



New Zealand Child and Youth
Epidemiology Service

Health and wellbeing of under-five year olds in the South Island 2017

Ambulatory-care sensitive conditions

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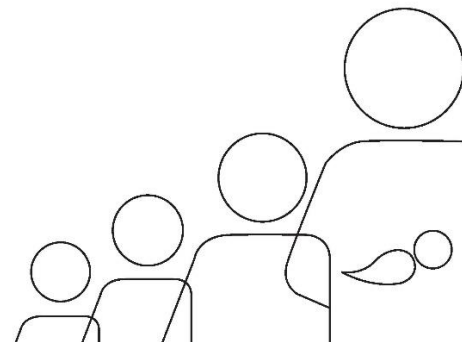
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May 2018



This report has been prepared for the South Island Alliance: Nelson Marlborough, Canterbury, South Canterbury, West Coast and Southern District Health Boards.

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Excerpt from:

Duncanson M, Oben G, Adams J, Wicken A, Morris S, Richardson G and McGee MA. 2018. Health and wellbeing of under-five year olds in the South Island 2017. Dunedin: New Zealand Child and Youth Epidemiology Service, University of Otago.



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VIII. AMBULATORY CARE-SENSITIVE CONDITIONS

Hospitalisations for ambulatory care-sensitive conditions (ACSH) are hospitalisations which could have potentially been avoided through preventive care and early intervention.^{1,2} At a community level, high ACSH 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, ACSH 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 ACSH. Not all these hospitalisations would be avoidable even in a perfect health system; for example, children who are found to have relatively minor ACSH conditions may have come in to hospital for investigations to exclude more serious illness such as meningococcal disease.³

There are currently two different ACSH algorithms in use in New Zealand, with both including and excluding Emergency Department cases. The NZCYES uses paediatric ACSH codes developed by Anderson et al.⁴ with hospitalisations restricted to children aged 28 days to 4 years and a StatsNZ population estimate denominator. The Health Quality and Safety Commission (HQSC) use a similar but not identical list in children aged 29 days to 14 years with a StatsNZ population projection denominator.⁵ Prior to 1 July 2015 HQSC had used a PHO enrolled population denominator.³

In New Zealand children, ACSH accounts for approximately 30% of all acute and arranged medical and surgical discharges.^{3,6} Pathways to prevent ACSH will vary by condition. For asthma it may be the use of preventive medicine, whilst for gastroenteritis it may be about access to early oral rehydration fluids.⁷ 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.⁷

This indicator serves as a proxy for access to and quality of primary health care, and enables identification of conditions for which early intervention is known to prevent or reduce severity and associated complications.^{1,2} It also highlights variation between different population groups thereby informing service planning to reduce disparities. This indicator also serves as a performance monitor for district health boards.⁸

Data sources and methods

Indicator

Ambulatory care-sensitive hospitalisations of children aged 28 days to 4 years

Data sources

Numerator: National Minimum Dataset (NMDS)

Denominator: StatsNZ Estimated Resident Population (ERP; with linear extrapolation between Census years)

Definition

Hospitalisations: Acute and arranged hospitalisations for ambulatory care-sensitive conditions (refer to Appendix 5 in 0–4 year olds, excluding neonates; Waiting list admissions were excluded, apart from dental hospitalisations which were all included.

Additional information

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

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 ACSH 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.

Emergency Department filters

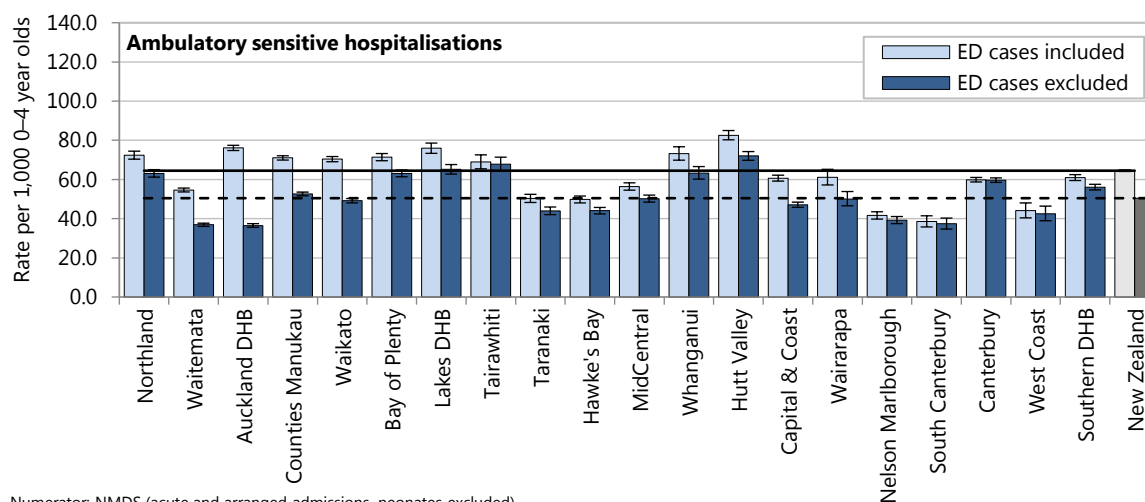
Due to inconsistent uploading of Emergency Department (ED) cases to NMDS, the Ministry of Health has traditionally applied a number of filters.^{9,10} These filters exclude Accident and Emergency cases which meet the following criteria: same admission and discharge dates, patient was not discharged dead and a health specialty code of M05–M08.

While NZCYES 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 ACSH rates, analyses in this section present ED cases included and excluded. NZCYES includes or excludes all ED cases and 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 profoundly influence the differences seen between the ED included and excluded rates.

Figure VIII–1 presents the hospitalisation rates, both including and excluding ED cases, of children aged 28 days–4 years with ambulatory care-sensitive conditions during 2012–2016 in the South Island region. Table VIII–1 describes the hospitalisation rates for each district health board in the South Island region for the same period. The hospitalisation rates in the five South Island DHBs were significantly lower than the national rate when ED cases were included. When ED cases were excluded, the hospitalisation rate in Canterbury and Southern DHBs were significantly higher than the national rate and significantly lower for the remaining DHBs (Figure VIII–1, Table VIII–1).

Figure VIII–1 Ambulatory care-sensitive hospitalisations of 0–4 year olds, by district health board compared to New Zealand, 2012–2016



Numerator: NMDS (acute and arranged admissions, neonates excluded),
Denominator: StatsNZ ERP

Table VIII–1 Ambulatory care-sensitive hospitalisations in 0–4 year olds, South Island DHBs 2012–2016

DHB	2012–2016 (n)	Annual average	Rate per 1,000 0–4 year olds	Rate ratio	95% CI
hospitalisations for ambulatory care-sensitive conditions in 0–4 year olds					
Emergency Department cases included					
Nelson Marlborough	1,824	365	41.60	0.65	0.62–0.68
South Canterbury	678	136	38.51	0.60	0.55–0.64
Canterbury	9,695	1,939	59.87	0.93	0.91–0.95
West Coast	490	98	44.03	0.68	0.63–0.74
Southern	5,914	1,183	60.95	0.95	0.92–0.97
New Zealand	101,748	20,350	64.47	1.00	
Emergency Department cases excluded					
Nelson Marlborough	1,720	344	39.22	0.78	0.74–0.82
South Canterbury	658	132	37.37	0.74	0.69–0.80
Canterbury	9,658	1,932	59.64	1.18	1.16–1.21
West Coast	473	95	42.50	0.84	0.77–0.92
Southern	5,440	1,088	56.06	1.11	1.08–1.14
New Zealand	79,598	15,920	50	1.00	

Numerator: NMDS (acute and arranged admissions, neonates excluded), Denominator: StatsNZ ERP; Rate ratios are unadjusted

Figure VIII–2 and Figure VIII–3 show the trends in the rates of ambulatory care-sensitive hospitalisations when ED cases were included and when excluded for the five South Island DHBs.

While the rates of ambulatory care-sensitive hospitalisations (ED included and excluded) in the five DHBs have declined to varying degrees since 2000, there was little separation of the trends between ED cases included and excluded (Figure VIII–2, Figure VIII–3).

Figure VIII–2 Trends in ambulatory care-sensitive hospitalisations of 0–4 year olds, Nelson Marlborough, South Canterbury and Southern DHBs 2000–2016

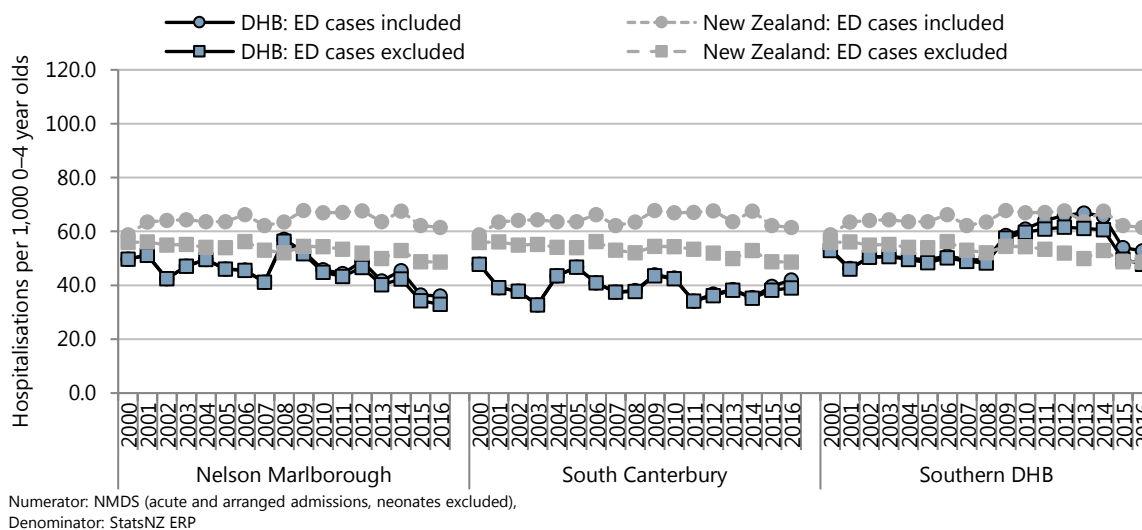


Figure VIII–3 Trends in ambulatory care-sensitive hospitalisations of 0–4 year olds, Canterbury and West Coast DHBs 2000–2016

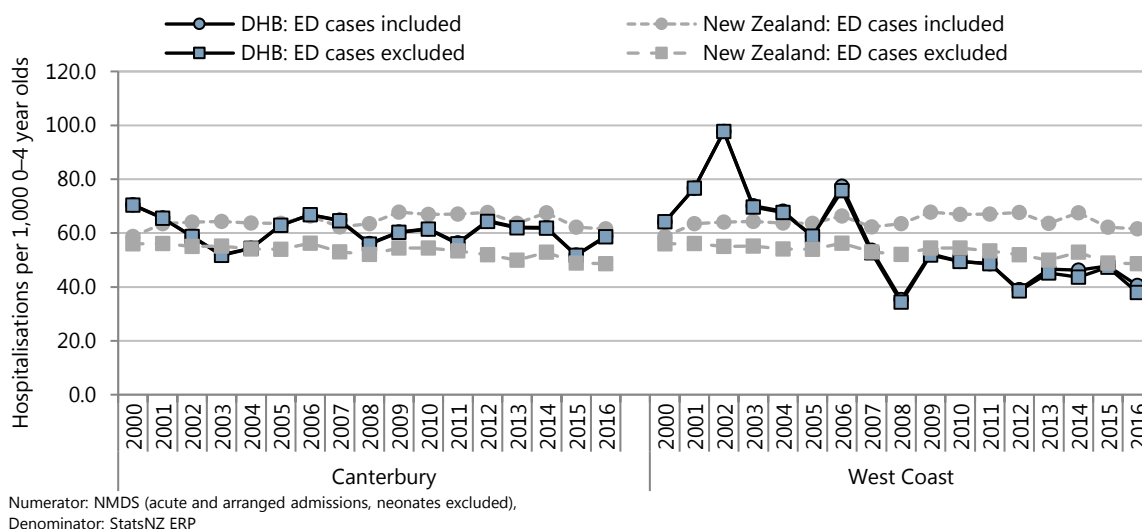


Figure VIII–4 to Figure VIII–8 present the ambulatory care-sensitive hospitalisations (ACSH; including ED cases) of children aged 28 days–4 years for differing demographic groups, specifically the residential deprivation score (NZDep2013 index of deprivation score), ethnicity, and sex.. The unadjusted rate ratio presents the gap, if any, between the groups and the reference group. The following associations were observed, bearing in mind that this univariate analysis does not quantify the independent effect of each factor:

- In the five South Island DHBs, rates of hospitalisation for ambulatory care-sensitive conditions were significantly higher for those residing in areas with higher (quintiles 4–5; deciles 7–10) NZDep2013 scores compared with quintile 1 (deciles 1–2), with the exception of West Coast DHB
- In Nelson Marlborough, West Coast, and Southern DHBs, the hospitalisation rate for Pacific and Māori 0–4 year olds were significantly higher than European/Other, and significantly higher for Pacific in South Canterbury and Canterbury DHBs
- Males were more likely to be hospitalised for ambulatory care-sensitive conditions compared with females in all five South Island DHBs.

Figure VIII-4 Ambulatory care-sensitive hospitalisations of 0-4 year olds, by demographic factor, Nelson Marlborough DHB 2012-2016

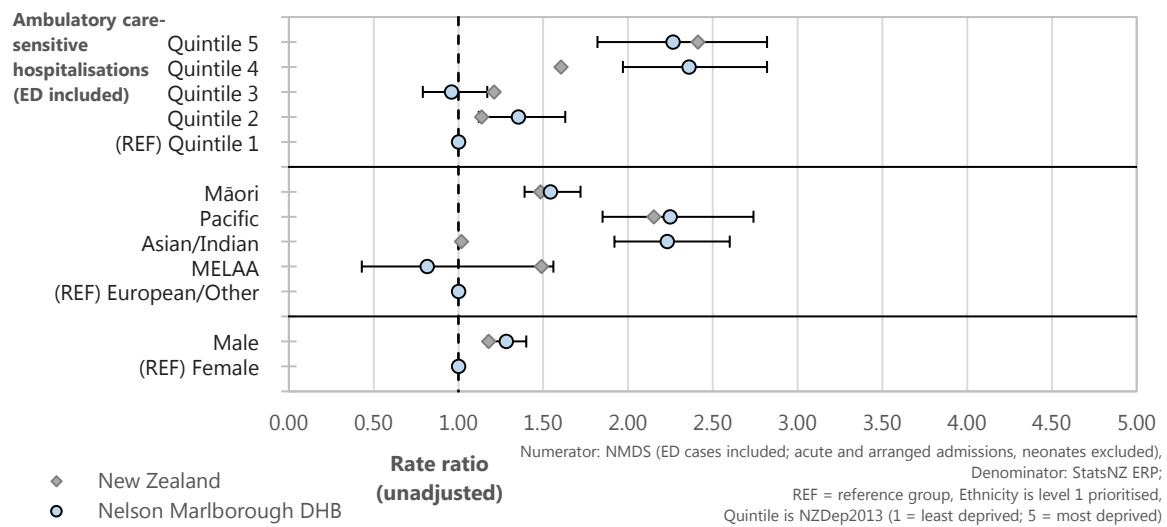


Figure VIII-5 Ambulatory care-sensitive hospitalisations of 0-4 year olds, by demographic factor, South Canterbury DHB 2012-2016

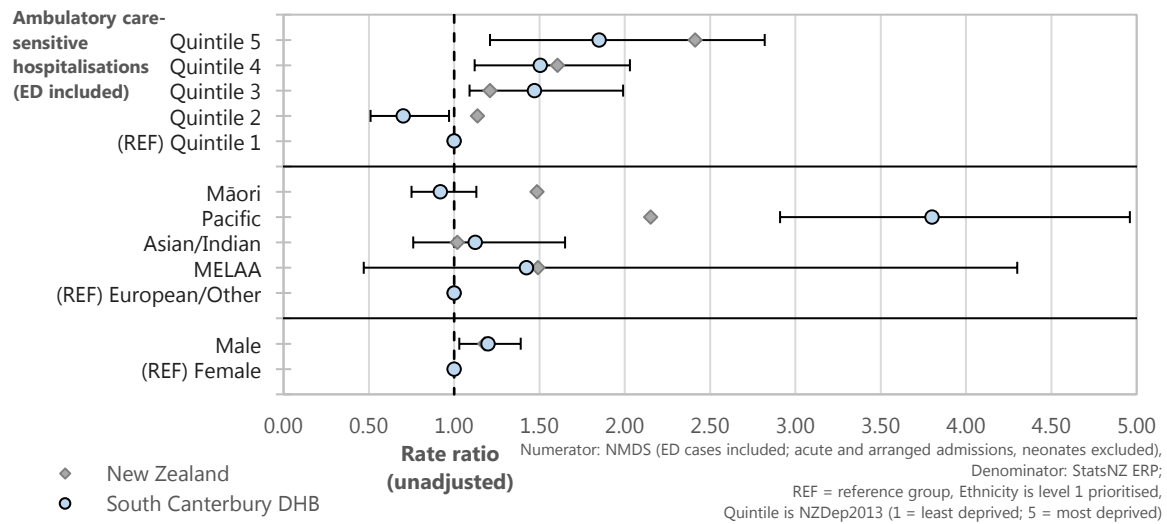


Figure VIII-6 Ambulatory care-sensitive hospitalisations of 0-4 year olds, by demographic factor, Canterbury DHB 2012-2016

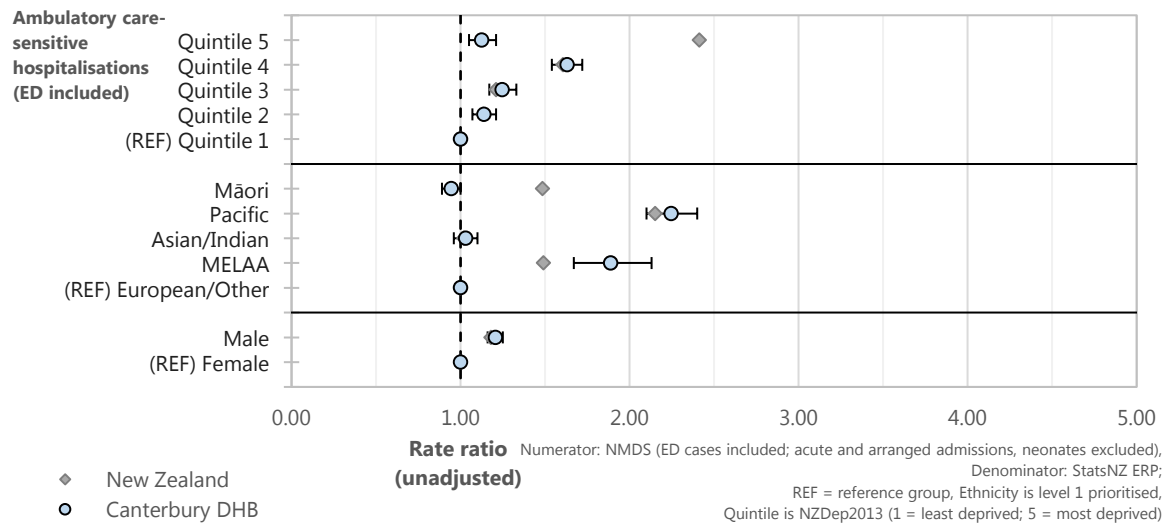


Figure VIII-7 Ambulatory care-sensitive hospitalisations of 0-4 year olds, by demographic factor, West Coast DHB 2012-2016

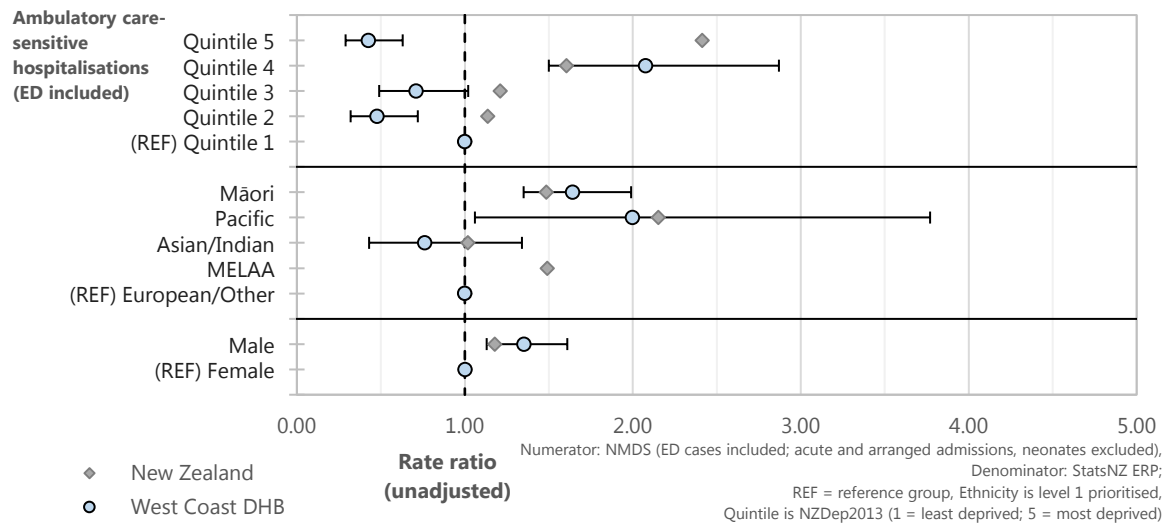


Figure VIII-8 Ambulatory care-sensitive hospitalisations of 0-4 year olds, by demographic factor, Southern DHB 2012-2016

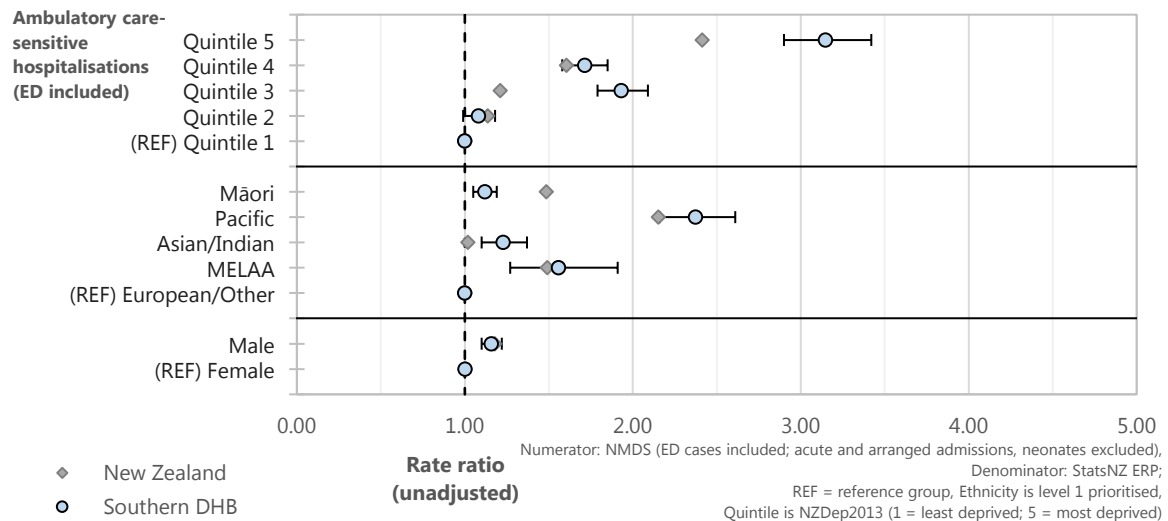


Table VIII–2 to Table VIII–6 present a summary of primary diagnosis of 28 day–4 year olds hospitalised with ambulatory care-sensitive conditions during 2012–2016. The conditions most frequently diagnosed were dental conditions, gastroenteritis, asthma and wheeze, acute upper respiratory tract infections, pneumonia, and skin infections although the order of these diagnoses varied between the five South Island DHBs.

Table VIII–2 Ambulatory sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, Nelson Marlborough DHB 2012–2016

Primary diagnosis	2012–2016 (n)	Annual average	Rate	%
Hospitalisations for ambulatory care-sensitive conditions in Nelson Marlborough 0–4 year olds				
Emergency Department cases included				
Dental conditions*	423	85	9.65	23.2
Respiratory infections - Acute upper† (excl croup)	415	83	9.46	22.8
Gastroenteritis/dehydration	333	67	7.59	18.3
Asthma and wheeze	317	63	7.23	17.4
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	93	19	2.12	5.1
Skin infections	79	16	1.80	4.3
Constipation	65	13	1.48	3.6
Dermatitis and eczema	46	9	1.05	2.5
Otitis media	25	5	0.57	1.4
Gastro-oesophageal reflux (GORD)	17	3	0.39	0.9
Nutritional deficiency and anaemia	6	1	0.14	0.3
VPD ≥ 6 months: DTP, Polio, HepB	<5	s	s	s
VPD ≥ 15 months: MMR	<5	s	s	s
Bronchiectasis	<5	s	s	s
Total	1,824	365	41.60	100.0
Emergency Department cases excluded				
Dental conditions*	422	84	9.62	24.5
Respiratory infections - Acute upper† (excl croup)	378	76	8.62	22.0
Asthma and wheeze	300	60	6.84	17.4
Gastroenteritis/dehydration	296	59	6.75	17.2
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	91	18	2.08	5.3
Skin infections	79	16	1.80	4.6
Constipation	62	12	1.41	3.6
Dermatitis and eczema	43	9	0.98	2.5
Otitis media	22	4	0.50	1.3
Gastro-oesophageal reflux (GORD)	17	3	0.39	1.0
Nutritional deficiency and anaemia	6	1	0.14	0.3
VPD ≥ 6 months: DTP, Polio, HepB	<5	s	s	s
Bronchiectasis	<5	s	s	s
Total	1,720	344	39.22	100.0

Numerator: NMDS (acute and arranged admissions, neonates excluded), Denominator: StatsNZ ERP; Rate per 1,000 0–4 year olds. *Dental conditions includes waiting list admissions; †Acute upper respiratory tract infections excludes croup; ‡Pneumonia comprises bacterial, and non-viral pneumonia; VPD = Vaccine preventable diseases; DTP = diphtheria, tetanus, pertussis; HepB = hepatitis B; MMR = measles, mumps, rubella

Table VIII-3 Ambulatory care-sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, South Canterbury DHB 2012–2016

Primary diagnosis	2012–2016 (n)	Annual average	Rate	%
Hospitalisations for ambulatory care-sensitive conditions in South Canterbury 0–4 year olds				
Emergency Department cases included				
Gastroenteritis/dehydration	163	33	9.26	24.0
Respiratory infections - Acute upper† (excl croup)	146	29	8.29	21.5
Dental conditions*	137	27	7.78	20.2
Asthma and wheeze	95	19	5.40	14.0
Skin infections	32	6	1.82	4.7
Dermatitis and eczema	28	6	1.59	4.1
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	20	4	1.14	2.9
Otitis media	20	4	0.00	2.9
Gastro-oesophageal reflux (GORD)	19	4	1.08	2.8
Constipation	16	3	0.91	2.4
VPD ≥ 6 months: DTP, Polio, HepB	<5	s	s	s
Nutritional deficiency and anaemia	<5	s	s	s
Total	678	136	38.51	100.0
Emergency Department cases excluded				
Gastroenteritis/dehydration	157	31	8.92	23.9
Dental conditions*	137	27	7.78	20.8
Respiratory infections - Acute upper† (excl croup)	136	27	7.72	20.7
Asthma and wheeze	95	19	5.40	14.4
Skin infections	32	6	1.82	4.9
Dermatitis and eczema	28	6	1.59	4.3
Gastro-oesophageal reflux (GORD)	19	4	1.08	2.9
Otitis media	18	4	1.02	2.7
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	18	4	0.00	2.7
Constipation	16	3	0.91	2.4
VPD ≥ 6 months: DTP, Polio, HepB	<5	s	s	s
Nutritional deficiency and anaemia	<5	s	s	s
Total	658	132	37.37	100.0

Numerator: NMDS (acute and arranged admissions, neonates excluded), Denominator: StatsNZ ERP; Rate per 1,000 0–4 year olds. *Dental conditions includes waiting list admissions; †Acute upper respiratory tract infections excludes croup; ‡Pneumonia comprises bacterial, and non-viral pneumonia; VPD = Vaccine preventable diseases; DTP = diphtheria, tetanus, pertussis; HepB = hepatitis B; MMR = measles, mumps, rubella

Table VIII-4 Ambulatory care-sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, Canterbury DHB 2012–2016

Primary diagnosis	2012–2016 (n)	Annual average	Rate	%
Hospitalisations for ambulatory care-sensitive conditions in Canterbury 0–4 year olds				
Emergency Department cases included				
Respiratory infections - Acute upper† (excl croup)	2,831	566	17.48	29.2
Asthma and wheeze	2,314	463	14.29	23.9
Gastroenteritis/dehydration	1,561	312	9.64	16.1
Dental conditions*	1,250	250	7.72	12.9
Skin infections	488	98	3.01	5.0
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	393	79	2.43	4.1
Otitis media	283	57	1.75	2.9
Dermatitis and eczema	221	44	1.36	2.3
Constipation	220	44	1.36	2.3
Gastro-oesophageal reflux (GORD)	78	16	0.48	0.8
Nutritional deficiency and anaemia	29	6	0.18	0.3
Bronchiectasis	13	3	0.08	0.1
VPD ≥ 6 months: DTP, Polio, HepB	12	2	0.07	0.1
VPD ≥ 15 months: MMR	<5	s	s	s
Rheumatic fever or rheumatic heart disease	<5	s	s	s
Total	9,695	1,939	59.87	100.0
Emergency Department cases excluded				
Respiratory infections - Acute upper† (excl croup)	2,821	564	17.42	29.2
Asthma and wheeze	2,305	461	14.23	23.9
Gastroenteritis/dehydration	1,552	310	9.58	16.1
Dental conditions*	1,250	250	7.72	12.9
Skin infections	487	97	3.01	5.0
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	389	78	2.40	4.0
Otitis media	282	56	1.74	2.9
Dermatitis and eczema	221	44	1.36	2.3
Constipation	218	44	1.35	2.3
Gastro-oesophageal reflux (GORD)	78	16	0.48	0.8
Nutritional deficiency and anaemia	29	6	0.18	0.3
VPD ≥ 6 months: DTP, Polio, HepB	12	2	0.07	0.1
Bronchiectasis	12	2	0.07	0.1
Rheumatic fever or rheumatic heart disease	<5	s	s	s
VPD ≥ 15 months: MMR	<5	s	s	s
Total	9,658	1,932	59.64	100.0

Numerator: NMDS (acute and arranged admissions, neonates excluded), Denominator: StatsNZ ERP; Rate per 1,000 0–4 year olds. *Dental conditions includes waiting list admissions; †Acute upper respiratory tract infections excludes croup; ‡Pneumonia comprises bacterial, and non-viral pneumonia; VPD = Vaccine preventable diseases; DTP = diphtheria, tetanus, pertussis; HepB = hepatitis B; MMR = measles, mumps, rubella

Table VIII-5 Ambulatory care-sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, West Coast DHB 2012–2016

Primary diagnosis	2012–2016 (n)	Annual average	Rate	%
Hospitalisations for ambulatory care-sensitive conditions in West Coast 0–4 year olds				
Emergency Department cases included				
Dental conditions*	156	31	14.02	31.8
Respiratory infections - Acute upper† (excl croup)	111	22	9.97	22.7
Gastroenteritis/dehydration	88	18	7.91	18.0
Asthma and wheeze	70	14	6.29	14.3
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	38	8	3.41	7.8
Skin infections	9	2	0.81	1.8
Constipation	7	1	0.63	1.4
Otitis media	<5	s	s	s
Dermatitis and eczema	<5	s	s	s
Gastro-oesophageal reflux (GORD)	<5	s	s	s
VPD ≥ 6 months: DTP, Polio, HepB	<5	s	s	s
VPD ≥ 15 months: MMR	<5	s	s	s
Total	490	98	44.03	100.0
Emergency Department cases excluded				
Dental conditions*	156	31	14.02	33.0
Respiratory infections - Acute upper† (excl croup)	102	20	9.17	21.6
Gastroenteritis/dehydration	84	17	7.55	17.8
Asthma and wheeze	69	14	6.20	14.6
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	35	7	3.15	7.4
Skin infections	9	2	0.81	1.9
Constipation	7	1	0.63	1.5
Otitis media	<5	s	s	s
Dermatitis and eczema	<5	s	s	s
Gastro-oesophageal reflux (GORD)	<5	s	s	s
VPD ≥ 6 months: DTP, Polio, HepB	<5	s	s	s
VPD ≥ 15 months: MMR	<5	s	s	s
Total	473	95	42.50	100.0

Numerator: NMDS (acute and arranged admissions, neonates excluded), Denominator: StatsNZ ERP; Rate per 1,000 0–4 year olds. *Dental conditions includes waiting list admissions; †Acute upper respiratory tract infections excludes croup; ‡Pneumonia comprises bacterial, and non-viral pneumonia; VPD = Vaccine preventable diseases; DTP = diphtheria, tetanus, pertussis; HepB = hepatitis B; MMR = measles, mumps, rubella

Table VIII-6 Ambulatory care-sensitive hospitalisations in 0–4 year olds, by ED status and primary diagnosis, Southern DHB 2012–2016

Primary diagnosis	2012–2016 (n)	Annual average	Rate	%
Hospitalisations for ambulatory care-sensitive conditions in Southern DHB 0–4 year olds				
Emergency Department cases included				
Respiratory infections - Acute upper† (excl croup)	1,433	287	14.77	24.23
Asthma and wheeze	1,178	236	12.14	19.9
Gastroenteritis/dehydration	1,175	235	12.11	19.9
Dental conditions*	867	173	8.93	14.7
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	258	52	2.66	4.4
Skin infections	255	51	2.63	4.3
Otitis media	200	40	2.06	3.4
Constipation	185	37	1.91	3.1
Gastro-oesophageal reflux (GORD)	181	36	1.87	3.1
Dermatitis and eczema	156	31	1.61	2.6
VPD ≥ 6 months: DTP, Polio, HepB	12	2	0.12	0.2
Nutritional deficiency and anaemia	10	2	0.10	0.2
Bronchiectasis	<5	s	s	s
VPD ≥ 15 months: MMR	<5	s	s	s
Total	5,914	1,183	60.95	100.0
Emergency Department cases excluded				
Respiratory infections - Acute upper† (excl croup)	1,238	248	12.76	22.8
Asthma and wheeze	1,119	224	11.53	20.6
Gastroenteritis/dehydration	1,018	204	10.49	18.7
Dental conditions*	866	173	8.92	15.9
Respiratory infections - Pneumonia‡ (bacterial, non-viral)	252	50	2.60	4.6
Skin infections	250	50	2.58	4.6
Gastro-oesophageal reflux (GORD)	180	36	1.85	3.3
Otitis media	171	34	1.76	3.1
Constipation	171	34	0.00	3.1
Dermatitis and eczema	149	30	1.54	2.7
VPD ≥ 6 months: DTP, Polio, HepB	12	2	0.12	0.2
Nutritional deficiency and anaemia	10	2	0.10	0.2
Bronchiectasis	<5	s	s	s
VPD ≥ 15 months: MMR	<5	s	s	s
Total	5,440	1,088	56.06	100.0

Numerator: NMDS (acute and arranged admissions, neonates excluded), Denominator: StatsNZ ERP; Rate per 1,000 0–4 year olds. *Dental conditions includes waiting list admissions; †Acute upper respiratory tract infections excludes croup; ‡Pneumonia comprises bacterial, and non-viral pneumonia; VPD = Vaccine preventable diseases; DTP = diphtheria, tetanus, pertussis; HepB = hepatitis B; MMR = measles, mumps, rubella

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