2 Deaths from natural causes

Deaths from natural causes (diseases and morbid conditions) accounted for three-quarters of child deaths, with these most likely to occur in the first days and weeks of life. Many of these early deaths were caused by perinatal conditions and congenital anomalies. Cancers and tumours were the leading natural cause of death, and among the top 3 causes of all deaths, for children aged 1–17 years.

Our involvement in research has contributed to evidence-based practice improvements and the development of initiatives aimed at reducing preventable child deaths due to sepsis-related infections.

In partnership with the Queensland Paediatric Sepsis Program (QPSP) (Children's Health Queensland), we published the *Queensland paediatric sepsis mortality study* in 2024, Australia's first population-based study to better understand the true incidence of childhood deaths from sepsis.

Our study found sepsis is the biggest single cause of preventable death of children in Queensland. It suggests sepsis may be under-diagnosed in Queensland children, particularly in infection-related deaths that occur outside hospitals.

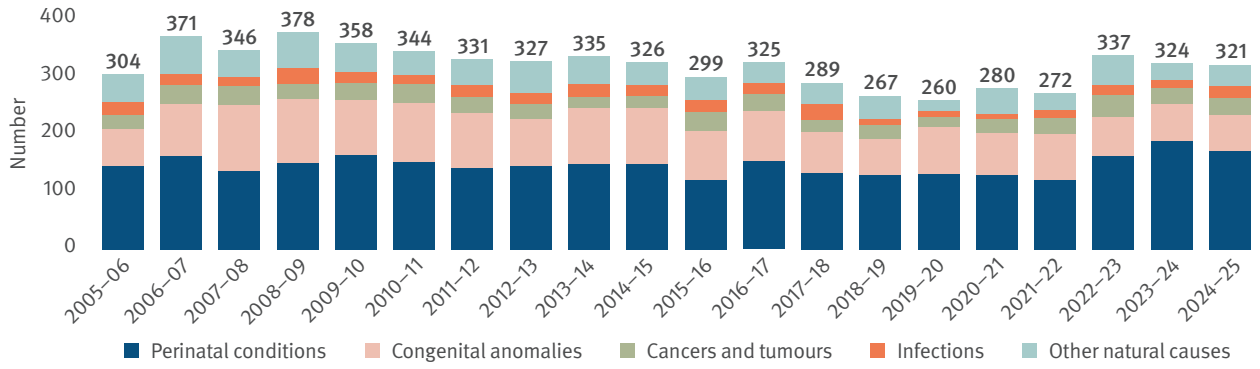
The study provides us with rich insights into the occurrence of sepsis and the opportunities for early detection and treatment. We continue to work with QPSP to improve our response to sepsis in 5 key areas – public awareness, clinical improvements, identifying sepsis on death certificates and in coronial investigations, and research. Child death review teams in New South Wales and South Australia have reached out to us to replicate the study in their jurisdictions.

Every child lost to sepsis is a reminder that we can do more. Sepsis can strike fast, but with knowledge, vigilance, and timely care, we can save lives. We commit to maintaining a spotlight on sepsis-related child deaths in future annual reports to help track progress on turning the trend in the numbers of deaths from sepsis among children in Queensland.

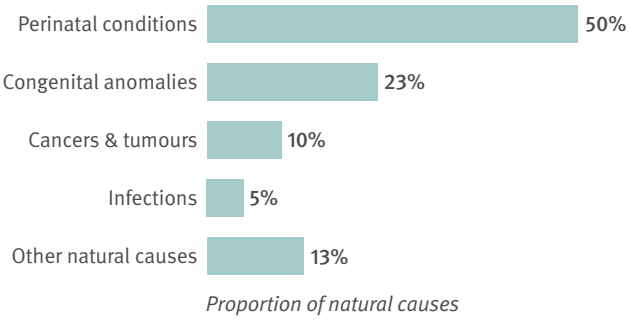
The Commission has also introduced a focus on deaths from potentially avoidable natural causes in our reporting. This includes deaths from conditions that can be mainly prevented through effective existing public health and primary prevention interventions and/or individualised care plans.

Key facts on child deaths from natural causes

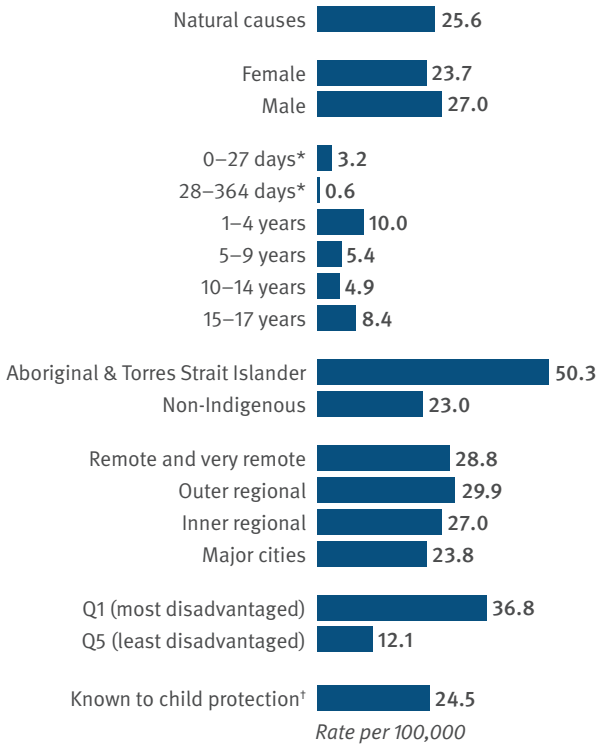
2005 to 2025



5-year summary (2020–2025) | Cause of death category



Demographics



Leading cause by age

0–27 days	**Perinatal conditions** 2.3 per 1,000 births
28–364 days	**Congenital anomalies** 0.2 per 1,000 births
1–4 years	**Cancers and tumours** 3.3 per 100,000
5–9 years	**Cancers and tumours** 2.1 per 100,000
10–14 years	**Cancers and tumours** 1.9 per 100,000
15–17 years	**Cancers and tumours** 2.5 per 100,000

Notes: Counting is by date of death registration. Percentages may not add to 100 due to rounding.
** rate per 1,000 births.*
† in the 12 months prior to death.

Key findings

Classification of causes of death using ICD-10

The Commission uses the ***International statistical classification of diseases and related health problems***, tenth revision[23] (ICD-10) to classify causes of death. The ICD-10 chapters and codes form the major groups and sub-groups of diseases and conditions in reporting on deaths from natural causes.

Overall, there has been a downward trend in the mortality rate for natural causes (diseases and morbid conditions),[24] with the rate decreasing from 35.3 per 100,000 in 2004–09 to 25.6 per 100,000 in 2020–25 (a decrease of 2.0% per year on average).[25] The majority of child deaths each year are from natural causes. Natural causes have accounted for 73% of all child deaths over the past 5 years.

Perinatal conditions and congenital anomalies were the most common natural causes in 2024–25 (169 and 64 deaths respectively). Together, these causes accounted for 73% of all deaths from natural causes.

Appendix A, Table A.4 provides summary data and key characteristics for deaths from natural causes.

Trends

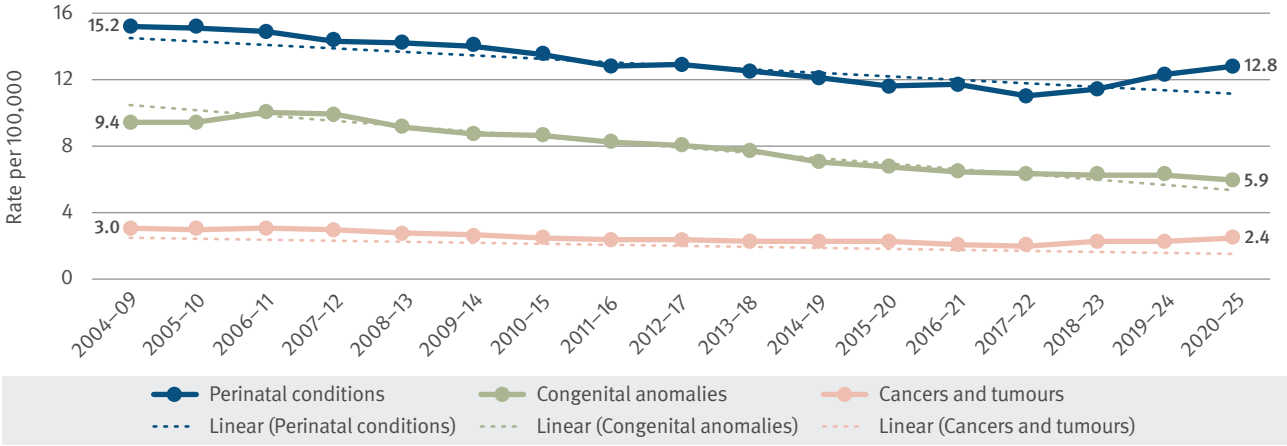
Although the broader trend in the natural cause mortality rate is decreasing, there have been higher natural cause deaths in the last 3 years with 337 in 2022–23, 324 in 2023–24 and 321 in 2024–25. In comparison, in the 5 years preceding the last 3, natural cause deaths were below 300 and ranged between 260 and 289.

The increased numbers are largely due to the increase in deaths from perinatal conditions, which increased from 121 in 2021–22 to 169 in 2024–25. Deaths from perinatal conditions, which predominantly occur in the neonatal period (0–27 days), are the largest contributor to child deaths.

The long-term trends in mortality rates from the leading natural causes are shown in Figure 2.1. The figure illustrates the recent increases in mortality from perinatal conditions.

Further analysis of the Child Death Register found the increase in perinatal conditions in 2024–25 has primarily occurred across one underlying cause of death block: Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery (P00–P04).

Figure 2.1: Perinatal conditions, congenital anomalies and cancers and tumours (5-year rolling rate), 2004–09 to 2020–25



23 https://icd.who.int/browse10/2019/en

24 Deaths are reported as explained diseases and morbid conditions only. Deaths from unexplained causes are included in Chapter 8.

25 Tables with data for 2004–2025 are available online at www.qfcc.qld.gov.au/sector/child-death/child-death-reports-and-data

Sex

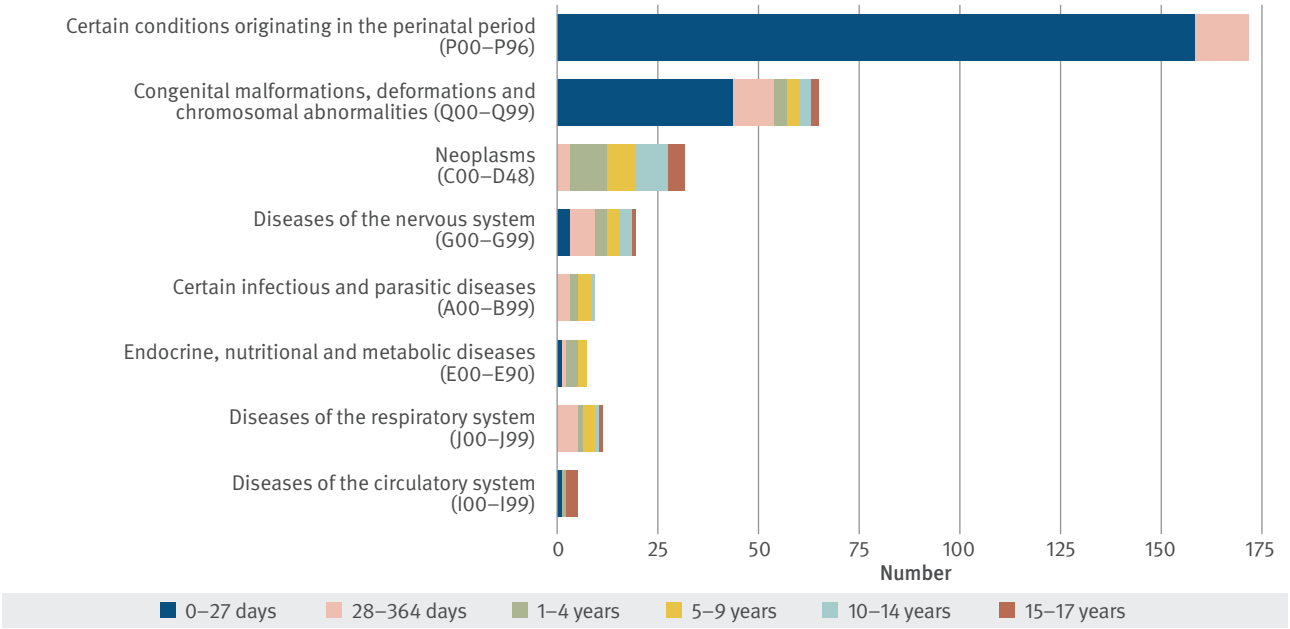
In 2024–25, of the 321 child deaths from natural causes 193 were male while 126 were female (in addition there were 2 infants of indeterminate sex). Child mortality from natural causes is marginally higher for males than females. Over the last 5 years, the male mortality rate was 27.0 deaths per 100,000 male children compared to 23.7 deaths per 100,000 female children.

Age

Figure 2.2 illustrates the types of natural cause deaths for each age category in 2024–25. The following findings were evident:

- Almost all natural causes of death for infants (under 1 year) were from perinatal conditions and congenital anomalies (96% of all natural causes within this age group).
- Neoplasms (cancers and tumours) was the primary natural cause for children aged 1–17 years.

Figure 2.2: Deaths from natural causes by ICD-10 chapter and age (number), 2024–25



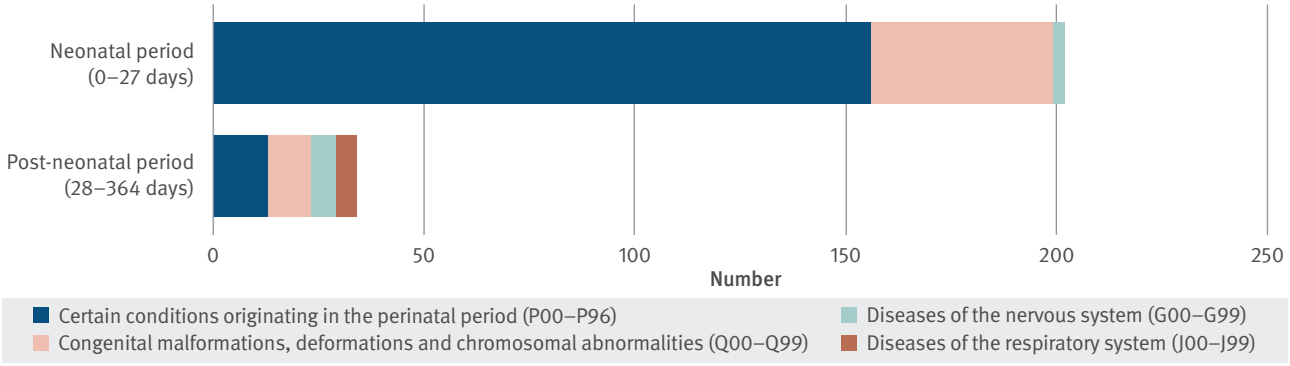
Notes: Excludes causes where the total number of deaths was 4 or less.

Neonatal and post-neonatal infants

The neonatal period is defined as the first 28 days of life, beginning at birth and ending at 27 completed days. It is often subdivided into early neonatal (0–7 days) and late neonatal (8–27 days) stages. The post-neonatal period follows immediately after, spanning from 28 days to the end of the first year of life. These definitions are commonly used in public health and clinical settings to monitor infant development and mortality trends.

Figure 2.3 illustrates the types of natural cause deaths for infants in 2024–25. Natural causes of death for infants (under 1 year) were primarily from perinatal conditions and congenital anomalies, accounting for 169 and 53 out of 246 in single reporting year.

Figure 2.3: Deaths of infants from natural causes by ICD-10 chapter and age (number), 2024–25



Notes: Excludes causes where the total number of deaths was 4 or less.

Table 2.1 shows the age and causes of infant deaths in major groups in the last 5 years, across the neonatal and post-neonatal periods.

Table 2.1: Age and cause of infant deaths from natural causes (number), 2020–21 to 2024–25

Age		Cause of death			Total
		Perinatal conditions (P00–P96)	Congenital anomalies (Q00–Q99)	Other diseases and morbid conditions[a]	
Neonatal (age in days)	<1	466	151	6	623
	1–6	126	39	3	168
	7–27	112	40	16	168
Neonatal total		704	230	25	959
Post-neonatal (age in months)	1*	34	22	13	69
	2	8	15	12	35
	3	5	5	8	18
	4	3	7	3	13
	5	2	5	4	11
	6	2	7	7	16
	7	0	5	3	8
	8	0	1	1	2
	9	2	1	6	9
	10	1	2	2	5
	11	1	1	2	4
Post-neonatal total		58	71	61	190
Total infants		762	301	86	1,149

* *28 days to <2 months.*

a *Includes certain infectious and parasitic diseases (A00–B99); neoplasms (C00–D48); diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50–D89); endocrine, nutritional and metabolic diseases (E00–E90); diseases of the nervous system (G00–G99); diseases of the circulatory system (I00–I99); diseases of the digestive system (K00–K93); diseases of the respiratory system (J00–J99); diseases of the musculoskeletal system and connective tissue (M00–M99); diseases of the genitourinary system (N00–N99); symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00–R99); codes for special purposes (U00–U49).*

Neonatal period (0–27 days)

Of the 1,149 infant deaths due to natural causes in the last 5 years, 83% occurred in the neonatal period. Of the 959 neonatal deaths, 65% (623) occurred on the day of birth and a further 18% (168) had occurred by the end of the first week.

The 2 leading causes—perinatal conditions (704 deaths) and congenital anomalies (230 deaths)—represent 97% of the neonatal deaths from natural causes.

Post-neonatal period (28–364 days)

During the last 5 years, there were 190 deaths from natural causes during the post-neonatal period. The leading cause of death from natural causes in the post-neonatal period was congenital anomalies (71 deaths or 37%).[26]

Major causes

Perinatal conditions

Perinatal conditions are diseases and conditions which originate during pregnancy or the neonatal period (first 28 days of life), even though death or morbidity may occur later. Perinatal conditions include maternal conditions which affect the newborn, such as complications of labour and delivery, disorders relating to fetal growth, length of gestation and birth weight, as well as disorders specific to the perinatal period, such as respiratory and cardiovascular disorders, infections, and endocrine and metabolic disorders.

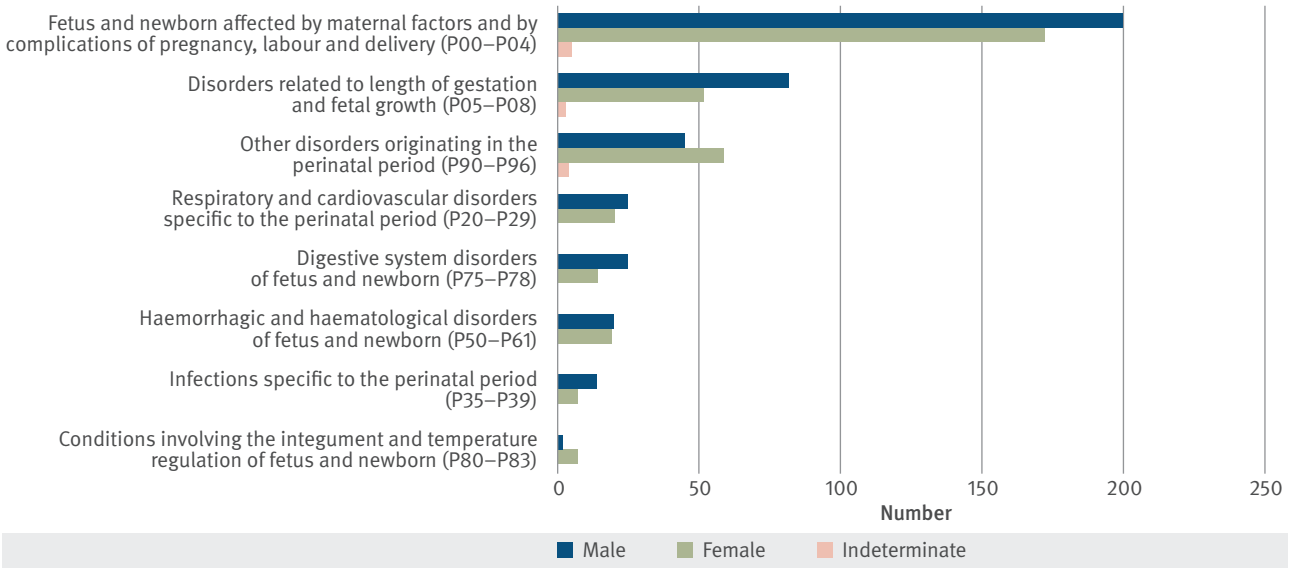
During 2024–25, there were 169 child deaths from perinatal conditions, at a mortality rate of 12.8 deaths per 100,000 children aged 0–17 years (5-year average). Perinatal conditions was the leading cause of death for infants (under 1 year).

As shown in Figure 2.4, over the past 5 years the majority of deaths due to perinatal conditions resulted from the fetus and/or newborn being affected by maternal factors or complications of pregnancy, labour and delivery (49%, 373 deaths), followed by disorders related to the length of gestation and fetal growth (18%, 136 deaths). Together, these causes accounted for 67% of all deaths due to perinatal conditions (511 of 776 deaths).[27]

26 The leading overall cause of death in the post-neonatal period was SIDS and undetermined causes, see **Table 1.1**.

27 Noting a small number of deaths from perinatal conditions occur in children aged 1 year and over.

Figure 2.4: Deaths due to perinatal conditions by sex (number), 2020–21 to 2024–25



Notes: Excludes causes where the total number of deaths was less than 4.

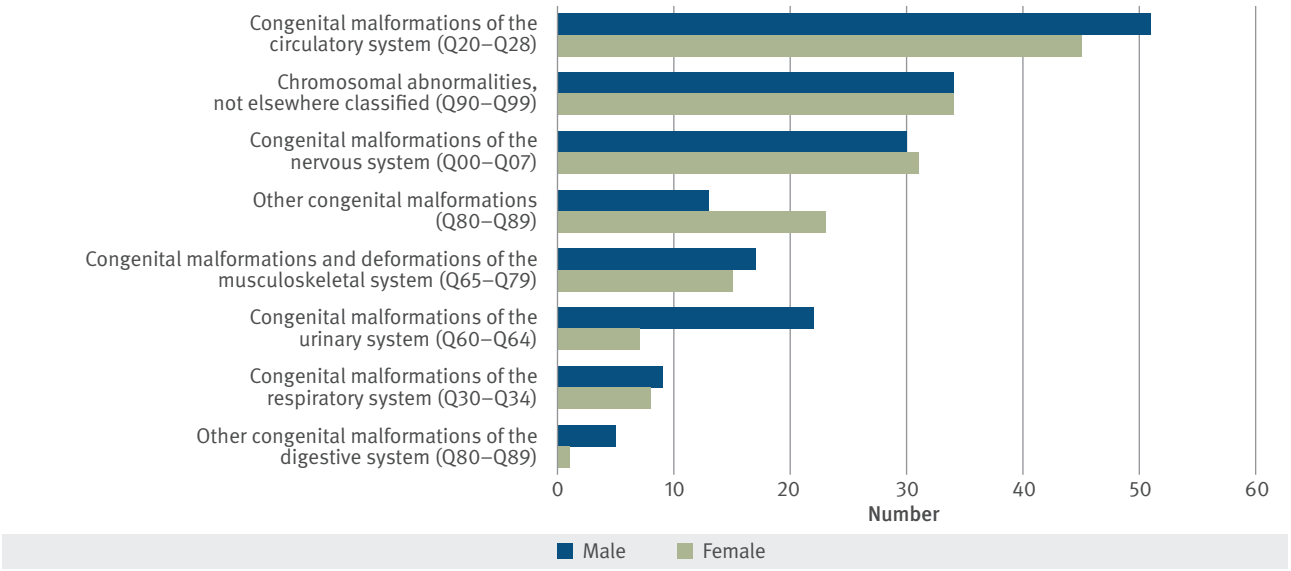
Congenital anomalies

Congenital anomalies are mental and physical conditions present at birth which are either hereditary or caused by environmental factors.[28]

During 2024–25, there were 64 child deaths from congenital anomalies, at a 5-year average rate of 5.9 deaths per 100,000 children aged 0–17 years.

As shown in Figure 2.5, over the last 5 years the leading causes of death due to congenital anomalies were malformations of the circulatory system (27%, 96 deaths) and chromosomal abnormalities, not elsewhere classified (19%, 68 deaths).

Figure 2.5: Deaths due to congenital anomalies by sex (number), 2020–21 to 2024–25



Notes: Excludes causes where the total number of deaths was less than 4. Excludes 1 child of indeterminate sex.

28 ICD-10 Chapter XVII, Congenital malformations, deformations and chromosomal abnormalities (Q00–Q99).

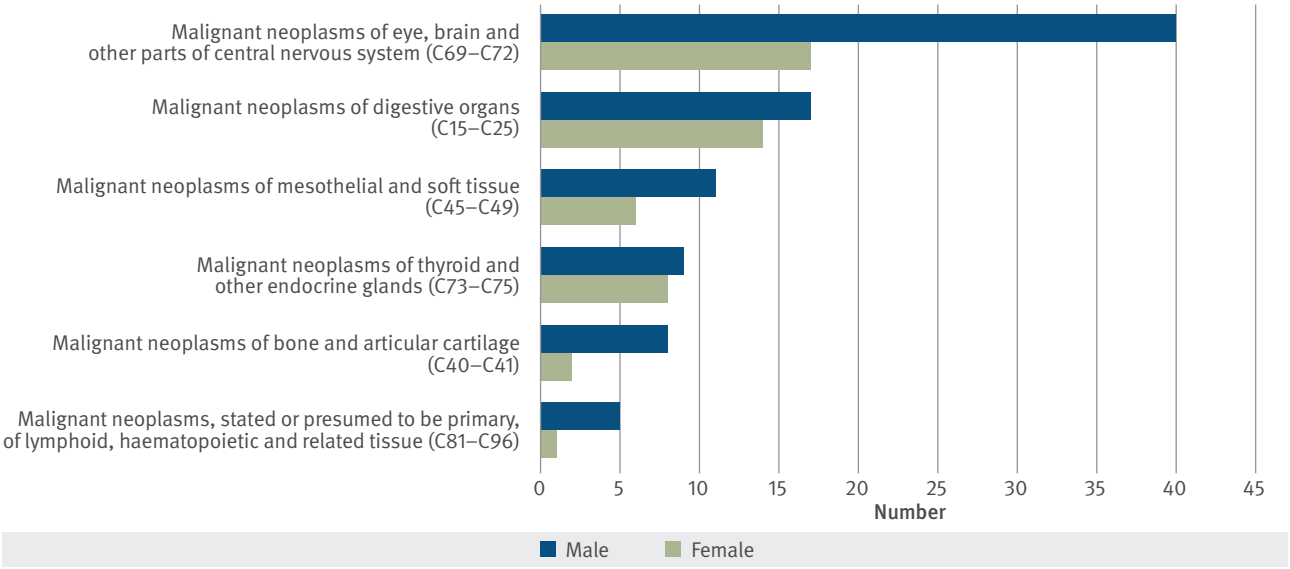
Neoplasms (cancers and tumours)

The term 'neoplasm' is often used interchangeably with the words 'tumour' and 'cancer'.[29]

Thirty-one children and young people died from neoplasms in 2024–25, at a 5-year average rate of 2.4 deaths per 100,000 children aged 0–17 years. As noted in **Chapter 1**, neoplasms were the leading cause of death (all causes) for ages 1–9 years, and the leading natural cause of death for ages 10–17 years.

Over the last 5 years, 146 children lost their lives to cancers and tumours. As illustrated in Figure 2.6, the most common types were malignant neoplasms of eye, brain and other parts of central nervous system (57 deaths or 39%), followed by malignant neoplasms, stated or presumed to be primary, of lymphoid, haematopoietic and related tissue (31 deaths or 21%).

Figure 2.6: Deaths due to neoplasms by sex (number), 2020–21 to 2024–25



Notes: Excludes causes where the total number of deaths was 4 or less.

Infections

'Infections' is a hybrid category composed of certain infections and parasitic diseases, diseases of the nervous system and diseases of the respiratory system.[30]

Twenty children died from infections in 2024–25. Over the last 5 years, 74 children and young people died from infections, at a 5-year average rate of 1.2 deaths per 100,000 children aged 0–17 years. The most common types of infections were Influenza and pneumonia[31] (20 deaths or 27%), followed by other bacterial diseases (15 deaths or 20%)[32] and Inflammatory diseases of the central nervous system (14 deaths or 19%).[33]

29 ICD-10 Chapter II, Neoplasms.

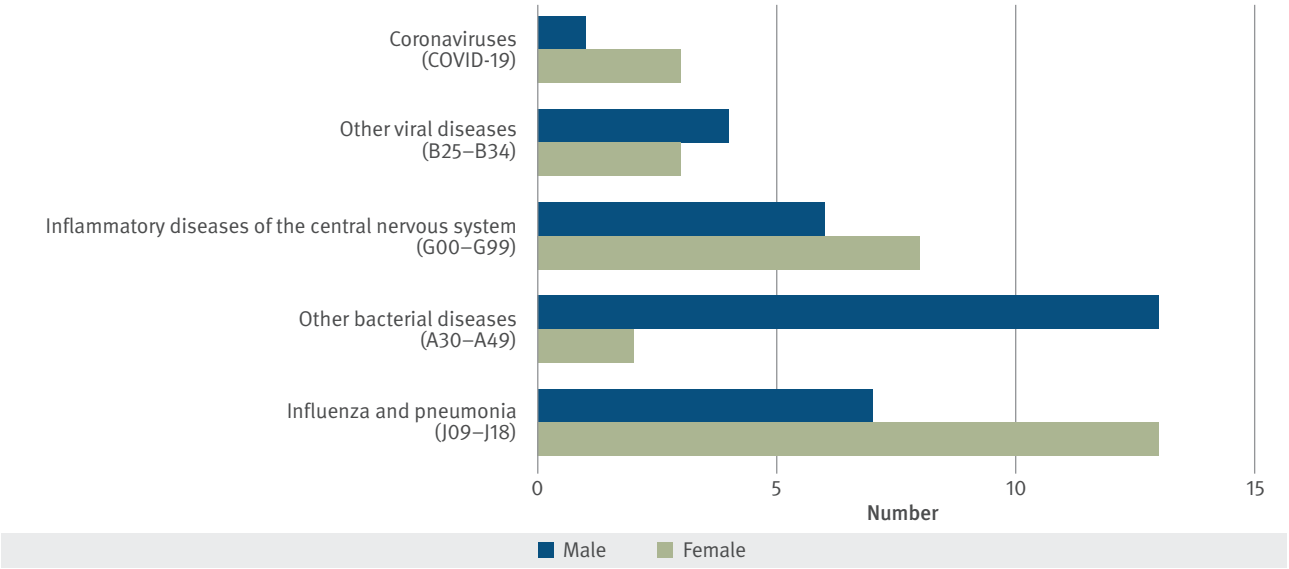
30 ICD-10 references: Chapter I, Certain infectious and parasitic diseases; Chapter VI, Diseases of the nervous system, codes G00–G09 only; Chapter X, Diseases of the respiratory system, codes J00–J22 only, Chapter XXII, Codes for special purposes, COVID 19 codes U07.1–U07.2 only.

31 ICD-10 Chapter X, Diseases of the respiratory system, Influenza and pneumonia (J09–J18).

32 ICD-10 Chapter I, Certain infectious and parasitic diseases, Other bacterial diseases (A30–A49).

33 ICD-10 Chapter VI, Diseases of the nervous system, Inflammatory disease of the central nervous system (G00–G09).

Figure 2.7: Deaths due to infections by sex (number), 2020–21 to 2024–25



Notes: Excludes causes where the total number of deaths was less than 4.

Paediatric sepsis – research translation

Sepsis is a life-threatening condition triggered when the body's response to infection causes organ and tissue damage and remains a significant contributor to preventable childhood morbidity and mortality worldwide. In partnership with the Queensland Paediatric Sepsis Program (QPSP) (Children's Health Queensland) the Commission released the *Queensland Paediatric Sepsis Mortality Study* in 2024.[34]

The study identified several opportunities for practice improvement, particularly in the early identification of paediatric sepsis. One key recommendation was the enhancement of death records to better capture infection-related data. The QPSP, supported by the Commission, has been undertaking activities to translate the study recommendations into practice. Actions are intended to:

- Ensure sepsis is accurately documented as a cause or contributor on death certificates.
- Require death certifiers to record known pathogens on medical cause of death forms.
- Develop localised workflows, educational materials, and implementation plans for all 16 Hospital and Health Services.
- Introduce novel investigative practices within the Coroners Court of Queensland.

An education package on death certification and autopsy processes has been developed for Queensland Health and Primary Health Care clinicians. Early engagement with Hospital and Health Services (HHSs) and Public Health Networks (PHNs) has informed a targeted dissemination strategy across hospital and primary care settings. These foundational resources meet the project's initial aims by improving clinician consistency in documenting sepsis and its causative pathogens.

As part of this effort, the Commission issued correspondence to HHSs throughout Queensland, requesting their collaboration in improving the documentation of sepsis on cause-of-death certificates through the development of a standardised workflow and accompanying education package. Targeted improvements have also been made to the Child Death Register to better capture infection-related data, supporting more detailed and accurate reporting in the future.

34 Available at www.qfcc.qld.gov.au/sites/default/files/2024-03/Paediatric%20Sepsis%20Mortality%20Study.pdf

Deaths from notifiable conditions

There are national and local public health legislation requirements for health practitioners and laboratories to notify public health authorities of certain diseases in Australia.[35] Key factors considered when deciding if a condition should be notifiable include the overall impact of the disease on morbidity and mortality, potential for control, demonstrated public health concern and the availability of control measures. Notification allows authorities to detect outbreaks early and take rapid public health action, if necessary, and to plan and monitor these efforts. It also provides information on the occurrence of disease.

Thirty-seven children and young people died from a notifiable condition over the latest 5-year period as shown in Table 2.2. Twenty-five (68%) of the 37 deaths due to notifiable conditions were the result of potentially vaccine-preventable conditions, with the most common of these being invasive pneumococcal disease and influenza.[36,37]

COVID-19 was added to Queensland's Schedule of Notifiable Conditions in the *Public Health Regulation 2018* in January 2020. There were 5 child deaths due to coronavirus (COVID-19) during the 5-year reporting period.[38]

Table 2.2: Deaths with notifiable conditions as underlying cause (number), 2020–21 to 2024–25

Notifiable condition	Total
Influenza^	9
Pneumococcal disease (invasive)^	9
Invasive group A streptococcal infection	6
Coronavirus (COVID-19)*	5
Respiratory syncytial virus	3
Meningococcal disease (invasive)^	2
Rheumatic heart disease	1
Rotavirus	1
Syphilis (congenital)	1
Total	**37**

^ *Potentially vaccine-preventable condition. Vaccines are available for selected strains of meningococcal, seasonal influenza and selected serotypes of pneumococcal disease. Serotyping information in relation to influenza, meningococcal and pneumococcal-related deaths is not available to the Commission, and so deaths are reported as being potentially vaccine-preventable only.*

* *Vaccines became available for coronavirus (COVID-19) for children during 2022.*

Notes: The child deaths with notifiable conditions in this report may differ from communicable disease reports which use date of notification or date of onset of disease to define the reporting period. The deaths reported by Commission use date of death registration to define the reporting period, which may occur sometime after the notification of disease.

35 The Queensland Health list of notifiable conditions can be found at **www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/notifiable-conditions/list**

36 In Australia, publicly funded immunisation programs are administered by state and territory governments. The current National Immunisation Program Schedule (valid from April 2019) includes vaccinations against the following diseases: hepatitis B, diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, Haemophilus influenzae type b (Hib), pneumococcal disease, rotavirus, measles, mumps, rubella, meningococcal ACWY disease, varicella (chicken pox), influenza and human papillomavirus (HPV).

37 Vaccines are available for only selected strains of influenza, meningococcal disease and pneumococcal disease.

38 Information in this report on child deaths with notifiable diseases, including COVID-19, may differ from official reporting by Queensland Health due to different methodology. Further information about the Commission's methodology can be found in the Methodology in **Appendix B** available at **www.qfcc.qld.gov.au/sector/child-death/child-death-reports-and-data**

Potentially avoidable natural cause deaths

Medical conditions such as asthma, diabetes, anaphylaxis, and nutritional deficiencies can result in fatal outcomes when left unmanaged. These deaths may reflect systemic gaps in healthcare access, caregiver knowledge, and early identification of risk factors. Deaths from conditions that can be mainly prevented through effective existing public health and primary prevention interventions and/or individualised care may be considered as potentially avoidable natural cause deaths.

Between 2015 and 2025, 24 children in Queensland died from treatable medical conditions, including asthma, diabetes, anaphylaxis, medium-chain acyl-CoA dehydrogenase deficiency (MCAD), and nutritional deficiencies. Of these, 4 cases met the Commission's criteria for classification as fatal neglect. In 2 of those cases, criminal charges were laid against the child's caregiver(s), suggesting that inadequate medical oversight or neglect may have contributed to the deaths.

Additionally, 3 child deaths were attributed specifically to malnutrition during the same period. All 3 cases resulted in criminal proceedings against caregivers and were classified as fatal neglect.

In June 2025, the Chair of the Queensland Child Death Review Board (the Board) requested the Commission present a statistical analysis to the Board in relation to deaths due to natural causes. The Board is interested in the distinction between deaths that were due to expected, life-limiting conditions versus those where poor health management may have contributed to a premature death. The paper is to be presented at the Board meeting in September 2025.