

BD Healthcare Resilience Barometer 2026

How resilient is your healthcare system, today and for future generations?

BD



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53/100

The average score for healthcare-associated infections across all countries **marginally improves (53/100 – up from 51/100 in 2024).**

33/100

Post-operative sepsis is the lowest performing patient safety indicator across all countries **(33/100)** – with **Poland (80/100) and Italy (60/100)** scoring particularly positively.

56/100

Comparative scores for **all healthcare workforce measures** have **fallen** in 2026 from 2024 – including **nurse to doctor ratio (56/100 – down 5), medical doctors per 10,000 population (down 6)** and **nursing and midwifery personnel per 10,000 (down 2).**

52/100

A new section in this year's edition of the barometer, **environmental sustainability performance is mixed,** with an **average score of 52/100 across all countries**. Infrequent reporting of data at a country level limits understanding of progress on key indicators.

42/100

The average score for **acute care length of hospital stay** across countries has **improved by 4 points since 2024** (42/100 in 2026).

71/100

Conversely, healthy life expectancy at birth scores have fallen by 7 points over the same period **(71/100 in 2026).**

Please go to page 40 for the methodology behind the scoring and ranking mechanism.

HIGHEST SCORING:

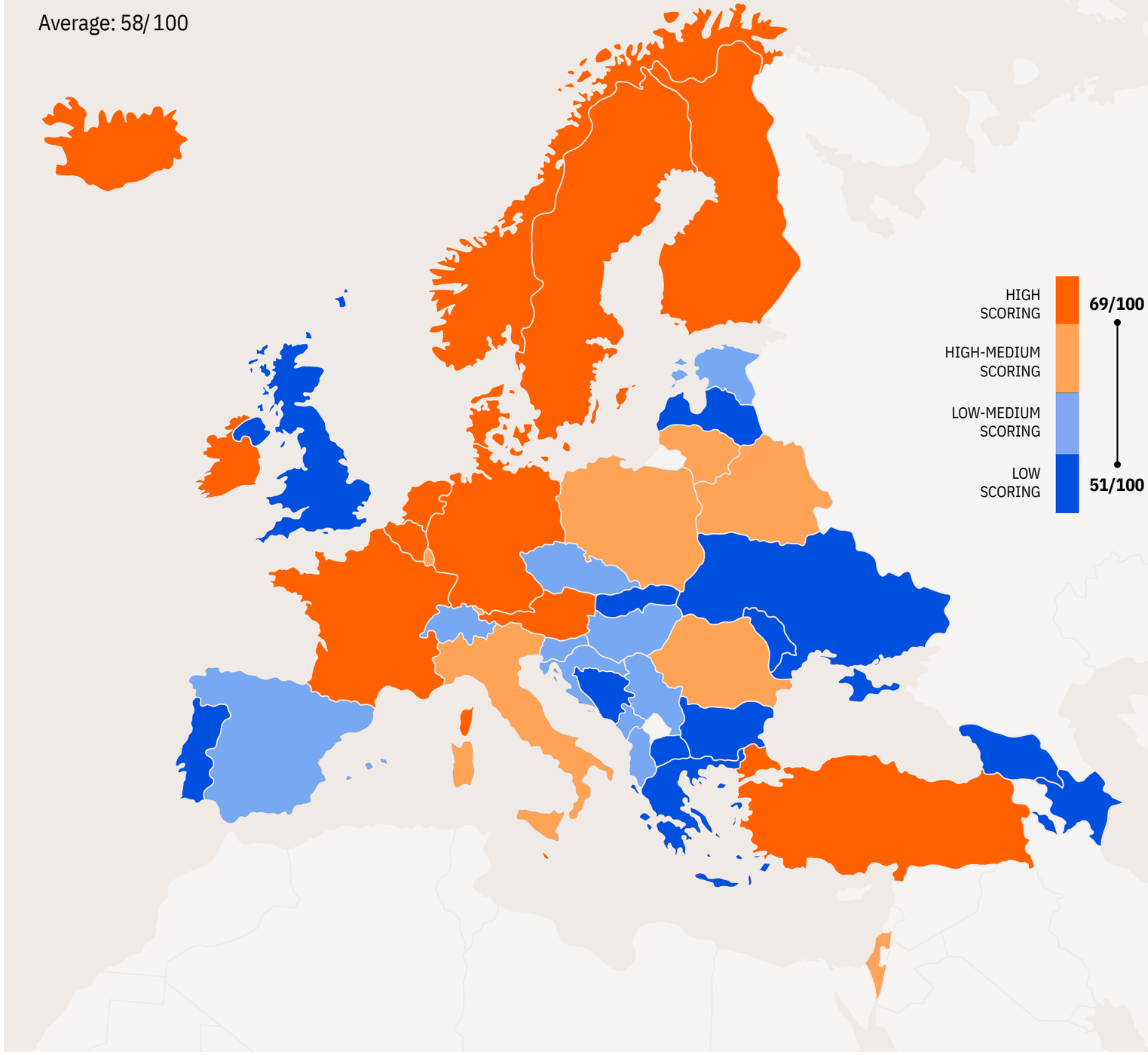
- Norway**: 69/100**
- Iceland: **67/100**
- Denmark: **64/100**
- Finland: **64/100**
- Turkey: **64/100**

LOWEST SCORING:

- Latvia: **53/100**
- Bosnia & Herzegovina: **52/100**
- North Macedonia: **52/100**
- Bulgaria: **51/100**
- Ukraine: **51/100**

Overall scores

Average: 58/ 100



FOREWORD

Health systems are under significant strain, making it increasingly difficult to maintain safe, reliable care. During periods of intense pressure, capacity becomes fully stretched, and **even minor disruptions can undermine system resilience**.

At these moments, financial and operational risks rise sharply. **Healthcare leaders now face a critical imperative**: to strengthen system-wide resilience so they can safeguard the delivery of **safe, high-quality care** and enhance the system's ability to absorb shocks from winter hospital surges, outbreaks, and extreme climate events.



This year's findings show resilience strengthening in some areas but not at the pace required.

BD created the Healthcare Resilience Barometer to understand what drives or threatens the resilience and sustainability of healthcare systems around the world at a time of competing pressures.

In this edition of the Healthcare Resilience Barometer, we have introduced a new indicator group: environmental sustainability. In previous versions of the Barometer, sustainability indicators were included in country efficiency scores, but this new grouping sets a clear focus on environmental sustainability as a core factor in health system resilience.

Our goal is to provide a consistent and comparable view of resilience across country health systems, focusing on patient safety, healthcare workers, the environmental sustainability of care delivery, and efficiency to highlight where action can have the greatest impact.

Working closely with health systems, we see both the commitment of clinical teams and the operational barriers that hold them back. This Barometer reflects those realities and aims to support leaders as they navigate them, with an analysis further enriched by the perspectives of key opinion leaders who provide on the ground insights into emerging risks, opportunities, and best practices.

This year's findings show resilience strengthening in some areas but not at the pace required. Patient safety indicators continue to show vulnerabilities, particularly in infection control and sepsis.

Workforce shortages are deepening, with fewer available clinicians and many approaching retirement. Country performance on environmental sustainability varies widely and efficiency gains remain isolated and insufficient to meet rising demand. **Stronger supply chains, fewer avoidable complications and reduced waste** all support more predictable care and lower operational risk.

These are actionable steps leaders can begin now, and each strengthens the wider system when pressures rise.

The Barometer also shows that resilience is built through practical, everyday actions. **Three actions stand out:**

1. Reducing avoidable harm

It can protect quality of care, free capacity and reduce readmissions.

2. Redesigning work

Better roles, clearer tasks and smarter workflows can protect the healthcare workforce and shift time toward meaningful patient care.

3. Removing barriers across pathways

Streamlined handovers, reliable escalation and integrated data flows strengthen throughput, which may improve patient experience and reduce avoidable costs.

These are actionable steps leaders can start now, and each strengthens the wider system when pressures rise.

The methodology of this analysis is transparent and based on internationally recognised indicators. Despite some data gaps, the trends are clear: **countries must accelerate efforts to build shock-resistant systems and support their workforces.** BD will continue to refine the Barometer, expand its measures and work with partners to keep it practical and credible. The ambition of this edition of the Barometer is to provide a clear picture of where resilience stands today and where collective action can strengthen it for the years ahead.

Methodology

This year's edition of the BD Healthcare Resilience Barometer ranks the resilience of healthcare systems in **42 countries** through the lenses of four thematic areas – **patient safety, the healthcare workforce, environmental sustainability, and efficiency**.

As the original data points the Barometer relies on are defined on different scales and measurements, the 0-100 scoring system was created to classify and interpret the data from the various sources in a standardised manner.

According to the unified system, 100/100 is the best possible score across all indicators. A higher score is always more positive, as it indicates a higher level of healthcare resilience in a country.

Primary research was also conducted to complement the findings. This included a series of in-depth interviews with key opinion leaders in the healthcare sector globally. 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 organization which the stakeholder represents, or of BD.

Please refer to the appendix of this report for a detailed explanation of the individual measures and how scores were created and a full list of stakeholders interviewed.

Throughout the report we compare this year's findings to older data from the 2024 edition of the Barometer. This 2024 data can be found at: lp.bd.com/healthcare-resilience-barometer-2024.html

Patient safety:

Protecting outcomes, capacity and system resilience

At-a-glance

Patient safety performance remains static. This cumulative measure includes indicators from infections to sepsis to health coverage, capturing clear measures of patient safety failures and wider vulnerabilities in healthcare systems. The average score across countries is 58/100. With Norway and Iceland leading at 73 and Slovenia and Greece at 40, progress is uneven and fragile.

Healthcare associated infection prevalence shows slight improvement on average across all countries. The average across countries has marginally improved (from 51/100 in 2024 to 53/100 in 2026), with improving countries including Italy, Ireland and Spain.

Sepsis incidence exposes system vulnerability. Most countries cluster closely together, with an average of 42/100 across countries. The all-country average score declined since 2024, including countries such as Italy and the United Kingdom.

Postoperative sepsis is worryingly low-scoring, with an average of 33/100 across all countries and with notable data gaps in several specific countries. This measure, added in this year's edition of the Barometer to better capture a critical, preventable driver of patient harm, healthcare costs, and system strain, sees Poland (80/100) and Italy (60/100) score comparatively well. This highlights opportunities to perioperative safety and infection-control opportunities.

Universal Health Coverage (UHC) is slipping in a number of high-performing country healthcare systems. Germany, the Netherlands, Spain and Sweden all declined from 2024, and the average across all countries fell from 76/100 to 74/100.

Data transparency is an issue. Several countries are missing published data for Surgical Site Infections (SSI) and post operative sepsis, limiting benchmarking and slowing improvement cycles.

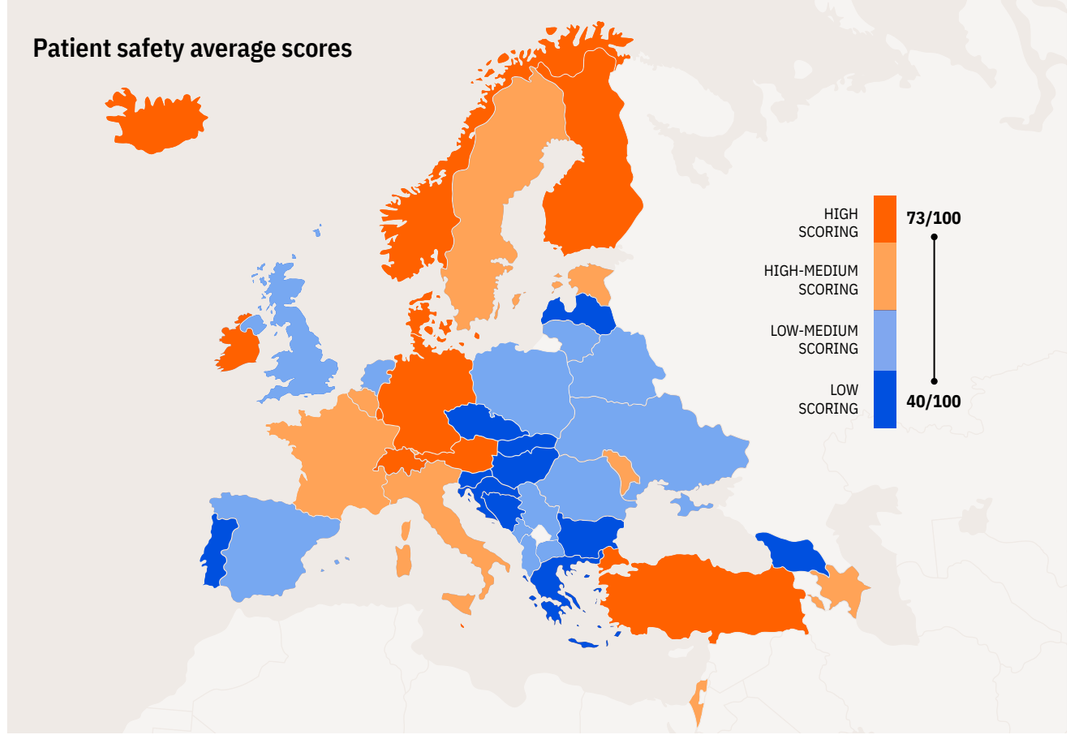
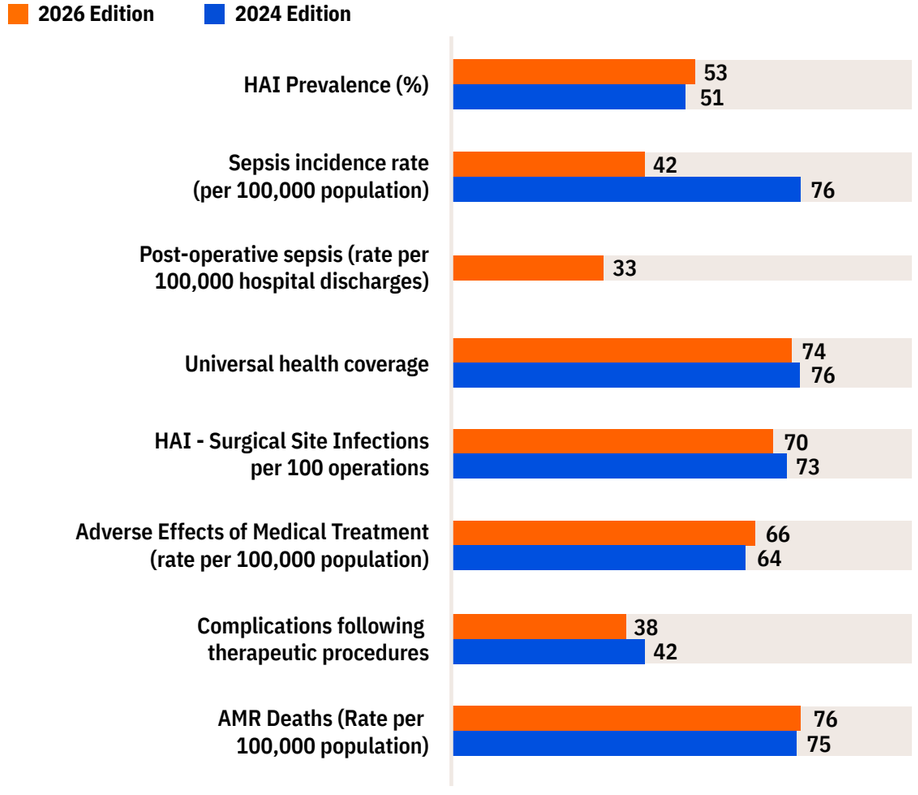


Figure 1: Patient safety indicators - average scores across all countries, out of 100



Note: The values shown in these bar charts are not to be considered as actual rates; these are interpreted in order to calculate a barometer score. See appendix: Barometer scoring system for more information.

High-quality care starts with patient safety and protects capacity.

Every patient enters a hospital with a simple, fundamental expectation: that the care they receive will be safe, reliable, and focused on their recovery, not undermined by avoidable harm. High-quality care starts with patient safety and protects capacity.



Reducing healthcare-associated infections shortens stays and improves patient flow, improving the number of bed-days available to reduce the number of patients waiting for care[1].

This year's Barometer shows a decline driven mainly by sepsis indicators, with the overall safety score at 58/100, down from 62/100 in 2024[2].

> "Even small safety failures quickly become capacity failures because complications often occupy a bed for an additional two to three weeks. This has a huge ripple effect across the whole system."



Prof. Dr Dirk De Ridder
Director of Quality & Head Institute for Healthcare Policy, UZ Leuven, Belgium

Healthcare-associated infections (HAIs)

The score for HAIs has improved slightly from 51/100 in 2024 to 53/100 in 2026, including in Italy, Ireland and Spain. Frontline leaders describe this as **genuine but fragile progress.**

Dr Rafael Bengoa, Senior Fellow at Harvard University and Former Director of Health Systems at the WHO, notes that improvement tools exist but *"clinicians do not have time to spread best practice,"* so advances stay local.

Dr Matthias Gründling, Head of the Sepsis Dialogue at the University Medical Center Greifswald, adds that infection control is constrained by the slow pace of system-wide transformation:

> "Systems should alert clinicians when key guideline parameters aren't met. Linking guidelines directly to digital workflows could significantly improve patient safety."



Dr Matthias Gründling
Head of the Sepsis Dialogue at the University Medical Center Greifswald, Germany

Surgical site infections (SSIs)

Surgical site infections occur in 0.6 to 9.6% of procedures across Europe[3]. This is reflected in the score for SSI performance which remains relatively strong at 70/100, though slightly down from 73/100 in 2024, and missing data in several countries limits benchmarking and learning. **Data gaps are a resilience risk because systems cannot identify or address variation.**

> "Improvement in any area depends on staff having the tools and ability to take on projects as they move forward, which relies on consistent measurement and transparency."



Dr Rafael Bengoa
Senior Fellow, Harvard University and Former Director of Health Systems at the WHO, Spain



1. Stewart S., et al. Impact of healthcare associated infection on length of stay. Journal of Hospital Infection. 2021. https://doi.org/10.1016/j.jhin.2021.02.026
2. Note: The full list of patient safety indicators used in 2026 is not directly comparable to those used in 2024; changes in overall scores should therefore be interpreted with caution.
3. European Centre for Disease Prevention and Control. Healthcare associated infections: surgical site infections. Annual epidemiological report for 2021–2022. Stockholm: ECDC; 2025.

Sepsis and post-operative sepsis

Every minute, more than one person dies of sepsis in Europe and three-quarters of the 2.8 million survivors affected suffer long-term sequelae[4].

Sepsis incidence scores an average of 42/100, with the decline potentially reflecting improved surveillance rather than worsening care.

Postoperative sepsis performs even lower at 33/100. Poland's stronger score of **80/100** shows what is possible, but inconsistent perioperative reliability and suboptimal care transitions continue to drive variation.

> "While surgical intensive care has made major progress there is still enormous potential to improve patient safety, especially in sepsis care."



Dr Matthias Gründling

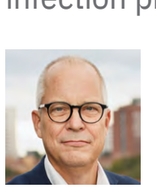
Head of the Sepsis Dialogue at the University Medical Center Greifswald, Germany

Universal health coverage (UHC)

Patient safety and quality care is recognised as an integral aspect of a successful system of UHC[5]. **UHC fell from 76/100 in 2024 to 74/100 in 2026**, which Dr Rafael Bengoa links to fragmentation and gaps in primary and social care that push avoidable complications into hospitals.

Workforce pressures compound this, with Prof. Dr Anders Ahlsson, Director of Health and Medical Services at Region Stockholm, noting that **administrative load reduces time for direct patient observation**. Alexandra Hammond, Associate Director of Net Zero and Sustainable Procurement at NHS England, also stresses that **strong patient safety delivers sustainability benefits**.

> "Reduced bedside time directly affects early detection and infection prevention reliability."



Prof. Dr Anders Ahlsson

Director of Health and Medical Services, Region Stockholm, Sweden

> "Avoiding preventable harm reduces complications, waste and unnecessary clinical activity, supporting both environmental goals and operating capacity."



Alexandra Hammond

Associate Director, Net Zero and Sustainable Procurement at NHS England, UK



Implications & outlook

Across the Barometer, some countries show notable improvements in patient safety from 2024 to 2026 – including Malta (+14), Belgium (+7), Ireland (+9), Germany (+4), and Luxembourg (+6) – but system-wide progress remains limited.

Infection risks remain high, as shown in declining sepsis scores, which may indicate how wider complications can prolong stays and increase pressure on intensive care. The clinical leaders interviewed for this report link these weaknesses to workforce shortages, variable skill mix and fragmented pathways.

There is a clear opportunity for continued progress, as around half of patient safety events are considered preventable[6]. Preventable harm is rarely caused by a single mistake. Reducing preventable harm requires an understanding of the risks and reliability challenges within complex care systems operating under constant pressure.

When healthcare systems are short-staffed, care consistency drops and patient safety is put at risk[7]. Our data suggests infection prevention and control is an ongoing risk factor for healthcare systems. Systems may consider initiatives such as dedicated infection teams, stronger support for early recognition of deterioration via improved early warning systems, safer care transitions, and more complete data to drive learning. Reducing gaps and poor coordination earlier in the care pathway is also essential to prevent hospitals from having to manage avoidable emergency episodes.

Looking ahead, reducing avoidable harm could bring environmental benefits by cutting unnecessary emissions and waste. Consistent measurement, improved working conditions, clearer handovers and thoughtful redesign of workforce roles could support progress.

4. European Sepsis Alliance. European sepsis report [Internet]. Brussels: European Sepsis Alliance; 2023. Available from: https://www.europeansepsisalliance.org/europeansepsisreport. Accessed 2026 May 21.
5. World Health Organization. Universal health coverage and patient safety & quality: understanding the central role of patient safety and quality in UHC. Geneva: WHO; 2014.
6. World Health Organization; Organisation for Economic Co-operation and Development. 10 facts on patient safety. Geneva: WHO; 2019.
7. Ball J.E., et al. Post operative mortality, missed care and nurse staffing in nine countries: a cross sectional study. International Journal of Nursing Studies. 2018;78:10 15. doi: 10.1016/j.ijnurstu.2017.08.004.

Healthcare workforce:

Healthcare systems' deepest structural weakness

At-a-glance

The overall Healthcare workforce indicator average score, covering all workforce-related indicators in this edition of the Barometer, stands at **56/100 – falling from 62/100 in 2024[8].**

Ageing staff is a key structural risk in health systems' ability to meet healthcare demand and ensure patient safety. Looking at doctors and nurses aged 55+ (an expansion on last year's indicator of only nurses 55+), overall, countries average only 44/100 on the 55+ metric, confirming that health systems are close to a retirement cliff without enough graduates to replace outgoing staff.

Doctor availability is deteriorating. The average doctor to patient ratio has **fallen from 56/100 to 50/100 across all countries**, with marked declines in Sweden, and further drops across Denmark, Ireland, Switzerland and France.

Nurse availability scores are also falling (77/100 vs 79/100 in 2024). Belgium, France, Germany and Sweden all declined slightly in this edition of the barometer.

Separately, the nurse to doctor ratio indicator has also fallen (56/100 vs. 61/100 in 2024) - including in Germany, Poland and Italy. This signals growing fragility in frontline teams.

New graduates are not keeping pace. This new indicator, assessing the new supply of healthcare professionals to the workforce found that only France and Germany achieve maximum scores on graduates, while many others fall well below the level needed to offset attrition.

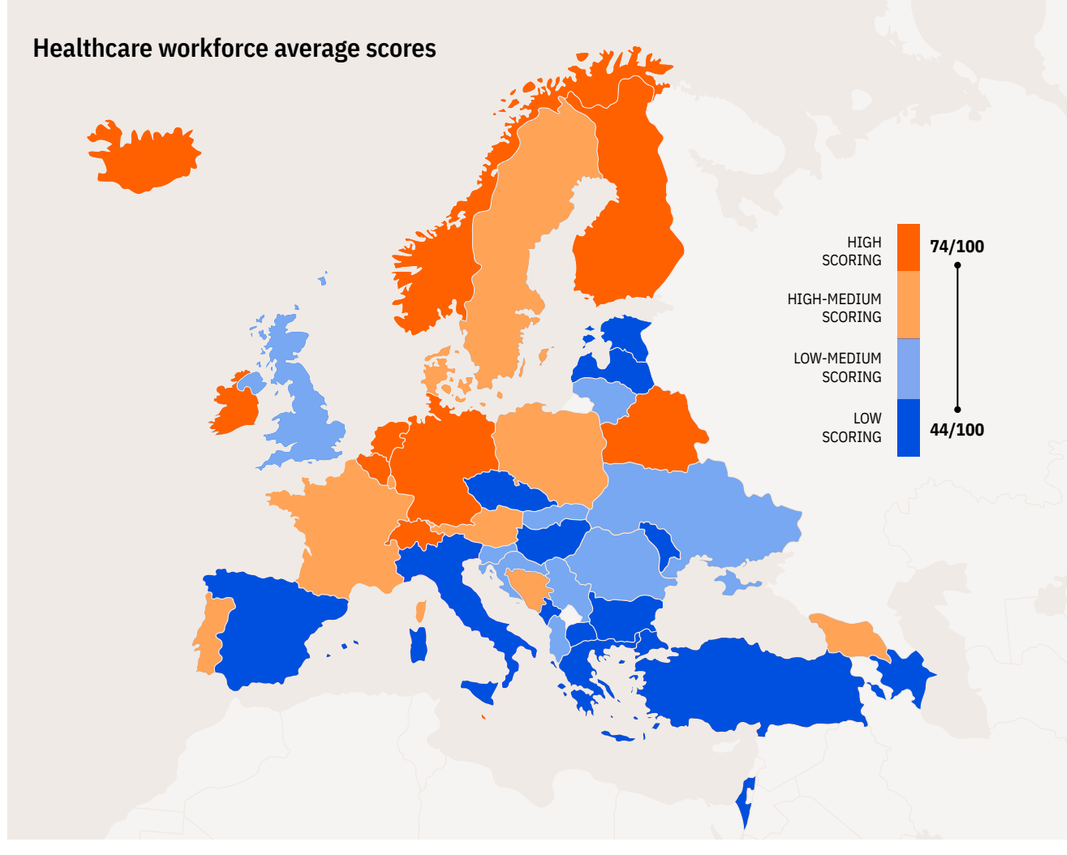
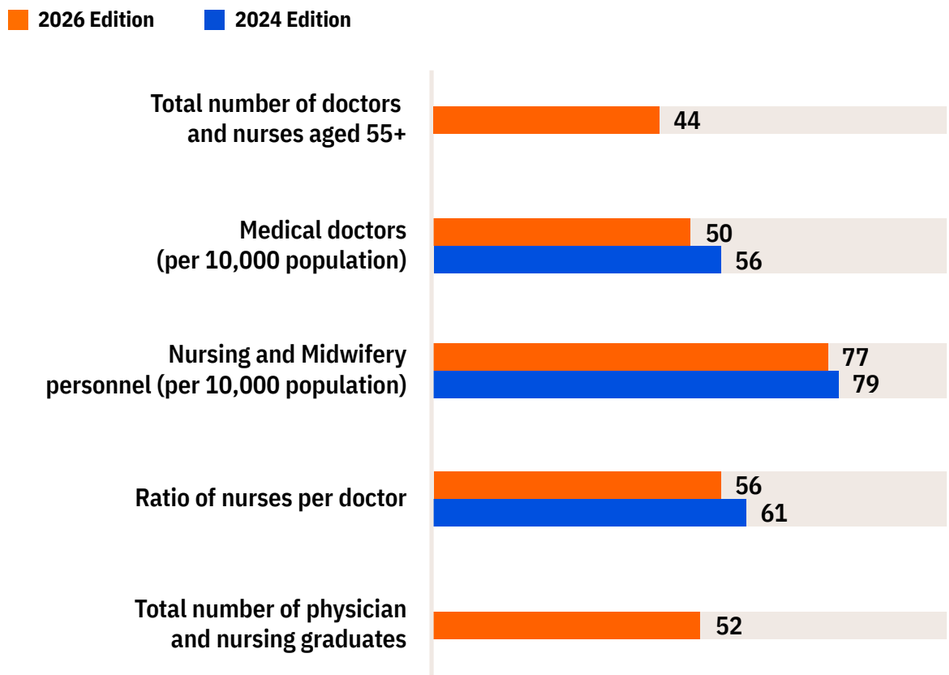


Figure 2: Healthcare workforce indicators - average scores across all countries, out of 100



8. Note: the full list of healthcare workforce indicators used in 2026 is not directly comparable to those used in 2024, so changes in the overall score should be read with caution

Note: The values shown in these bar charts are not to be considered as actual rates; these are interpreted in order to calculate a barometer score. See appendix: Barometer scoring system for more information.

Workforce resilience underpins system resilience.

When staffing is insufficient or poorly deployed, quality and safety can be harder to maintain. This year's Barometer shows a workforce stretched not only by rising demand but by structural imbalance.



Supply of medical doctors

The decline in medical doctors per population is a warning sign rooted in ageing staff, retention challenges and slow training pipelines. The average across countries has fallen from **56/100 to 50/100** in 2026, with notable drops in Sweden and further declines in Denmark, Ireland, Switzerland and France.

Some health systems are also facing a workforce gap where retirements increasingly outpace the inflows of new graduates[9]. Many countries rely on internationally trained clinicians to fill gaps, a short-term fix that adds fragility and contributes to shortages elsewhere[10].

9. Ellen Kuhlmann. The health workforce crisis in the European Union. 2025.
10. WHO. Healthcare workforce migration in the WHO European Region: country case studies from Albania, Armenia, Georgia, Ireland, Matla, Norway, Republic of Moldova, Romania and Tajikistan. 2025.

Ratio of nurses per doctor

The ratio of nurses to doctors has also fallen, from 61/100 in 2024 to 56/100. Major systems including Germany, Poland and Italy are slipping, highlighting strain on team composition and skill mix. Prof. Dr Dirk De Ridder notes that optimisation is not just about numbers but ensuring the right qualifications are available where and when needed.

> "We have had incidents where we missed deterioration because the person attending did not have the correct qualifications."



Prof. Dr Dirk De Ridder
Director of Quality & Head Institute for Healthcare Policy, UZ Leuven, Belgium

Number of doctors and nurses aged 55+

The ageing workforce further illustrates system fragility, reflecting a wider pattern: over one-third of doctors and around a quarter of nurses in the EU are aged over 55 and expected to retire in the coming years[11]. As such, **countries score an average of only 44/100** on this indicator.

Many countries face high risk as retirement eligibility accelerates after 60, leading to concentrated waves of exits. Without targeted retention measures or redesigned roles, the current age profile and graduate entry rates risk leaving many systems with a net loss of clinician capacity in the coming years, weakening the resilience of both the workforce and the system as a whole.

Physician and nursing graduates

Graduate output is not keeping pace with these impending losses. Although France and Germany score well, most countries fall far below what is needed to meet the increasing demand for healthcare and replace capacity from an ageing workforce.

Given the long lead times involved in expanding training, international assessments stress retention and better working conditions as the most effective near-term levers to stabilise the workforce[12]. New generations of healthcare professionals entering the workforce also bring new perspectives on work-life balance, career goals, and approaches to patient care. Understanding these differences and building constructive approaches to support an intergenerational workforce is essential to retain new graduates[13,14].



11. OECD and the European Commission, Health at a Glance: Europe 2024, 2024
12. OECD (2016). Health Workforce Policies in OECD Countries: Right Jobs, Right Skills, Right Places
13. Pawlak et al. Generational differences in nurse stress and coping strategies in relation to perceived patient safety: a cross-sectional study. 2025. https://doi.org/10.1016/j.ijnsa.2025.100385
14. Pietrantonio et al., Age diversity management in healthcare: leveraging generational differences with an inclusive approach. 2025. https://doi.org/10.4081/itjm.2025.2074

Solving the workforce challenges

There is no single solution to countries' healthcare systems' workforce challenges. Specific steps towards progress can include stronger staff integration, more flexible staff deployment, and improving working conditions, from adequate staffing and manageable workloads to physical safety and psychosocial support.

A 2026 study shows that a substantial proportion of healthcare workers **frequently feel exhausted (40%), mentally distant (25%), or cognitively impaired (23%) at work**[15].

To attract and retain talent, Prof. Dr Anders Ahlsson urges leaders to **examine the realities of daily work and reduce administrative burden**, which drains people's time, energy and productivity. Meanwhile, Sonya Carassik Ratty, Chief Executive of Adapt & Live, urges systems to **provide peer support, access to mental health services, and mentoring for healthcare workers**.

> "One of the greatest challenges facing our workforce today is the erosion of resilience in the absence of meaningful support."



Sonya Carassik Ratty
Chief Executive,
Adapt & Live, UK

> "For the lonely individual working in the ward, it is not a good working environment. Administrative layering and digital burdens reduce bedside time and undermine retention."



Prof. Dr Anders Ahlsson
Director of Health and Medical Services, Region Stockholm, Sweden

Prof. Dr Dirk De Ridder describes shifting appropriate procedures to day care to free up beds (provided primary care can receive patients earlier) and redesigning tasks so specialist nurses are not consumed by repetitive administrative work that can be automated or delegated.

> "Take prostate cancer, for example: after a robotic prostatectomy, 99% of our patients go home after just 23 hours. Tasks we used to handle during a hospital stay are increasingly being shifted into daycare, largely because COVID forced us to rethink how we deliver care."



Prof. Dr Dirk De Ridder
Director of Quality & Head Institute for Healthcare Policy, UZ Leuven, Belgium

Dr Rafael Bengoa suggests that a shortage of nurses is not always the issue and that part of the solution is in greater flexibility and a structural redesign of where, across an organisation, the right skills sets are being deployed. Amah Kouevi, Director of the French Patient Experience Institute, describes how this works in practice, creating elasticity that strengthens resilience across different parts of the care system.

> "We need the flexibility to reorganise our workforce, to let people take on different roles and to support local innovation with the staff we already have."



Dr Rafael Bengoa
Senior Fellow, Harvard University and Former Director of Health Systems at the WHO, Spain

> "Our system's strength lies in its diversity. Public, private, hospital and community providers work together to create elasticity, ensuring that when one part is stretched, others can take the strain."



Amah Kouevi
Director, French Patient Experience Institute, France

Implications & outlook

Across all countries, some systems are adapting, but the evidence points to a workforce under structural strain. Persistent shortages and an ageing workforce are tightening the supply of doctors and nurses, while working conditions that limit time for direct care widen gaps in safety and efficiency.

Workforce resilience is becoming an increasingly limiting factor to deliver safe, high-quality care. When teams are understaffed or unstable, with frequent onboarding, agency cover, and unfamiliarity with local protocols, it becomes more difficult to maintain reliable care across shifts and units[16].

There are a few clear actions that can be taken towards improving the healthcare workforce:

- Redesign roles and processes to maximise clinical time and strengthen onboarding and supervision where skill mix varies.
- Expand and modernise training pipelines, while improving working conditions and pay to support retention.
- Improve workflows and introduce digital tools and AI to boost productivity, freeing up staff for patient care and enabling more flexible practice across care settings so hospitals do not absorb avoidable demand.

Innovation, combined with sustained investment in training and workforce support, can protect today's capacity and support long term sustainability.

15. Foglia et al., Enhancing healthcare workers' safety and well-being through a comprehensive qualitative analysis across hospital settings. 2026.

16. Beauvais B., et al. When agency fails: an analysis of the association between hospital agency staffing and quality outcomes. Risk Management and Healthcare Policy. 2024.

BD **CHAPTER 3**

Environmental sustainability:

The resilience multiplier

At-a-glance

Environmental sustainability performance across the barometer is mixed, with an average score of 52/100.

The data included in this edition of the Barometer is based on the latest statistical releases. However, the underlying data in these releases has not been updated since the publication of the previous edition of the Barometer – meaning this data is unchanged. This highlights a gap in the ongoing monitoring of healthcare performance on this topic.

France, Ireland and Sweden are among countries that perform strongly on overall per capita healthcare emissions from the healthcare sector. Their high scores indicate that, compared with other systems, they generate relatively low greenhouse gas emissions per person from the healthcare sector.

Other countries, including Italy and Poland, perform well on a different dimension: healthcare's footprint as a percentage of national emissions is lower. This means that although their healthcare systems may not always be the lowest emitters in absolute terms, healthcare represents a smaller proportion of their countries' overall carbon footprint, suggesting progress in decarbonising health relative to other emitting sectors.

The 'tCO$_2$e per capita by percentage of GDP spent'[17] metric highlights the link between investment and carbon intensity. A higher tCO$_2$e per capita at similar spending levels may point to structural inefficiencies. Conversely, lower emitters at similar spending levels suggest more carbon efficient health systems.

Many western European countries rank below the all-country average. These rankings do not necessarily reflect inefficiency, but often reflect greater access, intensity, and scope of care. Some lower-ranking countries may simultaneously be leading in wider decarbonisation efforts, including renewable electricity and climate regulation.

17. tCO$_2$e stands for tonnes of carbon dioxide equivalent, a standard unit for counting greenhouse gas emissions regardless of which gas they are from. Please see the appendix for further detail on indicators.

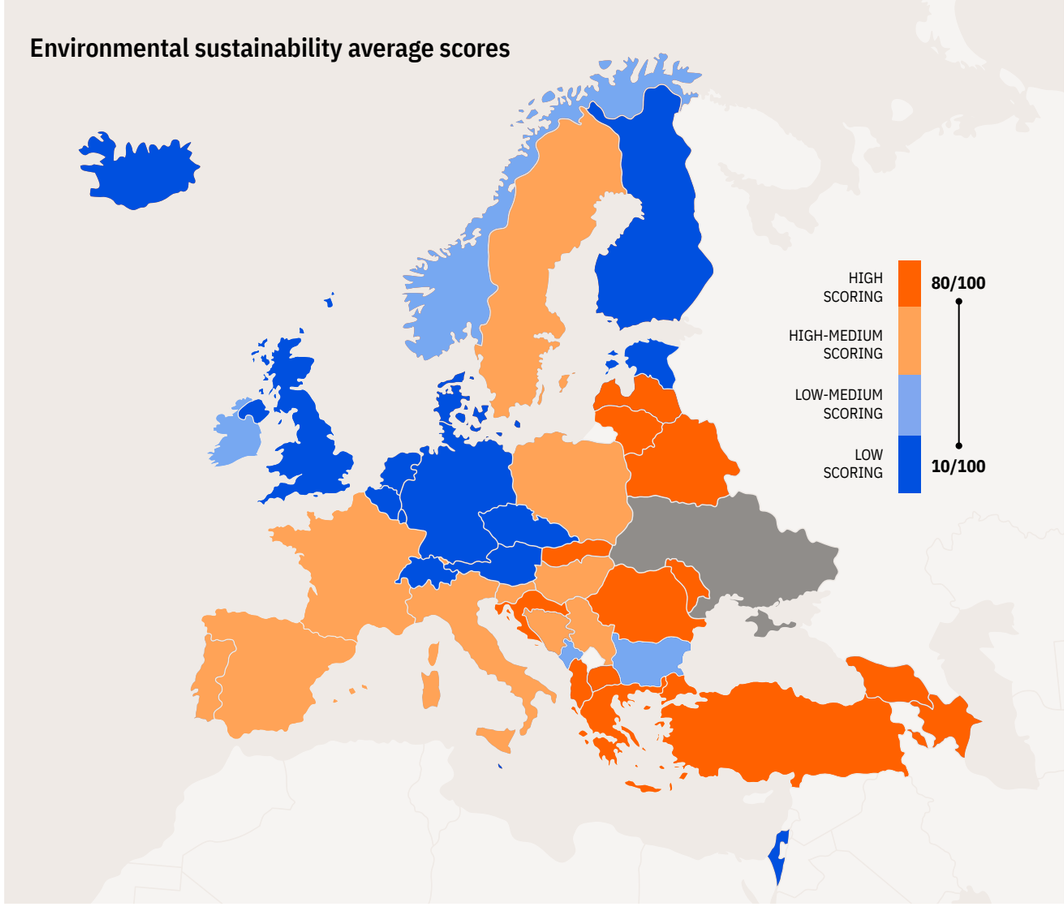
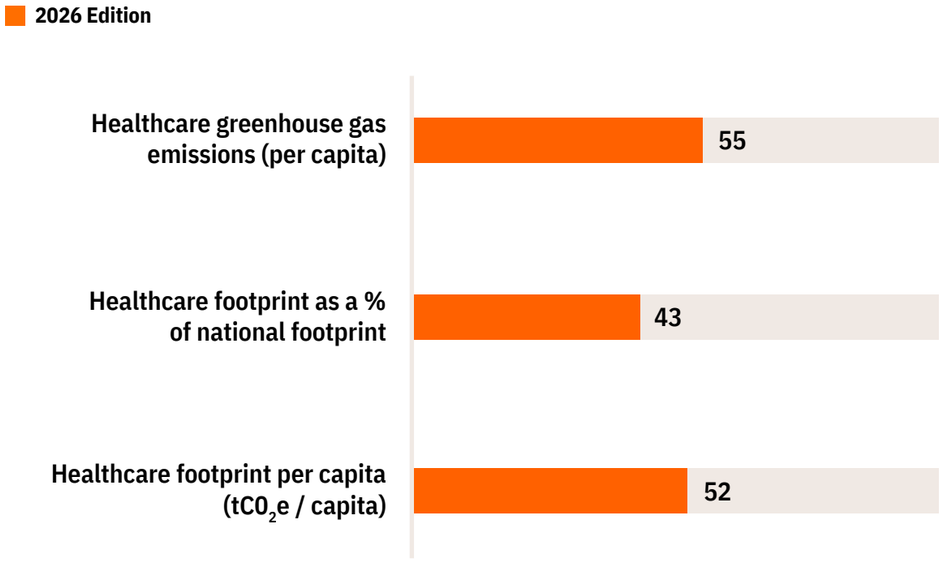


Figure 3: Environmental sustainability indicators - average scores across all countries, out of 100



Note: The values shown in these bar charts are not to be considered as actual rates; these are interpreted in order to calculate a barometer score. See appendix: Barometer scoring system for more information.

Environmental sustainability, a core factor in healthcare resilience.

Environmental sustainability is increasingly recognised as a core factor in healthcare resilience, with a rising focus on accurate measurement and reporting of health system sustainability, driven in part by the Lancet Commission on Sustainable Health Care[18]. To reflect this importance, this edition of the Barometer dedicates an entire section to environmental sustainability. The scores show an average of 52/100 across 42 countries and all sustainability indicators, with wide variation in healthcare emissions per capita, the sector's share of national emissions and overall footprint.



High healthcare emissions can reflect the extensive services provided through advanced, accessible healthcare systems, rather than a lack of sustainability effort. As countries decarbonise across industries, healthcare can be one of the hardest sectors to decarbonise due in part to their supply chain complexity.

Many factors may shape healthcare emissions, including how and where care is delivered, the sustainability of procurement and supply chains, and the effectiveness of clinical pathways in reducing avoidable tests, treatments and activity. Environmental sustainability improvements can be integrated alongside wider resilience initiatives. Systems can simultaneously improve care efficiency and outcomes while reducing their environmental impact through policies that target reductions in both waste and low-value care[19].

18. Singh S, et al. The Lancet Commission on sustainable health care measurement framework for advancing sustainable health care transformation. Lancet. 2026.
19. Organisation for Economic Co operation and Development. Decarbonising health systems across OECD countries. Paris: OECD Publishing; 2025.

Per capita greenhouse gas emissions from the national healthcare sector

Scores for greenhouse gas emissions illustrate the unevenness in health sector decarbonisation across healthcare systems.

France, Ireland and Sweden score comparatively highly (70/100) against an all-country **average of 55/100**. Compared with other healthcare systems, these three countries generate relatively low greenhouse gas emissions per person from the healthcare sector, whereas others remain heavily reliant on high energy and carbon-intensive operations.

Higher per capita healthcare emissions are strongly correlated with system maturity. Countries with universal access, high service coverage, advanced diagnostics, and complex treatments tend to deliver more healthcare per person, which increases emissions per capita. Per capita emissions comparisons should be interpreted alongside health outcomes and equity, to better understand how health system performance shapes sustainability targets, as the OECD demonstrates in its 2025 report *Decarbonising health systems across OECD countries*[20].

Healthcare sector footprint as a % of national emissions

Healthcare's share of national emissions also varies. In many high-income countries, energy, power generation, and heavy industry are already reducing emissions, while healthcare is harder to abate. As a result, healthcare can account for a larger proportion of national emissions even if absolute emissions are stable or declining.

Much of Western and Northern Europe falls below the all-country average of 43/100. For higher performing countries, this can mean that healthcare represents a smaller proportion of the overall carbon footprint, even if they are not always the lowest emitters in absolute terms.

Addressing the uneven climate transition across healthcare systems

The findings underscore a fragmented climate transition. Efficiency gains may increase reported emissions initially, as expanding access to diagnostics, treatments, and preventative care can increase short-term emissions while improving outcomes, as explained by the Jevons Paradox[21]. Alexandra Hammond stresses the **need to link environmental sustainability to operational performance**. Avoidable readmissions, unnecessary procedures and prolonged stays all generate avoidable emissions, energy use and waste, while complications drive additional carbon because high acuity care is resource intensive.

> "A really well-run health service is one that uses its products well, takes the best care of its patients, and makes sustainability a priority."



Alexandra Hammond
Associate Director, Net Zero and Sustainable Procurement at NHS England, UK

Prof. Dr Dirk De Ridder notes that complications such as missed deterioration or weak perioperative processes create extra bed days, higher material use and waste, and greater workload for staff. The Barometer's infection and postoperative sepsis findings **reinforce the link between safety, efficiency and environmental impact**.

Climate pressures will intensify this interdependence, as heatwaves, extreme weather and supply chain instability shift demand and directly impact human health[22]. Population shifts present an additional risk factor, which, compounding with increasing global disease burden and increasingly complex care, contributes to greater demand for care and greater emissions[23].

20. Organisation for Economic Co operation and Development. Decarbonising health systems across OECD countries. Paris: OECD Publishing; 2025.
21. Reid MJA, Mateen B. The Jevons paradox in global health: efficiency, demand, and the AI dilemma. Lancet Digit Health. 2025;7(10).
22. Curtis S, et al. Impact of extreme weather events and climate change for health and social care systems. Public Health. 2017.
23. MacNeill AJ, McGain F, Sherman JD. Planetary health care: a framework for sustainable health systems. The Lancet Planetary Health. 2021;5(2):e66 e68. doi:10.1016/S2542 5196(21)00005 X.

> We're beginning to really understand the true cost of complications, not just in terms of materials or the financial impact on the hospital, but also in terms of capacity.



Prof. Dr Dirk De Ridder

Director of Quality & Head Institute for Healthcare Policy, UZ Leuven, Belgium

A major opportunity lies in stronger measurement. The complexity of healthcare supply chains presents challenges to healthcare carbon accounting, making progress hard to compare or operationalise. Carbon-intensive supply chains dominate healthcare footprints, with 60-80% of healthcare emissions estimated to come from indirect emissions embedded in supply chains[24]. Advanced systems that rely on technology and pharmaceuticals therefore show higher footprints even with highly efficient hospitals.

Prof. Dr Robert S. Kaplan and Prof. Dr Karthik Ramanna, co-founders of the E-ledgers Institute, offer a promising model. Their E-ledgers carbon accounting system mirrors financial accounting in structure, traceability and auditability, as they discuss in the *Harvard Business Review* [25]. Applied in healthcare, it enables consistent emissions reporting, quantifies the carbon impact of pathway design and clinical variation, informs procurement by comparing cost and carbon, and links sustainability directly to financial and operational decisions.

> When organisations understand the emissions associated with their suppliers' products, they can use that information to spark healthy competition. Instead of comparing suppliers solely on price, quality, and delivery time, they can now also assess emissions per kilogram of input and the transport methods used to move goods. This gives organisations a stronger basis for choosing suppliers and logistics partners.



Prof. Dr Robert S. Kaplan

Emeritus Professor of Leadership Development at the Harvard Business School, USA

This approach could strengthen national strategies that already require emissions reporting and support the kind of integrated supplier engagement described by Alexandra Hammond in the United Kingdom's National Health Service, where carbon reduction commitments are built into procurement and delivered in partnership rather than through compliance alone.

Variation across countries also reflects differences in waste patterns and product use, not just clinical practice. Some of the most developed health systems have the highest emissions, but operational changes can help to reduce their environmental impact, including targeted improvements of inefficient processes that lead to medication waste and repeated diagnostics. Improving these areas cuts both cost and carbon. As Alexandra Hammond notes, *"sustainability is not ideological but about doing things right"*, underscoring that better resource use is simply good operational practice.



Implications & outlook

Healthcare systems' environmental sustainability performance remains mixed and uneven. Systems that embed environmental sustainability into pathway design and care delivery standards, reduce avoidable variation, strengthen carbon accounting and work proactively with suppliers can gain operational, financial and environmental benefits.

Tools such as the Kaplan-Ramanna E-ledgers system can help move sustainability from aspiration to measurable, decision-ready practice. Strengthening the links between safety, efficiency, procurement and sustainability offers a high-impact route to long term resilience, improving care delivery while reducing health systems' environmental impact.

24. World Health Organization. Decarbonizing the healthcare supply chain: strategic actions for health systems. Geneva: World Health Organization; 2025. Available from: https://www.who.int/publications/b/81844
25. Kaplan, Robert S., and Karthik Ramanna. "Accounting for Climate Change." Harvard Business Review 99, no. 6 (November–December 2021): 120–131. (note: editorially reviewed, not peer reviewed)

Efficiency

Unlocking hidden capacity to drive resilience

At-a-glance

Average efficiency performance across all countries for these indicators remains uneven, with the theme average score of 62/100, reflecting the inability of country healthcare systems to keep pace with rising demand despite modest gains in some efficiency indicators[26].

Length of stay (LOS) shows small improvements, with scores for Belgium, Ireland, Poland and Italy all improving, and the all-country average score rising to 42/100, signalling that system-wide throughput has largely plateaued.

Preventable deaths show minimal progress from the previous edition of the Barometer. Several countries' scores are unchanged, and small declines in Denmark and the United Kingdom bring the average score for all countries to 50/100 from 51/100 in 2024.

Healthy life expectancy scores are declining from the last edition of the Barometer, with most countries' scores falling and the average score falling from 78/100 in 2024 to 71/100 in 2026.

Digital capability is highly polarised, as indicated by the new measure on the use of electronic clinical records, which captures the shift towards digital clinical solutions and its implications for care efficiency. Nordic countries, the Netherlands and Germany score highly for electronic clinical record use, while many others have no available data, underscoring substantial digital and reporting fragmentation.

ICU capacity varies widely. In the first of two new indicators on hospital beds, the ICU capacity indicator highlights hospitals' potential ability to manage a surge in patients. Germany is among a few high-scoring countries, while Sweden achieves the lowest score in the Barometer where data is available, illustrating significant gaps in surge readiness across healthcare systems.

Bed occupancy rates are varied. The bed occupancy indicator, added this year, provides an additional level of depth to our indicator on ICU bed count. Scores across all countries average at 56/100, with scores highest in Greece and lowest in Ireland where data is available, with many health systems having limited bed availability to protect system resilience in the event of hospital surges.

Out of pocket expenditure scores relatively high compared to other efficiency indicators. This new indicator has been introduced to capture the financial burden placed directly on patients and its implications for equitable access and system efficiency. The average score across all countries is 73/100, with multiple countries scoring a 90/100 including the UK, Sweden, Netherlands, Ireland, Germany, France and Denmark.

26. Note: the full list of efficiency indicators used in 2026 is not directly comparable to those used in 2024, so changes in the overall score should be read with caution

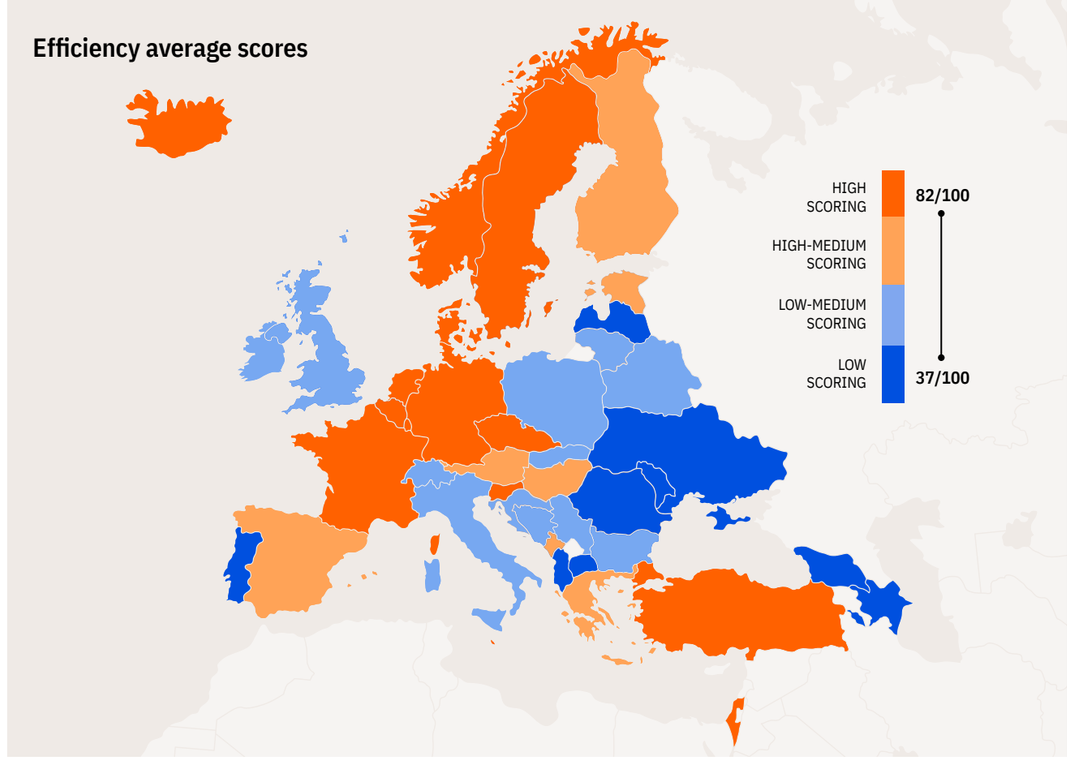
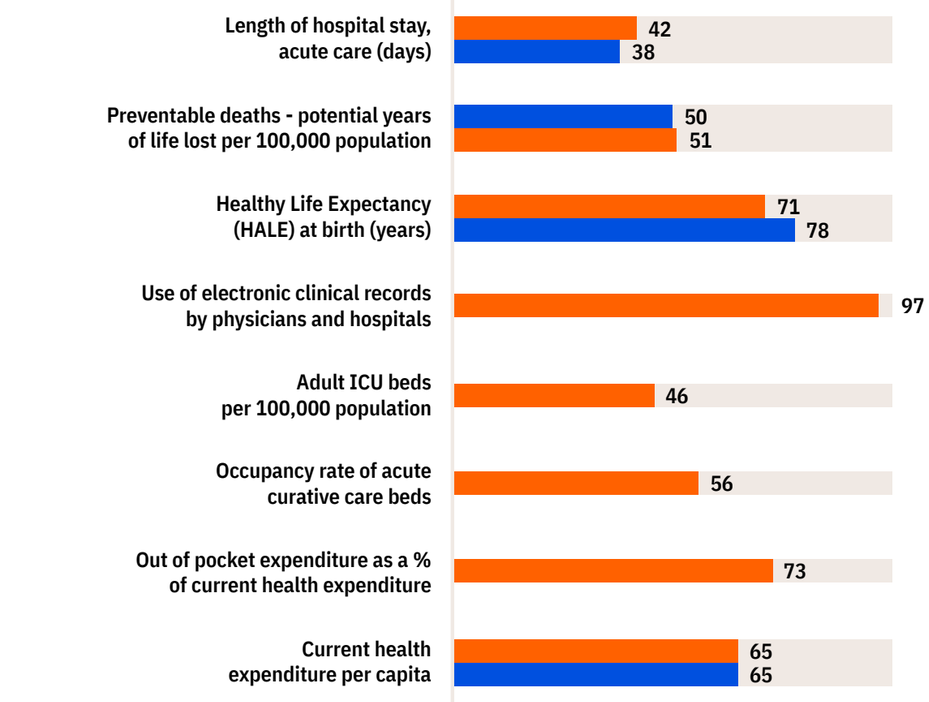


Figure 4: Efficiency indicators - average scores across all countries, out of 100



Note: The values shown in these bar charts are not to be considered as actual rates; these are interpreted in order to calculate a barometer score. See appendix: Barometer scoring system for more information.

Efficiency of care delivery can reflect how well health systems convert staff time, bed capacity and infrastructure into safe, predictable care.

Gaps between local and system needs, fragmented specialisation in care, and lack of foresight are among the factors that can shape system-wide patient flow and efficiency[27]. This year's Barometer shows small gains in isolated settings, but not the system-wide improvement needed to offset workforce shortages and rising demand.



Length of stay

Length of stay remains a key indicator of throughput. Belgium, Ireland, Poland and Italy show incremental progress, but the average score across countries is largely flat at 42/100, up only slightly from 38/100 in 2024. These marginal shifts suggest better coordination in some places, but not at a scale that transforms flow.

Patient outcome indicators

Outcome indicators tell a similar story. Preventable deaths remain flat at 50/100, with slight declines in Denmark and the United Kingdom. Healthy life expectancy has fallen across most systems, bringing the average down from 78/100 in 2024 to 71/100. These trends reflect not only hospital performance but upstream challenges in primary care, prevention and early diagnosis.

> "Prevention isn't the entire solution, but it could be a major part of reducing pressure on capacity and freeing up resources currently lost to wasteful care."



Prof. Dr Dominique Vandijck

Full Professor of Health Economics, Health Policy, Healthcare Innovation & Quality Management, Ghent University, Belgium

Digital transformation

Digital transformation to improve efficiency of care delivery remains uneven. Nordic systems, the Netherlands and Germany, among others, score highly on electronic clinical record use, while many countries lack data. This fragmentation in digital transformation may limit interoperability, slow decisions and reduce opportunities to automate low value tasks. Electronic records do more than digitise paperwork; they reshape how healthcare operates by improving information flow, care efficiency and safe access to patient information[28].

Adult ICU bed supply

Critical care capacity also varies widely. **On average, countries score 46/100 on adult ICU bed supply**, which can affect each country's ability to absorb shocks, maintain elective flow and prevent emergency department bottlenecks. Seasonal surges, such as winter respiratory illness, may amplify these pressures.

A study of ICU bed occupancy during the COVID-19 pandemic, for example, linked bed occupancy to higher mortality risk for patients admitted to the ICU, highlighting the importance of maintaining bed availability to mitigate adverse effects on patient care[29].

27. Åhlin C, et al. Bottom up perspectives on hospital wide patient flow: a multi site qualitative study of solutions to organisational paradoxes. BMC Health Services Research. 2026.

28. Costa C, et al. Electronic health records and data exchange in the WHO Europe region: a subregional analysis of achievements, challenges, and prospects. International Journal of Medical Informatics. 2023.
29. Wilde H, et al. The association between mechanical ventilator compatible bed occupancy and mortality risk in intensive care patients with COVID 19: a national retrospective cohort study. BMC Medicine. 2021.

Addressing efficiency pressures

Efficiency pressures persist in hospitals, where fragmented workflows may drain clinical time and slow decisions. Rigid processes can make it hard for teams to adapt, and these operational barriers may pull staff away from early observation and escalation – potentially narrowing opportunities to prevent deterioration or shorten stays.

> “Routine processes, such as handovers and transfers, frequently need to be designed again because small inefficiencies are repeated hundreds of times a day.”



Prof. Dr Dirk De Ridder

Director of Quality & Head Institute for Healthcare Policy, UZ Leuven, Belgium

> “When services aren’t joined-up, the burden on individual workers grows heavier. Creating a more joined-up system will be to the benefit of patients and the professionals delivering care.”



Sonya Carassik Ratty

Chief Executive, Adapt & Live, UK

But efficiency is also shaped by transitions of care. Prof. Dr Dirk De Ridder highlights that transfer processes are *“leading to incidents because workflows have developed around assumptions that no longer hold”*. Care transitions, especially discharges from hospital to primary care, are a key touchpoint for communication interventions between healthcare providers to protect patient outcomes and prevent readmission[30].

The Barometer reflects this challenge in patient care transitions in high bed occupancy. Countries average a score of 56/100, with the highest pressure in Ireland, where limited capacity may leave little buffer to absorb surges without disrupting flow.

‘Workflows have developed around assumptions that no longer hold.’

Prof. Dr Dirk De Ridder

Underlying these indicators are structural constraints discussed in the previous chapters of this report. Workforce shortages, uneven skills mix and an ageing clinical base may limit the ability to run more efficient pathways. Dr Rafael Bengoa stresses that *“fragmented models make improvement slower. Without integrated care and aligned incentives, gains are local rather than system-wide.”* Amah Kouevi describes how patient-reported outcome measures can bridge patient experience outcomes with efficiency targets.

> “By comparing patient-reported outcomes across regions and treatment approaches, PROMs reveal which clinical practices genuinely deliver better results and help push the science forward.”



Amah Kouevi

Director, French Patient Experience Institute, France

Implications & outlook

Across healthcare systems, hospitals are operating in a widening gap between increasing demand and available capacity. True efficiency lies in unlocking trapped capacity by eliminating avoidable clinical and operational waste so that greater value can be delivered from constrained resources.

Efficiency of care delivery remains modest and uneven across countries. Length of stay gains are too limited to offset rising pressures, preventable deaths show no improvement and healthy life expectancy is declining. Gaps in digital foundations, critical care capacity and care transitions continue to undermine readiness and patient flow.

These weaknesses, compounded with workforce shortages and an ageing clinical base, reduce operational flexibility. Inefficient processes also drive unnecessary emissions and waste by creating delays and repeat activity.

Improving efficiency will require more reliable discharge and handover processes, targeted digital investment that boosts interoperability and reduces administrative load, and redesigned care models that shift suitable activity to day settings. Stronger primary care integration will be essential to prevent avoidable acute demand and support earlier, safer discharge.

Looking ahead, the quickest gains may come from easing administrative burden, improving interoperability and redesigning clinical processes to maximise time with patients – supported by technology and responsible AI that can streamline workflows and strengthen decision making.

30. Becker A, et al. Interventions to improve communication at hospital discharge and rates of readmission. JAMA Netw Open. 2021.

REFLECTIONS

Health systems face sustained pressure, but the Barometer highlights clear opportunities to strengthen resilience, such as consistent measurement of healthcare complications and improvement of care transitions. The following priorities reflect common themes across countries, informed by Barometer data, frontline leaders and BD's partnerships. Each includes indicative operational or resource benefits.

1 Prioritise patient safety as the first line of defence

Leaders should consider repositioning patient safety as a core organisational capability rather than a standalone quality function, with executive level accountability for infection prevention, early deterioration detection and perioperative reliability.

2 Strengthen the workforce through redesigned roles, better working conditions and investing in targeted training pipelines

Leaders should consider rebalancing workforce investment, shifting away from short term tactics and fragmented initiatives that stall without deeper change. Investment could instead target role redesign, protected clinical time, structured onboarding and targeted training pipelines, especially for internationally recruited staff.

3 Advance integrated care through shared accountability and system alignment

Integration may require shared accountability for outcomes across primary, community and hospital care. Leaders should consider aligning incentives, escalation criteria and data visibility across settings to strengthen resilience and support patient outcomes. Integration requires shared accountability for outcomes.

4 Strengthen system foundations to improve operational performance

Operational performance may depend on reliable system foundations under pressure. Leaders should consider redesigning end to end pathways, strengthening escalation and discharge governance, and standardising operational decision making.

5 Automate workflow-level tasks to support clinicians and reduce burden

Automation should be considered basic operational hygiene rather than a discretionary innovation. Leaders should consider prioritising eliminating repetitive work, streamlining and standardising workflows, and protecting clinical time and cognitive capacity.

6 Embed environmental sustainability into everyday care delivery

High emitting processes may indicate underlying inefficiency, waste, and poor flow. By improving product use, eliminating unnecessary activity, and enforcing disciplined procurement, leaders may enhance both operational performance and emissions reduction. Carbon measurement tools like e-ledgers can support disciplined decision making.

7 Expand the focus on prevention and population health as core resilience multipliers

No health system can out-treat the rising burden of chronic disease. Healthcare leaders increasingly recognise that hospital optimisation alone cannot absorb this. Strengthening prevention – through earlier screening, timely diagnosis, and proactive community based management – should be considered as part of systems' core strategy, reducing avoidable demand and protecting hospital capacity.

BD as a system partner

BD will continue to assess what can drive or threaten the resilience of healthcare systems through the lens of patient safety, healthcare workers, efficiency and sustainability of care delivery.

Meaningful change requires system wide effort, and BD will continue to work with healthcare leaders to help convert these recommendations and enable the sustainable delivery of safe, high-quality care for current and future generations.



COUNTRY SNAPSHOTS

These country snapshots are highlights from the 2026 edition of the Barometer.
The indicators outlined in the following snapshots are not exhaustive.

Abbreviation key:

AMR - anti microbial resistance

HAI - healthcare-associated infections

SSI - surgical site infections

tCO_2e/capita - healthcare footprint per capita

HC - healthcare

EHR - electronic health record

OOP - out of pocket

UHC - universal health coverage

ICU - intensive care unit

HALE - healthy life expectancy



Belgium

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• Nurse availability (90/100) • HAI SSI (90/100) • UHC (90/100) • AMR deaths (80/100)	• Nurse availability 90/100 (vs. 77/100 all-country average) • HAI SSI 90/100 (vs. 70/100 all-country average) • Doctor availability 80/100 (vs. 50/100 all-country average)	• Length of stay (+10 from the last edition) • AMR deaths (+10 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• tCO_2e/capita (10/100) • Post-operative sepsis (20/100) • GHG/ capita (30/100) • HC footprint (30/100)	• tCO_2e /capita 10/100 (vs. 52/100 all-country average) • Post-operative sepsis 20/100 (vs. 33/100 all-country average)	• Nurse availability (-10 from the last edition)

ACTION TO CONSIDER: Focus ward level healthcare-associated infection (HAI) reduction and escalation reliability, leveraging strong SSI practice to standardise bundles across medical wards and shorten stays.

Denmark

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• EHR (100/100) • AMR deaths (90/100) • Nurse availability (90/100) • OOP expenditure (90/100)	• UHC 80/100 (vs. 74/100 all-country average) • Sepsis 60/100 (vs. 42/100 all-country average)	• AMR deaths (+10 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• HC footprint (20/100) • tCO_2e /capita (20/100) • Staff 55+ (40/100)	• Post-operative sepsis – no data • ICU beds – no data • tCO_2e /capita 20/100 (vs. 52/100 all-country average)	• Doctor availability (-10 from the last edition) • Health expenditure (-10 from the last edition) • HALE (-10 from the last edition)

ACTION TO CONSIDER: Close perioperative and capacity data gaps; use digital maturity to embed sepsis pathways and same day discharge rules.

France

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• Graduates (100/100) • Nurse availability (90/100) • OOP expenditure (90/100) • Health expenditure (80/100)	• HAI SSI 80/100 (vs. 70/100 all-country average) • HALE 80/100 (vs. 71/100 all-country average)	• None recorded
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Staff 55+ (10/100) • Adverse effects (40/100) • Doctor availability (40/100) • HC footprint (40/100)	• Staff 55+ 10/100 (vs. 44/100 all-country average) • Doctor availability 40/100 (vs. 50/100 all-country average)	• Doctor availability (-10 from the last edition) • Nurse availability (-10 from the last edition) • HALE (-10 from the last edition)

ACTION TO CONSIDER: Protect theatre productivity through SSI leadership and accelerate onboarding to offset ageing, using graduate strength to stabilise ward skill mix.

Germany

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• EHR (100/100) • Graduates (100/100) • Nurse availability (90/100) • UHC (90/100) • OOP expenditure (90/100)	• HAI SSI 80/100 (vs. 70/100 all-country average) • ICU beds 70/100 (vs. 46/100 all-country average) • Doctor availability 60/100 (vs. 50/100 all-country average)	• Adverse effects (+20 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Staff 55+ (10/100) • Length of stay (10/100) • tCO_2e /capita (30/100) • HC footprint (30/100)	• Length of stay 10/100 (vs. 42/100 all-country average) • Staff 55+ 10/100 (vs. 44/100 all-country average)	• Nurse to doctor ratio (-20 from the last edition) • UHC (-10 from the last edition) • Health expenditure (-10 from the last edition)

ACTION TO CONSIDER: Use ICU strength and digital tools to compress length of stay through discharge governance and earlier rehab starts.

Ireland

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• Nurse availability (100/100) • AMR deaths (90/100) • Health expenditure (90/100) • Nurse to doctor ratio (90/100) • OOP expenditure (90/100)	• Nurse availability 100/100 (vs. 77/100 all-country average) • Preventable deaths 60/100 (vs. 50/100 all-country average)	• Length of stay (+10 from the last edition) • HAI (+10 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Bed occupancy (20/100) • ICU beds (20/100) • HC footprint (40/100) • tCO_2e /capita (40/100)	• ICU beds 20/100 (vs. 46/100 all-country average)	• Doctor availability (-10 from the last edition) • HALE (-10 from the last edition) • Complications (-10 from the last edition)

ACTION TO CONSIDER: Prioritise ICU surge and perioperative data visibility; extend nurse led discharge and escalation to protect flow.

Italy

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• EHR (90/100) • Graduates (90/100) • HALE (80/100) • UHC (80/100)	• Graduates 90/100 (vs. 52/100 all-country average) • tCO_2e /capita 70/100 (vs. 52/100 all-country average) • Post-operative sepsis 60/100 (vs. 33/100 all-country average)	• HAI (+20 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Length of stay (20/100) • Staff 55+ (20/100) • ICU beds (30/100) • Sepsis (30/100)	• Length of stay 20/100 (vs. 42/100 all-country average) • ICU beds 30/100 (vs. 46/100 all-country average) • Nurse to doctor ratio 30/100 (vs. 56/100 all-country average)	• Doctor availability (-10 from the last edition) • HALE (-10 from the last edition)

ACTION TO CONSIDER: Lock perioperative reliability into medical wards and expand day surgery to reduce length of stay.



Netherlands

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• EHR (100/100) • Nurse availability (90/100) • OOP expenditure (90/100) • AMR deaths (80/100)	• Nurse availability 90/100 (vs. 77/10 all-country average) • Nurse to doctor ratio 70/100 (vs. 56/100 all-country average) • Preventable deaths 70/100 (vs. 50/100 all-country average)	• Adverse effects (+10 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Post-operative sepsis (10/100) • HC footprint (20/100) • ICU Beds (20/100) • Staff 55+ (20/100) • tCO_2e /capita (20/100)	• Post-operative sepsis 10/100 (vs. 33/100 all-country average) • ICU beds 20/100 (vs. 46/100 all-country average) • tCO_2e /capita 20/100 (vs. 52/100 all-country average)	• UHC (-10 from the last edition) • Healthy life expectancy (-10 from the last edition) • Complications (-10 from the last edition)

ACTION TO CONSIDER: Target postoperative escalation and rebuild length of stay reporting to steer throughput and bed planning.



Poland

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• Post-operative sepsis (80/100) • UHC (80/100) • Graduates (80/100) • OOP expenditure (80/100)	• Post-operative sepsis 80/100 (vs. 33/100 all-country average) • Graduates 80/100 (vs. 52/100 all-country average) • tCO2e /capita 70/100 (vs. 52/100 all-country average)	• Length of stay (+20 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Complications (20/100) • Preventable deaths (30/100) • Nurse to doctor ratio (40/100) • Length of stay (40/100)	• Preventable deaths 30/100 (vs. 50/100 all-country average) • Nurse to doctor ratio 40/100 (vs. 56/100 all-country average)	• Nurse to doctor ratio (-10 from the last edition) • HALE (-10 from the last edition) • Adverse effects (-10 from the last edition)

ACTION TO CONSIDER: Spread perioperative bundles nationally and target preventable death drivers with earlier detection and chronic care coordination.



Spain

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• Graduates (80/100) • HALE (80/100) • OOP expenditure (80/100) • UHC (80/100)	• HALE 80/100 (vs. 71/100 all-country average) • UHC 80/100 (vs. 74/100 all-country average) • Preventable deaths 70/100 (vs. 50/100 all-country average) • tCO_2e /capita 70/100 (vs. 52/100 all-country average)	• HAI (+10 from the last edition) • Adverse effects (+10 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Staff 55+ (10/100) • Post-operative sepsis (30/100) • Nurse to doctor ratio (30/100)	• Nurse to doctor ratio 30/100 (vs. 56/100 all-country average) • HAI 40/100 (vs. 53/100 all-country average)	• UHC (-10 from the last edition) • HALE (-10 from the last edition) • Doctor availability (-10 from the last edition)

ACTION TO CONSIDER: Sustain HAI gains and strengthen nurse doctor team balance to support elective throughput.



Sweden

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• EHR (100/100) • AMR deaths (90/100) • HALE (90/100) • Nurse availability (90/100) • OOP expenditure (90/100)	• HALE 90/100 (vs. 71/100 all-country average) • Sepsis 50/100 (vs. 42/100 all-country average)	• None recorded
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• ICU beds (10/100) • Staff 55+ (20/100) • HAI (30/100) • Post-operative sepsis (40/100)	• ICU beds 10/100 (vs. 46/100 all-country average) • Staff 55+ 20/100 (vs. 44/100 all-country average)	• Doctor availability (-40 from the last edition) • Nurse availability (-10 from the last edition) • UHC (-10 from the last edition)

ACTION TO CONSIDER: Rebuild medical staffing and add ICU surge capacity while protecting perioperative reliability.

Switzerland

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• Health expenditure (100/100) • Nurse availability (100/100) • Nurse to doctor ratio (100/100) • AMR deaths (90/100) • UHC (90/100)	• Nurse availability 100/100 (vs. 77/100 all-country average) • Nurse to doctor ratio 100/100 (vs. 56/100 all-country average)	• None recorded
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• HC footprint (10/100) • tCO_2e /capita (10/100) • ICU beds (20/100) • Length of stay (20/100)	• Length of stay 20/100 (vs. 42/100 all-country average) • ICU beds 20/100 (vs. 46/100 all-country average) • Staff 55+ 30/100 (vs. 44/100 all-country average)	• Doctor availability (-10 from the last edition) • Complications (-10 from the last edition) • Length of stay (-10 from the last edition)

ACTION TO CONSIDER: Leverage strong nursing to accelerate early mobilisation and discharge; invest in ICU readiness.

United Kingdom

▲ KEY STRENGTHS	▲ ABOVE AVERAGE	▲ AREAS IMPROVING
• UHC (100/100) • Nurse availability (90/100) • OOP expenditure (90/100) • AMR deaths (80/100) • Current health expenditure (80/100) • Healthy life expectancy (80/100)	• UHC 100/100 (vs. 74/100 all-country average) • Nurse availability 90/100 (vs. 77/100 all-country average) • OOP expenditure 90/100 (vs. 73/100 all-country average)	• Adverse effects (+10 from the last edition)
▼ KEY WEAKNESSES	**▼ BELOW AVERAGE**	**▼ AREAS DECLINING**
• Length of stay (10/100) • Staff 55+ (10/100) • Post-operative sepsis (10/100) • Bed occupancy (30/100) • Sepsis (30/100) • tCO_2e /capita (30/100)	• Length of stay 10/100 (vs. 42/100 all-country average) • Post-operative sepsis 10/100 (vs. 33/100 all-country average) • tCO_2e /capita 30/100 (vs. 52/100 all-country average) • Doctor availability 40/100 (vs. 50/100 all-country average)	• Preventable deaths (-10 from the last edition) • Length of stay (-10 from the last edition)

ACTION TO CONSIDER: Tighten perioperative sepsis response and scale early supported discharge to recover length of stay without adding beds.



APPENDIX

In this edition of the Healthcare Resilience Barometer, we have introduced a new indicator group: environmental sustainability.

In previous versions of the Barometer, environmental sustainability indicators were included in country efficiency scores, but countries in this year's Barometer received separate efficiency and environmental sustainability scores based on the groupings of indicators outlined below.

Given the slight variation in indicators included in the Barometer year-on-year, the scores are not directly comparable between editions of the Barometer. Nonetheless, the Barometer has been designed to retain a stable core of indicators within each domain, allowing for meaningful assessment of directional change over time.

Table 1: Full indicator descriptions and sources

PRIMARY AND SECONDARY DATA SOURCES					
New	Indicator	Full description	Year	Source	Date Accessed
PATIENT SAFETY					
	Adverse effects	Adverse effects of medical treatment rate per 100,000 population	2022	IHME	07.04.2026
	Complications	Complications following therapeutic procedures	2022	IHME	07.04.2026
	AMR Deaths	AMR death rate per 100,000 population	2021	IHME	07.04.2026
	Sepsis	Sepsis incidence rate per 100,000 population	2021	The Lancet	16.03.2026
	HAI - total	HAI prevalence (%)	2022-23	ECDC	16.03.2026
	HAI - SSI	% of SSIs per 100 operations	2021-22	ECDC	16.03.2026
New	Post-operative sepsis	Post-operative sepsis per 100,000 hospital discharges	2020-21	OECD	16.03.2026
	UHC Coverage	UHC Service Coverage Index (SDG 3.8.1)	2023	WHO	16.03.2026
HEALTHCARE WORKFORCE					
	Nurse to patient ratio (Nurses)	Nursing and midwifery personnel (per 10,000 population)	2022-23	WHO	16.03.2026
	Doctor to patient ratio (Doctors)	Medical doctors (per 10,000 population)	2023	WHO	16.03.2026
	Ratio of nurses per doctor	Ratio of nurses to doctors	2023	OECD	16.03.2026
New	Total number of staff >55 y/o	Total number of doctors and nurses over the age of 55	2022-23	WHO National Health Workforce Accounts (NHWA) Data Portal	16.03.2026
New	Total number of physician and nursing graduates	Total number of physician and nursing graduates	2023-24	Eurostat	16.03.2026
EFFICIENCY					
	Length of stay	Length of hospital stay, acute care (number of days)	2022	OECD	16.03.2026
	Current health expenditure (per capita in US$)	Current health expenditure (CHE) per capita in US$	2026	WHO	16.03.2026
	Preventable deaths	Potential years of life lost (per 100,000 population)	2022-23	OECD	16.03.2026
	Healthy life expectancy	Healthy life expectancy (HALE) at birth (years)	2024	WHO	16.03.2026
New	Adult ICU beds	Adult ICU beds per 100,000 population	2023	OECD	16.03.2026
New	Bed occupancy rate	Occupancy rate of curative acute care beds	2023	OECD	16.03.2026
New	Out-of-pocket expenditure	Out-of-pocket expenditure as percentage of current health expenditure (CHE) (%)	2023	WHO	16.03.2026
New	Use of electronic clinical records	Use of electronic clinical records by physicians and hospitals	2021	OECD	16.03.2026

PRIMARY AND SECONDARY DATA SOURCES					
New	Indicator	Full description	Year	Source	Date Accessed
ENVIRONMENTAL SUSTAINABILITY (NEW)					
New	Healthcare Greenhouse Gas Emissions (per capita)	Per capita Greenhouse Gas emissions from national healthcare sector consumption	2022	The Lancet	16.03.2026
	Healthcare footprint as a % of national footprint	Healthcare footprint as a percentage of national emissions	2019	Healthcare Without Harm	16.03.2026
	Healthcare footprint per capita (tCO_2e / capita)	Healthcare footprint per capita ordered by percentage of GDP spent on health care	2019	Healthcare Without Harm	16.03.2026

Table 2: Full list of stakeholders interviewed

Name	Country	Title & Organisation
Dr Rafael Bengoa	Spain	Senior Fellow, Harvard University and Former Director of Health Systems at the WHO
Prof. Dr Robert S. Kaplan	USA	Emeritus Professor of Leadership Development at the Harvard Business School
Prof. Dr Dominique Vandijck	Belgium	Full Professor of Health Economics, Health Policy, Healthcare Innovation & Quality Management, Ghent University
Alexandra Hammond	UK	Associate Director, Net Zero and Sustainable Procurement at NHS England
Prof. Dr Dirk De Ridder	Belgium	Director of Quality & Head Institute for Healthcare Policy, UZ Leuven
Prof. Dr Anders Ahlsson	Sweden	Director of Health and Medical Services, Region Stockholm
Amah Kouevi	France	Director, French Patient Experience Institute
Dr Matthias Gründling	Germany	Head of the Sepsis Dialogue at the University Medical Center Greifswald
Sonya Carassik Ratty	UK	Chief Executive, Adapt & Live

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 four thematic areas: patient safety, the healthcare workforce, sustainability, 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 country, aiming for a normal distribution bell curve, whilst still maintaining a standard range size where possible.

Interpreting the Barometer scores

As the original data point 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 the 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.



Table 3: Barometer scoring system per indicator

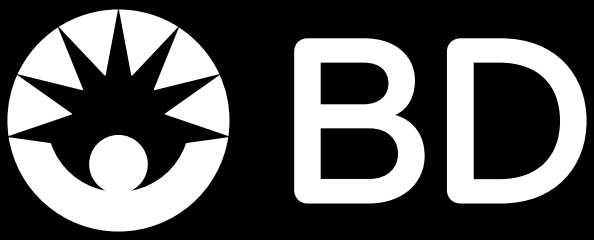
Indicator	Source	Original scale unit of measurement	Barometer score assigned
PATIENT SAFETY			
Adverse effects	IHME	Rate per 100,000 population	<0.25 = 100 >6 = 10
Complications	IHME	Rate per 100,000 population	<10 = 100 >70 = 10
AMR Deaths	IHME	Rate per 100,000 population	<18 = 100 >162 = 10
Sepsis	The Lancet	Rate per 100,000 population	<250 = 100 >2,250 = 10
HAI - total	ECDC	Prevalence %	<1.3 = 100 >11.7 = 10
HAI - SSI	ECDC	% of SSIs per 100 operations	<1 = 100 >9 = 10
Post-operative sepsis	OECD	Per 100,000 hospital discharges	<50 = 100 >3,500.01 = 10
UHC Coverage	WHO	UHC Service Coverage Index	<40 = 10 >87.51 = 100
HEALTHCARE WORKFORCE			
Nurse to patient ratio (Nurses)	WHO	Nursing and midwifery personnel per 10,000	>145 = 100 <10 = 10
Doctor to patient ratio (Doctors)	WHO	Medical doctors per 10,000	<9 = 10 >81 = 100
Ratio of nurses per doctor	OECD	Ratio of nurses to doctors	< 0.45 = 10 >4.05 = 100
Total number of staff >55 y/o	WHO National Health Workforce Accounts (NHWA) Data Portal	Total number of doctors and nurses over age 55	<250 = 100 >100,000.01=10
Total number of physician and nursing graduates	Eurostat	Total number of physician and nursing graduates	<250 = 10 >35,000.01 = 100

Indicator	Source	Original scale unit of measurement	Barometer score assigned
EFFICIENCY			
Length of stay	OECD	Length of hospital stay, acute care (number of days)	<4 = 100 >7.21= 10
Current health expenditure (per capita in US$)	WHO	Expenditure per capita (USD)	<50 = 10 >8,800.01 = 100
Preventable deaths	OECD	Potential years life lost (per 100,000 persons)	<870 = 100 >7,830 =10
Healthy life expectancy	WHO	Healthy life expectancy (HALE) at birth (years)	<50 = 10 >74 = 100
Adult ICU beds	OECD	Adult ICU beds per 100,000	<4.5 = 10 >40.5 = 100
Bed occupancy rate	OECD	Occupancy rate of curative acute care beds	<50 = 100 >90 = 10
Out-of-pocket expenditure	WHO	OOP expenditure as percentage of current health expenditure (%)	<7.5 = 100 >67.5 = 10
Use of electronic clinical records	OECD	Use of ECR by physicians and hospitals	<10 = 10 >90.01 = 100
ENVIRONMENTAL SUSTAINABILITY			
Healthcare Greenhouse Gas Emissions (per capita)	The Lancet	Per capita GHG emissions from national healthcare sector consumption	<15 = 100 >2,000.01 = 10
Healthcare footprint as a % of national footprint	Healthcare Without Harm	Footprint as % of national emissions	< 0.7 = 100 >6.3 = 10
Healthcare footprint per capita (tCO_2e / capita)	Healthcare Without Harm	Footprint per capita by % of GDP spent on healthcare	<0.09 =100 >0.81 = 10

Table 4: 2024 vs 2026 Barometer category average and total score comparisons by country

Country (A-L)	Patient Safety Average Score		Healthcare Workforce Average Score		Environmental Sustainability Average Score		Efficiency Average Score		Barometer total average score	
	2024	2026	2024	2026	2024	2026	2024	2026	2024	2026
Albania	60.0	58.0	40.0	53.3	-	70.0	63.3	50.0	54.2	55.8
Austria	67.8	65.7	65.0	60.0	-	40.0	55.7	64.3	63.0	60.5
Azerbaijan	60.0	62.5	55.0	50.0	-	80.0	43.3	36.7	54.0	54.0
Belarus	64.0	54.0	76.7	63.3	-	70.0	46.7	56.7	62.7	58.3
Belgium	52.5	60.0	74.0	74.0	-	23.3	50.0	67.5	57.4	60.9
Bos. & Herz.	50.0	44.0	50.0	56.7	-	60.0	66.7	56.7	54.5	51.7
Bulgaria	63.8	51.7	35.0	44.0	-	46.7	44.3	58.3	50.5	51.0
Croatia	60.0	48.0	80.0	54.0	-	73.3	61.4	58.3	64.7	56.8
Cyprus	60.0	64.0	57.5	37.5	-	63.3	70.0	76.7	62.5	59.3
Czechia	55.0	50.0	65.0	52.0	-	35.0	53.3	72.5	56.7	57.6
Denmark	74.0	72.0	52.0	60.0	-	30.0	60.0	82.0	61.9	64.4
Estonia	62.2	60.0	55.0	52.0	-	26.7	42.9	66.3	54.0	56.1
Finland	74.4	68.6	66.0	70.0	-	40.0	55.7	65.7	66.2	64.1
France	65.7	61.7	74.0	60.0	-	56.7	68.3	68.6	68.9	62.9
Georgia	52.0	52.5	65.0	56.7	-	70.0	50.0	43.3	54.0	52.7
Germany	63.3	66.7	78.3	64.0	-	36.7	52.9	67.5	64.1	62.3
Greece	44.3	40.0	73.3	50.0	-	63.3	61.7	66.7	56.3	54.0
Hungary	58.9	53.3	60.0	46.0	-	60.0	51.4	62.5	56.5	55.9
Iceland	67.5	73.3	65.0	62.0	-	10.0	74.0	74.3	68.8	67.4
Ireland	58.8	68.3	76.7	68.0	-	50.0	61.7	58.6	62.9	62.4
Israel	-	60.0	-	50.0	-	20.0	-	67.5	-	58.9
Italy	65.6	60.0	57.5	52.0	-	60.0	58.3	58.8	61.6	57.8
Latvia	52.5	52.0	34.0	44.0	-	70.0	56.7	51.4	48.9	52.5
Lithuania	60.0	55.7	66.0	56.0	-	80.0	50.0	57.5	58.1	59.6
Luxembourg	58.8	65.0	60.0	60.0	-	23.3	57.1	68.8	58.4	59.5

Country (M-U)	Patient Safety Average Score		Healthcare Workforce Average Score		Sustainability Average Score		Efficiency Average Score		Barometer total average score	
	2024	2026	2024	2026	2024	2026	2024	2026	2024	2026
Malta	51.1	65.0	85.0	62.5	-	40.0	66.0	70.0	60.0	60.6
Moldova	56.0	60.0	40.0	50.0	-	70.0	36.7	50.0	45.8	55.4
Montenegro	70.0	55.0	50.0	50.0	-	50.0	53.3	66.7	60.0	55.7
Netherlands	60.0	58.3	67.5	62.0	-	30.0	57.1	72.9	60.5	60.0
N. Macedonia	66.0	54.0	43.3	45.0	-	70.0	46.7	50.0	54.5	51.5
Norway	82.5	73.3	77.5	66.0	-	46.7	66.7	76.7	76.1	68.5
Poland	65.0	56.7	55.0	60.0	-	60.0	48.6	56.7	56.8	57.9
Portugal	56.7	47.5	85.0	58.0	-	56.7	57.1	56.3	62.5	53.8
Romania	70.0	58.3	66.7	56.0	-	76.7	54.3	50.0	63.3	58.9
Russia	58.0	48.0	60.0	80.0	-	60.0	48.0	56.7	54.2	55.5
Serbia	60.0	56.7	46.7	55.0	-	60.0	56.7	56.7	56.4	56.4
Slovakia	63.3	48.6	65.0	52.5	-	65.0	54.0	57.5	61.1	53.5
Slovenia	45.7	40.0	70.0	56.0	-	53.3	58.6	71.4	56.1	56.2
Spain	56.3	54.3	54.0	48.0	-	56.7	62.9	62.9	58.0	55.9
Sweden	78.0	58.6	68.0	58.0	-	53.3	65.0	71.4	70.0	61.8
Switzerland	82.0	70.0	76.0	70.0	-	13.3	65.0	57.1	73.8	57.6
Turkey	70.0	70.0	50.0	44.0	-	70.0	54.0	70.0	58.6	63.8
Ukraine	62.0	56.0	55.0	55.0	-	-	36.7	40.0	53.0	51.0
UK	60.0	56.7	68.3	52.5	-	36.7	51.7	56.7	60.0	52.6



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