NOCA National Office of Clinical Audit

NPMR National Paediatric Mortality Register

NATIONAL PAEDIATRIC MORTALITY REGISTER

ANNUAL REPORT 2026

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NATIONAL OFFICE OF CLINICAL AUDIT (NOCA)

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We warmly acknowledge the public and patient representatives who have generously shared their time, insight, and lived experience through their participation in Governance Committee meetings and in the preparation of the accompanying summary report. Their perspectives have been invaluable.

We are deeply appreciative of Fiona Farrell for so openly sharing her personal story and for powerfully reminding us of the people behind the statistics.

Our sincere thanks also go to Professor Eleanor Molloy for her expert review of sections of this report and for her thoughtful advice and recommendations throughout its development.

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HSE

Sláinte Leanaí Éireann
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DESIGNED BY SWERVE

NOCA National Office of Clinical Audit

NPMR National Paediatric Mortality Register

National Paediatric Mortality Register

Annual Report 2026

SUPPORT

If you, or someone you know needs advice on grief, bereavement or loss visit www.hse.ie/grief.

Information on bereavement supports and services includes helplines, organisations for bereaved parents and families, and supports for people bereaved by suicide.

Anam Cara provides support for parents after bereavement. www.anamcara.ie

Irish Hospice Foundation Bereavement Support Line is a confidential space for people to speak about their experience or to ask questions relating to the death of someone.
Freephone 1800 807 077 — Monday to Friday, 10am to 1pm
www.hospicefoundation.ie

NOCA National Office of Clinical Audit

Associate Professor Martina Healy
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19th August 2026

Dear Associate Professor Healy,

On behalf of NOCA, I wish to formally acknowledge receipt of the *National Paediatric Mortality Register Annual Report 2026*.

I extend my sincere thanks to you and the entire team, including Paediatric Programme Manager Dr Cliona McGarvey, Governance Committee Chair Professor Michael Barrett, the report writing group and the Patient and Public Interest Representatives, for their continued commitment to this important work. I would also like to acknowledge Fiona Farrell for sharing her personal story and helping to remind us of the children, young people and families behind the statistics presented in this report.

This report provides an important overview of mortality among children and young people in Ireland from 2019 to 2024. While recognising the significant long-term improvements in child mortality, the findings identify areas requiring particular attention, including the increase in sudden infant death syndrome and the continued impact of trauma and suspected self-harm among adolescents.

The report also reinforces the importance of developing a timely, standardised national system for recording all child deaths. Access to high-quality, real-time mortality data is essential to identifying emerging risks, informing prevention and supporting improvements in care and services for children, young people and their families.

This letter serves as the formal endorsement of NOCA for the *National Paediatric Mortality Register Annual Report 2026*.

Yours sincerely,

Dr Brian Creedon
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FOREWORD

Ireland is home to more than 1 million young people under the age of 16. Some of our children and young people have shorter lives, and this National Paediatric Mortality Report, based on the available data, provides an overview of childhood mortality from 2019 to 2024. Having this data provides valuable information that will inform immediate and future health planning and policy making.

The report points to an average number of 302 child deaths registered annually, with 45% occurring in the first 28 days of life. Some small increases are noted in the infant mortality rate and in the rate of Sudden Infant Death Syndrome, which give pause for thought and strengthen the need for surveillance. Beyond infancy, and in keeping with previous reviews, young people aged 15- 18 experience the next highest mortality burden accounting for 16.2 %, with trauma still the leading cause.

I was struck, as I read the report by the stories from parents and families who shared their journeys, giving meaning and context to the statistics and trends and I am very grateful to them for their collaboration.

The time, energy and compassion that go into collating and writing a report cannot be underestimated and I would like to acknowledge all of the clinicians and the audit team who have gathered the data painstakingly, despite challenges, and have produced an important and concise report. I also acknowledge their continued advocacy for a standardised, timely national system for recording all deaths in children and young people.

Every number and percentage on these pages represents a child and young person who died in our country between 2019 and 2024, and we owe it to every family represented to use this information to improve care and communication across all of our healthcare systems.

Ciara Martin
National Clinical Advisor for Children and Young People, HSE

A MESSAGE FROM OUR PATIENT AND PUBLIC INTEREST REPRESENTATIVES

"Behind each of the 1,811 deaths recorded are families who continue to grieve the loss of their child. Their experiences and their voices must remain central to how we understand these data and how we act upon them. The increase in the incidence of sudden infant death syndrome (SIDS) is especially concerning. We strongly advocate for a renewed, national public awareness campaign focused on safe sleep practices and the prevention of these deaths. Families need clear, consistent and accessible information, and we believe this should be prioritised at a national level.

Suspected self-harm among young people is another area requiring urgent attention. Public awareness, early intervention and improved access to mental health supports are critical – particularly for adolescents aged 15–18.

Working with mortality data that is up to 3 years out of date is deeply frustrating for families and services. As Patient and Public Interest (PPI) representatives, we strongly call for the electronic notification system to be prioritised so that data can be collected in real time and used to identify risks earlier, influence practice, and ultimately prevent avoidable childhood deaths."

Liz O'Donoghue
Patient and Public Interest representative

"On first reading, the standout pieces are clear – the alarming rise in SIDS deaths and the high rate of (suspected) self-harm and trauma-related deaths.

I'm neither a clinician nor a statistician. I don't have a medical background. I'm just a regular mum, but sadly one who understands what it is to bury her child and the lifelong impact that has. When I read these reports, I initially try to read them with my head rather than my heart, but then, my role as a PPI representative and a bereaved mum is surely to be the voice of the heart. I had to question why this report cut even deeper than last year. When I became a PPI representative, I imagined at this point in time reading these reports and saying, "My gosh, look how far we've come!" Instead, I'm saying, "Is this all the progress we've made?"

For me, as a bereaved mum of a child lost to a terminal illness, it is a travesty to witness so many preventable deaths for lack of basic information leading to positive action. I appreciate the huge body of work that is being done by an amazing, passionate and driven team to develop the child death notification system we sorely need, but it is beyond frustrating to me that this is taking so long. It is profoundly heartbreaking. I feel like we are failing these children and their families. We can and should do better."

Kate Burke
Patient and Public Interest representative

We are aware that the content of this report, which includes some detail of methods of death, may be distressing for some readers.

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GLOSSARY OF TERMS AND ABBREVIATIONS

ACRONYM	FULL TERM
adolescent	The phase of life between childhood and adulthood, ranging from the ages of 10 to 18 completed years
CDR	child death review
CHI	Children's Health Ireland
COVID-19	coronavirus disease 2019
CYP	children and young people
CSO	Central Statistics Office
ED	emergency department
ESRI	Economic and Social Research Institute
EU	European Union
EUROCAT	The European network of population-based registries for the epidemiological surveillance of congenital anomalies
Eurostat	The official European Union statistical office
external cause of death	Death due to accidents and violence, including environmental events, circumstances and conditions as the cause of injury, poisoning or other adverse effects
GDPR	General Data Protection Regulation
GRO	General Register Office
HCP	healthcare professional
HIPE	Hospital In-Patient Enquiry
HIQA	Health Information and Quality Authority
homicide	The unlawful killing of one person by another
HPSC	Health Protection Surveillance Centre
IHI	individual health identifier
HSE	Health Service Executive
ICD-10	International Classification of Diseases, Tenth Revision
IMR	infant mortality rate; the number of deaths in children aged under 1 year in a given period (usually 1 year) per 1,000 live births in that same period
infant	A child aged under 1 year
MTA	Major Trauma Audit
mortality rate	A measure of the number of deaths (in general or due to a specific cause) in some population, scaled to the size of that population, per unit of time
NCMD	National Child Mortality Database
neonate	A newborn aged ≤28 days
neoplasm	An abnormal growth of tissues that may or may not be cancerous
NHS	National Health Service

ACRONYM	FULL TERM
NOCA	National Office of Clinical Audit
NPEC	National Perinatal Epidemiology Centre
NPMR	National Paediatric Mortality Register
neonatal mortality rate	The number of deaths of infants aged ≤28 days in a given period (usually 1 year) per 1,000 live births in that same period
perinatal	The period immediately before and after birth
PME	post-mortem examination
postneonatal	The period between the ages of 29 days and 1 year
PPI	Patient and Public Interest
PNMR	postneonatal mortality rate
postneonatal mortality rate	The number of deaths of infants aged 29 days to 1 year in a given period of time (usually 1 year) per 1,000 live births in that same period
RCSI	Royal College of Surgeons in Ireland
RMF	Research Microdata File
RTC	road traffic collision
SNOMED	Systematized Nomenclature of Medicine
SIDS	sudden infant death syndrome; the sudden, unexpected death of an infant aged under 1 year, with the onset of the fatal episode apparently occurring during sleep and which remains unexplained after a thorough investigation, including the performance of a complete autopsy and review of the circumstances of death and the infant's clinical history
SIDS rate	The number of deaths in children that are classified as being the result of SIDS in a given time period (usually 1 year) per 1,000 live births in that same period
SPC	statistical process control
SUDI	sudden unexplained death in infancy
UK	United Kingdom
WHO	World Health Organization

EXECUTIVE SUMMARY

This third report of the National Paediatric Mortality Register (NPMR), produced under the governance of the National Office of Clinical Audit (NOCA), provides a comprehensive overview of child and young person (CYP) mortality in Ireland from 2019 to 2024. Building on the first NOCA NPMR report (2023), it reiterates the critical recommendation that all child deaths in Ireland should be reported to a central national database. This recommendation remains fundamental to further recommendations made in this report.

The report highlights areas of improvement, identifies emerging risks, and reinforces the need for real-time, high-quality mortality surveillance to support prevention, service planning and equitable care.

The average annual number of CYP (0–18 years) deaths registered in Ireland during 2019–2024 was 302, of which 45% (n=136) occurred during the first 28 days of life. Ireland has made significant progress over three decades in reducing infant and child mortality; however, there has been a slight increase in infant mortality since 2020. The infant mortality rate (IMR), which had been steadily declining, has risen from 2.8 per 1,000 live births in 2019 to 3.3 in 2023. The provisional rate for 2024 is 3.6 per 1,000 live births.* The 2023 rate aligns with the European Union average.

The increase in the rate of sudden infant death syndrome (SIDS) represents one of the most important findings. The number of SIDS deaths increased to 25 cases in 2023 – the highest figure since 2008 – and accounted for almost one-third (29%) of all deaths in children aged 29–364 days during 2019–2024. The SIDS rate more than doubled during this period, rising from 0.20 to 0.46 per 1,000 live births. This concerning trend is compounded by the lack of granular information on contributory risk factors such as sleep environment, parental smoking and social vulnerability. The increase in SIDS rates signals the need for strengthened surveillance and renewed national prevention efforts. The NPMR is actively supporting the Health Service Executive (HSE) Child Health Public Health investigation into SIDS deaths in order to help identify high-risk groups and inform national prevention efforts.

Among older children aged 1–14 years, neoplasms, trauma and congenital anomalies remain the leading causes of death, while adolescents aged 15–18 years experience the highest mortality burden beyond infancy, accounting for 16% of all CYP deaths. Trauma is the leading cause of death in this age group, responsible for 51% of fatalities. Within this category, suspected self-harm[§] accounts for nearly half (48%) of all trauma-related deaths. Other significant contributors include road traffic collisions, drug and alcohol toxicity, and drowning. For children aged 1–14 years, neoplasms are the leading cause of death, followed by trauma and congenital anomalies. Both age groups have seen longterm improvements in mortality, particularly reductions in neoplasm- and trauma-related deaths in children aged 1–14 years and a decline in trauma mortality among adolescents since 2017. Work to strengthen the evidence base for suicide prevention is in planning, through renewed data collection from coroners and planned expansion of relevant data points in the next phase of the NPMR implementation.

A spotlight review of infection-related deaths demonstrated that infection was recorded as the immediate cause of death in 13.8% of CYP deaths during 2019–2024. Rates were highest among infants, and in older children were more commonly seen in those with complex chronic conditions. Across all CYP aged 1–18 years, the combined infection-related mortality rate was 1.71 per 100,000 population, indicating that while infection contributes meaningfully to mortality, the absolute rate outside infancy is low. NOCA is now undertaking a feasibility study of a national audit of sepsis that includes CYP in its scope. A national clinical audit is an important step towards improving clinical outcomes and driving quality improvement in the recognition and treatment of sepsis.

"THE INCREASE IN THE RATE OF SUDDEN INFANT DEATH SYNDROME (SIDS) REPRESENTS ONE OF THE MOST IMPORTANT FINDINGS. THE NUMBER OF SIDS DEATHS INCREASED TO 25 CASES IN 2023 – THE HIGHEST FIGURE SINCE 2008 – AND ACCOUNTED FOR ALMOST ONE-THIRD (29%) OF ALL DEATHS IN CHILDREN AGED 29–364 DAYS DURING 2019–2024."

[§] The figure for suspected self-harm relates to a subset of injury deaths that in the absence of better data are most likely to be caused by self-harm and are an estimate of the true number of self-harm deaths. This figure may vary from Central Statistics Office (CSO) published data on suicide deaths.

"A RECURRING THEME THROUGHOUT THE REPORT IS THE PERSISTENT LIMITATION OF CURRENT MORTALITY DATASETS, INCLUDING DELAYED REGISTRATION, INSUFFICIENT DETAIL ON CIRCUMSTANCES AND RISK FACTORS, AND POOR LINKAGE ACROSS SERVICES. THESE GAPS RESTRICT THE ABILITY TO IDENTIFY HIGH-RISK GROUPS AND PREVENT AVOIDABLE DEATHS."

A recurring theme throughout the report is the persistent limitation of current mortality datasets, including delayed registration, insufficient detail on circumstances and risk factors, and poor linkage across services. These gaps restrict the ability to identify high-risk groups and prevent avoidable deaths. Recommendations in the previous NPMR reports were aimed at addressing these gaps; structures and processes are now in place in NOCA to facilitate collection of data for the NPMR; the design and build of a universal electronic data collection system has been completed, and data collection began in June 2026. National implementation of this system will be initiated in 2026 and will enable real-time notifications of CYP deaths.

Legislative foundations for timely death notification have advanced significantly through the *Civil Registration (Electronic Registration) Act 2024*, which mandates early reporting of all deaths and supports electronic certification. Technical solutions have been built to facilitate changes to the registration process, and full implementation will follow commencement of key sections of the legislation and when appropriate infrastructures and resources have been put in place to support the national implementation and ongoing management of the project. Work between NOCA and the HSE continues to ensure that the forthcoming national death notification process integrates seamlessly with the NPMR, supported through ongoing collaboration with the HSE National Death Notification project team.

Advocacy for a national child mortality review panel in Ireland remains active. With continued collaboration across services and full implementation of the new national systems, these developments will provide a responsive national system that will support timely information to inform prevention of deaths and improvement of outcomes for CYP in Ireland.

KEY FINDINGS

The total number of children and young people (CYP) (0–18 years) deaths that were registered in Ireland during the period from 1 January 2019 to 31 December 2024 was 1,811, an average of 302 deaths per year.

Sixty percent of all CYP deaths occur during infancy (first year of life) and 45% during the neonatal period (first 28days of life). Beyond infancy, the highest mortality burden lies among adolescents aged 15–18 years, who accounted for 16% of all CYP deaths.

Ireland has seen major long-term improvements in infant, neonatal and postneonatal mortality. However, there have been minor increases in recent years; the overall infant mortality rate (IMR) in Ireland for 2023 is 3.3 per 1,000 live births (an increase of 18% from 2019), which matches the European Union average. The provisional* rate estimated for 2024 is of 3.6 per 1,000 live births.

Neonatal mortality remains the dominant contributor to infant deaths, accounting for 75% of all infant deaths**.** Perinatal conditions (57%) and congenital abnormalities (37%) together made up 94% of all deaths in this age group during 2019–2024.

In the postneonatal period (29–364 days), the leading cause of death is now sudden infant death syndrome (SIDS). The SIDS rate in Ireland has increased significantly from 0.20 per 1,000 live births in 2019 to a peak of 0.46 in 2023. The provisional SIDS rate for 2024 is 0.37.

Delays in registration of deaths and gaps in risk identification mask real-time increases in the number of SIDS deaths, and insufficient granularity in the data prevents analysis of contributory risk factors such as sleep practices and environmental exposures.

Among children aged 1–14 years, the leading causes of death during 2019–2024 were neoplasms (24%; n=101), trauma (21%; n=87) and congenital malformations and chromosomal abnormalities (16%; n=67).

Mortality rates due to neoplasms and trauma in this age group (1–14 years) have demonstrated a significant improvement in recent years; however, provisional data for trauma deaths in 2024 indicate an increase above the long-term mean.

Among adolescents aged 15–18 years, trauma was the leading cause of death during 2019–2024, accounting for just over half (51%; n=149) of all deaths. There has been a significant reduction in the trauma-related mortality rate in this age group from 2017 onwards, suggesting effective prevention or safety interventions.

KEY FINDINGS

Suspected self-harm[§] remains the predominant mechanism of trauma deaths among those aged 15–18 years, accounting for almost half (48%; n=72) of all trauma-related deaths and almost one-quarter (25%; n=72) of all registered deaths in this age group during 2019–2024.

Other important mechanisms of trauma death in those aged 15–18 years were road traffic collisions (RTCs) (16%; n=24); toxicity related to drugs, alcohol or medication ingestion (9%; n=13); and drowning (7%; n=7).

RTCs were the leading cause of trauma death among children aged 1–14 years (31%; n=27). During 2019–2024, RTCs, suspected self-harm,* drowning and homicide accounted for 71% of trauma fatalities in this age group.

Death registration data lack sufficient detail to reliably determine intent in many trauma deaths, limiting accurate estimation of suicide mortality. Improved linkage with supplementary data sources is required to more accurately estimate suicide mortality in CYP.

Infection was recorded as the immediate cause of death in 14% of all CYP deaths registered in Ireland during 2019–2024. Rates were highest in infants aged under 1 year (36.1 deaths per 100,000 population); among older children, infection-related deaths were most common in those with complex chronic conditions. Across all CYP aged 1–18 years, the combined infection related mortality rate was 1.71 per 100,000 population, indicating that while infection contributes meaningfully to mortality, the absolute rate outside infancy is low.

A consistent male predominance in mortality was observed across all age groups, becoming more pronounced with increasing age due to the increasing contribution of trauma.

Most deaths in infants aged under 1 year and children aged 1–14 years (63%; n=265) occurred in hospital settings during 2019–2024. Hospital deaths are less common among children aged 15–18 years, with the majority of deaths occurring at home (43%; n=126) or at the scene of an injury (18%; n=53).

* 2024 data are based on year of registration, which may differ from the year in which the death occurred and is therefore subject to change following revision of figures by the Central Statistics Office (CSO) (see Table 3.2).

§ The figure for suspected self-harm relates to a subset of injury deaths that in the absence of better data are most likely to be self-harm and are an estimate of the true number of self-harm deaths. This figure may vary from CSO published data on suicide deaths.

RECOMMENDATIONS

The findings from this report continue to underscore the critical need for timely, detailed, and high-quality data on mortality among children and young people (CYP). Such data are essential to inform prevention-focused policy, support effective service planning, and ensure the delivery of equitable care. Previous NPMR reports have recommended that, in line with international best practice, all CYP deaths be formally notified to a central national database as part of the death certification process. An update on the implementation of previous recommendations is provided in Chapter 8. Additional recommendation arising from the 2026 report is as follows:

RECOMMENDATION

Renew and strengthen national efforts on sudden infant death syndrome (SIDS) prevention through enhanced public education and postnatal support to help mitigate the emerging trend of SIDS deaths.

It is recommended that a renewed focus be placed on SIDS prevention, with coordinated action across maternity, neonatal, primary care and community services. Standardised, evidenced-based safer sleep guidelines should be reinforced and consistently delivered to all caregivers by relevant healthcare professionals. Tailored and targeted communication strategies should be directed toward groups and communities where known SIDS risk factors are more prevalent, such as areas of deprivation and emergency accommodation (Gannon *et al*., 2026). Strengthening pre- and postnatal supports and reinforcing risk-reduction practices will be critical to mitigating the emerging upward trend in SIDS deaths.

NATIONAL PAEDIATRIC MORTALITY REGISTER

KEY FINDINGS

This report presents estimates of deaths among children and young people (CYP) in Ireland between 1 January 2019 and 31 December 2024. It describes the main causes of death at different stages of childhood and reviews yearly trends based on updated data on when deaths occurred.

1,811 CYP DEATHS WERE REGISTERED IN IRELAND DURING 2019–2024.

INFANT MORTALITY

- Deaths of infants (aged under 1 year) made up the majority of CYP deaths. Between 2019 and 2024, there were 1,096 infant deaths.
- The number of babies dying increased from 2.8 per 1,000 live births in 2019 to 3.3 in 2023. The provisional rate estimated for 2024 is 3.6 per 1,000 live births.
- Ireland's infant mortality rate in 2023 matched the European Union average but remains higher than several high-performing European countries, such as Finland (1.8) and Norway (2.0).

BETWEEN 2019 AND 2024, THERE WERE 1,096 INFANT DEATHS.

MORTALITY INCREASED FROM 2.8 INFANT DEATHS PER 1,000 LIVEBIRTHS IN 2019 TO 3.3 IN 2023.

CANCER

Cancer was the leading cause of death among children aged 1–14 years during 2019–2024, accounting for almost one in four deaths.

CANCER ACCOUNTED FOR ALMOST ONE IN FOUR DEATHS

SUSPECTED SELF-HARM

- Suspected self-harm* remains the leading cause of trauma deaths among those aged 15–18 years, accounting for almost half (48%) of all trauma-related deaths and 25% of all registered deaths in this age group between 2019 and 2024. Among trauma deaths in children aged 1–14 years, 16% were due to suspected self-harm.

*The figure for suspected self-harm relates to a subset of injury deaths that in the absence of better data are most likely to be caused by self-harm and are an estimate of the true number of self-harm deaths. This figure may vary from Central Statistics Office (CSO) published data on suicide deaths.

SUDDEN INFANT DEATH SYNDROME

- Sudden infant death syndrome (SIDS), often known as cot death, is once again the leading cause of death in babies aged between 29 days and one year:
  - SIDS accounted for 29% of deaths in this age group during 2019–2024.
  - The number of SIDS deaths in 2023 (n=25) was the highest recorded since 2008.
- Delays in official registration of deaths make it harder to identify trends early. Direct notification to the NPMR will improve the timeliness of data and allow emerging patterns in child mortality to be detected sooner.

SIDS ACCOUNTED FOR 29% OF DEATHS IN BABIES AGED BETWEEN 29 DAYS AND ONE YEAR DURING 2019–2024.

TRAUMA

- Trauma was the leading cause of death among adolescents aged 15–18 years during 2019–2024, accounting for just over half (51%) of deaths. Trauma accounted for one in five deaths in children aged 1–14 years.
- Mortality rates from trauma improved from 2017 onwards, suggesting effective prevention or safety interventions. However, provisional figures for 2024 are higher than previous years.

ROAD TRAFFIC COLLISIONS AND DROWNINGS

- Road traffic collisions (RTCs) accounted for almost one-third (31%) of all trauma deaths in children aged 1–14 years. Drowning accounted for 13% of trauma deaths in this age group.
- Among adolescents aged 15–18 years, RTCs were the second leading cause of trauma-related death (16%), followed by toxicity related to drugs, alcohol or medication ingestion (9%) and drowning (7%).

CHILD MORTALITY RATES

- Outside of infancy, the greatest number of deaths occurred among older children aged 15–18 years, which accounted for 41% of deaths in all children aged 1–18 years. The total number of deaths of children aged 1–18 years registered in Ireland during the period 2019–2024 was 715, the equivalent of 119 deaths per year in this age group.
- Most deaths in infants aged under 1 year and children aged 1–14 years (63%) occurred in hospital settings. Hospital deaths are less common among children aged 15–18 years, with the majority of deaths occurring at home (43%) or at the scene of an injury (18%).

THERE WERE 715 DEATHS OF CHILDREN AGED 1–18 YEARS REGISTERED IN IRELAND DURING THE PERIOD 2019–2024

- A higher percentage of boys than girls died across all age groups during 2019–2024. This trend becomes more pronounced with increasing age:

54% (under 29 days)
51% (29-364 days)
59% (1-14 years)
66% (15-18 years)

INFECTION

- Infection was the certified cause of death in 14% of deaths among CYP between 2019 and 2024.
- Rates were highest in infants under 1 year old (36.1 deaths per 100,000 population). Among children older than one year (all CYP aged 1–18 years), the combined infection related mortality rate was 1.71 per 100,000 population, indicating that while infection contributes meaningfully to mortality, the absolute rate outside infancy is low.
- Infection-related deaths in older children were commonly associated with complex chronic conditions.

CAPTURING THE PARENT VOICE
DANIEL'S STORY

I'd like to introduce myself, my name is Fiona and I'm married to John. We have 3 children, Sophie is the eldest, then Daniel and his brother, Matthew. It's hard to describe as a Mum how hard it is when people ask 'how many kids have you' and I have to think about whether I say two or three!

There is so much I could tell you about Daniel - his smile, his big brown eyes and how his first word was ball! We had no idea when he was born that he had a heart condition and that he wouldn't see his 2nd birthday.

Daniel was born on 21 March 2006, 7 days late but perfectly healthy. There was never any indication that anything was wrong. A paediatrician checked him thoroughly after birth and everything looked perfect. Although I was a semi-private patient, I was placed on a public ward with the understanding that I would be moved the next day. But when the midwives came around, they decided I was an ideal candidate for early discharge. "Everything looks good – baby's perfect, mum's perfect," they told me. The paediatrician came, did the required checks and discharged us. Daniel was my second child and his big sister Sophie was four at the time, so I was happy to go home because the hospital ward was busy and I was eager to settle into life with my newborn.

At home, Daniel thrived. I breastfed him for 6 months, and he met every developmental milestone right on time – smiling, giggling, crawling, and eventually walking by 12 months. He loved people, loved our dog, and his first birthday photos showed a bright, happy, engaging little boy. Nothing in those early months hinted that anything was wrong.

When Daniel was 14 months old, we took our first family holiday abroad to Spain. During the trip, Daniel became congested and "bunged up." He didn't seem himself. For peace of mind, I took him to a local tourist doctor after a pharmacist pointed me in that direction. The doctor listened to his chest and diagnosed a chest infection, prescribing an antibiotic. Daniel had never needed or been given antibiotics before in his 14 months.

That evening at the hotel, he skipped his bottle and had diarrhoea. I remember thinking it must be whatever infection his body was fighting. We gave him the antibiotic and settled him in his cot in the same room as Sophie.

Later that night, I woke up – partly from the anxiety of travelling with young children, and partly because the Madeleine McCann case was everywhere that year. I checked on Sophie; she was fast asleep. Then I

"WHAT HAPPENED NEXT FELT LIKE A NIGHTMARE I WAS WALKING THROUGH FROM OUTSIDE MY OWN BODY. WE RAN TO RECEPTION TO GET HELP, BUT THE LANGUAGE BARRIER MADE EVERYTHING SLOWER AND MORE FRIGHTENING."

instinctively reached over to check Daniel. He wasn't moving. I immediately thought something wasn't right and when I picked him up, he was breathing – but very shallowly.

What happened next felt like a nightmare I was walking through from outside my own body. We ran to reception to get help, but the language barrier made everything slower and more frightening. The tourist doctor, the same doctor that had seen Daniel earlier that evening, arrived before the ambulance and tried to resuscitate Daniel. I couldn't make sense of what I was seeing. We'd never dealt with anything remotely like this before.

When the ambulance finally came, we weren't allowed inside. They told us to stand outside while they worked on him. A friend we were travelling with tried to get the ambulance crew to let us inside, insisting we were his parents. Then they came out and told us that Daniel was gone. I just collapsed. It felt impossible – just hours earlier, he had been playing in the pool.

What followed was chaotic and deeply traumatic. We weren't allowed to travel to the hospital and were instead placed in a separate area of the hotel so other tourists wouldn't see what had happened. Sophie had to stay with our friends because we couldn't explain anything to her – she just wanted to know what had happened to her brother. Embassy staff encouraged us to return home with Sophie and let the authorities handle Daniel's repatriation. In hindsight, taking that advice remains one of my deepest regrets. I wish we had stayed with him. We still weren't processing what had happened and I was on autopilot, following what people were advising us to do.

Coming home without Daniel was surreal. We boarded the plane carrying his clothes, his buggy – everything except him. It didn't feel real. I kept waiting to wake up.

Back in Ireland, I went to our GP, but her response was, "Sometimes these things just happen". I knew in my heart something had been missed. I was adamant that there was something not right that, medically, there had to be something wrong with Daniel. With the help of friends, we were referred to a cardiologist in Crumlin, the first doctor who truly listened to us.

The conclusion from the autopsy in Spain was that Daniel died from pneumonia. I didn't accept this diagnosis. A second autopsy was carried out in Ireland and the results of this showed that Daniel had hypertrophic cardiomyopathy – a heart condition. I had never heard of it before and struggled to understand how something so serious had gone undetected through all his check-ups and GP visits.

Daniel was born with cardiomyopathy, yet he reached 14 months without this being picked up despite multiple checks. If his heart wasn't getting enough oxygen, surely that should have been a warning sign. He also had some oedema – swollen legs – but people brushed it off as "just a chubby baby". His shallow breathing was another concern I raised with the GP, but it was dismissed as me being an anxious mother.

It's so important that parental concerns like these aren't ignored. The only way Daniel's condition could have been detected was by ultrasound. There is now a way to check oxygen levels in the blood that can indicate conditions like hypertrophic cardiomyopathy, but unfortunately these babies often show very few symptoms. That's why listening to mothers is vital. If a baby's legs or hands are swollen, or their breathing seems wrong, those concerns should always be followed up – even if only for peace of mind.

Specialists have said that children with these heart conditions often have physical features, like recessed ears, which Daniel didn't have, so it would have been difficult to detect. But when reviewing cases of children who die suddenly with no history of illness, these hidden heart conditions are exactly the kind that can be missed.

"IF A BABY'S LEGS OR HANDS ARE SWOLLEN, OR THEIR BREATHING SEEMS WRONG, THOSE CONCERNS SHOULD ALWAYS BE FOLLOWED UP – EVEN IF ONLY FOR PEACE OF MIND."

Having the diagnosis made it easier for me to accept his death, but it also brought many "what ifs". Those questions can drive you mad.

This was a traumatic and completely unexpected death, so it's a different type of experience of losing a child because you are not mentally prepared. I can't explain how attached I was to Daniel, and it was just horrible that had to happen to him. Trying to understand that he had been carrying what felt like a time bomb in his chest without any warning is incredibly frightening. The years that followed were extraordinarily hard. I couldn't return to work for a long time and some days it was difficult just to get out of bed. Sophie kept me going. Grief is isolating and society often has little patience or understanding for long-term loss. Even now, all these years later, I rarely tell people about Daniel because I never know how they will react.

Because Daniel died overseas, we fell through every gap – there was no hospital follow-up, no bereavement supports and no social worker – we had nowhere to turn for support.

Meeting other bereaved parents through organisations such as LauraLynn, Anam Cara and Barretstown became a lifeline. Being surrounded by people who understood what it was like to lose a child meant I didn't have to explain myself or worry about how my grief might make others uncomfortable.

It was only by chance, when I walked into the Sunshine Home to ask how I could fundraise for this cause, that I met people who helped us piece ourselves back together. Through that journey I met Jane McKenna and others, and together we helped establish Anam Cara. Losing Daniel changed my life forever and broke my heart. Sharing his story is painful but important. Behind every statistic is a child who was loved beyond measure and a family whose world was turned upside down. Parents know their children, and when something doesn't feel right, those concerns must be listened to.

Daniel didn't have the chance he deserved – that is why his story matters.

We'd like to thank the Cardiologist, Paul Oslizlok and Professor Joe McMeniman at Crumlin hospital for Daniel's diagnosis. Their kindness will never be forgotten during the worst days of our lives.

The bereavement councillor Peter Hannon (now retired) was a huge support, as was the bereaved parents' group - Anam Cara which we helped to launch in 2008, or as we called it "the club nobody wants to join".

CHAPTER 1
INTRODUCTION

CONTENTS

CHAPTER 1: **INTRODUCTION**

WHAT IS THE NATIONAL PAEDIATRIC MORTALITY REGISTER?

The National Paediatric Mortality Register (NPMR) compiles and analyses data on child and young person (CYP) deaths in the Republic of Ireland. Existing datasets have notable limitations, including fragmentation, delays and inconsistent data quality. A national, timely and complete dataset on the circumstances and causes of infant and child deaths is therefore essential to identify issues, understand emerging trends, and inform health policy. International practice demonstrates that mandatory, realtime notification of all child deaths to a central database is the most effective approach for ensuring full national coverage and enabling robust reporting. Ireland must now evolve to meet these international standards (National Office of Clinical Audit (NOCA), 2023a).

AIM

The aim of the NPMR is to provide a national database of standardised information on all CYP deaths in the Republic of Ireland, generating high-quality data in order to provide an evidence base with which to drive improvements in the quality of care and services for children in Ireland and reduce the number of CYP deaths.

OBJECTIVE 1

Provide a system for continuous national surveillance of all deaths in children aged 0–18 years, regardless of cause, that occur both in hospital and in the community.

OBJECTIVE 2

Collect complete, standardised and timely data from multiple sources on the magnitude and characteristics of CYP deaths in Ireland.

OBJECTIVE 3

Build an epidemiological database of information on all CYP deaths and provide critical analysis of data in order to identify trends and subsequent recommendations on factors impacting on CYP mortality.

OBJECTIVE 4

Conduct audit, quality improvement and research studies relating to the occurrence and underlying causes of CYP deaths, and use this information to provide evidence for informing policy aimed at improving outcomes and reducing the number of CYP deaths.

OBJECTIVE 5

Liaise with senior decision-makers at both policy and operational level in order to implement recommendations.

RATIONALE FOR MONITORING CHILD MORTALITY

Although global child mortality rates have declined, many potentially avoidable deaths still occur. Beyond infancy, the leading cause of death among children and adolescents is accident and injury, with disproportionate impact on children living in disadvantaged areas (Odd *et al.*, 2022; ArmourMarshall *et al.*, 2012; Pearson *et al.*, 2011; Peden *et al.*, 2008; Sethi *et al.*, 2008).

In Ireland, there is limited contemporary, accurate information on where, how and why older children and adolescents die. Many of these deaths are avoidable. An improved understanding of contributing factors is urgently required to inform targeted interventions.

LIMITATIONS OF CURRENT DATA

Current national mortality statistics, based on death registration data from the Central Statistics Office (CSO), cannot be used to identify avoidable causes of death because:

- They provide limited information on contributory factors.
- Delays in registration mean year of occurrence data are often unavailable for several years.

Other national datasets (e.g. National Cancer Registry of Ireland, Major Trauma Audit (MTA), Irish Paediatric Critical Care Audit (IPCCA)) are disease or site-specific and do not provide a full picture of paediatric mortality.

A study from the Economic and Social Research Institute (Duffy *et al.*, 2022) found that inadequate national data hamper efforts to assess socioeconomic differences in infant and child mortality. This study found that although mortality rates have fallen in Ireland since 2000, inequalities remain between different population groups; however, deficits in Irish data meant that it was not possible to examine socioeconomic inequalities among the infant and child populations in Ireland. The World Health Organization (WHO, 2018) emphasises that accurate national mortality data are fundamental to paediatric mortality and morbidity audit.

BACKGROUND ON THE NPMR

The NPMR evolved from the National Sudden Infant Death Register, established in 1992. The original register improved understanding of sudden infant death syndrome (SIDS) and provided the evidence base for formulation of national prevention guidelines. These efforts contributed to a reduction in SIDS deaths from an average of 150 per year in the late 1980s/early 1990s to fewer than 30 per year by 2015 (National Paediatric Mortality Register, 2016).

Subsequently, the register's remit and data collection system were extended to include all paediatric deaths, regardless of cause and age, with the primary objective of addressing preventable deaths in all age groups; and it was renamed the National Paediatric Mortality Register. The NPMR's goal is to establish a standardised, timely national system for analysis and reporting of CYP deaths.

CURRENT DEATH REGISTRATION PROCESS IN IRELAND

Current legislation in the Republic of Ireland requires that a death is registered within 3 months of the date of death (Part 5 of the *Civil Registration Act 2004*). However, this legal requirement is met in only four out of five cases (Department of Social Protection and General Register Office, 2021).

Delays in the registration of deaths mean that CSO annual reports reflect statistics based on the year of registration only. These data may differ substantially from year of occurrence data, particularly in relation to sudden, unexpected and unexplained deaths in children due to the additional time required for the post-mortem examination (PME) procedure and inquest in some cases. In any given year, the reported statistics from the CSO will include only deaths registered in that current year along with those registered in the previous year, and adjusted figures are published in subsequent years. This process varies from that observed in other European jurisdictions, where delayed registration is not permitted and deaths are registered within days of when they occur (Bird, 2012).

Recent Legislative Change

The Department of Social Protection has introduced changes to the Civil Registration Act 2004 that reduce the time frame within which a death must be notified and registered and improve the death registration process in Ireland.

The *Civil Registration (Electronic Registration) Act 2024* introduces:

- electronic notification of all deaths within 5 working days
- notification to both the General Register Office (GRO) and the Health Service Executive (HSE)
- a 28 day window for families to complete registration
- interim certificates for cases under coronial investigation.

These changes aim to improve the speed and accuracy of national mortality data.

PURPOSE AND IMPORTANCE OF THIS REPORT

The first NPMR report under NOCA (2023) highlighted critical gaps in national paediatric mortality data. While it established the need for universal death notification, more granular and standardised information is required to inform meaningful, evidence-based improvements.

This report builds on the information provided in previous NPMR reports by:

- consolidating and analysing available national CYP mortality data
- providing detailed, quality-assured estimates of the main causes of CYP mortality
- identifying trends and areas requiring further attention
- providing updates on progress on the development of the NPMR child death notification process.

QUALITY IMPROVEMENT BENEFITS OF AN OPERATIONAL NPMR

An operational NPMR provides a single, standardised national system for collecting, validating and analysing data on all child and young person (CYP) deaths. Its key quality improvement benefits include:

- accurate, complete and standardised national data on all CYP deaths
- population-level surveillance and monitoring of mortality trends over time
- identification of high-risk groups, enabling targeted public health and service interventions
- improved accuracy and specificity of cause of death information
- enhanced ability to identify modifiable factors contributing to preventable deaths
- support for audit, research and quality improvement initiatives through a robust national dataset
- strengthening of the evidence base for policy development, strategic planning and resource allocation
- facilitation of benchmarking against national and international standards
- provision of essential data to underpin a national child death review process
- support for improvements in care pathways and the quality of end-of-life and bereavement support for families.

GOVERNANCE AND MANAGEMENT OF THE NPMR

The NPMR sits within the governance framework of NOCA. NOCA enables the continuous improvement of the healthcare system in the Republic of Ireland by maintaining a portfolio of prioritised national clinical audits measured against national and international standards.

NOCA is funded by the HSE National Quality Improvement Team, is governed by an independent voluntary board, and is operationally supported by the Royal College of Surgeons in Ireland (RCSI).

The NPMR was transferred to NOCA from Children's Health Ireland (CHI) at Temple Street in October 2020, and a new Governance Committee was established in order to oversee the implementation of the NPMR's objectives. The NPMR Governance Committee supports and advises the NPMR clinical leads on the operation of the audit, and these clinical leads report to the NOCA Governance Board (Figure 1.1) In addition, the NPMR Governance Committee provides guidance on the strategic direction of the NPMR. Please refer to Appendix 1 for a list of NPMR Governance Committee members in 2024–2025.

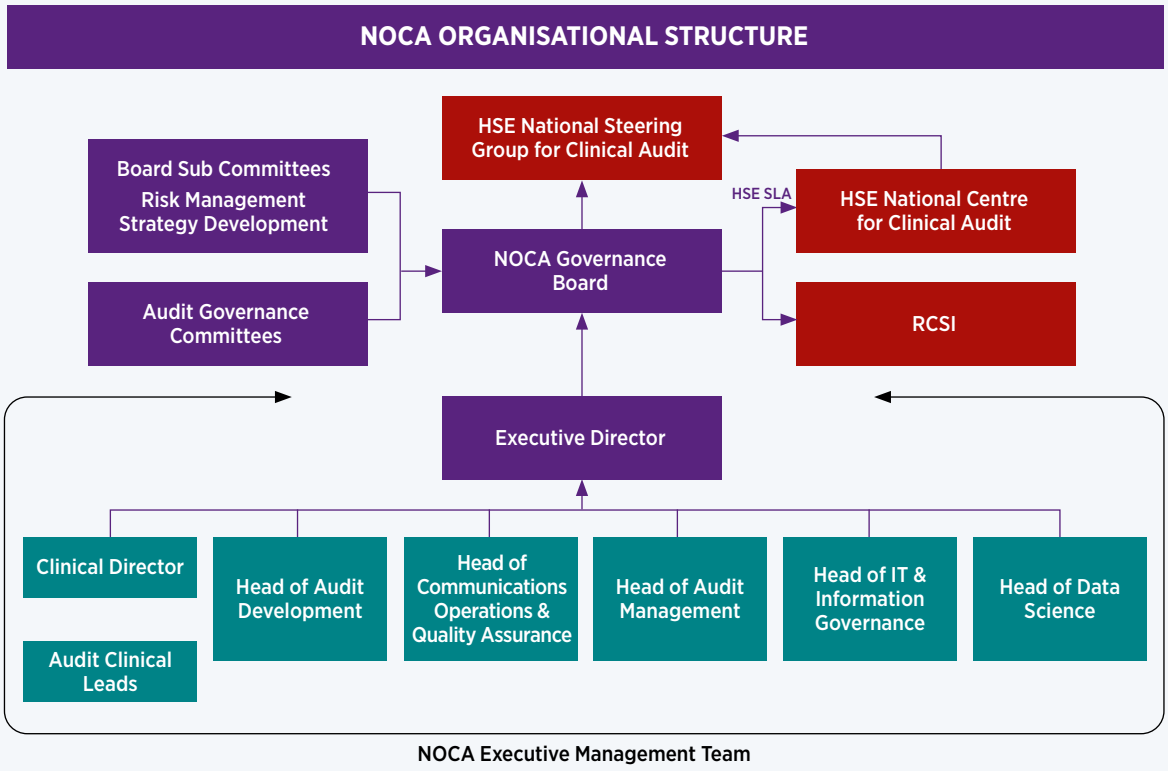


FIGURE 1.1: AUDIT GOVERNANCE AND MANAGEMENT FOR THE NATIONAL OFFICE OF CLINICAL AUDIT

WHO IS THIS REPORT AIMED AT?

The report is presented in two parts:

1. The *National Paediatric Mortality Register Annual Report 2026* is primarily aimed at:
   - healthcare professionals, hospital managers and hospital groups
   - paediatricians and multidisciplinary teams in the HSE and voluntary hospitals and other units caring for families
   - coroners
   - policy-makers (e.g. the HSE Department of Public Health, the Tusla Early Years Inspectorate)
   - nursing, public health and midwifery colleges
   - general practitioners
   - bereavement support groups
   - researchers and academics.

2. The companion report, the *National Paediatric Mortality Register 2026: Summary Report*, is aimed at parents and families, carers and advocates, patient advocacy organisations and the general public.

CHAPTER 2
METHODOLOGY

CONTENTS

CHAPTER 2: **METHODOLOGY**

The purpose of this report is to provide an overview of CYP mortality data in Ireland and to support the implementation of an improved, centralised system for the notification of deaths that will permit the analysis and timely reporting of CYP mortality data in Ireland.

There are several components to this report, which are presented in the following chapters.

Chapters 4, 5 and 6 present the results of the analysis of currently available mortality data.

Chapter 7 provides results of a review of death registration information to determine the proportion of CYP deaths that included infection either as a direct or contributory cause.

DATA SOURCE

Death registration information on all deaths in children aged under 19 years of age is derived from the CSO Vital Statistics department. Where available, year of occurrence figures were downloaded from the CSO website.

International figures were retrieved from the Eurostat and WHO websites for comparison, where available.

DATA COLLECTION

The CSO compiles annual data files generated by the GRO relating to all live birth, stillbirth, death and marriage registrations in Ireland. As a registered research organisation, NOCA is granted access to the CSO death registration information files or Research Microdata Files (RMFs) via a memorandum of understanding between the CSO and the RCSI through NOCA (NOCA, 2022). Access to RMFs is granted to researchers who meet the conditions and criteria designated by the CSO. The CSO controls NOCA's access to the RMF data by means of its Researcher Data Portal, and all analysis takes place within the CSO's information and communication technology systems. The results of this analysis are tabulated as aggregate data and are subject to CSO approval prior to being extracted from the Researcher Data Portal for inclusion in this report. The researcher must apply the following rules to outputs:

- Identifiable details will not be presented
- Cells containing values of less than 5 will not be presented
- Data are to be disseminated in aggregates (i.e., a person should not be identifiable in the data)
- The tabular outputs should not contain age group, sex and location in the same output table

Death registration details include demographic details (including age and sex), date of death, home address, place of death, cause of death, the coroner's region, and the name and place of occupation of the physician signing the death certificate (this applies only to deaths not involving a coroner).

INFORMATION GOVERNANCE

Data are collected under the *Civil Registration Act 2004* and provisions of the *Statistics Act, 1993*, which permits access to RMFs under strict conditions in order to ensure that the integrity and confidentiality of the data collected under the Act is maintained. Access is granted for scientific and statistical purposes only. The national statistical confidentiality provisions are reinforced by European Union (EU) legislation, specifically Regulation (EC) No 223/2009 on European statistics. NOCA staff working with the CSO data are Officers of Statistics under the *Statistics Act, 1993* and have signed a declaration of secrecy under that Act.

INCLUSION CRITERIA

All deaths of CYP aged 0–18 years registered in the Republic of Ireland for the period 2019–2024 are included in this analysis.

EXCLUSION CRITERIA

Any registered deaths where the age of the deceased is 19 years or over are excluded, as are late registrations of deaths that occurred more than 2 years prior to 2019.

DATA VALIDATION

Data validation consists of a data analyst reviewing the dataset for errors, such as multiple entries of the same death, whether age correlates logically with the date of registration, or registrations that occurred more than 2 years after the date of death.

STATISTICAL ANALYSIS OF DATA

Analysis of numerical and descriptive data received from CSO death registration information was conducted in Stata.

As per the NOCA information governance policy (O'Donovan, 2022) and CSO guidance (Linehan and Dineen, n.d.), all data included in this report were subjected to statistical disclosure control processes in order to ensure the suppression of data to acceptable levels. This included adherence to the following suppression/disclosure limitation rules:

- Identifiable quantitative data will not be presented
- Only aggregate data will be included
- No cell will contain more than 90% of the total number of units in a row or column
- There is a threshold rule of 5 (cells containing values of less than 5 will be redacted).

Data are reported using population-based mortality rates and trends over time. Population estimates for various age groups used to calculate crude mortality rates were retrieved from the CSO interactive databases at http://www.cso.ie/en/statistics/population. The data were reported as:

- annual number of deaths by age and sex
- annual number of deaths by place of death (hospital versus elsewhere)
- annual number of deaths by cause of death category.

Annual trends in the number of deaths and the main contributory causes of death in each age group were examined in order to identify trends and events over time. In some cases, data are compared with previously published data provided to the NPMR for the period 2007–2018.

Proportionate mortality due to various causes was calculated in order to determine the proportion of deaths in each age group due to specific causes, while cause-specific mortality rates were calculated in order to determine the risk of death due to injury within each age group. Crude mortality rates for various subcategories were expressed as aggregate blocks of data over the course of 3 and 6 years in order to avoid disclosure issues and permit further analysis of the data. Overall percentage changes in mortality rates relative to baseline were estimated using the following calculation:

[(*average comparative rate* – *average baseline rate*) ÷ (*average baseline rate*)] × 100

STATISTICAL PROCESS CONTROL CHARTS

Annual trends in the main contributory causes of death among various age categories were examined using statistical process control (SPC) charts. These charts were created using the National Health Service (NHS) SPC XmR tool (v5.0) (NHS England, 2020), a Microsoft Excel template that contains underlying macros to create individual SPC charts. This tool, designed specifically for healthcare quality improvement, helps track death rates and distinguish between common cause variations (natural fluctuations) and special cause variations, which indicate significant improvements or causes for concern that require further attention. The importance and reliability of SPC charts is demonstrated by both the HSE and the NHS in the United Kingdom actively promoting their use as an essential tool for quality improvement in healthcare.

Data from the CSO database were used in order to calculate the death rates (deaths per 1,000 live births) for the main contributory causes of death in infants between 2008 and 2023. Similarly, the death rates (deaths per 100,000 population) were calculated for the main contributory causes of death among children aged 1–14 years and children aged 15-18 years between 2008 and 2023. The death rates were subsequently inputted into the SPC XmR tool, which generated SPC charts corresponding to each primary cause of death for the relevant age groups.

Each SPC chart was carefully examined in order to identify trends, shifts and patterns in line with the NHS Making Data Count guidelines for interpreting SPC charts (NHS England, 2019). This analysis highlights how the rates of the main causes of death rose or fell over the specified period. It indicates to practitioners and clinicians where death rates are increasing at a concerning rate and need to be investigated further. It also highlights which death rates are significantly improving and would be worth examining in order to determine what led to this improvement.

Guidance for interpreting the rules of SPC charts is provided alongside the charts.

EVIDENCE SYNTHESIS AND FORMATION OF RECOMMENDATIONS

A core writing group that included the NOCA Paediatric Programme Manager, NOCA data analyst, the Clinical Lead for the NPMR and the Chair of the NPMR Governance Committee reviewed the results of the data analysis. The interpretation of results, conclusions and recommendations from each component of the data analysis were discussed and agreed at writing group and NPMR Governance Committee meetings. Owners were identified by the writing group for each recommendation and were contacted for comment and in order to aid implementation. Consultation with stakeholders – both from the NPMR Governance Committee and external stakeholders identified by the chair of the writing group – ensured that recommendations were informed by relevant sources of information, knowledge and expertise. This, in turn, ensured that the recommendations were factually correct and aided in the identification of appropriate owners.

CHAPTER 3
DATA QUALITY STATEMENT

Coverage of Data Release

Completeness of Data Release

Accuracy of Data Release

CONTENTS

CHAPTER 3: **DATA QUALITY STATEMENT**

This chapter is an assessment of the quality of the mortality data presented in this report using internationally agreed dimensions of data quality, as laid out in the Health Information and Quality Authority's (HIQA's) *Guidance on a data quality framework for health and social care* (HIQA, 2018) and outlined in Tables 3.1, 3.2 and 3.3.

TABLE 3.1: CONTEXT OF THE DATA QUALITY STATEMENT

SCOPE	This data quality statement provides an assessment of the data released for this report. This statement solely focuses on the data quality dimension of accuracy and reliability, and specifically on the following characteristics which are outlined in Table 3.2: • coverage of data release • completeness of data release • accuracy of data release. This can be used in conjunction with an assessment of the characteristics of this NPMR dataset.
PURPOSE	This statement will help the reader decide whether the data are fit for the user's specific purpose.
DATA SOURCE	The source of data for this report is Central Statistics Office (CSO) death registration information.
TIMEFRAME OF DATA RELEASE	The time frame for CSO death registration information used in this report is 1 January 2019 to 31 December 2024.
TYPE OF DATA	CSO death registration information is subject to revision based on late registrations. Revised year of occurrence data used for reviewing trends in statistical process control (SPC) charts is final.

TABLE 3.2: CHARACTERISTICS OF DATA QUALITY

Coverage of data release	The Central Statistics Office (CSO) collects details of all deaths registered nationally by the General Register Office (GRO). This report covers the 6-year period from January 2019 to December 2024. The CSO death registration information dataset is used to report on deaths in the following children and young people (CYP) age groups: infants aged under 1 year, children aged 1–4 years, children aged 5–9 years, children aged 1–14 years and young people aged 15–18 years. These age groups were chosen for comparability with international data on paediatric mortality. The CSO dataset includes 100% of deaths registered with the General Registrar›s Office. All deaths occurring in Ireland are legally obliged to be registered. Non-registration is rare because of the necessity of a death certificate for many legal purposes. Only deaths registered in the calendar year they occurred, or registered in the next calendar year, are included in the official annual statistics on deaths. Deaths registered after this date are included in the Late Deaths data file instead. In recent years approximately 2.5% of deaths registered are included in the Late Deaths data file.
Completeness of data release	Details of 100% of CYP deaths registered during the period 2019–2024 are contained in the CSO dataset. Completeness of the dataset was no less than 99.4% for all variables included, with most variables being 100.0% complete. Validation checks by National Office of Clinical Audit (NOCA) data analysts showed a high degree of completeness for all variables included in the CSO death registration information dataset.
Accuracy of data release	All deaths in the Republic of Ireland should be registered within 3 months from the date of death (*Civil Registration Act 2004*). However, unnatural deaths are the exception, as all such deaths are subject to a coroner's investigation, and some cases can take approximately 2 years to finalise. Provisional data are published on a quarterly basis. A large proportion of CYP deaths are sudden and unexpected, and as such, files based on year of registration will not account for all deaths that occurred in that particular year. Mortality statistics based on the year of occurrence are published by the CSO in subsequent years. The sources of the data are the attending doctor for the cause of death, and the next of kin or other qualified informant for the demographic details. For unexpected deaths or deaths arising from external causes, the data sources are the coroner and the Gardaí investigating the death. In the case of deaths involving an inquest, Form 104 is used for the purpose of supplementing the information on the coroner's certificate for better statistical classification of cause of death. Approximately one-third of CYP deaths in any particular year are registered in the following year, which renders the dataset incomplete with respect to the true number of annual deaths. Table 3.2.1 shows the number of late registrations for the population aged 0–18 years from 2019 to 2024.

TABLE 3.2: CHARACTERISTICS OF DATA QUALITY *CONTINUED*

Accuracy of data release

TABLE 3.2.1: PROPORTION OF LATE REGISTRATIONS FOR THE POPULATION AGED 0–18 YEARS, 2019–2024

Year	Total deaths registered	Late registrations*	
	N	n	%
2019	311	106	34%
2020	268	89	33%
2021	299	123	41%
2022	299	108	36%
2023	314	145	46%
2024	320	129	40%

* Deaths registered in each year that occurred in a previous year

The average proportion of late registrations was 36% in the period 2019–2021, compared with 41% in the period 2022–2024.

All cause of death coding strictly follows the World Health Organization (WHO) International Classification of Diseases, Tenth Revision (ICD-10) guidelines to ensure statistics are internationally comparable (WHO, n.da.). The same variables are collected for the deceased irrespective of what region the deceased resided in. The GRO sends reconciliation sheets containing the reference number of each death to the CSO weekly, and the number of deaths in the system is checked against this sheet.

Cause of death coding is complicated and has a subjective element, meaning that variation may occur.

TABLE 3.3: ASSESSMENT OF DATA QUALITY

Strengths of data in this report	Currently, the CSO collection of GRO death registrations is the only dataset that is complete for the children and young people (CYP) population and can be readily stratified for this population. Because the information is identifiable, it is possible to ensure that there is no double counting of patients. The data contain basic demographic information on all CYP deaths nationally, including cause of death. The cause of death data is based on a regulation that defines the scope, definitions of variables and characteristics of the data. Underlying cause of death is categorised according to the World Health Organization (WHO) International Classification of Diseases, Tenth Revision (ICD-10) (WHO, n.d.a) using an automated coding system called IRIS (Central Statistics Office (CSO), n.d.-a) for selecting the underlying cause of death code. The IRIS coding system has been developed by the IRIS code group to code mortality data and is the preferred coding tool for European countries. Ongoing training by senior mortality coders ensures the consistency of coding. The IRIS software codes the underlying cause of death in approximately 60% of deaths not involving an inquest, while the remaining 40% require manual intervention by mortality coders. As cause of death coding strictly follows WHO guidelines, statistics are internationally comparable. These guidelines also ensure comparability over time.
Limitations of data in this report	The quality of the cause of death coding depends on good medical information on the death certificate. Although the CSO data are population based, there are limitations to their use, including the following: • Delays in registration: result in discrepancies in figures based on year of death versus year of registration. This is particularly relevant to CYP deaths, many of which are coroner's cases, and particularly where there is an inquest into the death. This makes it difficult to identify any emerging public health issues (Table 3.2.1). • Lack of detail on the circumstances of death mean that it is not possible to provide an accurate description of the causes of death or to identify any contributory factors. Hence it is not possible to describe injury deaths according to intent. Systematic capture and review of such information provides learning opportunities and can inform intervention measures. • Lack of health equity stratifiers in the dataset prohibits the examination of health inequities within this dataset. • Variation in details (e.g. hospital names) affects the report's ability to accurately stratify the number of deaths. • The CSO is currently unable to permit linkage to other data sources. Conventional categorisation of deaths based on ICD-10 coding is not optimal for use in the clinical setting in relation to CYP. These particular codes are not often used in the paediatric clinical setting; for example, using the term 'circulatory' in relation to coronary heart disease is reasonable in adults, but for infants and children, causes of death more often relate to congenital heart disease and anatomical lesions, which would be more appropriately classified as 'cardiac/coronary heart disease', despite the ICD-10 coding guidelines. Similarly, the classification of deaths as being due to diseases of the nervous system is more likely to be appropriate in adults than in CYP. Data for the CYP cohort of patients will have to be further classified in order to present them in a clinically meaningful way.

CHAPTER 4
INFANT MORTALITY RATES

CONTENTS

CHAPTER 4: INFANT MORTALITY RATES

The data presented in this chapter are based on analysis of death registration information for the infant population aged under 1 year in the Republic of Ireland for the period 2019–2024. Estimates are provided of the age and sex distribution of infant mortality in Ireland, along with the main causes of infant death. References to 'infant' or 'infancy' throughout this report relate to children aged under 1 year.

BACKGROUND

Infant mortality rates (IMRs) are an important indicator of the overall health of a society because they reflect the social, environmental and economic conditions in which children live. Factors that can have an effect on IMRs include maternal health, quality of and access to medical care, socioeconomic conditions, and public health practices. Globally, the IMR decreased from an estimated rate of 65 deaths per 1,000 live births in 1990 to 29 deaths per 1,000 live births in 2018, and the annual number of infant deaths decreased from 8.7 million in 1990 to 4.0 million in 2018 (WHO, 2023).

The WHO defines the IMR as "the probability of a child born in a specific year or period dying before reaching the age of one, if subject to age-specific mortality rates of that period" (WHO, 2023), and it expresses the percentage as the number of deaths per 1,000 live births annually.

ANNUAL TRENDS IN INFANT (<1 YEAR) MORTALITY IN IRELAND

The IMR in Ireland has demonstrated a downward trend over time, decreasing from 8.2 deaths per 1,000 live births in 1990 to a low of 2.8 deaths per 1,000 live births in 2019 (see Figure 4.1). The latter rate is one-half of the average rate recorded for the late 1990s and early 2000s. Following a sharp decline from the early 1990s to mid-2000s, the rate stabilised between the lowest rate of 2.8 and 3.6, with slight yearly fluctuations. There has been no further decrease in the IMR since 2019, and the data indicate a gradual increase during 2020–2024, although not to the levels of earlier decades. Revised year of occurrence data show a rate of 3.5 deaths per 1,000 live births in 2022. The provisional rate for 2024 is 3.6 per 1,000 live births (an increase of 29% on 2019).

The changes in overall IMRs are reflected in similar patterns in both neonatal (aged <29 days) and postneonatal (aged 29–364 days) mortality rates. The postneonatal mortality rate (PNMR) has shown a steady decline, reaching a low of 0.7 in 2012 and recurring multiple years since. Provisional 2024 data suggest a recent small rise. The PNMR recorded for 2022 is the highest recorded since 2014. Mortality rates in the neonatal age group are consistently higher than those in the postneonatal age group and have also declined over time, although more gradually. Rates have been fluctuating within a narrow range of 2.1–2.7 since 2005.

The data behind Figure 4.1 are provided in the corresponding frequency table in Appendix 2. These data are based on absolute number of deaths and have not been adjusted to exclude major congenital malformations. Hence, these figures will vary from perinatal mortality data reported by the NPEC.

COMPARISON WITH INTERNATIONAL RATES

The most recent available IMRs reported for various European countries and the United Kingdom (UK) – for the year 2023 – are outlined in Figure 4.2. Internationally, infant mortality has declined sharply over the past three decades (Eurostat, 2021). At 3.3 deaths per 1,000 live births, the IMR in Ireland is the same as the EU average rate for 2023, but it is higher than those in many other European countries, including Sweden (2.1 deaths per 1,000 live births), Norway (2.0 deaths per 1,000 live births), Finland (1.8 deaths per 1,000 live births) and Estonia (1.7 deaths per 1,000 live births). Data on EU IMRs were obtained online from the Eurostat Data Browser. The UK figure was retrieved from the Office for National Statistics (Office for National Statistics, 2023). Overall, there has been a sharp decline in infant mortality in most EU countries in the past few decades (Eurostat, 2021; Eurostat n.d, Onambele *et al*., 2019).

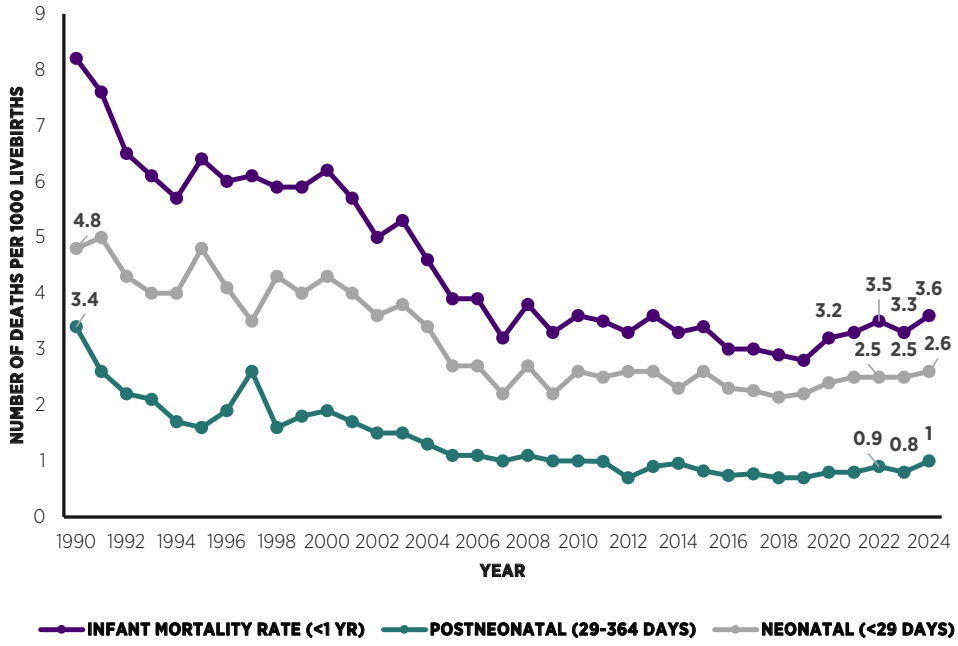


FIGURE 4.1: ANNUAL TRENDS IN INFANT, POSTNEONATAL AND NEONATAL MORTALITY RATES IN IRELAND, 1990–2024

IMR= number of deaths in children aged <1 year per 1,000 live births in a given year

PNMR = number of deaths in children aged between 29 days and 364 days per 1,000 live births in a given year

Neonatal mortality rate = number of deaths in children aged <29 days per 1,000 live births in a given year

Figures for 1990 to 2022 are based on revised year of occurrence data downloaded from the Central Statistics Office (CSO) on 15 October 2025, while figures for 2023 and 2024 are provisional based on year of registration.

Note: These data are based on the total number of deaths of liveborn children and have not been adjusted to exclude deaths due to major congenital malformations. Hence, the data are distinct from data published by the National Perinatal Epidemiology Centre (NPEC), which reports on early and late neonatal deaths.

Source: Central Statistics Office (CSO) year of occurrence data, retrieved from the CSO infant mortality data file at https://data.cso.ie/product/vsbo, on 15 October 2025. Updated birth figures are based on CSO revised figures for 31 October 2024 and vary from figures provided in previous reports: https://data.cso.ie/product/VSBO, downloaded on 15 October 2025.

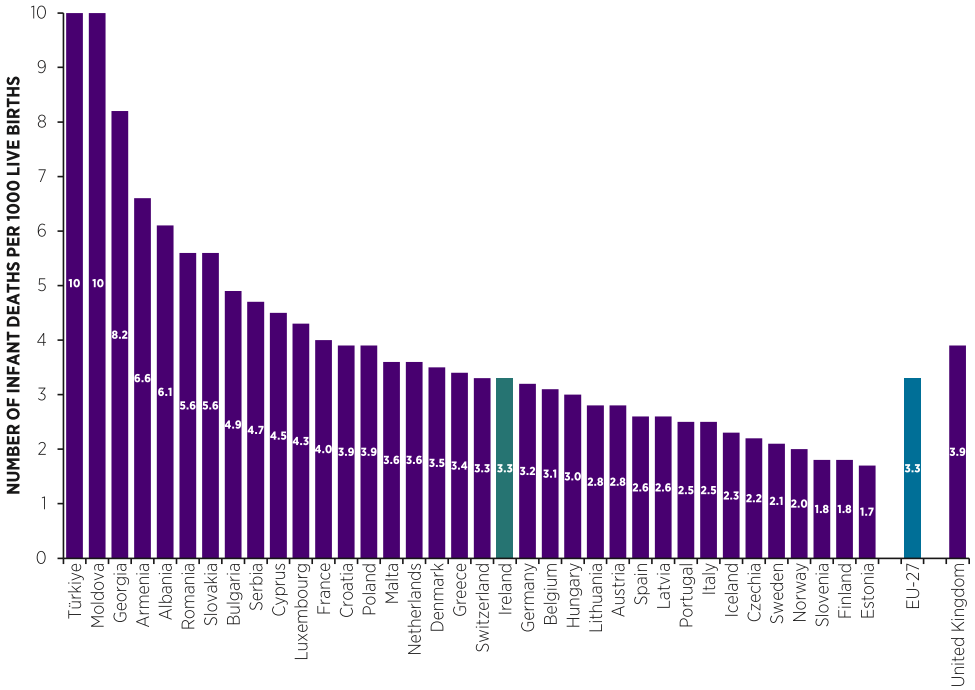


FIGURE 4.2: INFANT MORTALITY RATES IN EUROPEAN COUNTRIES AND THE UNITED KINGDOM, 2023

INFANT, POSTNEONATAL AND NEONATAL MORTALITY RATES IN IRELAND, 2019–2024

Between 2019 and 2024, 1,096 infant deaths were registered in Ireland. These are categorised into neonatal deaths (deaths occurring within the first 28 days of life) and postneonatal deaths (deaths occurring between the ages of 29 days and 1 year).

Table 4.1 provides the number of infant, postneonatal and neonatal deaths registered with the GRO in Ireland for the period 2019–2024, alongside adjusted figures based on the year in which the deaths occurred as reported by the CSO. Year of occurrence data are used in order to calculate accurate infant, neonatal and postneonatal mortality rates per 1,000 live births during the same period. These data indicate increases in both the overall number of deaths and in the infant, neonatal and postneonatal mortality rates in 2022 in comparison with the previous 3 years. Provisional data suggest that this increase, although not sustained in 2023, was repeated in 2024.

Data based on year of death are not available for the analysis of factors such as sex, place of death and cause of death. For this reason, data averages for the 6-year registration period from 2019 to 2024 are used in order to provide estimates of those variables.

TABLE 4.1: NUMBER AND RATE OF INFANT, POSTNEONATAL AND NEONATAL DEATHS IN IRELAND, BY YEAR OF DEATH AND YEAR OF REGISTRATION, 2019–2024

Data based on the year in which the deaths were registered with the General Register Office							
Year	**Number of live births**	**Total number of infant deaths (aged <1 year)**	**Number of neonatal deaths (aged ≤28 days)**	**Number of postneonatal deaths (aged 29–364 days)**	**IMR (number of infant deaths per 1000 live births)**	**Neonatal mortality rate (number of neonatal deaths per 1000 live births)**	**PNMR (number of postneonatal deaths per 1000 live births)**
2019	59 294	190	142	48	3.2	2.4	0.76
2020	55 959	153	112	41	2.7	2.0	0.73
2021	60 575	192	151	41	3.2	2.5	0.68
2019–2021	**175 828**	**535**	**405**	**130**	**3.0**	**2.3**	**0.74**
2022	54 483	191	140	51	3.5	2.6	0.93
2023	54 678	173	132	41	3.1	2.4	0.74
2024	54 062	197	143	54	3.6	2.6	0.99
2022–2024	**163 223**	**561**	**415**	**146**	**3.4**	**2.5**	**0.89**

Data based on the year in which the deaths occurred							
Year	**Number of live births**	**Total number of infant deaths (aged <1 year)**	**Number of neonatal deaths (aged ≤28 days)**	**Number of postneonatal deaths (aged 29–364 days)**	**IMR (number of infant deaths per 1000 live births)**	**Neonatal mortality rate (number of neonatal deaths per 1000 live births)**	**PNMR (number of postneonatal deaths per 1000 live births)**
2019	59 294	167	128	39	2.8	2.2	0.66
2020	55 959	178	134	44	3.2	2.4	0.77
2021	60 575	199	152	47	3.3	2.5	0.78
2022	54 483	188	137	51	3.5	2.5	0.93
2023	54 526	180	135	45	3.3	2.5	0.80
2019–2023	**284 837**	**912**	**686**	**226**	**3.2**	**2.4**	**0.79**

Note: Data for 2024 are provisional and based on year of registration. Quarterly and yearly Central Statistics Office (CSO) Vital Statistics summary reports provide figures on the number of births and deaths registered in a calendar year. Not all life events that are registered in a given year actually occur in that particular year (e.g., of the 54,526 births that were registered in 2023, 91.1% occurred in 2023, with the remainder occurring in 2022).

Source: CSO year of occurrence data, retrieved from the CSO infant mortality data file at https://data.cso.ie/product/VSBO on 15 October 2025. Birth figures updated based on CSO revised figures for 31.10.2024 and varies from figure provided in previous reports (https://data.cso.ie/product/VSBO, downloaded on 15 October 2025).

AGE AND SEX DISTRIBUTION OF INFANT DEATHS, 2019–2024

Data on age and sex distribution of infant deaths is provided in Appendix 3. Neonatal deaths consistently account for the majority of infant deaths, ranging from 72.6% to 78.7% of total infant mortality. Postneonatal deaths make up a smaller proportion, ranging from 21.4% to 27.4%. In the period 2022–2024, the percentage of neonatal deaths decreased slightly from 75.7% to 74.0%; conversely, the corresponding figure for postneonatal deaths increased slightly from 24.3% to 26.0%.

There is a consistent male predominance in infant deaths throughout the period 2019–2024 and in both neonatal and postneonatal deaths. Overall, 52.3% of infants who died during 2019–2021 were male; during 2022–2024, the corresponding figure was 55.5% (Appendix 3). This aligns with the demographic trend observed internationally where male infants have slightly higher mortality rates than females.

PLACE OF DEATH, 2019–2024

The vast majority of infant deaths in the years 2019–2024 occurred in a hospital (see Table 4.2). Neonatal deaths are heavily concentrated in maternity hospitals, reflecting the critical period immediately after birth. Only a small percentage of neonatal deaths (2.1%; n=17) occurred at home compared with the postneonatal age group, of which 18.5% (n=51) occurred at home. The greatest proportion of postneonatal deaths (46.4%; n=128) occurred in hospitals providing paediatric critical care, reflecting the centralisation of specialist paediatric services for critically ill children in Ireland.

Most infant deaths (i.e. deaths among children aged under 1 year) that occurred at home were due to SIDS. In the period 2019–2024, 37% of SIDS cases occurred at home and 58% were registered as occurring in hospital; the latter cases were likely pronounced dead in emergency departments (EDs), with the patients having been brought in deceased by ambulance (see Appendix 3).

TABLE 4.2: PLACE OF DEATH FOR INFANTS, 2019–2024

NEONATAL AGE GROUP (≤28 days)		
Place of death	**n**	**%**
CHI hospital	112	13.7
Select maternity hospitals	531	64.8
All other hospitals	155	18.9
At home	17	2.1
Hospice/other	5	0.6
Total	**820**	**100.0**
POSTNEONATAL AGE GROUP		
Place of death	**n**	**%**
CHI hospital	128	46.4
All other hospitals	88	31.9
At home	51	18.5
Hospice/other	9	3.2
Total	**276**	**100.0**

CHI = Children's Health Ireland

"Select maternity hospitals" include Coombe Women and Infants University Hospital, The National Maternity Hospital, Rotunda Hospital, University Maternity Hospital Limerick and Cork University Maternity Hospital. These figures are based on registrations where the complete and accurate name of the hospital is entered, hence numbers for Cork University Maternity Hospital and University Maternity Hospital Limerick may be underrepresented in that category, e.g., if entered as Cork University Hospital or University Hospital Limerick.

PRINCIPAL CAUSES OF NEONATAL AND POSTNEONATAL MORTALITY IN IRELAND, 2019–2024

The principal causes of mortality in Ireland during the years 2019–2024 (grouped according to ICD-10 classification) are provided for both the neonatal and postneonatal age groups in Table 4.3. Providing aggregate data for a period of 6 years makes it possible to report on a higher number of causes of death categories while avoiding disclosure issues due to the small numbers of deaths in a given year.

The considerable difference between the number of neonatal and postneonatal deaths is due to the deaths of babies with congenital malformations/chromosomal abnormalities and perinatal conditions during the first 4 weeks of life. The greatest proportion was attributable to ICD-10 category P00–P96: "Certain conditions arising in the perinatal period" (57.1%; n=468). The majority of these related to extreme prematurity, but also to necrotising enterocolitis, sepsis and hypoxic ischaemic encephalopathy. Congenital malformations and chromosomal abnormalities (ICD-10 Q00–Q99) accounted for 37.0% of deaths (n=303). These two categories – perinatal conditions and congenital anomalies – together make up 94% of all deaths in this age group. Of the remaining neonatal deaths in 2019–2024, 1.5% were registered as being due to SIDS or an undetermined/unexplained cause.

A wider number of causes contributed to postneonatal deaths (infants aged 29–364 days). Congenital and perinatal issues remain significant, accounting for 35.5% and 17.0%, respectively. SIDS and undetermined/unexplained causes of death, with ICD-10 codes R95 or R95.9, was the second leading cause of death in this age group during 2019–2024, accounting for 29.3%. Other important causes of death in this age group were disorders of the nervous system (5.1%), certain infectious and parasitic diseases (3.6%) and diseases of the circulatory system (3.3%). Annual trends in the main cause of death categories for postneonatal deaths are outlined in Appendix 2 and in the SPC charts shown in Figures 4.4A to 4.4D.

Prior to 2022, congenital malformations and chromosomal abnormalities accounted for the greatest proportion of postneonatal deaths. However, data for 2022, 2023 and 2024 indicated a change in this trend, with SIDS once again ranking as the leading cause of postneonatal deaths, at 34.2%. (Figure 4.3)

TABLE 4.3: CAUSE OF DEATH CATEGORISATION OF NEONATAL AND POSTNEONATAL DEATHS REGISTERED IN IRELAND, 2019–2024 (N=1096)

NEONATAL AGE GROUP (<29 DAYS)			
Rank	**Cause of death ICD-10 category**	**n**	**%**
1	Certain conditions originating in the perinatal period (P00–P96)	468	57.1
2	Congenital malformations and chromosomal abnormalities (Q00–Q96)	303	37.0
3	SIDS and undetermined/unexplained causes of death (R95)	12	1.5
4	Diseases of the blood and blood-forming organs (D50–D89)	8	1.0
5	Diseases of the circulatory system (I00–I99)	5	0.6
	All other causes	24	2.9
	Total	**820**	**100.0**
POSTNEONATAL AGE GROUP (29-364 DAYS)			
Rank	**Cause of death ICD-10 category**	**n**	**%**
1	Congenital malformations and chromosomal abnormalities (Q00–Q96)	98	35.5
2	SIDS and undetermined/unexplained causes of death (R95)	81	29.3
3	Certain conditions originating in the perinatal period (P00–P96)	47	17.0
4	Disorders of the nervous system (G00–G99)	14	5.1
5	Certain infectious and parasitic diseases (A00–B99)	10	3.6
6	Diseases of the circulatory system (I00–I99)	9	3.3
7	Endocrine, nutritional and metabolic diseases (E00–E90)	5	1.8
	All other causes	12	4.3
	Total	**276**	**100.0**

These data are distinct from data published by the National Perinatal Epidemiology Unit (NPEC), which reports separately on subgroups of neonatal deaths.

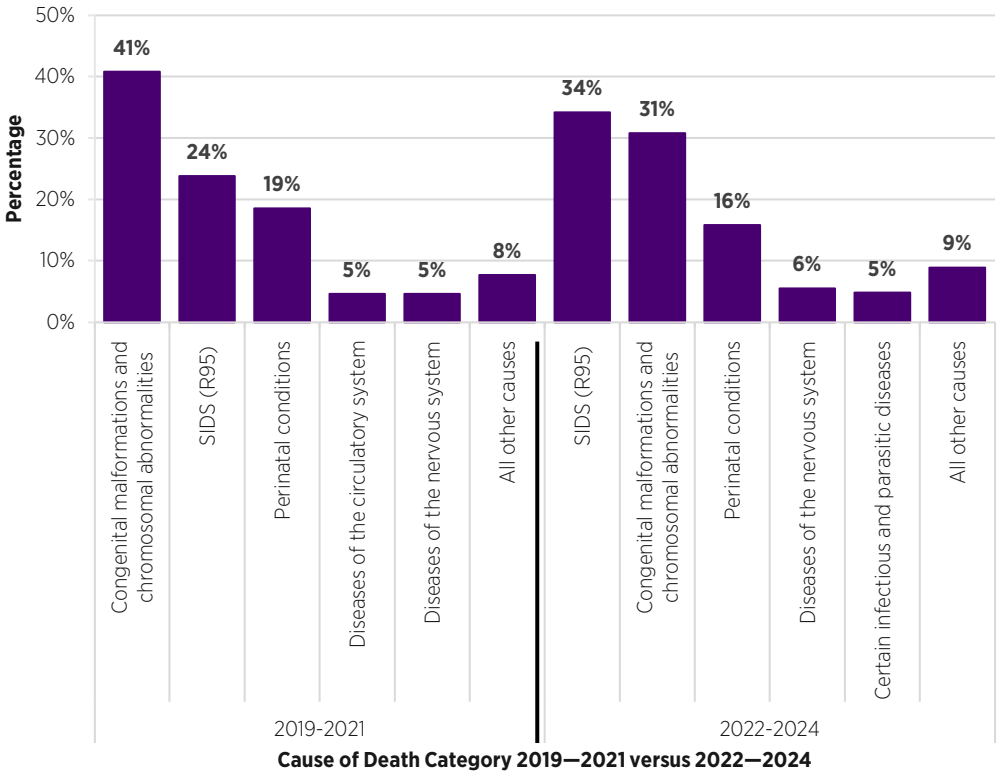


FIGURE 4.3: MAIN CAUSE OF DEATH CATEGORIES FOR POSTNEONATES (AGED 29–364 DAYS) IN IRELAND, 2019–2021 (N=130) VERSUS 2022–2024 (N=146)

DEATHS CERTIFIED AS SIDS DURING 2019–2024

The number, proportion and rate of SIDS deaths occurring or registered in Ireland during 2019–2024 is outlined in Table 4.4. The 2023 and 2024 data identify an increase in the number and rate of SIDS deaths per 1,000 live births, which increased steadily from 0.20 in 2019 to a peak rate of 0.46 in 2023. This figure (based on final revised year of occurrence data) indicates an increase of 130% over the 5-year period from 2019. The 2024 rate of 0.37 is based on year of registration and is therefore subject to change.

Delays in the registration of deaths impacts significantly on apparent SIDS rates; all cases of sudden unexplained deaths in infancy undergo a post-mortem examination (PME), and because SIDS is a diagnosis of exclusion, this includes many investigative tests that take time to complete, extending the time required for completion of the post-mortem report. Review of the timeliness of registration of infant deaths during the period 2019–2024 shows that registration counts remained relatively stable (fluctuating but showing no strong upward or downward trend) despite disruptions such as the COVID-19 pandemic. Examination of the pattern of late registrations of SIDS deaths specifically showed higher levels of late registration in 2021 and 2024, the highest proportion being in 2021 (69.2%) and the lowest in 2023 (36.8%) (Appendix 3).

In keeping with the trend observed in previous years, the majority of SIDS cases in 2023 and 2024 were in the postneonatal age group. The annual trend in the SIDS rate (per 1,000 live births) from 1992 to 2024 is illustrated in an SPC chart in Figure 4.4C.

TABLE 4.4: SUMMARY OF DEATHS DUE TO SUDDEN INFANT DEATH SYNDROME (ICD-10 CODE R95) IN IRELAND, 2019–2024

Year	SIDS Deaths <1 year (n)	Total deaths <1 year (n)	SIDS as percentage of all deaths aged <1 year	SIDS as percentage of postneonatal deaths	Live births (n)	SIDS rate (n per 1000 live births)
2019	12	167	7.2	28.2	59 294	0.20
2020	12	178	6.7	27.3	55 959	0.21
2021	16	199	8.0	34.0	60 575	0.26
2022	16	188	8.5	25.5	54 483	0.29
2023	25	180	13.9	48.9	54 678	0.46
2024	19	197	10.2	31.5	54 062	0.37

Data for 2019–2023 are based on revised year of occurrence data (updated 3 November 2025) downloaded from the CSO interactive online database on 10 November 2025. Data for 2024 are based on year of registration and therefore could be subject to revision at a later date. The number of deaths in the postneonatal age group used to calculate the proportionate SIDS mortality is not provided due to potential disclosure issues – this data is available on the CSO website at https://data.cso.ie/product/VSDO. The SIDS rate is calculated based on all deaths of infants aged <1 year registered as sudden infant death syndrome (R95).

ANNUAL TRENDS IN MAIN CAUSE OF INFANT DEATH CATEGORIES

Annual trends in the main causes of death in infants aged under 1 year were examined using SPC charts, and findings were summarised as follows:

SIDS: Figure 4.4A shows normal variation in crude mortality rates for SIDS between 2008 and 2013, followed by a significant 'shift' of improvement from 2014 to 2021, defined as six or more consecutive points below the mean, here represented by the series of blue data points. This positive trend ended in 2022 when mortality rates rose above the mean and returned to normal variation. In 2023, a significant special cause of concern was identified as mortality rates exceeded the upper control limit, represented by the orange data point. This warrants further investigation to identify potential underlying causes and inform preventative actions. Although mortality rates returned to normal variation in 2024, the rate remained above the mean, suggesting continued monitoring is needed to determine whether this represents a temporary fluctuation or the start of a new trend.

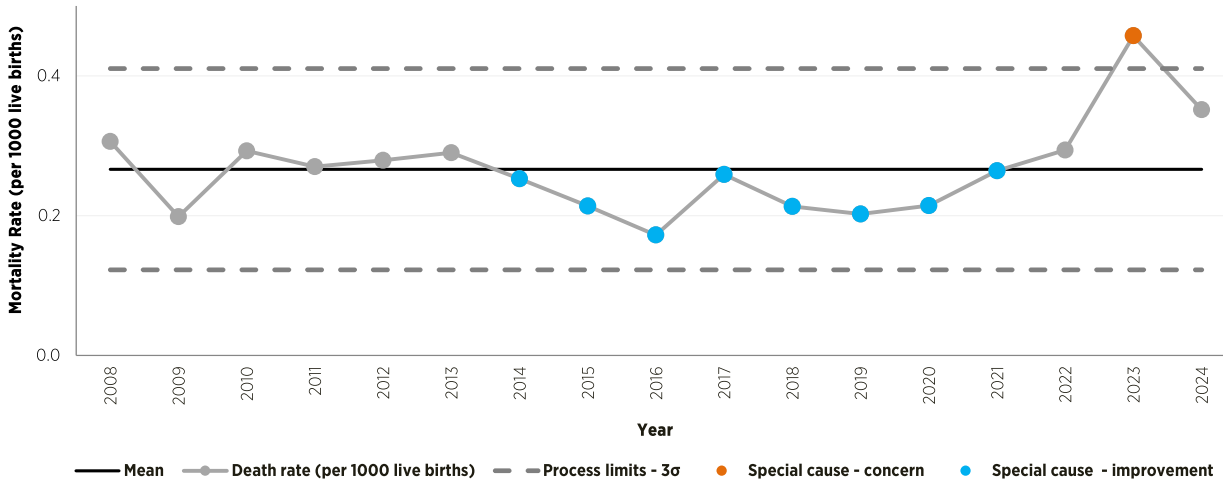


FIGURE 4.4A: CRUDE MORTALITY RATE DUE TO SUDDEN INFANT DEATH SYNDROME (ICD-10 R95) IN INFANTS AGED <1 YEAR IN IRELAND, 2008–2024

Data Source: CSO revised year of occurrence figures (3 November 2025), except for 2024 figure, which is based on year of registration. See rules for interpreting SPC charts at the end of this chapter.

Certain conditions originating in the perinatal period: Figure 4.4B shows that mortality rates due to perinatal conditions remained within the control limits throughout the observed period, exhibiting normal cause variation around the mean. No significant shifts, trends, or outliers were detected, indicating that mortality rates have been stable.

Congenital malformation and chromosomal abnormalities: Figure 4.4C shows that crude mortality rates for congenital malformation and chromosomal abnormalities exhibited normal variation from 2008 to 2025, with rates fluctuating around the mean. From 2016 to 2024, there is an ongoing and significant shift of improvement, indicated by all nine consecutive data points remaining below the mean.

Diseases of the nervous system: Figure 4.4D shows that crude mortality rates due to diseases of the nervous system experienced a significant 'trend' of improvement from 2010 to 2015, with rates declining consistently year-on-year. Since 2016, mortality rates have remained within normal variation, fluctuating around the mean. Although the most recent data point rose above the mean, this change is not statistically significant but should be monitored to assess whether an upward trend is emerging.

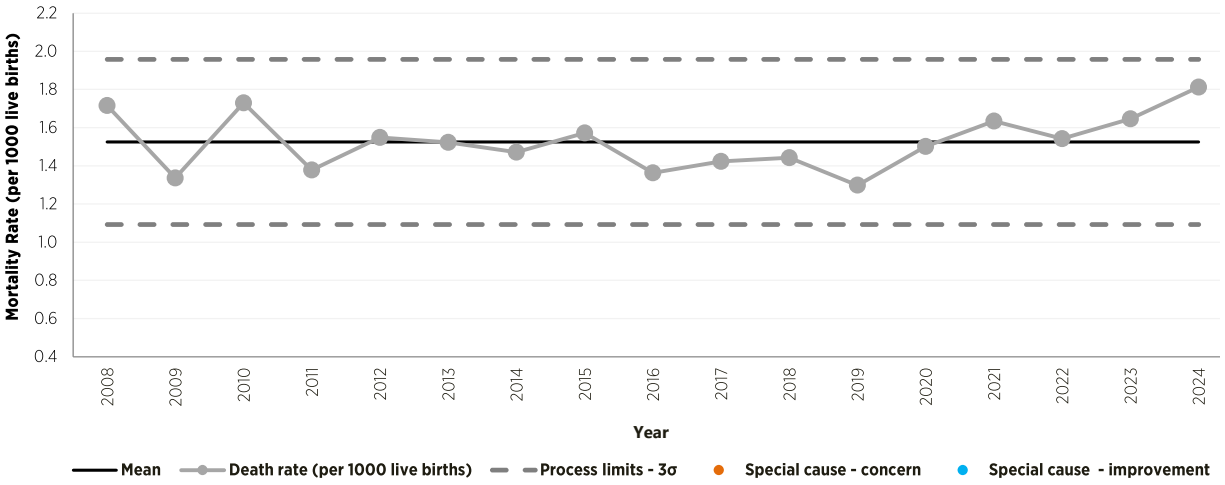


FIGURE 4.4B: CRUDE MORTALITY RATE DUE TO CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD (ICD-10 CATEGORY P00–P96) IN INFANTS AGED <1 YEAR IN IRELAND, 2008–2024

Data Source: CSO revised year of occurrence figures (3 November 2025), except for 2024 figure, which is based on year of registration

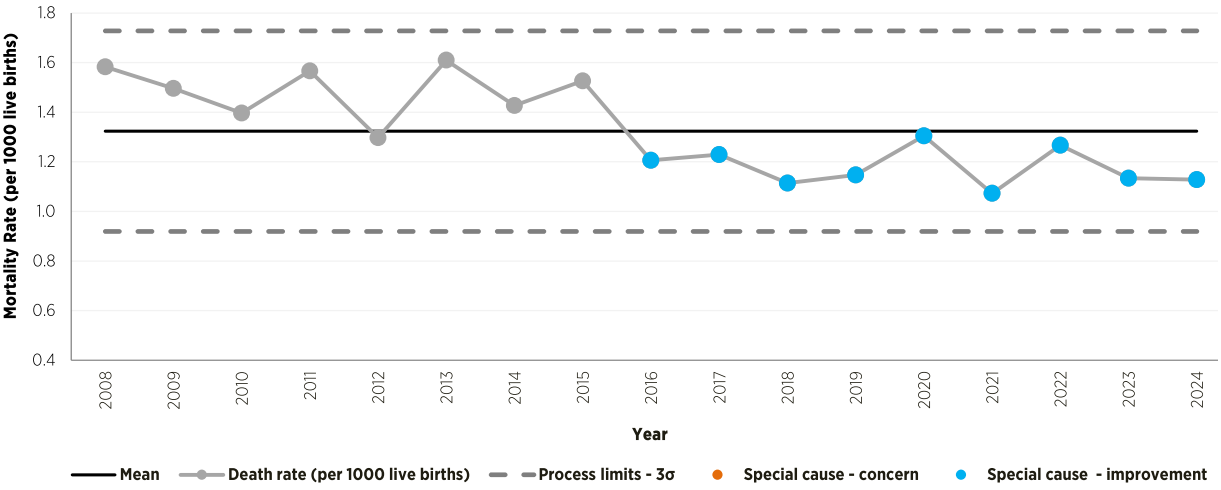


FIGURE 4.4C: CRUDE MORTALITY RATE DUE TO CONGENITAL MALFORMATION AND CHROMOSOMAL ABNORMALITIES (ICD-10 CATEGORY Q00–Q99) IN INFANTS AGED <1 YEAR IN IRELAND, 2008–2024

Data Source: CSO revised year of occurrence figures (3 November 2025), except for 2024 figure, which is based on year of registration

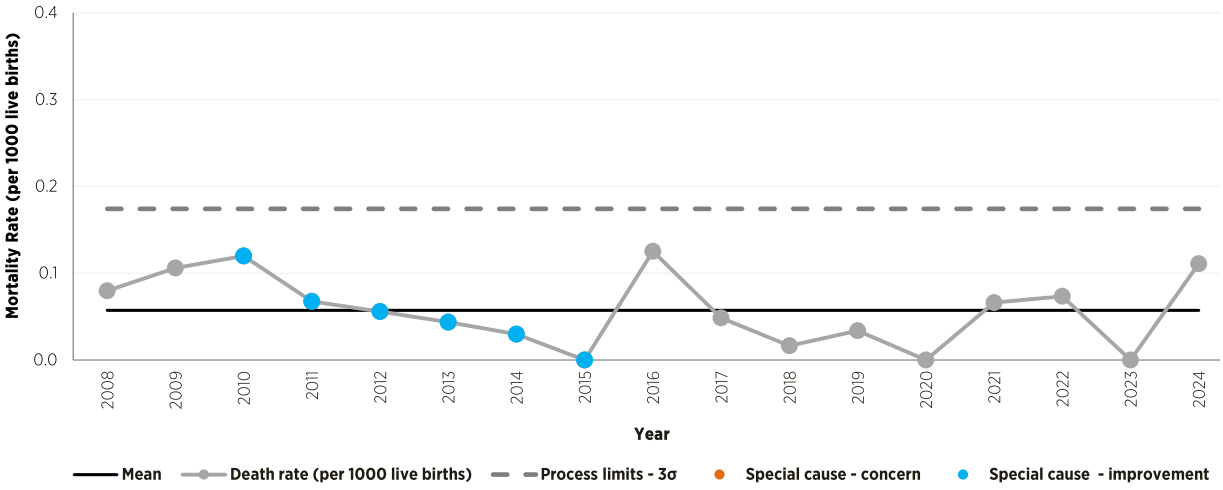


FIGURE 4.4D: CRUDE MORTALITY RATE DUE TO DISEASES OF THE NERVOUS SYSTEM (ICD-10 CATEGORY G00–G99) IN INFANTS AGED <1 YEAR IN IRELAND, 2008–2024

Data Source: CSO revised year of occurrence figures (3 November 2025), except for 2024 figure, which is based on year of registration

RULES FOR INTERPRETING SPC CHARTS

Statistical process control chart rules:

- A ***shift*** occurs when **six or more** consecutive points appear on the **same side of the mean** (centre line).
- A ***trend*** occurs when there are **six or more** consecutive points that move in the same direction (up or down); these may cross the mean.
- The ***'2 out of 3'*** rule highlights when two out of three data points are close to the upper or lower control limits.
- Extreme values (**special cause**) are any values on the line graph that fall outside the control limits.
- **Common cause variation** (grey data points) refers to the natural, inherent variability present in a process over time.

LIMITATIONS

There are limitations to the data presented in this chapter, mainly an inability to report accurate mortality estimates based on year of occurrence for 2024 and a lack of information that permits detailed descriptions of the main causes of death. Hence, we cannot currently provide an overview of the characteristics of the various categories of infant death; for example, an account of the sleeping position and location of SIDS deaths, or an accurate assessment of the impact of factors such as social deprivation or the COVID-19 pandemic on the various categories of infant mortality.

SUMMARY OF FINDINGS

- Ireland has seen substantial reductions in infant, neonatal and postneonatal mortality rates over the past three decades, reflecting advances in maternity and child healthcare. However, in recent years (post-2020), there have been minor increases in rates, suggesting the need for monitoring and possible renewed public health efforts. Despite a decline in the number of fatalities from two leading causes of infant death – congenital malformations and chromosomal abnormalities and diseases of the nervous system – the overall IMR in Ireland has not decreased since 2019. The rate for 2023 is on a par with the EU average. Revised year of occurrence data show a rate of 3.5 deaths per 1,000 live births in 2022 and 3.3 in 2023 (an increase of 18% on 2019).

- Neonatal mortality remains the dominant contributor to infant deaths. A higher proportion of postneonatal deaths was identified in 2022–2024, and this will continue to be monitored. Neonatal deaths were overwhelmingly due to perinatal conditions and congenital malformations and chromosomal abnormalities, which together made up 94% of all deaths in this age group during 2019–2024.

- Since 2022, SIDS has overtaken congenital and chromosomal abnormalities as the leading cause of postneonatal deaths, and in 2023 accounted for almost half (48.9%) of all deaths in this age group. This marks a reversal in mortality trends, driven by increases in both the number and rate of SIDS cases. The rate of SIDS deaths per 1,000 live births has steadily increased from 0.20 in 2019 to a peak of 0.46 in 2023. The number of SIDS deaths reported for 2023 (n=25) is the highest figure since 2008. Because of current data limitations, the characteristics of SIDS deaths in Ireland – including risk factors, social deprivation or COVID-19 impacts – cannot be reliably described, and the absence of granular detail prevents investigation into the underlying reasons for rising SIDS rates.

- Mortality rates for perinatal conditions have not changed significantly over time, while mortality rates for deaths due to congenital malformations and chromosomal abnormalities and diseases of the nervous system have declined.

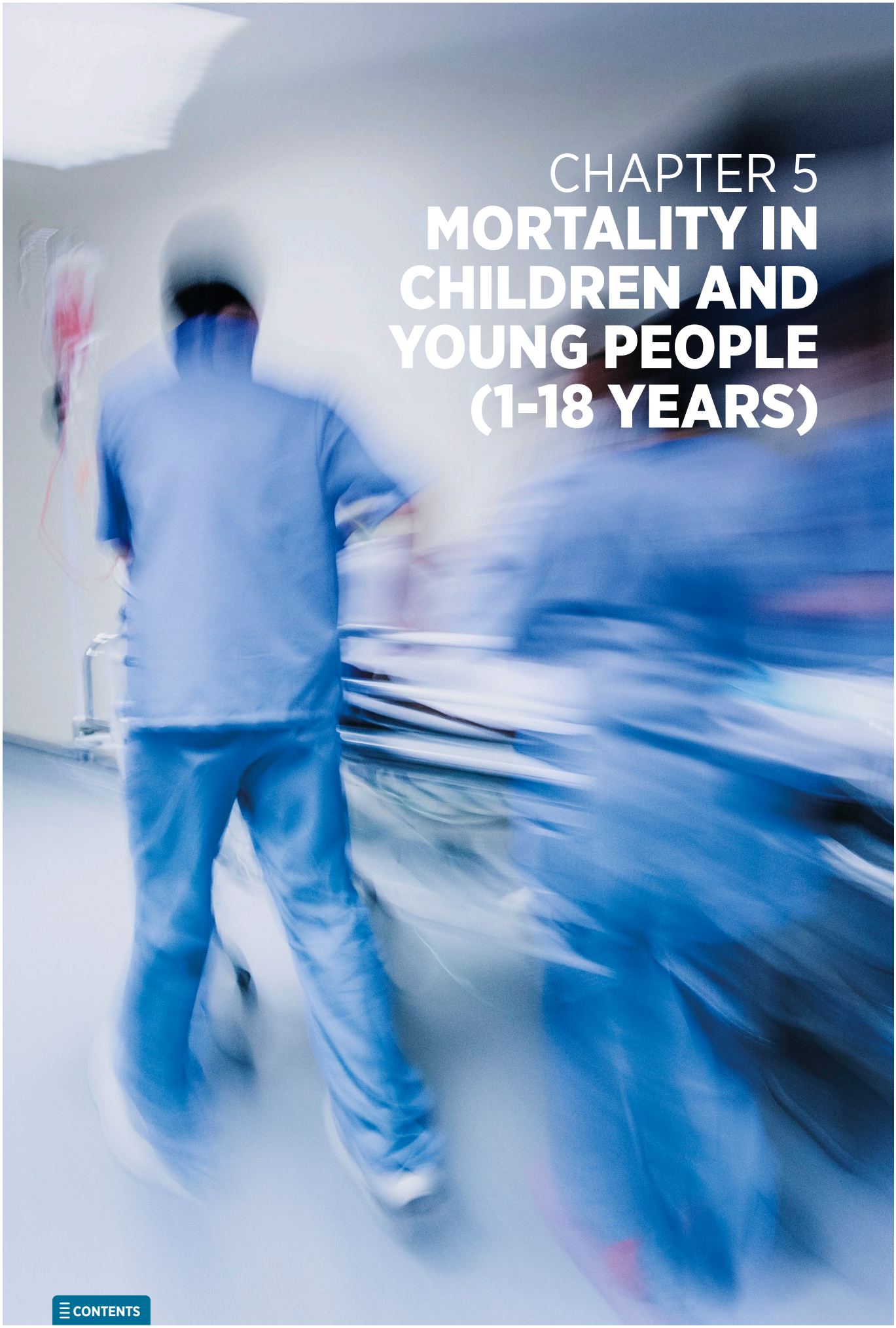
- Timely and more detailed information is required in order to provide an accurate account and review of infant mortality and to inform policy aimed at reducing the number of infant deaths. Direct notification of deaths to the NPMR will permit the review of annual trends based on timely year of occurrence data, which is necessary in order to validate the observed variation in the main causes of CYP deaths in recent years.

- The delay in confirming an increase in SIDS rates highlights the importance and value of occurrence-based data for detecting trends. There should be a renewed focus on SIDS prevention, public education, and postnatal support to help mitigate this emerging trend. Safer sleep messaging should be reinforced for the relevant healthcare professionals and the general population, as well as more targeted and tailored messaging and supports for groups where known risk factors are more prevalent.

QUALITY IMPROVEMENT OPPORTUNITY

Delays in the registration of deaths have limited the timely availability of accurate year of occurrence data on infant mortality, which meant that the rise in SIDS rates could not be identified until November 2025. The piloting and implementation of the NPMR child death notification process will allow for more rapid capture of infant death data. This, in turn, will support earlier detection of emerging public health concerns, such as increases in SIDS rates, and enable a faster roll-out of targeted public health interventions aimed at reducing the number of these deaths.

Phase 2 of the NPMR development will expand the system to collect more granular information on risk factors and the circumstances surrounding infant deaths. This enhanced dataset will provide deeper insight into changes in underlying trends and will help inform the design of effective prevention policies and interventions.



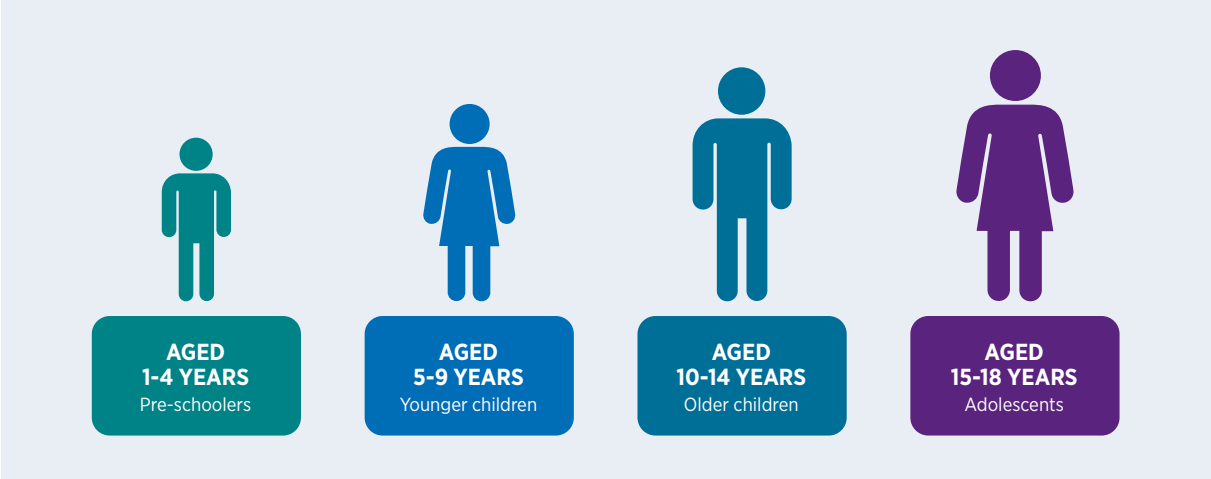
CHAPTER 5
MORTALITY IN CHILDREN AND YOUNG PEOPLE (1-18 YEARS)

CONTENTS

CHAPTER 5: MORTALITY IN CHILDREN AND YOUNG PEOPLE (1-18 YEARS)

BACKGROUND

Death registration information provided by the CSO is currently the only dataset available that can provide population-based information on mortality in CYP. Crude numbers and rates for child mortality are presented in the following age categories:



Data on variables relating to sex and to the place and cause of death are reported as a combined age group of 1–14 years where necessary in order to avoid disclosure issues arising from use of small numbers. Data on older adolescents (aged 15–18 years) are provided separately due to the varying patterns of mortality among this older age group.

DATA LIMITATIONS

These data based on year of registration must be interpreted with caution, as they may differ from final figures for each year in which the deaths actually occurred. Health equity stratifiers, including ethnicity, are not available.

CHILD MORTALITY IN IRELAND DURING THE PERIOD 2019–2024: AGE DISTRIBUTION

The age distribution of child deaths registered in 2019–2021 and 2022–2024 is outlined in Table 5.1. The average estimates for 2022–2024 showed a pattern similar to that observed in previous years. The total number of CYP deaths (0–18 years) registered in Ireland during 2019–2024 was 1,811, an average of 302 deaths per year. Excluding infants aged under 1 year, the number of registered deaths was 715. Figures for infant deaths are included in Table 5.1 for ease of comparison and to provide a complete picture of all child deaths during this period.

Child mortality rates follow a U-shaped distribution; infant deaths (aged <1 year) consistently accounted for the majority, making up 60.5% of all child deaths. Neonatal deaths (deaths occurring in the first 28 days of life) accounted for 45.3% of all registered CYP deaths (n=820) (see table 4.1). Numbers of deaths then drop substantially for children aged 1–14 years. Deaths among older children (15–18 years) were the second highest, comprising 16.2% of the total. For children aged 1–14 years, the average annual number of registered deaths rose from 67 in 2019–2021 to 73 in 2022–2024. Among adolescents aged 15–18 years, the average annual number of registered deaths increased from 47 in 2019–2021 to 51 in 2022–2024.

CHILD MORTALITY IN IRELAND FOR THE PERIOD 2019–2024: SEX DISTRIBUTION

The distribution of deaths in children aged 1–18 years by age group and sex is shown in Figure 5.1. More boys than girls died across all age groups. The larger proportion of deaths among males is more evident in these older age groups than for infant deaths (those aged under 1 year); this is a consequence of the higher proportion of deaths attributable to external causes in older groups.

TABLE 5.1: NUMBER AND PERCENTAGE OF CHILD DEATHS REGISTERED IN IRELAND, 2019–2024 (N=1811)

Year	Number of deaths registered											
	Aged <1 year		Aged 1–4 years		Aged 5–9 years		Aged 10–14 years		Aged 15–18 years		Total	
	N	%	n	%	n	%	n	%	n	%	n	%
2019	190	61.1	29	9.3	24	7.7	21	6.8	47	15.1	311	100.0
2020	153	57.0	27	10.1	24	9.0	23	8.6	41	15.3	268	100.0
2021	192	63.5	15	5.0	18	6.0	21	7.0	53	17.7	299	100.0
2019–2021	**535**	**60.9**	**71**	**8.1**	**66**	**7.5**	**65**	**7.4**	**141**	**16.1**	**878**	**100.0**
2022	191	63.9	19	6.4	16	5.4	26	8.7	47	15.7	299	100.0
2023	173	55.0	25	8.0	19	6.1	40	12.8	57	18.2	314	100.0
2024	197	61.6	18	5.6	20	6.3	36	11.3	49	15.3	320	100.0
2022–2024	**561**	**60.1**	**62**	**6.6**	**55**	**5.9**	**102**	**10.9**	**153**	**16.4**	**933**	**100.0**
2019–2024	**1096**	**60.5**	**133**	**7.3**	**121**	**6.7**	**167**	**9.2**	**294**	**16.2**	**1811**	**100.0**

Further breakdown of data for neonatal and postneonatal deaths is provided in table 4.1 and appendix 3.

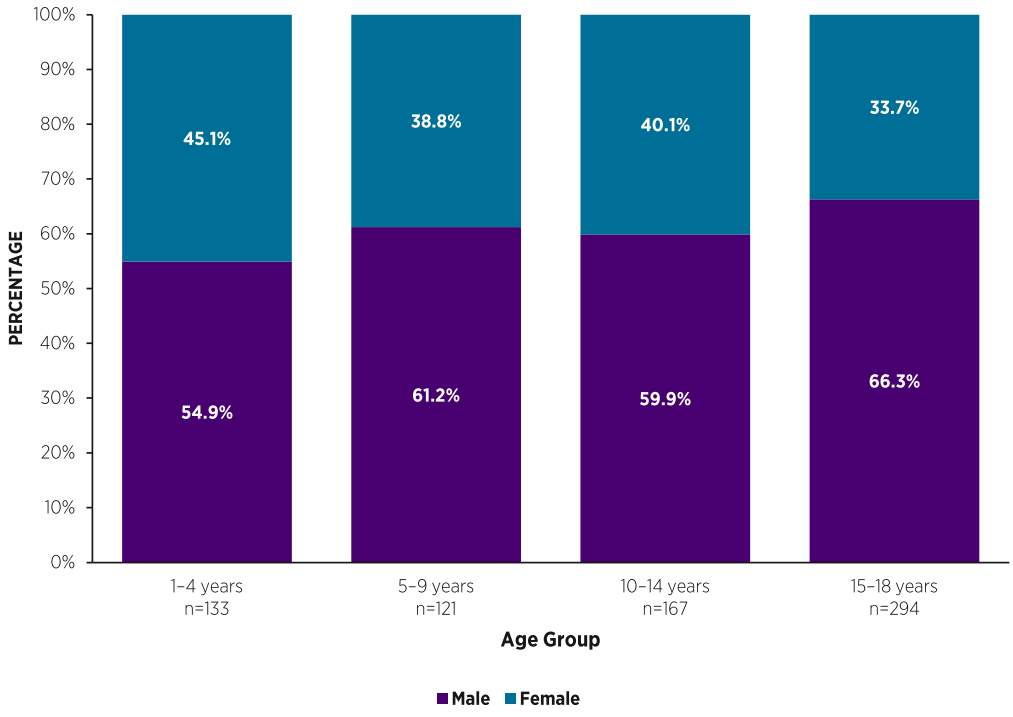


FIGURE 5.1: SEX DISTRIBUTION OF CHILD DEATHS BASED ON YEAR OF REGISTRATION, BY AGE GROUP, 2019–2024 (N=715)

CHILD MORTALITY IN IRELAND FOR THE PERIOD 2019–2024: PLACE OF DEATH

Data on place of death is provided as an aggregate figure for the six years 2019–2024 in order to allow reporting on as many subcategories as possible. The greatest proportion (63.0%; n=265) of child deaths aged 1–14 years occurred in hospital, with Children's Health Ireland (CHI) hospitals seeing slightly more than other hospitals throughout the country. Only 7.8% (n=23) of deaths in older children 15–18 years occurred in a CHI hospital, while deaths in hospitals other than CHI were common across both age groups, at 29.5% for children aged 1–14 years and 29.9% for children aged 15–18 years.

At 42.9% (n=126), the greatest proportion of deaths among young people 15–18 years occurred at home, as did 29.7% (n=125) of children 1–14 years. This is a reflection of the large proportion of deaths occurring outside of infancy that are attributable to trauma. An additional 5.2% (n=22) of deaths in children aged 1–14 years and 18.0% (n=53) of deaths in adolescents aged 15–18 years occurred at the scene of an injury (Figure 5.2). A small number of deaths in both age groups occurred in hospices and care homes, although the exact proportion in the 15–18 year age category is not reported due to small numbers and the associated disclosure risk.

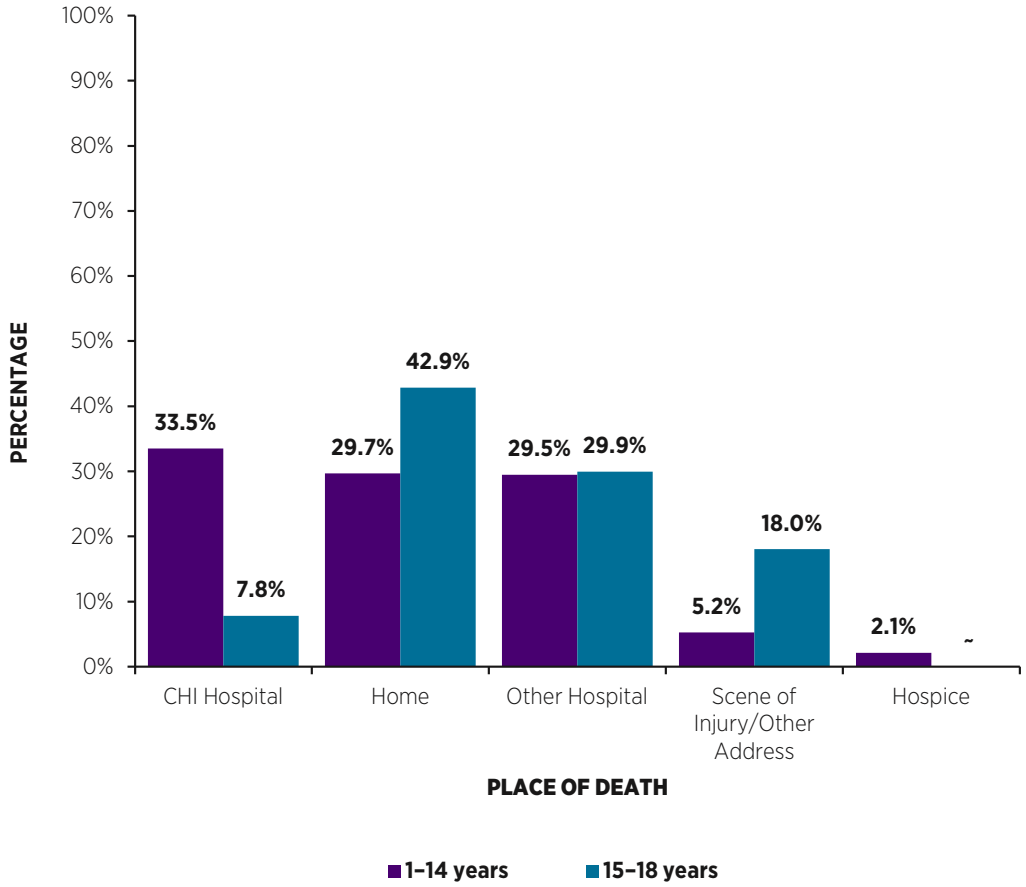


FIGURE 5.2: PLACE OF DEATH OF CHILD DEATHS BASED ON YEAR OF REGISTRATION, BY AGE GROUP, 2019–2024: 1–14 YEARS (N=421), 15–18 YEARS (N=294)

~ Denotes fewer than 5 cases
CHI = Children's Health Ireland

ANNUAL TRENDS IN CYP MORTALITY RATES IN IRELAND

The annual trends in Ireland's child mortality rates for the period 2008–2024 are illustrated in Figure 5.3. The analysis is based on final year of occurrence figures for deaths published by the CSO and expressed as the number of deaths per 100,000 population (figures for 2024 are provisional). The data demonstrate a welcome decrease in mortality rates by over 40% in all age groups since 2008. The largest proportional improvements were in the youngest (1–4 years) and oldest (15–18 years) groups, showing reductions of 47% and 56%, respectively, between 2008 and 2023. A recent review and comparison of CYP mortality rates in Ireland with other EU countries in 2021 reports lower than EU average rates in all age groups except for infants aged under 1 year (DCEDIY, 2024).

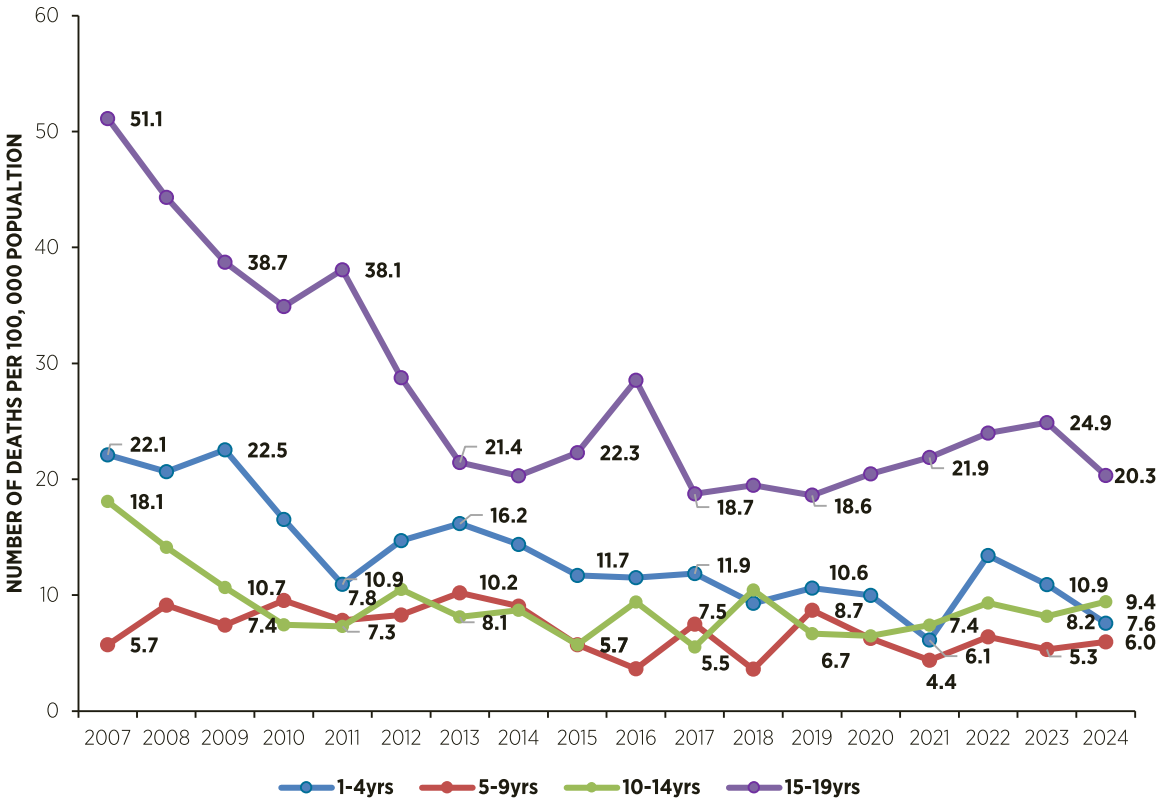


FIGURE 5.3: ANNUAL TRENDS IN CHILD MORTALITY RATES IN IRELAND, BY AGE GROUP, 2008–2024

Note: These figures are based on year of occurrence data retrieved from the Central Statistics Office (CSO) online database and updated for revised occurrence figures on 23 May 2025 (https://data.cso.ie/product/VSDO). Data points included for 2024 are provisional based on year of registration.

PRINCIPAL CAUSES OF CYP DEATHS IN CHILDREN AGED 1–14 YEARS FOR THE PERIOD 2019–2024, AS CATEGORISED BY ICD-10 CODING

The main contributory causes of childhood deaths according to ICD-10 classification assigned by the CSO are outlined in Figures 5.4 and 5.5. As these data are based on date of registration, they are presented as 6-year aggregate figures in order to provide a more accurate representation. A breakdown of the data behind Figures 5.4 and 5.5 is provided in Appendix 2.

Neoplasms accounted for the greatest proportion of deaths registered for children aged 1–14 years during 2019–2024, accounting for 24.0% (n=101). This was followed by external causes of accident and injury (also referred to as trauma deaths), which accounted for 20.7% (n=87). Other important causes of death among children aged 1–14 years were congenital malformations and chromosomal abnormalities (15.9%; n=67), diseases of the nervous system (9.0%; n=38), diseases of the circulatory system (6.4%; n=27), certain infectious and parasitic diseases (5.5%; n=23), and diseases of the respiratory system (4.8%; n=20).

Overall, a relatively small number of cause categories account for the majority of deaths in this age group, with the top three categories comprising nearly two-thirds of all deaths. While trauma has historically been the leading cause of death in childhood beyond infancy, neoplasms now represent the greatest proportion of registered deaths in this age group. The number and proportion of deaths in this age group caused by neoplasms increased from 19.8% (n= 40) in 2019–2021 to 27.9% (n=61) in 2022–2024 (see Appendix 2). Annual trends in the main cause of death categories for children aged 1–14 years since 2008 are presented in Figures 5.6A–5.6D.

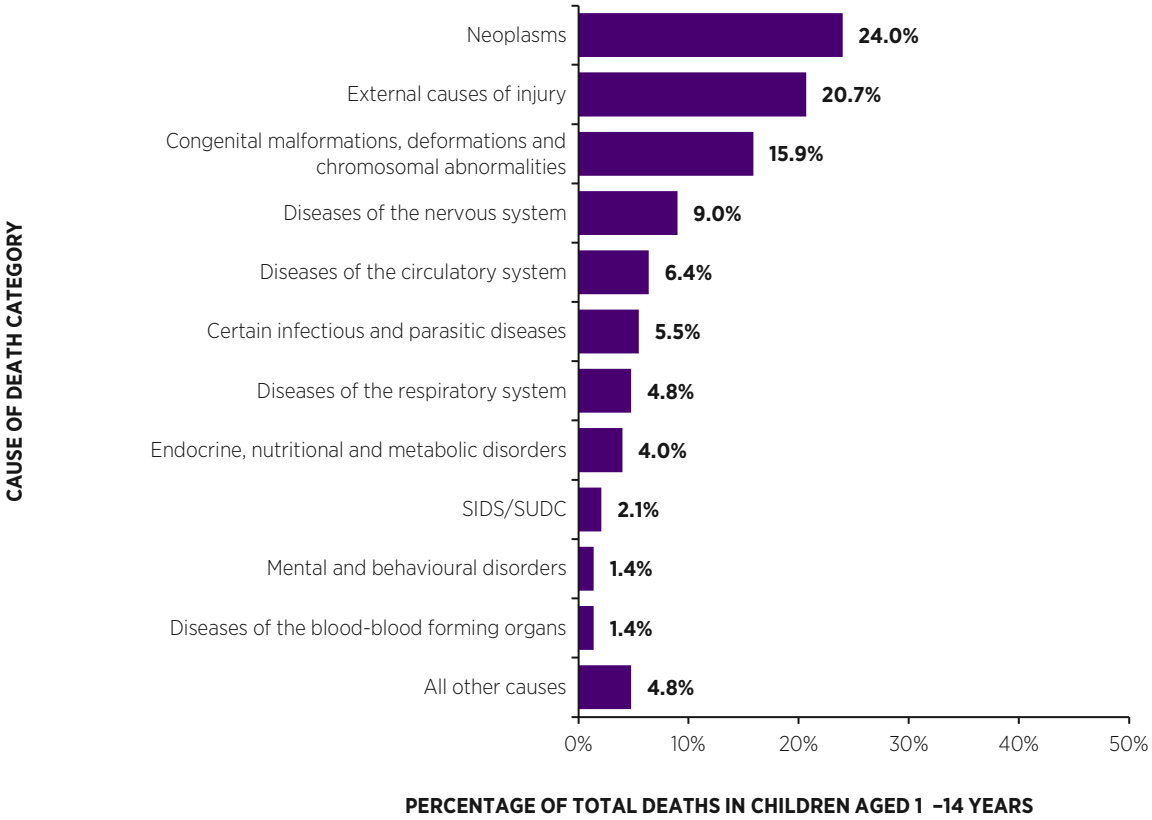


FIGURE 5.4: PRINCIPAL CAUSE OF DEATH CATEGORIES IN CHILDREN AGED 1–14 YEARS BASED ON YEAR OF REGISTRATION, 2019–2024 (N=421)

PRINCIPAL CAUSES OF CYP DEATHS IN CHILDREN AGED 15–18 YEARS FOR THE PERIOD 2019–2024, AS CATEGORISED BY ICD-10 CODING

Trauma remained the leading cause of death among older children aged 15–18 years, accounting for just over half of all registered deaths (50.7%; n=149) during 2019–2024, as shown in Figure 5.5. The proportion of deaths attributed to trauma declined from 56.0% (n=79) in 2019–2021 to 45.8% (n=70) in 2022–2024; this is largely attributed to an increase in the number of deaths registered due to other causes rather than a decline in absolute numbers (see Appendix 2).

Neoplasms were the second most common cause of death in this age group (15.7%; n=46). Diseases of the nervous system accounted for 8.2% (n=24) of deaths but showed an increase in both number and proportion of deaths registered during 2022–2024 (10.5%; n=16) compared with 2019–2021 (5.7%; n=8) (Appendix 2). An upward trend has been observed since 2021, and continued monitoring is required to assess whether this represents random variation.

Other causes of mortality among adolescents aged 15–18 years during 2019–2024 included congenital malformations and chromosomal abnormalities (6.5%; n=19) and diseases of the circulatory system (5.8%; n=17). Certain infectious and parasitic diseases; endocrine, nutritional and metabolic diseases; and diseases of the respiratory system each accounted for a small proportion of deaths. Together with a variety of less common causes, these accounted for a further 6.5% of deaths (Figure 5.5).

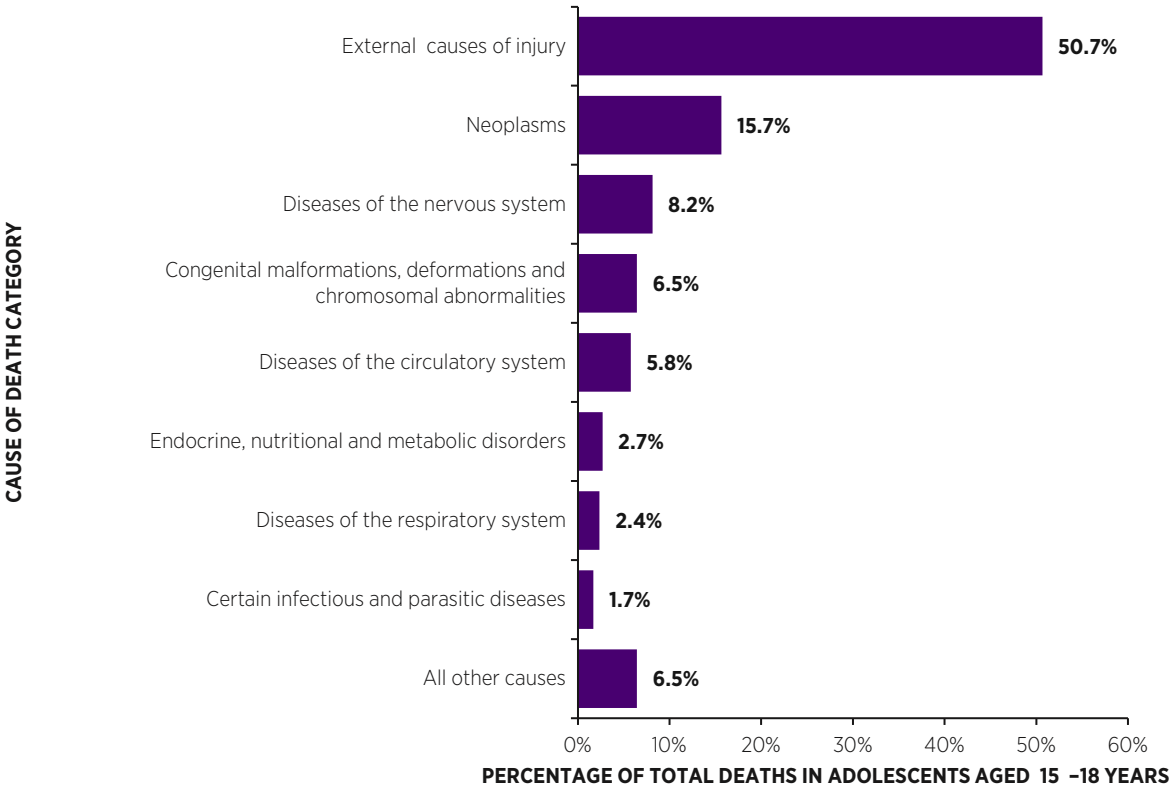


FIGURE 5.5: PRINCIPAL CAUSE OF DEATH CATEGORIES IN ADOLESCENTS AGED 15–18 YEARS BASED ON YEAR OF REGISTRATION, 2019–2024 (N=294)

ANNUAL TRENDS IN MAIN CAUSE OF DEATH CATEGORIES FOR CHILDREN AGED 1–14 YEARS

Annual trends in the main causes of CYP deaths in children aged 1–14 years are provided in SPC charts in Figures 5.6A–5.6D. The findings are summarised as follows:

External causes of death: Figure 5.6A illustrates mortality rates in the 1–14-year-old age group that raised significant cause for concern between 2008 and 2010. This was followed by a sustained and significant shift indicating improvement from 2015 to 2023. However, provisional data for 2024 indicate that the mortality rate rose above the mean, thus marking the end of this period of consistent improvement. Continued monitoring will be important to determine whether this increase represents random variation.

Neoplasms: Examination of mortality rates due to neoplasms in the 1–14-year-old age group between 2008 and 2024 shows a significant shift of improvement from 2016 to 2021 (Figure 5.6B). However, this trend ended in 2022, when rates increased above the mean and returned to common cause variation. Since then, rates have fallen below the mean again but remain within common cause variation. The factors contributing to the sharp increase in 2022 are not yet fully understood.

Congenital malformations and chromosomal abnormalities: Throughout the period from 2008 to 2024 mortality demonstrated sustained common cause variation (Figure 5.6C). This indicates relative stability, with no evidence of statistically significant shifts or breaches of control limits over time.

Diseases of the nervous system: Mortality rates due to diseases of the nervous system among children aged 1–14 years demonstrated a recent significant shift of improvement from 2019 to 2024. It will be important to investigate the underlying factors contributing to this improvement and to continue monitoring the data closely to ensure that the positive trend is maintained (Figure 5.6D).

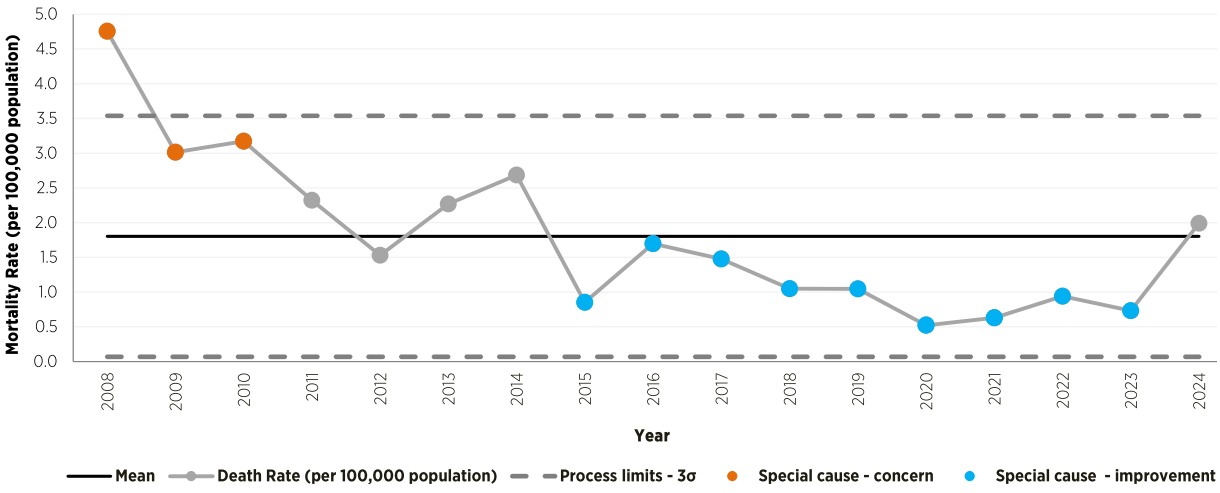


FIGURE 5.6A: CRUDE MORTALITY RATE DUE TO EXTERNAL CAUSES (TRAUMA) IN CHILDREN AGED 1–14 YEARS, 2008–2024

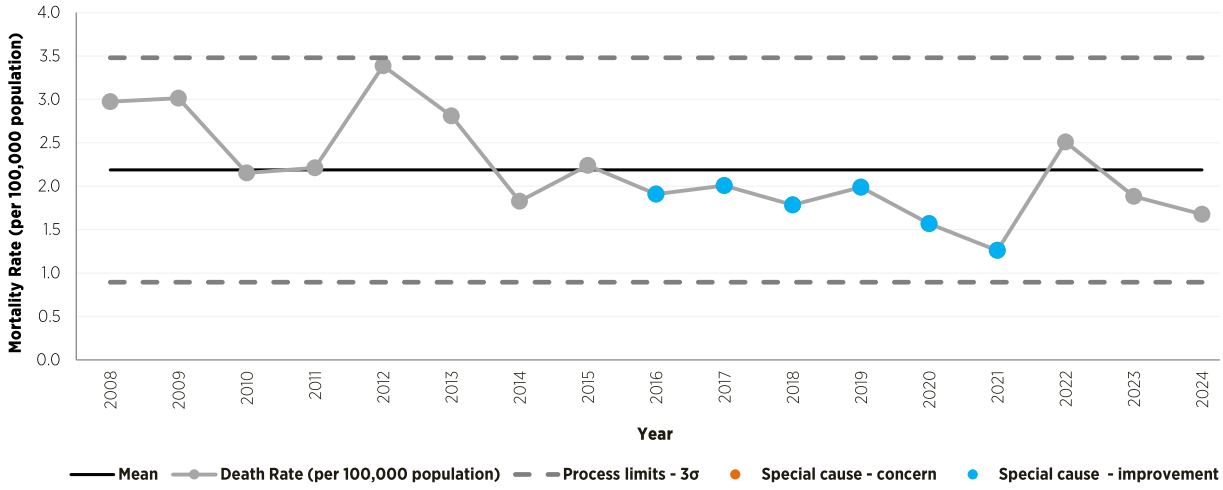


FIGURE 5.6B: CRUDE MORTALITY RATE DUE TO NEOPLASMS IN CHILDREN AGED 1–14 YEARS, 2008–2024

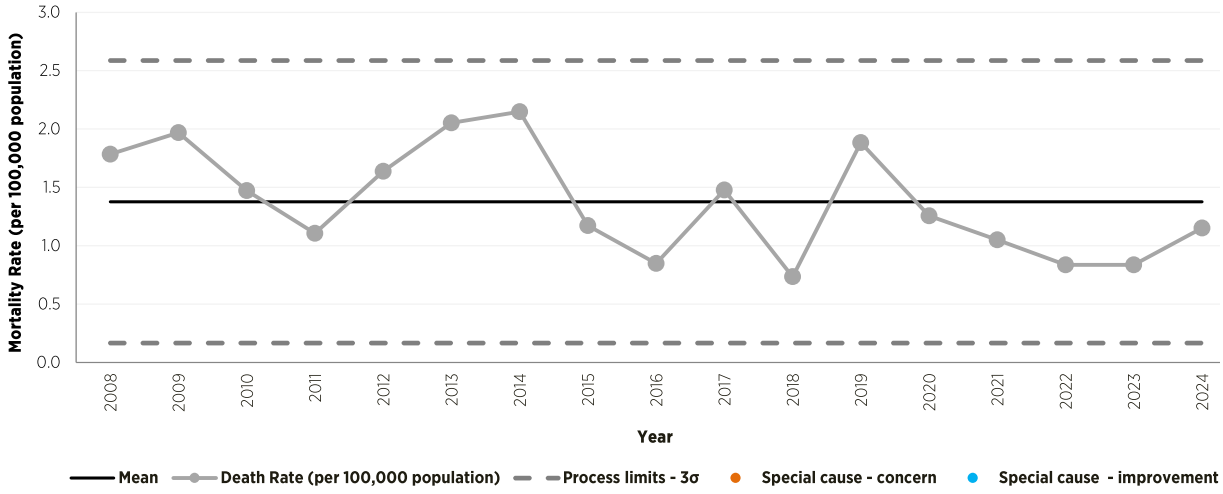


FIGURE 5.6C: CRUDE MORTALITY RATE DUE TO CONGENITAL MALFORMATIONS AND CHROMOSOMAL ABNORMALITIES IN CHILDREN AGED 1–14 YEARS, 2008–2024

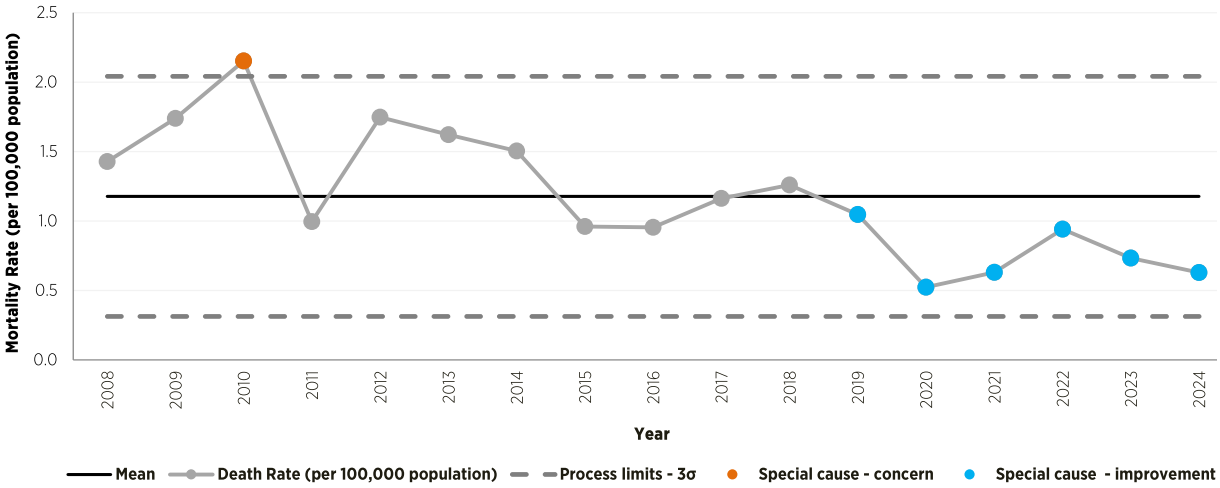


FIGURE 5.6D: CRUDE MORTALITY RATE DUE TO DISEASES OF THE NERVOUS SYSTEM IN CHILDREN AGED 1–14 YEARS, 2008–2024

RULES FOR INTERPRETING SPC CHARTS

Statistical process control chart rules:

- A ***shift*** occurs when **six or more** consecutive points appear on the **same side of the mean** (centre line).
- A ***trend*** occurs when there are **six or more** consecutive points that move in the same direction (up or down); these may cross the mean.
- The ***'2 out of 3'*** rule highlights when two out of three data points are close to the upper or lower control limits.
- Extreme values (**special cause**) are any values on the line graph that fall outside the control limits.
- **Common cause variation** (grey data points) refers to the natural, inherent variability present in a process over time.

ANNUAL TRENDS IN MAIN CAUSES OF DEATH CATEGORIES FOR CHILDREN AGED 15–18 YEARS

Annual mortality rates for the years 2008–2023 are provided in the SPC charts in Figures 5.7A and 5.7B, both based on data retrieved from the CSO website. However, figures for 2024 are unavailable for this age category. Statistical analysis of data relating to mortality due to diseases of the nervous system was not carried out due to small numbers in some annual figures.

External causes of injury: The SPC chart demonstrates a trend of significant improvement in mortality rates from 2008 to 2013, characterised by a consistent year-on-year decline. From 2008 to 2013, rates returned to common cause variation fluctuating around the mean. From 2017 to 2023, mortality rates fell below the mean, indicating a significant shift towards improvement. This pattern suggests a sustained positive change (Figure 5.7A).

Neoplasms: Throughout the period from 2008 to 2023, mortality rates due to neoplasms among young people aged 15–18 years fluctuated slightly year to year but generally stayed within expected limits, showing sustained common cause variation (Figure 5.7B). This indicates relative stability with no evidence of statistically significant shifts or breaches of control limits over time.

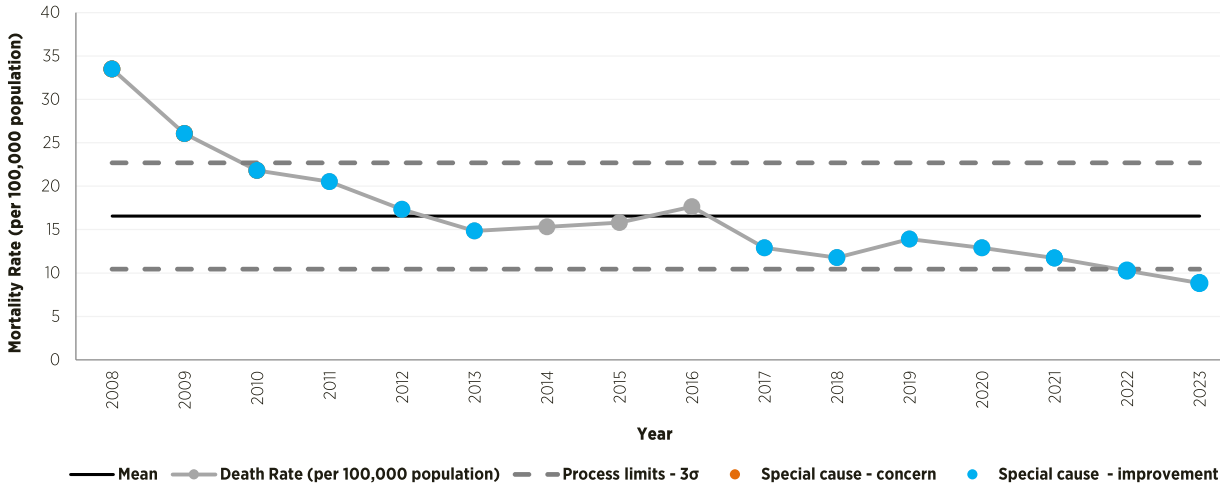


FIGURE 5.7A: CRUDE MORTALITY RATE DUE TO EXTERNAL CAUSES (TRAUMA) IN CHILDREN AND YOUNG PEOPLE AGED 15–18 YEARS, 2008–2023

Provisional figure for 2024 not available due to unavailability of confirmed population size for this age group in 2024.

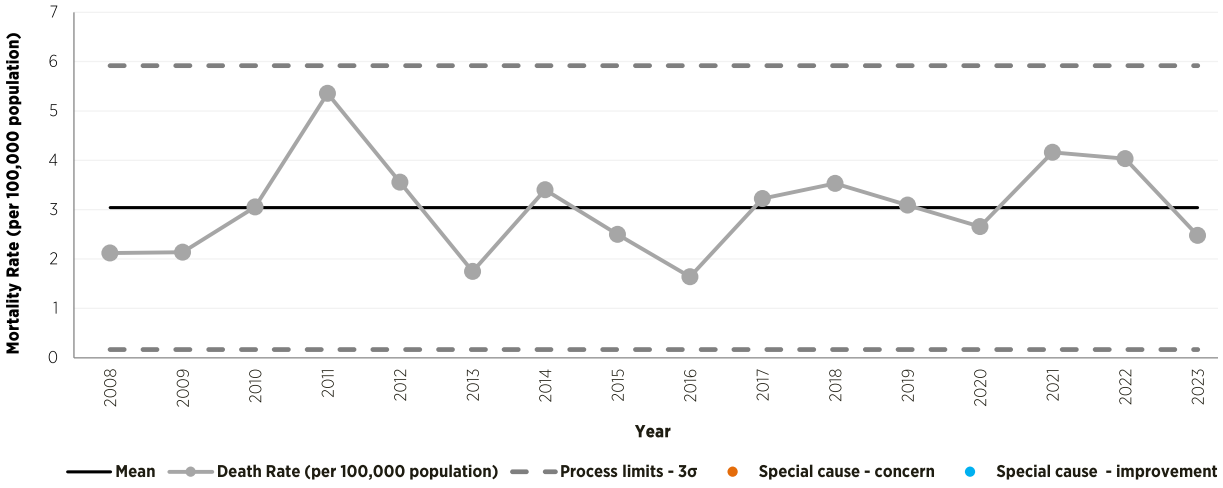


FIGURE 5.7B: CRUDE MORTALITY RATE DUE TO NEOPLASMS IN CHILDREN AND YOUNG PEOPLE AGED 15–18 YEARS, 2008–2023

Provisional figure for 2024 not available due to unavailability of confirmed population size for this age group in 2024.

SUMMARY OF FINDINGS

- The total number of child deaths (excluding children aged under 1 year) registered in Ireland during the period 2019–2024 was 715. Outside of infancy the greatest number of deaths (n=294) occurred among older children aged 15–18 years, accounting for 16% of all registered deaths of children aged under 19 years and 41.1% of deaths in all children aged 1–18 years.

- There has been a slight increase in the number of deaths registered for older children and adolescents in recent years. For children aged 1–14 years, the average annual number of registered deaths rose from 67 in 2019–2021 to 73 in 2022–2024. Among adolescents aged 15–18 years, the average annual number of registered deaths increased from 47 in 2019–2021 to 51 in 2022–2024.

- There has been a welcome decline of over 40% in mortality rates in all age groups since 2008. The largest proportional improvements were in the youngest (1–4 years) and oldest (15–18 years) age groups, which showed reductions of 47% and 56% in mortality rates, respectively, between 2008 and 2023.

- Boys accounted for more deaths than girls across all age groups, with the male predominance becoming more pronounced in older children. This pattern reflects the increasing contribution of external causes to mortality with age.

- Most deaths (63%) in children aged 1–14 years occurred in hospitals, with slightly more deaths occurring in CHI hospitals than other hospitals. Outside infancy, a substantial proportion of deaths (29.7%) occur at home, reflecting deaths from trauma or other causes. Hospital deaths are less common among children aged 15–18 years, with the majority of deaths occurring either at home (42.9%) or at the scene of an injury (18%). This reflects the increasing proportion of deaths attributable to trauma with increasing age.

- Neoplasms were the leading cause of death among children aged 1–14 years during 2019–2024, accounting for nearly one-quarter of deaths (24%; n=101). Trauma was the second leading cause and accounted for 20.7% (n=87), followed by congenital malformations and chromosomal abnormalities (15.9%, n=67). Together, the top three causes accounted for almost two-thirds of deaths in this age group. Although trauma has historically been the leading cause of post-infancy childhood deaths, neoplasms now account for the greatest proportion, reflecting a shift in cause of death patterns over time.

- Trauma was the leading cause of death among adolescents aged 15–18 years during 2019–2024, accounting for 50.7% of deaths (n=149). The proportion of trauma-related deaths declined from 56% in 2019–2021 to 45.8% in 2022–2024; this reflects an increase in the number of deaths from other causes rather than a significant reduction in trauma mortality.

- Neoplasms were the second most common cause of death in adolescents aged 15–18 years (15.7%; n=46). Deaths due to diseases of the nervous system increased in both number and proportion in 2022–2024 compared with 2019–2021 (from 5.7% to 10.5%), suggesting a potential emerging upward trend.

- Mortality trends among children aged 1–14 years show mixed patterns across causes of death. External causes demonstrated a sustained improvement from 2015 to 2023, but provisional 2024 data indicate a rise above the mean, requiring continued monitoring to determine whether this reflects random variation or an emerging adverse trend.

- The rates of mortality from neoplasms among children aged 1–14 years increased in 2022, although they have since fallen and remain within common cause variation. Mortality from congenital malformations and chromosomal abnormalities in that age group remained stable from 2008 to 2024, with no evidence of significant change. In contrast, rates of deaths due to diseases of the nervous system showed a recent significant decrease between 2019 and 2024, reasons for which are unexplained.

- Among adolescents aged 15–18 years, rates of deaths due to external causes of injury show a sustained and statistically significant improvement, particularly from 2017 onwards, suggesting effective prevention or safety interventions.

QUALITY IMPROVEMENT OPPORTUNITY

Timely and more detailed granular data are required in order to provide an accurate account and review of CYP mortality and to inform policy aimed at reducing the number of deaths (standardised, timely data with linkage to hospital, community and coronial data). This is to inform understanding of the underlying drivers of changes in mortality rates. Transition to direct notification to the NPMR in 2026 will greatly improve data timeliness, allowing earlier detection of emerging mortality patterns.

There is a need to strengthen child and adolescent injury and safety prevention, e.g. through a cross-sectoral national CYP Injury Prevention strategy. This should address male predominance in paediatric mortality and promote inclusion of disadvantaged communities. Children from disadvantaged and underrepresented groups (e.g. ethnic minorities) have a higher prevalence of complex or life-limiting conditions, making them more vulnerable (Mitchell et al., 2025; National Institute for Health and Care Research, 2023)). Children living in poverty are more likely to develop serious illnesses such as asthma or traumatic injuries and may not receive timely care due to difficulties in accessing help from GPs or emergency departments (EDs) (ESRI, 2023; Odd et al., 2022, Armour-Marshall et al., 2012; Pearson et al., 2011; Spencer and Logan, 2004). Health equity stratifiers, including ethnicity, should be included in NPMR data collection to determine the contribution of such factors to CYP mortality.

CHAPTER 6

TRAUMA MORTALITY IN CHILDREN AND YOUNG PEOPLE

CONTENTS

CHAPTER 6: TRAUMA MORTALITY IN CHILDREN AND YOUNG PEOPLE

Trauma is a leading cause of death for children and adolescents worldwide (Sehti *et al.,* 2008). Globally, more than 1,600 children and adolescents below the age of 19 years die every day from preventable injuries (UNICEF, n.d.). The main causes of injury fatalities among CYP internationally are road traffic collisions (RTCs), drownings, poisoning, thermal injuries, falls and intentional self-harm (NCMD 2023a, Cunningham *et al*., 2018; Sethi *et al*., 2008).

Fortunately, the majority of cases of CYP trauma result from preventable mechanisms and can be reduced by overall healthcare system development and improved infrastructure (McAleese *et al*., 2021; Peden *et al*., 2008; Sethi *et al*., 2008). This chapter is a description of the main causes of trauma mortality among CYP in Ireland during 2019–2024.

To allow for a more detailed description of injury subcategories, data for the 6-year period from 2019 to 2024 have been combined. Comparative data for previous years are provided in Appendix 4.

DATA LIMITATIONS

These data, based on year of registration, must be interpreted with caution, as they may differ from the final figures for each year in which the deaths actually occurred. There is an increasing problem with late registration of suicide deaths, which has an effect on the comparability of statistics across years (CSO, 2023b).

To allow for a more detailed description of injury subcategories, data for the 6-year period from 2019 to 2024 have been combined. Further disaggregation by narrower age groups or specific causes is not possible due to disclosure risks associated with small case numbers; causes with fewer than five cases are therefore grouped into an "Other" category.

Health equity stratifiers (e.g. ethnicity) are not available.

Comprehensive data are largely unavailable, affecting the ability to understand key factors (host, agent/vehicle, physical environment, social environment) over key time phases (pre-event, event, post-event) in order to fully inform comprehensive, multilayered and effective prevention interventions.

TRAUMA MORTALITY IN CHILDREN AGED 1–14 YEARS

RTCs accounted for the largest proportion of trauma-related deaths among children aged 1–14 years during 2019–2024, representing 31.0% (n=27) of cases (Figure 6.1). This equates to an average of 4.5 deaths per year and represents a reduction compared with earlier years (2007–2018), when RTCs accounted for 33.6% of external-cause deaths in this age group, with an annual average of 10 deaths (NOCA, 2025).

Deaths registered as due to hanging or suspension by ligature accounted for 16.1% of trauma-related fatalities (n=14), making this the second leading cause of death in children aged 1–14 years during the reporting period. Drowning accounted for 12.6% of deaths (n=11), while homicide or unlawful killing accounted for 11.5% (n=10). Collectively, these four causes were responsible for 71.3% of all trauma-related deaths in this age group during 2019–2024.

Drowning consistently ranks as the third leading cause of trauma-related death among children aged 1–14 years, a pattern that aligns with international findings (WHO, 2014).

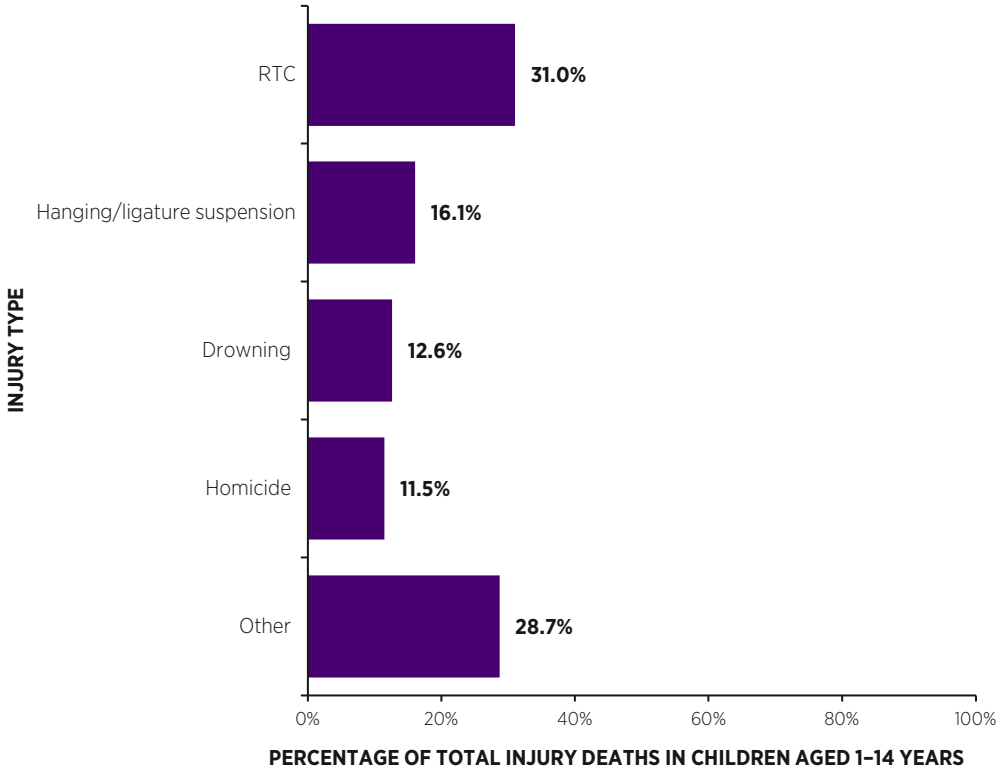


FIGURE 6.1: BREAKDOWN OF EXTERNAL-CAUSE DEATHS IN CHILDREN AGED 1–14 YEARS BASED ON YEAR OF REGISTRATION, BY INJURY TYPE, 2019–2024 (N=87)

RTC = road traffic collision

"Other" includes but is not limited to the following: accidents involving quad bikes, workplace heavy machinery or tractors; drug/alcohol/medication ingestion; asphyxia other than that caused by ligature suspension; accidental strangulation; choking on objects; near drowning; and "cause undetermined".

Deaths categorised according to detail entered on death registration, i.e. ligature strangulation reported separately to ligature suspension/hanging and accidental strangulation.

Number of deaths due to homicide does not include deaths registered as undetermined or "open verdict" in young children and may therefore be an underestimation of the true number of children who were unlawfully killed in Ireland during 2019–2024.

TRAUMA MORTALITY IN CYP AGED 15–18 YEARS

In adolescents aged 15–18 years, the leading cause of trauma-related mortality in 2019–2024 was ligature suspension or 'hanging', which accounted for 48.3% (n=72/149) of trauma deaths (Figure 6.2) and 24.5% (n=72/294) of all deaths in this age group during 2019–2024. This was followed by RTCs (16.1%; n=24); toxicity related to drugs, alcohol or medication ingestion (8.7%; n=13); and drowning (6.7%; n=10). Collectively, these four mechanisms accounted for 79.9% of trauma-related fatalities in this age group during 2019–2024.

The proportion of deaths from RTCs decreased from 26.3% (equivalent to 9.4 deaths per year) during 2012–2018 to 16.1% (equivalent to 4.0 deaths per year) during 2019–2024. Death registration data did not contain sufficient detail to identify road user type. However, the Road Safety Authority's (RSA's) *Child Casualties Report 2014–2022* (RSA, 2023a) indicates that approximately two in three child casualties during this period were either pedestrians or cyclists. A dedicated National Child Safety Day during Irish Road Safety Week in 2024 focused on educating parents and children on the importance of a number of measures for safe road use by all road users, especially drivers.

The proportion of trauma deaths attributed to ligature suspension/hanging during 2019–2024 (48.3%) was similar to that observed in previous years (47.8%). Regrettably, there was insufficient detail in death registration information to accurately confirm intent in many cases of injury-related fatalities among adolescents aged 15–18 years. Consequently, these data should not be interpreted as accurate estimates for suicide mortality. Moreover, several trauma-related deaths categorised under 'other' mechanisms were explicitly specified as being due to suicide; as such, interpretation of ligature suspension/hanging figures as a proxy for suicide rates in this age group is likely to be an underestimate. Access to additional information, including autopsy reports and supplementary data sources, is necessary to increase the accuracy of estimated suicide rates and identify opportunities for intervention.

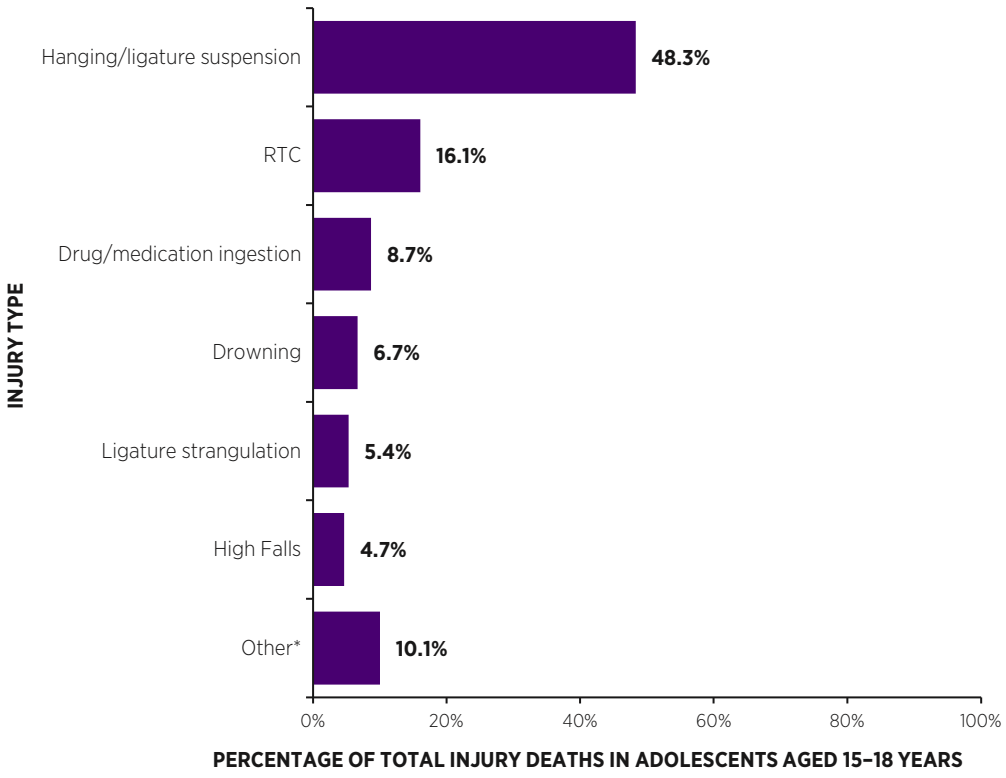


FIGURE 6.2: BREAKDOWN OF EXTERNAL-CAUSE DEATHS IN ADOLESCENTS AGED 15–18 YEARS BASED ON YEAR OF REGISTRATION, BY INJURY TYPE, 2019–2024 (n=149)

RTC = road traffic collision

"Other" includes but is not limited to the following: homicide, aspiration of gastric contents, blunt force trauma, gunshot wounds, asphyxia other than that caused by ligature suspension, and accidents involving quad bikes and other vehicles.

Deaths categorised according to detail entered on death registration, i.e. ligature strangulation, are reported separately to ligature suspension/hanging and accidental strangulation.

TREND IN OVERALL TRAUMA MORTALITY RATES IN CHILDREN AGED 1–18 YEARS

The total number of trauma deaths registered among CYP aged between 1 year and 18 completed years, categorised by injury type, is presented in Table 6.1. Across the 6-year period from 2019 to 2024, a total of 236 trauma deaths in this age group were registered. The data indicate a notable increase in the number and proportion of drowning deaths during 2022–2024 (11.2%; n=13) compared with the preceding three years (6.7%; n=8). These findings should be interpreted with caution and require confirmation using final year of occurrence data before being considered indicative of a true increase.

TABLE 6.1 NUMBER AND PERCENTAGE OF TRAUMA DEATHS REGISTERED IN IRELAND FOR CYP AGED 1–18 YEARS, 2019–2024 (N=236)

Type of Injury	Period					
	2019–2021		2022–2024		2019–2024	
	n	%	n	%	n	%
Ligature suspension/hanging	47	39.2	38	32.8	85	36.0
Road traffic collision	24	20.0	27	23.3	51	21.6
Drowning	8	6.7	13	11.2	21	8.9
Ingestion of drugs, alcohol or medication	9	7.5	8	6.9	17	7.2
Homicide	9	7.5	5	4.3	14	5.9
All other trauma deaths	23	19.2	22	18.3	45	19.1
Total number of injury deaths (1–18 years) registered	**120**		**116**		**236**	

SUMMARY OF FINDINGS

- Trauma remains a major contributor to childhood and adolescent mortality in Ireland, with four mechanisms – ligature suspension/hanging, RTCs, toxicity and drowning – accounting for nearly 80% of trauma-related deaths. These patterns highlight persistent, preventable risks and underscore the need for coordinated, multisectoral injury-prevention strategies.

- Among children aged 1–14 years, RTCs were the leading cause of trauma-related deaths during 2019–2024, responsible for 31.0% (n=27) of fatalities. Although this represents an improvement compared with 2007–2018, trauma in this age group still stems largely from a small number of high-impact causes, including drowning (12.6%; n=11), homicide (11.5%; n=10) and ligature suspension/hanging (16.1%; n=14), which together made up 71.2% of deaths in this age group during the reporting period.

- In adolescents aged 15–18 years, ligature suspension/hanging was the dominant mechanism of trauma death (48.3%), accounting for 24.5% of all deaths in this age group during 2019–2024, reflecting long-standing trends. RTC-related fatalities declined considerably compared with earlier years, yet still represented a significant proportion of adolescent trauma deaths (16.1%). Toxicity from drugs, alcohol or medication ingestion (8.7%), along with drowning (6.7%), also contributed notably to mortality.

- A major limitation of the available death registration data is that it lacks sufficient detail to reliably determine intent in some trauma deaths, particularly for deaths involving ligature suspension/hanging. As a result, these figures are an estimate of the true number of self-harm deaths. Improved linkage with coronial records and autopsy and supplementary data sources is required to more accurately estimate suicide mortality in older adolescents.

- The findings reinforce the need for age-appropriate injury-prevention policies that address both unintentional and intentional injury risks throughout childhood. As most trauma-related deaths arise from a small number of causes, coordinated prevention strategies involving transport, health, education, housing and community safety sectors are likely to yield the greatest impact.

QUALITY IMPROVEMENT OPPORTUNITY

Reliance on data that is based on year of registration and the need to aggregate categories due to small numbers highlights the importance of enhanced injury surveillance systems. Standardisation and timeliness of mortality data must be improved to enable accurate monitoring of trends in trauma-related deaths and to support robust public health surveillance and prevention planning.

Development of comprehensive data collection to understand key factors (host, agent/vehicle, physical environment, social environment) is required to fully inform multilayered and effective prevention interventions.

Available mortality data that are based on death registration information cannot be used to report timely suicide mortality rates. This is due to a non-standardised approach to the documentation of intent in relation to injury fatalities. Consequently, the data presented in this report relate to mortality rates based on injury type and are likely an underestimate of true suicide rates. Furthermore, there is an increasing problem with the late registration of suicide deaths, and this affects the comparability of statistics across years (CSO, 2023b). Cause of death classification and reporting systems should be strengthened to allow more granular analysis and reliable confirmation of annual mortality figures. This activity should include enhanced data collection on trauma-related deaths among CYP, particularly those associated with RTCs and suicide, in order to inform targeted interventions, improve public awareness and guide evidence-based policy development. The NPMR will explore available information on intentional and unintentional injury mortality through the review of the data available in post-mortem examination (PME) reports. Data captured by the NPMR and the Major Trauma Audit can be used to explore opportunities to inform policy by combining data on paediatric major trauma and paediatric mortality by trauma.

Future data collection by the NPMR should include health equity stratifiers in its minimum core dataset. This will enable identification of disparities in trauma mortality and inform appropriate targeting of prevention strategies to the most vulnerable groups.

CHAPTER 7
QUALITY IMPROVEMENT PROJECT

CONTENTS

CHAPTER 7: QUALITY IMPROVEMENT PROJECT

LEVERAGING MORTALITY DATA TO DRIVE IMPROVEMENT

REVIEW OF INFECTION AS A CONTRIBUTOR TO MORTALITY IN CYP

This chapter outlines the results of a detailed review of death registration information which was undertaken to establish the contribution of infection to overall mortality in CYP in Ireland.

The data presented in Chapter 5 of this report outline the main cause of death categories of CYP death. However, the classification system used to present these data does not allow for an estimate of overall infection-related mortality in CYP in Ireland. Cause of death information in official death registration data is categorised using the WHO's ICD-10 coding system, which does not contain a single overarching category for infection-related deaths. Instead, relevant deaths are dispersed across multiple system-based categories (e.g. respiratory, circulatory and nervous systems). Any variability in coding practices contributes to inconsistencies in how infection-related deaths are classified.

As a result, routine outputs of broad cause of death categories derived from ICD-10 coding cannot include a category for overall infection-related mortality in CYP alongside the other broad ICD-10 categories discussed in Chapters 4 and 5.

Impact of current data gaps

The absence of overall infection-related mortality data has significant implications; these gaps limit the ability to detect trends, clusters or sudden increases in overall infection-related deaths. Without reliable data, identifying high-risk populations becomes challenging, limiting opportunities for targeted prevention strategies or quality improvement initiatives.

Other potential data sources

In Ireland, the Health Protection Surveillance Centre (HPSC) captures data on notifiable diseases and publishes periodic surveillance reports. However, attempts to establish CYP mortality rates from these data were unsuccessful due to difficulties with reliably identifying the mortality status of cases.

Hospital In-Patient Enquiry (HIPE) data can be used to estimate infection-related mortality, but these data are restricted to in-hospital infection-associated mortality. HIPE data cannot provide infection-related mortality rates for the CYP population rate overall as it does not capture relevant cases that occur in the community or in the ED without admission. Other cases with mild to moderate infections are not admitted.

AIM

This analysis aims to quantify the burden of infection-related mortality among CYP in the Republic of Ireland by identifying all CYP deaths registered between 2019 and 2024 in which infection was recorded as either a direct cause or as a contributory factor in the "Medical Cause of Death" details.

METHODS

A retrospective review of national CYP mortality data was undertaken by conducting an interrogation of CSO death registration data to identify relevant cases. Because broad ICD-10 classification alone does not allow for reliable identification of infection-related deaths, individual-level cause of death information was reviewed using information entered in the "Medical Cause of Death" fields to identify relevant cases.

Cause of death information is entered on official death registration based on information entered by medical practitioners on the Death Notification form. This information is entered in a structured way outlined in Figure 7.1, which allows the sequence of medical events leading to the death to be clear. The form has two parts and is designed to show what directly caused the death, what led to it, and other factors that contributed to it. Part 1 specified the causal chain of events that led to the person's death, starting with the immediate cause (a), and including underlying conditions that led to (a) i.e. antecedent causes. Part 2 lists other diseases or conditions that contributed to the death but were not part of the disease or condition that caused death. Following registration, cause of death information is categorised by the CSO using the ICD-10 cause of death classification system (CSO, 2023a).

MEDICAL CAUSE OF DEATH DETAILS

PART 1

Disease or Condition directly leading to death

(*This does not mean the mode of dying e.g. heart failure, asthenia etc; it means the disease which caused death*)

Antecedent Causes

(*Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last)*

(a) .....

.....

Due to (or as a consequence of)

(b) .....

.....

Due to (or as a consequence of)

(c) .....

.....

Due to (or as a consequence of)

PART 2

Other Significant Conditions

contributing to the death but not related to the disease or condition causing it

.....

.....

FIGURE 7.1: FORMAT FOR RECORDING CAUSE OF DEATH INFORMATION ON OFFICIAL DEATH REGISTRATION IN IRELAND, 1990–2024

CASE IDENTIFICATION

Individual-level registrations for deaths among CYP aged under 19 years during 2019–2024 were reviewed and cases selected using the following criterion:

Inclusion criterion:

- All deaths in Ireland during 2019–2024 of CYP aged <19 years with infection or sepsis recorded in any Medical Cause of Death fields on death registration details, i.e. Part 1a, Part1b, Part 1c or Part 2.

Exclusion criteria:

- Deaths of persons ≥19 years
- No reference to infection or sepsis in any of Medical Cause of Death fields.

Where infection was recorded in more than one field on the same registration, the highest field was selected, with Part 1a considered highest. To improve the reliability of the data, case selection was performed independently by two data analysts.

Clinical expertise was applied to confirm the selection of relevant infection-related cases through (1) review of the Medical Cause of Death details for potential cases by a consultant paediatric intensivist clinical lead and (2) independent identification of relevant cases by a second individual with a clinical background. Consensus was reached through consultation with wider subject-matter experts to create a final list of cases. Registrations in which it was unclear whether the cause of death related to infection included the following: "pyrexial illness", "culture negative sepsis", "ARDS", "severe extensive myocarditis", "florid hypersensitivity pneumonitis" and "cytomegalovirun reactivation". These cases were excluded from the final analysis.

Cause of death coding is applied by the CSO using the WHO's International Classification of Diseases, ICD-10. The current version in use by the CSO is ICD-10 2019, with updated decision tables provided by the IRIS Institute, which includes WHO and Table Group updates effective from 2019 (CSO, 2023a). Coding is applied using an automated system called IRIS. The IRIS coding system has been developed by the IRIS Core Group to code mortality data and is the preferred coding tool for European countries. Deaths that go to inquest are coded manually. In compliance with Eurostat guidelines, data are edited to ensure that the ICD-10 code used is appropriate to the age and sex of the deceased. Use of the IRIS coding software helps ensure that statistics are consistent over time and comparable internationally.

DATA HANDLING

The data used in this report were stratified by age. It is particularly important that cases aged under 29 days at time of death are presented separately as they represent a biologically and clinically unique population with distinct infections risks and causes. Analysing data on neonates separately ensures that infection-related mortality is accurately understood and that interventions are appropriately targeted. Maternal factors play a major role, with many neonatal infections linked to maternal infection (e.g. chorioamnionitis, maternal sepsis), vertical transmission during labour or delivery, and complications of prematurity driven by maternal health. Neonates also have a distinct profile of hospital-acquired infections and infection patterns that differ from other stages of childhood.

The four-character ICD-10 codes of selected cases were cross-checked against a list of infection-related codes used by HIPE and the HPSC (Appendix 5). A comprehensive list of infection-related codes is provided by Jaboyedoff *et al*. (2026).

RESULTS

Death certificate sections noting infection

The section of death certification where infection was recorded is outlined in Table 7.1. Across all age groups under 19 years, infections were most commonly documented in Part 1a of the Medical Cause of Death, indicating that infection was frequently identified as the immediate or underlying cause of death. This was particularly evident in deaths of young children aged 1–4 years (83.3%). For deaths in the postneonatal age group (29–364 days), 18.5% of infection references appeared in Part 2, suggesting infection was a contributing but not primary cause of death in these cases.

TABLE 7.1: INFECTION-RELATED DEATHS OF CHILDREN AND YOUNG PEOPLE IN IRELAND, 2019–2024; DEATH CERTIFICATION FIELDS DOCUMENTING INFECTION, STRATIFIED BY AGE

Age Category	Medical Cause of Death field specifying infection									
	Part 1a		Part 1bB		Part 1cC		Part 2		Total	
	n	%	n	%	n	%	n	%	n	%
≤28 days	89	60.1	36	24.3	12	8.1	11	7.4	148	100.0
29–364 days	35	64.8	6	11.1	3	5.6	10	18.5	54	100.0
1–4 years	35	83.3	6	14.3	1	2.4	0	0.0	42	100.0
5–18 years	91	73.4	24	19.4	6	4.8	3	2.4	124	100.0
Total <19 years	**250**	**67.9**	**72**	**19.6**	**22**	**6.0**	**24**	**6.5**	**368**	**100.0**

Number and rate of infection-related deaths by age group

Table 7.2 outlines the total number of CYP deaths registered in Ireland across different age groups and the proportion of all deaths in each group that were identified as being infection related. This table presents infection-related mortality in terms of:

(1) Direct cause of death (specified in Part 1a of Medical Cause of Death)

(2) All infection-related deaths (including cases where infection contributed but was not the sole direct cause of death, i.e. included in any of Parts 1 or 2 of Medical Cause of Death).

A total of 1,811 CYP deaths were registered during 2019–2024, of which 250 (13.8%) had infection specified as the direct cause of death. When all infection-related deaths are considered, this number increases to 368 deaths (20.3%). Children aged 1–4 years had the highest proportion of deaths where infection was recorded as the direct cause of death (26.3%), followed by those aged 5–9 years (22.3%). From age 5 onward, the percentage gradually decreases, reaching 13.6% for those aged 15–18 years. The 1–4 years and 5–9 years groups have fewer total deaths overall, but a higher share of those deaths involve infection. Both neonatal (≤28days) and postneonatal (29–364 days) infants had lower proportionate mortality from infection than other age groups.

Age-specific rates of infection-related mortality per 100,000 population are illustrated in Figure 7.2. Rates are based on deaths in which infection was recorded as the direct cause of death (i.e. Part 1a of Medical Cause of Death). Infants (aged <1 year) had the highest mortality rate at 36.10 deaths per 100,000 population. Beyond infancy, infection-related mortality rates are substantially lower, declining to 2.39 per 100,000 among children aged 1–4 years, and 1.30 per 100,000 in those aged 5–9 years. The lowest rate was observed in children aged 10–14 years (1.09 per 100,000 population), followed by a slightly higher rate among adolescents aged 15–18 years (2.45 per 100,000). The overall combined infection-related mortality rate for CYP aged 1–18 years was 1.71 per 100,000.

This pattern of infection-related deaths among CYP in Ireland is consistent with international data and highlights early childhood as a critical period for infection-prevention strategies (Jaboyedoff *et al*., 2026; NCMD, 2023b).

ICD-10 category assigned to infection-related CYP deaths (Part 1a)

The ICD-10 category assigned to cases for which infection was specified in Part 1a of the Medical Cause of Death is outlined in Table 7.3. Although all deaths listed were infection-related, the underlying ICD-10 category reflects the broader medical context recorded on the death certificate. Deaths in the neonatal category are examined separately for ease of interpretation.

The vast majority (93.2%) of neonatal deaths that were certified with infection specified in Part 1a (i.e. directly leading to death) were categorised as perinatal conditions. This reflects the vulnerability of newborns and the strong influence of prematurity and birth-related conditions.

In contrast, infection-related deaths in older children are spread across many ICD-10 categories. The largest category was congenital malformations and chromosomal abnormalities (21.7%), diseases of the nervous system (18.0%), infectious and parasitic diseases (16.8%), perinatal conditions (9.3%) and diseases of the respiratory system (8.7%). A detailed list of the four-character codes assigned to each case is provided in Appendix 6.

TABLE 7.2: AGE DISTRIBUTION OF DEATHS OF CHILDREN AND YOUNG PEOPLE WITH INFECTION SPECIFIED IN CAUSE OF DEATH DETAILS ON DEATH CERTIFICATION, 2019–2024

Age category	Number of CYP deaths registered, 2019–2024	Number of infection-related deaths (direct cause of death)	Infection-related deaths as percentage of all deaths (direct cause of death)	Number of infection-related deaths (all infection-related deaths)	Infection-related deaths as percentage of all deaths (all infection-related deaths)
≤28 days	820	89	10.9	148	18.0
29-364 days	276	35	12.7	54	19.6
1–4 years	133	35	26.3	42	31.6
5–9 years	121	27	22.3	33	27.3
10–14 years	167	24	14.4	36	21.6
15–18 years	294	40	13.6	55	18.7
Total	**1811**	**250**	**13.8**	**368**	**20.3**

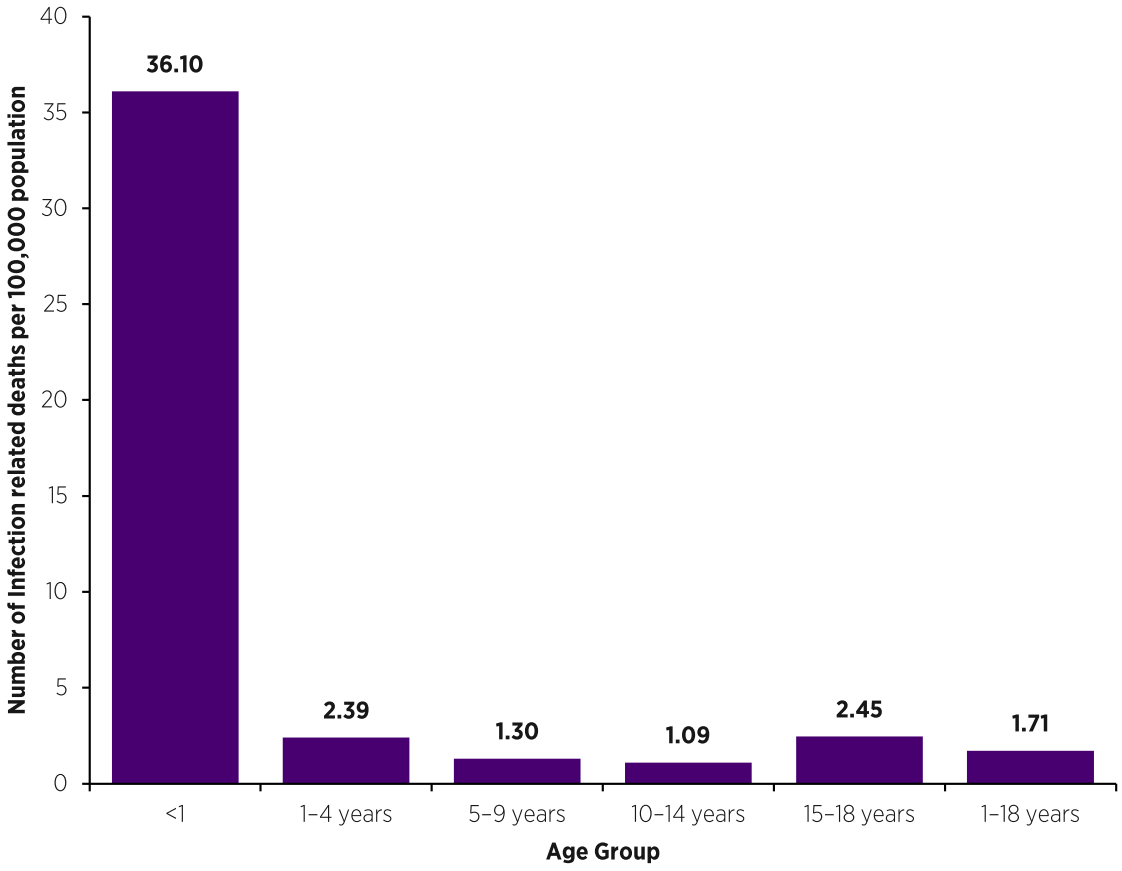


FIGURE 7.2: INFECTION-RELATED MORTALITY RATE BY AGE GROUP, 2019–2024 (N=250)

Data based on deaths where infection was recorded as direct cause of death (Part 1A of Medical Cause of Death details).

TABLE 7.3: ICD-10 CAUSE OF DEATH CATEGORY ASSIGNED TO DEATHS OF CHILDREN AND YOUNG PEOPLE WITH INFECTION RECORDED IN PART 1A OF MEDICAL CAUSE OF DEATH, 2019–2024

ICD-10 category assigned on certification of death	ICD-10 code	≤28 days		29 days–18 years	
		n	%	n	%
Congenital malformations, deformations and chromosomal abnormalities	Q00–Q99	6	6.7	35	21.7
Diseases of the nervous system	G00–G99	~		29	18.0
Certain infectious and parasitic diseases	A00–B99	~		27	16.8
Diseases of the respiratory system	J00–J99	~		14	8.7
Certain conditions originating in the perinatal period	P00–P96	83	93.2	15	9.3
Diseases of the circulatory system	I00–I99	~		5	3.1
Neoplasms	C00–D48	~		7	4.3
Endocrine, nutritional and metabolic diseases	E00–E90			5	3.1
External causes	V01–Y98			~	
Mental, behavioural and neurodevelopmental disorders	F00–F99			7	4.3
Diseases of the musculoskeletal system and connective tissues	M00–M99			~	
Diseases of the genitourinary system	N00–N99			~	
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	D50–D89			~	
Diseases of the digestive system	K00–K93			~	
Diseases of the skin and subcutaneous tissue	L00–L99	~			
Not coded					3.7
Total		**89**	**100.0**	**161**	**100.0**

~ Denotes fewer than five cases

KEY FINDINGS

- Evaluating the contribution of infection to child and young person (CYP) mortality in Ireland is challenged by limitations in current mortality coding and classification systems.
- Infection is an important contributor to CYP mortality and was specified as the direct cause of death in 13.8% of all CYP deaths registered in Ireland during 2019–2024. It was also referenced in 20.3% of all CYP deaths when all infection-related deaths were included.
- Children aged 1–4 years had the highest proportion of deaths attributable to infection, recorded as the direct cause in 26.3% of cases, and 31.6% when all infection-related deaths were included.
- Among older children (5–18 years), infection consistently contributed to a notable proportion of deaths, ranging from 13.6% to 27.3% depending on age group and classification.
- The highest absolute number (n=148) of infection-related deaths occurred in the neonatal period (≤28 days), of which 89 (10.9%) were directly caused by infection. This reflects the vulnerability of newborns to perinatal infection and early-onset sepsis.
- Infants aged 29–364 days also showed a high infection burden, with 19.6% of deaths being infection-related.
- Infection-related mortality rates varied substantially by age; rates were highest in infants aged under 1 year, at 36.1 deaths per 100,000 population, but were significantly lower in older age groups.
- The lowest infection-related mortality rate was observed in children aged 10–14 years (1.09 per 100,000), followed by a slightly higher rate in adolescents aged 15–18 years (2.45 per 100,000).
- Across all CYP aged 1–18 years, the combined infection-related mortality rate was 1.71 per 100,000 population, indicating that while infection contributes meaningfully to mortality, the absolute rate outside infancy is low.
- Neonatal infection-related deaths are almost entirely driven by perinatal conditions, while infection-related deaths in older children arise within a wide range of chronic underlying disorders, particularly congenital anomalies, neurological conditions and respiratory disease.
- There is a need to expand the dataset on infection-related deaths in order to identify more modifiable contributory factors.

CONCLUSION

This analysis provides an initial assessment of the contribution of infection to child mortality in Ireland. While the study quantifies the burden of infection-related mortality among children and young people, the data available lack sufficient granularity to examine the circumstances surrounding these deaths. This precludes the ability to determine whether infection could be considered a complete and sufficient explanation of individual deaths and is a limitation of this study.

Lack of detail on comorbidities, timeliness of care, socioeconomic context and health system factors precludes use of the data for informing targeted interventions or policy change. A more detailed and systematic review is required to enable a comprehensive breakdown of cases by presence and absence of underlying conditions, and to identify the conditions most frequently associated with mortality. Overall, the data emphasise the continued importance of infection-prevention measures across the paediatric age range. Key opportunities include strengthening vaccination uptake, improving early recognition of severe infection, and ensuring timely access to paediatric urgent and emergency care. Targeted interventions in the 1–4 years age group, where infection is the predominant cause of death, may yield the greatest impact.

A large proportion of infection-related CYP deaths involve significant underlying medical illness or infections in the neonatal period. These cases are usually quite complex, making targeted intervention campaigns to reduce mortality particularly challenging. Guidance and prevention strategies should reflect this increased vulnerability to infection-related mortality. Infection-related deaths of children with no significant underlying illness are all potentially preventable and warrant further investigation. More granular detail specific to various cases of infection-related death is necessary to allow learnings from these deaths to inform prevention strategies.

Further development of NPMR data capture will have the potential to address this need by enabling routine standardised capture of detailed information on comorbidities, disease trajectories and care pathways for these children. The dataset will aim to capture information that will help distinguish between modifiable and nonmodifiable risks within this high-risk population, highlight gaps in clinical pathways, and identify opportunities for earlier intervention.

LIMITATIONS

This analysis has several limitations. Because ICD10 does not provide a single infection category, manual review and clinical judgement were required to classify cases. Findings are therefore subjective, with potential for over- and underestimation of cases, e.g.:

- The details entered on the cause of death information on death certificates is not standardised, and references to infection vary in detail, terminology and clarity.
- Linkage with postmortem reports, HIPE data and the HPSC notifiable disease systems was not possible, limiting an understanding of clinical context.
- A small number of death registrations had insufficient information to allow accurate classification and were excluded from the analysis, leading potential underestimation of the number of infection-related deaths.
- Neonatal infection is difficult to distinguish from complications of prematurity or maternal infection, so the risk of misclassification is high in this age group.
- Without a case review it is not possible to confirm whether infection was a complete and sufficient explanation of death in individual cases.

These limitations should be considered when interpreting the findings.

CHAPTER 8
RECOMMENDATIONS

CONTENTS

CHAPTER 8: **RECOMMENDATIONS**

RECOMMENDATION

Renew and strengthen national efforts on sudden infant death syndrome (SIDS) prevention through enhanced public education and postnatal support to help mitigate the emerging trend of SIDS deaths.

It is recommended that a renewed focus be placed on SIDS prevention, with coordinated action across maternity, neonatal, primary care and community services. Standardised, evidenced-based safer sleep guidelines should be reinforced and consistently delivered to all caregivers by relevant healthcare professionals. Tailored and targeted communication strategies should be directed toward groups and communities where known SIDS risk factors are more prevalent, such as areas of deprivation and emergency accommodation. Strengthening pre- and postnatal supports and reinforcing risk reduction practices will be critical to mitigating the emerging upward trend in SIDS deaths.

Rationale
• The SIDS rate in Ireland has increased significantly in recent years, reaching a peak of 0.46 deaths per 1,000 live births in 2023, an increase of 145% from the rate recorded for 2019 (0.20 deaths per 1000 live births). As a result, SIDS has re-emerged as the leading cause of postneonatal mortality. Evidence accumulated over several decades indicates that many SIDS deaths are associated with modifiable risk factors, most notably infant sleep position, sleep environment and exposure to tobacco smoke. International experience, including the success of the "Back to Sleep" campaigns, has demonstrated that clear, consistent public messaging can substantially reduce SIDS deaths.
• The recent increase in SIDS rates may indicate reduced awareness, inconsistent adherence to safer sleep guidelines, or gaps in targeted prevention. Families from lower socioeconomic groups, certain underserved communities, and households with limited access to healthcare or appropriate sleep environments continue to experience disproportionate risk (Gannon *et al.,* 2026). Strengthened public education, consistent healthcare messaging and targeted supports for vulnerable groups are therefore essential.
Evidence base for implementation
Evidence consistently supports several key approaches to SIDS prevention:
• Public health campaigns focused on sleep position and safe sleep environments have had a major population-level impact on reducing SIDS rates in Ireland and internationally (Duncan and Byard, 2018; Hauck and Tanabe, 2008; Mehanni *et al*., 2000; Mitchell *et al*., 1997).
• Healthcare-provider counselling delivered antenatally, postnatally and during early infancy has been shown to improve adherence to safer sleep practices (Stringer *et al*., 2025; Aggelou *et al*., 2024; Molina *et al*., 2022; Moon *et al*., 2022, 2019, 2017; Cullen *et al*., 2000; de Luca and Hinde, 2016).
• Tailored interventions for high-risk communities, including home visiting programmes and accessible safer sleep resources, are effective in reducing inequities (Salm Ward *et al*., 2021; Pease *et al*., 2020; Lassi and Bhutta, 2015; Olds *et al*., 2014).
• Embedding safer sleep guidance within routine maternity, neonatal and community care pathways improves consistency and reach of messaging (Kruse *et al*., 2025; Cole *et al*., 2022; Ellis *et al*., 2022).

Who benefits from this recommendation

- **Infants aged under 1 year** will benefit from reduced exposure to risk factors and safer sleep environments, lowering the risk of SIDS.
- **Parents and caregivers** will gain clear, up-to-date safety guidelines and experience reduced anxiety through better education on safe sleep. They will avoid the trauma of preventable infant loss.
- **Healthcare providers** (public health nurses, midwives, GPs, neonatal staff) will be able to deliver consistent, evidence-based advice to parents, reducing the risk of infant mortality in their community.
- **High-risk and underserved communities** will benefit from targeted education and practical supports that are known to address disparities.
- **The public health system** will benefit through reduced infant mortality and more equitable health outcomes.

Recommended actions for improvement and implementation

- Review and update (if required) evidence-based advice on safer sleep practices to include safer co-sleeping and other risk factor advice across maternity, neonatal and community child health services, including embedding this in discharge procedures.
- Provide training for healthcare providers (e.g. public health nurses, midwives, GPs) about guidelines on how to reduce an infant's risk of SIDS.
- Engage with relevant stakeholders, including advocacy groups and academic and clinical organisations, to help facilitate increased awareness and dissemination of information.

Action owners/leads

- The action owner and leads for this recommendation are the HSE Child Health Public Health (CHPH), National Women and Infants Health Programme (NWHIP) and NOCA.
- NOCA should support CHPH and NWHIP by raising awareness of SIDS (e.g. through engagement with advocacy groups and presentations of report findings at relevant conferences and meetings).

Recommended prioritisation of actions

In order to maximise impact and address the rising mortality rate, prioritisation should focus on:

- immediate updating (if required) of HSE safer sleep guidelines, which are easily available to parents and healthcare professionals through e.g. the HSE MyChild.ie website and any other supporting information resources and educational materials
- distribution of *Safe Sleep for your Baby – Reduce the Risk of Cot Death* booklet across all healthcare services
- reiteration of training to ensure consistent messaging
- targeted intervention for high-risk communities
- strengthening of postnatal discharge procedures in order to ensure inclusion of safer sleep guidelines
- support for health and social care professionals' continuous professional development (CPD) learning events in order to ensure awareness on safer sleep messages and guidance are clear.

UPDATE ON PREVIOUS RECOMMENDATIONS

Recommendations from the first two NPMR reports, published in October 2023 (NOCA, 2023b) and February 2025 (NOCA 2025) are categorised by status in Table 8.1 and outlined in Table 8.2 along with an update on progress related to their implementation.

There has been substantial progress across earlier recommendations, with four now closed and five active as of June 2026.

TABLE 8.1: STATUS OF RECOMMENDATIONS OUTLINED IN PREVIOUS NATIONAL PAEDIATRIC MORTALITY REGISTER REPORTS

CATEGORY	DEFINITION	NOTES
Closed (Implemented)	Recommendation has been fully implemented and no further action needed.	A recommendation is only closed if there is clear evidence, e.g. policy updates or system change identified.
Active (In Progress)	Work has started but is not yet complete.	A recommendation is kept active if any part is still incomplete, even if most of the work is done.
Open (Not Started)	No action has been taken yet.	
Deferred/No Longer Applicable	Recommendation is no longer relevant or has been postponed.	

TABLE 8.2: PROGRESS UPDATE ON IMPLEMENTATION OF RECOMMENDATIONS OUTLINED IN PREVIOUS NATIONAL PAEDIATRIC MORTALITY REGISTER REPORTS

REF:	STATUS	RECOMMENDATION	OWNER	UPDATE
2023.01	Active	All deaths in children and young people in Ireland should be notified as part of death certification to a central national database. The Department of Social Protection has commenced drafting legislation pertaining to death notification. The National Office of Clinical Audit (NOCA) recommends the completion of publication and enactment of legislation to mandate timely reporting of all deaths.	NOCA *(advocate for Department of Social Protection to enact Bill)*	**The Civil Registration (Electronic Registration) Act 2024 was signed into law in July 2024. This amendment to the Civil Registration Act 2004 makes provisions for the online notification and registration of deaths and for a process to ensure the availability of more timely data on deaths. The legislation mandates early notification of all deaths to the HSE and completion of the Medical Certificate of the Cause of Death by a medical practitioner within 5 days of the death occurring. A technical solution has been developed to facilitate this new process and will be implemented when the relevant sections of the legislation are commenced and appropriate infrastructures and resources are in place to support national implementation and ongoing management of the project.**
2023.02	Active	NOCA should work with the Health Service Executive (HSE) Office of the National Director Operations and Integration to ensure that implementation of the proposed changes to the death notification process is aligned with the NPMR. This partnership should support the NPMR objective of implementing a universal, standardised system for capturing data on all CYP deaths in a national CYP mortality database.	NOCA	• **A business case was submitted to the Death Notification Working Group of the HSE Health Identity Management Services, Technology and Transformation (November 2023).** • **Ongoing engagement with National Death Notification Project team aims to ensure alignment of datasets and processes so that data are collected once and used for both the NPMR and the National Death Register.** • **The HSE will consider the NOCA NPMR process at the point of implementation of the new HSE process. At that time, the NPMR system will adapt to use a unified notification approach. This will allow for a streamlined process where the NPMR receives data directly concerning the CYP subset of death notifications, ensuring efficiency and compliance with notification of CYP deaths to the NPMR.** • **Joint communication around the change process has been agreed by the HSE and NOCA.** • **A recommendation has been made by the Ombudsman for Children's Office (OCO) that the HSE should ensure implementation of proposed changes to death notification process are aligned with the NPMR (OCO, 2025).**

TABLE 8.2: PROGRESS UPDATE ON IMPLEMENTATION OF RECOMMENDATIONS OUTLINED IN PREVIOUS NATIONAL PAEDIATRIC MORTALITY REGISTER REPORTS *CONTINUED*

REF:	STATUS	RECOMMENDATION	OWNER	UPDATE
2023.03	Closed	The NPMR must have a universal and standardised death notification process that is designed to capture details of all deaths in children and young people nationally, including deaths occurring outside of hospital as well as in-hospital deaths. The dataset should be built in line with international best practice (e.g. including health equity stratifiers) and data must be received by NOCA in a timely fashion using electronic systems.	NOCA	**Structures and processes are now in place, incorporating the implementation of an IT solution for data collection. The design and build phases are complete, with initiation of data collection planned for June 2026. A detailed description of the Audit Development process and its progress is provided in Chapter 10.**
2023.04	Active	The proposed individual health identifier (IHI) should be utilised for the purpose of the NPMR in order to facilitate the national linkage of datasets. This will allow for an accurate assessment of the causes of CYP deaths by making essential information relating to underlying conditions and pre-existing comorbidities universally accessible.	NOCA	• **A placeholder for the IHI has been included in the NPMR Child Death Notification form.** • **NOCA have engaged with the Health Identifiers Service (HIDS) team; documentation is still to be submitted.** • **The IHI will be embedded in the HSE death notification system and included in downstream data feeds.** • **Engagement with Childrens' Health Ireland Project Ogham, the team overseeing implementation of the electronic healthcare record continues in order to ensure alignment of the NPMR. Integration of the IHI into paediatric datasets has been confirmed by the project Ogham team. NOCA will reconnect with the team prior to the NPMR electronic data collection system going live.**

TABLE 8.2: PROGRESS UPDATE ON IMPLEMENTATION OF RECOMMENDATIONS OUTLINED IN PREVIOUS NATIONAL PAEDIATRIC MORTALITY REGISTER REPORTS *CONTINUED*

REF:	STATUS	RECOMMENDATION	OWNER	UPDATE
2023.05	Active	In line with international best practice, NOCA should engage with the Department of Health and the HSE in order to advocate for the establishment of a national child mortality review panel. The independent review panel would examine childhood deaths, write reports and make recommendations relating to local and system-wide improvements or interventions aimed at reducing the number of childhood deaths.	NOCA	**Activities advocating for this recommendation to date include the following:** • **stakeholder engagement:** - **Department of Children, Equality, Disability, Integration and Youth (28 May 2024)** - **Ombudsman for Children's Office (meetings 5 September 2024, 28 February 2025)** - **chair of National Review Panel (29 August 2024)** • **proposal to host a multi-agency symposium to discuss process and advocacy** • **participation in Survey on International Practice on Child Death Review *(Dr Joanna Garstang, UK, Chair of the Child Death Review Working Group, 21 August 2024)*** • **submission to the Department of Justice (DoJ) *Report of the Public Consultation on the Reform of the Coroner Service (DoJ, 2024)*** • **submission on status of NPMR operations to Department of Health (December 2025)** • **commitment in Programme for Government 2025 (Ombudsman for Children's Office, 2025).**
2025.01	Closed	The National Office of Clinical Audit (NOCA) must urgently progress the implementation of an electronic data collection system in order to allow for the timely submission of CYP mortality data to the NPMR, and engage with the Health Service Executive (HSE) Access to Information Health Identifiers (A2i HIDs) team to request the utilisation of the IHI in paediatric settings in order to support the NPMR.	NOCA	• **See update on recommendations 2023.03 and 2023.04 above.**

TABLE 8.2: PROGRESS UPDATE ON IMPLEMENTATION OF RECOMMENDATIONS OUTLINED IN PREVIOUS NATIONAL PAEDIATRIC MORTALITY REGISTER REPORTS *CONTINUED*

REF:	STATUS	RECOMMENDATION	OWNER	UPDATE
2025.02	Closed	Detailed analysis of infection-related deaths in children is warranted. Statutory and other appropriate data sources should be interrogated and together with appropriate stakeholders, a review of infection-related CYP deaths included as a spotlight report in the next NPMR report.	NOCA	• **Death registration dataset has been interrogated in order to provide an estimate of the contribution of infection to CYP mortality (see Chapter 7).** • **The process for collation of post-mortem examination (PME) reports on CYP deaths has been reviewed and is being resumed to facilitate review of infection-related deaths. The reports will be reviewed with clinical input and following stakeholder engagement to establish the required dataset.**
2025.03	Active	NOCA should contribute to the evidence base required to inform policy around suicide prevention by reviewing data relating to the circumstances of potential suicide deaths among children and young people, to support stakeholders e.g. the HSE National Office of Suicide Prevention in their work.		• **The process for collation of PME reports from coroners nationwide has been reviewed and is being resumed to facilitate review and extraction of data relating to suspected self-harm in the CYP population.** • **Stage 1 of NPMR data collection was initiated in Q2 2026 and captures a minimum core dataset of information on all CYP deaths nationally.** • **Stakeholder engagement will be extended to establish a project working group to inform development of data points relevant to suspected self-harm deaths for collection in stage 2 of the NPMR data collection.**
2025.04	Closed	Detailed, accurate, and timely information regarding the circumstances of SIDS deaths is required to make further improvements in the prevention of these deaths. NOCA should support the HSE Child Health Public Health function in its investigation of SIDS deaths in order to help establish the epidemiological profile of SIDS deaths in Ireland and identify any high-risk groups and supporting actions.	NOCA	**The NPMR is supporting the HSE Child Health Public Health (CHPH) investigation on SIDS and marginalised families via:** • **advice on relevant data points** • **national figures on SIDS incidence for validation purposes** • **access to data on SIDS cases extracted from coroners' reports and historical SIDS files** • **subject matter experts input to revised *National Healthy Childhood Programme* booklet (June 2025).** **The findings from the CHPH investigation will be published in a report to be made available on the CHPH website in due course.**

CHAPTER 9
AUDIT DEVELOPMENT

CONTENTS

CHAPTER 9: **AUDIT DEVELOPMENT**

DIGITISATION OF THE NPMR CHILD DEATH NOTIFICATION SYSTEM

Background

In response to recommendations from the 2023 and 2025 NPMR reports, NOCA prioritised the development of an electronic notification system to strengthen national reporting and support learning, quality improvement and better outcomes for CYP. This chapter describes the progress in the development of the electronic notification system to support the timely submission of CYP mortality data.

Audit Development at NOCA

Audit Development (AD) at NOCA provides a structured pathway for developing national audits and registries, from concept to implementation. It consists of five phases with subphases and process within each phase: planning; co-production of methodology; design, build and testing of the IT tool; training and implementation; and development of a roadmap to national roll-out. This ensures that resulting audits and registries are clinically relevant, focused on quality improvement, feasible to implement and governed to national standards. Figure 9.1 presents a high-level overview of the current AD process for the NPMR electronic data collection tool.

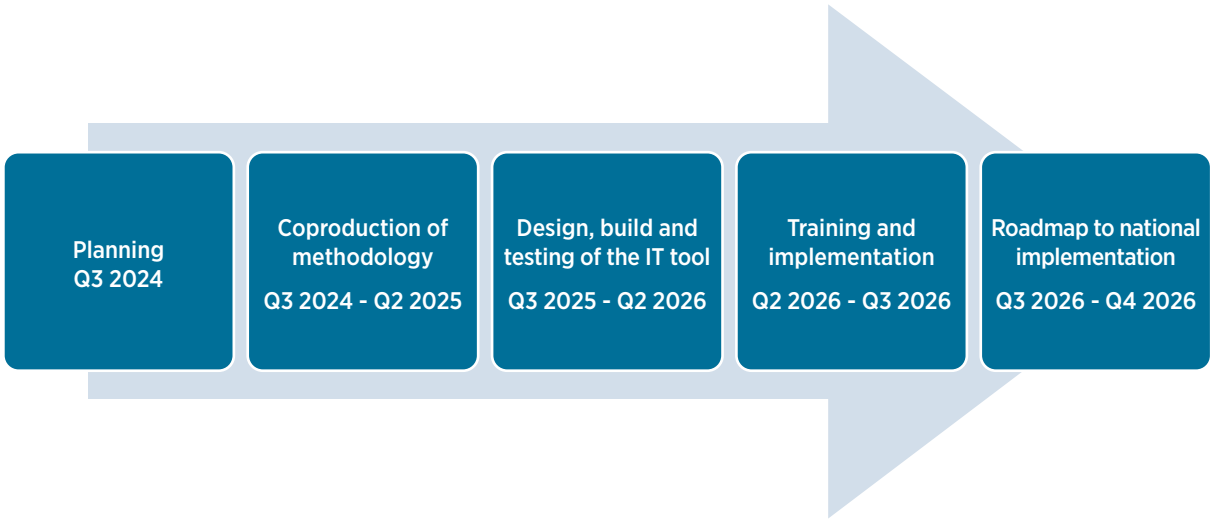


FIGURE 9.1: DEVELOPMENT PROCESS OF THE NATIONAL PAEDIATRIC MORTALITY REGISTER ELECTRONIC DATA COLLECTION TOOL

DEVELOPMENT METHODS

Operational management of the project: A dedicated working group was established to develop and test the methodology for digitising the NPMR child death notification process. This included clinical representation from paediatric critical care, emergency medicine, endocrinology, audit, quality improvement, audit methodology expertise from NOCA AD, data science, information governance and IT.

Stakeholder engagement: Stakeholder collaboration was central to developing the NPMR electronic notification process. Throughout 2025, NOCA worked closely with hospitals, the wider health system, and Patient and Public Interest (PPI) representatives to ensure feasibility, adoption and site readiness. Engagement with clinical leaders, the HSE Death Notification project, IT development partners, international organisations and PPI representatives produced key insights that shaped the system's design and implementation.

PPI contributors emphasised the importance of informing families about their child's inclusion in the NPMR and recognising that each statistical figure represents a real child or adolescent whose death must be acknowledged with sensitivity and respect.

Co-production: Coproduction was delivered through structured engagement activities across the development life cycle, including stakeholder workshops, targeted clinical meetings, and PPI consultations (see Appendix 7). Workshops were used to examine clinical workflows, system interfaces and implementation considerations, leading to the creation of a highlevel process map (Appendix 8) and the IT specification for the NPMR electronic notification tool.

Iterative consultation and feedback guided the refinement of the notification process, data requirements and system design. Stakeholder insights directly shaped the build, change management approach and testing phases. This collaborative process also informed training and implementation readiness activities, ensuring the system is practical for realworld clinical use and supports early adoption.

Coproduction was intentionally embedded to ensure the notification process is practical, aligned with existing workflows and systems, acceptable to families and sensitive to the context of child death. Continuous stakeholder involvement supported timely, high quality data collection while minimising the burden on clinical teams. PPI representatives contributed throughout to ensure family perspectives informed methodological decisions and supporting materials.

DEVELOPMENT OUTPUTS

Co-production generated tangible outputs that informed the final specification of core data, reporting and visualisation requirements, and shaped key design and implementation decisions. This ensured the electronic notification tool is intuitive, aligned with clinical workflows and practical for use. Engagement with clinicians strengthened ownership and supported early implementation planning, while PPI input promoted transparency and sensitivity to bereavement. System-level engagement ensured alignment with national processes and readiness for phased roll-out. Co-production will also inform governance arrangements for ongoing monitoring and improvement. Overall, these outputs (Table 9.1) underpin the electronic notification process and support transition to implementation and national roll-out.

TABLE 9.1: SUMMARY OF OUTPUTS FROM THE NATIONAL OFFICE OF CLINICAL AUDIT'S AUDIT DEVELOPMENT PROCESS

OUTPUT	DETAIL
Scope refinement	Stakeholder engagement clarified potential various circumstances of child deaths and identified phased expansion to all children ordinarily resident in Ireland.
Clinical leadership and readiness	Strong clinical ownership built through CHI/UHL engagement, presentations, induction sessions and coproduced promotional video.
International collaboration	Strengthened partnership with NCMD (England), enabling shared learning on datasets, reporting and surveillance.
Workflow alignment	Patient journey mapped with clinicians; workflow aligned with HSE Death Notification project and to reduce duplication and support feasibility, engagement with Health Identifiers Service (HIDS) to support linkage in the future.
Data standards and reporting	Data capture, reporting and visualisation specifications structured to support meaningful analysis.
Family-facing materials	Ethical screening completed; family leaflet and video coproduced to ensure transparency and sensitivity.
Interoperability and data quality	Engagement with SNOMED CT; data quality assessment aligned with HIQA principles to define validation rules and metrics.
End-user testing	Users found the system intuitive with clear data definitions; feedback informed final refinements.
Training and implementation	Training model includes guides, micromodules, cheat sheets and hospitalled plans to support consistent uptake.
Information governance	Coproduced framework embedding privacybydesign, datasharing agreements, access controls and workflow approvals.

CHI = Children's Health Ireland; UHL = University Hospital Limerick; NCMD = National Child Mortality Database; HSE = Health Service Executive; HIQA = Health Information and Quality Authority

NEXT STEPS

The IT solution for data collection is now technically ready, and NOCA is working closely with hospitals to implement the new electronic process. Phase 1 hospitals include CHI sites and University Hospital Limerick (UHL). The system went live in Q2 2026.

An approach to evaluation will be developed to support learning from early implementation and to inform decision-making as the NPMR progresses. This will include reporting on data quality, findings and user evaluation. Findings from this evaluation will inform refinement of the electronic notification process and support the development of a clear roadmap to national implementation.

CONCLUSION

NOCA has made progress in addressing the Audit Development recommendations outlined in the previous NPMR reports. The development of the NPMR electronic process demonstrates strengthened stakeholder collaboration and IT capability and provides a solution that minimises the burden of data collection and training; it integrates with existing hospital processes and aims to provide a sustainable, high-quality data collection and a reporting framework for the NPMR to enable health system learning and quality improvement.

CHAPTER 10
LEARNING POINTS AND CONSIDERATIONS FOR FURTHER WORK

CONTENTS

CHAPTER 10: LEARNING POINTS AND CONSIDERATIONS FOR FURTHER WORK

1. REVIEW OF DATA ON CYP DROWNING DEATHS

Review of death registration information indicated that the proportion of registered deaths due to drowning among all CYP (aged 1–19 years) increased from 6.7% in 2019–2021 to 11.2% in 2022–2024. These data suggest a potential emerging pattern that merits closer scrutiny once final year of occurrence data are available. A dedicated review would allow for a deeper examination of the circumstances surrounding drowning deaths, including environmental factors and access to water hazards. More detailed information could be extracted from postmortem reports, which would help clarify contributory factors and identify opportunities for targeted prevention measures.

2. ENHANCED GRANULARITY OF INFECTION-RELATED MORTALITY DATA AND IMPROVE LINKAGE ACROSS NATIONAL DATA SOURCES

More detailed, case-specific information on infection-related deaths in CYP is required to ensure that lessons learned effectively inform prevention strategies. Development of comprehensive data collection to understand key factors (host, agent/vehicle, physical environment, social environment) over key time phases (pre-event, event, post-event) is required in order to fully inform comprehensive, multilayered and effective prevention interventions. This would support a more robust understanding of infection-related CYP mortality and inform evidence-based public health policy along with both local and whole-system intervention planning.

Full national rollout of the NPMR child death notification process will support timely estimation of infection-related CYP mortality, while development of a more detailed data collection in Phase 2 of NPMR development will provide the granular detail needed for a more robust characterisation of infection-related death in children, both in those with and without underlying conditions. Inclusion of data on ethnicity and other relevant characteristics or circumstances would further support identification of high-risk groups and development of targeted prevention guidelines.

Strengthening linkage of death registration data with more detailed post-mortem findings and other relevant data sources (e.g. HIPE, HPSC) will improve interim understanding of infection-related mortality patterns and support more informed public health responses. Utilisation of the IHI would enable systematic and timely linkage of relevant datasets, thereby supporting comprehensive case ascertainment and detailed review of cases.

3. ENHANCED REPORTING ON NEONATAL DEATHS IN NPMR REPORTS

External review of NPMR reports by subject-matter experts has highlighted the merit in providing additional information on the category of neonatal deaths separately to other infant deaths. This may include a more detailed breakdown of the various conditions originating in the perinatal period leading to death and providing corrected rather than crude neonatal mortality estimates.

Crude mortality rates are not always directly comparable across countries, particularly in the context of neonatal and infant outcomes, due to differences in the incidence, detection and reporting of congenital abnormalities. Data from EUROCAT indicate that variation in deaths attributable to congenital malformations can substantially influence overall mortality figures. Countries with more comprehensive prenatal screening and reporting systems may appear to have higher mortality rates, despite comparable or better underlying standards of care. Adjusting for, or separately analysing, deaths due to congenital anomalies can therefore provide a more accurate basis for international comparison, helping to distinguish differences in case mix from differences in healthcare performance.

CHAPTER 11
CONCLUSION

CONTENTS

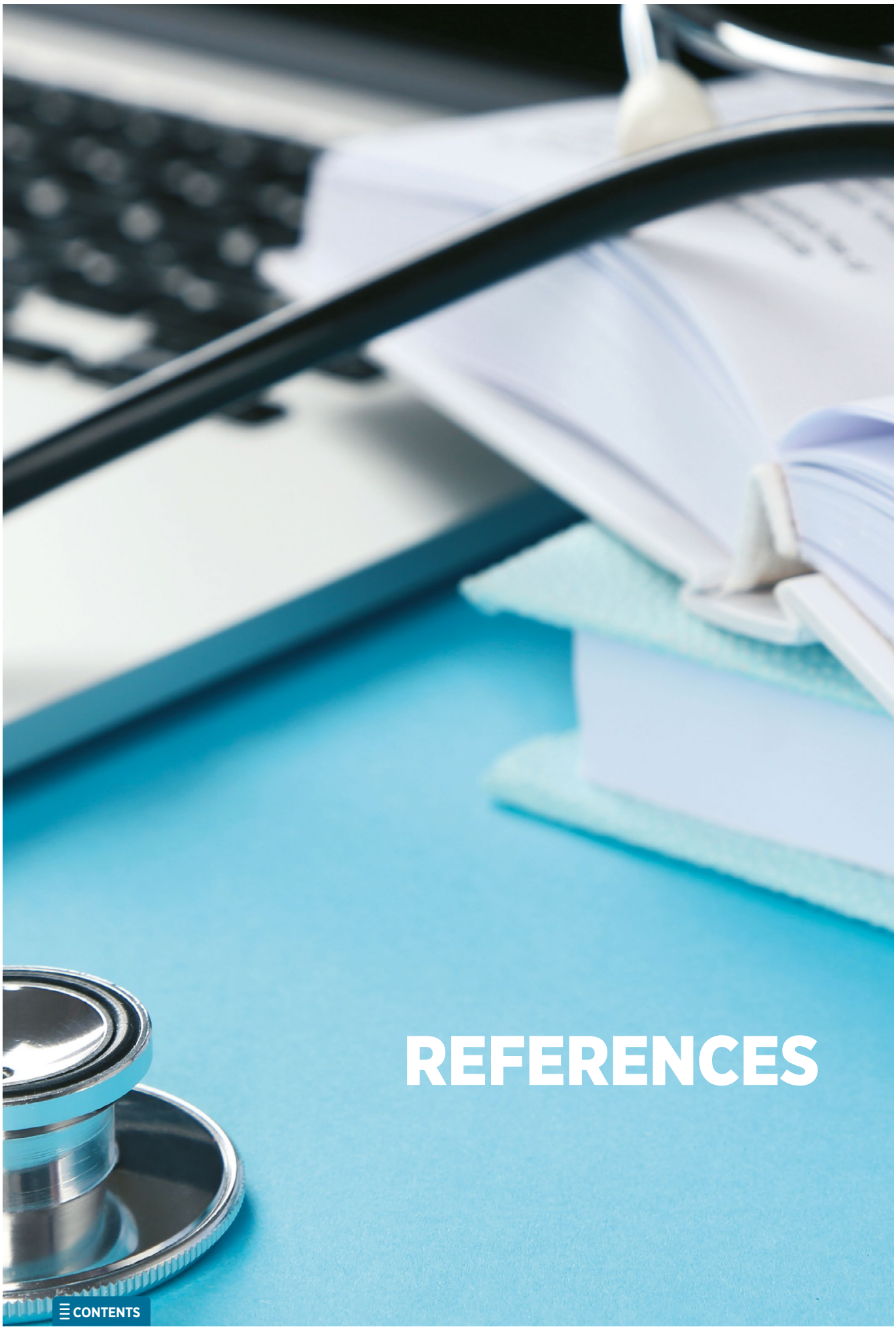
CHAPTER 11: **CONCLUSION**

Ireland has achieved major long-term improvements in child and young person mortality rates; however, recent trends – particularly the rising infant mortality rate and the re-emergence of SIDS as the leading cause of postneonatal death – demonstrate the need for more responsive and detailed mortality surveillance. The continued prominence of trauma in adolescent deaths further underscores the importance of targeted, evidence based prevention strategies.

Current mortality data systems do not provide the level of timeliness, granularity or linkage required to fully understand the circumstances leading to child deaths or to reliably identify emerging risks. The development and forthcoming implementation of the NPMR electronic child death notification system represent a transformative step toward a more robust and effective national mortality surveillance framework.

The national roll-out of electronic notification and stronger integration with health and coronial systems will improve availability and quality of data on CYP deaths and increase the potential to reduce preventable mortality. Enhanced data will support earlier detection of trends, better public health action and the necessary foundation for a future national child death review process.

Ultimately, improving child mortality outcomes requires sustained commitment to high quality data, responsive health services, cross-sectoral prevention strategies and equitable approaches that address the needs of the most vulnerable children and families. With coordinated national action, informed by the insights of this report, Ireland is well positioned to make meaningful progress in reducing avoidable child deaths and improving the safety, well-being and life chances of all children and young people.



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APPENDIX 1:
NATIONAL PAEDIATRIC MORTALITY REGISTER GOVERNANCE COMMITTEE MEMBERSHIP AND MEETING ATTENDANCE, 2025–2025

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