href="#">Estimation of number of patients with at least one HAI on any day</a>	ECDC
Patients	SSI prevalence	<a href="#">Surgical site infections (composite)</a>	ECDC
Patients	HAI guidelines	<a href="#">Hospitals reporting guidelines for HAI prevention</a>	ECDC
Patients	HAI surveillance	<a href="#">Hospitals reporting surveillance as part of HAI prevention strategies</a>	ECDC
Patients	Universal health coverage	<a href="#">UHC Service Coverage Index (SDG 3.8.1)</a>	WHO Global Health Observatory

Full indicator descriptions & sources			
Indicator group	Indicator	Full description	Source
Healthcare workers	Staff-to-patient ratio (nurses)	<a href="#">Nursing and midwifery personnel (per 10,000)</a>	WHO Global Health Observatory
Healthcare workers	Staff-to-patient ratio (doctors)	<a href="#">Medical doctors (per 10,000)</a>	WHO Global Health Observatory
Healthcare workers	Ratio of nurses to doctors	<a href="#">Ratio of nurses to doctors (OECD)</a>	OECD
Healthcare workers	Nurses aged above 55	<a href="#">Nurses 55 and above Havas Lynx – Healing the Healers (Point.1 data)</a>	WHO
Healthcare workers	Staff burnout	<a href="#">Ratio of nurses to doctors (OECD)</a>	Havas Lynx and additional market research
Healthcare workers	Occupational health and safety policy	<a href="#">Existence of national policy instruments for occupational health and safety for health workers</a>	WHO Global Health Observatory
Efficiency	Inflation	<a href="#">Inflation, consumer prices (annual %)</a>	World Bank
Efficiency	Length of stay	<a href="#">Health care use – Length of hospital stay (acute care)</a>	OECD
Efficiency	Health expenditure	<a href="#">Domestic general government health expenditure by Health Care Functions</a>	WHO Global Health Expenditure Database
Efficiency	Healthy Life Expectancy	<a href="#">Healthy Life Expectancy (HALE) at birth (years)</a>	WHO Global Health Observatory
Efficiency	Preventable deaths	<a href="#">Potential years of life lost</a>	OECD
Efficiency	Health care % of national footprint	<a href="#">Health care % of national footprint</a>	Health Care with No Harm – World Input-Output Database (WIOD) European Environmental Agency
Efficiency	Healthcare footprint per capita	<a href="#">Health care footprint per capita (tCO2e/capita)</a>	Health Care with No Harm – World Input-Output Database (WIOD) European Environmental Agency

## Full list of Italian stakeholders interviewed

Name	Country	Title & organisation
Dr Fabrizio d'Alba	Italy	National President at Federsanita
Dr Paolo Petralia	Italy	General Manager at ASL4 Chiavarese (Liguria, Italy) and National Vice President at FIASO

## Barometer scoring system

### Classification

In the BD Healthcare Resilience Barometer, each country received an aggregated resilience score between 0-100, which is a composite measure calculated as an average of resilience scores across the three thematic areas: patients, the healthcare workforce, and efficiency.

### Indicator-level score allocation

For each of the individual resilience indicators, we converted the raw data point into a 1-10 scale, to standardise and allow for comparability. Scores between 1-10 were multiplied by 10 and presented on a 0-100 scale in the barometer to allow for the use of whole numbers for country and regional averages. This involved creating individual ranges per indicator, where the aim was to create a range that allowed for a good distribution of the data points from each EMEA country, aiming for a normal distribution bell curve, whilst still maintaining a standard range size where possible.

For some indicators, achieving this distribution of data across the 1-10 range was not possible given the performance levels of the different countries included within the barometer. This is because the data naturally clusters heavily by region, with European countries scoring near the top of the ranges, and African countries scoring nearer the bottom of ranges for most indicators.

## Interpreting the barometer scores

As the original data points the barometer relies on are defined on different scales and measurements, the 0-100 scoring system was created to allow us to classify and interpret the data from the various sources in a standardised manner. According to this unified system, 100/100 is the best possible score across all indicators. As the table of classification in the above section shows, a higher score is always more positive, as it indicates a higher level of healthcare resilience in a country.

To support the interpretation of the charts and tables throughout the report, the below two examples illustrate the framework used in the standardisation process.

### Indicator 1: AMR-related deaths (IHME)

For this indicator, the higher prevalence of AMR-related deaths is converted into a lower (weaker) barometer score, while a lower prevalence is converted into a higher (stronger) score on the 0-100 scale in the barometer. In other words, a low score on AMR-related deaths in the barometer does not mean that the prevalence of AMR-related deaths is low. It means that the country performs weakly on the AMR deaths measure.

Original value (death rate per 100,000)	Barometer score assigned
<18	100
>162	10

### Indicator 2: Staff to patient ratio – Nurses (WHO)

In this case, the original dataset shows the number of nurses per 10,000 population in each country. A higher number of nurses is better from a healthcare perspective, therefore a higher number of nurses is translated into a higher score on the barometer, and a lower number of nurses translated into a lower score on the 0-100 scale.

Original value ((Number of nurses per 100,000)	Barometer score assigned
<10	10
>115	100

**The scale of 0 (weak) to 100 (strong) is included in each table in this report as a reminder of how the scores should be interpreted by the reader.**





Barometer scoring system per indicator			
Indicator	Source	Original scale / unit of measurement	Barometer score assigned
Adverse effects of medical treatment	IHME, Global Burden of Disease Study	Death rate per 100,000	<0.25 = 100 >14 = 10
Complications following therapeutic procedures	IHME, Global Burden of Disease Study	Prevalence rate per 100,000	<10 = 100 >70 = 10
AMR-related deaths	IHME, Global Burden of Disease Study	Death rate per 100,000	<18 = 100 >162 = 10
Sepsis	Lancet	Sepsis ASIR per 100,000	<100 = 100 >2000 = 10
HAI Prevalence	ECDC	%	<1 = 100 >9 = 10
HAI - SSI Prevalence	ECDC	% of SSIs per 100 operations	<1.2 = 100 >10.80 = 10
HAI - Guidelines	ECDC	Number of hospitals	<10 = 10 >90 = 100
HAI - Surveillance	ECDC	Number of hospitals	<9.5 = 10 >85.50 = 100
Universal Health Coverage	WHO Global Health Observatory	Average cover of essential services	<40 = 10 >87.50 = 100
Staff to patient ratio (Nurses)	WHO Global Health Observatory	Number of nurses per 10,000	<10 = 10 >115 = 100
Staff to patient ratio (Doctors)	WHO Global Health Observatory	Number of doctors per 10,000	<8 = 10 >72 = 100
Ratio of nurses to doctors	OECD	Ratio	<4.5 = 100 >40.50 = 10
Nurses aged 55 or above	WHO	%	<4.5 = 10 >40.50 = 100
Staff burnout	Havas Lynx	Custom calculation	<6.7 = 100 >13.2 = 10

Barometer scoring system per indicator			
Indicator	Source	Original scale / unit of measurement	Barometer score assigned
Occupational health and safety policy	WHO Global Health Observatory	Existence of national policy instruments for occupational health and safety for health workers	<1 = 10 >9 = 100
Inflation	World Bank	Annual % measured by consumer price index	<2 = 100 >18 = 10
Length of stay	OECD	Average number of days spent in hospital	<4 = 100 >7.20 = 10
HC % of health expenditure (per capita)	WHO	Domestic general government expenditure per capita (US\$)	<50 = 10 >8800 = 100
Healthy Life Expectancy	WHO Global Health Observatory	Average number of years	<50 = 10 >74 = 100
Preventable deaths	OECD	Summary measure of premature mortality which may be preventable	<950 = 100 >8550 = 100
Health care % of national footprint	Health Care with No Harm - World Input-Output Database (WIOD) European Environmental Agency	%	<0.7 = 10 >6.30 = 100
Healthcare footprint per capita	Health Care with No Harm - World Input-Output Database (WIOD) European Environmental Agency	tCO2e per capita	<0.09 = 100 >0.81 = 10

# List of countries (100)

## Europe

Albania	Estonia	Lithuania	Russia
Austria	Finland	Luxembourg	Serbia
Azerbaijan	France	Malta	Slovakia
Belarus	Georgia	Moldova	Slovenia
Belgium	Germany	Montenegro	Spain
Bosnia and Herzegovina	Greece	Netherlands	Sweden
Bulgaria	Hungary	North Macedonia	Switzerland
Croatia	Iceland	Norway	Turkey
Cyprus	Ireland	Poland	Ukraine
Czechia	Italy	Portugal	United Kingdom
Denmark	Latvia	Romania	

## Africa

Algeria	Congo (Republic of the)	Libya	Senegal
Angola	Djibouti	Madagascar	Seychelles
Benin	Egypt	Malawi	Sierra Leone
Botswana	Equatorial Guinea	Mali	South Africa
Burkina Faso	Eswatini (Swaziland)	Mauritania	South Sudan
Burundi	Ethiopia	Mauritius	Tanzania
Cameroon	Gabon	Morocco	Togo
Cape Verde	Ghana	Mozambique	Tunisia
Central African Republic	Guinea	Namibia	Uganda
Chad	Guinea-Bissau	Niger	Zambia
Comoros	Kenya	Nigeria	
Congo (Democratic Republic of the)	Lesotho	Rwanda	
	Liberia	Sao Tome & Principe	

## Middle East

Bahrain	Jordan	Qatar
Iran	Kuwait	Syria
Iraq	Oman	Yemen

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