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SWISS SEPSIS REPORT 2025

Burden of Sepsis in Switzerland, 2019–2023

Findings from a Nationwide Population-Based Analysis

SWISS SEPSIS PROGRAM

“The findings show that, even in a well-resourced country like Switzerland, sepsis remains one of the leading contributors to morbidity, mortality, and healthcare costs. The task will now be to reduce this burden – for patients, for Swiss society and for the world.”

Prof. Simon Finfer

Foreword
by Prof. Simon Finfer

Sepsis remains one of the world's most pressing but under-recognised health challenges, responsible for over 11 million deaths annually. It affects people of all ages, progresses rapidly, and leaves many survivors with long-term complications. Despite this enormous burden, sepsis continues to receive far less attention than other health threats.

In 2017, the World Health Assembly passed a landmark resolution calling on all countries to strengthen sepsis prevention, recognition, and care. Since then, progress has been made, with several countries, including Switzerland, creating national action plans. These allow countries to formulate strategies on how to embed early recognition, evidence-based management pathways, and continuous learning into routine practice through sustainable national quality improvement (QI) programs.

The recently launched 2030 Global Agenda for Sepsis, led by the Global Sepsis Alliance with broad international collaboration, sets ambitious goals to meet by 2030: reducing sepsis incidence by 25 %, improving survival by more than 20 %, and lowering costs by 20 %. Achieving these targets requires sustainable implementation of quality improvement, backed by international collaboration. We can learn from each other to gain greater efficiency towards this goal – by shared learnings across borders. Only through consistent data and coordinated surveillance can we truly measure progress and drive change.

As one of the wealthier countries in the world, with one of the highest per capita healthcare expenditures and a reputation for excellent healthcare and research, Switzerland has now completed a commendable effort to detail the contemporary burden of sepsis. The report stands out by assessing burden on all age groups, from birth to senescence, covering years from before the COVID-19 pandemic to post-pandemic, and by assessing cost effects as well as mortality beyond the initial hospitalisation.

This report, for the first time, provides robust national data on sepsis incidence, outcomes, and costs. The findings are striking, over 20,000 hospitalisations and around 4,000 deaths each year, with sepsis consuming a disproportionate share of health care resources at quite staggering cost. The authors' models also show that even these worrying numbers are likely a substantial underestimate of the true burden: applying implicit coding rules to patients with infection and organ dysfunction who were not coded as sepsis, the burden was even several fold higher. This analysis marks an important step toward enhancing surveillance and quality improvement in Switzerland, and, through example, contributes to global initiatives. The findings show that, even in a well-resourced country like Switzerland, sepsis remains one of the leading contributors to morbidity, mortality, and healthcare costs. The task will now be to reduce this burden – for patients, for Swiss society and for the world.

Sepsis is preventable, treatable, and survivable. Switzerland's leadership adds momentum to the global effort, and international collaboration will be the key to turning The Global Sepsis Alliance's vision of "A world without sepsis" into reality.

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1 Executive Summary

Background

Sepsis is a life-threatening medical emergency that happens when the body's response to an infection spirals out of control, damaging the body's own tissues and organs. Without rapid recognition and treatment, sepsis can progress to multi-organ failure, septic shock, and even death. Survivors, however, frequently experience long-term consequences that may last for months or years and have a profound impact on quality of life, independence, and participation in society. Globally, sepsis is responsible for around 11 million deaths each year[1], making it one of the leading causes of mortality worldwide, even in high-income countries with advanced healthcare systems[2,3]. Despite its high burden, sepsis receives little public and professional attention, which contributes to delayed recognition, underdiagnosis, and inconsistent reporting – all of which make it harder to measure and manage effectively.

In 2017, the World Health Organisation (WHO)[4] urged all member states to take action on sepsis. Switzerland responded in 2022 with the Swiss Sepsis National Action Plan (SSNAP)[5], and in 2023 launched the Swiss Sepsis Program (SSP), a five-year initiative funded by the Federal Quality Commission. Led by the University Children's Hospital Zurich, Inselspital Bern, and the Centre Hospitalier Universitaire Vaudois (CHUV), the program aims to raise awareness, improve care, and build a national registry to enable consistent monitoring and benchmarking of sepsis care across hospitals.

The Swiss Sepsis Report

The analyses for this first Swiss Sepsis Report demonstrate that sepsis is a frequent, deadly, and costly health problem in Switzerland, yet still underestimated. Aimed at policymakers, healthcare professionals, researchers, and the public, the report seeks to raise awareness of the magnitude of the problem, provide a common evidence base for decision-making, and support continuous improvement in sepsis care. The report summarises findings from a comprehensive analysis of all acute-care hospital discharge records in Switzerland between 2019 and 2023 covering all age groups. It examines sepsis incidence, mortality, healthcare use, and direct hospital costs, providing comprehensive and contemporary estimates of the burden of sepsis in Switzerland. A preprint of the corresponding scientific manuscript is available at the following link.

Key Findings for Switzerland

Between 2019 and 2023, there were about 20,000 sepsis-coded hospitalisations each year in Switzerland, including 500–600 in children. During this period, nearly 4,000 patients died in hospital annually – comparable in number to the deaths from breast, bowel, and prostate cancer combined[6] – with no visible improvements from year to year. Sepsis-coded hospital stays were considerably longer than those for other conditions, with many involving treatment in intensive care and mechanical ventilation. The associated annual direct costs amounted to CHF 1.07 billion in 2023 (see Key Findings at a Glance, p. 6). The volume of sepsis admissions was comparable to that of other medical emergencies, such as heart attacks (~19,000 cases per year)[7], and stroke (~22,000 cases per year)[8]. These findings may still underestimate the true burden, as many cases of patients with sepsis remain undetected or inadequately documented. Despite this enormous burden, public and professional awareness on sepsis remains limited.

Conclusion

By systematically measuring the burden of sepsis, Switzerland can track progress, identify gaps, and ensure accountability. This report marks an important step toward making sepsis visible and urgent in the public and policy arena.

Priorities for Action

To reduce and measure the burden of sepsis on patients and society, Switzerland needs:

- Improved detection, harmonised definitions and coding, and robust surveillance to ensure consistent identification and monitoring of all cases
- Enhanced public and professional awareness, comparable to existing campaigns for heart attack, stroke, and cancer
- Sustainable implementation of quality improvement at healthcare facilities, with emphasis on earlier recognition and timely, evidence-based treatment
- Long-term support for survivors, including structured follow-up and rehabilitation care
- Strengthened international collaboration to enable benchmarking and comparison with other countries

Through the implementation of these measures, a substantial proportion of sepsis-related deaths could be prevented, long-term complications mitigated, and the overall societal burden significantly reduced.

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Key Findings at a Glance

Overall burden of sepsis in Switzerland

- Each year, there were around 20,000 explicit sepsis-coded hospital stays (about 1.6 % of all acute-care hospital admissions), including more than 500 in children, with older adults most affected.
- The actual number of cases was up to four times higher if hospitalisations with an implicit sepsis code (infection and organ dysfunction) were also included.
- Compared to other medical emergencies, annual sepsis hospitalisations in Switzerland were in the same range as those for heart attacks (~19,000)[7] and strokes (~22,000)[8].
- Each year, around one in five people hospitalised with sepsis died, amounting to around 4,000 in-hospital deaths – a toll comparable to the combined deaths from bowel, breast, and prostate cancer[6].
- Despite advances in medical care, in-hospital mortality did not decline in recent years.
- About 40 % of sepsis-coded hospitalisations involved an intensive care admission, and their length of stay was almost three times longer than for non-sepsis hospital admissions.
- Between 2019 and 2023, annual case numbers remained consistent. Direct hospital costs continued to rise from year to year, increasing faster than inflation.

Key facts

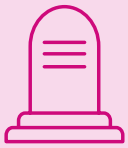
Sepsis in Switzerland in 2023

21,001
sepsis-coded hospital stays
1.6 % of all acute care hospital stays, including 6,098 cases with septic shock (29.3 %)

70.2 %
of cases occurred in patients ≥65 years
14,733 cases

Median hospital length of stay
9 days
vs. 3 days for non-sepsis admissions

Proportions of sepsis cases with intensive care unit admission
40.7 %
8,542 cases



IN-HOSPITAL MORTALITY

All cases
18.9 %
3,971 deaths

Septic shock
32.6 %
1,991 deaths in 6,098 septic shock cases

Older adults ≥ 65 years
22.3 %
3,289 deaths in 14,733 cases

Pediatric age groups (excluding newborns)
5.3 %
19 deaths in 358 cases

Newborn (< 29 days of life)
11.6 %
28 deaths in 241 cases

Average cost per sepsis-coded hospital stay
CHF 51,018

Annual direct hospital costs
CHF 1.07 billion
not including readmissions, rehabilitation and follow-up care or indirect costs due to lost income, or the long-term impact on patients and families

3
Sepsis in Switzerland, 2019–2023

3.1 Background

Sepsis is a life-threatening medical emergency that happens when the body's response to an infection spirals out of control. Instead of eliminating the infection, this uncontrolled reaction damages the body's own tissues and organs. Without rapid recognition and treatment, sepsis can progress to multi-organ failure, septic shock, and even death. It mostly results from bacterial infections and, less commonly, viral, fungal, or even parasitic infections. Affecting people of all ages, it arises suddenly and progresses rapidly, making early detection and treatment critical. Survivors, however, frequently face long-term consequences. These include persistent physical, cognitive, and psychological impairments – such as fatigue, mobility problems, memory loss, anxiety, or depression – that may last for months or years and have a profound impact on quality of life, independence, and participation in society.

The burden of sepsis is not evenly distributed. Although it can affect all age groups, the risk is greatest in newborns and in older adults, particularly those with multiple chronic conditions. Many of these patients require intensive care and face a much higher risk of dying during or after hospitalisation than younger, healthier individuals.

Beyond its human toll, sepsis is among the most costly conditions treated in hospitals, placing a substantial strain on healthcare systems and society. Patients often require intensive care, prolonged hospital stays, and repeated readmissions. Yet hospital costs capture only part of the impact. Indirect costs – such as rehabilitation, long-term care, reduced quality of life, and lost productivity – contribute significantly to the overall burden but are difficult to capture and quantify.

Robust sepsis surveillance remains challenging. Differences in clinical definitions, under-recognition, and

variable coding practices lead to underestimation and hinder national and international comparability.

In Switzerland, limited data exist on survival outcomes beyond hospital admission and sepsis-related healthcare costs, and no recent nationwide study has comprehensively combined hospital discharge, cost, and mortality records to assess the full burden of sepsis. The Swiss National Action Plan in 2022 defined the need for better evaluation and rigorous reporting on the national sepsis burden[5]. The present analysis addresses that gap and provides the first comprehensive national estimates of sepsis in Switzerland.

3.2 Methods

To address the lack of national data on sepsis in Switzerland, we conducted a nationwide analysis of all acute-care hospital admissions between 2019 and 2023. Incidence of sepsis-coded hospitalisations, in-hospital and 360-day mortality, healthcare resource utilisation, and direct hospital costs were examined. Hospital discharge data were provided and linked to national vital records by the Swiss Federal Statistical Office.

Experience in other countries has shown when clinicians do not detect or document sepsis, hospital administrations often code sepsis patients using other codes such as pneumonia, even in patients who meet international criteria for sepsis or septic shock[9], leading to under-coding and underestimation of its true incidence[10]. Therefore, Swiss coding and public health experts defined two types of case criteria to identify patients with sepsis for the present report. Cases were identified using both explicit sepsis codes (based on sepsis-specific ICD-10 codes) and a broader implicit definition combining infection and organ dysfunction codes. This allowed us to estimate the burden of sepsis in Switzerland more accurately.

Experience from other countries shows that if sepsis is not detected or documented, it is often coded as another diagnosis, leading to underestimation of its true incidence.

Notes on Methods and Terminology

ICD-10 codes
The International Classification of Diseases, 10th Revision (ICD-10) is the international standard for coding diseases and health conditions. Each diagnosis is assigned a unique alphanumeric code to ensure consistent recording and reporting across hospitals, insurers, and countries. Switzerland uses the ICD-10 German Modification (ICD-10-GM).

Explicit sepsis case definitions
We define explicit sepsis as hospital stays where sepsis was directly coded as a **primary or secondary diagnosis** using sepsis-specific ICD-10 codes. This approach captures sepsis cases with high specificity but low sensitivity, because many cases are not explicitly coded.

Implicit sepsis case definitions
We define implicit sepsis as hospital stays where both an infection code and an acute organ dysfunction code were recorded during the same admission. This approach increases sensitivity but reduces specificity, as it may also capture patients without sepsis. In this analysis, we included explicit cases within the implicit group.

Hospital stays vs persons
The results are based on hospital discharge records and reflect hospital stays with sepsis codes, not individual patients. A single patient may therefore be counted more than once if transferred between hospitals during the same episode of care.

Incidence
In this report, incidence refers to the number of new sepsis-coded hospital stays within a defined population and period of time.

3.3 Results

3.3.1
Sepsis incidence and hospitalisations

Between 2019 and 2023, about 100,000 hospital stays (1.6 % of all acute-care hospitalisations) in Switzerland were explicitly coded as sepsis, corresponding to around 20,000 cases per year. Each year, these cases led to around 4,000 in-hospital deaths. Because clinicians do not always recognise or document sepsis directly, we then compared this to a model where a broader "implicit" definition was applied. Using the implicit definition captured 72,000 – 90,000 cases annually where infection and organ dysfunction were coded together during the same admission. Explicit cases were included within this implicit definition. This shows that relying on explicit coding alone underestimates the real burden of sepsis.

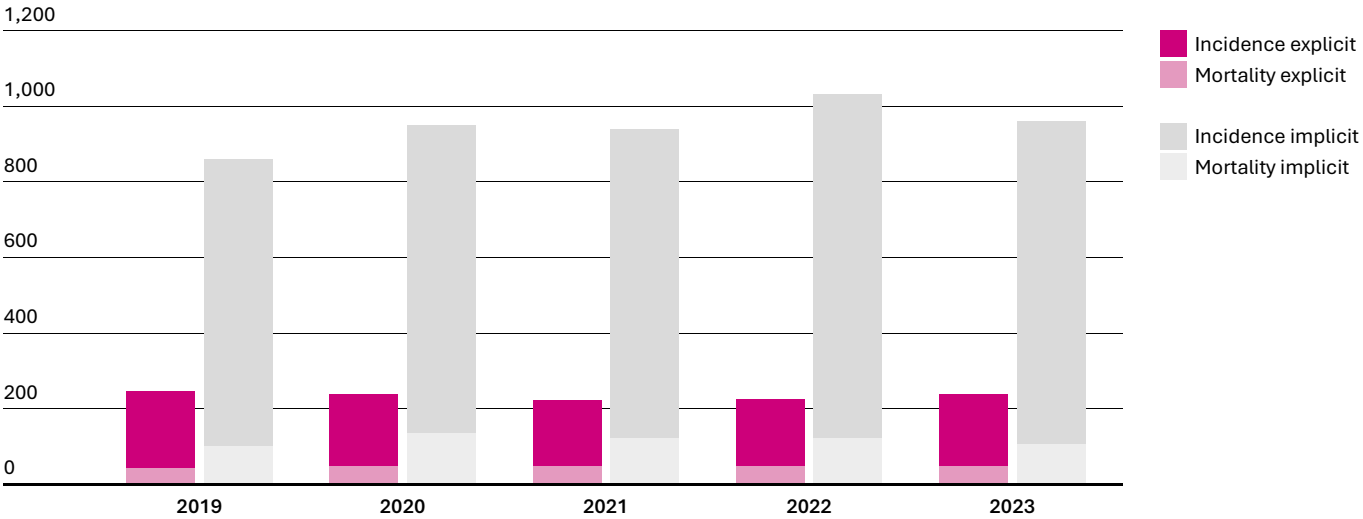
Age- and sex-standardised sepsis incidence and mortality rates remained relatively stable over the five-year period.

Age- and sex-standardised sepsis incidence and mortality rates remained relatively stable over the five-year period (explicit sepsis: 240 cases per 100,000 population and 45 deaths per 100,000 population, respectively). A small decline was observed during the COVID-19 pandemic in 2020 – 2021, but rates returned almost back to pre-pandemic levels by 2023.

FIGURE 1

Incidence and mortality of explicit and implicit sepsis hospitalisations

per 100,000 population in Switzerland, 2019 – 2023



In absolute numbers	2019	2020	2021	2022	2023
Incidence explicit	20,495	19,835	18,775	19,473	21,001
Mortality explicit	3,681	4,111	3,988	4,079	3,971

Annual age- and sex-standardised incidence and in-hospital mortality rates are shown separately for explicit sepsis (coded cases) and implicit sepsis (cases identified through infection plus organ dysfunction codes) hospitalisations. Incidence describes how often new cases of sepsis hospitalisations occurred in the population within a year, while standardisation adjusts for differences in the age and sex structure of the population, allowing fair comparison of sepsis incidence and mortality over time.

Key point

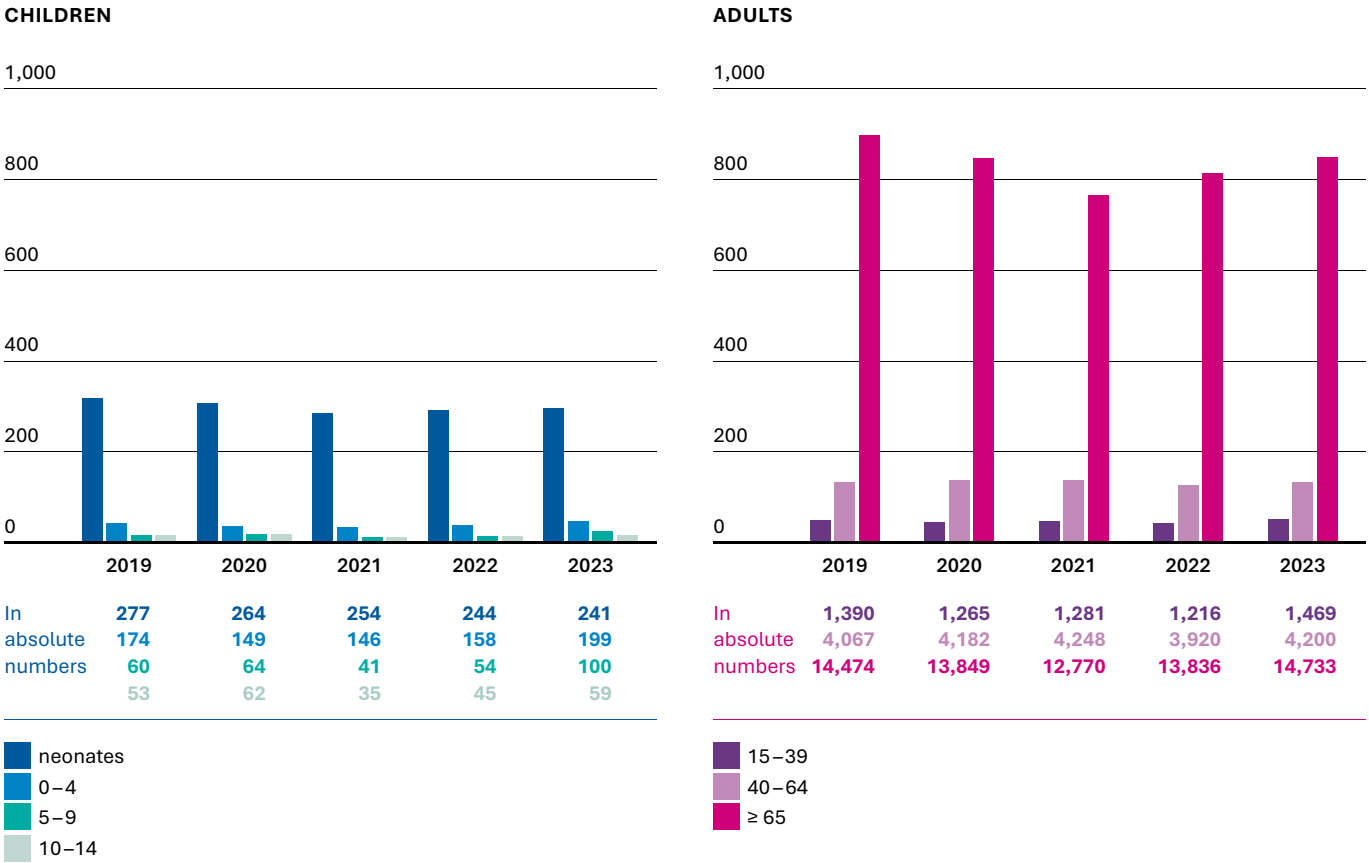
Around 80 % of sepsis admissions were emergencies, and one in four cases was coded as septic shock, the most severe form of sepsis, associated with vasopressor use, circulatory collapse, and a high risk of mortality. Explicit sepsis disproportionally affected older adults: ~70 % of cases were in patients over 65, with higher rates in men than women. Among patients aged 65 years and older, around 20 % of sepsis-coded hospitalisations involved two or more comorbidities, such as cancer, diabetes, chronic lung disease, or kidney disease. In children, 500–600 explicit sepsis hospitalisations occurred annually, with about half of the cases occurring in newborns.

Each year, approximately 20,000 sepsis-coded hospitalisations occurred in Switzerland, mostly in adults ≥65 years with comorbidities; one in four developed septic shock. Each year, 500 to 600 children are affected by sepsis, with almost half of the cases occurring in newborns.

FIGURE 2

Annual incidence of explicit sepsis hospitalisations

per 100,000 population by age group in children and adults, Switzerland, 2019–2023



Population-based incidence and hospitalisation counts are shown separately for children and adults.
A U-shaped pattern was observed: population-level (incidence) was highest in newborns (more than three times that of older children) and again in older adults, with the highest rates and the majority of cases occurring in those ≥65 years.
Note: Rates in newborns are reported per 100,000 live births and are not included in the 0–4-year age group.

Key point

3.3.2 Pathogen types

Most sepsis cases were associated with bacterial infections. However, the number of viral infections increased during the COVID-19 pandemic. In adults, viral codes nearly doubled between 2019 and 2021, mainly attributable to SARS-CoV-2. The number of implicit sepsis cases with viral infection codes increased even more, suggesting that many severe COVID-19 cases met sepsis criteria but were not explicitly coded.

In children, the number of viral infections in explicit sepsis declined slightly during the pandemic and rose above pre-pandemic levels in 2023, likely reflecting the protective effect of infection control measures during restrictions and a subsequent rebound in viral transmissions.

Most explicit sepsis infections were bacterial. Viral infections, mainly linked to COVID-19, rose sharply in adults during the pandemic, while children experienced a temporary decline followed by a rebound in 2023.

Key point

3.3.3 Hospital Resource Use

Explicit sepsis-coded hospitalisations required far greater resources than non-sepsis admissions. In 2023, 40 % of sepsis admissions included an ICU stay, and about one in four (23 %) involved mechanical ventilation. Median length of stay was three times longer for sepsis admissions compared to non-sepsis admission (9 days vs. 3 days). Children, especially newborns, had the highest ICU and ventilation rates, with many neonatal sepsis admissions requiring prolonged hospitalisations lasting weeks.

Note: Coding data cannot determine causality, i.e. whether ICU treatment was required due to sepsis or co-existing conditions.

Sepsis hospitalisations were highly resource-intensive, often involving intensive care and mechanical ventilation, with the heaviest burden seen in children and newborns. Lengths of stay were nearly three times longer than for non-sepsis hospital stays.

3.3.4 Mortality

Key point

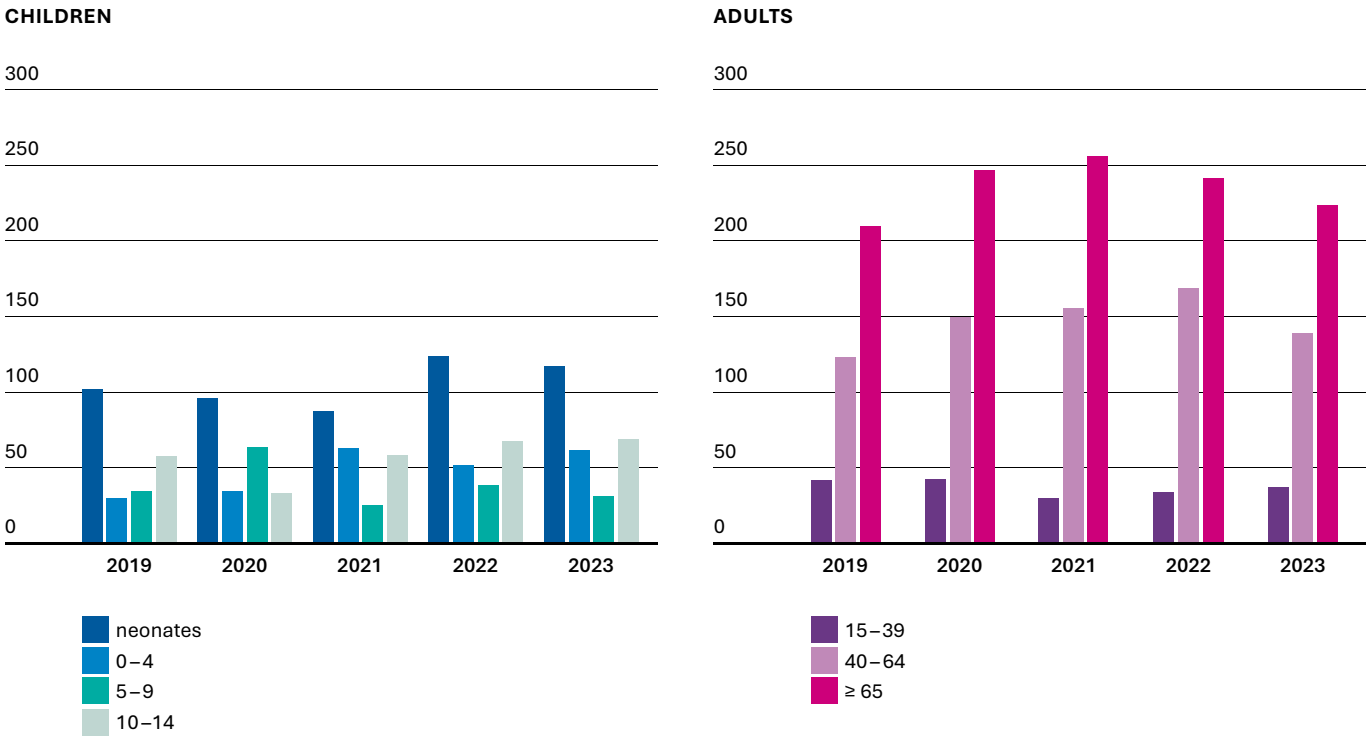
Each year, around 4,000 in-hospital deaths were recorded among sepsis-coded admissions. Mortality was highest in older adults, and although overall rates were low in children, newborns showed the greatest risk – highlighting that sepsis is a serious threat at all ages.

In-hospital mortality rate remained relatively stable across the five-year study period. Each year, about 4,000 cases with explicit sepsis hospitalisations died during their hospital stay, corresponding to an overall in-hospital mortality of 18–19 % for all explicit sepsis-coded hospitalisations and exceeding 30 % in the presence of septic shock. The risk of death was not evenly distributed: in patients aged 65 years and above, mortality was 20–25 % – more than three times higher than in younger adults and children (4–6 %) and about double the rate observed in newborns (10–12 %). More than 80 % of in-hospital deaths from sepsis occurred in this older age group, likely reflecting the impact of underlying comorbidities. Because the absolute number of deaths in children and newborns was small, mortality rates in these groups varied considerably from year to year – a common statistical effect when numbers are low.

FIGURE 3

Age-specific in-hospital mortality rates

per 1,000 explicit sepsis hospitalisations, Switzerland, 2019–2023



Mortality was highest in older adults (20–25 %) and among children it was highest in newborns (~10 %). Values represent all-cause in-hospital mortality, meaning any cause of death is included, not only sepsis. In-hospital deaths are shown per 1,000 explicit sepsis-coded hospital stays and for each eage group, meaning that for example a value of 200 per 1,000 means that 20 % of patients in that age group died during their hospital stay.

3.3.5
Post-admission Mortality (30-, 180-, 360-day)

Key point

In older adults with sepsis, nearly 30 % died within a year of entering the hospital – more than during the hospital stay itself – showing that the impact of sepsis often extends far beyond the initial episode.

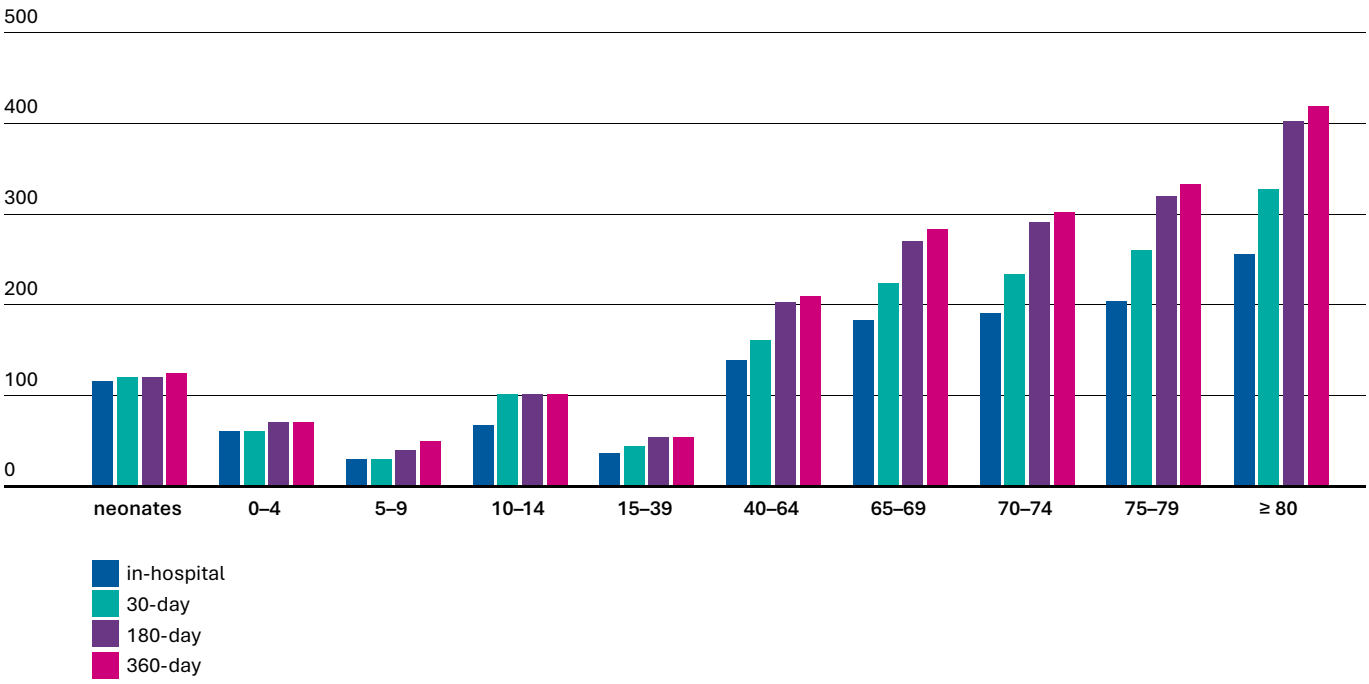
Mortality continued to increase after hospital admission, particularly among older adults. In patients aged ≥65 years, nearly one in four died during the index hospital stay, and by 360 days post-admission, almost 30 % had died.

In contrast, in neonates and children, mortality showed little increase over time from admission compared with in-hospital mortality, indicating that most deaths occurred during the acute hospital phase. The higher long-term mortality in older adults likely reflects their greater burden of chronic conditions, which both predispose to sepsis and worsen outcomes[11].

FIGURE 4

In-hospital, 30-day, 180-day, and 360-day all-cause mortality

per 1,000 explicit sepsis hospitalisations by age group, Switzerland, 2023



This figure shows the cumulative number of deaths per 1,000 sepsis-coded hospital stays in Switzerland in 2023 and represents all-cause mortality, meaning any cause of death is included. Mortality continued to increase after hospital admission, particularly among adults ≥65 years, with nearly one in three patients dying within one year of the hospital admission. In contrast, mortality among newborns and children showed little increase beyond the hospital stay. Mortality rates are cumulative, meaning that the numbers at 30, 180, and 360 days represent the total deaths up to that point in time. For example, the 180-day rate includes all deaths that occurred in hospital, within 30 days, and within 180 days after hospital admission.

3.3.6
Direct costs

Key point

Explicit sepsis-coded hospitalisations accounted for > CHF 1 billion in direct hospital costs in 2023 – over 6 % of total inpatient costs, despite making up < 2 % of all hospital admissions.

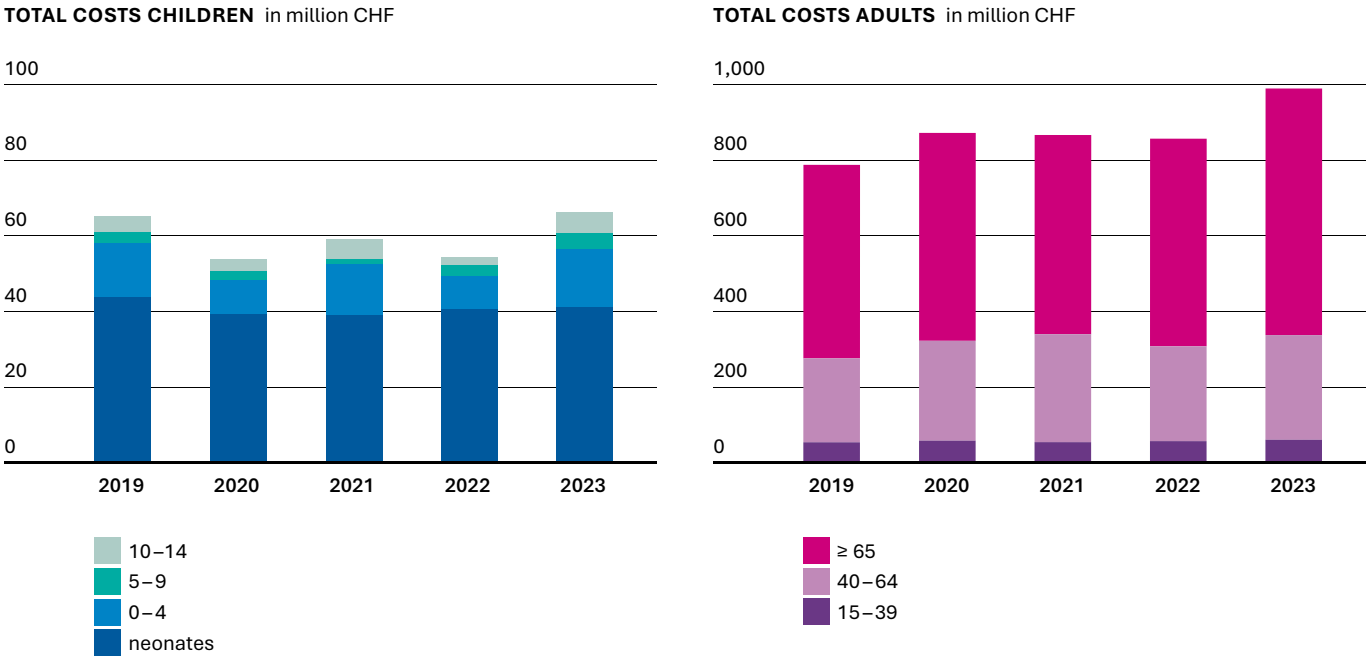
Direct hospital costs associated with the initial sepsis hospitalisation increased steadily over the study period. For explicit sepsis, total annual costs rose from CHF 870 million in 2019 to CHF 1.07 billion in 2023, while the total costs for implicit sepsis in 2023 amounted to CHF 3.15 billion. In 2023, the average cost per explicit sepsis hospitalisation was around CHF 51,000, increasing to over CHF 90,000 in cases with ICU admission or septic shock. Although representing 1.6 % of acute admissions, explicit sepsis-coded hospitalisations accounted for over 6 % of all inpatient costs, highlighting the disproportionate economic burden of sepsis on the healthcare system.

Considering follow-up care, rehabilitation, and readmissions over a three-year period, the cumulative direct costs of explicit sepsis in Switzerland can be extrapolated to roughly CHF 2 billion annually[11]. This estimate should be interpreted cautiously. Indirect costs – such as lost productivity, reduced quality of life, and long-term dependency among patients and families – are not included and would likely add substantially to the overall burden.

FIGURE 5

Total direct hospital costs of explicit sepsis-coded hospitalisations

in children and adults, Switzerland, 2019–2023



Total direct hospital costs from explicit sepsis rose from CHF 870 million in 2019 to CHF 1.07 billion in 2023. Adults accounted for most of the costs due to more cases, but per-case costs were highest among pediatric patients, those treated in the ICU, and patients with septic shock.
Note: Because of large differences in total costs driven by large differences in case numbers, total costs in children and adults are shown on different scales.

3.4 Summary

This nationwide analysis provides the most comprehensive assessment of sepsis in Switzerland to date, drawing on five years of hospital data that span both pre- and post-pandemic periods. Between 2019 and 2023, each year, around 20,000 hospitalisations were recorded with explicit sepsis in Switzerland and about 4,000 died during their stay, with the highest mortality in older age groups and cases with septic shock. Mortality continued to rise within 360 days after admission, particularly in older adults. Of concern, no reduction in mortality was observed during the study period. ICU admission occurred in more than 40 % of sepsis cases, and hospital stays were three times longer than for non-sepsis hospitalisations. Direct inpatient costs amounted to over CHF 1 billion annually in 2023. Yet, these figures likely still underestimate the true burden, as case numbers were about four times higher when applying broader (implicit) sepsis criteria, reflecting that sepsis is often underrecognised, underdocumented, and undercoded. In addition, the reported figures only capture the direct hospital costs and do not account for readmissions, rehabilitation, follow-up care, lost income, or the long-term impact on patients and their families. The results show that sepsis is a frequent, deadly, and increasingly costly health problem in Switzerland.

Sepsis affects people of all ages and is at least as common and serious as other medical emergencies such as stroke or heart attack – with a lasting impact on patients, their families, and the healthcare system.

3.4.1 International Comparison

The overall sepsis burden in Switzerland appears comparable to that in other high-income countries, although direct comparisons are limited by differences in case definitions, data sources, and coding practices; for instance, Switzerland's explicit sepsis incidence (240 per 100,000 population) and in-hospital mortality rates (~19 % in hospital, ~32 % in septic shock) align with findings from Ireland (19 – 21 % and 38 % for septic shock, respectively)[12], the US (~20 %)[9], Australia (19.7 %)[13], Sweden (30-day mortality: 18.9 %, incidence: 287 per 100,000 person-years explicit; 401 per 100,000 implicit)[3], and England (210.4 per 100,000 in 2023)[14].

Strengths and Limitations of the Analysis

This analysis provides important insights into the burden of sepsis in Switzerland but should be interpreted in light of its methodological strengths and limitations.

Strengths

- Nationwide coverage of all acute-care hospitalisations, ensuring representativeness across regions, hospital types, and patient groups.
- Five-year observation period including both pre-pandemic and pandemic years, enabling trend analysis.
- Linkage with national mortality data, allowing estimation of both in-hospital and mortality up to one year post-admission.
- Use of both explicit and implicit sepsis definitions, providing complementary perspectives on case identification and burden estimation.

Limitations

- Analysis is based on hospital discharge data, which depend on clinical recognition / diagnosis, documentation, and coding practices.
- Mortality figures reflect all-cause mortality (patients who died with or due to sepsis), not necessarily deaths directly attributable to sepsis.
- Retrospective, coding-based approach precludes causal inference.
- Only hospitalised cases are included; patients treated in emergency departments or outpatient settings without admission are not captured.
- Data cannot distinguish between community-acquired and hospital-acquired sepsis.
- Cost estimates are limited to direct inpatient costs; post-discharge, outpatient, rehabilitation, and indirect costs (e.g., productivity losses, informal care) are not included, leading to underestimation of the true economic burden.

3.5 **Implications and Recommendations**

Sepsis remains underestimated in Switzerland, despite being as urgent and frequent as other major medical emergencies such as heart attacks and strokes. Improving outcomes will require greater awareness, earlier detection, and timely, evidence-based treatment, embedded within national quality improvement efforts.

Validated, risk-adjusted mortality models are needed to enable fair benchmarking across hospitals that may receive disproportionate numbers of high-risk patients. Such models would support the identification of care gaps and guide targeted interventions. Comprehensive follow-up, incorporating patient-reported outcomes as well as data on long-term complications and healthcare utilisation, is required to capture the full human, societal, and economic impact of sepsis.

At the system level, investment in a dedicated national surveillance infrastructure is crucial. The planned Swiss Sepsis Registry within the Swiss Sepsis Program represents a key step in this direction. Ideally, the registry should capture not only acute hospitalisations but also long-term outcomes, outpatient care, and indirect costs. Surveillance could be further strengthened by integrating microbiology results, linking real-time data streams, and using algorithmic case-finding to support clinical recognition and documentation.

A national strategy should therefore prioritise:

- **Improved detection and surveillance**
  Harmonised definitions and integration of clinical with administrative data to ensure complete case capture and outcome monitoring.
- **Public and professional awareness**
  Campaigns comparable to those for heart attack, stroke, and cancer.
- **Quality improvement initiatives**
  Enhancing early recognition, case-finding, and timely evidence-based treatment to reduce mortality and complications.
- **Long-term patient support and data collection**
  Structured follow-up to address lasting health, social, and economic consequences.
- **International collaboration**
  Alignment of definitions and data standards to enable benchmarking and inform global strategies.

Implementing these measures at a national scale is essential to prevent avoidable deaths, reduce long-term consequences, and ensure measurable improvements in sepsis care and outcomes.

4 Acknowledgements

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5 Literature

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6
ICD-10 coding algorithms

Explicit sepsis codes

Sepsis-specific ICD-10 codes	A02.1, A20.7, A32.7, A39.1, A39.2, A39.4, A40.0, A40.1, A40.2, A40.3, A40.8, A40.9, A41.0, A41.1, A41.2, A41.3, A41.4, A41.51, A41.52, A41.58, A41.8, A41.9, A42.7, B37.7, P36.0, P36.1, P36.2, P36.3, P36.4, P36.5, P36.8, P36.9, O85, O75.3
SIRS	R65.0, R65.1
Septic shock	R57.2
Toxic shock syndrome	A48.3
Bacteremia	A49.9

Implicit sepsis codes

Pathogen-specific bacterial, viral and fungal infections	A01.0, A02.1, A32.7, A39.0, A39.1, A39.2, A39.3, A39.4, A39.5, A39.8, A39.9, A40.0, A40.1, A40.2, A40.3, A40.8, A40.9, A41.0, A41.1, A41.2, A41.3, A41.4, A41.5, A41.51, A41.52, A41.58, A41.8, A41.9, A42.7, A49.0, A49.1, A49.2, A49.3, A49.8, A49.9, B37.0, B37.1, B37.2, B37.3, B37.4, B37.5, B37.6, B37.7, B37.8, B37.9, B95.0, B95.1, B95.2, B95.3, B95.41, B95.42, B95.48, B95.5, B95.6, B95.7, B95.90, B95.91, B96.2, B96.3, B96.5, B96.6, B96.7, B96.8, P36.0, P36.1, P36.2, P36.3, P36.4, P36.5, P36.8, P36.9, P37.5, O85, O75.3, U07.1,U07.2
Infection codes in other groups	G00, G01, G02, G03, I30, I32, I33, I39, I40, I41, I80, J06, J09, J10, J11, J12, J13, J14, J15, J16, J17, J18, J20, J21, J22, J47, J85, J86, K35, K61, K65, L03, L04, L08, L88, M00, M01, M86, N10, N11, N12, N16, N30, N34
Implicit organ dysfunction	I95.8, R03.1, R57.0, R57.9, P29.0, J80, J96.00, J96.01, J96.09, J96.90, J96.91, J96.99, P28.5, G93.1, G93.4, F05.0, F05.1, F05.8, F05.9, P91.4, P91.5, P91.6, P91.9, R40.0, R40.1, R40.2, R41.0, N17.0, N17.1, N17.2, N17.8, N17.9, N19, P96.0, R34, K72.0, K72.71, K72.72, K72.73, K72.74, K72.79, K7.29, K76.9, D61.8, D61.9, D69.5, D69.6, P60, P61.0, P61.6

- **Explicit sepsis**
  (Sepsis-specific ICD-10 codes) OR any of (SIRS, septic shock, bacteremia, toxic shock syndrome)
- **Implicit sepsis**
  Explicit sepsis (see above) OR ([Pathogen-specific bacterial, viral and fungal infections OR Infection codes in other groups] AND [implicit organ dysfunction])

SWISS SEPSIS PROGRAM

Swiss Sepsis Program

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