Australian Commission on **Safety and Quality** in Health Care

National Sepsis Program Extension Epidemiology Report

A national analysis of the sepsis patient journey in Australian public hospital admitted care

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Executive Summary

The Australian Commission on Safety and Quality in Health Care (the Commission) leads and coordinates national improvement in the safety and quality of health care. Using the best available evidence and working closely with patients, carers, clinicians; the Australian state and territory health services; the private sector; managers and healthcare organisations; the Commission works to ensure that the health system can deliver safe, high-quality care.

Sepsis is a life-threatening and time critical condition that arises when the body's response to an infection damages its own tissues and organs. It is a major cause of morbidity and mortality. In 2017, there were approximately 55,251 cases of sepsis in Australia and 8,702 sepsis related deaths.[1] Sepsis is also very costly, in Australia the direct hospital cost of sepsis to the healthcare system is approximately $700 million per year, with indirect costs of more than $4 billion per year.[2]

Improving early detection, recognition and treatment of sepsis is key to preventing illness and death. This has been the focus of the first National Sepsis Program (2020-2022) and the current National Sepsis Program Extension (2023-2025).

Epidemiological data is used by health services to plan and evaluate health care delivery and guide clinical practice. It is integral to any quality improvement process.

Collecting reliable and consistent sepsis data is challenging. In 2017, Stopping Sepsis: A National Action Plan[3] called for the development of a National Minimum Data set, to address inconsistencies in documentation and coding. Work to develop a National Sepsis Data Plan to strengthen the overall quality of sepsis data is underway.

This long-term strategy is important, however current data can still deliver valuable insights to inform quality improvement and clinical care.

In 2024, the Commission conducted analysis on health outcomes for patients who received admitted care in public hospitals between 2013-14 and 2022-23, who were coded with at least one explicit sepsis diagnosis.

This report examines pre and post sepsis separations for patients with a sepsis diagnosis within a 30-day window, to better understand the sepsis patient journey in public admitted care. Due to the methodology and nature of the analysis, focusing on patient activity, the figures presented are not directly comparable to previous estimates. However, the increased prevalence of sepsis indicated is consistent with contemporary global estimates.[4]

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[1] Rudd KE, Johnson SC, Agesa KM, Shckelford KA, Tsoi D, Kievlan DR, et al. Global, regional, and national sepsis incidence and mortality, 1990-2017: analysis for the Global Burden of Disease Study. Lancet 202;395(10219):200-11

[2] The George Institute for Global Health (2021*) Cost of sepsis in Australia*, http://www.georgeinstitute.org/sites/default/files/cost-of-sepsis-in-australian-report.pdf

[3] The George Institute for Global Health (2017), Stopping Sepsis: A National Actions Plan, https://www.georgeinstitute.org.au/sites/default/files/documents/stopping-sepsis-national-action-plan.pdf

[4] Institute for Health Metrics and Evaluation (IHME), University of Oxford. **MICROBE**. Seattle, WA: IHME, University of Washington, 2024. Available from https://vizhub.healthdata.org/microbe. (Accessed14 May 2025).

Key Findings

One in seven sepsis cases resulted in a hospital death in 2022-23

Between 2013-14 and 2022-23 there were over 0.9 million admitted care separations involving sepsis. Age and sex adjusted sepsis rates peaked at 38 per 10,000 population in 2013-14 before dropping to 27 per 10,000 in 2022-23.

The average time spent in hospital, and in-hospital mortality, were similar between 2013-14 and 2022-23.

Emergency admissions continue to account for three in every four sepsis separations, but their share of hospital sepsis deaths has decreased over time. This suggests that efforts to improve recognition and response in emergency settings through awareness and sepsis pathways may be having a positive effect.

Patients with chronic and complex health conditions are at greater risk and are harder to treat

Almost one in three admissions for sepsis also had diabetes. Notable proportions of those treated for sepsis in hospital also had renal disease or cancer.

The average length of stay for patients with sepsis as a secondary diagnosis was almost twice that of patients with a primary diagnosis. This cohort was also more likely to be admitted to ICU and have longer ICU stays.

Over half of all post sepsis readmissions over a 12-month period occurred in the first 30 days after discharge. Of those who returned in the 30 days after sepsis, at least one in five were treated for sepsis again.

Analysis confirmed that older people or aged care residents were more likely to be admitted to hospital and treated for sepsis.

Aboriginal and Torres Strait Islander people are more likely to be hospitalised for sepsis.

The latest analysis period of 2022-23 saw 5,753 sepsis separations for Aboriginal or Torres Strait Islander patients. The Australian Bureau of Statistics' (ABS) medium series projection[5] for Aboriginal or Torres Strait Islander population was over 1 million as at 30 June 2022. This translated to approximately 6 sepsis separations per 1,000 Aboriginal or Torres Strait Islander people, double that of the non-indigenous rate.

Social determinants appear to affect readmission risk.

Hospital transfer data suggests that rural living and higher socio-economic disadvantage are important risk factors associated with 30-day readmission.

[5] https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-and-projections-aboriginal-and-torres-strait-islander-australians/latest-release , accessed 30 Oct 2024

The average cost of a sepsis separation has increased by 50% over a 10-year period

Managing comorbidities and sepsis in the context of complex social determinants and intersectionality may be driving increased resource utilisation.

Future Directions

Collaboration to reach priority groups

Partnerships with chronic disease associations such as Diabetes Australia, Kidney Health Australia and Cancer Australia may help to ensure that future sepsis awareness efforts reach those most at risk. Health services should also consider targeted quality improvement initiatives in chronic disease services/clinics.

A National Sepsis Data Plan

The quality and utility of sepsis data will be enhanced by:

- consensus on the exact code combinations to define sepsis
- inclusion of recommended ‘Minimum Core Set of Cultural and Language Indicators’
- data linkage including mortality sources, private hospital data, emergency department presentations and post-hospital follow up care.

Jurisdictional analysis

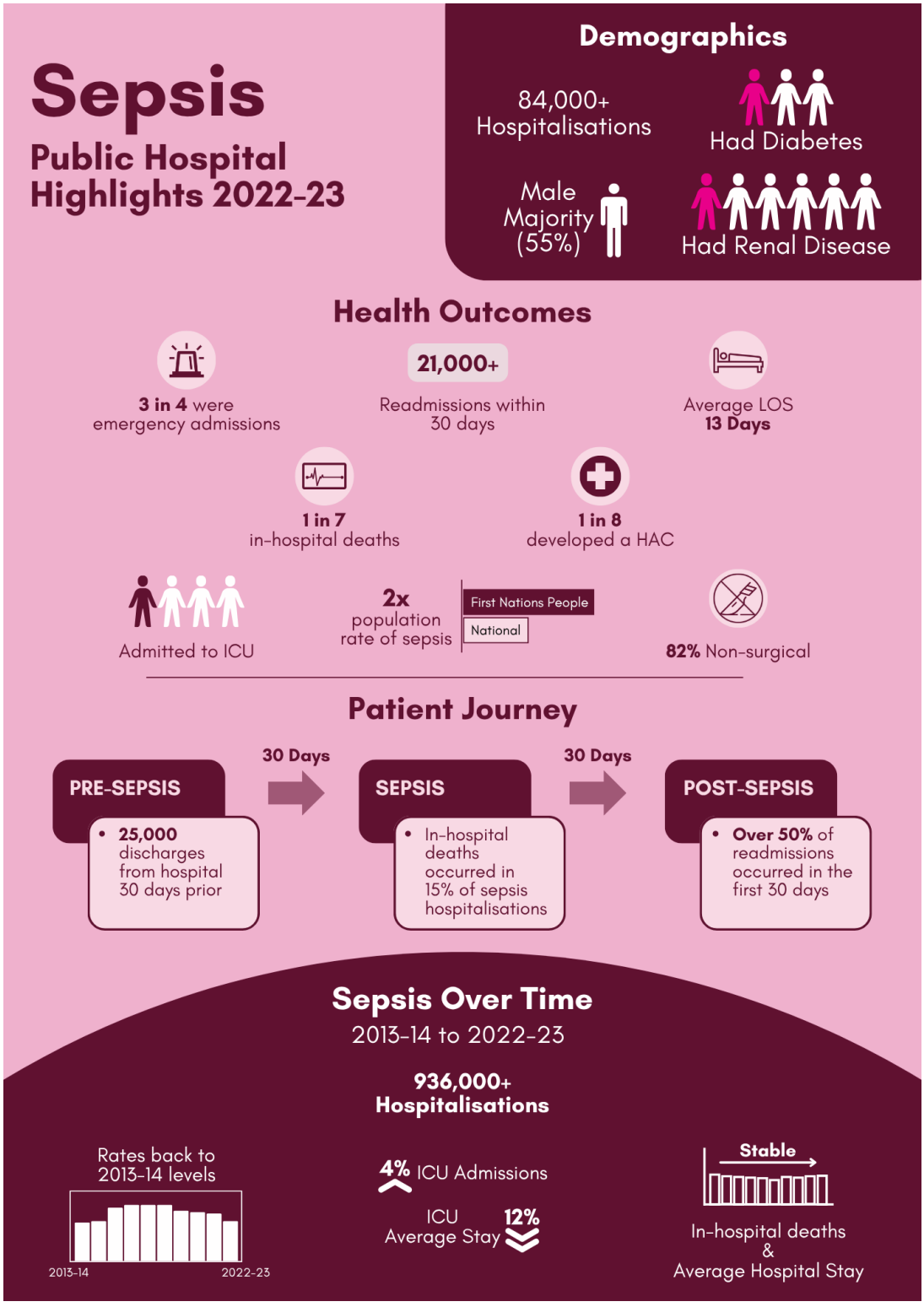
The Commission did not compare differences between Australian states and territories; however, the insights gained from this report suggest that jurisdictions may benefit from replicating the search parameters of this report.

Improving identification and management of complex infection cases, and the transfer of information across hospital systems may equip health services to evaluate the likelihood of a patient developing sepsis, and/or mitigate a subsequent sepsis hospitalisation.

Jurisdictions should also consider targeted subgroups, exploring local variation in hospital, geographic and patient level data to identify opportunities for local quality improvement including ways to strengthen health equity.

Tailored analysis of specific populations may also help health services better assess the prevalence and impact of sepsis on those groups. This includes paediatric and neonatal cohorts to ensure that the insights about risk factors are not masked by the weight of adult patient data

Report Infographic



alt= “snapshot of patient journey 2022-2023 including demographics, health outcomes and sepsis separations” time”.

HAC: **H**ospital **A**cquired **C**omplication is a medical complication that can happen to a patient while in hospital that was not present when they were admitted, for example a surgical site infection or pressure ulcer.

Background and Introduction

Health services need robust data to understand prevalence, recognition, responses, and impact of sepsis on populations, health services or systems; and to inform day to day clinical management.

Using explicit sepsis codes from editions 8 to 12 of the ICD-10AM, this report developed as part of the National Sepsis Program Extension investigates trends in sepsis separations in Australian public hospitals. Understanding the sepsis patient journey by examining before and after sepsis admissions highlights parts of the public hospital system where targeted improvement in sepsis recognition and response may add the most value. This includes delivering better patient outcomes and in doing so decreasing the burden of sepsis on health systems.

The report also highlights current data limitations that should be considered in the development of a National Sepsis Data Plan.

Data collection and methodology

The Australian Commission on Safety and Quality in Health Care (Commission) conducted analyses on health outcomes for patients who received admitted care in public hospitals between 2013-14 and 2022-23 and coded with at least one explicit sepsis diagnosis under Appendix A. This data was extracted from the Admitted Patient Care (APC) data collection collected by the Independent Health and Aged Care Pricing Authority (IHACPA).

Key reporting groups are described below and illustrated in Figure 1.1

- separations with sepsis recorded as the principal diagnosis
- separations with sepsis recorded as an additional diagnosis
- separations with either sepsis as principal or additional diagnoses
- pre-sepsis separations within a pre-defined window
- post-sepsis readmissions within a pre-defined window.

Figure 1 Reporting groups

alt= “Data collection definitions for pre-sepsis, sepsis and post-sepsis separations”.

Data was available for the entire population of admitted care patients in public hospitals, and subsequently no significance testing was performed. Therefore, differences observed in descriptive results reflect actual population differences, to the extent bound by how sepsis was identified in the data collection used.

Readmissions were reported based on the date readmissions occurred, while separations were reported based on date of hospital discharge (separation date).

Descriptive statistics for post-sepsis readmissions in 2022-23 were used to inform the appropriate window for the pre-sepsis and post-sepsis groups in all subsequent analyses.

Descriptive statistics were calculated for each reporting group, over the entire analysis period, and for selected years in more detail. Analysis period for the pre- and post- sepsis groups was limited to 2015-16 to 2022-23 due to data availability.

Selected factors were analysed for each reporting group by financial year. Rates of sepsis, post-sepsis readmissions and pre-sepsis separations were presented per 10,000 population. Rates were standardised by age and sex to a reference population to account for differences in age and sex structure of population across time. The reference population was the Australian Bureau of Statistics' 30 June 2001 Estimated Resident Population (ERP). Denominator population for each reporting year was based on the 30 June ERP prior to the start of each reporting year.

Cost of admitted care for each reporting year was estimated using the gross weighted activity unit (NWAU) for an episode of care with the corresponding national efficient price (NEP) of that year. The NEP, and corresponding NWAU algorithm, is determined annually by the IHACPA.

Table 1 General inclusion and exclusion criteria

Type	Criteria	General analysis	Readmissions
Inclusion	Reporting period	2013-14 to 2022-23	2015-16 to 2022-23
Exclusion	Care type	• Organ procurement-posthumous • Hospital boarder	• Subacute • Non-acute
Exclusion	AR-DRG	• Same day chemotherapy and dialysis • Invalid/error AR-DRG	• Same day chemotherapy and dialysis • Invalid /error AR-DRG
Exclusion	Patient Age	Negative or missing age	Negative or missing age
Exclusion	Principal diagnosis	Missing principal diagnosis	Missing principal diagnosis

Disaggregation

Results are disaggregated using factors relating to patient demographics, hospital characteristics and outcomes. Postcode to ASGS 2021 concordance was used to derive patient remoteness and socio-economic disadvantage i.e. Index of Relative Socio-economic Disadvantage (IRSD). Remote and very remote categories were combined under 'remote' due to smaller numbers.

Table 2 Disaggregation factors

Demographics	Admitted care characteristics	Readmission specific (202-23 only)
• Age • Sex • First Nations • Remoteness • Comorbidities • Socio-economic disadvantage	• Urgency of admission • Transfers from another hospital • Length of stay (overall, ICU) • Admission to ICU • Remoteness (hospital) • Sepsis on admission vs hospital-acquired • Maternal sepsis • Principal diagnosis • Diagnosis Related Group • HACs • Discharge/transfer to residential aged care service • Top 3 ICD-10-AM codes for sepsis	Readmission intervals at • 7 days • 30 days • 90 days • 120 days • 365 days

Sepsis definition

Sepsis was identified using 51 ICD-10-AM codes (8th to 12th edition) based on an 'explicit' definition, recorded as either principal or additional diagnoses. The complete list of explicit sepsis codes is provided in Appendix A. Implicit sepsis definition, for example the presence of at least one infection code together with organ dysfunction, was not considered in this analysis. Therefore 'sepsis' in this report refers to *only explicitly defined cases of sepsis*, and as such there is a likely undercount of sepsis cases that were not recorded with explicit codes.

Applying the same reasoning, designation of 'non-sepsis principal diagnoses' or 'non-sepsis DRGs' for those who received, would eventually receive, or returned to hospital after sepsis treatment does not imply said conditions were unrelated to sepsis. Instead, the intention was to identify possible prevalent conditions within each population cohort that may have contributed to or presented increased risk of requiring sepsis treatment.

Maternal sepsis definition

Maternal sepsis required at least one explicit sepsis code (Appendix A) recorded in the same episode of care with at least one maternal code in Appendix B. Maternal codes were selected to cover the period from pregnancy to postpartum. The denominator population for maternal sepsis calculation was restricted to that of the total corresponding female separations/readmissions over the same analysis period.

Health outcomes

Outcomes were derived based on IHACPA's APC data collection. In-hospital mortality was determined using the recorded separation mode, and surgical separations were defined based on the Australian Refined Diagnosis Related Groups[6] (AR-DRG) classification system. An episode of admitted care is assigned to a Diagnosis Related Group (DRG), taking into account the diagnoses and interventions as well as other characteristics such as age and sex. The highest DRG complexity is assigned for the purpose of public hospital funding. One episode of admitted care can only be assigned one DRG. Therefore, a sepsis separation may not be

[6] https://www.ihacpa.gov.au/health-care/classification/admitted-acute-care/ar-drgs , accessed Oct 2024

classified under the Septicaemia DRG. A more general infection related DRG might be more suitable, despite treatment for sepsis.

Hospital-acquired complications[7] (HACs) were determined using ICD-10-AM (8th to 12th editions) for 12 of the 16 HACs defined in version 3.1 of the HACs List. Hospital-acquired healthcare-associated infections (HAIs) were excluded from analysis due to overlap with the definition for sepsis. It was not feasible to identify unplanned ICU admission HACs from the dataset at the time of the report and these were therefore excluded from analysis.

Unless otherwise stated, results are presented as the number of separations or readmissions, not individual patients. Similarly, the denominator for descriptive statistics, unless stated otherwise, refers to the total separations or readmissions for the reporting year, not number of people in the population. A change in care type, such as statistical discharge from an initial care type record and statistical admission for a new care type, will result in a new separation record. Therefore, only records marked as acute care were considered for readmissions.

Post sepsis readmissions

A readmission was associated with the patient's last hospital stay (index separation), irrespective of whether the patient returned to the same treating hospital.

People for whom episodes of admitted care could not be linked due to invalid pins, a care type of *organ procurement – posthumou*s or *hospital boarder* or died in hospital according to the recorded separation mode, were excluded from the index separation definition. The readmission definition applied the same exclusion criteria for invalid pins, with the additional restriction to limit the scope to acute care episodes only.

A readmission interval refers to the difference (in days) between an index' separation date and the admission date of the associated readmission.

Data was first examined for all readmissions which occurred in the 2022-23. These readmissions occurred within 365 days following an earlier index sepsis separation, and patients may have been readmitted for any reason. The percentage of readmissions was analysed by readmission interval, the associated top 3 principal diagnoses and DRGs as indications of reasons for readmission, from 7 days to up to 365 days following an index sepsis separation. This determined the appropriate readmission interval for subsequent readmission analyses. A 30-day readmission interval was selected as it covered a majority of readmissions over the shortest period.

Pre-sepsis separations

Sepsis separations were traced back to each patients' last episode of admitted care, allowing for up to a pre-defined window between date of the last discharge and subsequent episode of admitted care where sepsis was recorded. A period of 30 days was selected to maintain consistency with the interval used in the readmissions group.

A consequence of the definitions used for pre- and post-sepsis episodes is that the same sepsis episode can serve as both a readmission for a prior hospitalisation, as well as the index of a subsequent readmission, depending on when each event occurred relative to the reporting period. While there is no requirement for a pre-sepsis episode to involve sepsis treatment, sepsis could still have been diagnosed in that episode, documented as being present on admission or hospital acquired.

[7] https://www.safetyandquality.gov.au/our-work/indicators-measurement-and-reporting/hospital-acquired-complications-hacs , accessed Oct 2024

Key Findings

Sepsis in admitted care

Between 2013-14 to 2022-23, there were over 900,000 admitted care separations in public hospitals involving sepsis (Table 1). The following characteristics were observed, as a percentage out of total sepsis separations:

Demographic characteristics

- mostly male (54.7%)
- highest representation from older patients (59.0% aged 65 years and over, followed by 31.7% for other adults (18-64 years), 7.3% for children below 1 year, and 1.9% for those aged 1-17 years)
- mostly lived in major cities (64.0%)
- almost 1 in 3 had diabetes (28.7%), followed by renal disease (15.8%) and cancer (13.4%)
- majority were treated for sepsis recorded as present on admission (87.2%)
- 39.5% recorded sepsis as the principal diagnosis
- representation of maternal sepsis (6.9%) and Aboriginal or Torres Strait Islander patients (5.8%).

Admitted care characteristics

2022-23 sepsis separations showed (Table 7):

- majority of sepsis treated at major city hospitals (67.5%)
- 3 in 4 were emergency admissions (77.9%)
- 1 in 10 were transfers from another hospital (12.2%)
- average length of stay was 13 days
- 1 in 4 were admitted to the ICU (27.8%), with an average ICU stay of 168 hours (7 days)
- most were for non-surgical reasons (81.9%)
- representation of maternal sepsis (7.7%)
- 12.0% developed a non-HAI HAC[8]. Respiratory complications were the most common (3.6%), followed by delirium (3.4%) and cardiac complications (3.3%)
- low representation from residential aged care patients (2.2%).

There were similar characteristics in the sepsis group before and after the COVID-19 pandemic (2017-18, vs 2022-23), including patient remoteness (Table 4 , vs Table 5) and hospital transfers (Table 6 , vs Table 7).

[8] https://www.safetyandquality.gov.au/our-work/indicators-measurement-and-reporting/hospital-acquired-complications-hacs , accessed Oct 2024

Sepsis recorded as secondary diagnosis

In 2022-23, when compared to separations with sepsis as the principal diagnosis, separations where sepsis was present as a secondary diagnosis (Table 5 , Table 7).

Demographic characteristics

- were slightly younger (median age of 70, vs 72 years)
- slightly higher proportion living in major cities (63.0%, vs 57.3%)
- similar levels of socio-economic status (25.1% for patients from the most socio-economic disadvantaged areas, vs 26.3%).

Admitted care characteristics

- lower rates of emergency admissions (77.1% vs 81.2%)
- almost twice the average length of stay (15 vs 8 days)
- 1.6 times as many admissions to ICU (35.2%, vs 21.8%), and longer ICU stays (average 176 hours, vs 104 hours)
- higher proportion of HACs (15.1% developed a non-HAI HAC, vs 6.2%). Common HAC groups were
    - respiratory complications (4.7%, vs 1.3%)
    - delirium (4.4%, vs 1.4%)
    - cardiac complications (4.2%, vs 1.8%).

30-day post-sepsis readmissions

From 2015-16 to 2022-23, there were 202,763 subsequent readmissions within 30 days following a sepsis separation (Table 1).

In 2022-23, 54.6% of readmissions within a year of a sepsis separation occurred in the first 30 days (Table 2). *Sepsis, unspecified (A419)* was the most common sepsis diagnosis for each readmission interval analysed (Table 3).

Compared to the sepsis group, 30-day post-sepsis readmissions in 2022-23 showed the below characteristics ((Table 5), (Table 7)).

Demographic characteristics

- slightly younger (median age 68, vs 70)
- slightly more representation from Aboriginal and/or Torres Strait Islander patients (8.9%, vs 6.8%)[9]
- higher proportions who lived outside of major cities (46.4%, vs 39.0%)
- similar proportions of those with diabetes (31.4%, vs 31.1%), followed by renal disease (13.2%, vs 16.5%) and cancer (14.1%, 13.0%)

[9] This is based on separations not population. Analysis based on population is addressed on pages 6 and 21.

- greater representation from patients in areas with the most socio-economic disadvantage (28.4%, vs 25.4%).

Admitted care characteristics

- more transfers from other hospitals (30.5%, vs 12.2%)
- less ICU admissions (12.0%, vs 27.8%), and shorter average ICU stay (129hrs, vs 168hrs)
- fewer sepsis present on admission (23.3%, vs 90.0%)
- lower proportion of non-HAI HACs (5.5%, vs 12.0%)
- less maternal sepsis (1.5%, vs 7.7%)
- top 3 non-sepsis principal diagnoses were
    - *Urinary tract infection, site not specified (N390)* (3.1%)
    - *Pneumonia, unspecified (J189)* (2.4%)
    - *Cellulitis of lower limb (L0313)* (1.9%)
- top 2 non-sepsis DRGs were
    - *Respiratory Infections and Inflammations, Major Complexity (E62A)* (4.1%)
    - *Kidney and Urinary Tract Infections, Major Complexity (L63A)* (3.0%).

30-day pre-sepsis separations

In 2022-23, there were 24,498 instances where a patient was discharged from hospital up to 30 days before a subsequent sepsis admission.

Compared with the sepsis group, the 30-day pre-sepsis group showed the following characteristics (Table 5, Table 7):

- slightly younger (median age 68, vs 70)
- 1 in 5 had sepsis documented as present on admission (18.9%, vs 90.0%)
- higher proportion of patients who lived outside of major cities (43.4%, vs 39.0%)
- higher proportion of patients in the most socio-economic disadvantaged areas (27.7%, vs 25.4%)
- nearly 1 in 6 had cancer (16.0%, vs 13.0%), with similar profiles for diabetes (29.6% vs 31.1%) and renal disease (11.3%, 16.5%)
- lower emergency admissions (61.6%, vs 77.9%)
- shorter average hospital stays (7 days, vs 13 days)
- lower rates of admission to ICU (9.4%, vs 27.8%), and shorter ICU stays (average 103 hours, vs 168 hours)
- lower proportion of non-HAI HACs (4.7%, vs 12.0%)
- top 3 non-sepsis principal diagnoses were
    - *Urinary tract infection, site not specified (N390)* (2.4%)
    - *Single spontaneous delivery (O80)* (2.1%)
    - *Pneumonia, unspecified (J189)* (1.9%)

- Top 2 non-sepsis DRGs were
    - *Respiratory Infections and Inflammations, Major Complexity (E62A)* (2.8%)
    - *Kidney and Urinary Tract Infections, Major Complexity (L63A)* (2.3%).

Trends over time

While the top 3 sepsis diagnosis codes remained the same, proportion of sepsis separations accounted for by the top 2 increased over time (Table 8):

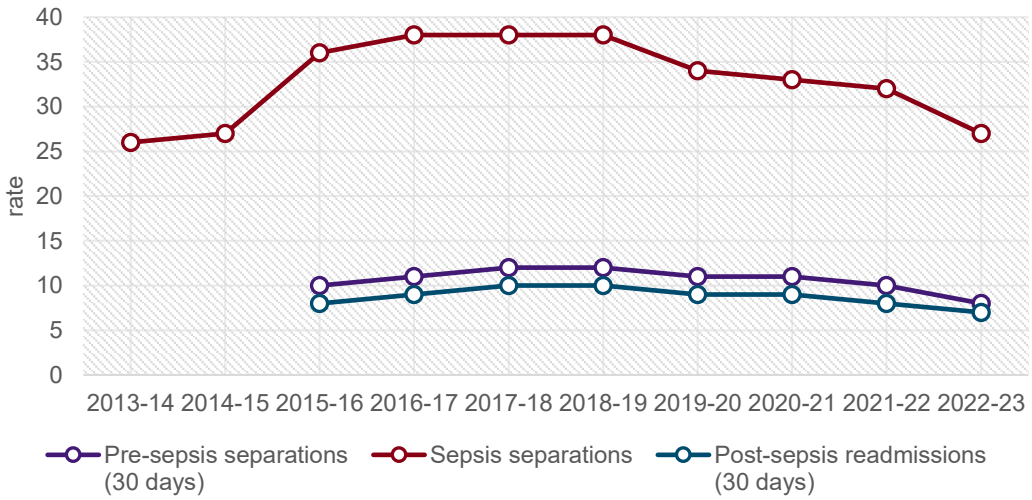
- most common diagnosis was *Sepsis, unspecified (A419)*
    - increased for sepsis separations, from 43.6% in 2013-14 to 60.7% in 2022-23
- second most common was *Septic shock (R572)*
    - increased for sepsis separations, from 14.6% in 2013-14 to 21.9% in 2022-23
- in third place was *Sepsis due to Escherichia coli [E. Coli] (A4151)*
    - decreased from 11.4% in 2013-14 to 9.9% 2022-23 in the sepsis group.

The following showed minor changes between earliest to latest analysis periods (Table 8):

- age and sex adjusted rates (**Figure 2**)
    - from 26 to 27 per 10,000 population for sepsis separations, though middle years (2015-16 to 2019-20) were almost 50% higher
    - 8 to 7 per 10,000 population for 30-day post-sepsis readmissions

10 to 8 per 10,000 population for 30-day pre-sepsis separations.

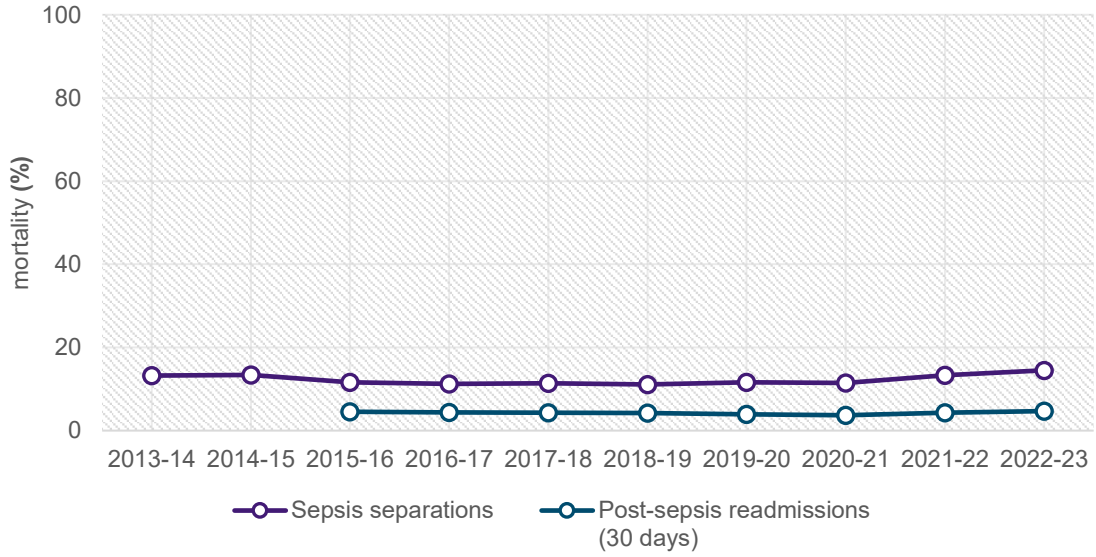
Figure 2 Rate per 100,000 population, age and sex standardised



alt= “age and sex adjusted pre-sepsis, sepsis and post-sepsis separations between 2013-14 and 2022-2023”.

- in-hospital mortality (**Figure 3**):
    - 13.2% to 14.5% for sepsis separations
    - 4.5% to 4.7% for 30-day post-sepsis readmissions.

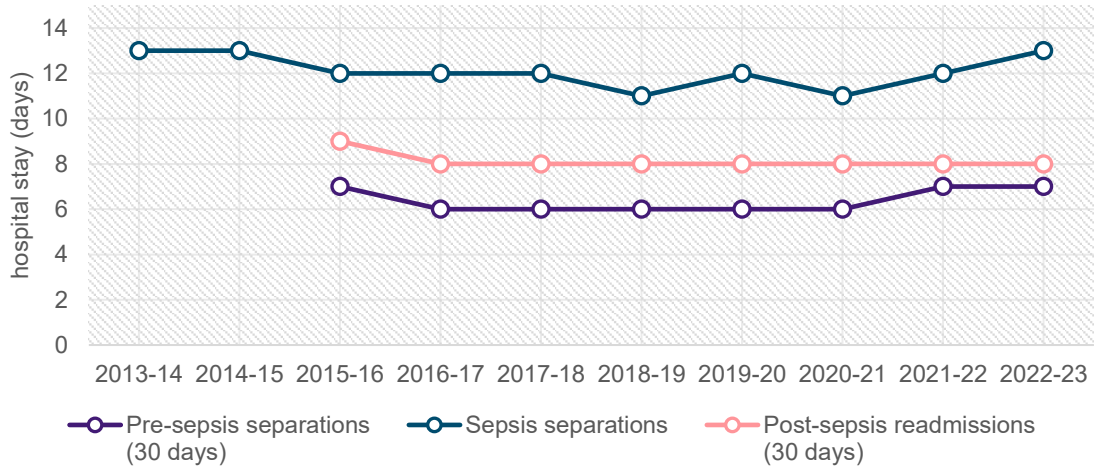
Figure 3 In-hospital mortality (%)



alt= “percentage of in-hospital mortality for sepsis and post-sepsis separations between 2013-14 and 2022-23”.

- average length of stay (**Figure 4**):
    - 13 days for sepsis separations
    - 9 to 8 days for 30-day post-sepsis readmissions
    - 7 days for 30-day pre-sepsis separations.

Figure 4 Average length of stay in hospital



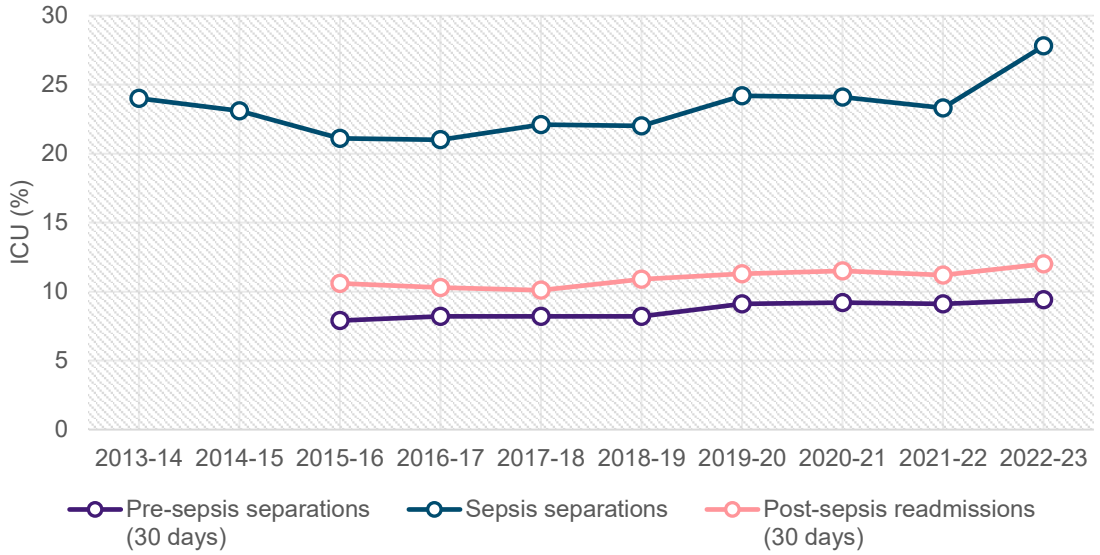
alt= “Average length of stay (days) pre-sepsis, sepsis and post-sepsis separations between 2013-14 and 2022-23”.

- admission to ICU (**Figure 5**):
    - 10.6% to 12.0% for 30-day post-sepsis readmissions
    - 7.9% to 9.4% for 30-day [i]pre-sepsis separations.

The following outcomes showed more notable changes over time (Table 8):

- estimated averaged cost increased:
    - by 50% for sepsis separations, from $20,934 in 2013-14 to $31,440 in 2022-23
    - by 22% for 30 day all cause readmissions following sepsis, from $14,748 in 2015-16 to $17,954 in 2022-23.
- admission to ICU for sepsis separations increased, from 24.0% in 2013-14 to 27.8% in 2022-23 (**Figure 5**).

Figure 5 Admission to ICU (%)



alt= “ICU admissions pre-sepsis, sepsis and post-sepsis between 2013-14 and 2022-23”.

- the average length of ICU stay fell:
    - from 191 hours in 2013-14 to 168 in 2022-23 for sepsis separations
    - from 141 hours in 2015-16 to 129 hours in 2022-23 in all cause 30-day post-sepsis readmissions.
- emergency admission as a proportion of in-hospital deaths decreased:
    - by 7 percentage points for sepsis separations from 74.4% in 2013-14 to 67.5% in 2022-23
    - by 6 percentage points for 30-day post-sepsis readmissions, from 72.5% to 66.1%.

Discussion of key findings

Improvement in sepsis recognition and response

There have been various resources, guidelines and awareness campaigns directed towards sepsis awareness, recognition and treatment in Australia over the last several years, including Australia's first National Sepsis Awareness Campaign in 2018.

The Commission developed the National Safety and Quality Health Service (NSQHS) Standards, as a nationally consistent statement on the standard of care provided by health service organisations. Amongst these are actions under the Recognising and Responding to Acute Deterioration Standard, which aim to ensure timely recognition and treatment of acute deterioration, including sepsis.

In addition to the Standards, the Commission published the national Sepsis Clinical Care Standard in 2022 outlining the care and supporting indicators to ensure 'timely recognition of sepsis, early and appropriate antimicrobial therapy and continuity of care from the acute setting through to discharge and survivorship'.

Together with ongoing efforts and awareness campaigns by State and Territory health departments and organisations including Sepsis Australia, these efforts are expected to contribute to better recognition, and therefore more timely treatment of sepsis in the hospital.

This analysis showed:

- 2022-23 age and sex adjusted rate of sepsis per population returned to similar levels observed in 2013-14.
- emergency admissions accounted for every 3 in 4 sepsis separations, both before and after the COVID-19 pandemic (2017-18 versus 2022-23). However, emergency admissions which ended in a sepsis patient dying in hospital declined over time, from 3 in 4 deaths during 2013-14 to 2 in 3 deaths in 2022-23.
- the average time spent in hospital and in-hospital mortality for sepsis in admitted care experienced little change. While the proportion of sepsis cases requiring admission to ICU increased, the average time sepsis patients spent in the ICU became shorter.

These observations may reflect the changes in coding rules and improvement by health services in recognising deterioration, leading to more efficient response by transferring those cases to the ICU, which in turn may have contributed to a shorter ICU stay. Since most sepsis cases were emergency admissions, hospital deaths reflected a similar percentage of such admissions.

There was *no evidence to suggest sepsis patients admitted to the ICU had an increased likelihood of readmission within 30 days*. While ICU admission in the sepsis group increased over time, rate of 30-day post-sepsis readmissions remained stable. If ICU admission alone, irrespective of the appropriateness, timeliness and quality of care provided, was sufficient to influence the likelihood of a patient returning to the hospital, the readmission rate would also have increased over time.

A recent evaluation review of the NSQHS Standards accreditation results has shown signs of progress in timely implementation of rapid treatment protocols towards sepsis in hospitals. Internal analysis of the period leading up to August 2024 indicated the Health Service Organisations are more likely to be compliant with the Recognising and Responding to Acute Deterioration with 93% of initial assessments deemed compliant. The number of organisations with a 'Not Met' rating for *Actions 8.10* and *8.12* under *Responding to deterioration* and *Action 8.06 - Escalating care* decreased over time. There remains room for improvement, particularly

with *Action 8.05 - Recognising acute deterioration*, which is one of the most frequently identified 'Not Met' actions for organisations at initial assessments.

Sepsis in public admitted care

The majority of sepsis separations, as well as 30-day pre- and post- sepsis groups, were treated in hospitals located in major cities, reflecting the Australian population distribution. The proportion of sepsis separations for remote and outer regional area patients was similar to that of hospital transfers, both before (2017-18) and after the COVID-19 pandemic (2022-23). This analysis did not focus on transfer rates from small to large hospitals, more commonly located in major cities. However, observations fitted the assumption that patients with complex conditions such as sepsis who first present to local remote and outer-regional hospitals were more likely to be transferred to larger, facilities that can manage patients with higher complexity for treatment.

The following groups were more likely to be admitted to hospital and treated for sepsis:

- older people (65 years and over)
- aged care residents (likely frail and/or elderly)
- Aboriginal or Torres Strait Islander patients.

While proportion that involved discharge of patient back to a residential aged care facility (RACF) out of total sepsis separations was small, sepsis hospitalisations rate in the elderly population was higher than that of the overall Australian rate. Given the majority of sepsis patients were aged 65 and over, and elderly patients were more likely to reside in aged care, the small percentage out of total sepsis separations linked to RACF residents suggested most sepsis patients had alternative living arrangements outside a RACF.

From a population perspective, those in RACF were hospitalised more often with sepsis. In 2022-23, there were 1,875 out of 84,382 sepsis separations for patients normally reside in residential aged care. The GEN Aged Care data collection[10] reported close to 181,000 people were in permanent residential aged care as at 30 June 2022, while the Australian Bureau of Statistics[11] (ABS) estimated an overall Australian population of 26 million for the same period. This corresponded to approximately 10 sepsis separations per 1,000 RACF residents, or three times the national rate of 3 per 1,000 individuals.

Aboriginal or Torres Strait Islander patients made up a small proportion of total sepsis separations, likely due to their population size relative to the overall Australian population. However, when examining from a population perspective, Aboriginal or Torres Strait Islander patients were more likely to be hospitalised for sepsis. The latest analysis period of 2022-23 saw 5,753 sepsis separations for Aboriginal or Torres Strait Islander patients. The ABS's medium series projection[12] for Aboriginal or Torres Strait Islander population was over 1 million as at 30 June 2022. This translated to approximately 6 sepsis separations per 1,000 Aboriginal or Torres Strait Islander people, double that of the non-indigenous rate.

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[10] https://www.gen-agedcaredata.gov.au/resources/access-data/2024/april/gen-data-people-using-aged-care, accessed 30 Oct 2024

[11] https://explore.data.abs.gov.au/vis?tm=quarterly%20population&pg=0&df[ds]=ABS_ABS_TOPICS&df[id]=ERP_Q&df[ag]=ABS&df[vs]=1.0.0&hc[Frequency]=Quarterly&pd=2022-Q2%2C2022-Q2&dq=1.3.TOT.AUS.Q , accessed 30 Oct 2024

[12] https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-and-projections-aboriginal-and-torres-strait-islander-australians/latest-release , accessed 30 Oct 2024

The average cost of a sepsis separation in admitted care increased by 50% over the 10 years to 2022-23. In addition to direct hospital costs, indirect costs such as premature deaths also place burden on the health system and the wider Australian community. Sepsis is more common in older patients, who likely have more complex health problems and underlying health conditions.

Sepsis coding rules

Continued changes to clinical definitions, diagnosis and coding criteria affect how sepsis is recorded in administrative data collections (such as the APC NMDS). Sepsis can be coded to the principal diagnosis, an additional diagnosis, or both during an episode of admitted care. The Australian Coding Standards (ACS) is used in to determine the appropriate sequencing of sepsis codes in hospitals.

Key coding standards that impact how sepsis is recorded in the administrative data include (but is not limited to)

- ACS 0001 Principal diagnosis
- ACS 0110 Sepsis, severe sepsis and septic shock.

Broadly, a principal diagnosis refers to the condition 'chiefly responsible for occasioning in the episode of care,' established after evaluation of findings that may include (but is not limited to) medical history, physical and pathological examinations, diagnostic tests and/or procedures, and specialist consultations.

As the body's extreme immune response to an infection, sepsis is always accompanied by infection, regardless of whether ACS guidelines permit the use of an explicit sepsis diagnosis code in an administrative hospital data collection such as the APC NMDS. Consequently, identified 'top non-sepsis' diagnoses or DRGs should be considered in the context of infection control. While such conditions do not mention 'sepsis' by name, they may point to broader implications for effective infection management as patients transition between different types of care within a hospital, across health services as well as between health services and the community environment. This may take the form of communication strategies and protocols established in recommended clinical care pathways as an opportunity to reflect on the patient journey in a more comprehensive manner, before, during and after sepsis treatment.

Prior to the ACS 9th edition (applicable for years prior to 2015-16), there was no requirement for clinical coders to verify sepsis with the treating clinician. For example, ACS 11th edition (applicable from July 2019) now states:

- 'evidence of presence of pathogenic microorganisms alone does not determine the diagnosis of sepsis'
- coders are to 'clarify with the treating clinical to determine whether it is a case of sepsis' where vague diagnostic terms such as 'chest sepsis' are used.

Therefore, the rise in sepsis rate observed in 2015-16 should be interpreted in light of ACS 9th edition's coding rules, rather than solely a sudden increase in community sepsis driving hospital admissions.

Analysis showed that most sepsis separations did not record sepsis as the principal diagnosis. However, *coding of sepsis as an additional diagnosis does not imply that the associated episode of care required fewer resources, or the patients were less unwell, or sepsis was not present on admission.* For example, if an infection was determined to be the chief reason for

that episode of admitted care, sepsis would not be coded as the principal diagnosis even if the patient was also treated for sepsis.

While the proportion of emergency admissions was lower in the group with sepsis as an additional diagnosis, this group's average stay in hospital was longer, with more admissions to ICU and longer time in ICU. Longer hospital stays can increase the risk of developing HACs (however on the inverse HACs can also attribute to a longer length of stay).

The most common sepsis diagnosis code *Sepsis, unspecified (A419)* continues to be used in a significant portion of sepsis separations. The increase in use of *A419* between 2013-14 and 2022-23 may indicate growing recognition of sepsis, facilitated though establishment of (or maturing) sepsis clinical pathways over time, at national and/or jurisdictional levels.

ACS 0110 requires *Septic shock (R57.2)* to be coded in conjunction with another sepsis or infection diagnosis, depending on the ACS edition used. Despite this rule, separations involving a diagnosis of septic shock (and no additional explicit sepsis diagnosis) would still be identified as sepsis patients in this report. Any instance of *Septic shock (R57.2)* used, as with all other sepsis codes listed under Appendix A, satisfies the definition for explicit sepsis for this report, regardless of what other diagnosis codes may also be present. By the same logic, the top 3 sepsis codes are not mutually exclusive. That is, patients with both *Sepsis, unspecified (A419)* and *Septic shock (R57.2)* would be counted once under each category. The extent of overlap between sepsis codes falls outside the scope of this analysis; however, future analyses of this nature would be beneficial for consideration in the development of a national sepsis data plan.

30-day post-sepsis readmissions

Over half of all readmissions following sepsis occurred in the first 30 days of discharge. Analysis showed these readmissions involved slightly younger patients, greater socioeconomic disadvantage and patients were more likely to live outside of major cities, compared to the sepsis group. Transfer from other hospitals was also more common i.e. three times that of the sepsis group.

Potentially contributing factors include:

- patients outside of major cities were more likely to require hospital transfers for complex conditions like sepsis.
- confidence bias from health services that younger patients will continue to recover after hospital discharge. However, when coupled with higher socio-economic disadvantage, these patients may be less able to recover outside of hospital, increasing risk of readmission.
- financial burden associated with longer hospital stays disproportionately affect those in greater socioeconomic disadvantage, leading to patient preference for earlier discharge, and consequently increased risk of readmission.

A patient's ability to perform post discharge selfcare for their sepsis is complex. A multitude of factors impact the recovery trajectory, including:

- multi-disciplinary, patient centred care to assist with post-sepsis syndromes
- clear communication and planning including quality of discharge paperwork
- access to a general practitioner
- support to transition to primary care and availability of community resources
- post-sepsis care pathways
- social determinants such as income and secure housing

- health literacy.

While healthcare teams can help arrange support services a patient needs on discharge, the treating hospital may not be as adept to connect out-of-area patients to their own locally accessible general practice, transition care programs or home and community care programs. As a result, patients transferred to hospitals outside of their locality may fall through the gap. The road to recovery post-sepsis can be long and complex. Those who struggle and have no access to support networks have higher risk of readmission. Readmission can cause further emotional and financial pressure (e.g. loss of income) and the cycle of poor health outcomes with poorer social determinants of health compounds. Health services may also benefit from further consideration of post sepsis readmission risk for people who have cancer, renal disease, diabetes and chronic obstructive pulmonary disease (COPD).

More than one in five 30-day post-sepsis readmissions had sepsis documented as 'present on admission'. In other words, *at least one in five sepsis cases readmitted within 30 days were treated for sepsis again*. With less emergency admissions, fewer ICU admissions and shorter hospital stays, analysis suggests patients readmitted within 30 days presented with less complex health conditions compared to their earlier sepsis episode. Maternal sepsis was also uncommon among women readmitted within 30 days after sepsis treatment.

30-day pre-sepsis separations

The 2022-23 results showed similarities between the 30-day all cause readmissions and 30-day pre-sepsis. Compared to the sepsis group, the pre- sepsis group was also slightly younger, with greater socioeconomic disadvantage and had higher representation from patients outside of major cities.

Although in small proportions, analysis identified two most common non-sepsis diagnoses across the sepsis, 30-day post-sepsis, and 30-day pre-sepsis groups:

- *pneumonia, unspecified*
- *urinary tract infection, site not specified.*

Median age differences compared to the sepsis group was not large, as the majority of patients in all groups were still in the 65 years and older cohort. Age may be a factor in the discharge timing by health services; however, there are additional factors that may also contribute to this decision.

Generally, younger patients may have fewer complications and are expected to recover faster, making them candidates for earlier discharge. Considering that sepsis is primarily treated in major city hospitals, patients from rural and remote areas, as well as those with greater socio-economic disadvantages, may prefer to recover closer to home, where more affordable support systems may be available.

Improving identification and management of complex infection cases (or an infection diagnosis more generally), and the transfer of such information in the case of patients presenting to different hospitals, would better equip a health service to evaluate the likelihood of a patient developing sepsis, and/or mitigate a subsequent sepsis hospitalisation through targeted sepsis risk management strategies.

Analysis limitations

Jurisdictional comparison

This analysis did not provide comparisons between Australian states and territories.

Sepsis outside of public admitted care

Analysis was limited to publicly funded admitted care. Therefore, this report did not examine:

- sepsis in private hospitals
- sepsis patients presenting to emergency departments (prior to public hospital admission)
- the role of primary care, including follow-up care by general practice and care transition programs in the sepsis recovery journey.

Data for non-public hospitals were outside the scope of the Commission's data access arrangements at the time of analysis. Due to time constraints associated with this report, it was not feasible to obtain the necessary approvals from data custodians to enable the data transfer.

Publicly available information which encompass both public and private hospitals, such as the Principal diagnosis and AR-DRG level data cubes maintained by the Australian Institute of Health and Welfare, were assessed and determined unsuitable for this report's objectives. This analysis found that in 2022-23 alone, less than 40% of explicitly defined sepsis separations in public hospitals recorded sepsis as the principal diagnosis. Similarly, the septicaemia DRG accounted for only about one third of all sepsis separations. Secondary diagnoses level data cubes were not readily available. Furthermore, publicly available sources did not offer the capability to link patients across multiple hospital admissions to identify those re-hospitalised following sepsis discharge, or those in hospital before sepsis.

Consequently, age and sex standardised sepsis rates in this report is an underestimation compared to the broader population-based incidence of sepsis across both public and private hospitals.

Data source coverage

Mortality was restricted to deaths in public hospitals due to the scope of the Commission's data access arrangements. Analysis reported in-hospital deaths for readmissions within 30 days following a sepsis separation, not broader 30-day mortality post sepsis, due to lack of linkage to other data collections such as the births and deaths registries from respective jurisdictions. Therefore, deaths outside of the public hospital system were not captured.

Readmission analysis period was limited to 2015-16 to 2022-23 due to data availability.

The ability to differentiate between discharge/transfer to residential aged care service between usual place of residence versus not usual place of residence was only possible from 2022-23 onwards. Modes of separation collected in earlier years did not allow for this level of detail.

Analysis was unable to identify patients based on culturally and linguistically diverse backgrounds, as the information is not available from this national dataset.

Sepsis coding

This analysis identified sepsis separations based on explicit sepsis codes (Appendix A), using ICD-10-AM. It is acknowledged more sepsis separations would be reported if sepsis was also defined using an implicit (coding combination) approach. While the explicit method provided

high specificity and would capture patients who were more unwell, an implicit method may provide better sensitivity and identify sepsis patients with better health outcomes/lower mortality rates. Since code combinations for implicit sepsis varied across literature, this analysis considered only explicit sepsis coding as a conservative approach.

Diagnosis Related Group for separations prior to 2015-16 were based on version 7 of the AR-DRG, and version 8 was used for later years due to data availability.

Covid-19

According to the WHO, 'sepsis is usually caused by bacterial infections but may be the result of other infections such as viruses, parasites or fungi.' The analysis period included the COVID-19 pandemic, when there were likely elevated cases of viral sepsis in hospitals and associated excess deaths.

Impacts of COVID-19 may be reflected in the data from the type of patients presenting to hospitals to the provision of care and clinical outcomes. Delay in sepsis patients seeking care during the pandemic due to elective surgery restrictions and challenges in accessing general practices, have downstream implications on mortality. Conversely, initiatives aimed at mitigating community infections during this period, such as isolation and mask wearing, may have applied downward pressure on sepsis hospitalisations.

Future Directions

Jurisdictional analysis

This analysis did not examine sepsis at the states and territories level. Permissions from jurisdictional data custodians could facilitate identification of jurisdictional specific outcomes. Such outcomes may enable tailoring of strategies to enhance safety and quality of sepsis care, and better support of the patient journey.

Other useful measures for comparison between national and jurisdictional results, such as hospital incidence of sepsis, can also be explored. Jurisdictional level comparisons could also provide a clearer understanding of any differences in DRG classification and/or coding practices among health services across various states and territories to identify best practice and improve patient outcomes.

Sector analysis outside of public admitted care

To gain a comprehensive understanding of sepsis care in hospital, it is essential to consider the important roles played by private hospitals and emergency departments. Future analysis may focus on quantifying sepsis presentations via emergency departments, examine subsequent transfers to (and from) public and private hospitals, and explore the role of public-private hospital partnerships as part of broader sepsis management within Australian hospitals.

National sepsis data collection

The administrative data collection used does not enable analyses by culturally and linguistically diverse (CALD) factors. The Australian Bureau of Statistics (ABS)'s national framework on 'collection and dissemination of data on cultural and language diversity' recommends the below at a minimum:

- Country of Birth of Person
- Main Language Other Than English Spoken at Home
- Proficiency in Spoken English

- Indigenous Status.

Development of a national sepsis data collection, as recommended in Stopping Sepsis: A National Action Plan, would benefit from including the 4 Minimum Core Set of Cultural and Language Indicators listed above.

Implicit sepsis definition and code combinations

Further efforts are needed to investigate identifying sepsis through an implicit method, such as considering an organ dysfunction diagnosis together with a diagnosis for infection. This work will include finalising the exact organ dysfunction and infection combinations to look for, to strike a balance between better sensitivity with the expected increase in false positives. Other methods of deriving implicit sepsis cases from combinations of diagnoses codes in a single record could also be investigated.

Consensus on the exact code combinations to define sepsis, using both implicit and explicit methods, will enable more comparable and comprehensive future analyses of the sepsis patient journey within Australian hospitals.

Targeted sub-group analysis

Analyses to explore local variation in sepsis, at the hospital or patient geographic level, and associated health outcomes such as mortality are also recommended. Analysis of sepsis at a regional level could identify areas with higher rates of sepsis and help inform local policy and responses. Exploring variation of health care use against patient preferences and underlying needs to identify potential areas of unwarranted variation, such as in the *Australian Atlas of Healthcare Variation* series, represent opportunities for the health system to improve.

Potentially higher risk populations, such as maternal sepsis and sepsis in First Nations patients, would benefit from a more tailored analysis to better assess sepsis prevalence and impact. These groups have much lower sepsis numbers and therefore adjustments need to be made to ensure patient confidentiality. In the case of maternal sepsis, a more appropriate the denominator population could involve limiting base analysis population to delivery and postpartum related episodes of care in hospital and investigate the frequency in different types of complications such as spontaneous/induced abortions, caesarean sections, and prolonged/obstructed labour, all of which may lead to sepsis.

Since adults (18 years and over) accounted for an overwhelming majority of all sepsis cases in this report, insights specific to younger patients may have been masked. This report was also unable to confirm whether very young children (under 1 year) in Australia were more vulnerable to sepsis due to lack of age specific population data at the time of analysis. Therefore, it would be beneficial to conduct separate analyses for the paediatric population (under 18 years) as well as neonates. Not only are there specific sepsis codes for neonates, the DRGs for paediatric patients may also differ significantly from those observed in adults.

Data linkage

This report focused on sepsis for admitted care patients in the Australian public hospital system. Future analyses could consider linkage with other data collections for a better understanding of sepsis. This may include:

- other mortality sources such as the births and deaths registries held by Australian States and Territories, to enable follow-up beyond the admitted hospital setting
- private hospitals admissions, to capture sepsis treatments in public-private hospital partnerships, as well as transfers to private facilities

- emergency department presentations with sepsis, to gain a clearer understanding of the outcomes associated with multiple emergency department visits and subsequent hospital admission
- follow-up care for sepsis patients after hospital discharge, such as longitudinal primary care quality improvement programs like MedicineInsight, or the Lumos program run by NSW Health to evaluate role of General Practices in preventing sepsis readmissions.

Supplementary Tables

Table 1. Overall characteristics summary for separations with explicit sepsis codes, public hospitals, 2013-14 to 2022-23

	Pre-sepsis separations (30 days) 2015-16 to 2022-23	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days) 2015-16 to 2022-23
N	244,163	370,362	634,479	936,879	202,763
Sex, n(%)					
Male	134,962 (55.3%)	198,095 (53.5%)	351,409 (55.4%)	512,410 (54.7%)	115,756 (57.1%)
Female	109,194 (44.7%)	172,258 (46.5%)	283,051 (44.6%)	424,443 (45.3%)	87,001 (42.9%)
Broad age group (years), n(%)					
< 1	5,185 (2.1%)	26,235 (7.1%)	43,282 (6.8%)	68,748 (7.3%)	5,337 (2.6%)
1-5	2,282 (0.9%)	3,543 (1.0%)	5,139 (0.8%)	8,308 (0.9%)	2,500 (1.2%)
6-17	3,087 (1.3%)	3,654 (1.0%)	6,441 (1.0%)	9,521 (1.0%)	2,913 (1.4%)
18-64	93,956 (38.5%)	107,937 (29.1%)	212,594 (33.5%)	297,445 (31.7%)	77,116 (38.0%)
>= 65	139,653 (57.2%)	228,993 (61.8%)	367,023 (57.8%)	552,857 (59.0%)	114,897 (56.7%)
Aboriginal or Torres Strait Islander, n(%)	17,393 (7.1%)	21,665 (5.8%)	37,449 (5.9%)	54,784 (5.8%)	16,056 (7.9%)
Remoteness of patient residence, n(%)					
Major cities	144,718 (59.3%)	230,210 (62.2%)	412,345 (65.0%)	599,785 (64.0%)	114,777 (56.6%)
Inner regional	56,641 (23.2%)	84,733 (22.9%)	133,657 (21.1%)	202,920 (21.7%)	49,442 (24.4%)
Outer regional	31,894 (13.1%)	40,274 (10.9%)	63,814 (10.1%)	97,367 (10.4%)	28,535 (14.1%)
Remote	10,175 (4.2%)	12,935 (3.5%)	19,754 (3.1%)	30,204 (3.2%)	9,387 (4.6%)
Comorbidities, n(%)					
Cancer	40,993 (16.8%)	44,120 (11.9%)	91,175 (14.4%)	125,628 (13.4%)	30,790 (15.2%)
Chronic obstructive pulmonary disease	13,116 (5.4%)	23,028 (6.2%)	60,687 (9.6%)	77,454 (8.3%)	12,075 (6.0%)

		Pre-sepsis separations (30 days) 2015-16 to 2022-23	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days) 2015-16 to 2022-23
	Diabetes	70,327 (28.8%)	107,332 (29.0%)	184,262 (29.0%)	269,329 (28.7%)	62,461 (30.8%)
	HIV/AIDS	222 (0.1%)	323 (0.1%)	789 (0.1%)	1,016 (0.1%)	226 (0.1%)
	Liver disease	3,271 (1.3%)	6,757 (1.8%)	18,992 (3.0%)	22,403 (2.4%)	3,284 (1.6%)
	Renal disease	27,851 (11.4%)	58,452 (15.8%)	105,482 (16.6%)	148,465 (15.8%)	26,426 (13.0%)
Sepsis onset, n(%)						
	present on admission	51,597 (21.1%)	361,577 (97.6%)	522,648 (82.4%)	816,738 (87.2%)	54,947 (27.1%)
	hospital acquired	5,368 (2.2%)	7,876 (2.1%)	111,402 (17.6%)	118,033 (12.6%)	2,090 (1.0%)
	both	279 (0.1%)	1,185 (0.3%)	4,160 (0.7%)	4,160 (0.4%)	352 (0.2%)
Maternal sepsis, n(%)		1,152 (1.1%)	13,786 (8.0%)	16,965 (6.0%)	29,289 (6.9%)	1,181 (1.4%)

Denominator for maternal sepsis is the total number of female separations.

Information recorded in gender for Tasmanian facilities in 2022-23 was used to impute sex (as sex was no longer available for Tasmanian data).
Sex categories shown do not add to 100%. Categories other than male and female are affected by small numbers and therefore subjected to data suppression for privacy purposes.

Sepsis separations (principal diagnosis) and Sepsis separations (secondary diagnosis) groups do not add to Sepsis separations because the first two groups are not mutually exclusive. An episode of care can record explicit sepsis codes in both its principal and secondary diagnosis.

Table 2. All cause readmissions following sepsis, public hospitals, 2022-23

		Post-sepsis readmissions
N		39,225
Readmission interval, n(%)		
	7 days	14,146 (36.1%)
	30 days	21,434 (54.6%)
	90 days	28,818 (73.5%)
	120 days	30,884 (78.7%)
	365 days	39,225 (100%)

Table 3. Top 3 reasons for all-cause readmissions following sepsis, public hospitals, 2022-23

Readmission interval			Post-sepsis readmissions
7 days	N		14,146
	Principal diagnosis, n(%)		
		Sepsis, unspecified (A419)	898 (6.3%)
		Pneumonia, unspecified (J189)	410 (2.9%)
		Urinary tract infection, site not specified (N390)	410 (2.9%)
	Diagnosis Related Group, n(%)		
		Respiratory Infections and Inflammations, Major Complexity (E62A)	643 (4.5%)
		Septicaemia, Major Complexity (T60A)	640 (4.5%)
		Septicaemia, Intermediate Complexity (T60B)	536 (3.8%)
30 days	N		21,434
	Principal diagnosis, n(%)		
		Sepsis, unspecified (A419)	1,159 (5.4%)
		Urinary tract infection, site not specified (N390)	659 (3.1%)
		Pneumonia, unspecified (J189)	525 (2.4%)
	Diagnosis Related Group, n(%)		
		Respiratory Infections and Inflammations, Major Complexity (E62A)	873 (4.1%)
		Septicaemia, Major Complexity (T60A)	768 (3.6%)
		Septicaemia, Intermediate Complexity (T60B)	682 (3.2%)
90 days	N		28,818
	Principal diagnosis, n(%)		
		Sepsis, unspecified (A419)	1,368 (4.7%)

Readmission interval			Post-sepsis readmissions
		Urinary tract infection, site not specified (N390)	951 (3.3%)
		Pneumonia, unspecified (J189)	674 (2.3%)
	Diagnosis Related Group, n(%)		
		Respiratory Infections and Inflammations, Major Complexity (E62A)	1,107 (3.8%)
		Kidney and Urinary Tract Infections, Major Complexity (L63A)	881 (3.1%)
		Septicaemia, Major Complexity (T60A)	861 (3.0%)
120 days	N		30,884
	Principal diagnosis, n(%)		
		Sepsis, unspecified (A419)	1,410 (4.6%)
		Urinary tract infection, site not specified (N390)	1,030 (3.3%)
		Pneumonia, unspecified (J189)	724 (2.3%)
	Diagnosis Related Group, n(%)		
		Respiratory Infections and Inflammations, Major Complexity (E62A)	1,180 (3.8%)
		Kidney and Urinary Tract Infections, Major Complexity (L63A)	943 (3.1%)
		Septicaemia, Major Complexity (T60A)	883 (2.9%)
365 days	N		39,225
	Principal diagnosis, n(%)		
		Sepsis, unspecified (A419)	1,578 (4.0%)
		Urinary tract infection, site not specified (N390)	1,372 (3.5%)
		Pneumonia, unspecified (J189)	929 (2.4%)
	Diagnosis Related Group, n(%)		

Readmission interval		Post-sepsis readmissions
	Respiratory Infections and Inflammations, Major Complexity (E62A)	1,472 (3.8%)
	Kidney and Urinary Tract Infections, Major Complexity (L63A)	1,201 (3.1%)
	Septicaemia, Major Complexity (T60A)	953 (2.4%)

DRG descriptions based on AR-DRG v8.

Principal diagnosis description based on ICD-10-AM 12th edition

Table 4. Demographic characteristics for separations with explicit sepsis codes, public hospitals, 2017-18

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
N	32,926	42,926	71,626	107,181	27,130
Sex, n(%)					
Male	18,236 (55.4%)	22,978 (53.5%)	39,745 (55.5%)	58,733 (54.8%)	15,461 (57.0%)
Female	14,689 (44.6%)	19,945 (46.5%)	31,880 (44.5%)	48,445 (45.2%)	11,668 (43.0%)
Age (years)					
mean (SD)	62 (22.1)	62 (27.2)	60 (26.5)	60 (27.2)	62 (22.2)
median (IQR)	68 (51-79)	70 (51-82)	68 (49-80)	69 (48-81)	67 (52-78)
Broad age group (years), n(%)					
< 1	790 (2.4%)	3,899 (9.1%)	6,392 (8.9%)	10,220 (9.5%)	837 (3.1%)
1-5	365 (1.1%)	433 (1.0%)	586 (0.8%)	965 (0.9%)	381 (1.4%)
6-17	467 (1.4%)	448 (1.0%)	652 (0.9%)	1,029 (1.0%)	418 (1.5%)
18-64	12,755 (38.7%)	12,309 (28.7%)	23,574 (32.9%)	33,249 (31.0%)	10,384 (38.3%)
>= 65	18,549 (56.3%)	25,837 (60.2%)	40,422 (56.4%)	61,718 (57.6%)	15,110 (55.7%)
Aboriginal or Torres Strait Islander, n(%)	2,234 (6.8%)	2,513 (5.9%)	4,171 (5.8%)	6,211 (5.8%)	2,063 (7.6%)
Remoteness of patient residence, n(%)					
Major cities	19,916 (60.5%)	27,226 (63.4%)	46,718 (65.2%)	69,269 (64.6%)	15,768 (58.1%)
Inner regional	7,581 (23.0%)	9,401 (21.9%)	15,226 (21.3%)	22,956 (21.4%)	6,543 (24.1%)
Outer regional	3,935 (12.0%)	4,497 (10.5%)	6,924 (9.7%)	10,730 (10.0%)	3,465 (12.8%)
Remote	1,403 (4.3%)	1,534 (3.6%)	2,211 (3.1%)	3,478 (3.2%)	1,277 (4.7%)
Socio-economic (SES) disadvantage, n(%)					
Most disadvantaged (1)	8,753 (26.6%)	10,502 (24.5%)	17,488 (24.4%)	26,026 (24.3%)	7,369 (27.2%)

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
2	6,903 (21.0%)	8,948 (20.8%)	14,326 (20.0%)	21,744 (20.3%)	5,819 (21.4%)
3	7,251 (22.0%)	9,646 (22.5%)	16,053 (22.4%)	24,041 (22.4%)	5,920 (21.8%)
4	5,540 (16.8%)	7,457 (17.4%)	12,636 (17.6%)	18,899 (17.6%)	4,453 (16.4%)
Least disadvantaged (5)	4,387 (13.3%)	6,103 (14.2%)	10,574 (14.8%)	15,719 (14.7%)	3,490 (12.9%)
Comorbidities, n(%)					
Cancer	5,322 (16.2%)	4,744 (11.1%)	9,779 (13.7%)	13,486 (12.6%)	4,008 (14.8%)
Chronic obstructive pulmonary disease	1,875 (5.7%)	2,646 (6.2%)	7,294 (10.2%)	9,228 (8.6%)	1,662 (6.1%)
Diabetes	9,260 (28.1%)	12,154 (28.3%)	20,270 (28.3%)	30,048 (28.0%)	8,144 (30.0%)
HIV/AIDS	31 (0.1%)	35 (0.1%)	95 (0.1%)	117 (0.1%)	40 (0.1%)
Liver disease	434 (1.3%)	748 (1.7%)	1,968 (2.7%)	2,353 (2.2%)	413 (1.5%)
Renal disease	3,608 (11.0%)	6,226 (14.5%)	10,963 (15.3%)	15,616 (14.6%)	3,434 (12.7%)

Table 5. Demographic characteristics for separations with explicit sepsis codes, public hospitals, 2022-23

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
N	24,498	32,608	60,258	84,382	21,434
Sex, n(%)					
Male	13,396 (54.7%)	17,413 (53.4%)	33,436 (55.5%)	46,194 (54.7%)	12,343 (57.6%)
Female	11,100 (45.3%)	15,195 (46.6%)	26,816 (44.5%)	38,182 (45.2%)	9,091 (42.4%)
Age (years)					
mean (SD)	63 (21.8)	65 (24.7)	63 (23.7)	64 (24.4)	63 (21.5)
median (IQR)	68 (52-79)	72 (55-82)	70 (53-80)	70 (53-81)	68 (53-78)
Broad age group (years), n(%)					
< 1	562 (2.3%)	1,740 (5.3%)	2,949 (4.9%)	4,429 (5.2%)	557 (2.6%)
1-5	199 (0.8%)	340 (1.0%)	494 (0.8%)	775 (0.9%)	263 (1.2%)
6-17	274 (1.1%)	344 (1.1%)	580 (1.0%)	854 (1.0%)	293 (1.4%)
18-64	9,395 (38.4%)	9,208 (28.2%)	20,053 (33.3%)	26,566 (31.5%)	8,173 (38.1%)
>= 65	14,068 (57.4%)	20,976 (64.3%)	36,182 (60.0%)	51,758 (61.3%)	12,148 (56.7%)
Aboriginal or Torres Strait Islander, n(%)	1,937 (7.9%)	2,269 (7.0%)	4,082 (6.8%)	5,753 (6.8%)	1,911 (8.9%)
Remoteness of patient residence, n(%)					
Major cities	13,870 (56.6%)	18,686 (57.3%)	37,968 (63.0%)	51,479 (61.0%)	11,483 (53.6%)
Inner regional	5,951 (24.3%)	8,281 (25.4%)	13,249 (22.0%)	19,554 (23.2%)	5,439 (25.4%)
Outer regional	3,483 (14.2%)	4,031 (12.4%)	6,538 (10.9%)	9,656 (11.4%)	3,325 (15.5%)
Remote	1,111 (4.5%)	1,367 (4.2%)	1,961 (3.3%)	2,977 (3.5%)	1,107 (5.2%)
Socio-economic (SES) disadvantage, n(%)					
Most disadvantaged (1)	6,784 (27.7%)	8,576 (26.3%)	15,131 (25.1%)	21,420 (25.4%)	6,087 (28.4%)

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
2	5,434 (22.2%)	7,067 (21.7%)	12,783 (21.2%)	18,015 (21.3%)	4,891 (22.8%)
3	5,391 (22.0%)	7,239 (22.2%)	13,741 (22.8%)	19,043 (22.6%)	4,695 (21.9%)
4	3,926 (16.0%)	5,283 (16.2%)	10,074 (16.7%)	14,056 (16.7%)	3,286 (15.3%)
Least disadvantaged (5)	2,879 (11.8%)	4,199 (12.9%)	7,985 (13.3%)	11,129 (13.2%)	2,395 (11.2%)
Comorbidities, n(%)					
Cancer	3,918 (16.0%)	3,890 (11.9%)	8,188 (13.6%)	10,969 (13.0%)	3,021 (14.1%)
Chronic obstructive pulmonary disease	1,310 (5.3%)	2,205 (6.8%)	6,113 (10.1%)	7,524 (8.9%)	1,332 (6.2%)
Diabetes	7,241 (29.6%)	10,144 (31.1%)	18,945 (31.4%)	26,219 (31.1%)	6,731 (31.4%)
HIV/AIDS	11 (0.0%)	17 (0.1%)	46 (0.1%)	54 (0.1%)	19 (0.1%)
Liver disease	359 (1.5%)	691 (2.1%)	1,934 (3.2%)	2,213 (2.6%)	351 (1.6%)
Renal disease	2,763 (11.3%)	5,417 (16.6%)	10,445 (17.3%)	13,953 (16.5%)	2,829 (13.2%)

Table 6. Admitted care characteristics for separations with explicit sepsis codes, public hospitals, 2017-18

		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
N		32,926	42,926	71,626	107,181	27,130
Urgency of admission, n(%)						
	Emergency	20,786 (63.1%)	34,247 (79.8%)	52,282 (73.0%)	80,193 (74.8%)	17,039 (62.8%)
	Elective	7,006 (21.3%)	2,322 (5.4%)	6,969 (9.7%)	8,949 (8.3%)	6,349 (23.4%)
	Not assigned	5,132 (15.6%)	6,354 (14.8%)	12,373 (17.3%)	18,034 (16.8%)	3,741 (13.8%)
Transferred from another hospital, n(%)		3,807 (11.6%)	4,627 (10.8%)	10,892 (15.2%)	14,380 (13.4%)	7,772 (28.6%)
Length of stay (days)						
	mean (SD)	6 (12.3)	8 (10.7)	14 (21.4)	12 (18.5)	8 (12.5)
	median (IQR)	3 (1-7)	5 (3-9)	8 (4-16)	6 (3-13)	4 (1-9)
Admission to ICU, n(%)		2,693 (8.2%)	6,722 (15.7%)	20,707 (28.9%)	23,689 (22.1%)	2,729 (10.1%)
ICU length of stay (hrs)						
	mean (SD)	96 (161.0)	92 (123.6)	182 (330.4)	168 (312.5)	127 (225.7)
	median (IQR)	48 (20-104)	58 (28-108)	83 (40-189)	76 (37-172)	66 (32-141)
Hospital remoteness, n(%)						
	Major cities	22,201 (67.4%)	29,494 (68.7%)	52,977 (74.0%)	77,182 (72.0%)	18,762 (69.2%)
	Inner regional	6,696 (20.3%)	8,664 (20.2%)	12,567 (17.5%)	19,736 (18.4%)	5,280 (19.5%)
	Outer regional	3,011 (9.1%)	3,623 (8.4%)	4,865 (6.8%)	8,057 (7.5%)	2,389 (8.8%)
	Remote	1,018 (3.1%)	1,145 (2.7%)	1,217 (1.7%)	2,206 (2.1%)	699 (2.6%)
Sepsis onset, n(%)						

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
present on admission	6,945 (21.1%)	41,667 (97.1%)	57,538 (80.3%)	91,840 (85.7%)	7,482 (27.6%)
hospital acquired	877 (2.7%)	1,404 (3.3%)	14,591 (20.4%)	15,844 (14.8%)	362 (1.3%)
both	43 (0.1%)	145 (0.3%)	504 (0.7%)	504 (0.5%)	56 (0.2%)
Maternal sepsis, n(%)	155 (1.1%)	1,407 (7.1%)	1,792 (5.6%)	3,026 (6.2%)	167 (1.4%)
Sepsis as principal diagnosis, n(%)	3,798 (11.5%)	42,926 (100%)	7,371 (10.3%)	42,926 (40.1%)	3,724 (13.7%)
Top 3 non-sepsis principal diagnoses, n(%)					
Cellulitis of lower limb (L0313)	N/A	N/A	N/A	N/A	437 (1.6%)
Congestive heart failure (I500)	512 (1.6%)	N/A	N/A	N/A	N/A
Pneumonia, unspecified (J189)	736 (2.2%)	N/A	4,015 (5.6%)	4,015 (3.7%)	772 (2.8%)
Preterm infant, 32 or more completed weeks but less than 37 completed weeks (P0732)	N/A	N/A	1,525 (2.1%)	1,525 (1.4%)	N/A
Urinary tract infection, site not specified (N390)	941 (2.9%)	N/A	4,056 (5.7%)	4,056 (3.8%)	756 (2.8%)
Diagnostic Related Group type, n(%)					
surgical	4,589 (13.9%)	2,645 (6.2%)	16,806 (23.5%)	18,334 (17.1%)	3,902 (14.4%)
non-surgical	28,337 (86.1%)	40,281 (93.8%)	54,820 (76.5%)	88,847 (82.9%)	23,228 (85.6%)
Sepsis Diagnosis Related Group, n(%)					
T60A Septicaemia, Major Complexity	843 (2.6%)	8,291 (19.3%)	2,176 (3.0%)	8,302 (7.7%)	948 (3.5%)
T60B Septicaemia, Intermediate Complexity	1,174 (3.6%)	12,978 (30.2%)	2,058 (2.9%)	12,988 (12.1%)	1,080 (4.0%)
T60C Septicaemia, Minor Complexity	1,366 (4.1%)	13,759 (32.1%)	1,523 (2.1%)	13,768 (12.8%)	1,114 (4.1%)
Top 3 non-sepsis Diagnosis Related Group, n(%)					
Cellulitis, Major Complexity (J64A)	N/A	N/A	1,901 (2.7%)	N/A	N/A

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
Infectious and Parasitic Diseases W OR Procedures, Major Complexity (T01A)	N/A	1,182 (2.8%)	N/A	N/A	N/A
Kidney and Urinary Tract Infections, Major Complexity (L63A)	755 (2.3%)	N/A	4,613 (6.4%)	4,613 (4.3%)	690 (2.5%)
Neonate, AdmWt >=2500g W/O Sig OR Proc/Vent>=96hrs, >=37 Comp Wks Gest, Int Comp (P68C)	N/A	1,073 (2.5%)	N/A	N/A	N/A
Neonate, AdmWt >=2500g W/O Sig OR Proc/Vent>=96hrs, >=37 Comp Wks Gest, Maj Comp (P68B)	N/A	1,307 (3.0%)	N/A	2,453 (2.3%)	N/A
Other Digestive System Disorders, Major Complexity (G70A)	506 (1.5%)	N/A	N/A	N/A	N/A
Other Follow Up After Surgery or Medical Care, Major Complexity (Z63A)	N/A	N/A	N/A	N/A	538 (2.0%)
Respiratory Infections and Inflammations, Major Complexity (E62A)	810 (2.5%)	N/A	5,721 (8.0%)	5,721 (5.3%)	1,024 (3.8%)

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
Hospital-Acquired Complications (HACs), n(%) *					
At least one HAC	2,101 (6.4%)	3,519 (8.2%)	13,273 (18.5%)	15,519 (14.5%)	1,915 (7.1%)
Pressure Injury	100 (0.3%)	218 (0.5%)	863 (1.2%)	979 (0.9%)	119 (0.4%)
Falls resulting in fracture or intracranial injury	35 (0.1%)	37 (0.1%)	148 (0.2%)	176 (0.2%)	29 (0.1%)
Surgical complications	357 (1.1%)	291 (0.7%)	2,392 (3.3%)	2,552 (2.4%)	290 (1.1%)
Respiratory complications	306 (0.9%)	535 (1.2%)	3,500 (4.9%)	3,768 (3.5%)	273 (1.0%)
Venous thromboembolism	103 (0.3%)	165 (0.4%)	816 (1.1%)	923 (0.9%)	116 (0.4%)
Renal failure	29 (0.1%)	46 (0.1%)	599 (0.8%)	612 (0.6%)	40 (0.1%)
Gastrointestinal bleeding	177 (0.5%)	279 (0.6%)	1,038 (1.4%)	1,219 (1.1%)	144 (0.5%)
Medication complications	125 (0.4%)	158 (0.4%)	716 (1.0%)	813 (0.8%)	93 (0.3%)
Delirium	539 (1.6%)	954 (2.2%)	4,115 (5.7%)	4,704 (4.4%)	516 (1.9%)
Incontinence	52 (0.2%)	90 (0.2%)	371 (0.5%)	438 (0.4%)	60 (0.2%)
Endocrine complications	339 (1.0%)	597 (1.4%)	2,138 (3.0%)	2,511 (2.3%)	365 (1.3%)
Cardiac complications	588 (1.8%)	1,178 (2.7%)	4,402 (6.1%)	5,127 (4.8%)	551 (2.0%)
Discharge/transfer to residential aged care service, n(%)					
usual place of residence	N/A	N/A	N/A	N/A	N/A
not the usual place of residence	918 (2.8%)	1,566 (3.6%)	2,176 (3.0%)	3,564 (3.3%)	810 (3.0%)

Table 7. Admitted care characteristics for separations with explicit sepsis codes, public hospitals, 2022-23

		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
N		24,498	32,608	60,258	84,382	21,434
Urgency of admission, n(%)						
	Emergency	15,083 (61.6%)	26,491 (81.2%)	46,448 (77.1%)	65,742 (77.9%)	13,168 (61.4%)
	Elective	5,124 (20.9%)	1,805 (5.5%)	5,192 (8.6%)	6,560 (7.8%)	5,429 (25.3%)
	Not assigned	4,270 (17.4%)	4,282 (13.1%)	8,541 (14.2%)	11,980 (14.2%)	2,820 (13.2%)
Transferred from another hospital, n(%)		2,853 (11.6%)	3,327 (10.2%)	8,109 (13.5%)	10,260 (12.2%)	6,534 (30.5%)
Length of stay (days)						
	mean (SD)	7 (15.0)	8 (11.5)	15 (25.3)	13 (22.2)	8 (12.0)
	median (IQR)	3 (1-7)	5 (2-10)	8 (4-17)	7 (3-14)	4 (1-10)
Admission to ICU, n(%)		2,314 (9.4%)	7,096 (21.8%)	21,223 (35.2%)	23,422 (27.8%)	2,572 (12.0%)
ICU length of stay (hrs)						
	mean (SD)	103 (157.4)	104 (125.2)	176 (306.4)	168 (294.5)	129 (168.6)
	median (IQR)	60 (24-115)	70 (38-122)	89 (45-184)	85 (44-174)	73 (37-151)
Hospital remoteness, n(%)						
	Major cities	15,209 (62.1%)	20,242 (62.1%)	42,514 (70.6%)	56,969 (67.5%)	13,837 (64.6%)
	Inner regional	5,360 (21.9%)	7,765 (23.8%)	11,264 (18.7%)	17,254 (20.4%)	4,648 (21.7%)
	Outer regional	2,759 (11.3%)	3,274 (10.0%)	4,654 (7.7%)	7,291 (8.6%)	2,250 (10.5%)
	Remote	798 (3.3%)	950 (2.9%)	985 (1.6%)	1,759 (2.1%)	476 (2.2%)
Sepsis onset, n(%)						
	present on admission	4,620 (18.9%)	32,145 (98.6%)	52,242 (86.7%)	75,935 (90.0%)	4,985 (23.3%)

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
hospital acquired	433 (1.8%)	550 (1.7%)	8,369 (13.9%)	8,800 (10.4%)	142 (0.7%)
both	14 (0.1%)	87 (0.3%)	353 (0.6%)	353 (0.4%)	28 (0.1%)
Maternal sepsis, n(%)	133 (1.2%)	1,342 (8.8%)	1,720 (6.4%)	2,952 (7.7%)	134 (1.5%)
Sepsis as principal diagnosis, n(%)	2,430 (9.9%)	32,608 (100%)	8,484 (14.1%)	32,608 (38.6%)	2,349 (11.0%)
Top 3 non-sepsis principal diagnoses, n(%)					
Cellulitis of lower limb (L0313)	N/A	N/A	1,426 (2.4%)	1,426 (1.7%)	400 (1.9%)
Pneumonia, unspecified (J189)	471 (1.9%)	N/A	2,623 (4.4%)	2,623 (3.1%)	525 (2.4%)
Single spontaneous delivery (O80)	515 (2.1%)	N/A	N/A	N/A	N/A
Urinary tract infection, site not specified (N390)	588 (2.4%)	N/A	2,631 (4.4%)	2,631 (3.1%)	659 (3.1%)
Diagnostic Related Group type, n(%)					
surgical	3,397 (13.9%)	2,267 (7.0%)	14,197 (23.6%)	15,308 (18.1%)	3,246 (15.1%)
non-surgical	21,101 (86.1%)	30,341 (93.0%)	46,061 (76.4%)	69,074 (81.9%)	18,188 (84.9%)
Sepsis Diagnosis Related Group, n(%)					
T60A Septicaemia, Major Complexity	601 (2.5%)	7,857 (24.1%)	2,753 (4.6%)	7,879 (9.3%)	768 (3.6%)
T60B Septicaemia, Intermediate Complexity	728 (3.0%)	10,102 (31.0%)	2,385 (4.0%)	10,116 (12.0%)	682 (3.2%)
T60C Septicaemia, Minor Complexity	839 (3.4%)	9,428 (28.9%)	1,656 (2.7%)	9,438 (11.2%)	525 (2.4%)
Top 3 non-sepsis Diagnosis Related Group, n(%)					
Cellulitis, Major Complexity (J64A)	N/A	N/A	1,775 (2.9%)	1,775 (2.1%)	N/A
Infectious and Parasitic Diseases W OR Procedures, Major Complexity (T01A)	N/A	1,100 (3.4%)	N/A	N/A	N/A
Kidney and Urinary Tract Infections, Major Complexity (L63A)	571 (2.3%)	N/A	3,826 (6.3%)	3,826 (4.5%)	642 (3.0%)
Other Factors Influencing Health Status, Major Complexity (Z64A)	474 (1.9%)	N/A	N/A	N/A	N/A

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
Other Follow Up After Surgery or Medical Care, Major Complexity (Z63A)	N/A	N/A	N/A	N/A	418 (2.0%)
Postpartum and Post Abortion W/O OR Procedures, Major Complexity (O61A)	N/A	481 (1.5%)	N/A	N/A	N/A
Postpartum and Post Abortion W/O OR Procedures, Minor Complexity (O61B)	N/A	734 (2.3%)	N/A	N/A	N/A
Respiratory Infections and Inflammations, Major Complexity (E62A)	696 (2.8%)	N/A	4,288 (7.1%)	4,288 (5.1%)	873 (4.1%)
Hospital-Acquired Complications (HACs), n(%) *					
At least one HAC	1,178 (4.8%)	2,036 (6.2%)	9,074 (15.1%)	10,124 (12.0%)	1,178 (5.5%)
Pressure Injury	61 (0.2%)	112 (0.3%)	533 (0.9%)	581 (0.7%)	63 (0.3%)
Falls resulting in fracture or intracranial injury	42 (0.2%)	44 (0.1%)	147 (0.2%)	182 (0.2%)	31 (0.1%)
Surgical complications	158 (0.6%)	213 (0.7%)	1,669 (2.8%)	1,757 (2.1%)	209 (1.0%)
Respiratory complications	210 (0.9%)	412 (1.3%)	2,841 (4.7%)	3,039 (3.6%)	249 (1.2%)
Venous thromboembolism	60 (0.2%)	112 (0.3%)	619 (1.0%)	672 (0.8%)	80 (0.4%)
Renal failure	5 (0.0%)	28 (0.1%)	321 (0.5%)	331 (0.4%)	17 (0.1%)
Gastrointestinal bleeding	74 (0.3%)	177 (0.5%)	631 (1.0%)	726 (0.9%)	85 (0.4%)
Medication complications	50 (0.2%)	94 (0.3%)	385 (0.6%)	436 (0.5%)	41 (0.2%)
Delirium	282 (1.2%)	460 (1.4%)	2,656 (4.4%)	2,870 (3.4%)	286 (1.3%)
Incontinence	13 (0.1%)	13 (0.0%)	70 (0.1%)	78 (0.1%)	10 (0.0%)
Endocrine complications	248 (1.0%)	373 (1.1%)	1,547 (2.6%)	1,748 (2.1%)	240 (1.1%)
Cardiac complications	247 (1.0%)	595 (1.8%)	2,512 (4.2%)	2,791 (3.3%)	241 (1.1%)
Discharge/transfer to residential aged care service, n(%)					
usual place of residence	490 (2.0%)	855 (2.6%)	1,178 (2.0%)	1,875 (2.2%)	414 (1.9%)

	Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
not the usual place of residence	313 (1.3%)	333 (1.0%)	608 (1.0%)	879 (1.0%)	210 (1.0%)

Table 8. Health outcomes for separations with explicit sepsis codes, public hospitals, 2013-24 to 2022-23

Year		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
2013-14	N	N/A	24,594	44,242	65,021	N/A
	Rate per 10,000 population, age and sex standardised	N/A	10	17	26	N/A
	Average length of stay (days)	N/A	8 (9.6)	16 (23.5)	13 (20.4)	N/A
	Admission to ICU, n(%)	N/A	3,527 (14.3%)	13,768 (31.1%)	15,576 (24.0%)	N/A
	Average ICU length of stay (hrs)	N/A	93 (133.2)	207 (369.3)	191 (351.4)	N/A
	Estimated cost per separation/readmission	N/A	$13,276	$25,273	$20,934	N/A
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	N/A	3,923 (16.0%)	4,201 (9.5%)	7,381 (11.4%)	N/A
	Sepsis, unspecified (A419)	N/A	10,671 (43.4%)	19,337 (43.7%)	28,373 (43.6%)	N/A
	Septic shock (R572)	N/A	2,758 (11.2%)	9,512 (21.5%)	9,514 (14.6%)	N/A
	In-hospital mortality, n(%)	N/A	2,882 (11.7%)	6,626 (15.0%)	8,595 (13.2%)	N/A
	Emergency admission*	N/A	2,260 (78.4%)	4,897 (73.9%)	6,391 (74.4%)	N/A
	Non-Emergency admission*	N/A	622 (21.6%)	1,729 (26.1%)	2,204 (25.6%)	N/A
2014-15	N	N/A	26,834	47,435	69,930	N/A
	Rate per 10,000 population, age and sex standardised	N/A	10	18	27	N/A
	Average length of stay (days)	N/A	8 (9.9)	16 (26.2)	13 (22.5)	N/A
	Admission to ICU, n(%)	N/A	3,818 (14.2%)	14,340 (30.2%)	16,176 (23.1%)	N/A
	Average ICU length of stay (hrs)	N/A	93 (130.5)	203 (364.6)	189 (347.3)	N/A
	Estimated cost per separation/readmission	N/A	$14,061	$29,178	$23,737	N/A

Year		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	N/A	4,385 (16.3%)	4,460 (9.4%)	7,974 (11.4%)	N/A
	Sepsis, unspecified (A419)	N/A	11,892 (44.3%)	21,253 (44.8%)	31,258 (44.7%)	N/A
	Septic shock (R572)	N/A	3,282 (12.2%)	10,867 (22.9%)	10,869 (15.5%)	N/A
	In-hospital mortality, n(%)	N/A	3,246 (12.1%)	7,209 (15.2%)	9,363 (13.4%)	N/A
	Emergency admission*	N/A	2,555 (78.7%)	5,463 (75.8%)	7,102 (75.9%)	N/A
	Non-Emergency admission*	N/A	691 (21.3%)	1,746 (24.2%)	2,261 (24.1%)	N/A
2015-16	N	26,389	35,822	65,361	95,214	20,854
	Rate per 10,000 population, age and sex standardised	10	13	24	36	8
	Average length of stay (days)	7 (12.8)	8 (10.2)	14 (22.9)	12 (19.9)	9 (21.6)
	Admission to ICU, n(%)	2,077 (7.9%)	5,078 (14.2%)	17,748 (27.2%)	20,122 (21.1%)	2,217 (10.6%)
	Average ICU length of stay (hrs)	102 (182.2)	99 (162.4)	194 (372.3)	180 (354.0)	141 (263.7)
	Estimated cost per separation/readmission	N/A	$10,210	$29,208	$22,428	$14,748
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	689 (2.6%)	5,053 (14.1%)	5,759 (8.8%)	9,810 (10.3%)	667 (3.2%)
	Sepsis, unspecified (A419)	3,221 (12.2%)	18,478 (51.6%)	39,224 (60.0%)	54,618 (57.4%)	3,022 (14.5%)
	Septic shock (R572)	992 (3.8%)	4,840 (13.5%)	12,233 (18.7%)	12,239 (12.9%)	1,042 (5.0%)
	In-hospital mortality, n(%)	N/A	4,027 (11.2%)	8,394 (12.8%)	11,028 (11.6%)	936 (4.5%)
	Emergency admission*	N/A	3,096 (76.9%)	6,244 (74.4%)	8,155 (73.9%)	679 (72.5%)
	Non-Emergency admission*	N/A	931 (23.1%)	2,150 (25.6%)	2,873 (26.1%)	257 (27.5%)

Year		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
2016-17	N	31,316	44,316	67,520	104,823	25,720
	Rate per 10,000 population, age and sex standardised	11	16	25	38	9
	Average length of stay (days)	6 (12.5)	8 (10.1)	15 (31.1)	12 (25.8)	8 (12.8)
	Admission to ICU, n(%)	2,573 (8.2%)	6,205 (14.0%)	19,114 (28.3%)	22,046 (21.0%)	2,649 (10.3%)
	Average ICU length of stay (hrs)	98 (165.5)	98 (138.5)	189 (337.0)	174 (318.3)	138 (215.4)
	Estimated cost per separation/readmission	$11,289	$14,592	$31,157	$24,308	$14,883
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	843 (2.7%)	6,295 (14.2%)	5,696 (8.4%)	10,829 (10.3%)	907 (3.5%)
	Sepsis, unspecified (A419)	4,075 (13.0%)	23,298 (52.6%)	40,299 (59.7%)	59,982 (57.2%)	3,835 (14.9%)
	Septic shock (R572)	1,200 (3.8%)	5,763 (13.0%)	13,180 (19.5%)	13,180 (12.6%)	1,238 (4.8%)
	In-hospital mortality, n(%)	N/A	4,471 (10.1%)	8,777 (13.0%)	11,746 (11.2%)	1,123 (4.4%)
	Emergency admission*	N/A	3,386 (75.7%)	6,342 (72.3%)	8,477 (72.2%)	823 (73.3%)
	Non-Emergency admission*	N/A	1,085 (24.3%)	2,435 (27.7%)	3,269 (27.8%)	300 (26.7%)
2017-18	N	32,926	42,926	71,626	107,181	27,130
	Rate per 10,000 population, age and sex standardised	12	15	26	38	10
	Average length of stay (days)	6 (12.3)	8 (10.7)	14 (21.4)	12 (18.5)	8 (12.5)
	Admission to ICU, n(%)	2,693 (8.2%)	6,722 (15.7%)	20,707 (28.9%)	23,689 (22.1%)	2,729 (10.1%)
	Average ICU length of stay (hrs)	96 (161.0)	92 (123.6)	182 (330.4)	168 (312.5)	127 (225.7)
	Estimated cost per separation/readmission	$11,377	$14,986	$30,514	$24,395	$14,763
	Top 3 sepsis codes, n(%)					

Year		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
	Sepsis due to Escherichia coli [E. Coli] (A4151)	912 (2.8%)	6,184 (14.4%)	5,957 (8.3%)	10,996 (10.3%)	924 (3.4%)
	Sepsis, unspecified (A419)	4,234 (12.9%)	22,024 (51.3%)	43,268 (60.4%)	61,510 (57.4%)	3,967 (14.6%)
	Septic shock (R572)	1,274 (3.9%)	6,122 (14.3%)	13,955 (19.5%)	13,955 (13.0%)	1,290 (4.8%)
	In-hospital mortality, n(%)	N/A	4,484 (10.4%)	9,338 (13.0%)	12,205 (11.4%)	1,158 (4.3%)
	Emergency admission*	N/A	3,363 (75.0%)	6,761 (72.4%)	8,770 (71.9%)	838 (72.4%)
	Non-Emergency admission*	N/A	1,121 (25.0%)	2,577 (27.6%)	3,435 (28.1%)	320 (27.6%)
2018-19	N	33,787	43,595	72,991	109,008	28,292
	Rate per 10,000 population, age and sex standardised	12	15	25	38	10
	Average length of stay (days)	6 (12.3)	8 (9.9)	14 (20.7)	11 (17.9)	8 (13.3)
	Admission to ICU, n(%)	2,780 (8.2%)	6,945 (15.9%)	20,910 (28.6%)	23,984 (22.0%)	3,072 (10.9%)
	Average ICU length of stay (hrs)	92 (143.2)	95 (133.7)	173 (315.9)	161 (299.2)	134 (221.5)
	Estimated cost per separation/readmission	$11,823	$15,863	$30,749	$24,871	$15,577
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	977 (2.9%)	6,338 (14.5%)	6,390 (8.8%)	11,488 (10.5%)	983 (3.5%)
	Sepsis, unspecified (A419)	4,606 (13.6%)	22,917 (52.6%)	45,923 (62.9%)	64,891 (59.5%)	4,290 (15.2%)
	Septic shock (R572)	1,306 (3.9%)	6,326 (14.5%)	14,202 (19.5%)	14,202 (13.0%)	1,343 (4.7%)
	In-hospital mortality, n(%)	N/A	4,648 (10.7%)	8,975 (12.3%)	12,067 (11.1%)	1,179 (4.2%)
	Emergency admission*	N/A	3,385 (72.8%)	6,303 (70.2%)	8,445 (70.0%)	837 (71.0%)
	Non-Emergency admission*	N/A	1,263 (27.2%)	2,672 (29.8%)	3,622 (30.0%)	342 (29.0%)

Year		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
2019-20	N	32,064	40,954	68,286	101,725	26,556
	Rate per 10,000 population, age and sex standardised	11	14	23	34	9
	Average length of stay (days)	6 (22.3)	8 (10.2)	14 (25.1)	12 (21.4)	8 (13.3)
	Admission to ICU, n(%)	2,910 (9.1%)	7,500 (18.3%)	21,409 (31.4%)	24,665 (24.2%)	3,008 (11.3%)
	Average ICU length of stay (hrs)	106 (228.8)	99 (142.3)	178 (347.8)	165 (328.5)	127 (245.8)
	Estimated cost per separation/readmission	$12,100	$15,587	$31,658	$25,338	$15,168
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	965 (3.0%)	6,303 (15.4%)	6,579 (9.6%)	11,602 (11.4%)	1,042 (3.9%)
	Sepsis, unspecified (A419)	4,165 (13.0%)	21,897 (53.5%)	43,562 (63.8%)	61,605 (60.6%)	3,940 (14.8%)
	Septic shock (R572)	1,287 (4.0%)	6,419 (15.7%)	14,471 (21.2%)	14,471 (14.2%)	1,304 (4.9%)
	In-hospital mortality, n(%)	N/A	4,731 (11.6%)	8,642 (12.7%)	11,831 (11.6%)	1,039 (3.9%)
	Emergency admission*	N/A	3,348 (70.8%)	6,185 (71.6%)	8,293 (70.1%)	714 (68.7%)
	Non-Emergency admission*	N/A	1,383 (29.2%)	2,457 (28.4%)	3,538 (29.9%)	325 (31.3%)
2020-21	N	32,238	39,918	67,725	99,856	26,710
	Rate per 10,000 population, age and sex standardised	11	13	22	33	9
	Average length of stay (days)	6 (11.3)	8 (9.6)	13 (21.1)	11 (18.2)	8 (13.4)
	Admission to ICU, n(%)	2,982 (9.2%)	7,372 (18.5%)	21,061 (31.1%)	24,081 (24.1%)	3,066 (11.5%)
	Average ICU length of stay (hrs)	95 (168.9)	94 (119.3)	174 (306.8)	162 (291.0)	130 (217.3)
	Estimated cost per separation/readmission	$12,399	$16,199	$32,535	$26,229	$16,099
	Top 3 sepsis codes, n(%)					

Year		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
	Sepsis due to Escherichia coli [E. Coli] (A4151)	1,004 (3.1%)	6,375 (16.0%)	6,815 (10.1%)	11,802 (11.8%)	1,007 (3.8%)
	Sepsis, unspecified (A419)	4,380 (13.6%)	21,253 (53.2%)	43,212 (63.8%)	60,382 (60.5%)	4,122 (15.4%)
	Septic shock (R572)	1,449 (4.5%)	6,701 (16.8%)	15,158 (22.4%)	15,158 (15.2%)	1,463 (5.5%)
	In-hospital mortality, n(%)	N/A	4,616 (11.6%)	8,441 (12.5%)	11,520 (11.5%)	997 (3.7%)
	Emergency admission*	N/A	3,085 (66.8%)	5,805 (68.8%)	7,702 (66.9%)	708 (71.0%)
	Non-Emergency admission*	N/A	1,531 (33.2%)	2,636 (31.2%)	3,818 (33.1%)	289 (29.0%)
2021-22	N	30,945	38,795	69,035	99,739	26,067
	Rate per 10,000 population, age and sex standardised	10	12	22	32	8
	Average length of stay (days)	7 (18.5)	8 (10.3)	14 (23.1)	12 (20.1)	8 (13.3)
	Admission to ICU, n(%)	2,820 (9.1%)	6,712 (17.3%)	20,713 (30.0%)	23,249 (23.3%)	2,924 (11.2%)
	Average ICU length of stay (hrs)	105 (194.8)	98 (123.3)	186 (336.6)	175 (321.0)	139 (207.1)
	Estimated cost per separation/readmission	$13,754	$17,048	$35,002	$28,442	$17,581
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	979 (3.2%)	5,893 (15.2%)	6,648 (9.6%)	11,165 (11.2%)	1,030 (4.0%)
	Sepsis, unspecified (A419)	4,175 (13.5%)	20,809 (53.6%)	44,622 (64.6%)	61,214 (61.4%)	3,990 (15.3%)
	Septic shock (R572)	1,514 (4.9%)	7,034 (18.1%)	16,257 (23.5%)	16,257 (16.3%)	1,492 (5.7%)
	In-hospital mortality, n(%)	N/A	5,226 (13.5%)	9,856 (14.3%)	13,252 (13.3%)	1,121 (4.3%)
	Emergency admission*	N/A	3,506 (67.1%)	6,818 (69.2%)	8,933 (67.4%)	775 (69.1%)
	Non-Emergency admission*	N/A	1,720 (32.9%)	3,038 (30.8%)	4,319 (32.6%)	346 (30.9%)
2022-23	N	24,498	32,608	60,258	84,382	21,434

Year		Pre-sepsis separations (30 days)	Sepsis separations (principal diagnosis)	Sepsis separations (secondary diagnosis)	Sepsis separations	Post-sepsis readmissions (30 days)
	Rate per 10,000 population, age and sex standardised	8	10	19	27	7
	Average length of stay (days)	7 (15.0)	8 (11.5)	15 (25.3)	13 (22.2)	8 (12.0)
	Admission to ICU, n(%)	2,314 (9.4%)	7,096 (21.8%)	21,223 (35.2%)	23,422 (27.8%)	2,572 (12.0%)
	Average ICU length of stay (hrs)	103 (157.4)	104 (125.2)	176 (306.4)	168 (294.5)	129 (168.6)
	Estimated cost per separation/readmission	$14,038	$19,722	$38,220	$31,440	$17,954
	Top 3 sepsis codes, n(%)					
	Sepsis due to Escherichia coli [E. Coli] (A4151)	463 (1.9%)	3,928 (12.0%)	5,610 (9.3%)	8,314 (9.9%)	518 (2.4%)
	Sepsis, unspecified (A419)	2,899 (11.8%)	17,621 (54.0%)	38,057 (63.2%)	51,260 (60.7%)	2,701 (12.6%)
	Septic shock (R572)	1,392 (5.7%)	7,696 (23.6%)	18,467 (30.6%)	18,467 (21.9%)	1,431 (6.7%)
	In-hospital mortality, n(%)	N/A	4,925 (15.1%)	9,199 (15.3%)	12,273 (14.5%)	1,018 (4.7%)
	Emergency admission*	N/A	3,287 (66.7%)	6,423 (69.8%)	8,286 (67.5%)	673 (66.1%)
	Non-Emergency admission*	N/A	1,638 (33.3%)	2,776 (30.2%)	3,987 (32.5%)	345 (33.9%)

*Percentage based on total in-hospital deaths within each reporting group, not the total number of separations/readmissions represented by N.

Appendices, Glossary and References

Appendix A: Explicit sepsis codes

ICD-10-AM	Description	ICD-10-AM editions (8th to 12th)
A021	Sepsis due to Salmonella	
A037	Sepsis due to Shigella	12th only
A207	Sepsis due to plague	
A217	Sepsis due to tularaemia	
A227	Sepsis due to anthrax	
A237	Sepsis due to Brucella	12th only
A247	Sepsis due to glanders and melioidosis	12th only
A267	Sepsis due to Erysipelothrix [erysipeloid] [rhusiopathiae]	
A2801	Sepsis due to Pasteurella, not elsewhere classified	12th only
A2821	Sepsis due to extraintestinal yersiniosis	12th only
A327	Sepsis due to Listeria [monocytogenes]	
A394	Meningococcaemia, unspecified	
A397	Sepsis due to Meningococcus	12th only
A400	Sepsis due to Streptococcus, group A	
A401	Sepsis due to Streptococcus, group B	
A402	Sepsis due to Streptococcus, group D and Enterococcus	
A4021	Sepsis due to Streptococcus, group D	12th only
A4022	Sepsis due to Enterococcus	12th only
A403	Sepsis due to Streptococcus pneumoniae	
A408	Other streptococcal sepsis	
A409	Streptococcal sepsis, unspecified	
A410	Sepsis due to Staphylococcus aureus	

A411	Sepsis due to other specified Staphylococcus	
A412	Sepsis due to unspecified Staphylococcus	
A413	Sepsis due to Haemophilus influenzae	
A414	Sepsis due to anaerobes	
A415	Sepsis due to other and unspecified Gram-negative organisms	
A4150	Sepsis due to unspecified Gram-negative organisms	
A4151	Sepsis due to Escherichia coli [E. Coli]	
A4152	Sepsis due to Pseudomonas	
A4158	Sepsis due to other Gram-negative organisms	
A418	Sepsis due to other specified organism	
A419	Sepsis, unspecified	
A427	Sepsis due to actinomycosis	
A547	Sepsis due to Gonococcus	12th only
B007	Disseminated herpesviral disease	
B0071	Sepsis due to herpesviral [herpes simplex] infection	12th only
B377	Sepsis due to Candida	
O85	Puerperal sepsis	
P36	Sepsis of newborn	12th only
P360	Sepsis of newborn due to streptococcus, group B	8th to 11th only
P361	Sepsis of newborn due to other and unspecified streptococci	8th to 11th only
P362	Sepsis of newborn due to Staphylococcus aureus	8th to 11th only
P363	Sepsis of newborn due to other and unspecified staphylococci	8th to 11th only
P364	Sepsis of newborn due to Escherichia coli	8th to 11th only
P365	Sepsis of newborn due to anaerobes	8th to 11th only

P368	Other bacterial sepsis of newborn	8th to 11th only
P369	Bacterial sepsis of newborn, unspecified	8th to 11th only
R572	Septic shock	
R651	Severe sepsis	
T8142	Sepsis following a procedure	8th only

Appendix B: Maternal codes

ICD-10-AM	Description
O00	Ectopic pregnancy
O000	Abdominal pregnancy
O001	Tubal pregnancy
O002	Ovarian pregnancy
O008	Other ectopic pregnancy
O009	Ectopic pregnancy, unspecified
O01	Hydatidiform mole
O010	Classical hydatidiform mole
O011	Incomplete and partial hydatidiform mole
O019	Hydatidiform mole, unspecified
O02	Other abnormal products of conception
O020	Blighted ovum and nonhydatidiform mole
O021	Missed abortion
O028	Other specified abnormal products of conception
O029	Abnormal product of conception, unspecified
O03	Spontaneous abortion
O030	Spontaneous abortion, incomplete, complicated by genital tract and pelvic infection and sepsis
O031	Spontaneous abortion, incomplete, complicated by delayed or excessive haemorrhage
O032	Spontaneous abortion, incomplete, complicated by embolism
O033	Spontaneous abortion, incomplete, with other and unspecified complications
O034	Spontaneous abortion, incomplete, without complication
O035	Spontaneous abortion, complete or unspecified, complicated by genital tract and pelvic infection and sepsis
O036	Spontaneous abortion, complete or unspecified, complicated by delayed or excessive haemorrhage
O037	Spontaneous abortion, complete or unspecified, complicated by embolism
O038	Spontaneous abortion, complete or unspecified, with other and unspecified complications
O039	Spontaneous abortion, complete or unspecified, without complication
O04	Medical abortion
O040	Medical abortion, incomplete, complicated by genital tract and pelvic infection and sepsis
O041	Medical abortion, incomplete, complicated by delayed or excessive haemorrhage
O042	Medical abortion, incomplete, complicated by embolism
O043	Medical abortion, incomplete, with other and unspecified complications

O044	Medical abortion, incomplete, without complication
O045	Medical abortion, complete or unspecified, complicated by genital tract and pelvic infection and sepsis
O046	Medical abortion, complete or unspecified, complicated by delayed or excessive haemorrhage
O047	Medical abortion, complete or unspecified, complicated by embolism
O048	Medical abortion, complete or unspecified, with other and unspecified complications
O049	Medical abortion, complete or unspecified, without complication
O05	Other abortion
O050	Other abortion, incomplete, complicated by genital tract and pelvic infection and sepsis
O051	Other abortion, incomplete, complicated by delayed or excessive haemorrhage
O052	Other abortion, incomplete, complicated by embolism
O053	Other abortion, incomplete, with other and unspecified complications
O054	Other abortion, incomplete, without complication
O055	Other abortion, complete or unspecified, complicated by genital tract and pelvic infection and sepsis
O056	Other abortion, complete or unspecified, complicated by delayed or excessive haemorrhage
O057	Other abortion, complete or unspecified, complicated by embolism
O058	Other abortion, complete or unspecified, with other and unspecified complications
O059	Other abortion, complete or unspecified, without complication
O06	Unspecified abortion
O060	Unspecified abortion, incomplete, complicated by genital tract and pelvic infection and sepsis
O061	Unspecified abortion, incomplete, complicated by delayed or excessive haemorrhage
O062	Unspecified abortion, incomplete, complicated by embolism
O063	Unspecified abortion, incomplete, with other and unspecified complications
O064	Unspecified abortion, incomplete, without complication
O065	Unspecified abortion, complete or unspecified, complicated by genital tract and pelvic infection and sepsis
O066	Unspecified abortion, complete or unspecified, complicated by delayed or excessive haemorrhage
O067	Unspecified abortion, complete or unspecified, complicated by embolism
O068	Unspecified abortion, complete or unspecified, with other and unspecified complications
O069	Unspecified abortion, complete or unspecified, without complication
O07	Failed attempted abortion
O070	Failed medical abortion, complicated by genital tract and pelvic infection and sepsis
O071	Failed medical abortion, complicated by delayed or excessive haemorrhage
O072	Failed medical abortion, complicated by embolism

O073	Failed medical abortion, with other and unspecified complications
O074	Failed medical abortion, without complication
O075	Other and unspecified failed attempted abortion, complicated by genital tract and pelvic infection and sepsis
O076	Other and unspecified failed attempted abortion, complicated by delayed or excessive haemorrhage
O077	Other and unspecified failed attempted abortion, complicated by embolism
O078	Other and unspecified failed attempted abortion, with other and unspecified complications
O079	Other and unspecified failed attempted abortion, without complication
O08	Complications following abortion and ectopic and molar pregnancy
O080	Genital tract and pelvic infection and sepsis following abortion and ectopic and molar pregnancy
O081	Delayed or excessive haemorrhage following abortion and ectopic and molar pregnancy
O082	Embolism following abortion and ectopic and molar pregnancy
O083	Shock following abortion and ectopic and molar pregnancy
O084	Kidney failure following abortion and ectopic and molar pregnancy
O085	Metabolic disorders following abortion and ectopic and molar pregnancy
O086	Damage to pelvic organs and tissues following abortion and ectopic and molar pregnancy
O087	Other venous complications following abortion and ectopic and molar pregnancy
O088	Other complications following abortion and ectopic and molar pregnancy
O089	Complication following abortion and ectopic and molar pregnancy, unspecified
O09	Duration of pregnancy
O090	Duration of pregnancy less than 5 completed weeks
O091	Duration of pregnancy 5-13 completed weeks
O092	Duration of pregnancy 14-19 completed weeks
O093	Duration of pregnancy 20-25 completed weeks
O094	Duration of pregnancy 26-33 completed weeks
O095	Duration of pregnancy 34-36 completed weeks
O099	Unspecified duration of pregnancy
O10	Pre-existing hypertension in pregnancy, childbirth and the puerperium
O100	Pre-existing essential hypertension complicating pregnancy, childbirth and the puerperium
O101	Pre-existing hypertensive heart disease complicating pregnancy, childbirth and the puerperium
O102	Pre-existing hypertensive kidney disease complicating pregnancy, childbirth and the puerperium
O103	Pre-existing hypertensive heart and kidney disease complicating pregnancy, childbirth and the puerperium
O104	Pre-existing secondary hypertension complicating pregnancy, childbirth and the puerperium

O109	Unspecified pre-existing hypertension complicating pregnancy, childbirth and the puerperium
O11	Pre-eclampsia superimposed on chronic hypertension
O12	Gestational [pregnancy-induced] oedema and proteinuria without hypertension
O120	Gestational oedema
O121	Gestational proteinuria
O122	Gestational oedema with proteinuria
O13	Gestational [pregnancy-induced] hypertension
O14	Pre-eclampsia
O140	Mild to moderate pre-eclampsia
O141	Severe pre-eclampsia
O142	HELLP syndrome
O149	Pre-eclampsia, unspecified
O15	Eclampsia
O150	Eclampsia in pregnancy
O151	Eclampsia in labour
O152	Eclampsia in the puerperium
O159	Eclampsia, unspecified as to time period
O16	Unspecified maternal hypertension
O20	Haemorrhage in early pregnancy
O200	Threatened abortion
O208	Other haemorrhage in early pregnancy
O209	Haemorrhage in early pregnancy, unspecified
O21	Excessive vomiting in pregnancy
O210	Hyperemesis gravidarum
O211	Hyperemesis gravidarum with metabolic disturbance
O212	Vomiting in late pregnancy
O218	Other vomiting complicating pregnancy
O219	Vomiting in pregnancy, not elsewhere classified
O22	Venous conditions and haemorrhoids in pregnancy
O220	Varicose veins of lower extremity in pregnancy
O221	Genital varices in pregnancy
O222	Superficial thrombophlebitis in pregnancy
O223	Deep phlebothrombosis in pregnancy
O224	Haemorrhoids in pregnancy

O225	Cerebral venous thrombosis in pregnancy
O228	Other venous complications in pregnancy
O229	Venous condition in pregnancy
O23	Infections of genitourinary tract in pregnancy
O230	Infections of kidney in pregnancy
O231	Infections of bladder in pregnancy
O232	Infections of urethra in pregnancy
O233	Infections of other parts of urinary tract in pregnancy
O234	Unspecified infection of urinary tract in pregnancy
O235	Infections of the genital tract in pregnancy
O239	Other and unspecified genitourinary tract infection in pregnancy
O24	Diabetes mellitus and intermediate hyperglycaemia in pregnancy, childbirth and the puerperium
O240	Pre-existing Type 1 diabetes mellitus in pregnancy, childbirth and the puerperium
O241	Pre-existing Type 2 diabetes mellitus in pregnancy, childbirth and the puerperium
O2411	Pre-existing diabetes mellitus, Type 2, in pregnancy, non-insulin treated
O2412	Pre-existing Type 2 diabetes mellitus in pregnancy, childbirth and the puerperium, insulin treated
O2413	Pre-existing Type 2 diabetes mellitus in pregnancy, childbirth and the puerperium, oral hypoglycaemic therapy
O2414	Pre-existing Type 2 diabetes mellitus in pregnancy, childbirth and the puerperium, other
O2419	Pre-existing Type 2 diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified
O242	Pre-existing other specified diabetes mellitus in pregnancy, childbirth and the puerperium
O2421	Pre-existing diabetes mellitus, other specified type, in pregnancy, non-insulin treated
O2422	Pre-existing other specified diabetes mellitus in pregnancy, childbirth and the puerperium, insulin treated
O2423	Pre-existing other specified diabetes mellitus in pregnancy, childbirth and the puerperium, oral hypoglycaemic therapy
O2424	Pre-existing other specified diabetes mellitus in pregnancy, childbirth and the puerperium, other
O2429	Pre-existing other specified diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified
O243	Pre-existing unspecified diabetes mellitus, in pregnancy, childbirth and the puerperium
O2431	Pre-existing diabetes mellitus, unspecified, in pregnancy, non-insulin treated
O2432	Pre-existing unspecified diabetes mellitus in pregnancy, childbirth and the puerperium, insulin treated
O2433	Pre-existing unspecified diabetes mellitus in pregnancy, childbirth and the puerperium, oral hypoglycaemic therapy
O2434	Pre-existing unspecified diabetes mellitus in pregnancy, childbirth and the puerperium, other
O2439	Pre-existing unspecified diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified

O244	Diabetes mellitus arising during pregnancy
O2441	Diabetes mellitus arising at or after 24 weeks gestation, non-insulin treated
O2442	Diabetes mellitus arising during pregnancy, insulin treated
O2443	Diabetes mellitus arising during pregnancy, oral hypoglycaemic therapy
O2444	Diabetes mellitus arising during pregnancy, other
O2449	Diabetes mellitus arising during pregnancy, unspecified
O245	Pre-existing intermediate hyperglycaemia in pregnancy, childbirth and the puerperium
O2451	Pre-existing impaired glucose regulation, in pregnancy, non-insulin treated
O2452	Pre-existing intermediate hyperglycaemia in pregnancy, childbirth and the puerperium, insulin treated
O2453	Pre-existing intermediate hyperglycaemia in pregnancy, childbirth and the puerperium, oral hypoglycaemic therapy
O2454	Pre-existing intermediate hyperglycaemia in pregnancy, childbirth and the puerperium, other
O2459	Pre-existing intermediate hyperglycaemia in pregnancy, childbirth and the puerperium, unspecified
O249	Diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified onset
O2491	Diabetes mellitus in pregnancy, unspecified onset, non-insulin treated
O2492	Diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified onset, insulin treated
O2493	Diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified onset, oral hypoglycaemic therapy
O2494	Diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified onset, other
O2499	Diabetes mellitus in pregnancy, childbirth and the puerperium, unspecified onset, unspecified
O25	Malnutrition in pregnancy, childbirth and the puerperium
O26	Maternal care for other conditions predominantly related to pregnancy
O260	Excessive weight gain in pregnancy
O261	Low weight gain in pregnancy
O262	Pregnancy care of habitual aborter
O263	Retained intrauterine contraceptive device in pregnancy
O264	Pemphigoid gestationis [herpes gestationis]
O265	Maternal hypotension syndrome
O266	Liver disorders in pregnancy, childbirth and the puerperium
O267	Subluxation of symphysis (pubis) in pregnancy, childbirth and the puerperium
O268	Other specified pregnancy-related conditions
O2681	Kidney disorders in pregnancy, childbirth and the puerperium
O2682	Carpal tunnel syndrome in pregnancy
O2683	Neuralgia in pregnancy
O2688	Other specified pregnancy-related conditions

O269	Pregnancy-related condition, unspecified
O28	Abnormal findings on antenatal screening of mother
O280	Abnormal haematological finding on antenatal screening of mother
O281	Abnormal biochemical finding on antenatal screening of mother
O282	Abnormal cytological finding on antenatal screening of mother
O283	Abnormal ultrasonic finding on antenatal screening of mother
O284	Abnormal radiological finding on antenatal screening of mother
O285	Abnormal chromosomal and genetic finding on antenatal screening of mother
O288	Other abnormal findings on antenatal screening of mother
O289	Abnormal finding on antenatal screening of mother, unspecified
O29	Complications of anaesthesia during pregnancy
O290	Pulmonary complications of anaesthesia during pregnancy
O291	Cardiac complications of anaesthesia during pregnancy
O292	Central nervous system complications of anaesthesia during pregnancy
O293	Toxic reaction to local anaesthesia during pregnancy
O294	Spinal and epidural anaesthesia-induced headache during pregnancy
O295	Other complications of spinal and epidural anaesthesia during pregnancy
O296	Failed or difficult intubation during pregnancy
O2961	Failed intubation during pregnancy
O2962	Difficult intubation during pregnancy
O298	Other complications of anaesthesia during pregnancy
O299	Complication of anaesthesia during pregnancy, unspecified
O30	Multiple gestation
O300	Twin pregnancy
O301	Triplet pregnancy
O302	Quadruplet pregnancy
O308	Other multiple gestation
O309	Multiple gestation, unspecified
O31	Complications specific to multiple gestation
O310	Papyraceous fetus
O311	Continuing pregnancy after abortion of one fetus or more
O312	Continuing pregnancy after intrauterine death of one fetus or more
O318	Other complications specific to multiple gestation
O32	Maternal care for known or suspected malpresentation of fetus

O320	Maternal care for unstable lie
O321	Maternal care for breech presentation
O322	Maternal care for transverse and oblique lie
O323	Maternal care for face, brow and chin presentation
O324	Maternal care for high head at term
O325	Maternal care for multiple gestation with malpresentation of one fetus or more
O326	Maternal care for compound presentation
O328	Maternal care for other malpresentation of fetus
O329	Maternal care for malpresentation of fetus, unspecified
O33	Maternal care for known or suspected disproportion
O330	Maternal care for disproportion due to deformity of maternal pelvic bones
O331	Maternal care for disproportion due to generally contracted pelvis
O332	Maternal care for disproportion due to inlet contraction of pelvis
O333	Maternal care for disproportion due to outlet contraction of pelvis
O334	Maternal care for disproportion of mixed maternal and fetal origin
O335	Maternal care for disproportion due to unusually large fetus
O336	Maternal care for disproportion due to hydrocephalic fetus
O337	Maternal care for disproportion due to other fetal deformities
O338	Maternal care for disproportion of other origin
O339	Maternal care for disproportion, unspecified
O34	Maternal care for known or suspected abnormality of pelvic organs
O340	Maternal care for congenital malformation of uterus
O341	Maternal care for tumour of corpus uteri
O342	Maternal care due to uterine scar from previous surgery
O343	Maternal care for cervical incompetence
O344	Maternal care for other abnormalities of cervix
O345	Maternal care for other abnormalities of gravid uterus
O346	Maternal care for abnormality of vagina
O347	Maternal care for abnormality of vulva and perineum
O348	Maternal care for other abnormalities of pelvic organs
O349	Maternal care for abnormality of pelvic organ, unspecified
O35	Maternal care for known or suspected fetal abnormality and damage
O350	Maternal care for (suspected) central nervous system malformation in fetus
O351	Maternal care for (suspected) chromosomal abnormality in fetus

O352	Maternal care for (suspected) hereditary disease in fetus
O353	Maternal care for (suspected) damage to fetus from viral disease in mother
O354	Maternal care for (suspected) damage to fetus from alcohol
O355	Maternal care for (suspected) damage to fetus by drugs
O356	Maternal care for (suspected) damage to fetus by radiation
O357	Maternal care for (suspected) damage to fetus by other medical procedures
O358	Maternal care for other (suspected) fetal abnormality and damage
O359	Maternal care for (suspected) fetal abnormality and damage, unspecified
O36	Maternal care for other known or suspected fetal problems
O360	Maternal care for rhesus isoimmunisation
O361	Maternal care for other isoimmunisation
O362	Maternal care for hydrops fetalis
O363	Maternal care for signs of fetal hypoxia
O364	Maternal care for intrauterine death
O365	Maternal care for poor fetal growth
O366	Maternal care for excessive fetal growth
O367	Maternal care for viable fetus in abdominal pregnancy
O368	Maternal care for other specified fetal problems
O369	Maternal care for fetal problem, unspecified
O40	Polyhydramnios
O41	Other disorders of amniotic fluid and membranes
O410	Oligohydramnios
O411	Infection of amniotic sac and membranes
O418	Other specified disorders of amniotic fluid and membranes
O419	Disorder of amniotic fluid and membranes, unspecified
O42	Premature rupture of membranes
O420	Premature rupture of membranes, onset of labour within 24 hours
O421	Premature rupture of membranes, onset of labour after 24 hours
O4211	Premature rupture of membranes, onset of labour between 1-7 days later
O4212	Premature rupture of membranes, onset of labour more than 7 days later
O422	Premature rupture of membranes, labour delayed by therapy
O429	Premature rupture of membranes, unspecified
O43	Placental disorders
O430	Placental transfusion syndromes

O431	Malformation of placenta
O432	Morbidly adherent placenta
O438	Other placental disorders
O439	Placental disorder, unspecified
O44	Placenta praevia
O440	Placenta praevia specified as without haemorrhage
O441	Placenta praevia with haemorrhage
O45	Premature separation of placenta [abruptio placentae]
O450	Premature separation of placenta with coagulation defect
O458	Other premature separation of placenta
O459	Premature separation of placenta, unspecified
O46	Antepartum haemorrhage, not elsewhere classified
O460	Antepartum haemorrhage with coagulation defect
O468	Other antepartum haemorrhage
O469	Antepartum haemorrhage, unspecified
O47	False labour or labour without delivery
O470	False labour before 37 completed weeks of gestation
O471	False labour at or after 37 completed weeks of gestation
O472	Labour without delivery
O479	False labour, unspecified
O48	Prolonged pregnancy
O60	Preterm labour and delivery
O600	Preterm labour without delivery
O601	Preterm spontaneous labour with preterm delivery
O602	Preterm spontaneous labour with term delivery
O603	Preterm delivery without spontaneous labour
O61	Failed induction of labour
O610	Failed medical induction of labour
O611	Failed surgical induction of labour
O612	Failed medical with surgical induction of labour
O618	Other failed induction of labour
O619	Failed induction of labour, unspecified
O62	Abnormalities of forces of labour
O620	Primary inadequate contractions

O621	Secondary uterine inertia
O622	Other uterine inertia
O623	Precipitate labour
O624	Hypertonic, incoordinate, and prolonged uterine contractions
O628	Other abnormalities of forces of labour
O629	Abnormality of forces of labour, unspecified
O63	Long labour
O630	Prolonged first stage (of labour)
O631	Prolonged second stage (of labour)
O632	Delayed delivery of second or subsequent fetus in multiple delivery
O633	Prolonged third stage (of labour)
O639	Long labour, unspecified
O64	Labour and delivery affected by malposition and malpresentation of fetus
O640	Labour and delivery affected by incomplete rotation of fetal head
O641	Labour and delivery affected by breech presentation
O642	Labour and delivery affected by face presentation
O643	Labour and delivery affected by brow presentation
O644	Labour and delivery affected by shoulder presentation
O645	Labour and delivery affected by compound presentation
O648	Labour and delivery affected by other malposition and malpresentation
O649	Labour and delivery affected by malposition and malpresentation, unspecified
O65	Labour and delivery affected by maternal pelvic abnormality
O650	Labour and delivery affected by deformed pelvis
O651	Labour and delivery affected by generally contracted pelvis
O652	Labour and delivery affected by pelvic inlet contraction
O653	Labour and delivery affected by pelvic outlet and mid-cavity contraction
O654	Labour and delivery affected by fetopelvic disproportion, unspecified
O655	Labour and delivery affected by abnormality of maternal pelvic organs
O658	Labour and delivery affected by other maternal pelvic abnormalities
O659	Labour and delivery affected by maternal pelvic abnormality, unspecified
O66	Other factors affecting labour and delivery
O660	Labour and delivery affected by shoulder dystocia
O661	Labour and delivery affected by locked twins
O662	Labour and delivery affected by unusually large fetus

O663	Labour and delivery affected by other abnormalities of fetus
O664	Failed trial of labour, unspecified
O665	Failed application of vacuum extractor and forceps, unspecified
O668	Labour and delivery affected by other dystocia
O669	Labour and delivery affected by dystocia, unspecified
O67	Labour and delivery complicated by intrapartum haemorrhage, not elsewhere classified
O670	Intrapartum haemorrhage with coagulation defect
O678	Other intrapartum haemorrhage
O679	Intrapartum haemorrhage, unspecified
O68	Labour and delivery complicated by fetal stress [distress]
O680	Labour and delivery complicated by fetal heart rate anomaly
O681	Labour and delivery complicated by meconium in amniotic fluid
O682	Labour and delivery complicated by fetal heart rate anomaly with meconium in amniotic fluid
O683	Labour and delivery complicated by biochemical evidence of fetal stress
O688	Labour and delivery complicated by other evidence of fetal stress
O689	Labour and delivery complicated by fetal stress, unspecified
O69	Labour and delivery complicated by umbilical cord complications
O690	Labour and delivery complicated by prolapse of cord
O691	Labour and delivery complicated by cord around neck, with compression
O692	Labour and delivery complicated by other cord entanglement, with compression
O693	Labour and delivery complicated by short cord
O694	Labour and delivery complicated by vasa praevia
O695	Labour and delivery complicated by vascular lesion of cord
O698	Labour and delivery complicated by other cord complications
O699	Labour and delivery complicated by cord complication, unspecified
O70	Perineal laceration during delivery
O700	First degree perineal laceration during delivery
O701	Second degree perineal laceration during delivery
O702	Third degree perineal laceration during delivery
O703	Fourth degree perineal laceration during delivery
O709	Perineal laceration during delivery, unspecified
O71	Other obstetric trauma
O710	Rupture of uterus before onset of labour
O7100	Rupture of uterus before onset of labour, unspecified

O7101	Spontaneous rupture of uterus before onset of labour
O7102	Traumatic rupture of uterus before onset of labour
O711	Rupture of uterus during labour
O7110	Rupture of uterus during labour, unspecified
O7111	Spontaneous rupture of uterus during labour
O7112	Traumatic rupture of uterus during labour
O712	Postpartum inversion of uterus
O713	Obstetric laceration of cervix
O714	Obstetric high vaginal laceration (alone)
O715	Other obstetric injury to pelvic organs
O716	Obstetric damage to pelvic joints and ligaments
O717	Obstetric haematoma of pelvis
O718	Other specified obstetric trauma
O7181	Obstetric uterine laceration or tear
O7182	Diastasis of recti abdominal muscle in pregnancy or delivery
O7188	Other specified obstetric trauma
O719	Obstetric trauma, unspecified
O72	Third-stage and postpartum haemorrhage
O720	Third-stage haemorrhage
O721	Other immediate postpartum haemorrhage
O722	Delayed and secondary postpartum haemorrhage
O723	Postpartum coagulation defects
O73	Retained placenta and membranes
O730	Retained placenta
O731	Retained portions of placenta and membranes
O74	Complications of anaesthesia during labour and delivery
O740	Aspiration pneumonitis due to anaesthesia during labour and delivery
O741	Other pulmonary complications of anaesthesia during labour and delivery
O742	Cardiac complications of anaesthesia during labour and delivery
O743	Central nervous system complications of anaesthesia during labour and delivery
O744	Toxic reaction to local anaesthesia during labour and delivery
O745	Spinal and epidural anaesthesia-induced headache during labour and delivery
O746	Other complications of spinal and epidural anaesthesia during labour and delivery
O747	Failed or difficult intubation during labour and delivery

O7471	Failed intubation during labour and delivery
O7472	Difficult intubation during labour and delivery
O748	Other complications of anaesthesia during labour and delivery
O749	Complication of anaesthesia during labour and delivery, unspecified
O75	Other complications of labour and delivery, not elsewhere classified
O750	Maternal distress during labour and delivery
O751	Shock during or following labour and delivery
O752	Pyrexia during labour, not elsewhere classified
O753	Other infection during labour
O754	Other complications of obstetric surgery and procedures
O755	Delayed delivery after artificial rupture of membranes
O756	Delayed delivery after spontaneous or unspecified rupture of membranes
O757	Vaginal delivery following previous caesarean section
O758	Other specified complications of labour and delivery
O759	Complication of labour and delivery, unspecified
O80	Single spontaneous delivery
O81	Single delivery by forceps and vacuum extractor
O82	Single delivery by caesarean section
O83	Other assisted single delivery
O84	Multiple delivery
O840	Multiple delivery, all spontaneous
O841	Multiple delivery, all by forceps and vacuum extractor
O842	Multiple delivery, all by caesarean section
O848	Other multiple delivery
O8481	Multiple delivery, all assisted, not elsewhere classified
O8482	Multiple delivery by combination of methods
O849	Multiple delivery, unspecified
O85	Puerperal sepsis
O86	Other and unspecified puerperal infections
O860	Infection of obstetric surgical wound
O861	Other infection of genital tract following delivery
O862	Urinary tract infection following delivery
O863	Other genitourinary tract infections following delivery
O864	Pyrexia of unknown origin following delivery

O868	Other and unspecified puerperal infections
O87	Venous conditions and haemorrhoids in the puerperium
O870	Superficial thrombophlebitis in the puerperium
O871	Deep phlebothrombosis in the puerperium
O872	Haemorrhoids in the puerperium
O873	Cerebral venous thrombosis in the puerperium
O878	Other venous complications in the puerperium
O879	Venous condition in the puerperium
O88	Obstetric embolism
O880	Obstetric air embolism
O881	Amniotic fluid embolism
O882	Obstetric blood clot embolism
O883	Obstetric pyaemic and septic embolism
O888	Other obstetric embolism
O89	Complications of anaesthesia during the puerperium
O890	Pulmonary complications of anaesthesia during the puerperium
O891	Cardiac complications of anaesthesia during the puerperium
O892	Central nervous system complications of anaesthesia during the puerperium
O893	Toxic reaction to local anaesthesia during the puerperium
O894	Spinal and epidural anaesthesia-induced headache during the puerperium
O895	Other complications of spinal and epidural anaesthesia during the puerperium
O896	Failed or difficult intubation during the puerperium
O8961	Failed intubation during the puerperium
O8962	Difficult intubation during the puerperium
O898	Other complications of anaesthesia during the puerperium
O899	Complication of anaesthesia during the puerperium, unspecified
O90	Complications of the puerperium, not elsewhere classified
O900	Disruption of caesarean section wound
O901	Disruption of perineal obstetric wound
O902	Haematoma of obstetric wound
O903	Cardiomyopathy in the puerperium
O904	Postpartum acute kidney failure
O905	Postpartum thyroiditis
O908	Other complications of the puerperium, not elsewhere classified

O909	Complication of the puerperium, unspecified
O91	Infections of breast associated with childbirth
O910	Infection of nipple associated with childbirth
O9100	Infection of nipple associated with childbirth, without mention of attachment difficulty
O9101	Infection of nipple associated with childbirth, with mention of attachment difficulty
O911	Abscess of breast associated with childbirth
O9110	Abscess of breast associated with childbirth, without mention of attachment difficulty
O9111	Abscess of breast associated with childbirth, with mention of attachment difficulty
O912	Nonpurulent mastitis associated with childbirth
O9120	Nonpurulent mastitis associated with childbirth, without mention of attachment difficulty
O9121	Nonpurulent mastitis associated with childbirth, with mention of attachment difficulty
O92	Other disorders of breast and lactation associated with childbirth
O920	Retracted nipple associated with childbirth
O9200	Retracted nipple associated with childbirth, without mention of attachment difficulty
O9201	Retracted nipple associated with childbirth, with mention of attachment difficulty
O921	Cracked nipple associated with childbirth
O9210	Cracked nipple associated with childbirth, without mention of attachment difficulty
O9211	Cracked nipple associated with childbirth, with mention of attachment difficulty
O922	Other and unspecified disorders of breast associated with childbirth
O9220	Other and unspecified disorders of breast associated with childbirth, without mention of attachment difficulty
O9221	Other and unspecified disorders of breast associated with childbirth, with mention of attachment difficulty
O923	Agalactia
O9230	Agalactia, without mention of attachment difficulty
O9231	Agalactia, with mention of attachment difficulty
O924	Hypogalactia
O9240	Hypogalactia, without mention of attachment difficulty
O9241	Hypogalactia, with mention of attachment difficulty
O925	Suppressed lactation
O9250	Suppressed lactation, without mention of attachment difficulty
O9251	Suppressed lactation, with mention of attachment difficulty
O926	Galactorrhoea
O9260	Galactorrhoea, without mention of attachment difficulty

O9261	Galactorrhoea, with mention of attachment difficulty
O927	Other and unspecified disorders of lactation
O9270	Other and unspecified disorders of lactation, without mention of attachment difficulty
O9271	Other and unspecified disorders of lactation, with mention of attachment difficulty
O94	Sequelae of complication of pregnancy, childbirth and the puerperium
O95	Obstetric death of unspecified cause
O96	Death from any obstetric cause occurring more than 42 days but less than one year after delivery
O960	Death from direct obstetric cause occurring more than 42 days but less than one year after delivery
O961	Death from indirect obstetric cause occurring more than 42 days but less than one year after delivery
O969	Death from unspecified obstetric cause occurring more than 42 days but less than one year after delivery
O97	Death from obstetric causes, one year or more after delivery
O970	Death from direct obstetric cause, one year or more after delivery
O971	Death from indirect obstetric cause, one year or more after delivery
O979	Death from unspecified obstetric cause, one year or more after delivery
O98	Maternal infectious and parasitic diseases classifiable elsewhere in pregnancy, childbirth and the puerperium
O980	Tuberculosis in pregnancy, childbirth and the puerperium
O981	Syphilis in pregnancy, childbirth and the puerperium
O982	Gonorrhoea in pregnancy, childbirth and the puerperium
O983	Other infections with a predominantly sexual mode of transmission in pregnancy, childbirth and the puerperium
O984	Viral hepatitis in pregnancy, childbirth and the puerperium
O985	Other viral diseases in pregnancy, childbirth and the puerperium
O986	Protozoal diseases in pregnancy, childbirth and the puerperium
O987	Human immunodeficiency virus [HIV] disease in pregnancy, childbirth and the puerperium
O988	Other maternal infectious and parasitic diseases in pregnancy, childbirth and the puerperium
O989	Unspecified maternal infectious or parasitic disease in pregnancy, childbirth and the puerperium
O99	Other maternal diseases classifiable elsewhere in pregnancy, childbirth and the puerperium
O990	Anaemia in pregnancy, childbirth and the puerperium
O9900	Anaemia in pregnancy, childbirth and the puerperium, unspecified
O9901	Anaemia in pregnancy
O9902	Anaemia in pregnancy, with mention of pre-existing anaemia
O9903	Anaemia in childbirth and the puerperium
O9904	Anaemia in childbirth and the puerperium, with mention of pre-existing anaemia

O991	Other diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism in pregnancy, childbirth and the puerperium
O992	Endocrine, nutritional and metabolic diseases in pregnancy, childbirth and the puerperium
O993	Mental disorders and diseases of the nervous system in pregnancy, childbirth and the puerperium
O9931	Mental disorders in pregnancy, childbirth and the puerperium
O9932	Diseases of the nervous system in pregnancy, childbirth and the puerperium
O994	Diseases of the circulatory system in pregnancy, childbirth and the puerperium
O995	Diseases of the respiratory system in pregnancy, childbirth and the puerperium
O996	Diseases of the digestive system in pregnancy, childbirth and the puerperium
O997	Diseases of the skin and subcutaneous tissue in pregnancy, childbirth and the puerperium
O998	Other specified diseases and conditions in pregnancy, childbirth and the puerperium
Z32	Pregnancy supervision, examination and test, not elsewhere classified
Z320	Pregnancy, not (yet) confirmed
Z321	Pregnancy confirmed
Z322	Initiation of medical abortion
Z33	Pregnant state, incidental
Z34	Supervision of normal pregnancy
Z340	Supervision of normal first pregnancy
Z348	Supervision of other normal pregnancy
Z349	Supervision of normal pregnancy, unspecified
Z35	Supervision of high-risk pregnancy
Z350	Supervision of pregnancy with history of infertility
Z351	Supervision of pregnancy with history of abortive outcome
Z352	Supervision of pregnancy with other poor reproductive or obstetric history
Z353	Supervision of pregnancy with history of insufficient antenatal care
Z354	Supervision of pregnancy with grand multiparity
Z355	Supervision of pregnancy with advanced maternal age
Z3551	Supervision of primigravida with advanced maternal age
Z3552	Supervision of multigravida with advanced maternal age
Z356	Supervision of (very) young primigravida
Z357	Supervision of high-risk pregnancy due to social problems
Z358	Supervision of other high-risk pregnancies
Z359	Supervision of high-risk pregnancy, unspecified
Z36	Antenatal screening

Z360	Antenatal screening for chromosomal anomalies
Z361	Antenatal screening for raised alpha-fetoprotein level
Z362	Other antenatal screening based on amniocentesis
Z363	Antenatal screening for malformations using ultrasound and other physical methods
Z364	Antenatal screening for fetal growth retardation using ultrasound and other physical methods
Z365	Antenatal screening for isoimmunisation
Z368	Other antenatal screening
Z369	Antenatal screening, unspecified
Z37	Outcome of delivery
Z370	Single live birth
Z371	Single stillbirth
Z372	Twins, both liveborn
Z373	Twins, one liveborn and one stillborn
Z374	Twins, both stillborn
Z375	Other multiple births, all liveborn
Z376	Other multiple births, some liveborn
Z377	Other multiple births, all stillborn
Z379	Outcome of delivery, unspecified
Z39	Postpartum care and examination
Z390	Postpartum care and examination immediately after delivery
Z3900	Postpartum care and examination after delivery, unspecified
Z3901	Postpartum care after hospital delivery
Z3902	Postpartum care after planned, out of hospital delivery
Z3903	Postpartum care after unplanned, out of hospital delivery
Z391	Care and examination of lactating mother
Z392	Routine postpartum follow-up

Glossary

Term	Description
Admitted care	When patients are formally admitted to public or private hospital to receive treatment or care.
Admitted Patient Care- National Minimum Data Set (APC-NMDS)	The admitted patient care national minimum data set (APC-NMDS) is the mandatory core data collected and reported nationally about episodes of admitted patient care.
Australian Refined Diagnosis Related Groups (AR-DRG)	Australian Refined Diagnosis Related Groups (AR-DRG) is a classification system used to group diagnosis and intervention data with other types of routinely collected data to help classify admitted patient episodes of care. They are used to calculate public hospital funding based on activity.
Australian Statistical Geographic Classification (ASGC)	Australian Statistical Geographic Classification (ASGC) is a geographical data set that defines five levels of remoteness.
Data Cube	A data cube is a large collection of data that can be organized and modelled so that analysis can be completed in multiple ways.
Diagnosis Related Group (DRG)	See AR-DRG.
Estimated Resident Population (ERP)	Estimated resident population (ERP) data is an Australian Bureau of Statistics (ABS) data set that contains information about national, state and territory populations.
GEN Aged Care	Gen Aged Care Data is an Australian Institute of Health and Welfare data collection that provides data and information about aged care services in Australia.
Hospital Acquired Complication (HAC)	A hospital acquired complication (HACs) is a medical complication that can happen to patients while they are in hospital that were not present when they were admitted.
Hospital Acquired Infection (HAI)	A hospital acquired infection (HAI) is an infection that develops while a person is in hospital. It is a type of HAC.
ICD-10AM	International Statistical Classification of Diseases and related Health Problems (ICD-10AM**)** is an alphabetic index used to classify diseases, injuries and health related problems.
Intensive Care Unit (ICU)	An intensive care unit (ICU) provides critical care and life support to people who are acutely ill or serious injured.
Index of Relative Socio-economic Disadvantage (ISRD)	The Index of relative socio-economic disadvantage (ISRD) is an Australian Bureau of Statistics data collection about the economic and social conditions of people and households in Australia. A low score indicated relatively greater disadvantage.
Median	The median is the middle number in a sorted list of numbers.

National Minimum Data Set	A National Minimum Data Set (NMDS) is a core set of data elements agreed by the National Health Information Management Group for mandatory collection and reporting at a national level.
National Safety and Quality Health Service (NSQHS) Standards	The National Safety and Quality Health Service Standards (NSQHS Standards) are statements developed by the Australian Commission on Safety and Quality in Health Care (ACSQHC) that describe the standard of care that should be delivered across Australian health services. There are currently eight standards.
National Weighted Activity Unit	The national weighted activity unit (NWAU) is a unit cost set for episodes of specific health service activity.
National Efficient Price	The National Efficient Price (NEP) is a price signal or benchmark about the efficient cost of public hospital service delivery. It is published annually by the Independent Health and Aged Care Pricing Authority (IHAPCA).
Organ decompensation	Organ decompensation is the term used when organs begin to fail or breakdown due to stress, fatigue or illness.
Principal diagnosis	The principal diagnosis is the main illness/concern documented following assessment of a patient in an emergency department.
Secondary diagnosis	A secondary diagnosis is any condition that a patient has in addition to the principal diagnosis.
Separation	A separation is the term used to describe an episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay beginning or ending in a change in type of care (for example, from acute care to rehabilitation).

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