NATIONAL SEPSIS REPORT 2024

RECOGNISE SEPSIS • ENHANCE SURVIVAL •

Cáilíocht Náisiúnta agus Sábháilteacht Othar
Oifig an Phríomhoifigigh Cliniciúil
National Quality and Patient Safety
Office of the Chief Clinical Officer

October 2025

National Sepsis Report 2024

Dear Colleagues,

This is the tenth National Sepsis Report describing the burden of sepsis on our patients and the healthcare system. Understanding the pattern of sepsis incidence in Ireland is essential to inform the programme about the characteristics of individuals who are at increased risk both of developing sepsis and of dying from sepsis. This allows us to advocate for heightened vigilance for sepsis amongst these individuals. Sepsis does not discriminate. It can happen to anybody irrespective of their age. However, it is much more common in the extremes of age and in individuals with co-morbidities.

The most effective way to reduce mortality from sepsis is by prevention. Preventative measures are those measures to stay healthy and prevent infection. These include good sanitation, personal hygiene, healthy eating, exercising moderately, breastfeeding, avoiding unnecessary antibiotics and obtaining vaccination for vaccine preventable infections.

The next most effective way to combat sepsis is through early recognition and treatment.

Six processes must occur to give a person the best opportunity to survive:

i) The unwell person, their family or carer must be aware of the signs and symptoms of sepsis and the need to seek urgent medical review.
ii) Early recognition of the signs and symptoms of sepsis by healthcare staff at point of presentation or deterioration.
iii) Timely escalation to medical review to ensure that a thorough history and examination is carried out to identify infection as the likely (or suspected cause) of the patient being unwell. This should either detect new onset organ dysfunction consequent to that infection or identify that the person is in a group that puts them at an increased risk of developing and indeed dying from sepsis.
iv) The person with sepsis is treated promptly with the Sepsis 6/Sepsis 6+1 bundle.
v) Healthcare staff must review the person's response to initial therapy and amend the treatment plan accordingly.
vi) Adequate critical care capacity is available to accommodate those patients who fail to respond to treatment and require critical care.

This report outlines the status of sepsis in Ireland based on data extracted from the Hospital Inpatient Enquiry (HIPE) dataset for 2024. All datasets have limitations and are dependent on methodologies used to identify and extract data. The strengths in this report include the education of the acute healthcare sector and the HIPE coders in a standardised approach to assessment and documentation of sepsis using a consistent dataset.

This report shows that the sepsis associated in-hospital mortality rate in 2024 has increased slightly when compared to the 2023 data (20.3% vs 19.3%). Over the same period the number

of documented cases of sepsis has decreased by approximately 22% (12,323 vs 15,722). Important context here includes a change to the diagnostic codes used by the HIPE coders to record sepsis (further details on page 9). Perhaps then a more robustly and consistently defined cohort are those patients diagnosed with septic shock where the incidence has remained much more constant and the mortality rate has decreased from 38% to 34.2% over the last year. The diagnostic codes used for this analysis are outlined in Appendices 3 & 4.

The outcomes in this report are the result of the hard work and dedication of the staff caring for sick people in our acute healthcare sector and recognition must be given to the improvements that they have achieved by engaging in the Sepsis quality improvement (QI) programme. Each hospital's sepsis QI project was coordinated by their Sepsis or Deteriorating Patient Committees. Credit also to the Hospital Groups Sepsis Assistant Directors of Nursing who provided awareness, education, and audit reports to feedback to the Hospitals, Hospital Groups and to inform national data so that the ongoing improvement efforts could be strengthened.

We would like to thank Grainne Cosgrove, National Quality and Patient Safety, for providing the statistical analysis, without whom this report would not be possible.

Finally, we wish to thank the members of the report subcommittee (Appendix 1) including Jacqui Curley and Marie Glynn, Healthcare Pricing Office, the Office of Coding, who manage the HIPE system and who generously reviewed the Report for accuracy. The National Sepsis Programme is governed by HSE National Quality and Patient Safety (NQPS) and effected through the National Sepsis Team (Appendix 2).

Go raibh mile maith agat,

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National Clinical Lead NCP for Sepsis, HSE National Quality & Patient Safety Directorate

Prof. Fidelma Fitzpatrick, *BA (Mod), MB BAO BCh, MD. DME, PGDip Med Ed, FRCPI, FRCPath.*

Chair, National Sepsis Steering Committee

Dear Colleagues,

The establishment of the National Clinical Programme for Sepsis in 2014 led to many achievements, including the development of the National Clinical Effectiveness Committee (NCEC) National Clinical Guideline No. 6 on Sepsis Management, 2014 and the revised National Clinical Guideline No. 26 - Sepsis Management for Adults (including maternity), 2025, national awareness campaigns, educational initiatives, and ongoing audits in acute hospitals. These efforts aim to standardise sepsis management, reduce mortality rates, and enhance patient care and safety across Ireland and have yielded significant results.

These achievements would not have been possible without the dedicated team of professionals who work as part of the Sepsis Programme, including the current and former Clinical Leads and the Assistant Directors of Nursing in each Region and the present and former programme managers.

The HSE Patient Safety Strategy (2019-2024) calls for embedding patient safety into everything we do. Commitment 4 of the Strategy outlines 13 Common Causes of Harm. These are high-impact patient safety risks and, if tackled effectively, can improve safety in healthcare organisations. Two prominent examples include reducing and managing sepsis and recognising and responding to clinically deteriorating patients.

Due for publication in 2025, the Action on Sepsis: Five Year Strategy (2025 – 2030) is comprehensive and grounded in Irish data and international best practice. The Strategy will tackle the challenges of sepsis management and prevention. It will build on the current sepsis programme of work and will expand its focus into community settings, including supporting the uptake of vaccinations and public health measures that can reduce the incidence of sepsis.

The ‘Could it be sepsis?’ campaign, which launched in March 2024, is the first HSE mass media campaign for sepsis. It was developed following quantitative and qualitative market research and engagement with key stakeholders and experts by experience.

Paid search, radio, digital audio, paid social media, PR, leaflets and posters carried the message ‘Sepsis can hide behind any infection. Don’t miss the signs.’ The advertising and information encouraged the public to know the signs and symptoms of sepsis and never be afraid to ask ‘Could it be sepsis?’

Visitors to the HSE.ie sepsis content increased by 100% for the duration of the campaign and there was significant national media coverage of the launch, with key statistics from the market research peaking the interest of journalists.

The performance of the campaign was promising. A research evaluation showed that people were significantly more likely to be familiar with the signs of sepsis if they were exposed to the campaign. A third of people recalled seeing or hearing the campaign. The radio advert, in

particular, showed strong potential to encourage people to consider sepsis if they were to experience symptoms.

In October 2024, the HSE & the Irish College of General Practitioners (ICGP) launched an Adult Sepsis: General Practice Update for GPs on identifying and managing Sepsis in Adults in the primary care setting. This guide aims to promote sepsis awareness in primary care and to promote vaccination as an essential part of sepsis prevention. This document will assist GPs in the detection, assessment, and early management of suspected sepsis.

On the 1st September 2025 the Minister for Health, Jennifer Carroll MacNeill, launched the updated NCEC National Clinical Guideline No. 26 Sepsis Management for Adults (including Maternity) in addition to the revised sepsis tools and updated HSELanD training programme for clinical staff in acute hospitals. A second HSELanD training programme is being developed for clinical staff in non acute settings. By the end of 2026 it will become mandatory for all clinical staff to have completed sepsis elearning programme on HSELanD. Retrospective audits against the National Clinical Guideline for Sepsis are undertaken in Adult, Maternity & Paediatric inpatient services annually. Key learnings from the audits are used to improve care in the early recognition and management of sepsis. The audit findings have been consistent since 2018 and identify key areas for improvement particularly around the use of the Sepsis tools. The Sepsis programme team has worked with the National Centre for Clinical Audit (NCCA) to improve the audit tool used. This was implemented in September 2024 and for the first time standardised clinical audits of sepsis care were undertaken in all hospitals . Analysis of the audit led to recommendations on areas for improvement and were shared with executive teams of regional health areas and acute hospitals in April 2025 .

This National Report provides us with important data on the incidence of sepsis in our acute hospitals. As part of the Sepsis Strategy, we plan, in partnership with the NCCA, to develop a national clinical audit on the incidence of deteriorating patients and sepsis in the acute hospitals. This audit will expand on the findings in this report and include more detail on the experience of patients and the journey of the deteriorating patients including those with sepsis. This data is needed to help clinicians identify and treat clinical deterioration and sepsis as early as possible so that the risk of critical care admission and harm from sepsis is avoided or reduced.

In presenting this report we extend our sympathy to the families and friends of those who have lost their lives to sepsis.

Best wishes,

Dr Orla Healy, National Clinical Lead

National Quality and Patient Safety

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Executive Summary 2024

Key findings

The following figures include adult, maternity, and paediatric patients.

Total number of cases sepsis and septic shock, 2024	12,323
Crude mortality rate, 2024	20.3%

The following relate to the adult, non-maternity patient.

Number of cases of sepsis & septic shock	11,379
In-hospital crude mortality rate: Sepsis & Septic Shock	21.8%
Average length of stay	22.9 days

Specialty based data:

Paediatric sepsis-associated hospital crude mortality rate	2.6%
Maternal sepsis-associated hospital crude mortality rate	0.4%
Surgical (DRG) sepsis-associated hospital crude mortality rate	23.5%
Medical (DRG) sepsis-associated hospital crude mortality rate	21.4%

Key comparators with 2023 (adult non-maternity cohort):

- There was a 21.7% decrease in documented cases of Sepsis and Septic Shock with a 5.8% relative increase in associated in-hospital crude mortality.
- There was a 3.3% increase in average length of stay.

Sepsis (excluding septic shock): There were 9,412 cases documented in 2024, a 25.4% decrease when compared with 2023 (n=12,620), with an in-hospital crude mortality rate of 19.2%, representing a 7.0% relative increase in crude mortality over 2023 (18.0%). International comparators for sepsis mortality include the UK at 20.3%[1], USA at 25%[2], Australia at 19.7%[3] and globally at 27%[4].

Septic Shock: There were 1,967 cases documented in 2024, a 2.7% increase when compared with 2023 (n=1,915), with an in-hospital crude mortality rate of 34.2%, representing a 10.1% relative decrease in crude mortality rate when compared with 2023 (n=38.0%). This also benchmarks well internationally: global 42%[4].

Note: We are continually striving to produce the most accurate data in an imperfect system and it is hard to draw any conclusions between these 2 years when we have excluded so many patients due to a change to the diagnostic codes used by the HIPE coders to record sepsis.

Where a diagnosis of urosepsis was documented prior to 2024 (before the update to the 12th Edition of ICD-10-AM/ACHI/ACS), coders were directed to code both a diagnosis of sepsis and urinary tract infection. The guidance on the coding of urosepsis in the 12th Edition has resulted in a reduction in the number of inpatients with a diagnosis of both sepsis and urinary tract infection from 4,906 in 2023 to 2,740 in 2024, a decrease of 2,166 (44%). This accounts for over 67% of the decrease in documented cases in 2024.

Perhaps then a more robustly and consistently defined cohort are those patients diagnosed with septic shock where the incidence has remained more much constant and the mortality rate has decreased from 38% to 34.2% over the last year.

Recommendations:

1	**Enhance Public Awareness and Early Recognition** Continue to support and expand the national public sepsis awareness campaign, particularly during periods of heightened risk, to improve early presentation and reduce delays in care.
2	**Strengthen Professional Education and Compliance Monitoring** Maintain mandatory sepsis eLearning or in person training for all relevant healthcare professionals, with a three-year refresh cycle. Hospitals should implement robust governance systems to monitor and ensure compliance with training requirements.
3	**Advance Multidisciplinary Training and Integration of Care Pathways** Promote ongoing multidisciplinary education, simulation-based training, and integration of sepsis treatment pathways across primary and secondary care to improve early recognition and coordinated response.
4	**Implement and Audit Guideline Adherence** Continue to support the implementation of the Surviving Sepsis Campaign Guidelines and National Clinical Guideline No. 26, with regular audits to assess adherence and impact on outcomes.
5	**Develop a National Sepsis Mortality Prediction Model** Prioritise the development of a validated mortality prediction model and scoring system to enable age and comorbidity-adjusted benchmarking of hospital sepsis-associated mortality rates nationally and internationally.
6	**Support Quality Improvement and Governance Structures** Sustain investment in the National Sepsis Programme and reinforce the role of hospital-level sepsis and deteriorating patient committees in driving local improvements.
7	**Improve Clinical Documentation and Coding Accuracy** Continue education for clinicians and HIPE coders on the Sepsis-3 definitions, with emphasis on accurate documentation of infection, organ dysfunction, and sepsis/septic shock to ensure reliable data capture and analysis.
8	**Align with Antimicrobial Stewardship Initiatives** Strengthen alignment between the national sepsis programme and antimicrobial stewardship efforts to optimise antimicrobial use and combat resistance, particularly in high-risk hospital cohorts.

National Sepsis Report 2024

An overview of the burden of sepsis-associated mortality and healthcare usage as captured by the Hospital In-Patient Enquiry database (HIPE).

Hospital in-patient enquiry (HIPE) dataset

The data captured in this dataset is dependent on the documentation in the patients' medical notes and its' subsequent coding. An external, independent body reviewed the quality of coding in 2016 and the subsequent report is available at www.hpo.ie.

Population studied

ICD–10–AM Diagnosis codes were used to identify patients with sepsis (Appendix 4a) and infection (Appendix 4b). These codes were interrogated in patients aged 16 years and over in the acute hospital sector. Maternity patients with sepsis are subject to analysis and reporting by Maternal Death Enquiry Ireland (National Perinatal Epidemiology Centre). Therefore, we present limited mortality data for this cohort.

Limitations

Administrative databases are limited to what is documented in the patients' case notes (The Coding Process, Appendix 3). To severity-adjust for limited benchmarking, the surrogate of 'patients with a diagnosis of sepsis and critical care admission' was used. Critical care requirement was identified by admission to Coronary Care Unit (CCU), High Dependency Unit (HDU) or Intensive Care Unit (ICU), or the presence of an Intensive Care Consultant code recorded in the HIPE record. The advantage is that it includes critically ill patients where there was 'an intention to treat', and some limited comparison with critical care databases can be done. The disadvantages are that it assumes that there is always a critical care bed available, and it fails to consider that patients admitted to critical care are a heterogeneous group varying from requiring modest respiratory or cardiovascular support with a lower mortality predictive score to multi-organ failure and a high score. This current analysis provides age-adjusted mortality rates and provides an insight into the burden of sepsis in our healthcare system. Both age and co-morbidities are strongly associated with higher mortality from sepsis. Based on the current analysis, the requirement to develop and validate a sepsis mortality prediction model for the HIPE database remains and has been highlighted again in key recommendations.

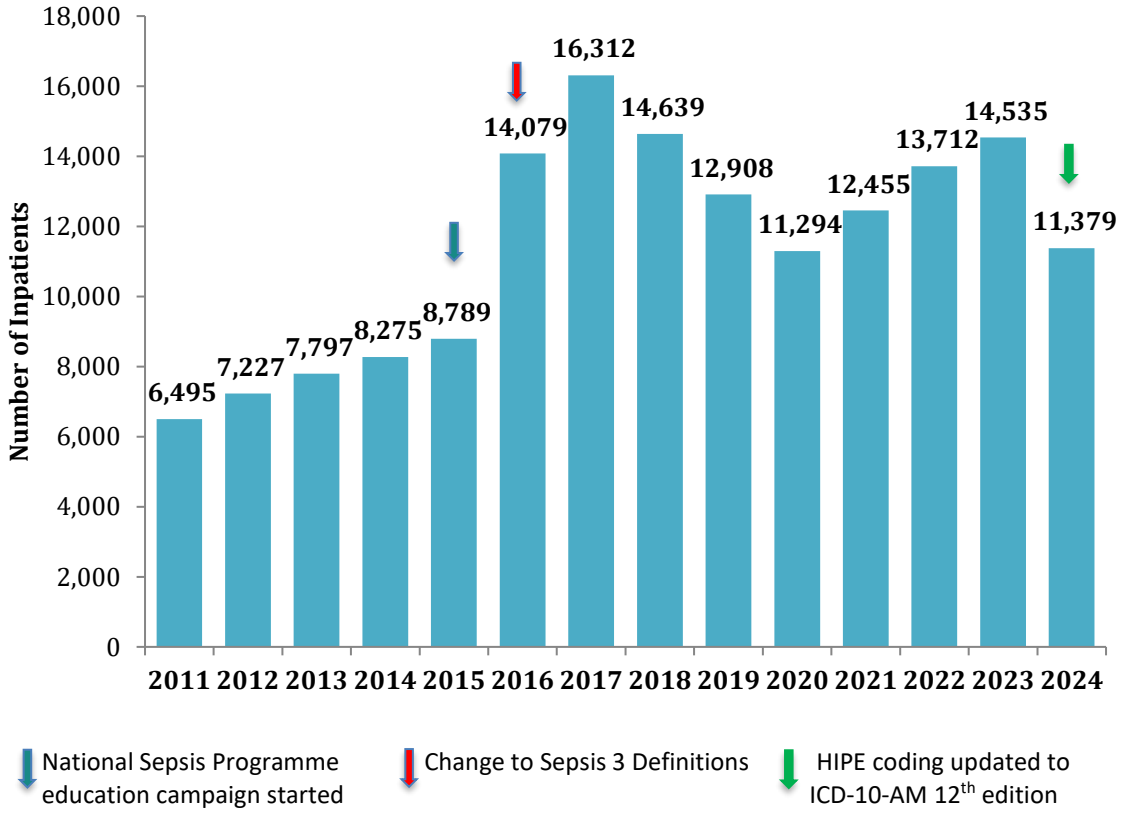
The data presented in this report are based on inpatients in publicly funded acute hospitals with the diagnosis of sepsis coded on the HIPE system. Causality cannot be inferred, as sepsis may be one of many diagnoses that complicated the patients' admission. Thus, mortality rates reported are sepsis-associated and include both direct and indirect deaths due to sepsis.

Other limitations include:

- Not all Irish hospitals participate in submitting data to HIPE.
- Patients who attend the Emergency Department are not captured by HIPE unless they are admitted to a ward.
- Patients who attend an outpatient clinic are not captured.

The Epidemiology of Sepsis in Ireland

Figure 1: The number of adult patients with a diagnosis of Sepsis & Septic Shock, 2011-2024 (excludes paediatric & maternity).



Between 2011 and 2015, documented cases of sepsis were increasing by approximately 8% per annum. In 2015, there was a nationwide education campaign as part of the implementation programme of the 2014 National Clinical Guideline. This was associated with a 60% increase in the recognition and documentation of sepsis cases (Figure 1).

Sepsis-3 definitions, which were published in 2016, identify a cohort of patients with a higher acuity than previously documented as sepsis. It is reasonable to expect a lower number of cases in this cohort with a higher mortality (Figures 1 & 2).

The classification system used to code diagnoses and procedures in HIPE data was updated from the 10th Edition of the ICD-10-AM/ACHI/ACS classification to the 12th Edition of ICD-10-AM/ACHI/ACS on 1st January 2024. This update included some additional diagnosis codes for sepsis (see Appendix 4a), and a change to the Australian Coding Standard (ACS) for sepsis. In particular, ACS 0110 Sepsis and Septic Shock now states:

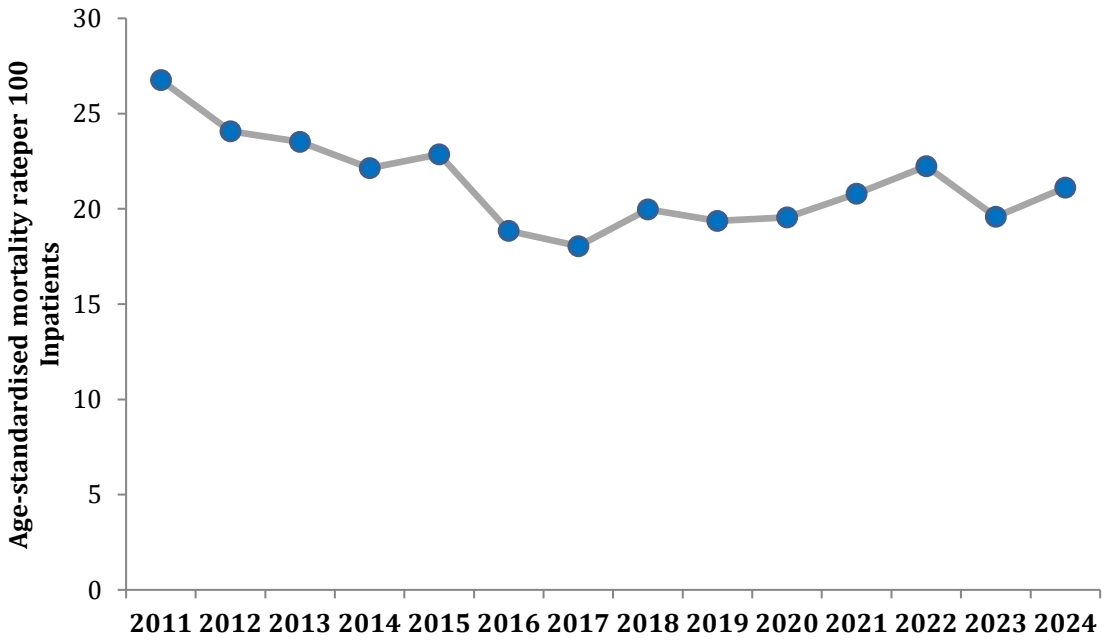
"Where there is documentation of vague diagnostic terms not indexed under the lead term Sepsis, such as 'chest sepsis' or 'biliary sepsis', assign a code for Infection/by site.

Where there is documentation of urosepsis alone (i.e., not otherwise specified (NOS)), assign a code for urinary (tract) infection (see Alphabetic Index: Infection/urinary).

Note that codes for terms seemingly synonymous with sepsis (e.g., septicaemia, bloodstream infection) are assigned as directed by the ICD-10-AM Alphabetic Index. The term 'septic' describes an infection or inflammation in an organ or tissue and is not synonymous with sepsis."

Where a diagnosis of urosepsis was documented prior to 2024 (before the update to the 12th Edition of ICD-10-AM/ACHI/ACS), coders were directed to code both a diagnosis of sepsis and urinary tract infection. The guidance on the coding of urosepsis in the 12th Edition has resulted in a reduction in the number of inpatients with a diagnosis of both sepsis and urinary tract infection from 4,906 in 2023 to 2,740 in 2024, a decrease of 2,166 (44%).

Figure 2: Age-standardised in-hospital mortality rate for adult inpatients with a diagnosis of Sepsis 2011-2024



High risk cohort

Risk stratification and prognosis in sepsis is important because high-risk patients may benefit from earlier clinical interventions, whereas low-risk patients may benefit from not undergoing unnecessary procedures[5]. Chronic comorbid conditions that alter immune function and increase the risk of sepsis include chronic renal failure, diabetes mellitus, alcohol abuse, neutropenia and cumulative comorbidities are associated with greater acute organ dysfunction[6].

Figure 3: The number of inpatients with a diagnosis of sepsis by age group 2024 (includes paediatrics and maternity).

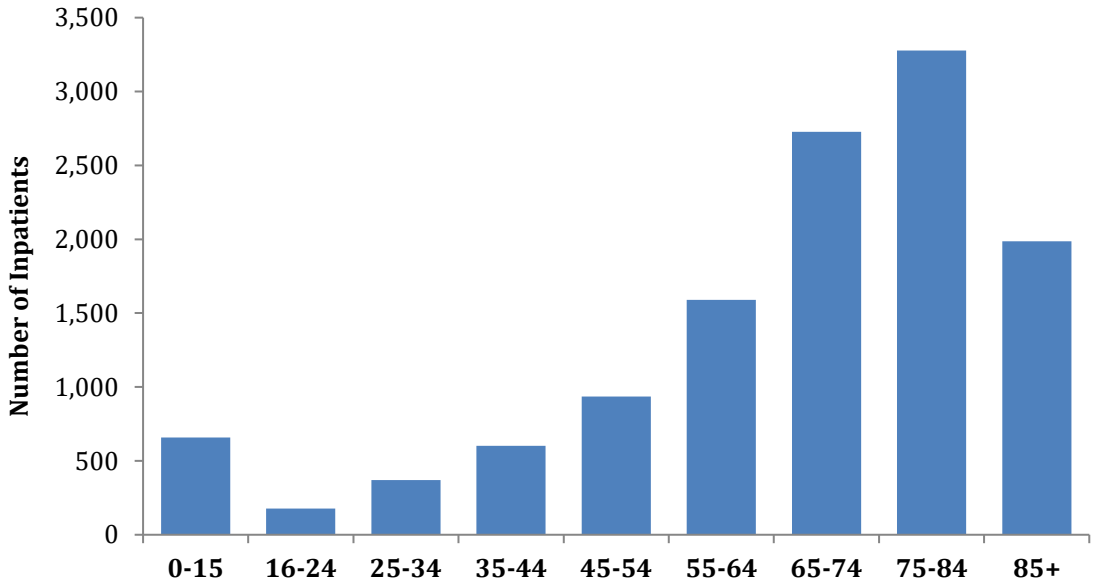
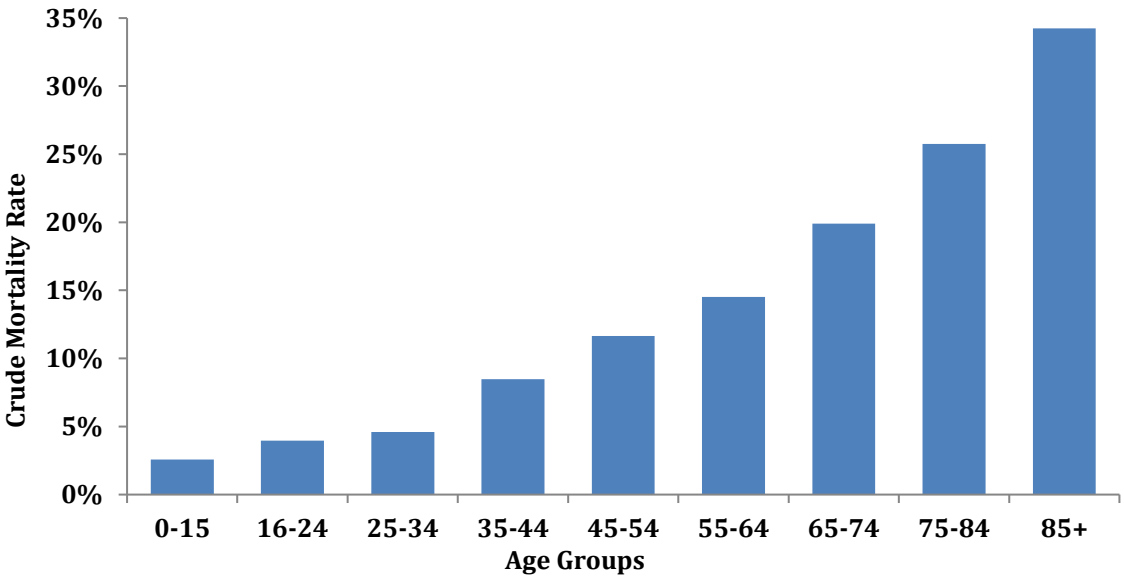


Figure 4: In-hospital crude mortality rate for patients with a diagnosis of sepsis by age group 2024.



In 2024, as in previous years, sepsis incidence increases with age in adults (Figure 3). With a crude mortality rate of over 25%, a person aged over 75 years is considered at very high risk for sepsis mortality (Figures 3 & 4).

With ageing, co-morbidities are accumulated, and the immune system gradually deteriorates leading to increases in both sepsis incidence and mortality (Figure 5).

Figure 5: The in-hospital crude mortality rate for adult inpatients with a diagnosis of sepsis and selected co-morbidities 2024.

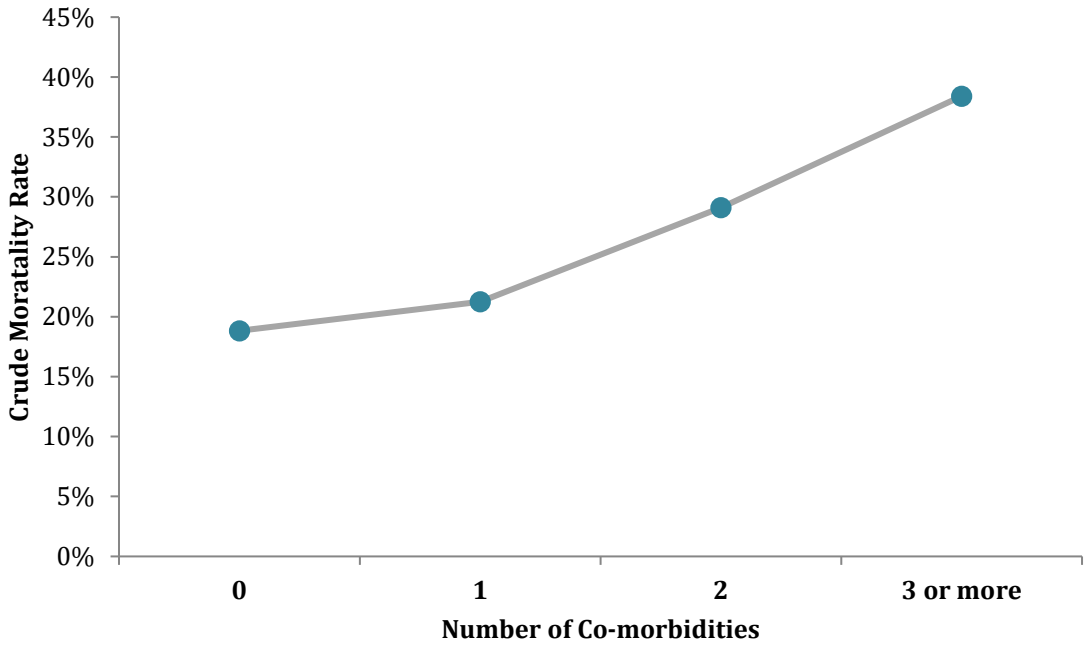


Table 1 summarises the effect of co-morbidities on sepsis incidence and mortality.

Table 1: Inpatients with a diagnosis of sepsis and selected co-morbidities; Number of cases and crude mortality rates 2024.

Co-morbidity	Number of cases	Crude Mortality Rate
Chronic Liver Disease	386	43.5%
Chronic Obstructive Pulmonary Disease	1,133	29.6%
Mental & Behavioural Disorders due to Alcohol	427	29.0%
Chronic Kidney Disease	1,409	28.4%
Diabetes	2,804	23.2%
Cancer	2,755	22.6%

Note: Cases with more than one of the co-morbidities above are included in each of the relevant co-morbidity groups. This excludes paediatrics and maternity.

Effect of Recent Surgery on sepsis mortality.

The 2024 HIPE data identified that sepsis patients with a surgical diagnosis related group (DRG) continue to have a higher mortality than those with a medical DRG 23.5% vs 21.4%.

Previous reports identified that the difference in mortality between the medical and surgical cohorts is not due to issues related to recognition and management, but rather inherent in the circumstances of the patient, the immunosuppressant effect of surgery and the different microorganisms and sites of infection that affect these patients. This data is widely replicated in other jurisdictions. Given this higher mortality risk, extra vigilance should be given to surgical patients who develop signs of infection. For this reason, recent surgery is also considered to place patients in a high-risk group. The more co-morbidities the higher the mortality risk (Figure 5). Therefore, extra vigilance should be given to patients who deteriorate due to infection and who have one or more co-morbidities, including age >75years, or those with identified chronic conditions such as those listed above or those who have had recent surgery.

Sepsis-associated mortality, 2011-2024

Age-adjusted mortality rates control for the effects of differences in age distributions and allow for comparisons of mortality rates across years with different age distributions. (Table 2). However, both age and co-morbidities are strongly associated with higher mortality from sepsis in Ireland and the National Sepsis Programme recommend the development of a sepsis mortality prediction model and scoring system to enable the comparison of age and co-morbidity adjusted hospital sepsis-associated mortality rates nationally and internationally.

Table 2: Adult inpatients (non-maternity) with a diagnosis of sepsis, crude and age standardised mortality rates 2011-2024.

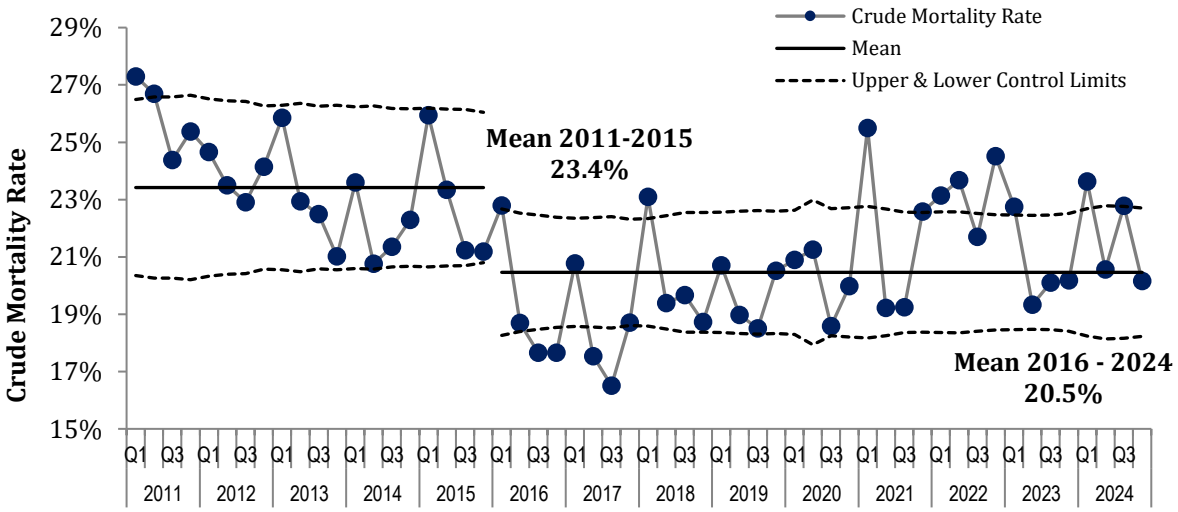
Year	Number of Inpatients with a Diagnosis of Sepsis	Number of Deaths among Inpatients with a Diagnosis of Sepsis	Crude Mortality Rate per 100 Inpatients	Age-standardised Mortality Rate per 100 Inpatients*
2011	6,495	1,686	26.0	26.8
2012	7,227	1,720	23.8	24.1
2013	7,797	1,799	23.1	23.5
2014	8,275	1,821	22.0	22.2
2015	8,789	2,010	22.9	22.9
2016	14,079	2,676	19.0	18.8
2017	16,312	3,004	18.4	18.1
2018	14,639	2,979	20.3	20.0
2019	12,908	2,542	19.7	19.4
2020	11,294	2,273	20.1	19.6
2021	12, 455	2, 682	21.5	20.8
2022	13,712	3,191	23.3	22.2
2023	14,535	2,994	20.6	19.6
2024	11,379	2,481	21.8	21.1

% Change in age adjusted mortality

- Since 2023 a relative increase of 7.8%
- Since 2015 – introduction of National Clinical Guideline a relative decrease of 7.6%
- Since 2011 – start of data collection a relative decrease of 21.1%

* Data have been age-standardised using a standard population based on the numbers of inpatients with a diagnosis of sepsis in 2015

Figure 6: Quarterly rates of in-hospital mortality for adult patients with a diagnosis of Sepsis, quarterly data, 2013 – 2024.



Seasonal variation

Peaks in mortality occur in the winter season corresponding with the higher incidence of respiratory tract infections, a number of which are vaccine preventable. This report clearly demonstrates the vulnerability of the older patient and those with co-morbidities to sepsis. It is recommended that this cohort avail of recommended vaccination as prevention is always better than cure. However, cure is not always possible even with the very best management.

Quarterly rates of in-hospital mortality for inpatients with a diagnosis of sepsis from 2013 to 2024 were analysed using statistical process control (SPC) methods (Figure 6). The use of SPC methods allows us to see whether the changes we made resulted in improvements and allow us to distinguish between variation that may have happened by chance alone and variation that indicates a real improvement in mortality rates.

The mean in-hospital crude mortality rate for inpatients with a diagnosis of sepsis from 2013-2015 showed an average of 23.4%. Using control limits based on SPC methods it was expected during this period that the quarterly mortality rate would vary from around 20 to 26% by chance alone. Since 2016, the quarterly mortality rate has averaged 20.5% and has been below the previous average of 23.4%, indicating an improvement in mortality rates that is not explained by chance alone.

The control limits in the SPC chart have been re-calculated to reflect this reduction. We can now expect that this improvement will be sustained, and the average mortality rate will remain around 20.5% (with some variation due to seasonal effects).

Septic shock.

Septic shock is considered a sub-group of sepsis, where patients experience more severe disease characterised by hypotension necessitating vasopressor administration. This sub-group of patients, while lower in incidence, consistently experience worse outcomes (Figures 7 & 8).

Figure 7: Adult inpatients (non-maternity) with a diagnosis of sepsis or septic shock, Incidences 2022-2024

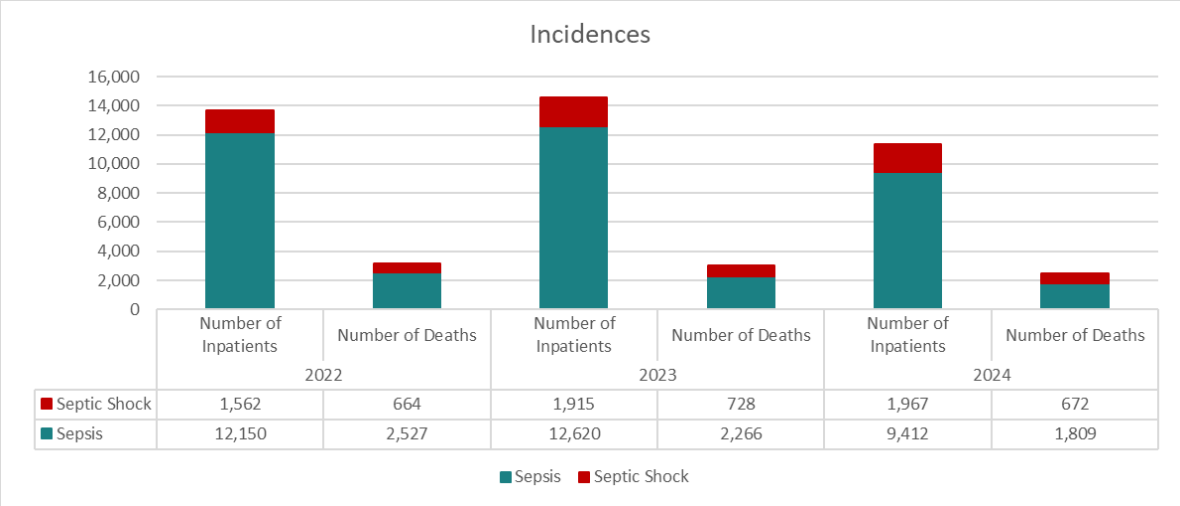
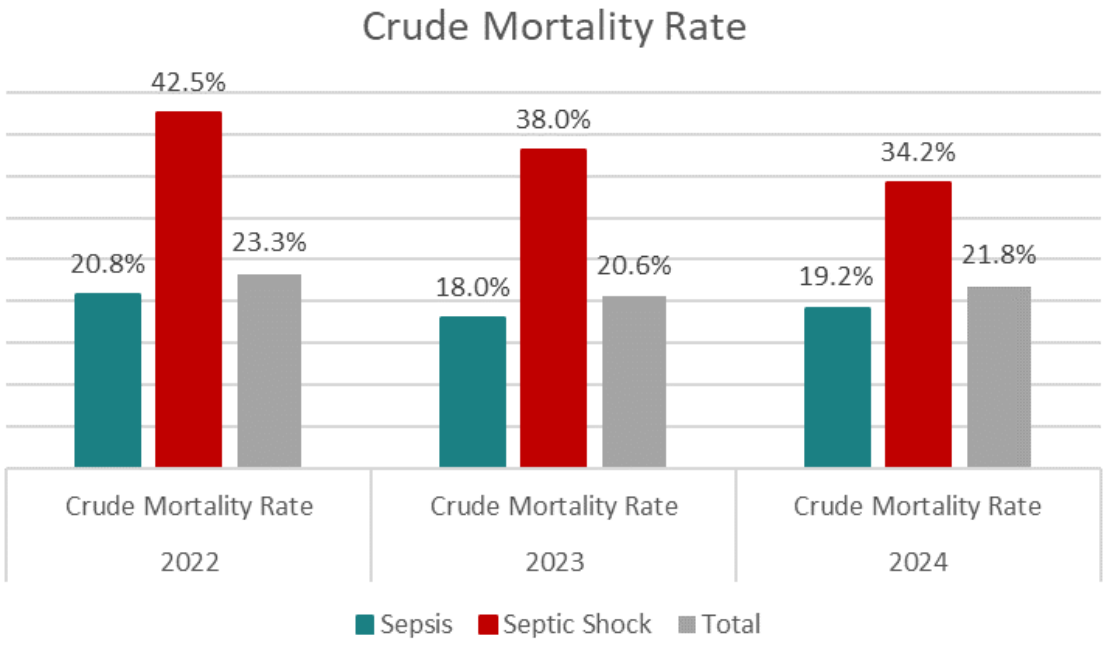


Figure 8: Adult inpatients (non-maternity) with a diagnosis of sepsis or septic shock, crude mortality rate 2022-2024



Specialties:

Maternity

In 2024, there were 285 pregnancy-related cases of sepsis (Table 3).

Table 3: Maternal sepsis-associated incidence and crude mortality rates, 2011-2024

Year	Pregnancy Related Cases with a Diagnosis of Sepsis	
	Number of Inpatients	Crude Mortality Rate
2011	190	1.6%
2012	192	0.5%
2013	271	0.0%
2014	282	0.0%
2015	306	0.3%
2016	402	0.0%
2017	473	0.2%
2018	420	0.5%
2019	380	0.0%
2020	257	0.0%
2021	238	0.0%
2022	283	0.0%
2023	260	0.0%
2024	285	0.4%

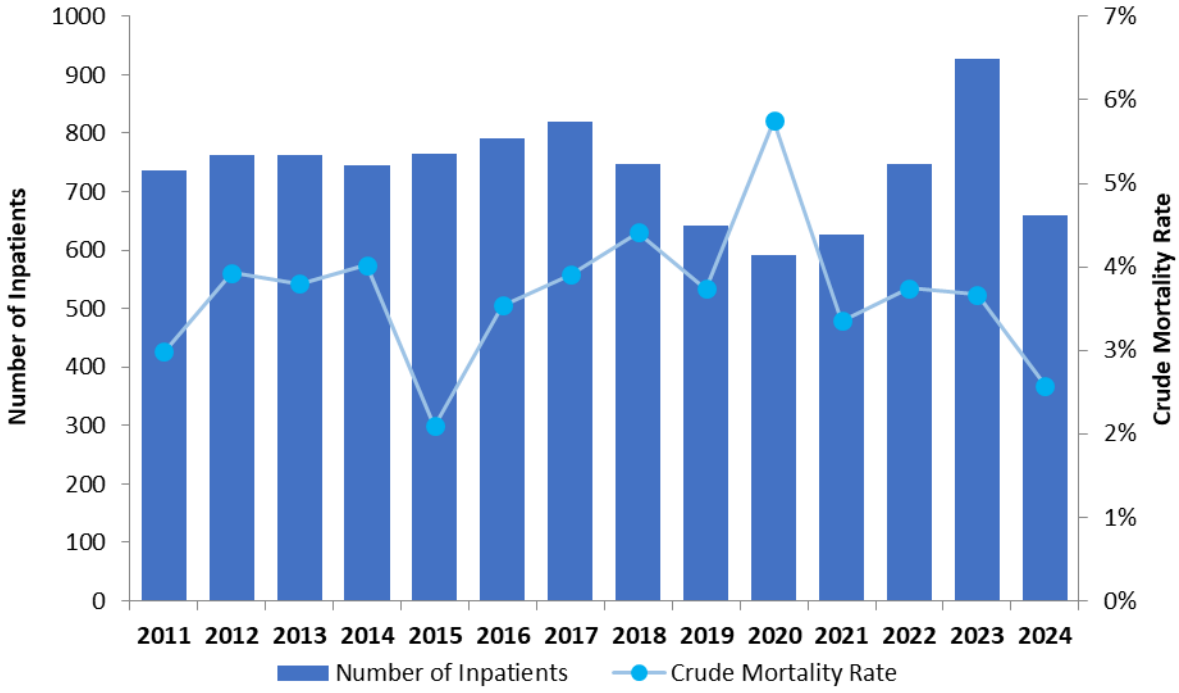
Paediatrics

The majority of paediatric morbidity and mortality occurs in the under one year old when the immune system is still immature (Table 4).

Table 4: Paediatric sepsis-associated incidence and crude mortality rates, by age group 2020 - 2024

Age Group	Number of Inpatients	Number of Deaths	Crude Mortality Rate
Under 1 Year of age	2,704	109	4.0%
1-9 Years	567	12	2.1%
10-15 Years	279	13	4.7%
Total	**3,550**	**134**	**3.8%**

Figure 9: Paediatric sepsis-associated incidence and crude mortality rates, 2011- 2024



Medicine and Surgery

In 2024, adult sepsis inpatients with a medical Diagnostic Related Group (DRG) accounted for 82% of all adult inpatients with sepsis (excluding maternity) while those with a surgical DRG accounted for 18%. However, as seen in previous years, adult sepsis inpatients with a surgical DRG spent over twice as long in hospital and had a higher mortality rate than their medical counterparts (Table 5).

Table 5: Adult inpatient with a diagnosis of sepsis by Surgical/Medical Diagnostic Related Group, 2024

Surgical / Medical DRG	Number of Inpatients	Number of Bed Days	Average Length of Stay	Crude Mortality Rate
Surgical	2,031	92,972	45.8	23.5%
Medical	9,348	167,728	17.9	21.4%
Total	**11,379**	**260,700**	**22.9**	**21.8%**

* 'Surgical' refers to inpatients with a surgical Diagnosis Related Group (DRG) which is assigned if there is at least one significant surgical procedure carried out in an operating room during that episode of care. 'Medical' refers to inpatients with a medical DRG which is assigned if there are no significant surgical procedures during that episode of care. The 'Medical' group above also includes a small number of patients with a DRG classified as 'Other', that is they had a non-surgical operating room procedure.

The average length of stay (AvLOS) for surgical patients with sepsis is 45.8 days, which is, triple that of medical patients (17.9 days) (Table 5).

To put this in context, Table 6 below identifies the AvLOS for sepsis, infection, and all other diagnoses.

AvLOS for patients with a sepsis diagnosis is just over double that of those with an infection diagnosis (22.9 vs 11.9 days) and over 4 times the length of stay of those with any other diagnosis (n=4.8 days). The opportunity to shorten this by earlier recognition and treatment will not only improve patient outcomes but also free up bed days for patients on waiting lists.

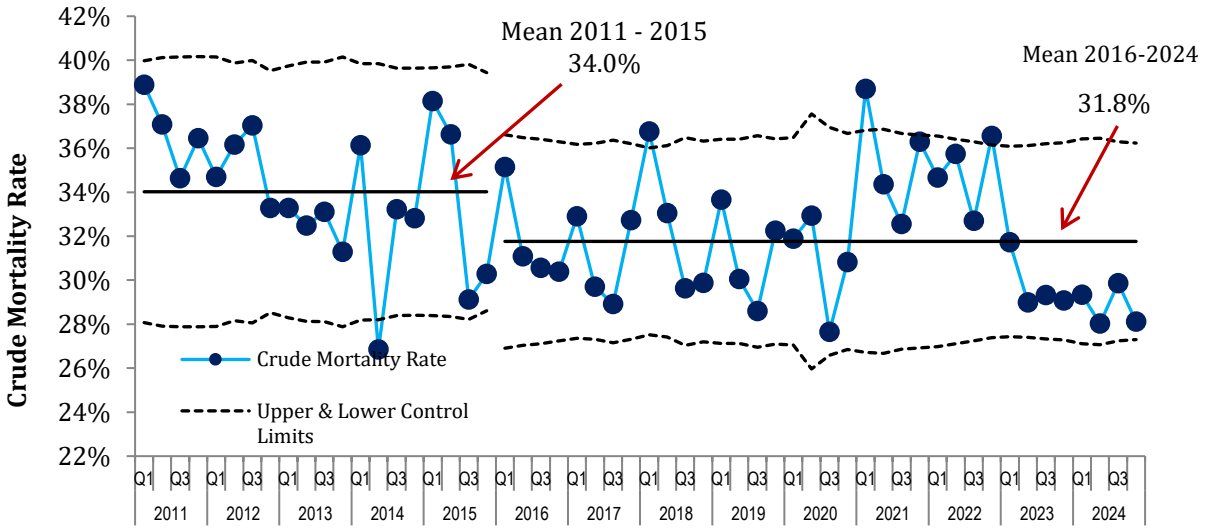
Table 6: Adult inpatient with a diagnosis of sepsis vs diagnosis of infection or all other diagnoses, 2024.

Diagnosis	No. of pts.	AvLOS
Sepsis	11,379	22.9
Infection	142,158	11.9
All other Diagnoses	363,095	4.8
Total	**516,632**	**7.1**

Critical Care

The mean in-hospital crude mortality rate for inpatients with a diagnosis of sepsis or septic shock admitted to critical care from 2011-2016 showed an average of 34% (Figure 10). For the period 2016-2024 this dropped to 31.8% representing an improvement since the inception of the national clinical programme for sepsis.

Figure 10: Statistical process control chart of hospital mortality for adult inpatients with a diagnosis of sepsis and admitted to a critical care area, quarterly data, 2013 – 2024.



In 2024, 32.6% of sepsis patients were admitted to a critical care bed and the mortality rate was nearly twice that of those managed on the ward (Table 7).

Table 7: Admission and crude mortality rates for adult inpatients (non-maternity) admitted to a critical care area with a diagnosis of sepsis or septic shock, 2024

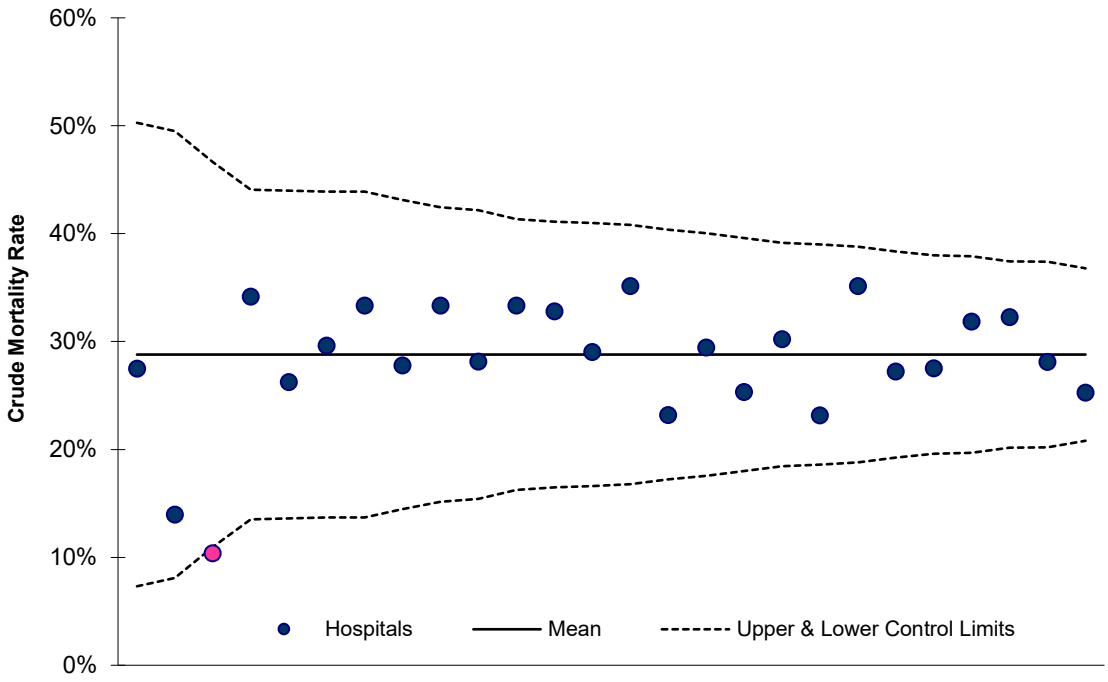
	Admitted to Critical Care		Not Admitted to Critical Care	
	Total Number of cases	Crude mortality rate	Total Number of cases	Crude mortality rate
Sepsis + Septic Shock	3,714	28.8%	7,665	18.4%

The Centres for Disease Control and Prevention (CDC) report that 80% of all sepsis cases arise in the community and therefore present to the emergency department. In 2024 the majority, 67.4%, were managed on a general ward and these patients had a mortality rate of 18.4% which is significant when compared with other time dependant medical emergencies such as acute myocardial infarction 4.8% and ischaemic stroke 6.8% (NAHM,

2021). Capacity in the critical care area remains the limiting factor for admission. Admission to critical care when required, as well as appropriate management on admission, will give the patient the best opportunity to survive.

In the absence of age and co-morbidity adjustment, which would allow each hospital sepsis-associated mortality to be published, the funnel plot (Figure 11) depicts the crude In-hospital mortality in patients with a diagnosis of sepsis or septic shock and who were admitted into a critical care area in hospitals who had more than 40 of such cases. It is the aim of the National Sepsis Programme to be able to produce an age and comorbidity adjusted funnel plot for all acute hospitals that manage sepsis patients into the future. This would assure people that their hospital achieves similar outcome goals as others in the state and if a hospital has outlier status, it will facilitate further investigation as to the reasons why and enable timely intervention to correct that status and associated outcomes.

Figure 11: Inpatient crude mortality rate for adult inpatients with a diagnosis of sepsis or septic shock and admitted to critical care area, by hospital, 2024.



Healthcare usage

It is of interest to compare sepsis cases with those coded as infection and all other diagnosis as it demonstrates the clear difference in these disease processes in terms of healthcare usage i.e., bed days used and average length of stay (Table 8) and outcome (Table 9).

This provides a clear rationale to investigate the patient with infection for evidence of organ dysfunction, not just so they can be HIPE coded correctly but also so they can get the urgent time-dependent therapy that is associated with improved patient outcomes. Additionally, early input from senior decision makers is essential to direct appropriate treatment and

escalation plans, which include source control, critical care management and other complex needs.

Table 8: Healthcare usage and outcomes– Sepsis vs infection and all other diagnoses, 2024

Diagnosis	Number of Inpatients	Number of Bed Days	Average Length of Stay (Days)
Sepsis	11,379	260,700	22.9
Infection	142,158	1,688,221	11.9
All Other Diagnoses (Dx)	363,095	1,732,390	4.8
Total	**516,632**	**3,681,311**	**7.1**

Table 9: Healthcare outcomes – Sepsis vs infection and all other diagnoses, 2024

Diagnosis	Number of Inpatients	% Total inpatients	Number of deaths	% Total deaths	Crude mortality rate
Sepsis	11,379	2.2%	2,481	19.5%	21.8%
Infection	142,158	27.5%	5,939	46.7%	4.2%
All Other Dx	363,095	70.3%	4,296	33.8%	1.2%
Total	**516,632**		**12,716**		**2.5%**

Key findings:

Sepsis patients account for only 2.2% of the total in-patient population but have more than a 5-fold higher mortality rate compared to patients coded with infection and a 3-fold average higher length of stay.

Balancing measures

The following data is from the Health Protection Surveillance Centre (HPSC). Further details are available at www.hpsc.ie

Multi-drug resistant organisms:

On-going surveillance is key to monitoring the emergence, spread and control of antimicrobial resistance (AMR). Since 1999, AMR surveillance in Ireland, as part of the European Antimicrobial Resistance Surveillance Network (EARS-Net), has been undertaken for a number of important pathogens that cause invasive infections, in particular bloodstream infections (BSIs).

In 2024, 32 of 36 microbiology laboratories in Ireland submitted data on invasive infections for 8 key EARS-Net pathogens (*Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Acinetobacter species, Streptococcus pneumoniae, Staphylococcus aureus, Enterococcus faecalis* and *Enterococcus faecium*). The estimated population coverage by EARS-Net Ireland in 2024 was approximately 82%. The decrease in coverage from 96% in 2023 was primarily a result of two large laboratories in tertiary hospitals not participating due to resource issues in 2024.

Data were received on 6,577 isolates in 2024 compared with 7,711 in 2023 (34 labs). Of these, 6,138 were EARS-Net pathogens and the rest were invasive Group A Streptococcus, Group B Streptococcus and Candida species isolates. The numbers are lower in 2024 due to the lower population coverage.

When comparing the 31 laboratories that submitted data for both years, there was a small increase (1%) in the overall number of cases reported in 2024 compared to 2023. Five of pathogens saw increasing numbers, while six experienced decreases or no significant change. The biggest increases were seen for *S. pneumoniae* (up 19%) and Group B streptococcus (up 17%), while the biggest decreases were observed for Group A streptococcus (down 60%, with a return to more "normal" levels following the 2022-2023 upsurge in iGAS infections) and Candida spp (down 27%).

In Ireland, most of the key AMR indicators showed no significant trend over the latest five-year period (2020-2024) with the following exceptions:

1. **Vancomycin-Resistant *E. faecium* (VREfm):** Although the proportion of vancomycin-resistance among *E. faecium* (VREfm) increased slightly to 21.8% in 2024, the latest analysis shows a significant downward trend for the past 5 years. While the VREfm incidence decreased marginally, there was bigger drop in the incidence of VSEfm. By contrast, the %VREfm is still increasing across Europe (with a significant 5-year trend) with an EU/EEA weighted mean of 19.8% in 2023 (up from 17.6% in 2022). Despite the decreasing trend here, Ireland still has one of the highest proportions in Europe, along with countries in Eastern and Southern Europe.
2. **Other drug-bug combinations**
    a. **Aminoglycoside-resistant *K. pneumoniae*:** a decreasing 5-year trend from 11.8% in 2020 to 5.9% in 2024

b. **Ceftazidime-resistant *P. aeruginosa*:** a decreasing 5-year trend from 10.5% in 2020 to 4.1% in 2024

Meticillin-Resistant *S. aureus* (MRSA): In 2024, the proportion of methicillin-resistant *S. aureus* (%MRSA) increased to 10.7%. Despite the increase in %MRSA, the MRSA incidence rate decreased to 0.027 cases per 1,000 Patient Days (from 0.030 in 2023), with a larger decrease in the MSSA incidence to 0.225 cases per 1,000 Patient Days (from 0.281 in 2023). Although the 5-year trend is still downwards, this is no longer statistically significant. The %MRSA has been decreasing throughout EARS-Net countries (with a significant 5-year trend, 2019-2023) with an EU/EEA weighted mean of 15.8% in 2023. The highest proportions are seen in Southern Europe.

Despite the decreasing trend for VREfm, this AMR indicator, along with MRSA, remains problematic in Irish healthcare settings, accounting for just over 1 in 5 *E. faecium* invasive infections and over 1 in 10 *S. aureus*, respectively.

Carbapenem resistant organisms:

Resistance to carbapenems is one of the biggest AMR challenges facing the healthcare systems in Ireland and worldwide. Carbapenem resistance in the Enterobacterales (CRE), (which include *E. coli* and *K. pneumoniae*), and *Acinetobacter* spp. (CRA) is most commonly via the production of carbapenemase enzymes, e.g. KPCs, NDMs and OXA-type; hence, the terms carbapenemase-producing Enterobacterales (CPE) and carbapenem-producing Acinetobacter (CPA).

CRA is a major problem in most Eastern and Southern European countries. While Ireland reported 0% CRA in 2024 (similar to 2023), the EU/EEA weighted mean was 40.1% in 2023 (up from 36.3% in 2022). Nine countries reported CRA proportions in excess of 60% (decrease from 10 countries in 2022). Carbapenem resistance among Acinetobacter spp. (especially A. baumannii) has been listed as one of the top priorities by the WHO for research and development of novel therapeutic agents.

Among invasive isolates of *E. coli* and *K. pneumonaie* reported to EARS-Net, carbapenem resistance in Ireland is still very low (0.1% and 1.2% respectively) compared to levels seen in Southern Europe, especially among *K. pneumoniae*, with proportions exceeding 25% in Bulgaria, Croatia, Cyprus, Greece, Italy and Romania. Implementation of antimicrobial stewardship and infection prevention and control strategies are required in order to prevent the emergence and spread of such highly resistant strains in Ireland.

National surveillance of all new CPE, including cases associated with colonisation and infection (both invasive and non-invasive) re-commenced in 2022. The numbers of CPE reported have increased over the past three years from 861 in 2022 (31 labs), to 1096 in 2023 (32 labs) and

Production of the annual surveillance report on CPE in Ireland in 2024 is currently underway, so the 2024 data is provisional and subject to change. Data were received from 1,557 from all 30 laboratories in Ireland in 2024. Among laboratories that consistently submitted data over the past three years (n=24), reported numbers have increased significantly year-on-year — rising by 36% from 2022 to 2023, and by a further 41% from

2023 to 2024. Of the 1,557 isolates reported, 89% were associated with colonisation, 9% with non-invasive infection and 2% with invasive infection (this breakdown is similar to previous years). The majority of CPE reported in 2024 had OXA-48-like enzymes (74%), which is similar to 2023 (72%). The composition of the remaining isolates included KPC (14%, up from 10% in 2023), NDM (9%, up from 11% in 2022) and VIM (2%, down from 3% in 2022).

Implementation of antimicrobial stewardship and infection prevention and control strategies are required in order to prevent the emergence and spread of such highly resistant strains in Ireland.

Clostridioides difficile infection (CDI):

Clostridioides difficile are anaerobic, spore-forming bacteria normally present in the large intestine and are a leading cause of antibiotic-associated diarrhoea. In spore form, *C. difficile* is highly resilient, surviving in the environment and resistant to many disinfectants, including alcohol-based hand gels. As such, environmental contamination is a significant reservoir in healthcare settings, and hand hygiene with soap and water is essential for prevention.

Clostridioides difficile infection (CDI) can range from mild diarrhoea to severe, life-threatening conditions such as toxic megacolon, with older adults at increased risk of severe outcomes. Asymptomatic colonisation is also common, contributing to transmission. The primary risk factor for CDI is antimicrobial use, which disrupts the gut microbiota, facilitating *C. difficile* proliferation and toxin production. Risk is further elevated with broad-spectrum antibiotics, use of multiple antimicrobial classes, and prolonged treatment durations. Additional patient-related risk factors include advanced age (particularly >65 years), comorbidities, immunosuppression, and a prior history of CDI. Recurrent CDI occurs in 15–35% of cases, with each episode increasing the likelihood of further recurrence. Effective antimicrobial stewardship and robust infection prevention and control (IPC) practices remain critical for reducing CDI incidence and severity.

CDI has been a notifiable disease in Ireland since May 2008, with most cases reported to public health via the Computerised Infectious Disease Reporting (CIDR) system. To supplement statutory notifications, the Health Protection Surveillance Centre (HPSC) established a voluntary enhanced CDI surveillance programme in 2009, which collects additional epidemiological data. In 2024, 62 hospitals participated in this enhanced surveillance programme.

In 2024, 2,583 CDI cases were notified to public health, of which 2,184 (85%) were classified as new cases of CDI. The national crude incidence rate (including new and recurrent cases) rose to 47.2 per 100,000 population, a 19.2% increase from 39.6 per 100,000 in 2023. This represents the highest crude incidence in five years, though comparable to the 2019 rate of 48.4 per 100,000. Consistent with previous years, CDI incidence increased markedly with age, particularly in individuals aged ≥75 years. The highest incidence was observed among adults aged ≥85, with similar rates between sexes. Incidence remained low in children and younger adults.

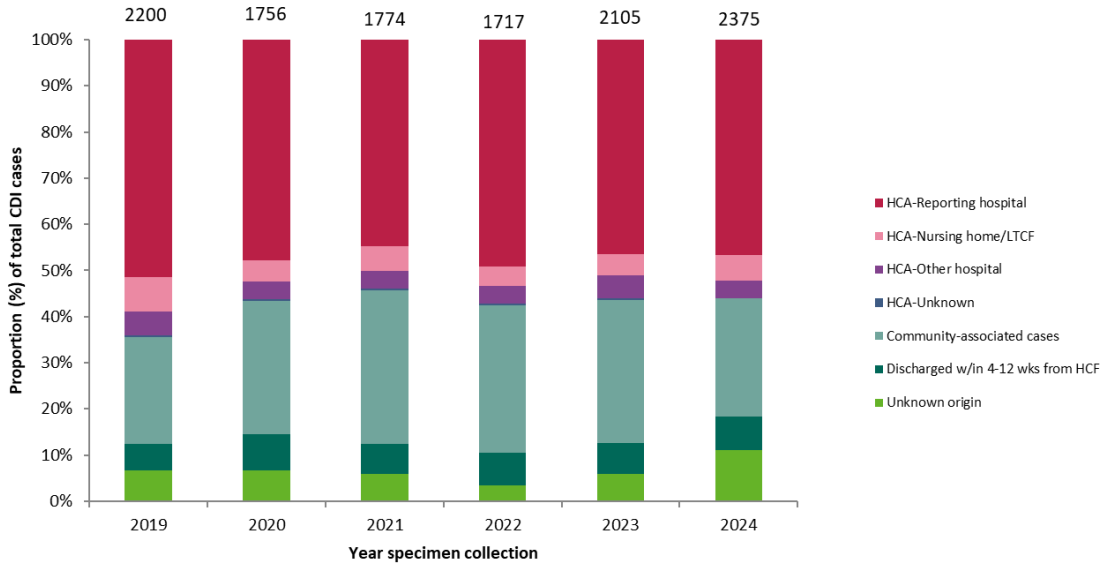
Sixteen CDI outbreaks were reported in 2024, of which 15 occurred in acute hospitals. Multiple sequence types (STs) were associated with these outbreaks, with ST55 implicated in three.

Healthcare-associated (HCA) CDI cases consistently account for 50–60% of reported CDI. In 2024, HCA-CDI represented 56% (n=1,331) of all cases, with 51% classified as healthcare-onset. The majority (86%) of HCA cases originated from the reporting hospital. Community-associated (CA) CDI has shown a rising trend. In 2024, 26% (n=609) of all CDI cases were community-associated, with 41% presenting with symptoms in the community (community-onset).

Severe outcomes requiring ICU admission or colectomy were reported in 55 cases (2%) in 2024, a reduction from 79 cases (4%) in 2023. This aligns with the 2019–2022 average (2%), suggesting a return to baseline severity following a transient increase.

C. difficile strain typing was conducted for 884 cases, matched between the National Reference Laboratory and HPSC. The most common sequence types were ST11, ST2, and ST8. The majority of isolates were positive for *tcdA* (92%) and *tcdB* (97%) toxins. Over half (58%) of the typed cases were part of molecular clusters, primarily involving ST11 and ST8. Most typed cases were new (91%), healthcare-associated (73%), and demonstrated low overall severity (2%).

Figure 12: Origin of C. difficile infection by healthcare facility type, 2019-2026. (Source: HPSC)



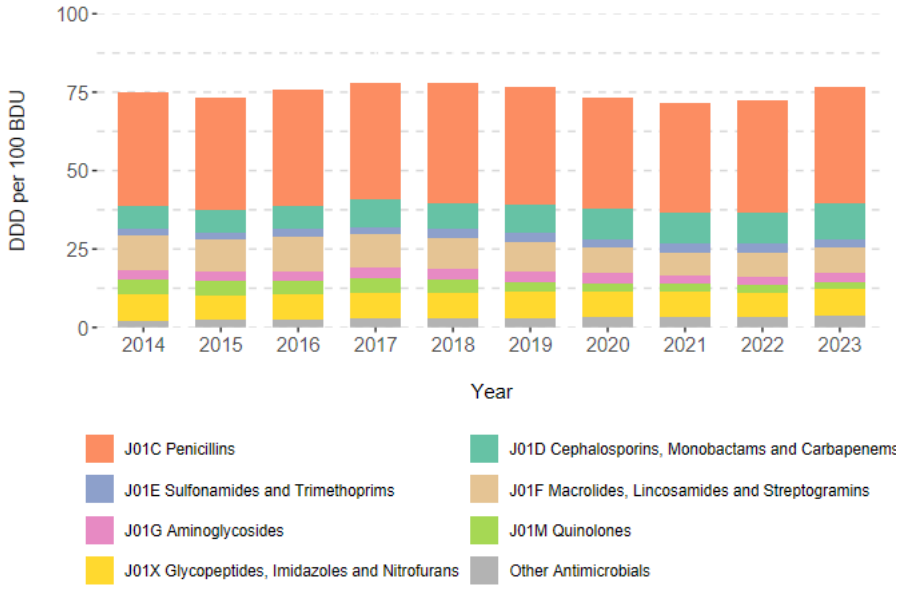
Antimicrobial consumption:

Antimicrobial prescribing is a key part of sepsis management. However, high rates of antimicrobial consumption increases AMR. Surveillance of both the quantity and the quality of antimicrobial use is therefore crucial, as AMR challenges the treatment of sepsis by reducing the number of effective antimicrobials to treat the condition.

Quantity of antimicrobial prescribing (Acute hospitals):

- The median rate of antimicrobial consumption in 42 participating acute hospitals in Ireland in 2023 was 71.8 defined daily doses (DDD) per 100 bed days used (BDU), ranging from 20.9 to 109.2 DDD per 100 BDU. This represents a slight increase from 68.1 DDD per 100 BDU in 2022.
- Similarly, the mean consumption also increased, rising from 72.6 DDD per 100 BDU in 2022 to 76.8 DDD per 100 BDU in 2023. This rate of antimicrobial consumption is mid-range in comparison with other European countries.
- There was a slight increase in the consumption of penicillins, other beta-lactams, macrolides, glycopeptides, imidazoles, and nitrofurans. In contrast, a slight decrease was observed in the consumption of sulfonamides and trimethoprim.
- Carbapenem consumption remained relatively stable over the last three years, recorded at 2.4 DDD per 100 BDU in 2023. Conversely, the consumption of second and third-generation cephalosporins has been increasing steadily over the past five years.

Figure 13: Annual National Hospital Antimicrobial Consumption rate in DDD p 100 BDU by Pharmacological subgroup (ATC level 3).



National Clinical Programme for Sepsis (NCP: Sepsis) Governance and future planning

In 2023, governance for the NCP: Sepsis moved under National Quality and Patient Safety (NQPS). It is planned to have a greater integrated approach to sepsis, deteriorating patient and clinical handover ensuring that sepsis remains a key patient safety improvement priority, as identified in the HSE's Patient Safety Strategy 2019-2024[9].

National Clinical Audit of Sepsis:

The National Clinical Programme (NCP) for Sepsis undertakes clinical audit in each acute hospital annually to assess compliance with NCG No. 26 (Sepsis Management for Adults, including Maternity) and the international guidelines for the management of septic shock and associated organ dysfunction in Children (SSCGC) HSE 2021. These audits measure compliance with key metrics from initial patient presentation to completion of immediate treatment, that, when followed, increase the likelihood of better care and reduced mortality. These are; screening for sepsis on initial presentation or when an inpatient becomes unwell, using the sepsis form to aid identification, recognising the at-risk criteria for sepsis and undertaking the immediate appropriate treatments by following the 'Sepsis 6' protocol.

General findings from audit data for adult (non-maternity) inpatients nationally (audit period Q1 2024, all hospitals combined) showed that the initial screening for sepsis has an overall compliance rate of 87%, this is an indication that the initial clinical presentation either in ED or when the patient deteriorates as an inpatient, the immediate screen for sepsis is done promptly and correctly. Accordingly, the recognition of the risk factors for sepsis and/or septic shock, by the treating clinician, are evident with an overall compliance rate of 87%. This indicates that there is a clear and robust understanding of the risk of sepsis in patients who are becoming unwell. As sepsis is a time critical emergency, significant improvement is required in the use of the tools that are designed to aid critical decision making for clinicians. The use of the Sepsis form, in adult inpatient care, has a national compliance rate of only 17%. This is a very poor indicator. Once the patient has been screened and risk factors are highlighted the pathway of treatment loses its time critical element. Although the national compliance to 'Take 3', taking relevant clinical measurements such as bloods, urine & blood lactate is 75% and the national compliance to 'Give 3', Antimicrobials IV fluids & Oxygen, is 83% nationally, compliance to the requirement to complete the 'Sepsis 6' bundle in the 1-hour time frame is only 30%.

Audits of Paediatric (full year 2023 data) & Maternity Inpatients (full year 2024) yield similar findings in the use of the form & sepsis tools, however compliance to the 'Sepsis 6' bundle is marginally higher in both cohorts.

The findings of these audits, align with previous audit data, particularly the consistent poor compliance with the use of the sepsis form and poor documentation overall. Not using the sepsis clinical decision support tool hinders the ability to collect correct and timely data, and correct diagnosis of Sepsis & Septic Shock as this is not always documented in the

clinical notes. Additionally, it inhibits the ability to measure timeliness of sepsis 6 bundle, a crucial patient care outcome in sepsis management.

Each hospital received a detailed report of their own audit findings and recommendations were provided on how to improve the care and management of inpatients with or suspected to have sepsis/septic shock. The NCP: Sepsis will continue to audit hospitals annually for Adult, Paediatric and Maternity patients and support hospitals to implement recommendations and quality improvement plans.

As part of the revision of the National Clinical Guideline, and to address the poor compliance to the use of the sepsis tools including the sepsis form, a full revision of the adult and maternal sepsis forms took place. The final clinical decision support tools were signed off following a successful pilot phase and will be implemented in all hospitals in 2025.

Revision of the National Clinical Guideline:

A rapid update to National Clinical Guideline (NCG, No.26), Sepsis Management for Adults (including Maternity) (DoH, 2021), was undertaken by a sepsis guideline review team in November 2024 to incorporate five key recommendations from the Surviving Sepsis Campaign Guidelines (SSCG 2021).

The update relates to changing the guideline recommendations 11 & 16, adding three new recommendations 16a, 38a & 48a, updating guidance on 'Time Zero' (guideline pg. 48) and structure and governance of local hospital Sepsis committees (guideline pg. 41). This rapid update is required because the Society of Critical Care Medicine Surviving Sepsis campaign (SSCG) updated their guidelines in 2021, (SSCG 2021).

While this guideline rapid update incorporates what are the most relevant aspects of the SSCG 2021 guidelines that were not previously reflected in NCG No. 26, a comprehensive review and full revision of NCG No. 26 will be undertaken in due course.

Completion of this this rapid update is essential because it impacts on patient care including; the type of fluid used during patient resuscitation, use of peripheral vasopressors, the method of oxygen delivery and the anti-microbial usage for patients with sepsis and septic shock.

Changed guidance on antimicrobial resistance delineates a 1-hour and a 3-hour response for probable and possible sepsis respectively. The original guidance recommending antimicrobials within 1 hour was based on very minimal evidence and, given the potential to cause harm with increased unnecessary antimicrobials coupled with the lack of clear benefit, an international consensus has coalesced to loosen the time frames to try and avoid harm. The change from 1 hour to 3 hours will particularly affect the management of patients with possible sepsis without shock. A period of rapid investigation is recommended and if concern for infection persists antimicrobials should be administered within 3 hours. The 1-hour timeframe will remain for patient with probable sepsis or possible septic shock.

A literature search was undertaken by the HSE Library Service to identify any additional research evidence published since the SSCG 2021 to support this rapid update. No new practice changing research evidence was identified from the peer reviewed evidence in SSCG 2021

To reflect the guideline, update the sepsis tools, used by clinicians, have been updated and piloted across multiple acute hospitals nationally. The piloting of these tools completed in June 2025 and received very favourable feedback from clinicians, keen to use the revised tools to aid their clinical care and critical decision making. An update of the HSELanD Sepsis mandatory training programme is now available on HSELanD.ie and equivalent in person training materials are being developed by the NSP together with a supporting SOP. The NCP is working with the national simulation programme team to develop simulation training for use across all acute hospitals.

The rapid updated sepsis guideline, its associated documents & eLearning programme was formally launched by the Minister for Health, Jennifer Carroll McNeill on Monday 1st September 2025 via webinar. The webinar provided an opportunity to share learning and expertise on the rationale for the update, its importance for clinicians caring for patients with sepsis and/or septic shock and the impact these changes will have on patient outcomes.

Following the launch, a comprehensive training and education programme, developed by the national sepsis programme team, will take place across all hospitals nationally. Full implementation of the Guideline is expected by October 31st 2025.

Five Year Strategic Plan:

The Action on Sepsis: Five Year Strategy will be published in 2025. The strategy outlines a five-year strategic programme of work from 2025 to 2030. This comprehensive strategy, grounded in Irish data and international best practices, is structured to tackle the challenges of sepsis management and prevention. This ambitious Strategy will build on and enhance the existing priorities and work of the programme. It will include preventative measures, awareness of recognition, standardised management, and follow up and management of those that survive sepsis, as they suffer significant morbidity, and are at increased risk of recurrence of sepsis.

The strategy sets out a range of HSE actions aligned to the six priority areas:

1. Governance
2. Preventing Avoidable Cases of Sepsis
3. Increasing Awareness of Sepsis amongst the Public and Health Professionals
4. Improving Identification and Treatment across the Patient Care Pathway
5. Improving Support and Care for Sepsis Survivors
6. Research for Sepsis

The provision of identified programme resources is an essential requirement to delivery on this plan, as well as consultation, input, and support for implementation from key stakeholders.

Acute Hospitals:

Robust structures have been put in place to support and monitor implementation of National Clinical Guideline No. 26 – Sepsis Management (NCG) (Version 2) and the Surviving Sepsis Campaign International Guidelines for the Management of Septic Shock and Sepsis-Associated Organ Dysfunction in Children (SSCGC 2020) in the acute hospital setting. All acute hospitals have a deteriorating patient / sepsis committee which provides clinical oversight and governance for the management of sepsis care. As part of the sepsis KPI it is expected that this group will meet at least quarterly and a have reporting structure to the hospital and health region executive teams.

The rapid update to the guideline provides further clarification on the structure and governance of acute hospital deteriorating patient / sepsis committees. It advises that a stand-alone sepsis committee may be desirable and should be supported, it may also be appropriate for individual hospitals to incorporate this committee under an umbrella group, such as a deteriorating patient (DP) committee, provided some important caveats are adhered to:

- The Terms of Reference (TOR) of the umbrella committee should state that sepsis is a standing item on the agenda and ample time should be set aside for discussion of relevant issues such as national updates, mandatory education status across all disciplines, sepsis audit recommendations and status of resulting quality improvement action plans, and plans for World Sepsis Day awareness campaigns.
- The TOR should state that the Sepsis ADON for the relevant Health Region should be a committee member
- The arrangement should be reviewed every 12 months with the Sepsis ADON for each Health Region reporting back to the National Sepsis Team
- All hospitals will be expected to complete a key performance indicator on sepsis management that includes, mandatory training, audit, QI and governance, this will be reported through the Acute BIU metadata quarterly.

- Role of the RHA Sepsis ADONs:
    - Undertake process audits (adult, maternity & paediatrics) to measure compliance at hospital level with the NCG and provide feedback on audit results to hospital executive teams.
    - Deliver education and training on Sepsis based on the eLearning HSELanD mandatory programme
    - Provide guidance and support to the DP/Sepsis committees on Audit findings and QI initiatives
    - Provide information and updates as relevant

All hospitals hold sepsis awareness events for World Sepsis Day - 13th September and throughout the month of September (Sepsis Awareness Month). These events included: sepsis simulations; information stands for staff, patients, and visitors; virtual and in person presentations; staff quizzes; poster displays and ward-based education.

Health Regions:

A key priority of the Action on Sepsis: Five Year Strategy is to ensure that the changing structures of the Health Services are reflected in the delivery of its objectives. NQPS will work closely with their counterparts in the Health Regions and a key priority of this work will be the assurance that robust governance arrangements are in place with responsibility and oversight of the identification and management of Sepsis, and that quality improvement processes are implemented and evaluated following audit and serious incident reviews. An eLearning programme is under development for all clinical staff in non-acute settings, this will focus on identification and awareness of Sepsis and will be made mandatory for all relevant clinical staff working in non-acute settings to have completed this training by the end of 2026 and every three years thereafter.

Sepsis associated crude mortality rates for 2022, 2023 and 2024 per Health Region are presented in table 10

Table 10: Health Region crude mortality rate for sepsis & septic shock (acute hospitals), 2022-2024 Adult in-patients only, excluding maternity and paediatrics.

Health Region	2022	2023	2024
HSE Dublin and Midlands	23.5%	21.0%	23.6%
HSE Dublin and South East	22.9%	19.7%	21.0%
HSE Dublin and North East	23.0%	21.3%	22.1%
HSE West and North West	23.6%	19.1%	20.6%
HSE South West	22.3%	18.9%	21.2%
HSE Mid-West	25.0%	23.7%	21.5%
National	23.3%	20.6%	21.8%

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Appendix 1: The National Sepsis Report Subcommittee

Member	Title
Dr. Michael O'Dwyer	National Clinical Lead, National Sepsis Programme
Grainne Cosgrove	Senior Statistician, QPS Intelligence & Education
Bláthnaid Connolly	Programme Manager, National Sepsis Programme
Celine Conroy	Director of Nursing, HSE Dublin and South East
Prof Fidelma Fitzpatrick	Chair Sepsis Steering Committee

Appendix 2: The National Sepsis Programme Team 2024

Member	Title
Dr. Michael Dwyer	National Clinical Lead, National Sepsis Programme
Bláthnaid Connolly	Programme Manager, National Sepsis Programme
Sue Markey	Sepsis ADON HSE Dublin and North East
Karen D Holden	Sepsis ADON HSE Dublin and Midlands
Susan Keane	Sepsis ADON HSE Dublin and South East
Denise McCarthy	Sepsis ADON HSE South West
Ronan O'Cathasaigh	Sepsis ADON HSE West and North West
Yvonne Young	Sepsis ADON HSE Mid-West
Nuala Clarke	Sepsis ADON HSE Dublin and Midlands - Children's Health Ireland

Appendix 3: The Coding Process

The source document for coding in Ireland for HIPE is the medical record or chart. The clinical coder uses the entire chart to extract the conditions and procedures to provide a complete record of the patient and their health care encounter. The clinical coder, the person who translates medical terminology into alphanumeric code, performs an essential function in providing quality, accurate, and uniform medical information and greatly contributes to the continuous growth of medical knowledge. In addition to the discharge summary or letter, additional documentation referenced for coding a case include nursing notes, consultation reports, progress notes, operative reports, pre- and post-operative reports, pathology reports and more recently the sepsis screening form.

The classification used since 1st January 2024 is ICD-10-AM/ACHI/ACS 12th Edition (International Classification of Diseases, 10th Revision, Australian Modification/ Australian Classification of Health Interventions/Australian Coding Standards). The Australian Coding Standards have to be adhered to by clinical coders in their work. These are complemented

by the Irish Coding Standards (ICS). The ICS are developed to complement the Australian Coding Standards (ACS) and are revised regularly to reflect changing clinical practice.

ACS 0010 Clinical Documentation And General Abstraction Guidelines states that coders cannot infer diagnoses from laboratory results and that "The listing of diagnoses on the front sheet and/or the discharge summary of the clinical record is the responsibility of the clinician". It further states, "Do not use test results to determine code assignment where there is no clinical documentation within the health care record to indicate the significance of the test result, or there is an unclear relationship between a test result and a condition".

All HIPE data are keyed in at the hospital using the HIPE Portal data entry system that runs an extensive number of validations edit checks to ensure the quality of the data. Other data quality activities and data quality tools are in use at local and national HPO level.

Note on update to the classification system

The classification system used to code diagnoses and procedures in HIPE data was updated from the 10th Edition of the ICD-10-AM/ACHI/ACS classification to the 12th Edition of ICD-10-AM/ACHI/ACS on 1st January 2024. This update included some additional diagnosis codes for sepsis (see Appendix 4a), and a change to the Australian Coding Standard (ACS) for sepsis. In particular, ACS 0110 Sepsis and Septic Shock now states:

"Where there is documentation of vague diagnostic terms not indexed under the lead term Sepsis, such as 'chest sepsis' or 'biliary sepsis', assign a code for Infection/by site.

Where there is documentation of urosepsis alone (i.e., not otherwise specified (NOS)), assign a code for urinary (tract) infection (see Alphabetic Index: Infection/urinary).

Note that codes for terms seemingly synonymous with sepsis (e.g., septicaemia, bloodstream infection) are assigned as directed by the ICD-10-AM Alphabetic Index. The term 'septic' describes an infection or inflammation in an organ or tissue and is not synonymous with sepsis."

Where a diagnosis of urosepsis was documented prior to 2024 (before the update to the 12th Edition of ICD-10-AM/ACHI/ACS), coders were directed to code both a diagnosis of sepsis and urinary tract infection. The guidance on the coding of urosepsis in the 12th Edition has resulted in a reduction in the number of inpatients with a diagnosis of both sepsis and urinary tract infection from 4,906 in 2023 to 2,740 in 2024, a decrease of 2,166 (44%).

Sepsis forms will no longer be used for coding purposes but instead will used to signpost HIPE coders to the medical records to confirm if infection, sepsis or septic shock has been documented.

Appendix 4a: ICD-10-AM 12th Edition Diagnosis Codes for Sepsis

Sepsis (based on Sepsis-3 definition)

ICD-10-AM Diagnosis Codes	Description
A40	Sepsis due to streptococcus and enterococcus
A41	Other and unspecified sepsis
A02.1	Sepsis due to salmonella
A22.7	Sepsis due to anthrax
A26.7	Sepsis due to Erysipelothrix [erysipeloid] [rhusiopathiae]
A32.7	Sepsis due to Listeria [monocytogenes]
A42.7	Sepsis due to actinomycosis
B37.7	Sepsis due to Candida
A03.7[1]	Sepsis due to Shigella
A20.7[1]	Sepsis due to plague
A21.7[1]	Sepsis due to tularaemia
A23.7[1]	Sepsis due to Brucella
A24.7[1]	Sepsis due to glanders and melioidosis
A28.01[1]	Sepsis due to Pasteurella, not elsewhere classified
A28.21[1]	Sepsis due to extraintestinal yersiniosis
A39.7[1]	Sepsis due to Meningococcus
A54.7[1]	Sepsis due to Gonococcus
B00.71[1]	Sepsis due to herpesviral [herpes simplex] infection
T81.42[2]	Sepsis following a procedure
R65.1[3]	Systemic inflammatory response syndrome [SIRS] of infectious origin with acute organ failure / Severe Sepsis

1. Additional diagnosis codes included in 12th Edition, no corresponding 8th or 10th Edition codes
2. ICD-10-AM 8th Edition code, no corresponding 10th or 12th Edition Code.
3. There is no code for SIRS of infectious origin with organ failure in 12th Edition. In 12th edition code R65.1 Severe sepsis cannot be used

Septic Shock

ICD-10-AM Diagnosis Codes	Description
R57.2	Septic Shock

NOTE:

Data are based on inpatients grouped into two mutually exclusive categories:

(i) Inpatients with any diagnosis (principal or secondary) of septic shock
(ii) Inpatients with any diagnosis (principal or secondary) of sepsis (including severe sepsis), excluding cases with any diagnosis of septic shock as these are already captured in the septic shock category.

Appendix 4b: ICD-10-AM 12th Edition Diagnosis Codes for Infections

ICD-10-AM Codes	Description
A00 - B99[1]	Certain Infectious & Parasitic Diseases
G00 - G07	Meningitis, Encephalitis, Intracranial and intraspinal abscess and granuloma
J00 - J06	Acute upper respiratory infections
J09 - J18	Influenza and pneumonia
J20 - J22	Other acute lower respiratory infections
J36	Peritonsillar abscess
J44.0	Chronic obstructive pulmonary disease with acute lower respiratory infection
K35.0[2]	Acute appendicitis with generalised peritonitis
K35.2[3]	Acute appendicitis with generalised peritonitis
K35.3[3]	Acute appendicitis with localised peritonitis
K57.0, K57.2, K57.4, K57.8	Diverticular disease of intestine with perforation and abscess
K61	Abscess of anal and rectal regions
K65	Peritonitis
L00–L08	Infections of the skin and subcutaneous tissue
M00–M03	Infectious arthropathies
M86	Osteomyelitis
N10 - N12	Acute, chronic & not specified tubulo-interstitial nephritis
N13.6	Pyonephrosis
N39.0	Urinary tract infection, site not specified
N45	Orchitis and epididymitis
R65.0	Systemic inflammatory response syndrome [SIRS] of infectious origin without acute organ failure
T80.2	Infections following infusion, transfusion and therapeutic injection
T81.4	Wound infection following a procedure, not elsewhere classified

T81.41[3]	Wound infection following a procedure
T82.6	Infection and inflammatory reaction due to cardiac valve prosthesis
T82.7	Infection and inflammatory reaction due to cardiac and vascular devices, implants and grafts, not elsewhere classified
T83.5	Infection and inflammatory reaction due to prosthetic device, implant and graft in urinary system
T83.6	Infection and inflammatory reaction due to prosthetic device, implant and graft in genital tract
T84.5	Infection and inflammatory reaction due to internal joint prosthesis
T84.6	Infection and inflammatory reaction due to internal fixation device [any site]
T84.7	Infection and inflammatory reaction due to other internal orthopaedic prosthetic devices, implants and grafts
T85.7	Infection and inflammatory reaction due to other internal prosthetic devices, implants and grafts
T89.02	Open wound with infection
U07.1	Coronavirus disease 2019 [COVID-19], virus identified.
U07.2	Coronavirus disease 2019 [COVID-19], virus not identified.

[1.] Excluding diagnosis codes already included in the list of sepsis codes, i.e. A40, A41, A02.1, A22.7, A26.7, A32.7, A42.7, B37.7.
[2.] ICD-10-AM 6th Edition code.
[3.] ICD-10-AM 8th Edition code.

Appendix 4c: Pregnancy related exclusions

HIPE Admission type = 6 (Maternity) or Any diagnosis in HIPE (principal or additional) of O00 – O99 (Pregnancy, Childbirth and the Puerperium) or Any diagnosis of

- Z32 Pregnancy examination and test
- Z33 Pregnant state, incidental
- Z34 Supervision of normal pregnancy
- Z35 Supervision of high-risk pregnancy
- Z36 Antenatal screening
- Z37 Outcome of delivery
- Z39 Postpartum care and examination
- Z64.0 Problems related to unwanted pregnancy
- Z64.1 Problems related to multiparity