

ISSUES
FOR
ALL
AGES



CAUSES OF DEATH AND HOSPITALISATION

Introduction

This section provides a brief review of the causes of death and hospitalisation for New Zealand children and young people for the last five years thereby giving the context for the subsequent sections of this report where the descriptions are of specific conditions. Infant mortality has been considered in the previous section and is not repeated here. The following sections use the National Mortality Collection and the National Minimum Dataset to describe the most common causes of death for children aged 1–14 years and young people aged 15–24 years, and for hospitalisation of children aged 0–14 years and young people aged 15–24 years.

Data source and methods

Indicators

Causes of deaths in 1–24 year olds

Causes of hospitalisations in 0–24 year olds

Data sources

Numerator:

Deaths: National Mortality Collection

Hospitalisations: National Minimum Dataset

Denominator:

Statistics NZ Estimated Resident Population (with linear extrapolation being used to calculate denominators between Census years)

Definition

Numerator:

Deaths: Deaths in 1–24 year olds by the main underlying cause of death (deaths per 100,000 population)

Hospitalisations: Hospitalisations for 0–24 year olds by primary diagnosis (acute and arranged admissions; excluding neonates) or primary procedure (waiting list admissions; hospitalisations per 1,000 population).

Refer to **Appendix 6** for the codes included.

Denominator:

1–14 DHB age range was calculated using Estimated Resident Population extrapolations for 0–14 range and subtracting the number of live births in that period

Notes on interpretation

Note 1: Because hospitalisations during the neonatal period are likely to be heavily influenced by perinatal factors and/or result from preterm infants transitioning through different levels of neonatal care (e.g. from neonatal intensive care, to Level 1–3 special care baby units), neonatal hospitalisations have been excluded from this analysis. Similarly, infant mortality is also likely to be heavily influenced by perinatal factors, and thus this section is restricted to an analysis of mortality aged 1–24 years (see **Error! Reference source not found.** section beginning on **page Error! Bookmark not defined.** for a review of the causes of mortality in those aged less than one year).

Note 2: An acute admission is an unplanned hospitalisation occurring on the day of presentation, while an arranged admission (also referred to as a semi-acute) is a non-acute hospitalisation with an admission date less than seven days after the date the decision was made that the hospitalisation was necessary. A waiting list admission is a planned hospitalisation, where the admission date is seven or more days after the date the decision was made that the hospitalisation was necessary.

Note 3: In order to maintain consistency with the injury section, all injury hospitalisations with an Emergency Medicine Specialty Code on discharge have been excluded (see **Appendix 3** for rationale).

Note 4: **Appendix 3** outlines the limitations of the data utilised from the National Minimum Dataset. The reader is advised to review this information before interpreting any trends.

National distribution

Causes of death

Between 2008 and 2012 there were 718 deaths of children aged 1–14 years, an average of 144 deaths per year. The most common underlying causes of death were cancers (neoplasms), congenital anomalies, transport-related injuries, and other injuries including self-harm (**Table 1**). From 2008–2012 there were 1,965 deaths of young people aged 15–24 years, an average of 393 deaths per year. Suicide (intentional self-harm) was the most common cause of death in this age group followed by transport-related injury (**Table 2**).

Table 1. Deaths in 1–14 year olds, by main underlying cause, New Zealand 2008–2012

Main underlying cause of death	Number: 2008–2012	Number: annual average	Rate per 100,000 1–14 year olds	95% CI	Per cent
New Zealand					
1–14 year olds					
Unintentional injury	227	45	5.43	4.77–6.18	31.6
Neoplasm	112	22	2.68	2.23–3.22	15.6
Congenital anomalies	65	13	1.55	1.22–1.98	9.1
Suicide	39	8	0.93	0.68–1.27	5.4
Metabolic disorders	25	5	0.60	0.40–0.88	3.5
Assault	24	5	0.57	0.39–0.85	3.3
Pneumonia	18	4	0.43	0.27–0.68	2.5
Meningococcal disease	13	3	0.31	0.18–0.53	1.8
SUDI: SIDS & unspecified	12	2	0.29	0.16–0.50	1.7
Other medical	173	35	4.14	3.56–4.80	24.1
Undetermined intent	5	1	0.12	0.05–0.28	0.7
Other causes	5	1	0.12	0.05–0.28	0.7
New Zealand total	718	144	17.17	15.96–18.47	100.0

Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population; Excludes infants (age less than one year)

Table 2. Deaths in 15–24 year olds, by main underlying cause, New Zealand 2008–2012

Main underlying cause of death	Number: 2008–2012	Number: annual average	Rate per 100,000 15–24 year olds	95% CI	Per cent
New Zealand					
15–24 year olds					
Unintentional injury	773	155	25.03	23.32–26.86	39.3
Suicide	625	125	20.24	18.71–21.89	31.8
Neoplasm	141	28	4.57	3.87–5.38	7.2
Assault	54	11	1.75	1.34–2.28	2.7
Congenital anomalies	48	10	1.55	1.17–2.06	2.4
Metabolic disorders	22	4	0.71	0.47–1.08	1.1
Other medical	266	53	8.61	7.64–9.71	13.5
Unspecified	12	2	0.39	0.22–0.68	0.6
Undetermined intent of injury	14	3	0.45	0.27–0.76	0.7
Other causes	10	2	0.32	0.18–0.60	0.5
New Zealand total	1,965	393	63.62	60.87–66.50	100.0

Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

Causes of hospitalisation

0–14 year olds

Between 2010 and 2014 there were 380,650 acute hospitalisations of children aged 0–14 years, 60,000 arranged admissions and 140,860 waiting list admissions. In total there were 581,510 hospitalisations of children in this age group. The most common reasons for acute hospitalisation in this age group were injury or poisoning, bronchiolitis, acute upper respiratory tract infections and gastroenteritis. The most common reasons for arranged admissions were cancer or cancer treatment (neoplasm, chemotherapy or radiotherapy), injury or poisoning and congenital anomalies. The most common procedures for waiting list admissions were gastrointestinal procedures, grommets and tonsillectomy (**Table 3**).

15–24 year olds

Between 2010 and 2014 there were 265,498 acute hospitalisations of young people aged 15–24 years, 54,140 arranged hospitalisations, 139,389 reproductive admissions and 59,390 waiting list admissions. In total there were 518,417 hospitalisations of young people in this age group, an average of 103,683 hospitalisations per year. The most common reasons for acute hospitalisation in this age group were injury or poisoning, pregnancy,

delivery or postnatal-related conditions, mental health, and abdominal or pelvic pain. The most common reasons for arranged admissions were injury or poisoning, cancer or cancer treatment (neoplasm, chemotherapy or radiotherapy), mental health and dialysis. Most of the reproductive admissions (79.5%) were for pregnancy, delivery or postnatal-related conditions with smaller numbers for termination of pregnancy and spontaneous or other early pregnancy loss. The most common procedures for waiting list admissions were gastrointestinal procedures, dental procedures and tonsillectomy (**Table 4**).

Table 3. Causes of hospitalisations in 0–14 year olds, by admission type, New Zealand 2010–2014

	Number: 2010–2014	Number: annual average	Rate per 1,000 0–14 year olds	95% CI	Per cent
New Zealand 0–14 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	45,360	9,072	10.05	9.96–10.14	11.9
Bronchiolitis	28,377	5,675	6.29	6.21–6.36	7.5
Acute upper respiratory tract infection	28,060	5,612	6.22	6.14–6.29	7.4
Gastroenteritis	27,033	5,407	5.99	5.92–6.06	7.1
Viral infection NOS	20,915	4,183	4.63	4.57–4.70	5.5
Skin infections	15,375	3,075	3.41	3.35–3.46	4.0
Pneumonia	14,712	2,942	3.26	3.21–3.31	3.9
Abdominal or pelvic pain	10,461	2,092	2.32	2.27–2.36	2.7
Urinary tract infection	7,171	1,434	1.59	1.55–1.63	1.9
Appendicitis	5,242	1,048	1.16	1.13–1.19	1.4
Constipation	4,378	876	0.97	0.94–1.00	1.2
Other diagnoses	173,566	34,713	38.45	38.27–38.62	45.6
Total	380,650	76,130	84.31	84.06–84.57	100.0
Arranged admissions by primary diagnosis					
Neoplasm, chemotherapy, or radiotherapy	13,371	2,674	2.96	2.91–3.01	22.3
Injury or poisoning	4,336	867	0.96	0.93–0.99	7.2
Congenital anomalies	3,109	622	0.69	0.66–0.71	5.2
Metabolic disorders	1,362	272	0.30	0.29–0.32	2.3
Haemolytic anaemias	853	171	0.19	0.18–0.20	1.4
Constipation	828	166	0.18	0.17–0.20	1.4
Mental health	771	154	0.17	0.16–0.18	1.3
Dialysis	701	140	0.16	0.14–0.17	1.2
Removal of internal fixation device	700	140	0.16	0.14–0.17	1.2
Dental conditions	700	140	0.16	0.14–0.17	1.2
Other diagnoses	33,269	6,654	7.37	7.29–7.45	55.4
Total	60,000	12,000	13.29	13.18–13.40	100.0
Waiting list admissions by primary procedure					
Gastrointestinal procedures	40,336	8,067	8.93	8.85–9.02	28.6
Grommets	22,450	4,490	4.97	4.91–5.04	15.9
Tonsillectomy ± adenoidectomy	15,646	3,129	3.47	3.41–3.52	11.1
Dental procedures	10,201	2,040	2.26	2.22–2.30	7.2
Procedures on nose	3,896	779	0.86	0.84–0.89	2.8
Adenoidectomy without tonsillectomy	2,982	596	0.66	0.64–0.68	2.1
Circumcision	1,948	390	0.43	0.41–0.45	1.4
Other procedures	38,270	7,654	8.48	8.39–8.56	27.2
No procedure listed	5,131	1,026	1.14	1.11–1.17	3.6
Total	140,860	28,172	31.20	31.04–31.36	100.0
New Zealand total	581,510	116,302	128.81	128.50–129.12	

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; NOS = not otherwise specified

Table 4. Causes of hospitalisations in 15–24 year olds, by primary diagnosis, New Zealand 2010–2014

	Number: 2010–2014	Number: annual average	Rate per 1,000 15–24 year olds	95% CI	Per cent
New Zealand 15–24 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	40,155	8,031	12.93	12.81–13.06	15.1
Mental health	21,475	4,295	6.92	6.83–7.01	8.1
Abdominal or pelvic pain	20,981	4,196	6.76	6.67–6.85	7.9
Skin infections	11,100	2,220	3.58	3.51–3.64	4.2
Gastroenteritis	8,745	1,749	2.82	2.76–2.88	3.3
Appendicitis	7,994	1,599	2.57	2.52–2.63	3.0
Urinary tract infection	6,932	1,386	2.23	2.18–2.29	2.6
Acute upper respiratory tract infection (URTI)	5,206	1,041	1.68	1.63–1.72	2.0
Viral infection NOS	3,975	795	1.28	1.24–1.32	1.5
STI or pelvic inflammatory disease	3,936	787	1.27	1.23–1.31	1.5
Other diagnoses	134,999	27,000	43.48	43.26–43.71	50.8
Total	265,498	53,100	85.51	85.20–85.83	100.0
Arranged admissions by primary diagnosis					
Injury or poisoning	5,360	1,072	1.73	1.68–1.77	9.9
Neoplasm, chemotherapy, or radiotherapy	3,668	734	1.18	1.14–1.22	6.8
Mental health	2,448	490	0.79	0.76–0.82	4.5
Dialysis	2,167	433	0.70	0.67–0.73	4.0
Immune disorders	1,552	310	0.50	0.48–0.53	2.9
Metabolic disorders	891	178	0.29	0.27–0.31	1.6
Removal of internal fixation device	833	167	0.27	0.25–0.29	1.5
Other diagnoses	37,221	7,444	11.99	11.87–12.11	68.7
Total	54,140	10,828	17.44	17.29–17.58	100.0
Reproductive hospitalisations by primary diagnosis					
Pregnancy, delivery, or postnatal-related conditions	111,671	22,334	73.37	72.96–73.79	80.1
Termination of pregnancy*	26,186	5,237	17.21	17.00–17.41	18.8
Spontaneous or other early pregnancy loss	1,532	306	1.01	0.96–1.06	1.1
Total	139,389	27,878	91.59	91.13–92.04	100.0
Waiting list admissions by primary procedure					
Gastrointestinal procedures	8,391	1,678	2.70	2.65–2.76	14.1
Dental procedures	7,752	1,550	2.50	2.44–2.55	13.1
Tonsillectomy ± adenoidectomy	4,585	917	1.48	1.43–1.52	7.7
Other procedures	35,953	7,191	11.58	11.46–11.70	60.5
No procedure listed	2,709	542	0.87	0.84–0.91	4.6
Total	59,390	11,878	19.13	18.98–19.28	100.0
New Zealand total	518,417	103,683			

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; Injury ED cases excluded; NOS = not otherwise specified; reproductive hospitalisations are presented as rates per 1,000 females aged 15–24 years; * Termination of pregnancy includes therapeutic, other, or unspecified terminations performed in hospital, and may be an underestimate; overall rate not provided due to use of gender-specific denominator for reproductive hospitalisations

South Island region distribution

Causes of death

Between 2008 and 2012 the most common underlying causes of death for 1–14 year olds in Canterbury and Southern DHBs were unintentional injury and cancer (neoplasm). In the other South Island DHBs numbers were too small to group deaths in this age group by specific cause (**Table 5**). Among 15–24 year olds the most common underlying causes of death were unintentional injury and suicide in all South Island DHBs (**Table 6**).

Table 5. Deaths in 1–14 year olds, by main underlying cause of death, South Island DHBs 2008–2012

Main underlying cause of death	Number: 2008–2012	Number: annual average	Rate per 100,000 1–14 year olds	95% CI	Per cent
1–14 year olds					
Nelson Marlborough					
All medical	7	1	5.61	2.72–11.58	58.3
All injury	5	1	4.01	1.71–9.38	41.7
Nelson Marlborough total	12	2	9.61	5.50–16.80	100.0
South Canterbury					
All causes	9	2	18.07	9.51–34.34	100.0
South Canterbury total	9	2	18.07	9.51–34.34	100.0
Canterbury					
Unintentional injury	20	4	4.55	2.94–7.02	31.3
Neoplasm	16	3	3.64	2.24–5.91	25.0
Congenital anomalies	6	1	1.36	0.63–2.98	9.4
Other medical	16	3	3.64	2.24–5.91	25.0
Other causes	6	1	1.36	0.63–2.98	9.4
Canterbury total	64	13	14.55	11.39–18.57	100.0
West Coast					
All causes	10	2	33.64	18.28–61.93	100.0
West Coast total	10	2	33.64	18.28–61.93	100.0
Southern DHB					
Unintentional injury	10	2	3.86	2.09–7.10	22.7
Neoplasm	6	1	2.31	1.06–5.05	13.6
Other medical	22	4	8.48	5.60–12.84	50.0
Other causes	6	1	2.31	1.06–5.05	13.6
Southern total	44	9	16.97	12.64–22.77	100.0

Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

Table 6. Deaths in 15–24 year olds, by main underlying cause of death, South Island DHBs 2008–2012

Main underlying cause of death	Number: 2008–2012	Number: annual average	Rate per 100,000 15–24 year olds	95% CI	Per cent
15–24 year olds					
Nelson Marlborough					
Unintentional injury	28	6	36.93	25.55–53.37	51.9
Suicide	12	2	15.83	9.05–27.67	22.2
Other causes	14	3	18.47	11.00–31.00	25.9
Nelson Marlborough total	54	11	71.23	54.60–92.91	100.0
South Canterbury					
Suicide	20	4	63.18	40.90–97.57	44.4
Unintentional injury	18	4	56.86	35.97–89.87	40.0
Other causes	7	1	22.11	10.71–45.64	15.6
South Canterbury total	45	9	142.15	106.26–190.14	100.0
Canterbury					
Unintentional injury	88	18	24.93	20.23–30.70	40.6
Suicide	63	13	17.84	13.95–22.83	29.0
Neoplasm	14	3	3.97	2.36–6.66	6.5
Congenital anomalies	9	2	2.55	1.34–4.85	4.1
Assault	8	2	2.27	1.15–4.47	3.7
Metabolic disorders	7	1	1.98	0.96–4.09	3.2
Other causes	28	6	7.93	5.49–11.46	12.9
Canterbury total	217	43	61.46	53.81–70.20	100.0
West Coast					
Unintentional injury	18	4	99.33	62.84–156.97	78.3
Other causes	5	1	27.59	11.79–64.58	21.7
West Coast total	23	5	126.92	84.59–190.39	100.0
Southern DHB					
Unintentional injury	60	12	25.38	19.72–32.67	40.8
Suicide	52	10	22.00	16.78–28.85	35.4
Neoplasm	8	2	3.38	1.72–6.68	5.4
Other medical	20	4	8.46	5.48–13.07	13.6
Other causes	7	1	2.96	1.43–6.11	4.8
Southern total	147	29	62.19	52.92–73.08	100.0

Numerator: National Mortality Collection; Denominator: Statistics NZ Estimated Resident Population

Causes of hospitalisation

In all the South Island DHBs between 2010 and 2014 the most frequent cause of acute hospitalisation for 0–14 year olds was injury or poisoning. Other common causes were upper respiratory tract and other viral infections, bronchiolitis and gastroenteritis although the order of these diagnoses varied between the DHBs. Cancer or cancer treatment (neoplasms, chemotherapy or radiotherapy) was the most common reason for arranged admissions in all South Island DHBs and injury or poisoning was also a common reason in Nelson Marlborough. The most frequent waiting list admissions were for gastrointestinal procedures, insertion of grommets, dental treatment and tonsillectomy +/- adenoidectomy, although the order of these diagnoses varied between DHBs (**Table 7–Table 11**).

Table 7. Causes of hospitalisations of 0–14 year olds, by admission type, Nelson Marlborough, 2010–2014

	Number: 2010–2014	Number: annual average	Rate per 1,000 0–14 year olds	95% CI	Per cent
Nelson Marlborough 0–14 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	1,078	216	8.03	7.56–8.52	14.5
Acute upper respiratory tract infection	672	134	5.00	4.64–5.40	9.1
Asthma and wheeze	504	101	3.75	3.44–4.09	6.8
Gastroenteritis	491	98	3.66	3.35–3.99	6.6
Viral infection NOS	468	94	3.49	3.18–3.81	6.3
Bronchiolitis	386	77	2.87	2.60–3.18	5.2
Other diagnoses	3,813	763	28.39	27.52–29.30	51.4
Acute total	7,412	1,482	55.20	53.99–56.43	100.0
Arranged admissions by primary diagnosis					
Injury or poisoning	239	48	1.78	1.57–2.02	17.1
Neoplasm, chemotherapy, or radiotherapy	215	43	1.60	1.40–1.83	15.4
Dental conditions	79	16	0.59	0.47–0.73	5.6
Congenital anomalies	77	15	0.57	0.46–0.72	5.5
Other diagnoses	789	158	5.88	5.48–6.30	56.4
Arranged total	1,399	280	10.42	9.89–10.98	100.0
Waiting list admissions by primary procedure					
Dental procedures	1,245	249	9.27	8.77–9.80	25.2
Grommets	720	144	5.36	4.99–5.77	14.6
Tonsillectomy ± adenoidectomy	426	85	3.17	2.89–3.49	8.6
Musculoskeletal procedures	302	60	2.25	2.01–2.52	6.1
Other procedures	1,935	387	14.41	13.79–15.06	39.2
No procedure listed	314	63	2.34	2.09–2.61	6.4
Waiting list total	4,942	988	36.80	35.81–37.82	100.0
Nelson Marlborough total	13,753	2,751	102.42	100.81–104.05	

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; excludes neonates; URTI = upper respiratory tract infection; NOS = not otherwise specified

Table 8. Causes of hospitalisations of 0–14 year olds, by admission type, South Canterbury, 2010–2014

	Number: 2010–2014	Number: annual average	Rate per 1,000 0–14 year olds	95% CI	Per cent
South Canterbury 0–14 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	556	111	10.51	9.67–11.41	20.3
Acute upper respiratory tract infection	220	44	4.16	3.64–4.74	8.0
Gastroenteritis	214	43	4.04	3.54–4.62	7.8
Viral infection NOS	147	29	2.78	2.36–3.26	5.4
Bronchiolitis	145	29	2.74	2.33–3.22	5.3
Asthma and wheeze	145	29	2.74	2.33–3.22	5.3
Other diagnoses	1,317	263	24.89	23.60–26.25	48.0
Acute total	2,744	549	51.86	50.00–53.78	100.0
Arranged admissions by primary diagnosis					
Neoplasm, chemotherapy, or radiotherapy	118	24	2.23	1.86–2.67	28.1
Injury or poisoning	25	5	0.47	0.32–0.70	6.0
Congenital anomalies	22	4	0.42	0.27–0.63	5.2
Other diagnoses	255	51	4.82	4.26–5.45	60.7
Arranged total	420	84	7.94	7.22–8.73	100.0
Waiting list admissions by primary procedure					
Grommets	453	91	8.56	7.81–9.38	21.4
Dental procedures	402	80	7.60	6.89–8.37	19.0
Tonsillectomy ± adenoidectomy	379	76	7.16	6.48–7.92	17.9
Other procedures	848	170	16.03	14.99–17.13	40.1
No procedure listed	31	6	0.59	0.41–0.83	1.5
Waiting list total	2,113	423	39.93	38.30–41.63	100.0
South Canterbury total	5,277	1,055	99.73	97.20–102.31	

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; excludes neonates; URTI = upper respiratory tract infection; NOS = not otherwise specified

Table 9. Causes of hospitalisations of 0–14 year olds, by admission type, Canterbury, 2010–2014

	Number: 2010–2014	Number: annual average	Rate per 1,000 0–14 year olds	95% CI	Per cent
Canterbury 0–14 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	5,571	1,114	11.77	11.46–12.08	15.9
Asthma and wheeze	3,633	727	7.67	7.43–7.93	10.4
Acute upper respiratory tract infection	3,581	716	7.56	7.32–7.81	10.2
Gastroenteritis	2,277	455	4.81	4.62–5.01	6.5
Bronchiolitis	1,758	352	3.71	3.54–3.89	5.0
Other diagnoses	18,256	3,651	38.56	38.02–39.11	52.0
Acute total	35,076	7,015	74.09	73.35–74.84	100.0
Arranged admissions by primary diagnosis					
Neoplasm, chemotherapy, or radiotherapy	1,857	371	3.92	3.75–4.10	34.7
Congenital anomalies	335	67	0.71	0.64–0.79	6.3
Other diagnoses	3,165	633	6.69	6.46–6.92	59.1
Arranged total	5,357	1,071	11.32	11.02–11.62	100.0
Waiting list admissions by primary procedure					
Dental procedures	3,364	673	7.11	6.87–7.35	23.2
Grommets	2,261	452	4.78	4.58–4.98	15.6
Tonsillectomy ± adenoidectomy	1,596	319	3.37	3.21–3.54	11.0
Gastrointestinal procedures	1,156	231	2.44	2.31–2.59	8.0
Musculoskeletal procedures	1,011	202	2.14	2.01–2.27	7.0
Other procedures	4,861	972	10.27	9.98–10.56	33.5
No procedure listed	271	54	0.57	0.51–0.64	1.9
Waiting list total	14,520	2,904	30.67	30.18–31.17	100.0
Canterbury total	54,953	10,991	116.08	115.17–116.99	

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; excludes neonates; URTI = upper respiratory tract infection; NOS = not otherwise specified

Table 10. Causes of hospitalisations of 0–14 year olds, by admission type, West Coast, 2010–2014

	Number: 2010–2014	Number: annual average	Rate per 1,000 0–14 year olds	95% CI	Per cent
West Coast 0–14 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	367	73	11.63	10.50–12.87	20.8
Acute upper respiratory tract infection	157	31	4.97	4.26–5.81	8.9
Asthma and wheeze	137	27	4.34	3.67–5.13	7.7
Gastroenteritis	128	26	4.06	3.41–4.82	7.2
Viral infection NOS	104	21	3.29	2.72–3.99	5.9
Bronchiolitis	92	18	2.91	2.38–3.57	5.2
Other diagnoses	783	157	24.81	23.15–26.58	44.3
Acute total	1,768	354	56.01	53.53–58.60	100.0
Arranged admissions by primary diagnosis					
Neoplasm, chemotherapy, or radiotherapy	102	20	3.23	2.66–3.92	25.9
Injury or poisoning	32	6	1.01	0.72–1.43	8.1
Perinatal-related conditions	21	4	0.67	0.44–1.02	5.3
Immune disorders	21	4	0.67	0.44–1.02	5.3
Other diagnoses	218	44	6.91	6.05–7.88	55.3
Arranged total	394	79	12.48	11.32–13.77	100.0
Waiting list admissions by primary procedure					
Dental procedures	311	62	9.85	8.82–11.00	27.5
Tonsillectomy ± adenoidectomy	162	32	5.13	4.40–5.98	14.3
Grommets	113	23	3.58	2.98–4.30	10.0
Musculoskeletal procedures	97	19	3.07	2.52–3.75	8.6
Other procedures	420	84	13.31	12.10–14.63	37.1
No procedure listed	29	6	0.92	0.64–1.32	2.6
Waiting list total	1,132	226	35.86	33.87–37.97	100.0
West Coast total	3,294	659	104.36	101.03–107.78	

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; excludes neonates; URTI = upper respiratory tract infection; NOS = not otherwise specified

Table 11. Causes of hospitalisations of 0–14 year olds, by admission type, Southern DHB, 2010–2014

	Number: 2010–2014	Number: annual average	Rate per 1,000 0–14 year olds	95% CI	Per cent
Southern DHB 0–14 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	2,513	503	8.97	8.63–9.33	12.0
Acute upper respiratory tract infection	1,964	393	7.01	6.71–7.33	9.4
Asthma and wheeze	1,699	340	6.06	5.78–6.36	8.1
Gastroenteritis	1,693	339	6.04	5.76–6.34	8.1
Bronchiolitis	1,270	254	4.53	4.29–4.79	6.1
Other diagnoses	11,784	2,357	42.06	41.32–42.81	56.3
Acute total	20,923	4,185	74.68	73.71–75.66	100.0
Arranged admissions by primary diagnosis					
Neoplasm, chemotherapy, or radiotherapy	421	84	1.50	1.37–1.65	24.7
Injury or poisoning	110	22	0.39	0.33–0.47	6.5
Congenital anomalies	101	20	0.36	0.30–0.44	5.9
Other diagnoses	1,071	214	3.82	3.60–4.06	62.9
Arranged total	1,703	341	6.08	5.80–6.37	100.0
Waiting list admissions by primary procedure					
Dental procedures	2,782	556	9.93	9.57–10.30	25.3
Grommets	2,047	409	7.31	7.00–7.63	18.6
Tonsillectomy ± adenoidectomy	1,315	263	4.69	4.45–4.95	11.9
Musculoskeletal procedures	864	173	3.08	2.89–3.30	7.8
Other procedures	3,557	711	12.70	12.29–13.12	32.3
No procedure listed	447	89	1.60	1.45–1.75	4.1
Waiting list total	11,012	2,202	39.30	38.59–40.03	100.0
Southern DHB total	33,638	6,728	120.06	118.86–121.27	

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; excludes neonates; URTI = upper respiratory tract infection; NOS = not otherwise specified

In all South Island DHBs from 2010 to 2014 the most frequent cause of acute hospitalisation in 15–24 year olds was injury or poisoning. Other frequent causes were abdominal or pelvic pain and mental health conditions. The most frequent causes of arranged hospitalisations in this age group were injury and poisoning, cancer or cancer treatment, and mental health conditions. Gastrointestinal procedures and dental procedures were the most frequent causes of waiting list admissions. The frequency and order of diagnoses for all admission types varied between DHBs. All South Island DHBs had a substantial number of reproductive hospitalisations, the majority were for pregnancy, delivery, or postnatal-related conditions (**Table 12–Table 16**).

Table 12. Causes of hospitalisations of 15–24 year olds, by admission type, Nelson Marlborough, 2010–2014

	Number: 2010–2014	Number: annual average	Rate†	95% CI	Per cent
Nelson Marlborough 15–24 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	1,043	209	13.84	13.03–14.70	17.6
Abdominal or pelvic pain	586	117	7.77	7.17–8.43	9.9
Mental health	481	96	6.38	5.84–6.98	8.1
Other diagnoses	3,800	760	50.42	48.88–52.00	64.3
Acute total	5,910	1,182	78.41	76.51–80.35	100.0
Arranged admissions by primary diagnosis					
Injury or poisoning	443	89	5.88	5.36–6.45	32.2
Neoplasm, chemotherapy, or radiotherapy	79	16	1.05	0.84–1.31	5.7
Other diagnoses	854	171	11.33	10.60–12.11	62.1
Arranged total	1,376	275	18.26	17.32–19.24	100.0
Reproductive hospitalisations by primary diagnosis					
Pregnancy, delivery, or postnatal-related conditions	2,309	462	64.34	61.85–66.93	64.0
Termination of pregnancy: therapeutic, other, or unspecified*	1,085	217	30.23	28.51–32.06	30.1
Spontaneous or other early pregnancy loss	212	42	5.91	5.17–6.76	5.9
Reproductive total	3,606	721	100.49	97.42–103.64	100.0
Waiting list admissions by primary procedure					
Gastrointestinal procedures	300	60	3.98	3.56–4.46	14.0
Musculoskeletal procedures	243	49	3.22	2.84–3.65	11.3
Dental procedures	198	40	2.63	2.29–3.02	9.2
Tonsillectomy ± adenoidectomy	190	38	2.52	2.19–2.91	8.9
Procedures on skin or subcutaneous tissue	186	37	2.47	2.14–2.85	8.7
Procedures on the cervix	152	30	2.02	1.72–2.36	7.1
Other procedures	755	151	10.02	9.33–10.75	35.3
No procedure listed	117	23	1.55	1.30–1.86	5.5
Waiting list total	2,141	428	28.41	27.24–29.62	100.0
Nelson Marlborough total	13,033	2,607			

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; URTI = upper respiratory tract infection; NOS = not otherwise specified; Injury ED cases excluded; Reproductive rates are per 1,000 females thus overall DHB rate not provided due to use of gender-specific denominator for reproductive admissions; *NMDS coverage of therapeutic abortions is incomplete, and thus may underestimate regional totals; † Rate per 1,000 15–24 year olds

Table 13. Causes of hospitalisations of 15–24 year olds, by admission type, South Canterbury, 2010–2014

	Number: 2010–2014	Number: annual average	Rate†	95% CI	Per cent
South Canterbury 15–24 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	657	131	20.35	18.87–21.95	26.4
Mental health	273	55	8.46	7.51–9.51	11.0
Abdominal or pelvic pain	170	34	5.27	4.53–6.12	6.8
Appendicitis	125	25	3.87	3.25–4.61	5.0
Other diagnoses	1,265	253	39.18	37.12–41.35	50.8
Acute total	2,490	498	77.12	74.26–80.08	100.0
Arranged admissions by primary diagnosis					
Neoplasm, chemotherapy, or radiotherapy	80	16	2.48	1.99–3.08	14.5
Mental health	49	10	1.52	1.15–2.01	8.9
Other diagnoses	421	84	13.04	11.86–14.34	76.5
Arranged total	550	110	17.04	15.68–18.51	100.0
Reproductive hospitalisations by primary diagnosis					
Pregnancy, delivery, or postnatal-related conditions	1,419	284	92.83	88.33–97.54	78.4
Termination of pregnancy: therapeutic, other, or unspecified*	293	59	19.17	17.11–21.47	16.2
Spontaneous or other early pregnancy loss	97	19	6.35	5.21–7.73	5.4
Reproductive total	1,809	362	118.35	113.32–123.56	100.0
Waiting list admissions by primary procedure					
Musculoskeletal procedures	215	43	6.66	5.83–7.61	23.5
Tonsillectomy ± adenoidectomy	121	24	3.75	3.14–4.48	13.3
Gastrointestinal procedures	83	17	2.57	2.07–3.19	9.1
Dental procedures	83	17	2.57	2.07–3.19	9.1
Procedures on the cervix	66	13	2.04	1.61–2.60	7.2
Other procedures	314	63	9.73	8.71–10.86	34.4
No procedure listed	31	6	0.96	0.68–1.36	3.4
Waiting list total	913	183	28.28	26.53–30.14	100.0
South Canterbury total	5,762	1,152			

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; URTI = upper respiratory tract infection; NOS = not otherwise specified; Injury ED cases excluded; Reproductive rates are per 1,000 females thus overall DHB rate not provided due to use of gender-specific denominator for reproductive admissions; *NMDS coverage of therapeutic abortions is incomplete, and thus may underestimate regional totals; † Rate per 1,000 15–24 year olds

Table 14. Causes of hospitalisations of 15–24 year olds, by admission type, Canterbury, 2010–2014

	Number: 2010–2014	Number: annual average	Rate†	95% CI	Per cent
Canterbury 15–24 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	4,679	936	13.18	12.81–13.57	20.3
Mental health	2,117	423	5.97	5.72–6.22	9.2
Abdominal or pelvic pain	1,851	370	5.22	4.98–5.46	8.0
Other diagnoses	14,369	2,874	40.49	39.85–41.14	62.4
Acute total	23,016	4,603	64.85	64.05–65.67	100.0
Arranged admissions by primary diagnosis					
Mental health	605	121	1.70	1.57–1.85	7.9
Neoplasm, chemotherapy, or radiotherapy	575	115	1.62	1.49–1.76	7.5
Other diagnoses	6,478	1,296	18.25	17.82–18.70	84.6
Arranged total	7,658	1,532	21.58	21.11–22.06	100.0
Reproductive hospitalisations by primary diagnosis					
Pregnancy, delivery, or postnatal-related conditions	11,202	2,240	67.01	65.82–68.22	70.0
Termination of pregnancy: therapeutic, other, or unspecified*	3,904	781	23.35	22.64–24.09	24.4
Spontaneous or other early pregnancy loss	898	180	5.37	5.03–5.73	5.6
Reproductive total	16,004	3,201	95.73	94.33–97.15	100.0
Waiting list admissions by primary procedure					
Musculoskeletal procedures	1,967	393	5.54	5.30–5.79	27.1
Gastrointestinal procedures	810	162	2.28	2.13–2.44	11.2
Procedures on skin or subcutaneous tissue	550	110	1.55	1.43–1.68	7.6
Tonsillectomy ± adenoidectomy	510	102	1.44	1.32–1.57	7.0
Other procedures	3,257	651	9.18	8.87–9.50	44.8
No procedure listed	169	34	0.48	0.41–0.55	2.3
Waiting list total	7,263	1,453	20.47	20.01–20.94	100.0
Canterbury total	53,941	10,788			

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; URTI = upper respiratory tract infection; NOS = not otherwise specified; Injury ED cases excluded; Reproductive rates are per 1,000 females thus overall DHB rate not provided due to use of gender-specific denominator for reproductive admissions; *NMDS coverage of therapeutic abortions is incomplete, and thus may underestimate regional totals; † Rate per 1,000 15–24 year olds

Table 15. Causes of hospitalisations of 15–24 year olds, by admission type, West Coast, 2010–2014

	Number: 2010–2014	Number: annual average	Rate†	95% CI	Per cent
West Coast 15–24 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	426	85	23.27	21.18–25.56	32.0
Mental health	122	24	6.66	5.58–7.95	9.2
Abdominal or pelvic pain	88	18	4.81	3.90–5.92	6.6
Other diagnoses	697	139	38.07	35.40–40.94	52.3
Acute total	1,333	267	72.81	69.14–76.67	100.0
Arranged admissions by primary diagnosis					
Neoplasm, chemotherapy, or radiotherapy	81	16	4.42	3.56–5.50	21.1
Injury or poisoning	51	10	2.79	2.12–3.66	13.3
Mental health	41	8	2.24	1.65–3.04	10.7
Other diagnoses	211	42	11.53	10.08–13.18	54.9
Arranged total	384	77	20.98	19.00–23.15	100.0
Reproductive hospitalisations by primary diagnosis					
Pregnancy, delivery, or postnatal-related conditions	882	176	100.06	93.97–106.50	74.4
Termination of pregnancy: therapeutic, other, or unspecified*	244	49	27.68	24.46–31.32	20.6
Spontaneous or other early pregnancy loss	59	12	6.69	5.19–8.62	5.0
Reproductive total	1,185	237	134.44	127.48–141.72	100.0
Waiting list admissions by primary procedure					
Musculoskeletal procedures	153	31	8.36	7.14–9.78	26.2
Gastrointestinal procedures	115	23	6.28	5.24–7.53	19.7
Procedures on skin or subcutaneous tissue	45	9	2.46	1.84–3.29	7.7
Tonsillectomy ± adenoidectomy	44	9	2.40	1.79–3.22	7.5
Other procedures	197	39	10.76	9.37–12.36	33.8
No procedure listed	29	6	1.58	1.10–2.27	5.0
Waiting list total	583	117	31.85	29.40–34.49	100.0
West Coast total	3,485	697			

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; URTI = upper respiratory tract infection; NOS = not otherwise specified; Injury ED cases excluded; Reproductive rates are per 1,000 females thus overall DHB rate not provided due to use of gender-specific denominator for reproductive admissions; *NMDS coverage of therapeutic abortions is incomplete, and thus may underestimate regional totals; † Rate per 1,000 15–24 year olds

Table 16. Causes of hospitalisations of 15–24 year olds, by admission type, Southern DHB, 2010–2014

	Number: 2010–2014	Number: annual average	Rate†	95% CI	Per cent
Southern DHB 15–24 year olds					
Acute admissions by primary diagnosis					
Injury or poisoning	3,152	630	13.34	12.88–13.81	16.3
Mental health	2,205	441	9.33	8.95–9.72	11.4
Abdominal or pelvic pain	1,273	255	5.39	5.10–5.69	6.6
Other diagnoses	12,658	2,532	53.55	52.65–54.47	65.6
Acute total	19,288	3,858	81.61	80.51–82.72	100.0
Arranged admissions by primary diagnosis					
Injury or poisoning	149	30	0.63	0.54–0.74	7.6
Mental health	123	25	0.52	0.44–0.62	6.2
Neoplasm, chemotherapy, or radiotherapy	111	22	0.47	0.39–0.57	5.6
Other diagnoses	1,589	318	6.72	6.40–7.06	80.6
Arranged total	1,972	394	8.34	7.98–8.72	100.0
Reproductive hospitalisations by primary diagnosis					
Pregnancy, delivery, or postnatal-related conditions	5,735	1,147	48.16	46.96–49.40	72.6
Termination of pregnancy: therapeutic, other, or unspecified*	1,754	351	14.73	14.06–15.43	22.2
Spontaneous or other early pregnancy loss	406	81	3.41	3.09–3.76	5.1
Reproductive total	7,895	1,579	66.30	64.91–67.73	100.0
Waiting list admissions by primary procedure					
Musculoskeletal procedures	827	165	3.50	3.27–3.75	18.7
Dental procedures	568	114	2.40	2.21–2.61	12.8
Tonsillectomy ± adenoidectomy	403	81	1.71	1.55–1.88	9.1
Gastrointestinal procedures	386	77	1.63	1.48–1.80	8.7
Procedures on skin or subcutaneous tissue	281	56	1.19	1.06–1.34	6.3
Other procedures	1,691	338	7.15	6.82–7.50	38.2
No procedure listed	273	55	1.16	1.03–1.30	6.2
Waiting list total	4,429	886	18.74	18.20–19.29	100.0
Southern DHB total	33,584	6,717			

Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population; URTI = upper respiratory tract infection; NOS = not otherwise specified; Injury ED cases excluded; Reproductive rates are per 1,000 females thus overall DHB rate not provided due to use of gender-specific denominator for reproductive admissions; *NMDS coverage of therapeutic abortions is incomplete, and thus may underestimate regional totals; † Rate per 1,000 15–24 year olds

AMBULATORY SENSITIVE HOSPITALISATIONS

Introduction

Ambulatory sensitive hospitalisations (ASH) are a range of conditions for which hospitalisation could potentially be avoided.²⁰ At a community level, high ASH rates may indicate difficulty in accessing primary care in a timely fashion, poor care coordination or care continuity, or structural constraints such as limited supply of primary care workers. However ASH rates are also determined by other factors including hospital size and service configuration, capacity for emergency department management, admission policies and practices, as well as health literacy and overall social determinants of health in the community. It is important to note the deliberate use of the word 'sensitive' in the title of ASH. Not all these hospitalisations would be avoidable even in a perfect health system; for example, children who are found to have relatively minor ASH conditions may have come in to hospital for investigations to exclude more serious illness such as meningococcal disease.²¹

There are currently two different ASH algorithms in use in New Zealand: the NZCYES uses paediatric ASH codes developed by Anderson et al²² with analysis restricted to age 0–4 years and a population-based denominator. The Health Quality and Safety Commission use a similar but not identical list in 0–14 year olds with a PHO enrolment denominator.²¹ Both provide analyses including and excluding ED cases.

In New Zealand children, ASH accounts for approximately 30% of all acute and arranged medical and surgical discharges each year.²¹ Pathways to prevent ASH will vary by condition. For asthma it may be the use of preventative medicine, whilst for gastroenteritis it may be about access to early oral rehydration fluids.²¹ Vaccine-preventable disease can be prevented almost entirely with good immunisation coverage and diseases or conditions that can lead to rapid onset of problems, such as dehydration and gastroenteritis, can be treated in primary care.²⁰

The following section reports on ambulatory sensitive hospitalisations for children aged 0–4 years using the ASH conditions, as defined by NZCYES, applied to information from the National Mortality Collection and the National Minimum Dataset. Guidelines and reviews of literature which consider the most effective interventions for preventing or managing the specific conditions included in ASH can be found in the relevant indicator chapter.

Data sources and methods

Indicator

Ambulatory sensitive hospitalisations (ASH) in 0–4 year olds

Data sources

Numerator: National Minimum Dataset

Denominator: Statistics NZ Estimated Resident Population (with linear extrapolation being used to calculate denominators between Census years)

Definition

Acute and arranged hospitalisations for ambulatory sensitive conditions in 0–4 year olds

The conditions in this section are based on primary diagnosis, and include:

Asthma and wheeze, bronchiectasis, skin infections, constipation, dental caries and other dental conditions, dermatitis and eczema, gastroenteritis, gastro-oesophageal reflux, nutritional deficiency, bacterial or non-viral pneumonia, rheumatic fever/rheumatic heart disease, otitis media, acute upper respiratory tract infections (excluding croup), vaccine preventable diseases: (neonatal/other tetanus, congenital rubella; pertussis age ≥6 months, diphtheria, hepatitis B, measles, mumps, rubella age ≥16 months, urinary tract infections age >4 years).

Notes on interpretation

Note 1: *Age filters:* The 0–4 year age group has been selected for this analysis as it aligns with the Ministry of Health's previous paediatric ASH Target (0–4 years). Neonatal hospitalisations (0–27 days) have been excluded on the basis that issues arising in the neonatal period are likely to be heavily influenced by antenatal/perinatal factors, and as a consequence are likely to require different care pathways from conditions arising in the community (e.g. pneumonia in a very preterm infant). The only exceptions are neonatal tetanus and congenital rubella, which are potentially preventable by timely (maternal) access to immunisation. Further, age filters have also been applied to some vaccine preventable diseases (e.g. measles ≥16 months) on the basis that these conditions may not be (primary care) preventable, prior to the age at which immunisation for the relevant condition is due. Similarly, a >4 year age criteria has been applied to urinary tract infections, on the basis that younger children may require hospitalisation for further investigation.

Note 2: Admission type filters: An acute hospitalisation is an unplanned hospitalisation occurring on the day of presentation, while an arranged admission is a non-acute hospitalisation with an admission date less than seven days after the decision was made that the admission was required. A waiting list admission is a planned hospitalisation, where the admission date is equal to or greater than seven days after the decision was made that the admission was necessary. In this section, all analyses include acute and arranged admissions only, with the exception of dental conditions, which also include waiting list admissions (as some DHBs routinely admit dental conditions from the waiting list, while others admit the majority as arranged admissions, potentially creating artefactual DHB differences if the entire burden of dental morbidity is not captured). This restriction was applied in order to eliminate the large number of cases where the primary diagnosis was, for example, otitis media, but where the main reason for admission was for the insertion of grommets. It was considered that the role primary care played in preventing acute admissions (e.g. for acute otitis media), was likely to differ from the one it played in ensuring children had access to waiting list procedures (e.g. for the insertion of grommets).

Note 3: Emergency Department Filters: In order to deal with the issue of inconsistent uploading of Emergency Department (ED) cases to the National Minimum Dataset (see **Appendix 3**), the Ministry of Health has traditionally applied a number of filters to its ASH analyses.^{23,24} These filters exclude Accident and Emergency cases which meet the following criteria:

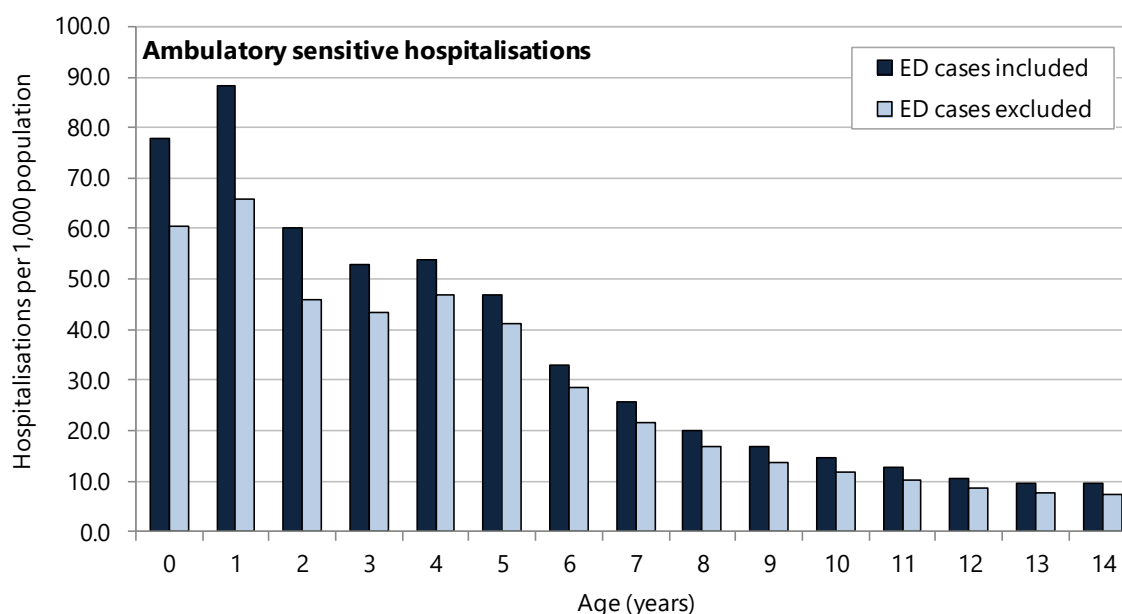
- The admission and discharge dates are the same AND,
- The patient was not discharged dead (i.e., discharge type not in 'DD') AND,
- The health specialty code is in ('M05', 'M06', 'M07', or 'M08').

While the NZ Child and Youth Epidemiology service does not recommend the use of such filters in the paediatric population, in order to allow DHBs to assess the impact ED cases have on their ASH rates, all the analyses in this section are presented with both ED cases included and excluded. In contrast to the Ministry of Health filters described above however, all ED cases have either been totally included or excluded, not just those admitted and discharged on the same day (as in the paediatric population many presentations occur late in the evening, with children then being discharged in the early hours of the following day, potentially making their total length of stay similar to that of ED day cases).

For those DHBs without a dedicated paediatric emergency department, who assess the majority of their cases in a Paediatric Assessment Unit or on the Paediatric Ward, the ED included and excluded analyses may be identical. Local variations in the way health specialty codes are assigned to such cases may seriously influence the differences seen between the ED included and excluded rates.

As shown in **Figure 1**, ASH rates were highest for children aged under two years and declined rapidly with increasing age from age five years whether ED cases were included or excluded. The remainder of this section is restricted to 0–4 year olds (**Figure 1**).

Figure 1. Ambulatory sensitive hospitalisations in 0–14 year olds, by age New Zealand 2010–2014



Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded); Denominator: Statistics NZ Estimated Resident Population

Causes of ambulatory sensitive hospitalisations

Between 2010 and 2014 there were 102,454 ASH when ED cases were included and 88,831 ASH when ED cases were excluded. The most frequent ASH diagnoses with ED cases included were gastroenteritis and asthma and wheeze. With ED cases excluded the most common ASH diagnosis was asthma and wheeze, followed by dental conditions and gastroenteritis (**Table 17**).

Table 17. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, New Zealand 2010–2014

Primary diagnosis	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	95% CI	Per cent
Ambulatory sensitive hospitalisations in 0–4 year olds					
Emergency Department cases included					
Gastroenteritis	21,691	4,338	14.07	13.89–14.26	21.2
Asthma and wheeze	21,603	4,321	14.02	13.83–14.20	21.1
Acute upper respiratory infections (excl croup)	17,937	3,587	11.64	11.47–11.81	17.5
Dental	14,629	2,926	9.49	9.34–9.65	14.3
Pneumonia: bacterial, non-viral	9,162	1,832	5.94	5.82–6.07	8.9
Skin infections	8,219	1,644	5.33	5.22–5.45	8.0
Dermatitis and eczema	2,681	536	1.74	1.68–1.81	2.6
Otitis media	2,480	496	1.61	1.55–1.67	2.4
Constipation	2,030	406	1.32	1.26–1.38	2.0
Gastro-oesophageal reflux	1,353	271	0.88	0.83–0.93	1.3
Bronchiectasis	263	53	0.17	0.15–0.19	0.3
Nutritional deficiencies or anaemias	211	42	0.14	0.12–0.16	0.2
VPD ≥ 6 months: DTP, Polio, HepB	156	31	0.10	0.09–0.12	0.2
VPD ≥ 16 months: MMR	28	6	0.02	0.01–0.03	0.0
Rheumatic fever or rheumatic heart disease	11	2	0.01	s	0.0
Total	102,454	20,491	66.48	66.09–66.87	100.0
Emergency Department cases excluded					
Asthma and wheeze	16,230	3,246	10.53	10.37–10.69	20.1
Dental	14,596	2,919	9.47	9.32–9.62	18.1
Gastroenteritis	14,580	2,916	9.46	9.31–9.61	18.0
Acute upper respiratory infections (excl croup)	12,598	2,520	8.17	8.03–8.32	15.6
Skin infections	7,686	1,537	4.99	4.88–5.10	9.5
Pneumonia: bacterial, non-viral	7,677	1,535	4.98	4.87–5.09	9.5
Dermatitis and eczema	2,457	491	1.59	1.53–1.66	3.0
Otitis media	1,713	343	1.11	1.06–1.17	2.1
Constipation	1,493	299	0.97	0.92–1.02	1.8
Gastro-oesophageal reflux	1,185	237	0.77	0.73–0.81	1.5
Bronchiectasis	257	51	0.17	0.15–0.19	0.3
Nutritional deficiencies or anaemias	198	40	0.13	0.11–0.15	0.2
VPD ≥ 6 months: DTP, Polio, HepB	133	27	0.09	0.07–0.10	0.2
VPD ≥ 16 months: MMR	17	3	0.01	0.01–0.02	0.0
Rheumatic fever or rheumatic heart disease	11	2	0.01	s	0.0
Total	80,831	16,166	52.45	52.10–52.80	100.0

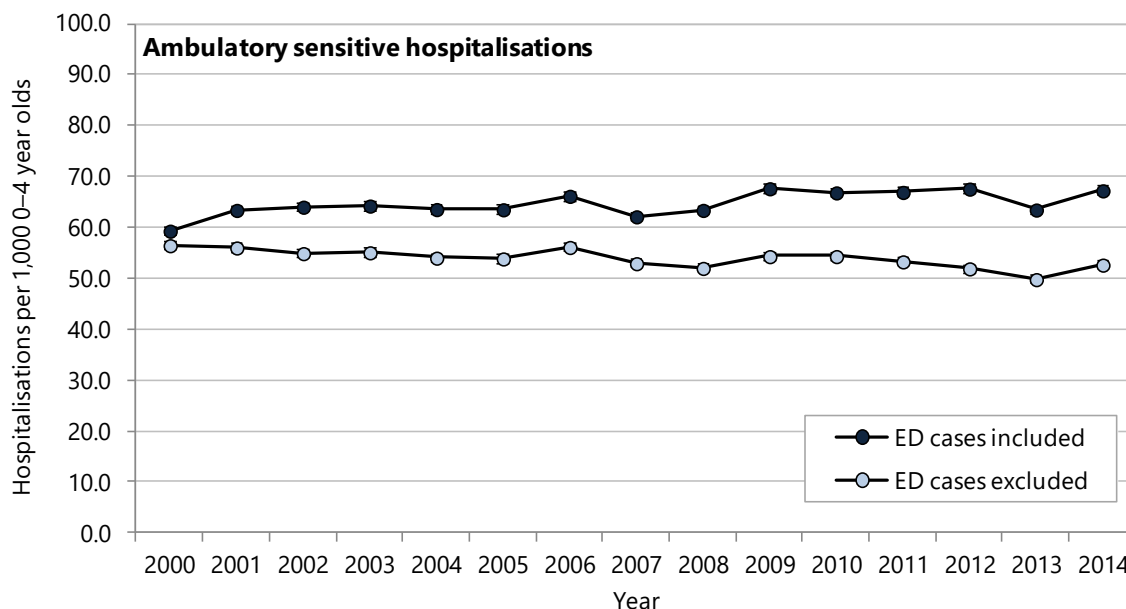
Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded); Denominator: Statistics NZ Estimated Resident Population; * Acute upper respiratory tract infections excludes croup; s: suppressed due to small numbers; VPD: Vaccine preventable diseases; DTP: diphtheria, tetanus, pertussis; HepB: hepatitis B; MMR: measles, mumps, rubella

National trends and distribution

From 2000 to 2014 the hospitalisation rate for ambulatory-care sensitive conditions rose when ED cases were included and fell when ED cases were excluded (**Figure 2**).

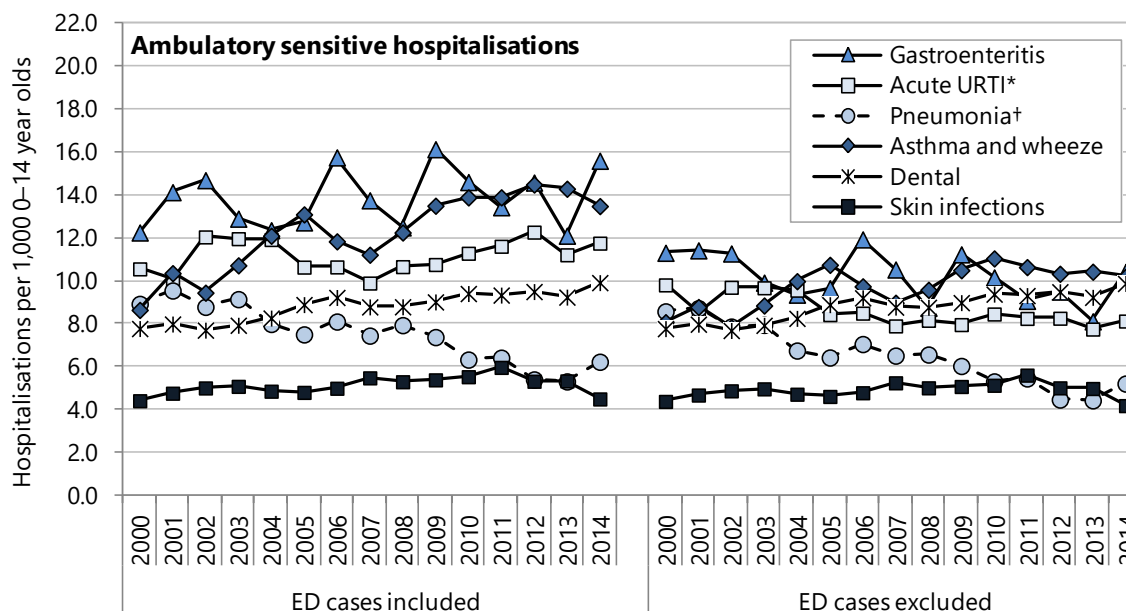
When considered by primary diagnosis ASH rates rose from 2000 to 2014 for asthma and wheeze and dental conditions and fell for pneumonia with ED cases included or excluded. Hospitalisation rates for URTI and gastroenteritis were more variable over time (**Figure 3**).

Figure 2. Ambulatory sensitive hospitalisations in 0–4 year olds, New Zealand 2000–2014



Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded); Denominator: Statistics NZ Estimated Resident Population

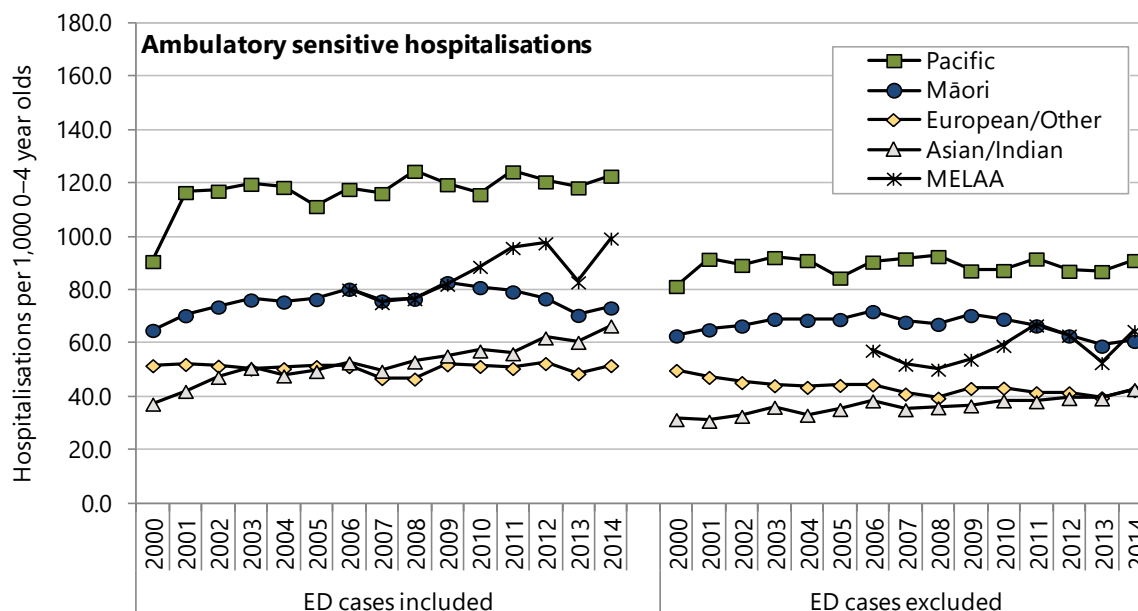
Figure 3. Ambulatory sensitive hospitalisations in 0–4 year olds, by primary diagnosis, New Zealand 2010–2014



Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded); Denominator: Statistics NZ Estimated Resident Population; * Acute URTI = Acute upper respiratory infections (excl croup); Pneumonia† = Bacterial and non-viral pneumonia

From 2000 to 2014 hospitalisation rates for ambulatory-care sensitive conditions were stable for European/Other 0–4 year olds and increased for other ethnic groups when ED cases were included. When ED cases were excluded ASH rates rose for Asian/Indian children, fell for European/Other children and were stable with year-to-year variability for Māori and Pacific children. ASH rates from 2000–2014, with or without ED cases, were consistently highest for Pacific children, followed by Māori, European/Other and Asian/Indian children. Data for MELAA children were available from 2006; the MELAA rate rose when ED cases were included and was stable with year-to-year variability with ED cases excluded (**Figure 4**).

Figure 4. Ambulatory sensitive hospitalisations in 0–4 year olds, by ethnicity, New Zealand, 2000–2014



Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded); Denominator: Statistics NZ Estimated Resident Population

Distribution by demographic factors

From 2010 to 2014 for children aged 0–4 years there were disparities in ASH rates by NZDep2013 decile, ethnicity and gender. With ED cases included a social gradient was evident with a *significant increase* in ASH rates between each quintile of NZDep2013 scores compared with the quintile below. ASH rates for Māori, Pacific, Asian/Indian and MELAA were *significantly higher* than rates for European/Other children. Male ASH rates were *significantly higher* than female rates. Similar relationships with demographic factors were *observed* when ED cases were excluded except that rates for Asian/Indian 0–14 years olds were *significantly lower* than European/Other rates (**Table 18, Table 19**).

Table 18. Ambulatory sensitive hospitalisations in 0–4 year olds (ED cases included), by demographic variables New Zealand 2010–2014

Variable	Number: 2010–2014	Rate per 1,000 0–4 year olds	Rate ratio	95% CI
Ambulatory sensitive hospitalisations in 0–4 year olds				
Emergency Department cases included				
NZDep2013 Index of deprivation quintile				
Deciles 1–2	10,977	42.16	1.00	
Deciles 3–4	12,717	48.56	1.15	1.12–1.18
Deciles 5–6	15,981	54.24	1.29	1.26–1.32
Deciles 7–8	23,417	68.13	1.62	1.58–1.65
Deciles 9–10	38,901	102.24	2.42	2.38–2.48
Prioritised ethnicity				
Māori	31,438	76.24	1.49	1.47–1.51
Pacific	18,322	120.54	2.36	2.32–2.40
Asian/Indian	10,750	60.89	1.19	1.17–1.22
MELAA	1,977	93.10	1.82	1.74–1.90
European/Other	39,820	51.12	1.00	
Gender				
Female	45,443	60.56	1.00	
Male	57,009	72.09	1.19	1.18–1.20

Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded, ED included); Denominator: Statistics NZ Estimated Resident Population; Rate ratios are unadjusted; Ethnicity is level 1 prioritised; Decile is NZDep2013

Table 19. Ambulatory sensitive hospitalisations in 0–4 year olds (ED cases excluded), demographic variables New Zealand 2010–2014

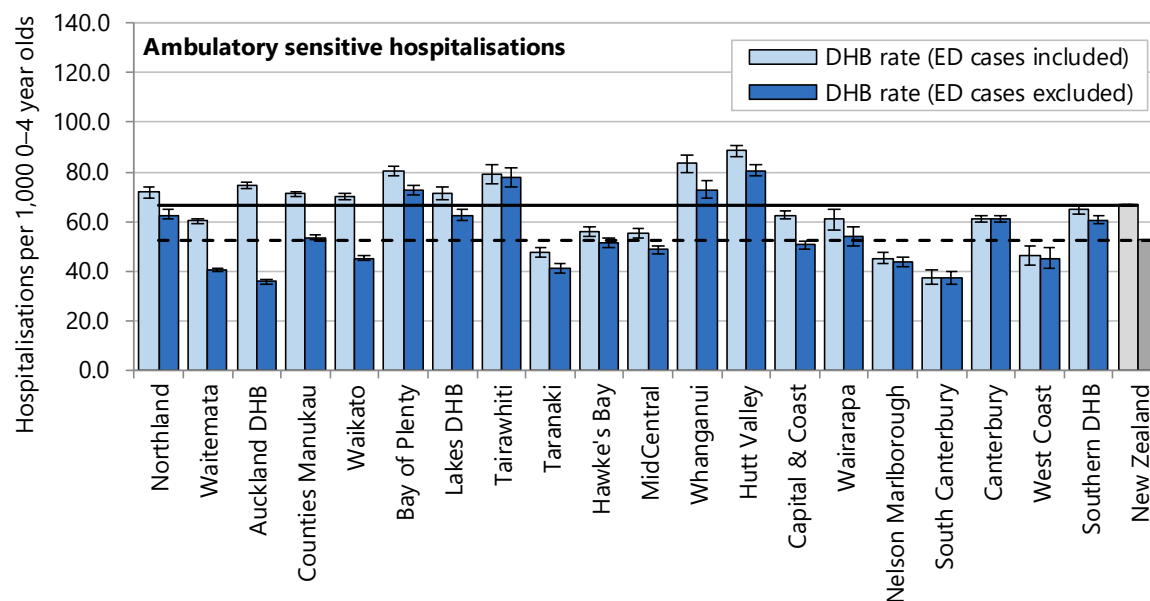
Variable	Number: 2010–2014	Rate per 1,000 0–4 year olds	Rate ratio	95% CI
Ambulatory sensitive hospitalisations in 0–4 year olds				
Emergency Department cases excluded				
NZDep2013 Index of deprivation quintile				
Deciles 1–2	8,614	33.09	1.00	
Deciles 3–4	9,777	37.34	1.13	1.10–1.16
Deciles 5–6	12,221	41.48	1.25	1.22–1.29
Deciles 7–8	18,996	55.27	1.67	1.63–1.71
Deciles 9–10	30,896	81.20	2.45	2.40–2.51
Prioritised ethnicity				
Māori	26,274	63.72	1.52	1.50–1.55
Pacific	13,528	89.00	2.13	2.09–2.17
Asian/Indian	7,035	39.85	0.95	0.93–0.98
MELAA	1,303	61.36	1.47	1.39–1.55
European/Other	32,560	41.80	1.00	
Gender				
Female	35,839	47.76	1.00	
Male	44,990	56.89	1.19	1.18–1.21

Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded, ED included); Denominator: Statistics NZ Estimated Resident Population; Rate ratios are unadjusted; Ethnicity is level 1 prioritised; Decile is NZDep2013

Distribution by region

Hospitalisation rates for ambulatory-sensitive conditions, with ED cases included were *significantly higher* than the New Zealand rate in the Northland, Auckland, Counties Manukau, Waikato, Bay of Plenty, Lakes, Tairāwhiti, Whanganui and Hutt Valley DHBs between 2010 and 2014. In contrast rates were *significantly lower* than the New Zealand rate in the Waitemata, Taranaki, Hawke's Bay, MidCentral, Capital & Coast, Wairarapa, Nelson Marlborough, South Canterbury, Canterbury and West Coast DHBs. Excluding ED cases made a difference for the Canterbury and Southern DHBs where rates became *significantly higher* and the Auckland and Waikato DHBs where rates became *significantly lower* than the New Zealand rate (**Figure 5, Table 20**).

Figure 5. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and district health board, New Zealand 2010–2014



Numerator: National Minimum Dataset; Denominator: Statistics NZ Estimated Resident Population

Table 20. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and district health board, New Zealand 2010–2014

DHB	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	Rate ratio	95% CI
Ambulatory sensitive hospitalisations in 0–4 year olds					
Emergency Department cases included					
Northland	4,289	858	71.74	1.08	1.05–1.11
Waitemata	11,720	2,344	60.20	0.91	0.89–0.92
Auckland	11,124	2,225	74.67	1.12	1.10–1.14
Counties Manukau	14,527	2,905	71.14	1.07	1.05–1.09
Waikato	9,723	1,945	70.01	1.05	1.03–1.07
Bay of Plenty	5,931	1,186	80.30	1.21	1.18–1.24
Lakes	2,795	559	71.18	1.07	1.03–1.11
Tairāwhiti	1,524	305	79.11	1.19	1.13–1.25
Taranaki	1,921	384	47.24	0.71	0.68–0.74
Hawke's Bay	3,216	643	55.90	0.84	0.81–0.87
MidCentral	3,154	631	55.28	0.83	0.80–0.86
Whanganui	1,829	366	83.30	1.25	1.20–1.31
Hutt Valley	4,556	911	88.48	1.33	1.29–1.37
Capital & Coast	5,976	1,195	62.61	0.94	0.92–0.97
Wairarapa	824	165	60.68	0.91	0.85–0.98
Nelson Marlborough	1,935	387	45.16	0.68	0.65–0.71
South Canterbury	635	127	37.37	0.56	0.52–0.61
Canterbury	9,764	1,953	61.19	0.92	0.90–0.94
West Coast	495	99	45.95	0.69	0.63–0.75
Southern	6,093	1,219	64.57	0.97	0.95–1.00
New Zealand	102,454	20,491	66.48	1.00	
Emergency Department cases excluded					
Northland	3,742	748	62.59	1.19	1.16–1.23
Waitemata	7,866	1,573	40.40	0.77	0.75–0.79
Auckland	5,335	1,067	35.81	0.68	0.66–0.70
Counties Manukau	10,936	2,187	53.55	1.02	1.00–1.04
Waikato	6,265	1,253	45.11	0.86	0.84–0.88
Bay of Plenty	5,349	1,070	72.42	1.38	1.34–1.42
Lakes	2,453	491	62.47	1.19	1.15–1.24
Tairāwhiti	1,500	300	77.86	1.48	1.41–1.56
Taranaki	1,660	332	40.82	0.78	0.74–0.82
Hawke's Bay	2,947	589	51.23	0.98	0.94–1.01
MidCentral	2,765	553	48.47	0.92	0.89–0.96
Whanganui	1,598	320	72.78	1.39	1.32–1.46
Hutt Valley	4,153	831	80.65	1.54	1.49–1.58
Capital & Coast	4,814	963	50.43	0.96	0.93–0.99
Wairarapa	733	147	53.98	1.03	0.96–1.10
Nelson Marlborough	1,860	372	43.41	0.83	0.79–0.87
South Canterbury	630	126	37.07	0.71	0.65–0.76
Canterbury	9,727	1,945	60.96	1.16	1.14–1.19
West Coast	485	97	45.03	0.86	0.79–0.94
Southern	5,719	1,144	60.61	1.16	1.13–1.19
New Zealand	80,831	16,166	52.45	1.00	

Numerator: National Minimum Dataset (acute and arranged admissions, neonates excluded, ED excluded); Denominator: Statistics NZ Estimated Resident Population

South Island region distribution and trends

Comparison with New Zealand

Between 2010 and 2014 hospitalisation rates for ambulatory sensitive conditions with ED cases included were *significantly lower* than the national rate in all South Island DHBs except the Southern DHB where ASH rates were *not significantly different*. With ED cases excluded ASH rates were *significantly higher* than the national rate in Canterbury and Southern DHBs and *significantly lower* in Nelson Marlborough, South Canterbury and on the West Coast (**Table 21**).

Table 21. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status South Island DHBs vs New Zealand 2010–2014

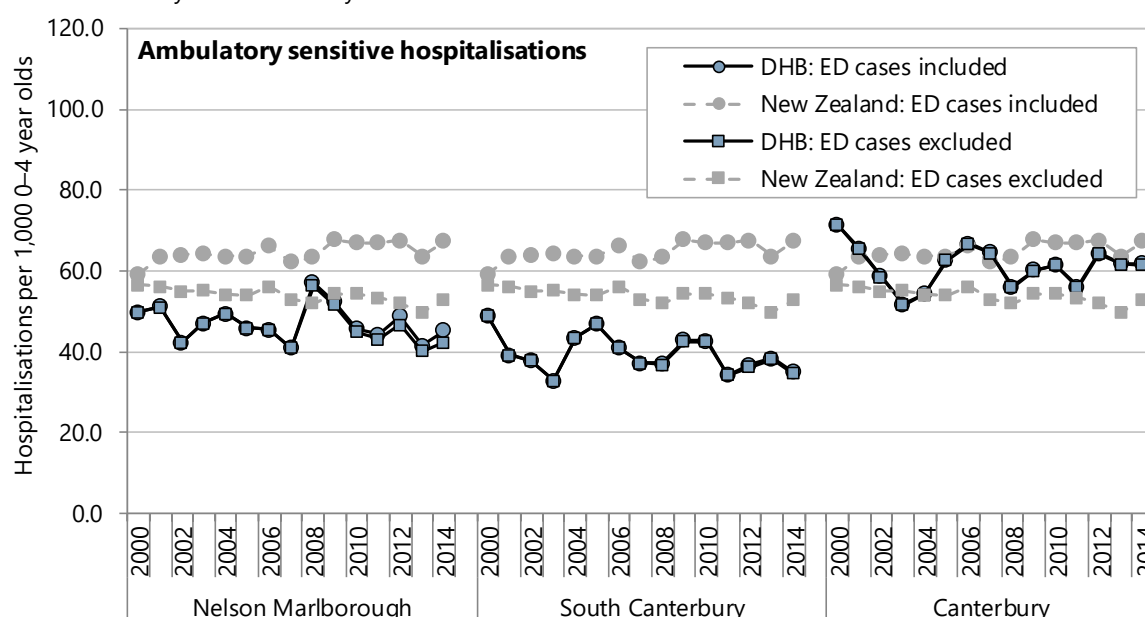
DHB	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	Rate ratio	95% CI
Ambulatory sensitive hospitalisations in 0–4 year olds					
Emergency Department cases included					
Nelson Marlborough	1,935	387	45.16	0.68	0.65–0.71
South Canterbury	635	127	37.37	0.56	0.52–0.61
Canterbury	9,764	1,953	61.19	0.92	0.90–0.94
West Coast	495	99	45.95	0.69	0.63–0.75
Southern	6,093	1,219	64.57	0.97	0.95–1.00
New Zealand	102,454	20,491	66.48	1.00	
Emergency Department cases excluded					
Nelson Marlborough	1,860	372	43.41	0.83	0.79–0.87
South Canterbury	630	126	37.07	0.71	0.65–0.76
Canterbury	9,727	1,945	60.96	1.16	1.14–1.19
West Coast	485	97	45.03	0.86	0.79–0.94
Southern	5,719	1,144	60.61	1.16	1.13–1.19
New Zealand	80,831	16,166	52.45	1.00	0.0

Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population

Regional trends

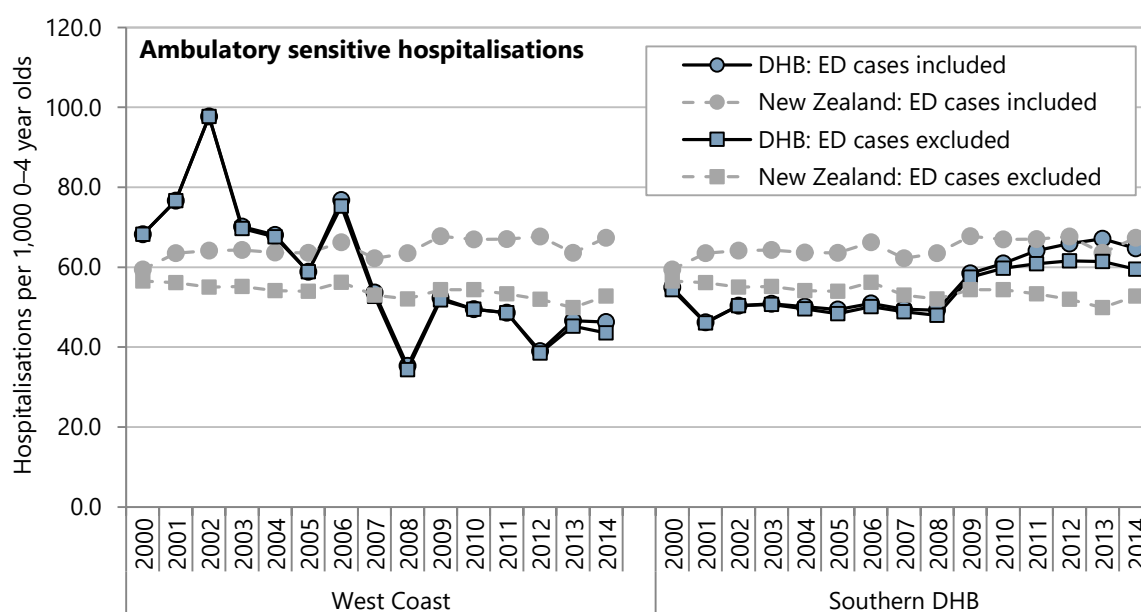
Hospitalisation rates of 0–4 year olds for ambulatory sensitive conditions increased between 2000 and 2014 in the Southern DHB, decreased in Nelson Marlborough, South Canterbury, Canterbury and on the West Coast, whether ED cases were included or excluded (**Figure 6, Figure 7**).

Figure 6. Ambulatory sensitive hospitalisations in children aged 0–4 years, by ED status, Nelson Marlborough, South Canterbury and Canterbury DHBs vs New Zealand 2000–2014



Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population

Figure 7. Ambulatory sensitive hospitalisations in children aged 0–4 years, by ED status, West Coast and Southern DHBs vs New Zealand 2000–2014

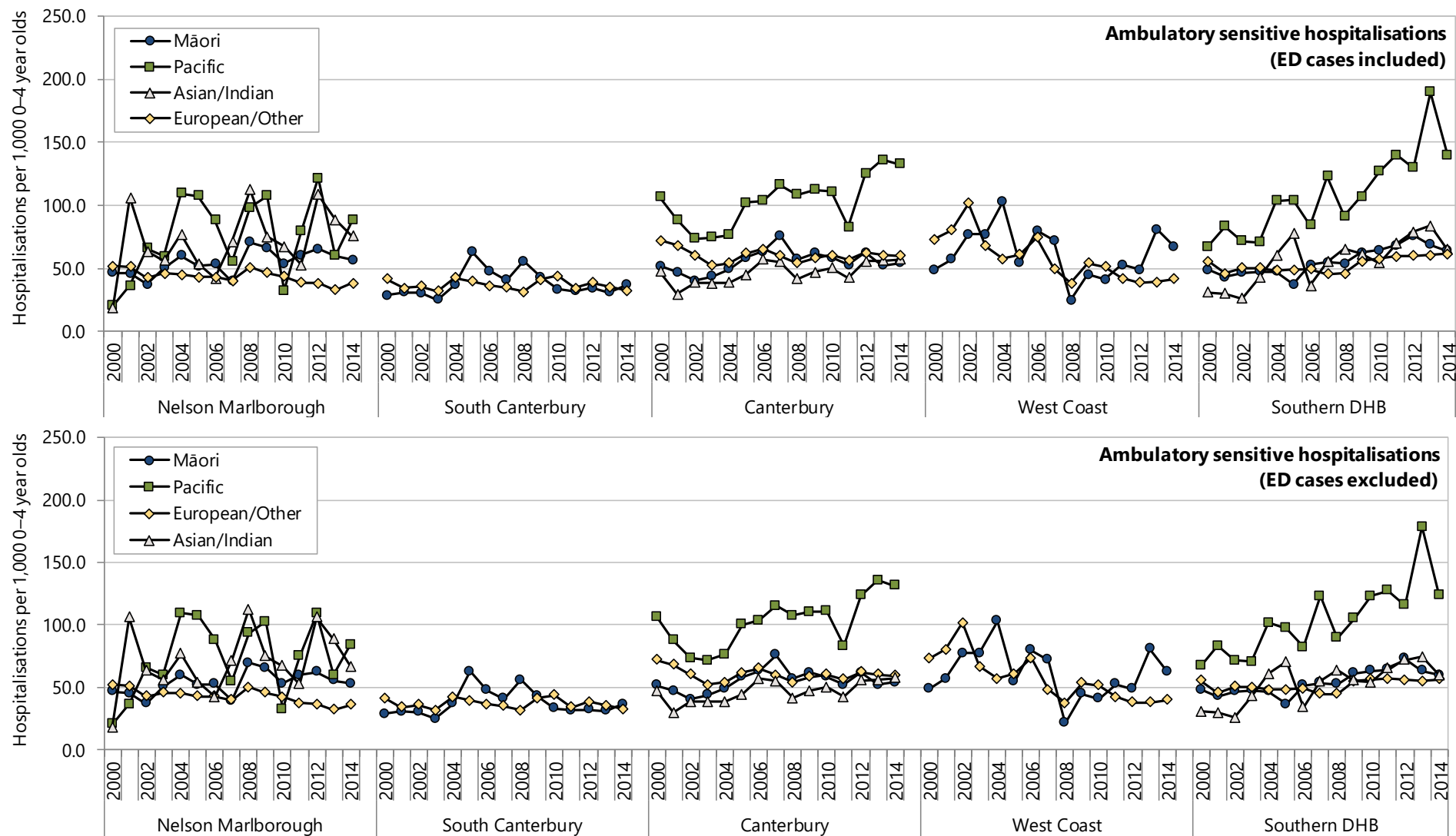


Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population

There were no clear patterns in ASH rates by ethnicity for 0–4 year olds in Nelson Marlborough and South Canterbury from 2000 to 2014, (**Figure 8**).

From 2000 to 2014, with ED cases included or excluded, ASH rates of Pacific 0–4 year olds were consistently higher than European/Other, Asian and Māori in Canterbury and Southern DHBs and the difference in rates increased over time. In South Canterbury and on the West Coast there were no clear patterns in ASH rates by ethnicity for 0–4 year olds. European/Other rates have been lower than Pacific, Māori and Asian rates in Nelson Marlborough since 2011 (**Figure 8**).

Figure 8. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and ethnicity, South Island DHBs vs New Zealand 2000–2014



Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population; Ethnicity is level 1 prioritised

Regional distribution by cause

Between 2010 and 2014 0–4 year olds hospitalised with ambulatory sensitive conditions in the South Island DHBs were most frequently diagnosed with gastroenteritis, dental, acute upper respiratory tract infection or asthma and wheeze, although the order of these diagnoses varied between DHBs (**Table 22–Table 26**).

Table 22. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, Nelson Marlborough DHB 2010–2014

Primary diagnosis	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	95% CI	Per cent
Ambulatory sensitive hospitalisations in Nelson Marlborough 0–4 year olds					
Emergency Department cases included					
Dental	419	84	9.78	8.89–10.75	21.7
Acute upper respiratory infections (excluding croup)	408	82	9.52	8.65–10.49	21.1
Gastroenteritis	378	76	8.82	7.98–9.75	19.5
Asthma and wheeze	333	67	7.77	6.98–8.65	17.2
Pneumonia: bacterial, non-viral	113	23	2.64	2.19–3.17	5.8
Skin infections	106	21	2.47	2.05–2.99	5.5
Constipation	73	15	1.70	1.36–2.14	3.8
Dermatitis and eczema	41	8	0.96	0.71–1.30	2.1
Otitis media	34	7	0.79	0.57–1.11	1.8
Gastro-oesophageal reflux	20	4	0.47	0.30–0.72	1.0
Nutritional deficiencies or anaemias	5	1	0.12	0.05–0.27	0.3
VPD ≥6 months: DTP, Polio, HepB	<5	s	s	s	s
Bronchiectasis	<5	s	s	s	s
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
VPD ≥16 months: MMR	0	..	..	..	..
Total	1,935	387	45.16	43.23–47.16	100.0
Emergency Department cases excluded					
Dental	418	84	9.75	8.87–10.73	22.5
Acute upper respiratory infections (excluding croup)	388	78	9.05	8.20–10.00	20.9
Gastroenteritis	349	70	8.14	7.34–9.04	18.8
Asthma and wheeze	319	64	7.44	6.67–8.30	17.2
Pneumonia: bacterial, non-viral	108	22	2.52	2.09–3.04	5.8
Skin infections	105	21	2.45	2.02–2.97	5.6
Constipation	70	14	1.63	1.29–2.06	3.8
Dermatitis and eczema	41	8	0.96	0.71–1.30	2.2
Otitis media	32	6	0.75	0.53–1.05	1.7
Gastro-oesophageal reflux	20	4	0.47	0.30–0.72	1.1
Nutritional deficiencies or anaemias	5	1	0.12	0.05–0.27	0.3
VPD ≥6 months: DTP, Polio, HepB	<5	s	s	s	s
Bronchiectasis	<5	s	s	s	s
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
VPD ≥16 months: MMR	0	..	..	..	..
Total	1,860	372	43.41	41.52–45.38	100.0

Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population; s= suppressed due to small numbers; VPD: Vaccine preventable diseases; DTP: diphtheria, tetanus, pertussis; HepB: hepatitis B; MMR: measles, mumps, rubella

Table 23. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, South Canterbury 2010–2014

Primary diagnosis	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	95% CI	Per cent
Ambulatory sensitive hospitalisations in South Canterbury 0–4 year olds					
Emergency Department cases included					
Gastroenteritis	168	34	9.89	8.51–11.49	26.5
Acute upper respiratory infections (excluding croup)	124	25	7.30	6.12–8.69	19.5
Dental	111	22	6.53	5.43–7.86	17.5
Asthma and wheeze	86	17	5.06	4.10–6.25	13.5
Skin infections	34	7	2.00	1.43–2.79	5.4
Dermatitis and eczema	28	6	1.65	1.14–2.38	4.4
Gastro-oesophageal reflux	24	5	1.41	0.95–2.10	3.8
Otitis media	22	4	1.29	0.86–1.96	3.5
Constipation	19	4	1.12	0.72–1.75	3.0
Pneumonia: bacterial, non-viral	17	3	1.00	0.62–1.60	2.7
Nutritional deficiencies or anaemias	<5	s	s	s	s
VPD ≥6 months: DTP, Polio, HepB	<5	s	s	s	s
Bronchiectasis	0	..	..	..	..
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
VPD ≥16 months: MMR	0	..	..	..	..
Total	635	127	37.37	34.62–40.33	100.0
Emergency Department cases excluded					
Gastroenteritis	166	33	9.77	8.40–11.36	26.3
Acute upper respiratory infections (excluding croup)	123	25	7.24	6.07–8.63	19.5
Dental	111	22	6.53	5.43–7.86	17.6
Asthma and wheeze	86	17	5.06	4.10–6.25	13.7
Skin infections	34	7	2.00	1.43–2.79	5.4
Dermatitis and eczema	28	6	1.65	1.14–2.38	4.4
Gastro-oesophageal reflux	24	5	1.41	0.95–2.10	3.8
Otitis media	21	4	1.24	0.81–1.89	3.3
Constipation	19	4	1.12	0.72–1.75	3.0
Pneumonia: bacterial, non-viral	16	3	0.94	0.58–1.53	2.5
Nutritional deficiencies or anaemias	<5	s	s	s	s
VPD ≥6 months: DTP, Polio, HepB	<5	s	s	s	s
Bronchiectasis	0	..	..	..	..
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
VPD ≥16 months: MMR	0	..	..	..	..
Total	630	126	37.07	34.34–40.02	100.0

Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population; VPD: Vaccine preventable diseases; DTP: diphtheria, tetanus, pertussis; HepB: hepatitis B; MMR: measles, mumps, rubella

Table 24. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, Canterbury DHB, 2010–2014

Primary diagnosis	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	95% CI	Per cent
Ambulatory sensitive hospitalisations in Canterbury 0–4 year olds					
Emergency Department cases included					
Asthma and wheeze	2,655	531	16.64	16.02–17.28	27.2
Acute upper respiratory infections (excluding croup)	2,494	499	15.63	15.03–16.25	25.5
Gastroenteritis	1,809	362	11.34	10.83–11.87	18.5
Dental	1,063	213	6.66	6.27–7.07	10.9
Pneumonia: bacterial, non-viral	448	90	2.81	2.56–3.08	4.6
Skin infections	436	87	2.73	2.49–3.00	4.5
Otitis media	273	55	1.71	1.52–1.93	2.8
Dermatitis and eczema	215	43	1.35	1.18–1.54	2.2
Constipation	200	40	1.25	1.09–1.44	2.0
Gastro-oesophageal reflux	122	24	0.76	0.64–0.91	1.2
VPD ≥6 months: DTP, Polio, HepB	16	3	0.10	0.06–0.16	0.2
Bronchiectasis	15	3	0.09	0.06–0.16	0.2
Nutritional deficiencies or anaemias	15	3	0.09	0.06–0.16	0.2
VPD ≥16 months: MMR	<5	s	s	s	s
Rheumatic fever or rheumatic heart disease	<5	s	s	s	s
Total	9,764	1,953	61.19	60.03–62.38	100.0
Emergency Department cases excluded					
Asthma and wheeze	2,645	529	16.58	15.96–17.22	27.2
Acute upper respiratory infections (excluding croup)	2,484	497	15.57	14.97–16.19	25.5
Gastroenteritis	1,802	360	11.29	10.79–11.82	18.5
Dental	1,063	213	6.66	6.27–7.07	10.9
Pneumonia: bacterial, non-viral	443	89	2.78	2.53–3.05	4.6
Skin infections	435	87	2.73	2.48–2.99	4.5
Otitis media	271	54	1.70	1.51–1.91	2.8
Dermatitis and eczema	215	43	1.35	1.18–1.54	2.2
Constipation	199	40	1.25	1.09–1.43	2.0
Gastro-oesophageal reflux	122	24	0.76	0.64–0.91	1.3
VPD ≥6 months: DTP, Polio, HepB	16	3	0.10	0.06–0.16	0.2
Nutritional deficiencies or anaemias	15	3	0.09	0.06–0.16	0.2
Bronchiectasis	14	3	0.09	0.05–0.15	0.1
VPD ≥16 months: MMR	<5	s	s	s	s
Rheumatic fever or rheumatic heart disease	<5	s	s	s	s
Total	9,727	1,945	60.96	59.80–62.15	100.0

Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population; s= suppressed due to small numbers; VPD: Vaccine preventable diseases; DTP: diphtheria, tetanus, pertussis; HepB: hepatitis B; MMR: measles, mumps, rubella

Table 25. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, West Coast DHB, 2010–2014

Primary diagnosis	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	95% CI	Per cent
Ambulatory sensitive hospitalisations in West Coast 0–4 year olds					
Emergency Department cases included					
Dental	129	26	11.98	10.09–14.21	26.1
Gastroenteritis	102	20	9.47	7.81–11.48	20.6
Acute upper respiratory infections (excluding croup)	99	20	9.19	7.56–11.18	20.0
Asthma and wheeze	82	16	7.61	6.14–9.44	16.6
Pneumonia: bacterial, non-viral	50	10	4.64	3.52–6.11	10.1
Constipation	10	2	0.93	0.50–1.71	2.0
Gastro-oesophageal reflux	6	1	0.56	0.26–1.21	1.2
Skin infections	6	1	0.56	0.26–1.21	1.2
Otitis media	5	1	0.46	0.20–1.09	1.0
Dermatitis and eczema	<5	s	s	s	s
VPD ≥6 months: DTP, Polio, HepB	<5	s	s	s	s
VPD ≥16 months: MMR	<5	s	s	s	s
Bronchiectasis	0	..	..	..	..
Nutritional deficiencies or anaemias	0	..	..	..	..
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
Total	495	99	45.95	42.16–50.07	100.0
Emergency Department cases excluded					
Dental	129	26	11.98	10.09–14.21	26.6
Gastroenteritis	100	20	9.28	7.64–11.28	20.6
Acute upper respiratory infections (excluding croup)	95	19	8.82	7.22–10.77	19.6
Asthma and wheeze	81	16	7.52	6.05–9.34	16.7
Pneumonia: bacterial, non-viral	47	9	4.36	3.28–5.80	9.7
Constipation	10	2	0.93	0.50–1.71	2.1
Gastro-oesophageal reflux	6	1	0.56	0.26–1.21	1.2
Skin infections	6	1	0.56	0.26–1.21	1.2
Otitis media	5	1	0.46	0.20–1.09	1.0
Dermatitis and eczema	<5	s	s	s	s
VPD ≥6 months: DTP, Polio, HepB	<5	s	s	s	s
VPD ≥16 months: MMR	<5	s	s	s	s
Bronchiectasis	0	..	..	..	..
Nutritional deficiencies or anaemias	0	..	..	..	..
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
Total	485	97	45.03	41.27–49.11	100.0

Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population; VPD: Vaccine preventable diseases; DTP: diphtheria, tetanus, pertussis; HepB: hepatitis B; MMR: measles, mumps, rubella

Table 26. Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, Southern DHB 2010–2014

Primary diagnosis	Number: 2010–2014	Number: annual average	Rate per 1,000 0–4 year olds	95% CI	Per cent
Ambulatory sensitive hospitalisations in Southern DHB 0–4 year olds					
Emergency Department cases included					
Gastroenteritis	1,321	264	14.00	13.27–14.77	21.7
Acute upper respiratory infections (excluding croup)	1,316	263	13.95	13.22–14.71	21.6
Asthma and wheeze	1,181	236	12.52	11.83–13.24	19.4
Dental	966	193	10.24	9.61–10.90	15.9
Pneumonia: bacterial, non-viral	294	59	3.12	2.78–3.49	4.8
Skin infections	251	50	2.66	2.35–3.01	4.1
Constipation	208	42	2.20	1.92–2.52	3.4
Gastro-oesophageal reflux	205	41	2.17	1.89–2.49	3.4
Otitis media	188	38	1.99	1.73–2.30	3.1
Dermatitis and eczema	143	29	1.52	1.29–1.78	2.3
VPD ≥6 months: DTP, Polio, HepB	11	2	0.12	0.07–0.21	0.2
Nutritional deficiencies or anaemias	7	1	0.07	0.04–0.15	0.1
Bronchiectasis	<5	s	s	s	s
VPD ≥16 months: MMR	<5	s	s	s	s
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
Total	6,093	1,219	64.57	63.02–66.15	100.0
Emergency Department cases excluded					
Gastroenteritis	1,186	237	12.57	11.88–13.30	20.7
Acute upper respiratory infections (excluding croup)	1,173	235	12.43	11.74–13.16	20.5
Asthma and wheeze	1,131	226	11.99	11.31–12.70	19.8
Dental	965	193	10.23	9.60–10.89	16.9
Pneumonia: bacterial, non-viral	289	58	3.06	2.73–3.44	5.1
Skin infections	250	50	2.65	2.34–3.00	4.4
Gastro-oesophageal reflux	202	40	2.14	1.87–2.46	3.5
Constipation	195	39	2.07	1.80–2.38	3.4
Otitis media	170	34	1.80	1.55–2.09	3.0
Dermatitis and eczema	138	28	1.46	1.24–1.73	2.4
VPD ≥6 months: DTP, Polio, HepB	11	2	0.12	0.07–0.21	0.2
Nutritional deficiencies or anaemias	7	1	0.07	0.04–0.15	0.1
Bronchiectasis	<5	s	s	s	s
VPD ≥16 months: MMR	<5	s	s	s	s
Rheumatic fever or rheumatic heart disease	0	..	..	..	..
Total	5,719	1,144	60.61	59.10–62.15	100.0

Numerator: National Minimum Dataset (acute and arranged admissions; neonates excluded); Denominator: Statistics NZ Estimated Resident Population; s= suppressed due to small numbers; VPD: Vaccine preventable diseases; DTP: diphtheria, tetanus, pertussis; HepB: hepatitis B; MMR: measles, mumps, rubella

