Papua New Guinea Department of Health

Child Morbidity and Mortality
16th Annual Report, 2025

Paediatric Society of Papua New Guinea
and
Child Health Advisory Committee

2025 Annual Report on Child Morbidity and Mortality

Produced by the members of the Paediatric Society of Papua New Guinea



Acknowledgements

We gratefully acknowledge all paediatricians, nurses and other health care workers in all participating hospitals who reported their hospital's data.

Data compiled by Edilson Yano, Paediatric Surveillance Officer and PHR coordinator, and by all the members of the Paediatric Society of PNG.

Edited by Professor Trevor Duke

Graphs by Eleanor Neal
PHR Software design: Adrian Hutchinson

Foreword by Dr Cornelia Kilalang, Chief Paediatrician, National Department of Health

Review committee: Drs Cornelia Kilalang, Fiona Kupe, Anna Toti, Mary Paiva, Gwenda Anga, Gamini Vali, Roland Barnabas, Rupert Marcus, Trevor Duke.

We are grateful to the Australian Department of Foreign Affairs and Trade (DFAT) for their support to this program.

July 2026

Our aims

To collect and analyse accurate and comprehensive data reflecting paediatric admissions to hospitals, and the overall health of newborns, children and adolescents.

To enable monitoring and benchmarking of health services for newborns, children and adolescents

To promote quality improvement initiatives in paediatric health care, and improvements in outcomes for newborns, children and adolescents

Foreword by the Chief Paediatrician

It gives me great pleasure to write the foreword for this Annual Report for 2025.

The Annual Reports on Child Morbidity and Mortality have been produced since 2010 and this report marks 16 years of this reporting through many versions to what we are up to now.

Sixteen years gives a lot of useful data of trends in morbidity and mortality and helps us in planning for areas for improvement.

We have improved over these years in reporting, with a handful of provincial hospitals reporting in 2009, this year 21 hospitals participated.

Overall, our admissions have been increasing, and our mortality rates have decreased gradually. Our case fatality rates for most diseases have generally improved, however this year some outcomes remain stubbornly high – including birth asphyxia, the rise in deaths from septic shock, ongoing cases and deaths from severe malnutrition, and deaths from child protection issues. Many of these outcomes are preventable by early intervention, including more awareness of child health and nutrition in families and the community.

Over the years, our plans for improvement have been guided by this data and the results in this report show that. The Paediatric Society of PNG has initiated programs to improve our outcomes, and many are proving successful. But there is much work to be done.

As a way forward, the Paediatric Society will achieve further improvement in our outcomes with a **Paediatric Quality Improvement Program** and the many initiatives described in the **Child and Adolescent Health Policy and Plan 2021-2030**. As a Society, we want to ensure that quality care is given even in resource limited settings to all children of this country.

Let me acknowledge all my fellow Paediatricians and colleague health workers who contribute to the data collection. Edilson Yano has been our constant worker supporting the PHR program and helping to put together the data yearly, and his work is appreciated by the Society. And thanks to Prof Trevor Duke who edits and produces this report.

I hope this report gives useful information to all health workers and administrators both in the province and nationally to improve child health services together with our second and revised Child Health Plan 2021-2030, that we launched in June last year. In our last CAHPP 2011-2020 and in the National Health Plan KRA 4 (Child Health), I believe we have achieved much and as we go forward with the new NHP 2021-2030 that the recommendations from this report can be the cornerstone for child health services in PNG.

Dr Cornelia Kilalang
Chief Paediatrician
National Department of Health





Contents

Acknowledgements 1
Our aims 2
Foreword by the Chief Paediatrician 3
Executive summary 5
Introduction 8
Paediatric Hospital Reporting System (PHR) 8
Mortality rates for common diseases 8
Pneumonia 14
Diarrhoea 17
Typhoid 18
Malaria 19
Malnutrition 20
Meningitis 22
Severe sepsis and septic shock 24
Tuberculosis 27
HIV 30
Chronic non-communicable diseases in children 31
Cancer awareness 33
Management of children with chronic conditions 36
Autism and neurodevelopmental conditions 37
Rheumatic heart disease 38
Child protection 38
Vaccine preventable diseases 39
Neonatal care and newborn health 42
Neonatal infections 44
Birth asphyxia 45
Very low birth weight 47
Congenital anomalies 48
Congenital or intrauterine infections 49
Quality of care assessment 52
Appendix 55

Executive summary

This report covers admissions and outcomes for children in 2025 from 21 hospitals. We gratefully acknowledge the paediatricians, nurses, medical officers, and HEOs in charge of wards who record these data and submit it annually.

Report key points

- **In 2025 overall, there were 42,427 admissions, and 2141 deaths, a mortality rate of 5.04%.** This overall CFR is lower than recent years (5.96% in 2024), and lower than the historical trend of 6.58% for the 16 years PHR data have been collected (2009-2025).
- The children's ward case fatality rate was 4.29% (23990 admissions and 1028 deaths). The neonatal ward admissions were 18482 admissions and 1113 neonatal deaths (case fatality rate 6.02%). These case fatality rates are all improvements compared to the 2024 and the years after the pandemic.
- Neonatal admissions remain high as a proportion of overall admissions, emphasising that the neonatal period is the most hazardous period of childhood, and the need for better newborn services in all hospitals.
- The commonest causes of admission for children over 1 month were pneumonia (7515 cases and 259 deaths), diarrhoea (4018 cases and 158 deaths), severe malnutrition (3820 and 327 deaths), anaemia (3055 and 276 deaths), tuberculosis (3625 and 214 deaths), meningitis (1398 and 133 deaths), and malaria (1031 and 48 deaths).
- In 2025 there were 378 children older than 1 month with severe sepsis or septic shock, and 166 deaths, making septic shock the illnesses with the highest paediatric death rate (case fatality rate 44%). Improvements in recognition of septic shock, emergency care, quality of care including having an intensive care area in each paediatric ward with monitoring and supportive care, and increases in immunisation are needed to reduce deaths from septic shock.
- There were 1944 patients admitted to these 21 hospitals with chronic non-communicable diseases, making up 8.1% of all admissions in children over 1 month of age, and 19% of all paediatric deaths. These chronic non-communicable illnesses include asthma, chronic lung disease, rheumatic and congenital heart disease, epilepsy and cerebral palsy, and cancer. More education and treatment to care for such children in hospitals and communities are needed.
- Almost half of the children admitted to hospitals are in the neonatal period, and infection, birth asphyxia, and low birth weight (LBW) are the commonest causes. Many of these infants, especially those with LBW, remain vulnerable throughout childhood.
- In 2025, 222 children were admitted with abuse or neglect, and 21 of these children died. Sadly, many more children are affected by such adverse social conditions, most of whose cases are not reported. We need more social workers, parenting support and community awareness. This includes measures to reduce domestic and gender-based violence, which affects women and girls, and has a serious impact on children's health and welfare. It is a problem that all countries need to improve on. There should be zero-tolerance of child abuse and domestic violence by all members of the community, and child protection should be given higher priority.

- In 2024-5 Quality of Care Assessments were completed by 11 provincial hospitals, and the results are summarised in this report.

This report shows many improvements, and also areas that need increased attention. To achieve further improvements, The Paediatric Society has initiated a **Paediatric Quality Improvement Program**. Such programs exist in many countries and have been very successful. The components include:

- Regular child mortality and morbidity audits in all hospitals to learn lessons about how to improve services
- Regular perinatal review with obstetricians and midwives in hospitals
- A quality improvement team in each provincial hospital
- More paediatric nurses being trained
- Training on Early Essential Newborn Care (EENC) and the care of sick newborns through the Neonatal Mentoring Program supported by UNICEF and the Paediatric Society
- Training on the care of seriously ill children, through the WHO Hospital Care for Children courses
- Establishment of intensive care areas in the paediatric wards for the care of the sickest children
- Paediatric monitoring and response charts with early warning indicators and escalation processes
- Improved infection control and antibiotic stewardship in all wards
- Improved systems for managing children with chronic conditions, and palliative care services.
- Continuing medical education (CME) for paediatricians and paediatric nurses
- Strengthen social welfare services and Child Protection to prevent child abuse and neglect, and protect vulnerable children and mothers.

Tools for Quality Improvement are available at: **https://pngpaediatricsociety.org/quality-improvement/**

Reducing **neonatal deaths** further requires improved access to skilled birth attendants, access to obstetric care and early essential newborn care. Essential newborn care includes *immediate and thorough drying*, which stimulates breathing and prevents hypothermia. *Sustained skin-to-skin contact* prevents hypothermia, reduces infection, calms the baby, and facilitates successful intake of colostrum and sustained breastfeeding. *Delaying cord clamping until cord pulsations stop* reduces the risk of anaemia in preterm infants, and other complications. *Exclusive breastfeeding and elimination of formula* can prevent a large proportion of neonatal sepsis deaths. *Avoid harmful practices*, such as separation of babies from their mothers in the first hours of life for bathing or unnecessary observation. To reduce deaths from neonatal sepsis, newborns should have 4% chlorhexidine applied to the umbilical cord. If chlorhexidine is not available, air drying of the umbilical cord can be an option.

Better care for very low birth weight babies, those with neonatal sepsis and birth asphyxia is needed. This includes the increased use of Kangaroo Mother Care (skin-to-skin contact), prevention and treatment of hypoxaemia, apnoea, hypoglycaemia, improved feeding with breast milk, more rational use of antibiotics, and careful use of IV fluids, using paediatric monitoring and response charts, audit, and ward organisation.

In many hospitals nosocomial infections are common, and some of these are resistant to multiple antibiotics. To prevent hospital-acquired infections, it is very important to adhere to hand hygiene and other infection control practices and reduce the use of unnecessary antibiotics.

Improved obstetric care is needed to reduce deaths from birth asphyxia. Improved use of partographs during labour is needed. Family planning would reduce many unwanted pregnancies.

Malnutrition also needs both prevention and treatment. Prevention of malnutrition at the community level is the best way to avoid children dying from malnutrition. Timely treatment of children with malnutrition is also essential and often poorly done in hospitals. Use of Mid Upper Arm Circumference (MUAC) measurement and plotting weights on a growth chart would identify children at highest risk. Children with severe malnutrition need special attention to feeding, prevention and treatment of infections, and close monitoring for complications. A step-by-step approach to the management of severe malnutrition should be followed; this is outlined in the Pocket Book of Hospital Care for Children and the PNG Standard Treatment Manual. Major problems in the management of malnutrition are inadequate feeding: starting feeds too late, not giving enough milk feeds and not frequent enough feeds. By addressing these steps, the CFR for severe malnutrition has come down from 18-24% to just under 10% in 2023 and 2024, an overall improvement in the last decade.

Tuberculosis remains a major problem limiting children's health and development. Every effort should be made to identify children with TB and help them complete TB treatment. For many children this requires keeping them under careful supervision for the 2 months of intensive phase, good education of parents to ensure adherence in the continuation phase, and active community-based follow-up. Identifying children early who may have multi-drug-resistant TB is also very important and requires input from a paediatrician.

Children with **chronic diseases**, including asthma, chronic lung disease, epilepsy, rheumatic and congenital heart diseases, cerebral palsy and neurodevelopmental problems, thalassaemia, and diabetes need ongoing holistic care. They need a long-term treatment plan, good follow-up by a paediatrician or skilled child health nurse, adherence with medications and a continued supply of essential medicines, addressing comorbidities such as vision and hearing loss, going to school regularly and having education about their condition. Increasingly important is adolescent health, including preventative and mental health issues.

The National Child Health Plan outlines a plan for improving child health for 2021-2030. Everyone involved in health care for children be familiar with the Plan, and Provincial and District Health officials should use it to formulate their Annual Activity Plans. This plan can be downloaded at http://pngpaediatricsociety.org/png-child-health

Introduction

The Paediatric Society of Papua New Guinea releases the 16th Annual Report on Child Morbidity and Mortality for 2025. The Society believes the data and recommendations contained in this report should be read by all health workers and health administrators. It is only by examining health outcomes that we can improve our services. The data are current, covering 2025, with some comparisons to data collected in the previous 16 years. The recommendations cover clinical and public health solutions that would result in many more children's lives being saved each year.

Paediatric Hospital Reporting System (PHR)

The Paediatric Hospital Reporting System enables hospitals to record admissions, calculate mortality rates and monitor trends in disease burdens and outcomes over time. When the data are compiled from all hospitals, this can highlight areas of high mortality where there is scope for improvement. The data are reported using standardised diagnostic criteria, consistent with clinical and public health practice in Papua New Guinea.

There have been several versions of the PHR, we are now up to V12.5, but not all hospitals were using the latest version in 2025. That is not a problem as the data for the common diagnoses are consistent between versions and therefore comparable. However, some less-common diagnoses only included in V12.5 are not reported by all hospitals. Version 12.5 is downloadable at: https://pngpaediatricsociety.org/hospital-reporting-program/

Version 12.5 has a maternal component. In future years we hope labour wards and obstetric departments will report summary data on outcomes for mothers and deliveries.

A note on the method of the graphs in this report: the graphs of case fatality rates per year are *weighted averages*, rather than proportions of the aggregate raw data for all hospitals combined for each condition. The use of weighted averages is more valid for looking at time trends in outcomes, as different hospitals report different numbers of cases and deaths, and different numbers of hospitals have reported data each year. Weighted averages take this into account and enables year-on-year comparison as smaller district hospitals or health facilities contribute PHR data in the future.

Mortality rates for common diseases

In 2025 overall, there were 42,472 admissions and 2141 deaths recorded (mortality rate 5.04%). The newborn death rate was 6.02% and the children's ward case fatality rate was 4.29%, see Figure 1 and Table 1.

Case fatality rates vary widely, often related to the level of the health facility (smaller rural hospitals have much lower CFR, larger referral hospitals have higher CFR, related to referral bias and complexity). Differences in CFR can reflect many factors, including case mix (the types of illnesses seen in different hospitals), the severity of illness at the time of presentation (if children with severe illness present late, they have a higher risk of death),

the number of health care workers and other resources available to manage seriously ill children, and serious disease outbreaks.

What matters are broad trends over time and looking for signals where there may be problems.

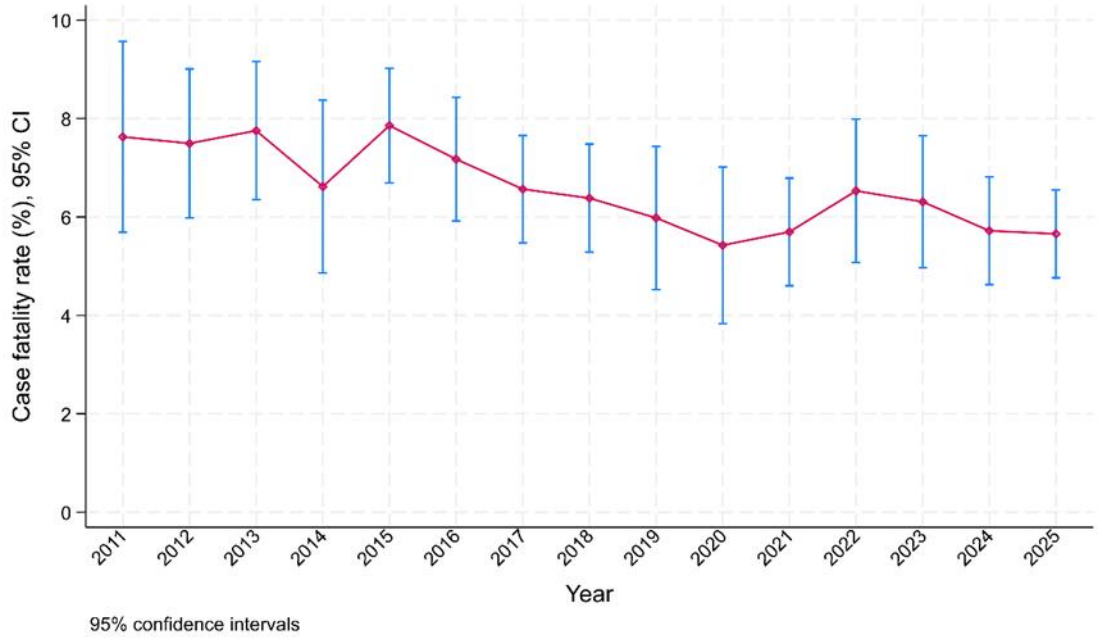


Figure 1. Overall paediatric (children's ward and special care nurseries combined) case fatality rates 2011-2025 (weighted averages). The graph shows an overall improving trend of mortality rates, a correction in the last 3 years after the deterioration that occurred during the pandemic.

Hospitals	Paediatric admissions overall	Paediatric deaths	Total mortality rate 2025	2024 mortality rate
Alotau	1443	43	3.00	2.63
Angau *	2320	151	6.50	7.71
Buka	909	69	7.59	
Chuave				
Daru	424	30	7.08	
Gembogl				
Gerehu	1295	17	1.31	1.10
Goroka	2839	231	8.14	10.95
Kainantu	533	28	5.25	
Gumine				
Kavieng	846	46	5.44	5.69
Kimbe	1485	103	6.94	6.66
Kerema				
Kerowagi				
Kompiam				
Kundiawa	1617	43	2.66	
Kudjip				
Mabisanda				
Lorengau	258	21	8.14	4.69
Mendi	1789	92	5.14	5.18
Mingendi				
Modilon	2410	145	6.02	7.13
Mt Hagen	6036	243	4.03	4.27
Nonga	872	74	8.49	9.19
Popendetta	781	70	8.96	8.85
Port Moresby	13290	555	4.20	4.75
Rumginae	98	3	3.06	1.35
Tari	1378	75	5.44	6.59
Vanimo	636	38	5.97	5.30
Wabag				6.86
Wewak	1213	64	5.28	6.81
Yagum HC				2.81
Yampu				
TOTAL	**42472**	**2141**	**5.04**	**5.96**

Table 1. Summary of admissions, deaths, and case fatality rates in 21 hospitals in 2025 (with comparison mortality rates for the previous year)

* ANGAU Hospital reported only 6 months of data from special care nursery and paediatric ward, and some missing data when excess patients were admitted to the Children's Outpatients Department.

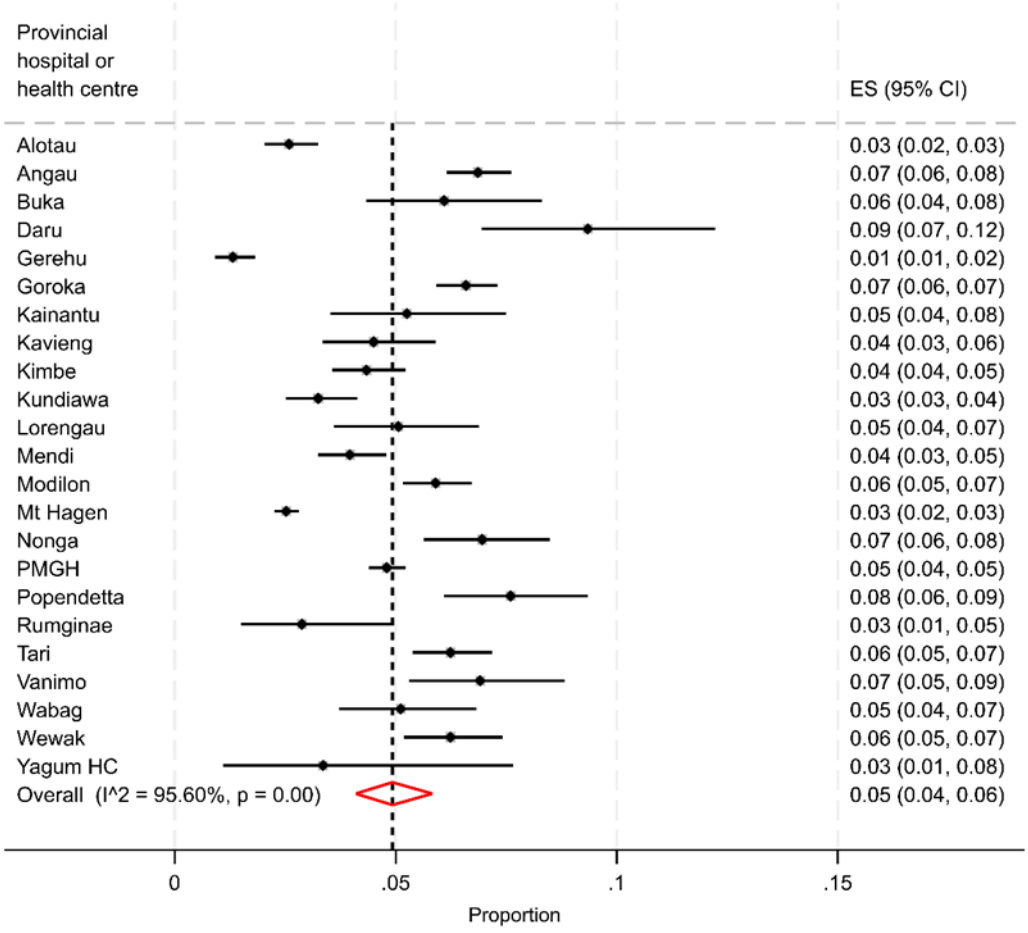


Figure 2. Meta-analysis of overall mortality rates by hospital averaged over the last 3 years (2023-25).

Note: This graph shows variability between hospitals in mortality rates. The average mortality is 5% (0.05), but some hospitals are as low as 3% and others as high as 8%. The differences relate to many factors, including resources, number of nurses, training, presence of a paediatrician, disease burdens within the catchment community, and timing of presentation. There is much we can learn from some of the hospitals with low mortality rates, that can help other hospitals improve services.

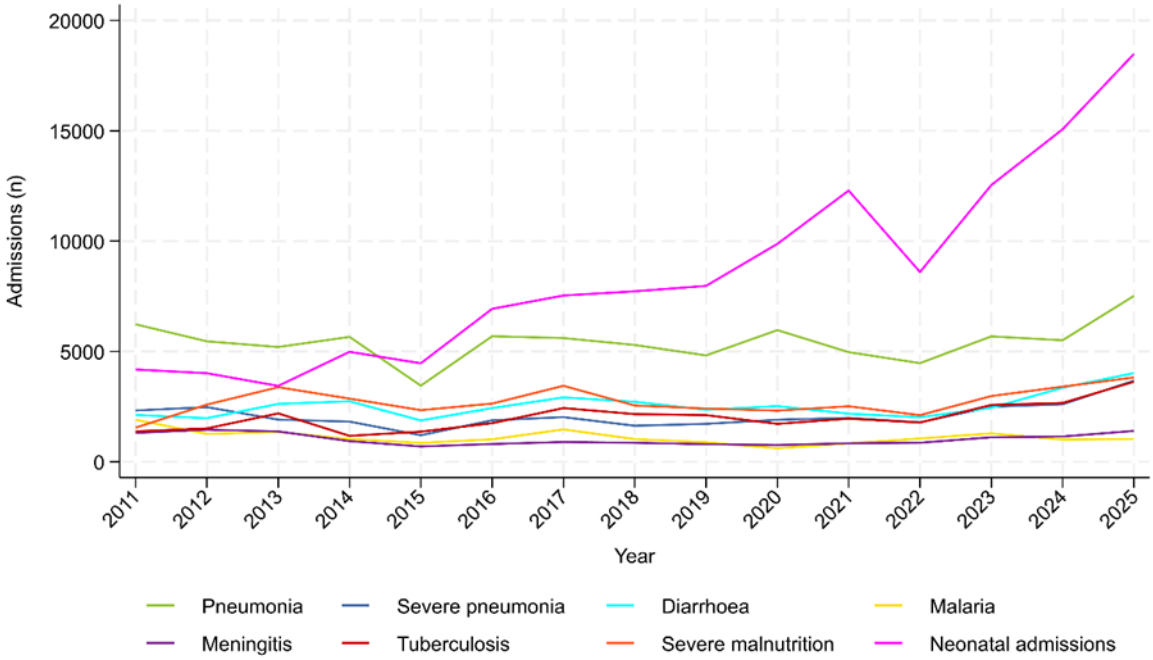


Figure 3. Admissions per year overall and for common conditions 2011-2025

Although the total number of admissions reported in the PHR has increased over the years, the number of cases of common conditions has remained relatively static; pneumonia, diarrhoea, malaria remain the common reasons for admissions to children's wards. The increased number of *other* conditions (thus the much higher total admissions) reflect the increased proportion of neonatal admissions over the last 10 years, the rise in chronic non-communicable paediatric conditions, and increased cases of severe sepsis.

Diagnoses	Admissions 2025	Deaths 2025	Case fatality rate 2025	Trend CFR 2009-2025
All paediatric admissions	**42472**	**2141**	**5.04**	**6.58**
Neonatal conditions	**18482**	**1113**	**6.02**	**9.30**
Pneumonia	**7515**	**228**	**3.03**	**4.22**
Severe pneumonia	**3672**	**198**	**5.39**	**9.34**
Bronchiolitis	869	8	0.92	0.93
Asthma	203	1	0.49	
Diarrhoea	4018	158	**3.93**	**4.18**
Dysentery	446	14	3.14	
Malaria	1031	48	**4.66**	**4.29**
Severe malnutrition	3820	312	**8.17**	**13.66**
Moderate malnutrition	2595	144	5.55	
Anaemia	3055	314	**10.28**	**11.62**
Typhoid	942	16	1.70	
Tuberculosis	3625	245	6.76	**9.34**
Meningitis	**1398**	**144**	**10.3**	**15.39**
Severe sepsis	378	166	43.92	**46.88**
Epilepsy	202	2	0.99	
Dengue	86	4	4.65	
Developmental disability	301	29	9.63	
HIV	547	54	**9.87**	**14.87**
Rheumatic heart disease	156	12	**7.69**	**10.1**
Congenital heart disease	**881**	**107**	**12.1**	**13.25**
Cancer	**167**	**44**	**26.3**	**28.83**
Measles	1	0	0	2.94
Tetanus	21	3	14.3	18.75
Acute flaccid paralysis	35	4	11.4	5.71
Whooping cough	51	2	3.9	1.98
Child protection	**222**	**21**	**9.5**	**14.96**
Trauma and injuries	190	3	15.8	1.0

Table 2. Most common causes of hospital admission and case fatality rates in children for 2025, with trend CFR over 2009-2025.

Note: some diagnoses added recently, so CFRs do not reflect the complete years of reporting. Paediatric admissions = neonatal conditions admitted to special care nurseries plus children's ward admissions. In hospitals where sick newborns were admitted to children's wards, or general wards, these are separated according to age (neonates <1 months; or children older than 1 month).

* Combined paediatric ward and neonatal cases of congenital heart disease.

Pneumonia

In 2025 as in all years, pneumonia was the most common reason for admission (7515 cases: 17.7% of all admissions overall).

Pneumonia case fatality rate overall in 2025 was 3.03%, and for severe pneumonia was 5.39%. This is lower than in the years of the pandemic, and is a welcome trend (see Figure). However, further improvements are needed to lower the deaths from severe pneumonia.

Severe pneumonia case fatality rates, which are partly standardised for illness severity at the time of presentation, reflect systems of practice, staff skills training and resources. High case fatality rates from severe pneumonia may occur if children present late, or are not recognised to be very unwell, if antibiotics and oxygen are not given promptly, or if children are not monitored closely.

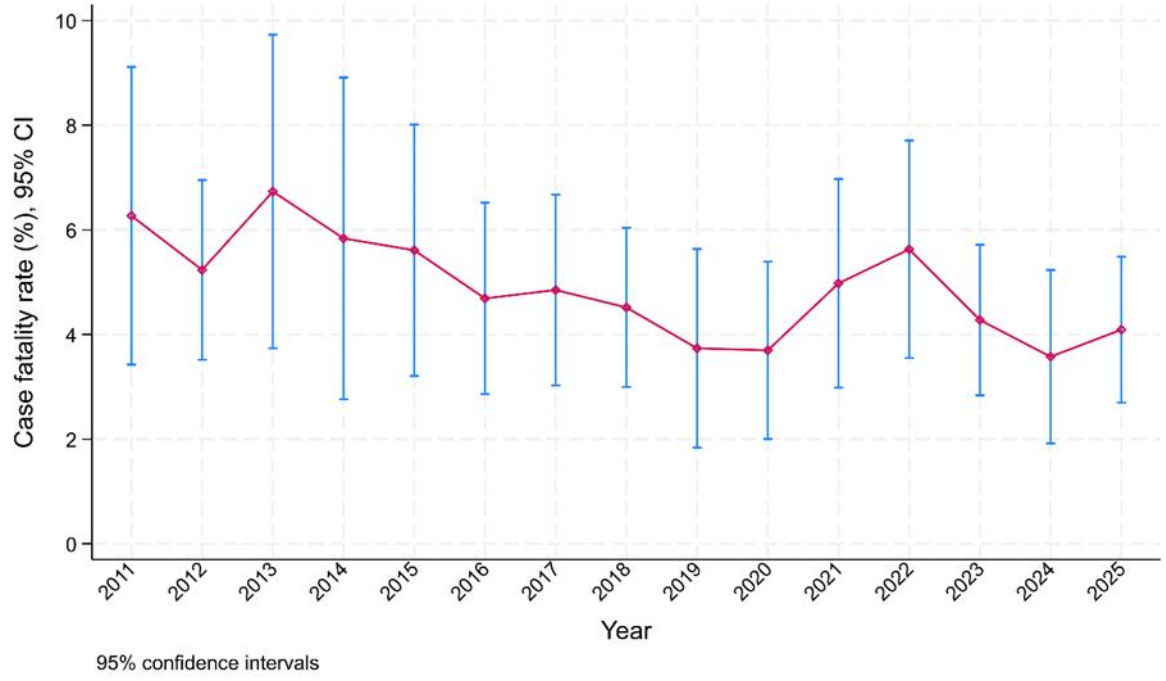


Figure 4. Pneumonia mortality rates 2011-2025

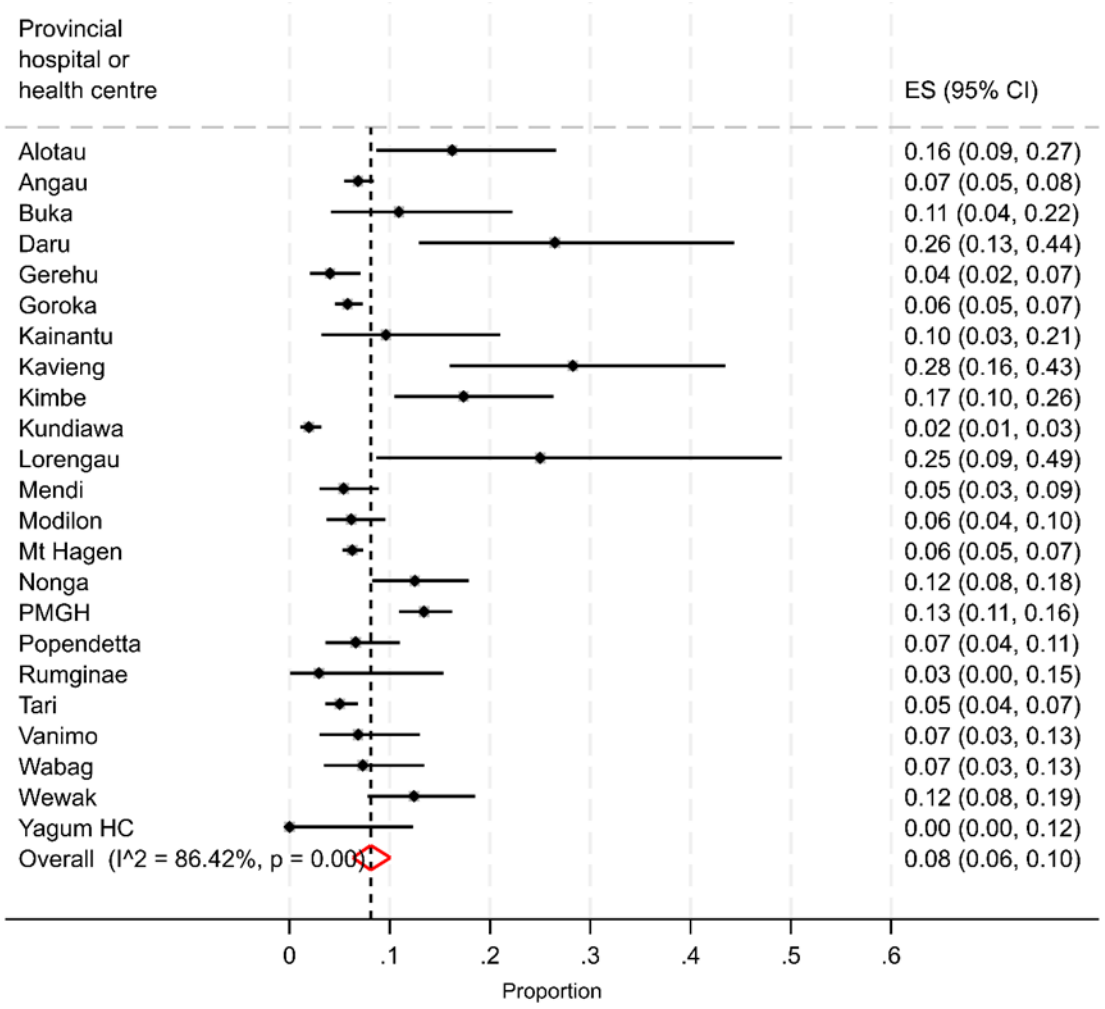


Figure 5. Meta-analysis of severe pneumonia case fatality rates over 3 years (2023-2025)

Note: Like Figure 3 (Meta-analysis of overall mortality), this graph shows wide variability between hospitals in mortality rates for severe pneumonia. The average mortality is 8% (0.08), but some hospitals are as low as 3% and others over 20%%. The differences relate to many factors, including number of cases, oxygen and quality systems for managing critically ill children, number of paediatric nurses, presence of a paediatrician, delays in presentation, community disease burdens, and more. Targeted interventions in high mortality hospitals are needed.

Recommendations

It is recommended that hospitals ensure that there is:

- a system of triage and rapid treatment of the sickest patients in the emergency and outpatients' departments
- a part of the children's ward that is properly equipped to provide intensive care and close monitoring 24 hours a day.

- adequate oxygen supplies and staff trained in when and how to effectively give oxygen.
- appropriate stocks of antibiotics to treat pneumonia.
- regular clinical monitoring, including the use of pulse oximetry.
- colour-coded paediatric monitoring and response charts.
- training for staff in the recognition and care of critically ill children
- sufficient nursing and medical staff to always provide clinical care
- supervision of nursing and medical care by senior clinicians

Deaths from pneumonia (228), meningitis (144) and severe sepsis (166) = 538 deaths from likely serious bacterial infection: and combined they account for 52% of all children's ward deaths.

This emphasises the importance of *Hemophilus influenzae* type b vaccine (Hib) – given as part of Pentavalent vaccine, and the pneumococcal conjugate vaccine (PCV); both vaccines given at 1, 2 and 3 months and protect against pneumonia, meningitis and sepsis.

There are other common causes of pneumonia, including viruses (particularly respiratory syncytial virus - RSV, influenza) and other bacteria (such as Group A streptococcus, *Staphylococcus aureus*, Chlamydia, Mycoplasma, Klebsiella), and other causes of viral meningitis (enterovirus, and dengue and other mosquito-borne viruses), which are not all currently prevented by vaccines.

The best way to address this with a comprehensive approach. The National Child Health Plan 2021-2030 outlines a comprehensive approach to preventing and treating pneumonia and other acute lower respiratory infections.

This includes key areas to address:

Prevention

- Breast feeding and good balanced nutrition in the second 6 months of life and beyond, with growth monitoring.
- Helping parents be aware of the signs of pneumonia and when to seek care.
- Reduce indoor air pollution, keeping children away from smoke from cooking stoves, and never smoke in a child's presence.
- Handwashing
- Vaccines: measles, Hib (Pentavalent), PCV, BCG, and other vaccines.
- Vector control measures will reduce the number of causes of mosquito-borne viral meningitis, such as Japanese encephalitis, dengue, as well as malaria.

Treatment

- Improving hospital and district health facility care of pneumonia through Hospital Care for Children training.
- Use of a colour-coded paediatric monitoring and response chart to identify children who are deteriorating and escalate appropriately.

- Oxygen, pulse oximetry, careful monitoring, and supportive intensive care.
- Identification and treatment of comorbidities that increase the risk of death from infections, especially anaemia, malnutrition, HIV and tuberculosis.
- Improved infection control practices, particularly hand hygiene, and reducing unnecessary antibiotic usage.
- Outpatient or day-care treatment for moderate bronchiolitis, so that hospitals are not crowded by children who can safely be treated without hospitalisation.

Diarrhoea

4018 cases and 158 deaths (case fatality rate of 3.9%) due to diarrhoea were reported in the 21 hospitals in 2025 (Figure). Deaths from diarrhoea remain around 4%.

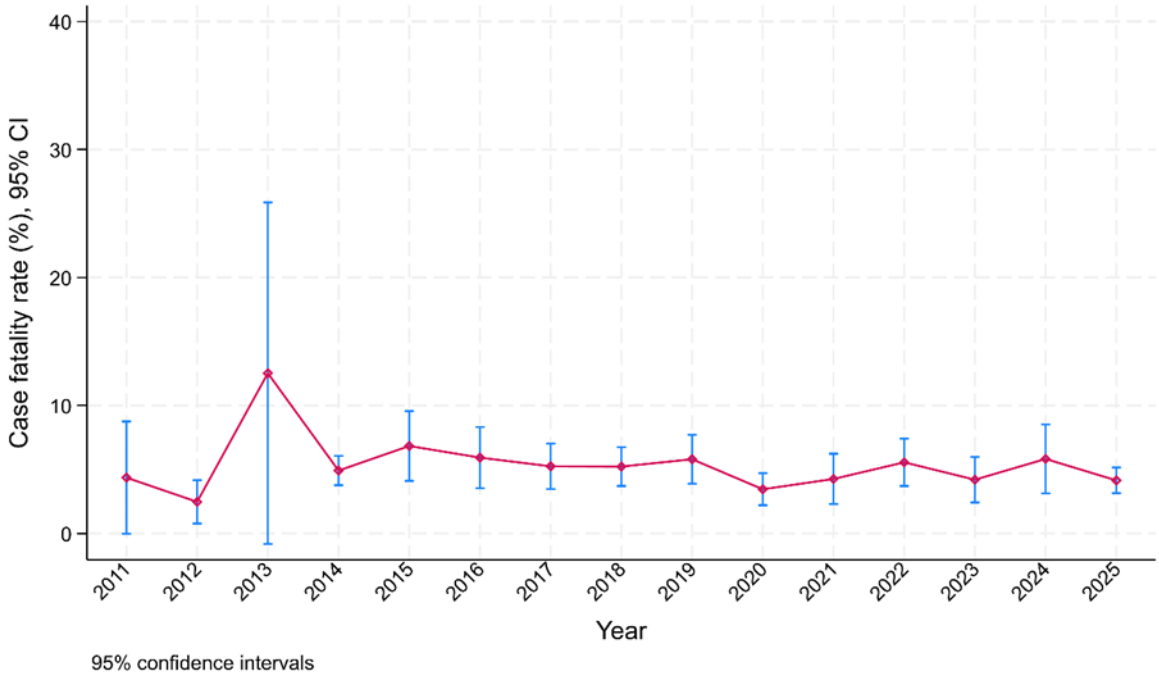


Figure 6. Diarrhoea mortality rates 2011-2025

Deaths in diarrhoea occur if the child (1) does not have access to effective rehydration, (2) has sepsis or bacillary dysentery, or (3) other co-morbidity, such as severe malnutrition or immune deficiency. Many deaths from diarrhoea occur in children who are bottle-fed, or adopted, and do not receive adequate nutrition.

Severe diarrhoea can be prevented by breast feeding, timely use of oral rehydration solution (ORS) in the community and in primary care, by parents bringing their child to a health facility early if they have diarrhoea and signs of being sick, by improved assessment of the severity of dehydration, the use of zinc as additional treatment, the appropriate use of antibiotics in bloody diarrhoea, and by reducing malnutrition.

Most watery diarrhoea in otherwise well children is due to viruses and does not require antibiotics. These children need ORS, zinc and nutrition (breast feeding in infants). If children receive adequate rehydration and nutrition when they have acute watery diarrhoea, death is very unlikely.

Watery diarrhoea is mostly due to rotavirus, and now there are vaccines against rotavirus. Consideration can be given to the introduction of rotavirus vaccine in the near future.

If a child with watery diarrhoea is very sick, toxic, with high fever, then antibiotics are needed, as some watery diarrhoea is due to *Escherichia coli* (*E. coli*), a bacterium, and causes sepsis.

Dysentery is bloody diarrhoea and is commonly due to a bacterium called *Shigella flexneri*. Studies in PNG found very high levels of resistance to amoxicillin and cotrimoxazole among *Shigella flexneri* isolates causing diarrhoea. The study confirmed that cotrimoxazole (Septrin) is no longer effective, and that ciprofloxacin is needed to treat dysentery. **Oral ciprofloxacin is currently recommended treatment by WHO for children with dysentery** in a dose of 10-15 mg/kg twice daily for 5 days.

If children have dysentery and are too sick to take oral medications, give ceftriaxone intravenously (IV) or intramuscularly (IM), and refer if you can.

In 2024 there were 278 children admitted with dysentery, with 8 reported deaths. With the right treatment children with dysentery can recover.

Recommendations

- Deaths from watery diarrhoea usually means the child did not receive sufficient fluids, or the child had sepsis or underlying malnutrition.
- Give ORS and zinc to all children with diarrhoea.
- Treat bloody diarrhoea (dysentery) with ciprofloxacin.
- Recognise sepsis in children with diarrhoea who look too sick (they will often be toxic, malnourished, with high fever), treat according to sepsis protocols, and have the child reviewed by an experienced paediatrician.
- Recognise the high risk of mortality among children with chronic or persistent diarrhoea, they often have underlying problems or comorbidity (anaemia, malnutrition, immune deficiency, adoption), and need referral for assessment.
- Consider rotavirus vaccine introduction

Typhoid

In 2025 there continued high numbers of reported cases of typhoid: 942 in total, with 16 reported deaths from typhoid. Most were from major highlands hospitals: Mt Hagen (524 cases) reported by far the most paediatric typhoid cases, followed by Goroka (150).

Multi-drug resistant typhoid has increased in countries throughout Asia in the last 10 years. Although there is limited resistance data from PNG, the recommended treatment for proven or suspected typhoid is ciprofloxacin. Third generation cephalosporins such as ceftriaxone, and azithromycin are also options.

The rising incidence of typhoid being seen in the PHR data especially in highlands provinces is concerning. Typhoid is often under-recognised in children because of lack of culture facilities and widespread availability of antibiotics means blood cultures are often negative – so the typhoid burden in other areas of PNG may be similar to that of the highlands.

There is a new WHO approved Typhoid conjugate vaccine, which has longer-lasting immunity than the older typhoid vaccines and can be given as a single dose to children from the age of 6 months. WHO recommends this vaccine in highly endemic areas, but it is not currently available in PNG.

Malaria

In 2025 malaria accounted for 1031 admissions and 48 deaths (case fatality rate of 4.7%, Table 3). The number of cases of malaria are static over the last 3 years. The case fatality rate has not changed (around 3-5% most years).

Cases of malaria may be increasing again because of lack of use of insecticide-treated bed nets and other public health protective measures.

Year	Cases	Deaths	CFR
2025	1031	48	4.7
2024	1006	29	2.9
2023	1283	51	4.0
2022	1053	40	3.8
2021	829	34	4.1
2020	617	32	5.2
2019	872	42	4.8
2018	1026	43	4.2
2017	1465	56	3.8
2016	1015	46	4.5
2015	852	44	5.2
2014	1033	67	6.5
2013	1347	70	5.2
2012	1263	69	5.5
2011	1904	61	3.2
2010	1814	50	2.8

Table 3. Malaria admissions and case fatality rates 2010-2025

PNG has established malaria treatment guidelines which include:

- Uncomplicated malaria: artemether-lumefantrine
- Severe or complicated malaria: artesunate as initial treatment, followed by artemether-lumefantrine.

It is important that health workers are familiar with these treatments. They are described in the Standard Treatment Book for Common Illnesses in Children, 11th Edition (2025).

Malnutrition

The PHR records malnutrition as either a co-morbidity or a main diagnosis, so even if it is not the main diagnosis it is still recorded. In 2025 in the 21 hospitals, 3820 children were admitted with severe malnutrition (weight for age <3 SD below the median), or with severe wasting or kwashiorkor. This represented 9% of all admissions.

The case fatality rate for severe malnutrition was 8.2%, which compares well with previous years (Figure and Table 4). There have been clear improvements in severe malnutrition outcomes in the last 10 years, but the death rates are still high.

Malnutrition is a social condition, and improved social, economic and educational conditions are needed to reduce the numbers of children with malnutrition. Informal adoption, early weaning, lack of education on complimentary feeding practices, poor water and sanitation, and other social problems are all risk factors for malnutrition.

Many children with severe malnutrition have comorbidities such as tuberculosis (based on studies in Africa, about 17%), HIV, other chronic illnesses.

There is a need for ongoing supply of essential commodities for managing severe malnutrition, but the best way to prevent deaths from malnutrition is prevention at a community level.

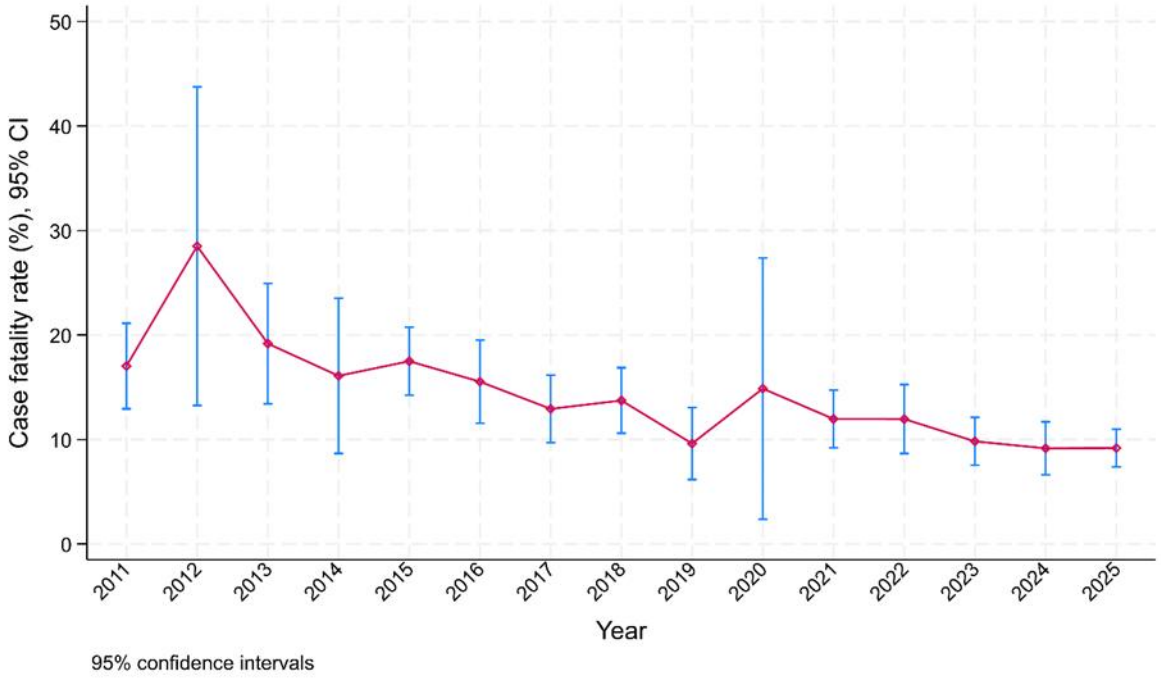


Figure 7. Severe malnutrition case fatality rate 2011-2025

Year	Number admissions	Percentage of all admissions	Deaths	CFR	Number of hospitals with CFR ≥ 20%
2011	1544	7.50	287	18.6	3
2012	2590	12.61	604	23.3	4
2013	3379	16.50	524	15.5	4
2014	2861	13.64	455	15.9	4
2015	2338	14.36	438	18.7	4
2016	2635	11.56	438	16.7	4
2017	3049	14.0	483	15.8	2
2018	2548	10.21	315	12.4	3
2019	2411	8.06	250	10.4	1
2020	2377	7.27	257	10.8	1
2021	2514	8.52	256	10.1	0
2022	2111	8.45	244	11.6	4
2023	2976	9.0	273	9.4	0
2024	3402	10.0	327	9.6	0
2025	3820	9.0	312	8.17	1 *

Table 4. Cases and outcomes of children with severe malnutrition 2011-2025

* Small number of severe malnutrition admissions in Manus (15 and 3 deaths)

In the last 6 years we also report moderate malnutrition, because as improvements occur, a greater focus is needed on other types of under-nutrition, including moderate malnutrition, under-nutrition in adolescents, nutritional anaemia.

In 2025 2595 children were reported with moderate malnutrition, and there were 144 deaths (CFR 5.5%).

This will be an underestimate of the numbers of cases of moderate malnutrition, as moderate malnutrition will be an under-recognised condition because it is so common. However, recording a problem is a start to improving the recognition of it. Better approaches to children with moderate malnutrition will prevent more children developing severe malnutrition.

Recommendations

Health centres and hospitals need early identification and treatment for children with severe and moderate malnutrition:

- Breast feeding should be strongly promoted, and mothers supported to breast-feed while their babies are in hospital.
- Growth monitoring should be a regular part of child health care.
- There should be ready access in the health centre or hospital to adequate formulas (F75 and F100 ideally), nutritious fresh fruits and vegetables and other fresh food,

and ready-to-use therapeutic food (RUTF). If F75 and F100 are not available, there are **recipes for making equivalent formula** at https://pngpaediatricsociety.org/treatment/ in the section: **Undernutrition – guidelines and tools for management**.

- The main problems in the management of malnutrition are inadequate feeding (starting feeds too late, not enough milk feeds and not frequent enough feeds).
- Guidelines for the management of malnutrition should be used in all wards. These include prevention and treatment of fatal complications such as sepsis, hypothermia, and hypoglycaemia.
- Children with severe acute malnutrition should be nursed in a high dependency area in the children's ward, where close monitoring and identification of complications can occur.
- Check all children with severe malnutrition for tuberculosis, as it is likely that 17% of such children will have tuberculosis. They should all have a thorough clinical examination, chest x-ray, GeneXpert test, and TB score. If children with severe malnutrition have a positive family history of a household contact with sputum smear positive, the risk is even higher, and starting TB treatment can be lifesaving.
- Zinc and vitamin A should be available and given to children with severe malnutrition, as per Standard Treatment guidelines.
- Staff should be trained in the management of malnutrition.

The *prevention* of malnutrition should be a high priority. This requires improved rates of breast feeding and complementary (weaning) feeding. This will be helped by increased participation in education by girls and by greater economic independence for mothers. Mothers who have been educated to at least primary school completion are much more likely to breast feed their infants for longer, as well as more likely to seek care when their children are sick and be up to date with immunization.

The *management* of malnutrition is outlined in the PNG Standard Treatment Manual, the PNG Guidelines on Management of Severe Malnutrition, and the WHO Pocket Book of Hospital Care for Children, all available at: https://pngpaediatricsociety.org/treatment/

Many children in hospitals are inadequately supplied with food. Steps should be taken to improve the caloric intake of sick hospitalised children. Having trained paediatric nurses skilled in the management of malnutrition is essential to reducing the case fatality rates from malnutrition.

Meningitis

In the 21 hospital, meningitis accounted for 1398 admissions and 144 deaths. The case fatality rate for meningitis was 10.3%.

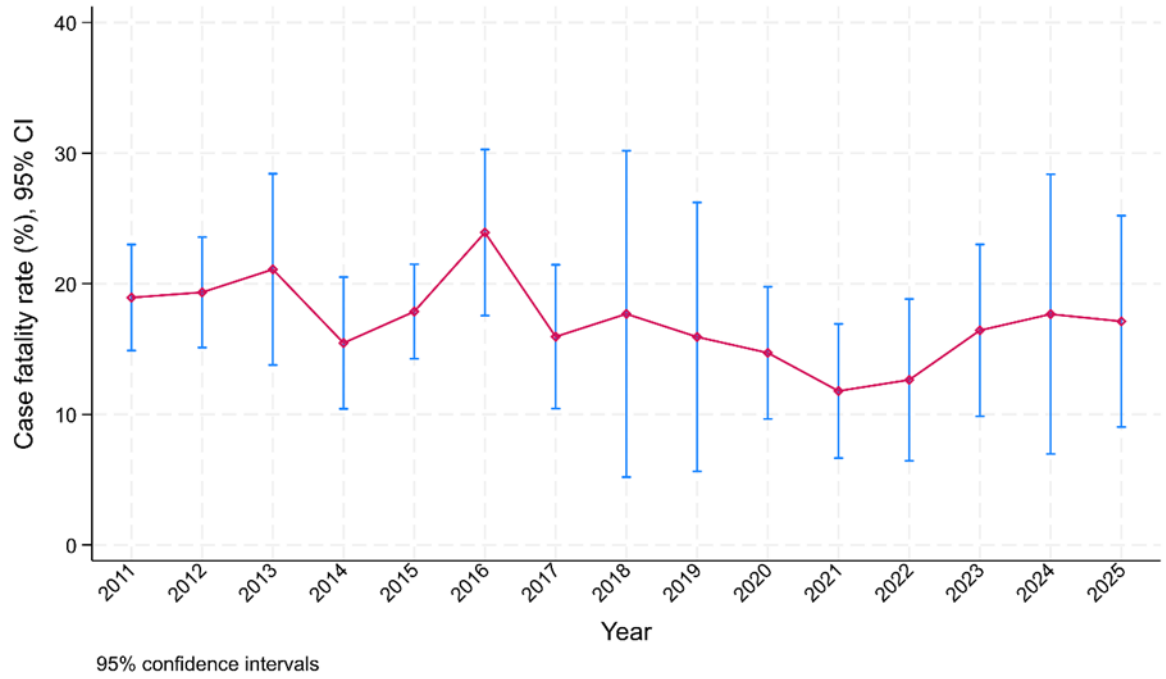


Figure 8. Meningitis case fatality rates 2011-2025

For every death from meningitis, many children survive with serious brain injury which will reduce the child's ability to gain a proper education or participate in the community or workforce. This tragedy is often preventable by vaccination and early presentation and treatment.

The best method of preventing meningitis is the use of conjugate Hib (Pentavalent) and pneumococcal (PCV) vaccines. Cases of Haemophilus influenza and pneumococcal meningitis are still being reported in 2023, which indicates that the vaccines are not yet reaching all children.

Most Hib and *Streptococcus pneumoniae* causing meningitis are resistant to chloramphenicol, so do not use chloramphenicol for children with suspected meningitis. Ceftriaxone or cefotaxime is needed for bacterial meningitis.

There are many causes of the syndrome of febrile encephalopathy that are not bacterial meningitis. The other causes of febrile encephalopathy include viral encephalitis, including enterovirus, dengue, Japanese encephalitis, herpes viruses, and influenza. TB meningitis also causes febrile encephalopathy. A careful history should be taken to determine if the child has been unwell for several weeks prior to presentation: weight loss, chronic fever, chronic cough, and examination finding of wasting, lymphadenopathy, and enlarged liver suggest a more chronic process than occurs with bacterial or viral meningitis, and TB should be considered early.

All patients with febrile encephalopathy or meningitis require good supportive care and monitoring.

Recommendations

All children should receive Pentavalent and PCV vaccines at 1, 2 and 3 months of age.

Pentavalent contains the Hib vaccine and protects against diphtheria (a throat infection), tetanus, pertussis (whooping cough) and hepatitis B (a liver infection which eventually can cause liver cancer in adults). PCV protects against the other most common cause of meningitis.

All children with suspected meningitis should have a lumbar puncture if it is safe to do so. If the CSF is cloudy or has cells on microscopy, treat with ceftriaxone 50mg/kg twice daily IV or IM for 10 days.

Supportive care of children with febrile encephalopathy (seizures and / or acute coma) includes attention to the following:

- Nurse all children with meningitis or unconsciousness in a high dependency or intensive care section of the ward.
- Nurse the child 30° head up (elevate the head of the bed, or nurse on a pillow) to reduce the risk of aspiration and to reduce intracranial pressure.
- Monitor with pulse oximetry to detect hypoxaemia, and give oxygen if SpO_2 <94%
- Monitor the blood glucose and prevent hypoglycaemia.
- Monitor the Glasgow Coma Scale
- Monitor the blood pressure and ensure it is in the upper normal range to optimise cerebral perfusion. Avoid both severe hypertension and hypotension, both are bad for children with meningitis. Monitor the pulses and peripheral circulation.
- Close observation for convulsions, and prompt treatment with a preventative anticonvulsant if the child has convulsions.
- Do not give too much IV fluid, this leads to body and brain swelling and results in poor outcomes, maintain enteral nutrition via a nasogastric tube.
- Check electrolytes and correct if sodium <130mmol/L or >150mmol/L.
- Change position to prevent pressure sores.
- Physiotherapy to prevent limb contractures.
- Consider the diagnosis of TB meningitis if a child is not improving, or if the history is suggestive (prolonged history, malnutrition, contact with a case of active TB). If uncertain, refer, or commence TB treatment.
- Do a CT scan if you can if the child remains poorly conscious after 48 hours of treatment for bacterial meningitis.

Severe sepsis and septic shock

In 2025 there were 378 children outside the neonatal period reported with severe sepsis or septic shock, and 166 deaths, making septic shock the illness with the highest death rate (44%). There has been a large increase in cases of septic shock in recent years.

It is very important that health workers recognise the signs of septic shock, and know how to give emergency management.

There should be a system of Triage in every emergency or outpatient department to enable prompt identification of seriously ill children.

The general signs of severe sepsis include:

- High or persistent fever
- Vomiting or diarrhoea
- Severe pallor
- Lethargy or unconsciousness
- Fast breathing and respiratory distress
- Heart rate >160 with pulses that are difficult to feel.
- Cold skin of arms and legs
- Slow capillary refill (>3 seconds)
- Low blood pressure

There may be **localising signs** suggesting meningitis:

- Severe headache
- Neck stiffness
- Repeated convulsions
- Bulging fontanelle
- Extreme irritability or high-pitched cry

There may be localising signs suggesting **bowel sepsis**.

- Severe vomiting and abdominal distension
- Blood in vomit or dysentery (blood in stools)

There may be a rash, different types of rashes suggest different causes:

Purpura (red or black spots on the skin) – suggests a Gram-negative septic shock (*Neisseria meningitidis*, *E. coli*, *Klebsiella*)

Scarlet fever-like red rash (widespread red rash on face, trunk, limbs) – suggests a Gram-positive septic shock (Group A Streptococcus, *Staphylococcus aureus*).

There may be other signs of Staphylococcal infection:

- Skin sepsis: boils, pustules, abscess, infected scabies or infected skin sores, cellulitis.
- Swollen red, hot, tender, and painful joint.
- Empyema or pleural effusion

The **emergency treatment for severe sepsis** should be known by all health workers:

- If the child is unconscious or convulsing, nurse on the side, 30° head up, keep the airway clear.
- Give oxygen if there is severe respiratory distress, cyanosis, poor conscious state, or the oxygen saturation is <94%

- Measure blood pressure if you can, and assess the circulation for signs of shock (are the limbs cold, are the pulses hard to feel, is the capillary refill very prolonged?)
- If the child has signs of shock (several signs: lethargy or drowsiness, low volume pulses, heart rate >160, cold skin or low blood pressure), give an IV bolus of Normal Saline or Hartmann solution, 20ml/kg, then reassess.
- Give antibiotics urgently: ceftriaxone 50mg/kg *plus* flucloxacillin 50mg/kg intravenously (IV) or IM.
- Monitor in the ICU section of the ward. Monitor with pulse oximetry to detect hypoxaemia.
- Check blood glucose. Give a bolus of glucose if the blood sugar level (BSL) is low.
- Seek assistance from an experienced doctor. If you cannot insert an IV, give IM antibiotics and refer urgently if you can.
- Look up further treatment recommendations in the PNG Standard Treatment Book for Children, and the WHO Pocketbook of Hospital Care for Children.

Tuberculosis

Tuberculosis made up 8.5% of all admissions. In the 21 hospitals in 2025 there were 3625 children admitted with a diagnosis of tuberculosis, and 245 deaths and a case fatality rate of 6.8%. (Figure).

Year	Cases of TB	Total paediatric admissions	TB cases as a percentage of admissions
2017	2417	23272	10.4%
2018	2175	24960	8.7%
2019	2125	29901	7.1%
2020	1819	32755	5.6%
2021	1953	29485	6.6%
2022	1840	24967	7.4%
2023	2574	32,741	7.8%
2024	2664	33,917	7.9%
2025	3625	42,472	8.5%

Table 5. Cases of TB as a proportion of all admissions 2017-2024

The case fatality rates for paediatric pulmonary TB were 4.1% (1847 admissions and 76 deaths), and extrapulmonary TB 10.4% (1487 admissions and 155 deaths), Figure .

702 children were diagnosed and treated for central nervous system TB, which has the highest case fatality rate (110 deaths, 15.7%).

There were 106 cases of MDR TB reported, with 8 deaths in this group of high-risk children, which proves MDR-TB that it can be treated successfully if identified and the medications and other resources are available to treat.

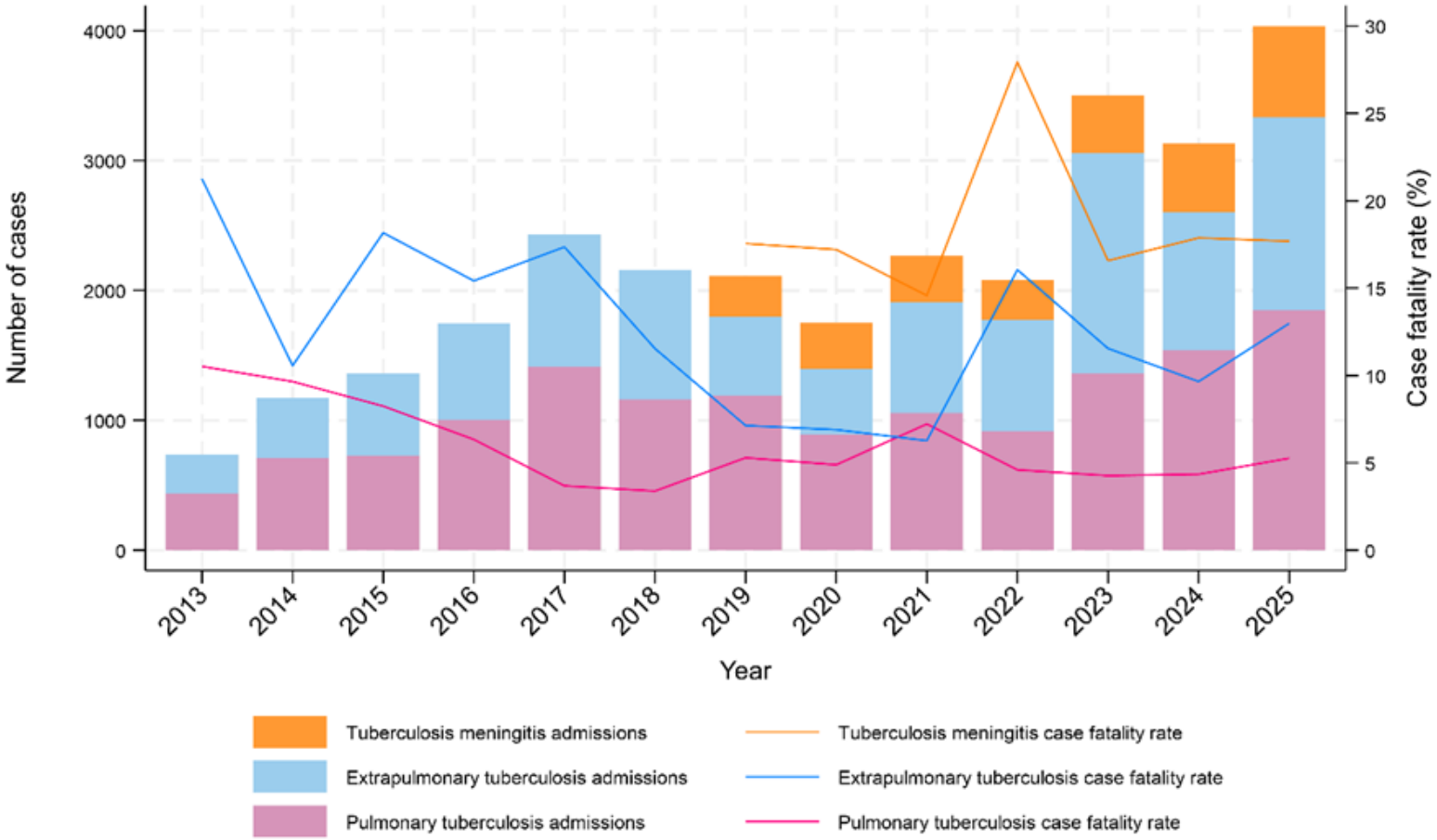


Figure 9. Pulmonary and extra-pulmonary tuberculosis admissions and case fatality rates 2013-2024

The numbers represented in this report are a proportion of the children with TB in PNG, given that many cases are diagnosed by other hospitals or health facilities or remain undiagnosed in the community.

Recommendations

Every effort should be made to help children complete TB therapy, and for many children this will require up to 2 months of hospitalisation to ensure adherence, adequate education of the family, and arrange active community follow-up.

It is important to screen all family members (particularly children) of adult patients who are known to have sputum smear positive PTB.

If there is a person with sputum smear positive PTB in the household, child contacts should be screened. If they are asymptomatic, they should be commenced on TB Preventative Therapy (TPT, see paediatric Standard Treatment Manual). If children have symptoms or signs of TB, do a TB score. If the score is >7, register them and commence TB treatment.

The most effective way to prevent transmission of TB to children is by early identification and treatment of those people in the community with infectious TB, usually adults and older children with PTB, especially sputum smear positive PTB.

BCG immunization is effective in preventing severe and disseminated forms of TB (such as miliary TB and TB meningitis) in young children.

Early identification and treatment of children with TB disease will reduce the numbers of childhood deaths and complications (such as bronchiectasis and cerebral palsy) due to TB.

In remote areas, where chest x-ray and acid-fast bacilli (AFB) staining of sputum is not possible, it is valid to diagnose TB clinically, based on symptoms, signs, and the TB score. It is better to treat and closely monitor response than to have children deteriorate because diagnostic tests were not available.

The GeneXpert test can help diagnose TB and identify drug-resistant TB. GeneXpert is available in almost all provincial hospitals. However, a negative GeneXpert test does not mean a child does not have TB. The diagnosis of TB is based on the history of infectious contact, the clinical features, radiology, sputum or gastric aspirate for acid fast bacilli, and other tests, including GeneXpert. If uncertain refer to the PNG Standard Treatment Guidelines on TB and to your provincial paediatrician; more details are also in the National Child Health Plan.

GeneXpert testing should be done on all children who are:

- Contacts of known MDR cases or suspected MDR cases
- Relapsed or re-treatment cases
- HIV positive
- Failing treatment despite supervised treatment and proven adherence.

Do not discharge patients with TB too early: keep children who are seriously ill with TB in hospital for the duration of their intensive phase treatment (2 months) if this is feasible. To do this child and family friendly health facilities are needed, where children can go to school while they receive supervised treatment, and parents can receive appropriate

education on how to care for their child with TB and receive proper family screening and treatment themselves if they have TB.

TB programs that are successful in achieving good treatment completion rates have **nurse outreach services** for identification and supervision of DOTs providers, checking of adherence, nutritional, social, and economic support, and follow-up in the home.

HIV

In 2022 there were 547 children with HIV admitted to the hospitals, and 54 known HIV-related deaths (case fatality rate of 9.9%, Table 6).

Year	Admission of children with HIV	Deaths in children with HIV
2016	532	86
2017	545	89
2018	547	87
2019	389	48
2020	479	82
2021	384	61
2022	281	64
2023	455	76
2024	400	39
2025	547	54

Table 6 Cases and deaths of paediatric HIV 2016-2024

The numbers represent only cases that were admitted to hospitals and may be an underestimate of new cases in the population, as some children are diagnosed as outpatients or through Prevention of Parent to Child Transmission (PPTCT) programs, and are not admitted to wards.

In the past children living with HIV were failing anti-retroviral (ART) therapy because they are still on Nevirapine-Lamivudine-Zidovudine (NVP/3TC/AZT) combination therapy. In PNG as in many countries there are high levels of drug-resistance to non-nucleoside reverse transcriptase inhibitors (NNRTIs), particularly Nevirapine. This led to poor treatment outcomes on NNRTI-based ART among infants and young children, which is now addressed by new treatments with Dolutegravir based therapy (see below).

Recommendations

- Early infant diagnosis (EID) of HIV with PCR testing is now available (including rapid point-of-care testing using GeneXpert in some hospitals). In Western Highlands Province EID with GeneXpert for HIV is being done successfully at birth, and this is helping identify babies who have HIV before they become sick.
- Children who have HIV confirmed by early infant diagnosis and start on effective anti-retroviral therapy (ART) before they become symptomatic have a much better

chance of healthy life than children diagnosed later because they have AIDS-related opportunistic infections.

- Effective therapy using Dolutegravir (DGV)-based therapy is available, and other recommended drugs Lopinavir (LPV)/ritonavir, Abacavir and Lamivudine are now also available. If these are not available in your province, contact the Chief Paediatrician.
- All children living with HIV should be on DGV-based or LPV-based regimens. This is described in the new HIV care and treatment guidelines: https://pngpaediatricsociety.org/wp-content/uploads/2020/03/PNG-HIV-care-and-treatment-guidelines-2019.pdf
- Mothers who are diagnosed with HIV during or after pregnancy are now treated with three antiretroviral drugs for life, not just for shorter periods to prevent transmission to the baby.
- All children living with HIV should see a paediatrician regularly, for starting on antiretroviral therapy and follow-up.
- Children on ART need to have their treatment monitored, with regular testing of viral load.
- All children living with HIV need prophylaxis with cotrimoxazole (Septrin or Bactrim) and isoniazid, treatment of other infections and good nutrition.
- Teach children who are living with HIV about their condition. They are more likely to take their ART reliably if they understand more, and even young children have a right to this knowledge. Educational resources are available to teach children who are living with HIV about their condition in ways that are age appropriate.

Chronic non-communicable diseases in children

There are increasingly children with chronic diseases, involving respiratory, cardiac, neurological systems, endocrine problems, and cancer. The PHR has just started reporting these conditions, and more awareness on the care of these patients is needed. Individually the conditions are less common than acute problems, for example, pneumonia, diarrhoea, or malaria, however together they are increasingly common. In 2025, 1944 patients with these chronic conditions were admitted to these 21 hospitals (Table 7), making up 8.1% of all admissions in children over 1 month of age, and 19% of all deaths.

Some chronic disease management occurs in outpatients and in the community, so hospital inpatient data is an under-representation of the overall disease burden for children and adolescents.

Chronic condition	Admissions	Deaths
Congenital heart disease	881	107
Cerebral palsy / developmental disability	301	29
Epilepsy	202	2
Cancer	167	44
Asthma	203	1
Rheumatic heart disease	156	12
Diabetes and endocrine disorders	34	4
Total	1944	199 (10.2%)

* Includes paediatric admissions plus babies born with congenital heart disease.

Table 7. Common chronic diseases reported in 2025

Cancer awareness



Figures 10 and 11. Childhood cancer awareness

Poster (above) to promote awareness of the early signs of childhood cancer. Produced by the Children's Cancer group, led by Dr Gwenda Anga and Dr Benjamin Daur, and many committed paediatric nursing colleagues (below).



Guidelines for the management of common cancers are available at www.pngpaediatricsociety.org (under Treatment Guidelines, Cancer Protocols), and assistance is available from Dr Gwenda Anga and Dr Benjamin Daur, oncology paediatricians at Port Moresby General Hospital.



Figure 12. Detecting eye problems early

One of the most prevalent forms of childhood cancer in PNG is retinoblastoma. If this is detected early the outcome can be good. Dr Benjamin Daur shows a child and her mother the signs of early retinoblastoma. But an eye check can identify other problems, such a refractive error that will be corrected by glasses, so if parents or health workers think there may be a problem with a child's vision, have it checked out.

Management of children with chronic conditions

Children with chronic diseases, regardless of the type, have some common health care needs, including:

- a long-term treatment plan
- good follow-up by a trusted doctor or paediatric nurse
- going to school regularly and having schools informed about their condition.
- a regular supply of medicines on time, and good adherence
- optimal nutrition

Children with chronic illnesses must understand their condition well. Children as young as 4 or 5 years can start to understand. This is empowering and helps them manage their illness as they get older.

Some children with chronic illness have problems with hearing and vision, which can be addressed to make their lives better, and some have motor and mobility problems that can be addressed with physiotherapy, regular exercise and aids such as wheelchairs or walking frames. Programs are needed in every province that better support children with chronic illness. These children are most at risk of dying from acute infections and malnutrition, so preventative measures are vital.

*

Autism and neurodevelopmental conditions

The Paediatric Society and the Child Health Advisory Committee note the rise of some conditions that are rarely captured by statistics, but which need to be better understood by health care workers, parents and the wider community. These include Autism and other neurodevelopmental problems. These conditions have effects on children's development, and their functioning at schools and in communities. More awareness is needed to help families who have children with autism live their best lives. If you have children who may have autism, they should see a paediatrician for proper assessment.



Figure 13. The paediatric team at Port Moresby General Hospital gather for Autism Awareness.

Rheumatic heart disease

From 2025 there were 156 cases of rheumatic heart disease / acute rheumatic fever (Table 8).

Year	Rheumatic heart disease / acute rheumatic fever admissions	RHD / ARF Deaths	Case fatality rate (%)
2013	58	4	6.9
2014	48	3	6.3
2015	65	6	9.2
2016	77	7	9.0
2017	132	16	12.1
2018	92	6	6.5
2019	116	15	12.9
2020	140	21	15.0
2021	170	15	8.8
2022	229	23	10.0
2023	203	21	10.3
2024	102	10	9.8
2025	**156**	**12**	**7.7**

Table 8. Paediatric rheumatic heart disease / acute rheumatic fever admissions and outcomes 2013 - 2025

Recommendations

Hospitals and health facilities to start using the ARF / RHD case reporting form, to feed into a national register of cases. The case reporting form can be downloaded at: https://pngpaediatricsociety.org/reports/disease-surveillance-case-reporting-forms/

Child protection

Data on child physical, sexual, and other forms of abuse are gathered by the PHR. There were 222 child protection cases and 21 deaths reported in 2025. This under-estimates the true burden of child abuse, maltreatment, and neglect, as many children do not present to hospitals.

There are other conditions that children present with that represent child protection issues: social issues are also a frequent root cause of malnutrition, and a proportion of children with severe malnutrition have also been subject to neglect.

In many families where a child has been abused or neglected, there will also be gender-based violence against the mother.

More awareness of child protection is needed, and more resources, including a child social worker in each hospital to deal with the range of common social issues.

For resources on Child protection see: https://pngpaediatricsociety.org/treatment/, scroll down to **Child protection, maltreatment and gender-based violence.**

Vaccine preventable diseases

In 2025, there were 51 cases of whooping cough, 35 cases of acute flaccid paralysis (AFP), 21 cases of tetanus. There was only 1 recorded case of suspected measles and 0 cases of rubella reported in 2025.

Measles is affecting many countries in Asia and the Western Pacific region, including Cambodia, Laos, Mongolia, Malaysia, the Philippines, and Viet Nam. Measles vaccination coverage in PNG is far too low, and despite few reported cases in 2025 it is inevitable that there will be another measles epidemic in the next few years, unless measures are taken to improve coverage.

At least 90% coverage is needed to prevent outbreaks of measles. Every child we vaccinate is another child protected. The most at-risk children are those who do not come to get vaccines, so we must go to communities to immunise them. Routine and outreach immunisation programs are a high priority.

Report any suspected case of acute flaccid paralysis, acute fever and rash, tetanus, or whooping cough to the Provincial or National Disease Control Officer for evaluation and specimen collection for laboratory confirmation.

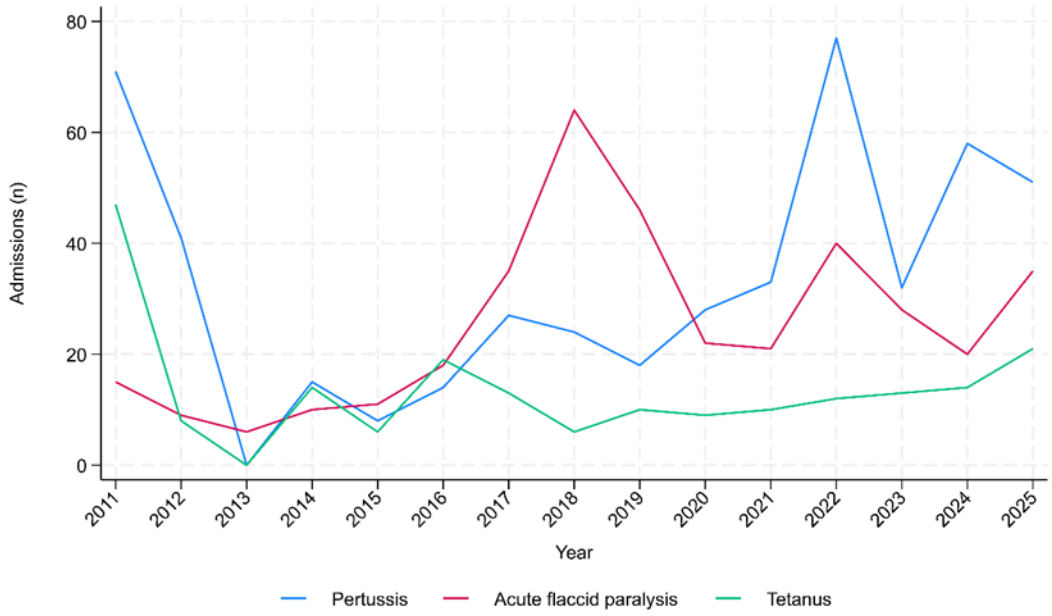


Figure 14. Cases of vaccine preventable diseases reported in 2011-2025: pertussis, AFP and tetanus

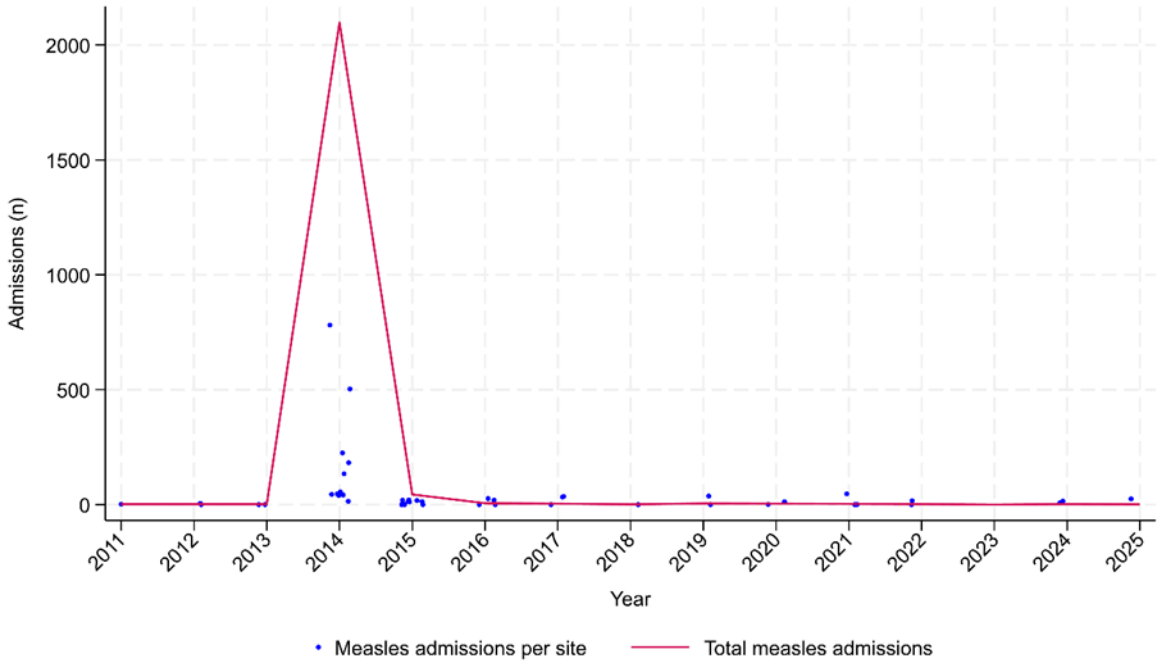


Figure 15. Measles cases 2011-2025

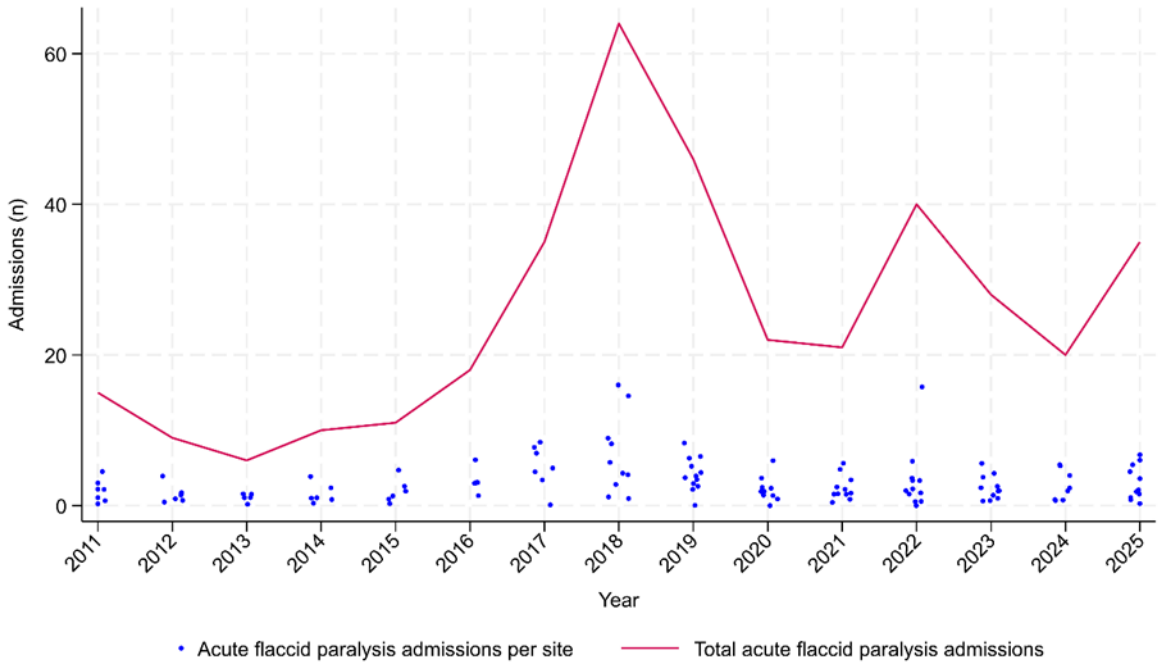


Figure 16. Acute flaccid paralysis cases 2011-2025

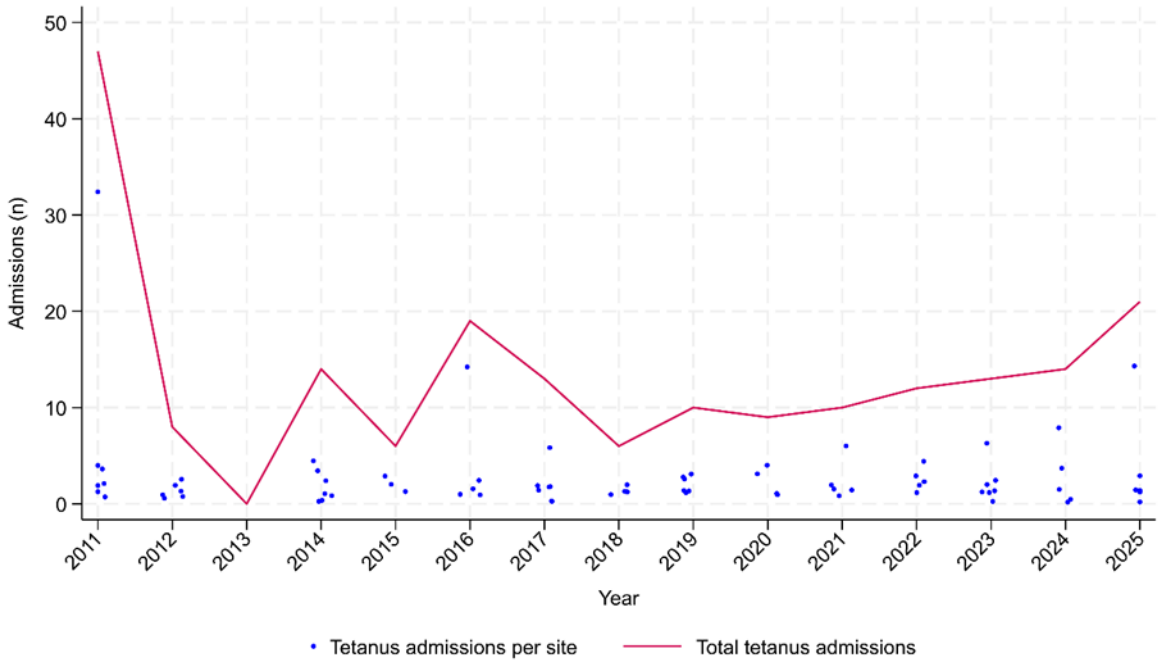


Figure 17. Tetanus cases 2011-2025

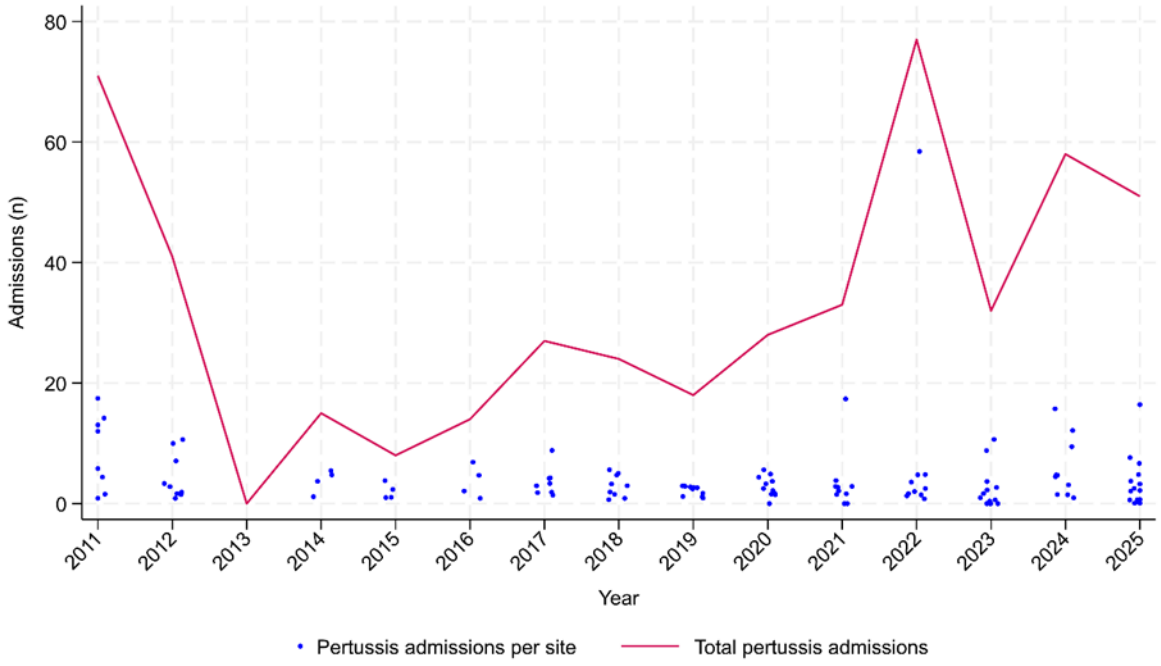


Figure 18. Pertussis (whooping cough) cases 2011-2025

Neonatal care and newborn health

Neonatal admissions made up 18,482 (44%) of all 42,472 paediatric admissions to the 21 hospitals in 2025.

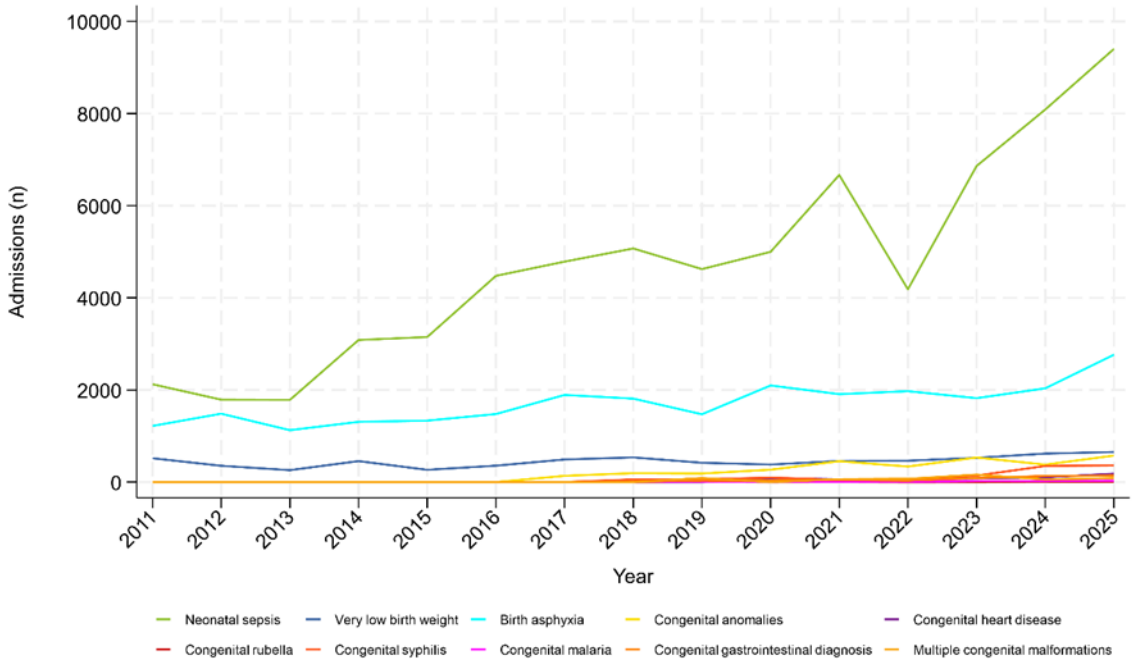


Figure 19. Common neonatal diagnoses 2011-2025

There were 1113 neonatal deaths reported (mortality rate 6.02%), which is lower than in the recent post-pandemic years: (Table 9, Figure 20, below).

Year	Neonates admitted	Neonatal deaths	Mortality rate
2015	4461	394	8.8
2016	6930	556	8.0
2017	7534	687	9.1
2018	7725	643	8.3
2019	7971	679	8.5
2020	10024	534	5.3
2021	12292	726	5.9
2022	8600	928	10.8
2023	12,537	1160	9.25
2024	15,069	1132	7.51
2025	18,482	1113	6.02

Table 9. Neonatal admissions and deaths 2015-2025

The major causes of neonatal deaths are infection, birth asphyxia, and very low birth weight.

There are many possible reasons for high newborn mortality: out-of-hospital deliveries, delays in accessing obstetric care, parents not bringing their newborns to be assessed until they were very unwell, overcrowding of special care nurseries, unavailable newborn care equipment, and insufficient beds and other resources to admit the number of unwell neonates.

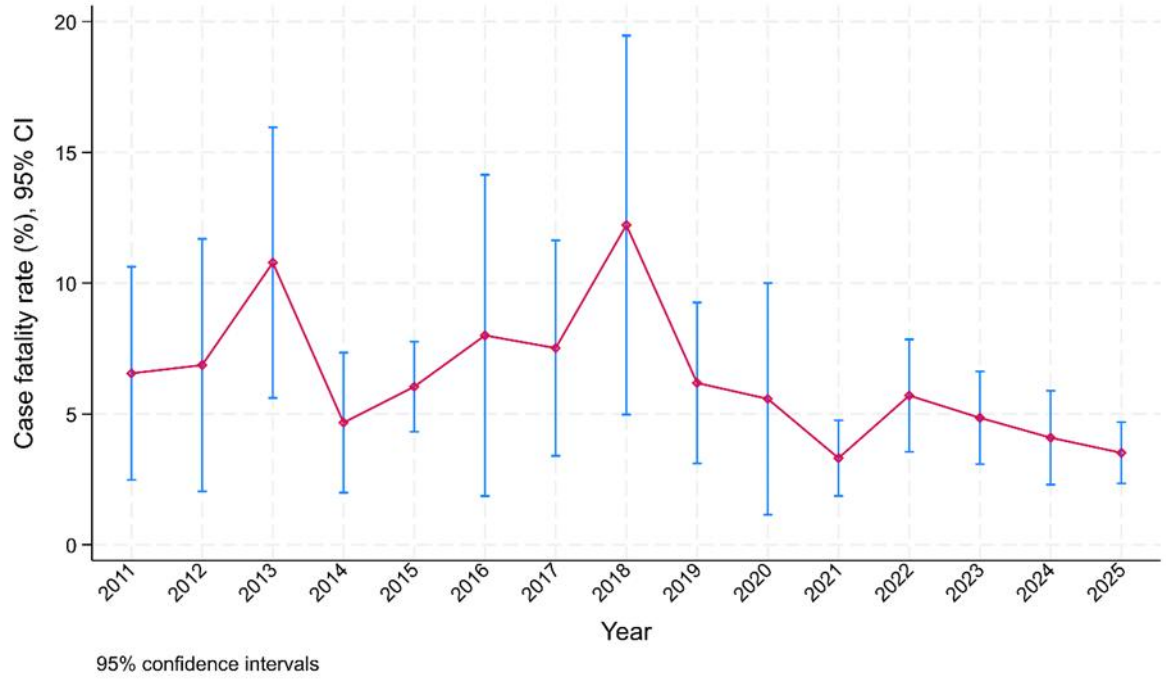


Figure 20. Overall neonatal mortality rates in Special Care Nurseries 2011-2025



Figure 21. PHA teams making a difference to women's and children's health

The above shows midwives and nurses at the Milfordhaven Urban Clinic in Lae doing couple-counselling to antenatal mothers with their husbands or partners. These nurses provide all-important health information regarding pregnancy, delivery, complications, newborn care, breastfeeding, and violence against pregnant women and new mothers.

Neonatal infections

In 2025, 54% (9403 of 18,482 neonatal admissions) were associated with infections, and there were 391 deaths from neonatal infections (CFR 4.1%). These proportions have been consistent for several years.

Neonatal infections included pneumonia, meningitis, cord sepsis, skin sepsis and diarrhoea. Because of comorbidity, infections may occur in babies with other diagnoses, including low birth weight.

Measures to prevent neonatal infections are described below in early essential newborn care.

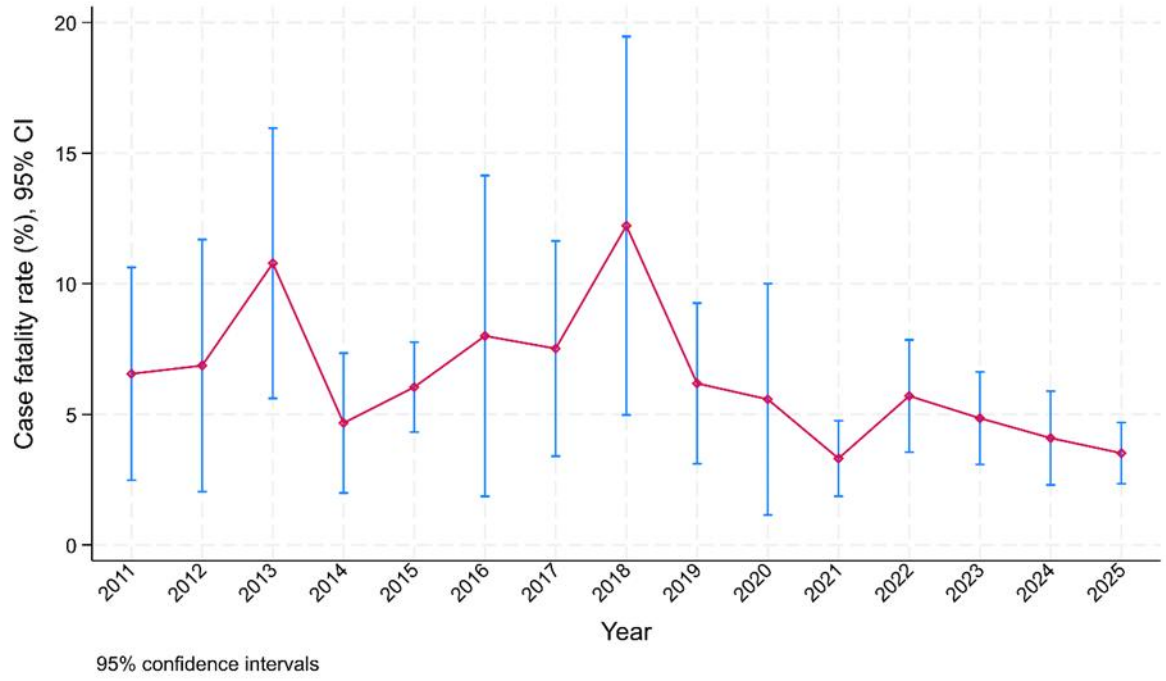


Figure 22. Neonatal infection case fatality rates in Special Care Nurseries 2011-2024

Birth asphyxia

Birth asphyxia is lack of oxygen at or around the time of birth. Many babies survive without serious damage, but the consequences for some children are severe brain injury or death. In 2025 there were 2765 cases and 342 deaths with a CFR of 12.4 (Figure and Table 10). 31% of neonatal deaths were due to perinatal asphyxia or associated with it.

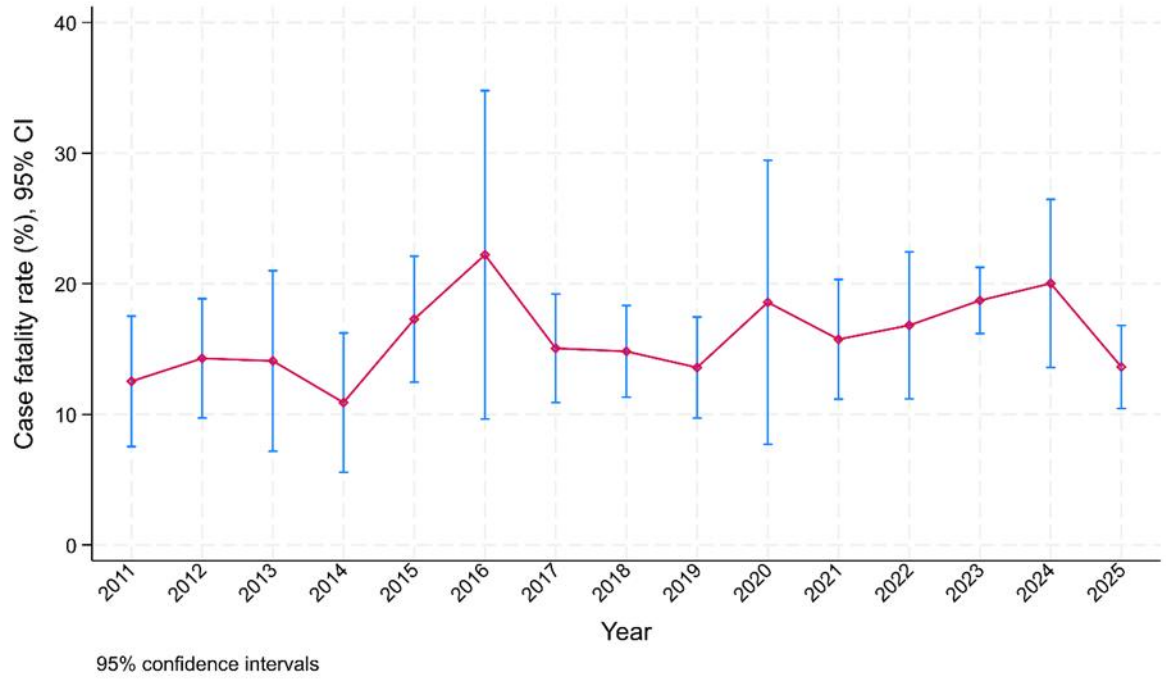


Figure 23. Case fatality rates for newborns with birth asphyxia 2011-2025

Year	Birth asphyxia cases	Birth asphyxia as a percentage of all newborn SCN admissions	Deaths caused by birth asphyxia (% of all newborn deaths)	Case fatality rate
2015	1335	29.9%	198 (50%)	14.8%
2016	1478	21.3	285 (51%)	19.2%
2017	1892	25.15	280 (41%)	14.8%
2018	1812	23.5%	245 (38.1%)	13.5%
2019	1473	18.5%	218 (32.1)	14.8%
2020	2134	21.3%	204 (38.2%)	9.5%
2021	1909	15.5%	240 (33.1%)	12.6%
2022	1973	22.9%	231 (24.9%)	11.7%
2023	1822	14.5%	311 (26.8%)	17.1%
2024	2035	13.5%	354 (31.3%)	17.4%
2025	2765	15.0%	342 (30.7)%	12.4%

Table 10. Birth asphyxia cases as a proportion of all newborn admissions and deaths 2015-2025

The developmental implications for many surviving children are significant: cerebral palsy, intellectual disability, blindness, and seizures are common. Even mild or moderate forms of birth asphyxia can have long-term developmental consequences.

Birth asphyxia can be reduced with supervision by a skilled midwife, identification of delays in labour, active management of labour, and close communication between obstetric / midwifery services and paediatric services. Providing immediate newborn care - described below - can also prevent some cases of asphyxia, as babies are stimulated to initiate breathing early by drying. Training in neonatal resuscitation for nurses and doctors can reduce the number of babies with birth asphyxia.

Very low birth weight

Very low birth weight (VLBW) is a birth weight between 1000 and 1499g. In 2024, there were 619 VLBW admissions in the 20 hospitals. Of those VLBW newborns, 220, or 36% died, which is unchanged on recent years (Table 11 and Figure 24).

Year	VLBW cases	VLBW deaths	Case fatality rate
2015	267	100	37.5%
2016	356	120	33.7%
2017	491	198	40.3%
2018	536	217	40.5%
2019	419	140	33.4%
2020	262	79	30.2%
2021	459	113	24.6%
2022	464	167	36.0%
2023	527	186	35.3%
2024	619	220	35.5%
2025	652	214	32.8%

Table 11. Very low birth weight cases and deaths 2015-2025

Although two-thirds of these VLBW babies survive to hospital discharge, the survivors remain very vulnerable, and many become ill, malnourished or die after discharge. They are especially at risk if they are too small when they leave hospital. It is not generally safe to discharge VLBW babies until they reach at least 1.8kg. These babies need close follow-up and care in the first year of life.

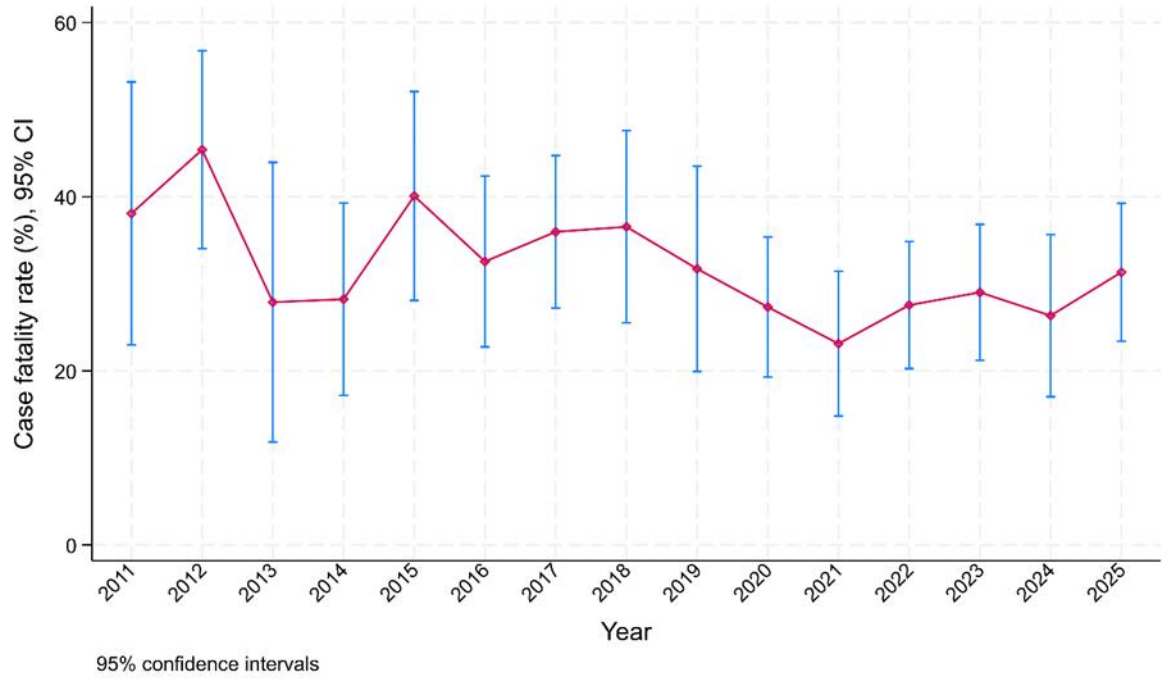


Figure 24. Case fatality rates for very low birthweight newborns 2011-2025

In addition, there were 4094 babies admitted with **low birth weight** (1500-2500g), and 294 deaths, with a case fatality rate of 7.2%. Again, these babies are highly vulnerable in infancy and throughout childhood, especially to malnutrition and infections.

Congenital anomalies

In 2025, 440 newborns were reported to have congenital malformations, of whom 107 died (case fatality rate 24%). These are shown in Table 12. Gastrointestinal malformations include ano-rectal malformations (anal atresia), other bowel atresia, Hirschsprung disease, congenital diaphragmatic hernia, and trachea-oesophageal fistula. "Multiple congenital anomalies" include chromosomal abnormalities, and birth defects caused by teratogens (such as foetal alcohol syndrome, and neural tube defects caused by maternal folic acid deficiency). Other congenital malformations will be specifically reported on in coming years.

Type of congenital anomaly	Admissions	Deaths	CFR (%)
Gastrointestinal anomalies	143	38	26.6
Congenital heart disease in newborn	183	40	21.8
Multiple congenital anomalies	94	12	17.1
Microcephaly	20	6	30.0
Total congenital malformations	440	106	24.1

Table 12. Congenital malformations 2025

Congenital or intrauterine infections

There were 363 cases of newborns exposed to syphilis who were unwell enough to be admitted to the special care nursery. Not all had signs of congenital syphilis, most were born to mothers who tested VDRL (venereal disease research laboratory) or TPHA (Treponema Pallidum Haemaglutination assay) positive. There were 11 deaths among these babies whose mothers were VDRL positive.

There were 30 cases of congenital malaria (3 deaths), and 4 cases of congenital rubella identified in 2025.

These are a fraction of the congenital infections that occur. Others of course include vertical (parent to newborn) transmission of HIV, and vertical transmission of hepatitis B. The transmission of hepatitis B from parent to newborn is why the birth dose of hepatitis B vaccine is vital in protecting newborns from becoming chronic carriers of the infection. Also, congenital cytomegalovirus is likely to be very common but currently cannot be tested for in hospitals in PNG.

Recommendations for improving neonatal care

Provision of early essential newborn care and keeping newborns with their mothers has a big impact on reducing neonatal sepsis, birth asphyxia and other complications. All newborns need the following:

- ***Immediate and thorough drying*** stimulates breathing and prevents hypothermia which can threaten newborns with delayed foetal-to-newborn circulatory adjustment, acidosis, hyaline membrane disease, coagulation defects, infection, hypoglycaemia, and brain haemorrhage. In some studies, the number of babies who do not breathe at birth was found to decrease by more than half once immediate and thorough drying was instituted.
- ***Sustained skin-to-skin contact with the mother*** prevents hypothermia, initiates colonization of the newborn with maternal flora (as opposed to hospital flora which often includes multi-resistant bacteria), calms the baby and facilitates successful intake of colostrum and sustained breastfeeding.
- ***Delaying cord clamping until cord pulsations stop***, typically around one to three minutes after birth, reduces the risk of anaemia and the risk of intraventricular haemorrhages in preterm infants.
- ***Exclusive breastfeeding and elimination of formula*** can prevent a large proportion of neonatal sepsis deaths.
- ***Avoiding harmful practices***, such as separation of babies from their mothers in the first hours of life for bathing or unnecessary observation. Separation reduces the chance that babies will breast feed successfully and means they are less likely to receive colostrum, which contains antibodies that protect against infection.

Babies who require resuscitation or special care

Despite thorough drying, 5-10% of newborns do not breathe immediately after birth and require some assistance or resuscitation.

Bag and mask resuscitation for babies who are not breathing within the first minute of life reduces neonatal mortality.

All hospitals should have neonatal areas that reach a minimum standard to care for babies who require a higher level of care. However, in a Special Care Unit it is vital that newborn care practices are as non-invasive and as natural as possible, and that babies are not separated from their mothers having skin-to-skin warming and breast feeding.

Maintain skin-to-skin contact with the mother to protect babies from hypothermia, hypoglycaemia, apnoea, and infection.

Improved care for sick neonates includes early essential newborn care, *plus*:

- Keeping babies warm, best done using Kangaroo Mother Care (KMC). KMC is even safe for many very low birth weight babies, unless they are also very sick with danger signs such as apnoea, cyanosis, or severe hypoxaemia.
- Supplemental oxygen administration and pulse oximetry. Because many neonates do not have clinical signs of hypoxaemia, use of pulse oximetry is recommended. In very low birth weight babies, keep SpO_2 90-95%, but do not give oxygen to make the SpO_2 higher than 95%, as it can cause eye damage (retinopathy of prematurity: ROP).
- Detecting and treating apnoea. Apnoea is a major cause of neonatal mortality among premature neonates and among babies with sepsis and birth asphyxia. The use of apnoea monitors, aminophylline for premature neonates and close observation of all very sick babies are recommended.
- Prevention and treatment of hypoglycaemia. Hypoglycaemia complicates many neonatal conditions, particularly low birth weight and sepsis. Early breast feeding and close contact with the mother immediately after birth prevents hypoglycaemia – this is best achieved by early skin-to-skin contact and KMC. Hypoglycaemia occurs because neonates have insufficient glycogen stores in the liver, inability to feed or separation from the mother, and increased glucose metabolism during illness. The clinical signs are non-specific, and regular blood glucose monitoring of high-risk ill neonates is required. Contact with the mother is essential for most sick babies. Ensure careful correction of hypoglycaemia using breast feeds in babies who can suck, or nasogastric expressed breast milk feeding or IV glucose in babies too sick to feed.
- Organisation of the SCN to ensure close observation of the most seriously ill and highest risk ill babies.
- Safe use of intravenous fluids in seriously ill neonates. In very low birth weight neonates, expressed breast milk by a nasogastric tube is ideal. However large volumes of enteral feeding in the first day or two of life is often not well tolerated. Artificial formula feeding is not recommended at any time in low-birth-weight babies. For babies less than 1.5 kg, slow increases in expressed breast milk with cautious intravenous fluids to maintain hydration and prevent hypoglycaemia in the first few days of life is recommended. Babies on IV fluids are at risk of overhydration and nosocomial infection through the IV drip site.

- Antibiotics. Although many seriously ill neonates have bacterial infections, the inappropriate use of broad-spectrum antibiotics will lead to colonization of babies, and of neonatal units, with bacteria that are resistant to standard antibiotics. Standard treatment of neonatal sepsis is benzylpenicillin (or ampicillin or amoxicillin) and gentamicin, which are effective against most bacteria causing sepsis. *Staphylococcus aureus* is another common cause of infection in young infants in some hospitals, and resistant enteric gram-negative bacilli are a common cause of neonatal death. Flucloxacillin or cloxacillin should be used if there are signs Staphylococcal infection, such as purulent umbilical cord, skin pustules or purulent conjunctivitis.
- Prevention of neonatal sepsis. Strict hand washing and other basic infection control measures are strongly recommended. There is good evidence now that prolonged antibiotics lead to colonisation of the newborns. gastrointestinal tract with pathogenic bacteria that are likely to be invasive, rather than the protective bacteria that comes from the mother. So, avoiding antibiotics in babies who do not have serious infections is very important to protect them against infection. Ceasing antibiotics after 24 or 48 hours if the baby is well will also reduce colonisation with pathogenic or highly-resistance bacteria and reduce infections in babies.
- Birthing facilities, nurseries, and post-natal wards can be involved in educating mothers on warning signs for newborns e.g. poor feeding, fits or twitching, yellow discoloration, fever, too sleepy, wet cord, etc. Such education on warning signs can help improve health seeking for sepsis, where it is not uncommon for symptoms to have been present for a couple of days.
- Auditing of practice. It is only by keeping accurate records of all admissions and outcomes that patterns of adverse events will be identified. Clinical audit is essential to reduce neonatal mortality.
- Training of nurses in early essential newborn care and neonatal high-dependency care

Quality of care assessment

In 2024-25, The Paediatric Society and the National Department of Health carried out quality of paediatric care assessments. This was a detailed assessment done by paediatricians and senior nurses in their own hospitals. 11 hospitals completed these assessments.

Some of the summarised results are below:

- Child / adolescent population per paediatric bed: 7700 (interquartile range 3800-15,200)
- **Nurse: patient ratio day: one nurse per 9 (5-15) patients**
- **Nurse: patient ratio night: one nurse per 13 (10-20) patients**
- One paediatrician per 153,000 (94,000-231,000) children and adolescents in the population

Resources and average staff per hospital

- Paediatric beds: 21 (interquartile range 18-40)
- Paediatric nurses: 5 (4-10)
- General nurses: 12 (6-15)
- CHWs: 13 (8-19)
- HEOs: 2 (1-3)
- Total RMOs: 1 (0-2)

Facilities for caring for children

- Clean facilities 7 (4 not adequately clean, and many wards in great need of repair)
- Adequate lighting 6 (5 wards had inadequate lighting)
- Adequate ventilation 5 (6 wards had inadequate ventilation)
- Three meals per day for patients 3 (8 not providing adequate nutrition)
- Green spaces 3 (8 without child friendly spaces)
- No wards had adolescent beds, or a space for adolescents, or adequate privacy

As part of the assessments, the paediatric teams were asked to nominate 5 key priorities for the next 1-2 years. The following are the priorities identified by multiple hospitals.

Priorities identified by hospitals for the next 1-2 years
Improving ward infrastructure and buildings in children's ward and special care nursery
Medical equipment for emergencies and HDU / PICU and essential drugs
Greater health workforce – paediatricians, paediatric nurses, ICU trained staff
Training - WHO Pocketbook of Hospital Care for Children, Neonatal Mentoring program, EENC, and good palliative care
Supervisory visits and outreach in rural areas
Need for development of adolescent services
Need for a dedicated nutrition unit
Laboratory services improvements – microbiology
Improving specialist services, cardiac, chronic disease
Child protection services

Summary

This Annual Report and the Paediatric Hospital Reporting System in 2025 has highlighted steady progress in many diseases over the last few years. However, mortality rates are still much higher than in neighbouring countries, and some areas where the outcomes have not improved much over recent years. There is much to do.

The Child Health Advisory Committee and the Paediatric Society asks that all health workers and hospital administrators play their part to address ongoing problems, adopt the recommendations in this report, and see these results improve in the coming years.

Appendix

Appendix Table 1 Severe pneumonia

Hospital	Admissions	Deaths	Case fatality rate
Alotau	16	2	12.50
Angau	331	13	4.00
Buka	55	6	10.91
Chuave			
Daru	22	3	13.64
Gembogl			
Gerehu	117	4	3.42
Goroka	545	28	5.14
Kainantu	52	5	9.62
Gumine			
Kavieng	18	5	27.80
Kimbe	45	8	17.80
Kerema			
Kerowagi			
Kompiam			
Kundiawa	454	2	0.44
Kudjip			
Mabisanda			
Lorengau	2	2	100.00
Mendi	186	9	4.84
Mingendi			
Modilon	113	7	6.20
Mt Hagen	900	12	1.33
Nonga	70	11	15.71
Popendetta	45	9	20.00
PMGH	430	56	13.02
Rumginae	3	0	0.00
Tari	222	8	3.60
Vanimo	4	3	75.00
Wabag			
Wewak	42	5	11.90
Yagum HC			
Yampu			
TOTAL	3672	198	5.39

Appendix Table 2 Diarrhoea

Hospital	Admissions	Deaths	Case fatality rate
Alotau	135	2	1.50
Angau	237	11	4.64
Buka	53	3	5.66
Chuave			
Daru	71	4	5.63
Gembogl			
Gerehu	305	9	2.95
Goroka	317	16	5.05
Kainantu	116	5	4.31
Gumine			
Kavieng	78	4	5.13
Kimbe	144	12	8.33
Kerema			
Kerowagi			
Kompiam			
Kundiawa	182	6	3.30
Kudjip			
Mabisanda			
Lorengau	25	0	0.00
Mendi	188	8	4.26
Mingendi			
Modilon	144	8	5.56
Mt Hagen	548	14	2.55
Nonga	126	7	5.56
Popendetta	84	6	7.14
PMGH	997	32	3.21
Rumginae	17	1	5.88
Tari	164	8	4.88
Vanimo	30	0	0.00
Wabag			
Wewak	57	2	3.50
Yagum HC			
Yampu			
TOTAL	4018	158	3.93

Appendix Table 3 Malaria

Hospital	Admissions	Deaths	Case fatality rate
Alotau	31	1	3.23
Angau	98	6	6.12
Buka	33	4	12.12
Chuave			
Daru	20	1	5.00
Gembogl			
Gerehu	16	0	0.00
Goroka	20	2	10.00
Kainantu	7	2	28.57
Gumine			
Kavieng	68	3	4.41
Kimbe	110	8	7.27
Kerema			
Kerowagi			
Kompiam			
Kundiawa	10	1	10.00
Kudjip			
Mabisanda			
Lorengau	13	0	0.00
Mendi	5	0	0.00
Mingendi			
Modilon	319	9	2.82
Mt Hagen	15	0	0.00
Nonga	49	5	10.20
Popendetta	18	1	5.56
PMGH	117	0	0.00
Rumginae	3	1	33.33
Tari	0	0	0.00
Vanimo	27	3	11.11
Wabag			
Wewak	52	1	1.92
Yagum HC			
Yampu			
TOTAL	1031	48	4.66

Appendix Table 4 Severe malnutrition

Hospital	Admissions	Deaths	Case fatality rate
Alotau	130	9	6.92
Angau	344	29	8.43
Buka	118	13	11.02
Chuave			
Daru	74	13	17.57
Gembogl			
Gerehu	312	10	3.21
Goroka	192	14	7.29
Kainantu	10	0	0.00
Gumine			
Kavieng	61	5	8.20
Kimbe	174	16	9.20
Kerema			
Kerowagi			
Kompiam			
Kundiawa	107	5	4.67
Kudjip			
Mabisanda			
Lorengau	15	3	20.00
Mendi	128	10	7.81
Mingendi			
Modilon	248	20	8.06
Mt Hagen	379	26	6.86
Nonga	85	9	10.59
Popendetta	173	22	12.72
PMGH	798	65	8.15
Rumginae	18	1	5.60
Tari	263	20	7.60
Vanimo	59	7	11.86
Wabag			
Wewak	132	15	11.36
Yagum HC			
Yampu			
TOTAL	3820	312	8.17

Appendix Table 5 Anaemia

Hospital	Admissions	Deaths	Case fatality rate
Alotau	140	7	5.00
Angau	114	12	10.53
Buka	81	12	14.81
Chuave			
Daru	119	15	12.61
Gembogl			
Gerehu	49	0	0.00
Goroka	57	15	26.32
Kainantu	0	0	0.00
Gumine			
Kavieng	141	13	9.22
Kimbe	158	25	15.82
Kerema			
Kerowagi			
Kompiam			
Kundiawa	47	6	12.77
Kudjip			
Mabisanda			
Lorengau	76	9	11.84
Mendi	114	13	11.40
Mingendi			
Modilon	453	36	7.95
Mt Hagen	51	1	1.96
Nonga	86	12	13.95
Popendetta	86	10	11.63
PMGH	813	97	11.93
Rumginae	2	0	0.00
Tari	23	2	8.70
Vanimo	73	9	12.33
Wabag			
Wewak	372	20	5.38
Yagum HC			
Yampu			
TOTAL	3055	314	10.28

Appendix Table 6 Meningitis

Hospital	Admissions	Deaths	Case fatality rate
Alotau	17	3	17.60
Angau	67	13	19.40
Buka	53	12	22.64
Chuave			
Daru	8	3	37.50
Gembogl			
Gerehu	63	2	3.17
Goroka	137	13	9.50
Kainantu	35	7	20.00
Gumine			
Kavieng	22	3	13.64
Kimbe	28	6	21.43
Kerema			
Kerowagi			
Kompiam			
Kundiawa	66	7	10.61
Kudjip			
Mabisanda			
Lorengau	0	0	0.00
Mendi	47	5	10.64
Mingendi			
Modilon	136	9	6.62
Mt Hagen	196	9	4.59
Nonga	27	8	29.63
Popendetta	39	5	12.82
PMGH	371	30	8.09
Rumginae	3	2	66.67
Tari	48	3	6.25
Vanimo	15	3	20.00
Wabag			
Wewak	20	1	5.00
Yagum HC			
Yampu			
TOTAL	1398	144	10.30

Appendix Table 7 Sepsis and septic shock

Hospital	Admissions	Deaths	Case fatality rate
Alotau	6	3	50.00
Angau	64	35	55.00
Buka	12	8	66.67
Chuave			
Daru	0	0	0.00
Gembogl			
Gerehu	47	8	17.02
Goroka	28	5	17.86
Kainantu	57	2	3.51
Gumine			
Kavieng	10	5	50.00
Kimbe	12	9	75.00
Kerema			
Kerowagi			
Kompiam			
Kundiawa	8	2	25.00
Kudjip			
Mabisanda			
Lorengau	2	2	100.00
Mendi	8	8	100.00
Mingendi			
Modilon	5	4	80.00
Mt Hagen	16	16	100.00
Nonga	21	9	42.86
Popendetta	7	2	28.57
PMGH	44	30	68.18
Rumginae	1	1	100.00
Tari	18	11	61.11
Vanimo	1	1	100.00
Wabag			
Wewak	11	5	45.45
Yagum HC			
Yampu			
TOTAL	378	166	43.92

Appendix Table 8 Tuberculosis

Hospital	Admissions	Deaths	Case fatality rate
Alotau	114	5	4.40
Angau	176	18	10.23
Buka	117	11	9.40
Chuave			
Daru	41	4	9.76
Gembogl			
Gerehu	87	0	0.00
Goroka	202	27	13.37
Kainantu	35	2	5.71
Gumine			
Kavieng	60	5	8.33
Kimbe	154	14	9.09
Kerema			
Kerowagi			
Kompiam			
Kundiawa	197	7	3.55
Kudjip			
Mabisanda			
Lorengau	10	1	10.00
Mendi	200	16	8.00
Mingendi			
Modilon	460	21	4.57
Mt Hagen	337	25	7.42
Nonga	66	8	12.12
Popendetta	85	9	10.59
PMGH	863	39	4.52
Rumginae	8	1	12.50
Tari	185	11	5.95
Vanimo	52	10	19.23
Wabag			
Wewak	176	11	6.25
Yagum HC			
Yampu			
TOTAL	3625	245	6.76

Appendix Table 9 HIV

Hospital	Admissions	Deaths	Case fatality rate
Alotau	18	1	5.60
Angau	14	3	21.43
Buka	7	1	14.29
Chuave			
Daru	1	0	0.00
Gembogl			
Gerehu	33	2	6.06
Goroka	83	15	18.07
Kainantu	15	0	0.00
Gumine			
Kavieng	7	0	0.00
Kimbe	4	0	0.00
Kerema			
Kerowagi			
Kompiam			
Kundiawa	9	1	11.11
Kudjip			
Mabisanda			
Lorengau	1	0	0.00
Mendi	10	1	10.00
Mingendi			
Modilon	34	4	11.76
Mt Hagen	67	1	1.49
Nonga	27	1	3.70
Popendetta	43	11	25.58
PMGH	155	10	6.45
Rumginae	0	0	0.00
Tari	11	1	9.10
Vanimo	2	0	0.00
Wabag			
Wewak	6	2	33.33
Yagum HC			
Yampu			
TOTAL	547	54	9.87

Appendix Table 10 Total neonatal admissions

Hospital	Admissions	Deaths	Case fatality rate
Alotau	609	22	3.61
Angau	1030	88	8.54
Buka	302	32	10.60
Chuave			
Daru	143	7	4.90
Gembogl			
Gerehu	29	0	0.00
Goroka	948	110	11.60
Kainantu			
Gumine			
Kavieng	424	25	5.90
Kimbe	590	57	9.66
Kerema			
Kerowagi			
Kompiam			
Kundiawa	492	15	3.05
Kudjip			
Mabisanda			
Lorengau	106	10	9.43
Mendi	433	37	8.55
Mingendi			
Modilon	1168	70	5.99
Mt Hagen	1720	126	7.33
Nonga	394	41	10.41
Popendetta	297	28	9.43
PMGH	8205	357	4.35
Rumginae	34	0	0.00
Tari	486	32	6.58
Vanimo	382	18	4.71
Wabag			
Wewak	690	38	5.51
Yagum HC			
Yampu			
TOTAL	18482	1113	6.02

Appendix Table 11 Neonatal infections

Hospital	Admissions	Deaths	Case fatality rate
Alotau	288	13	4.51
Angau	970	77	7.94
Buka	196	6	3.06
Chuave			
Daru	102	1	1.00
Gembogl			
Gerehu	18	0	0.00
Goroka	530	58	10.94
Kainantu			
Gumine			
Kavieng	370	15	4.05
Kimbe	308	10	3.25
Kerema			
Kerowagi			
Kompiam			
Kundiawa	310	6	1.94
Kudjip			
Mabisanda			
Lorengau	65	0	0.00
Mendi	359	19	5.29
Mingendi			
Modilon	625	13	2.08
Mt Hagen	742	35	4.72
Nonga	277	16	5.78
Popendetta	223	12	5.38
PMGH	2797	54	1.93
Rumginae	23	0	0.00
Tari	486	32	6.58
Vanimo	257	4	1.55
Wabag			
Wewak	457	20	4.38
Yagum HC			
Yampu			
TOTAL	9403	391	4.16

Appendix Table 12 Very low birth weight (1000-1499g)

Hospital	Admissions	Deaths	Case fatality rate
Alotau	22	4	18.20
Angau	31	15	48.40
Buka	12	4	33.33
Chuave			
Daru	3	2	66.67
Gembogl			
Gerehu	0	0	0.00
Goroka	53	24	45.28
Kainantu			
Gumine			
Kavieng	17	8	47.06
Kimbe	22	9	40.91
Kerema			
Kerowagi			
Kompiam			
Kundiawa	9	5	55.56
Kudjip			
Mabisanda			
Lorengau	6	3	50.00
Mendi	19	5	26.32
Mingendi			
Modilon	46	14	30.43
Mt Hagen	53	22	41.51
Nonga	39	11	28.21
Popendetta	16	7	43.75
PMGH	241	68	28.22
Rumginae	1	0	0.00
Tari			
Vanimo	13	2	15.38
Wabag			
Wewak	49	11	22.45
Yagum HC			
Yampu			
TOTAL	652	214	32.82

Appendix Table 13 Perinatal asphyxia

Hospital	Admissions	Deaths	Case fatality rate
Alotau	102	8	7.84
Angau	271	38	14.02
Buka	56	9	16.07
Chuave			
Daru	28	3	10.71
Gembogl			
Gerehu	0	0	0.00
Goroka	184	19	10.33
Kainantu			
Gumine			
Kavieng	78	10	12.82
Kimbe	141	25	17.73
Kerema			
Kerowagi			
Kompiam			
Kundiawa	77	4	5.19
Kudjip			
Mabisanda			
Lorengau	18	3	16.67
Mendi	73	15	20.55
Mingendi			
Modilon	208	23	11.06
Mt Hagen	432	43	9.95
Nonga	94	17	18.09
Popendetta	52	10	19.23
PMGH	705	79	11.21
Rumginae	2	0	0.00
Tari	52	13	25.00
Vanimo	54	8	14.81
Wabag			
Wewak	138	15	10.87
Yagum HC			
Yampu			
TOTAL	2765	342	12.37

Appendix Table 14 Paediatric cancer

Hospital	Admissions	Deaths	Case fatality rate
Alotau	5	1	20.00
Angau	3	0	0.00
Buka	5	0	0.00
Chuave			
Daru	5	1	20.00
Gembogl			
Gerehu	1	0	0.00
Goroka	15	4	26.67
Kainantu	0	0	0.00
Gumine			
Kavieng	6	2	33.33
Kimbe	8	6	75.00
Kerema			
Kerowagi			
Kompiam			
Kundiawa	13	3	23.08
Kudjip			
Mabisanda			
Lorengau	1	1	100.00
Mendi	5	1	20.00
Mingendi			
Modilon	4	1	25.00
Mt Hagen	15	5	33.33
Nonga	18	2	11.11
Popendetta	5	0	0.00
PMGH	46	13	28.26
Rumginae	0	0	
Tari	3	1	33.33
Vanimo	0	0	0.00
Wabag			
Wewak	9	3	33.33
Yagum HC			
Yampu			
TOTAL	167	44	26.35

Appendix Table 15 Acute rheumatic fever / Rheumatic heart disease

Hospital	Admissions	Deaths	Case fatality rate
Alotau	8	0	0.00
Angau	1	0	0.00
Buka	4	0	0.00
Chuave			
Daru	5	0	0.00
Gembogl			
Gerehu	4	0	0.00
Goroka	13	1	7.70
Kainantu	0	0	0.00
Gumine			
Kavieng	7	0	0.00
Kimbe	3	1	33.33
Kerema			
Kerowagi			
Kompiam			
Kundiawa	13	0	0.00
Kudjip			
Mabisanda			
Lorengau	0	0	0.00
Mendi	15	1	6.67
Mingendi			
Modilon	8	4	50.00
Mt Hagen	16	0	0.00
Nonga	6	1	16.67
Popendetta	0	0	0.00
PMGH	41	4	9.76
Rumginae	0	0	0.00
Tari	8	0	0.00
Vanimo	2	0	0.00
Wabag			
Wewak	2	0	0.00
Yagum HC			
Yampu			
TOTAL	156	12	7.69

Appendix Table 16 Congenital heart disease (admissions outside the newborn period)

Hospital	Admissions	Deaths	Case fatality rate
Alotau	21	2	9.52
Angau	12	0	0.00
Buka	31	4	12.90
Chuave			
Daru	5	3	60.00
Gembogl			
Gerehu	10	0	0.00
Goroka	98	9	9.18
Kainantu	15	0	0.00
Gumine			
Kavieng	24	4	16.67
Kimbe	24	3	12.50
Kerema			
Kerowagi			
Kompiam			
Kundiawa	33	2	6.06
Kudjip			
Mabisanda			
Lorengau	6	0	0.00
Mendi	57	0	0.00
Mingendi			
Modilon	32	3	9.38
Mt Hagen	162	19	11.73
Nonga	26	6	23.08
Popendetta	5	1	20.00
PMGH	102	8	7.84
Rumginae	0	0	0.00
Tari	21	2	9.50
Vanimo	8	1	12.50
Wabag			
Wewak	6	0	0.00
Yagum HC			
Yampu			
TOTAL	698	67	9.60

Appendix Table 17 Child protection admissions (physical abuse, neglect, or sexual abuse)

Hospital	Admissions	Deaths	Case fatality rate
Alotau	1	0	0.00
Angau	1	0	0.00
Buka	0	0	0.00
Chuave			
Daru	0	0	0.00
Gembogl			
Gerehu	0	0	0.00
Goroka	2	0	0.00
Kainantu	0	0	0.00
Gumine			
Kavieng	0	0	0.00
Kimbe	26	2	7.70
Kerema			
Kerowagi			
Kompiam			
Kundiawa	7	0	0.00
Kudjip			
Mabisanda			
Lorengau	0	0	0.00
Mendi	0	0	0.00
Mingendi			
Modilon	90	4	4.44
Mt Hagen	0	0	0.00
Nonga	21	5	23.81
Popendetta	11	2	18.20
PMGH	19	5	26.32
Rumginae	0	0	
Tari			
Vanimo	0	0	0.00
Wabag			
Wewak	44	3	6.82
Yagum HC			
Yampu			
TOTAL	222	21	9.46

Paediatric monitoring and response chart

Name

UR Number | Age: | Weight: | Length / height

Diagnoses: | Frequency of observations:

Date																									
Time																									
	Temp °C	≥ 39																							>39
		38-38.9																							38-38.9
		36-37.9																							36-37.9
		<36																							<36
AIRWAY / BREATHING	Respiratory Rate (bpm)	≥ 80																							≥ 80
		70																							70
		60																							60
		50																							50
		40																							40
		30																							30
		20																							20
		10																							10
		0																							0
	SpO_2 (%)	95-100																							95-100
		90-94																							90-95
		85-89																							80-90
		80-84																							
		70-79																							70-80
		<70																							<70
	Oxygen	L/min																							L/min
	Respirat distress	Severe																							Severe
		Mod.																							Mod.
		Mild																							Mild
		Normal																							Normal
CIRCULATION	Heart rate (bpm)	≥ 200																							≥ 200
		190																							190
		180																							180
		170																							170
		160																							160
		150																							150
		140																							140
		130																							130
		120																							120
		100																							100
		90																							90
		80																							80
		70																							70
		60																							60
		<60																							<60
	Cap refill	≥ 3 secs																							≥ 3 secs
		< 3 secs																							< 3 secs
	BP	Systolic																							Systolic
		Diastolic																							Diastolic
		Mean																							Mean
DISABILITY	AVPU response to stimuli	Alert																							Alert
		Verbal																							Verbal
		Pain																							Pain
		None																							None
	Pain score (/10)																								Pain
Blood sugar level																									
Treatments given Actions taken																									