ECZEMA AND DERMATITIS

Introduction

Eczema and dermatitis are terms that are often used interchangeably. They are common skin conditions affecting up to one in five people during their lifetime, with a wide clinical spectrum from mild to severe disease. They can be acute, chronic, or both [1]. Acute eczema/dermatitis is an inflammation of the skin that is usually itchy, red and swollen. Chronic eczema/dermatitis is a longer-term inflammation, resulting in skin that is usually darker, scratched and thicker (lichenified) than the surrounding skin. Specific types include: atopic dermatitis; allergic and contact dermatitis; and seborrhoeic dermatitis.

Atopic dermatitis usually appears early in infancy, and persists into adulthood in a significant proportion of people. Risk factors at the population level include increased urbanisation, family history of atopy, higher socio-economic status, and higher educational levels of families. At the individual level, common causes include allergies such as dust mites, pollen or foods. There is also a major underlying genetic association between the filaggrin gene and atopic dermatitis, which may provide further understanding of the role of environmental and lifestyle factors for some children. More recent evidence suggests there may different subtypes of atopic dermatitis. For some subtypes progression to asthma and allergic rhinitis may occur, but for others it may not [1]. Psychological stresses can provoke or aggravate dermatitis, presumably by suppressing normal immune mechanisms.

Risk factors for allergic contact dermatitis include atopic dermatitis, skin barrier defects and intense or repetitive contact with irritants such as metals, cleaning products and perfume. [2]. Patch testing is the gold standard diagnostic test for allergic contact dermatitis. The sensitisation rate increases with age as children are exposed to more environmental factors, but also appears to be more frequent in recent years [2].

New Zealand is among countries with the highest prevalence (15–20%) of eczema and dermatitis [3]. Most children will not need to be hospitalized for this condition. However, infected eczema, controlling of the itch/scratch cycle and intensification of topical therapy may be indications for more intensive treatment and management in hospital.

The following section briefly reviews hospitalizations for children aged 0–14 years with any mention of eczema or dermatitis in any of the first 15 diagnoses, before considering those children for whom eczema or dermatitis was the primary reason for admission. The rationale for the greater focus on the latter group was the finding that the majority of children with eczema or dermatitis were admitted for conditions unrelated to their eczema (e.g. bronchiolitis, gastroenteritis) and in such cases, it was unclear the extent to which the child's eczema contributed to their admission.

Data Source and Methods

Definition

1. *Hospital admissions for children 0–14 years with eczema or dermatitis listed in any of their first 15 diagnoses*

2. *Hospital admissions for children 0–14 years with eczema or dermatitis listed as a primary diagnosis*

Data Source

1. National Minimum Dataset

Numerator: Hospital admissions for children aged 0–14 years with eczema or dermatitis (ICD-10-AM L01.1, L20–L26, L272, L28–L30, B000, H01.1) listed in any of their first 15 diagnoses

Numerator: Hospital admissions for children aged 0–14 years with eczema or dermatitis (ICD-10-AM L01.1, L20–L26, L272, L28–L30, B000, H01.1) listed as a primary diagnosis.

Denominator: Statistics New Zealand Estimated Resident Population (projected from 2007)

Individual diagnoses include: Eczema Herpeticum (B00.0); Seborrhoeic Dermatitis (L21); Diaper Dermatitis (L22); Contact Dermatitis (L23–L25); Dermatitis due to Food Ingestions (L27.2); Atopic and Other Dermatitis (L20, L26, L28–L29, H01.1, L30.0–L30.2, L30.4–L30.5, L30.8–L30.9); and Infective Dermatitis (L01.1, L30.3).

Broader diagnostic groupings include: Infective Dermatitis (L01.1, L303); and Other Eczema and Dermatitis (L20L–26, L28–L29, B00.0, H01.1, L27.2, L30.0–L30.2, L30.4–L30.5, L30.8–L30.9).

Notes on Interpretation
Apart from the first table in each section (NZ and DHB), which considers the primary diagnoses assigned to children hospitalised with eczema or dermatitis in any of their first 15 diagnoses, this analysis focuses on hospitalisations where eczema or dermatitis were the primary reasons for admission. The rationale for the narrower focus was the finding that the majority of children with eczema or dermatitis listed in their first 15 diagnoses were admitted for conditions unrelated to their eczema (e.g. bronchiolitis, gastroenteritis). In such cases, it was unclear how severe the child's eczema was, how it contributed to their admission, or the extent to which the characteristics of those admitted for other reasons, reflected the demographic profiles of those with eczema or dermatitis. Admissions with a primary diagnosis of eczema or dermatitis were thus seen as a better reflection of the need for acute secondary health services in children with eczema or dermatitis.

New Zealand Distribution and Trends

Admissions with Eczema or Dermatitis in First 15 Diagnoses

Table 1. Hospital Admissions for Children Aged 0–14 Years with Eczema or Dermatitis, by Primary Diagnosis, New Zealand 2008–2012

Primary Diagnosis	Number of Admissions: Total 2008−2012	Number of Admissions: Annual Average	Rate per 100,000 Population	% of Admissions in those with Eczema or Dermatitis
Eczema and Dermatitis				
Atopic and Other Dermatitis	1,631	326.2	36.57	12.6
Infective Dermatitis	1,394	278.8	31.26	10.8
Eczema Herpeticum	208	41.6	4.66	1.6
Contact Dermatitis	134	26.8	3.00	1.0
Dermatitis due to Food Ingestions	118	23.6	2.65	0.9
Diaper Dermatitis	111	22.2	2.49	0.9
Seborrhoeic Dermatitis	109	21.8	2.44	0.8
Total Eczema or Dermatitis	3,705	741.0	83.07	28.7
Total Other Diagnoses*	9,212	1,842.4	206.55	71.3
New Zealand Total	12,917	2,583.4	289.62	100.0
*Other Primary Diagnoses				
Bronchiolitis	1,353	270.6	30.34	10.5
Asthma and Wheeze	1,074	214.8	24.08	8.3
Skin Infections	806	161.2	18.07	6.2
Prematurity and Low Birth Weight	776	155.2	17.40	6.0
Gastroenteritis	617	123.4	13.83	4.8
Pneumonia and Unspecified LRTI[+]	510	102.0	11.44	3.9
Acute Upper Respiratory Infections	438	87.6	9.82	3.4
Injury and Poisoning	385	77.0	8.63	3.0
Other Perinatal Conditions	356	71.2	7.98	2.8
Other Infectious Diseases	329	65.8	7.38	2.5
Viral Infections Unspecified	251	50.2	5.63	1.9
Cancer Neoplasms	130	26.0	2.91	1.0
Epilepsy and Convulsions	114	22.8	2.56	0.9
Urinary Tract Infection	97	19.4	2.17	0.8
Other Diagnoses	1,976	395.2	44.31	15.3
Total Other Primary Diagnoses	9,212	1,842.4	206.55	71.3

Source: Numerator: National Minimum Dataset, hospital admissions by primary diagnosis for children with eczema or dermatitis listed in any of their first 15 diagnoses; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: [+]LRTI: Lower Respiratory Tract Infection

Distribution by Primary Diagnosis

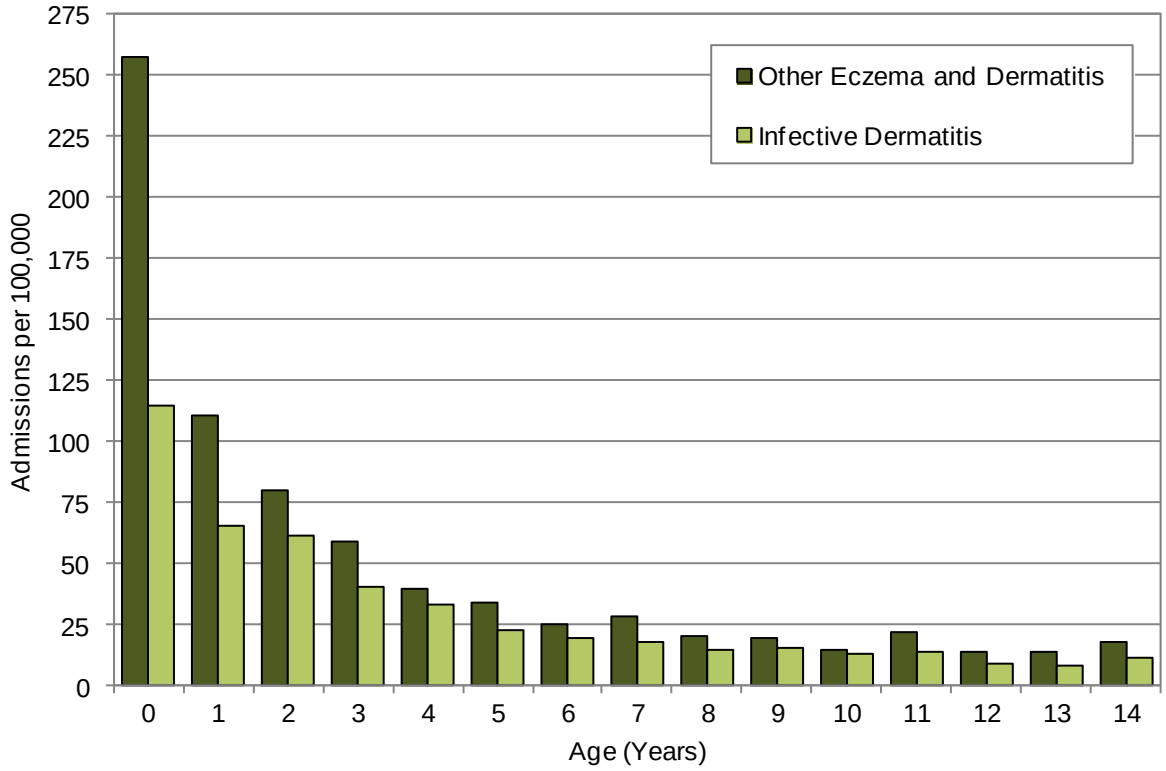
In New Zealand during 2008–2012, only 28.7% of hospitalisations in children with eczema or dermatitis listed in any of their first 15 diagnoses, had eczema or dermatitis listed as the primary reason for their admission. Atopic and other dermatitis (12.6%) and infective dermatitis (10.8%) were the most frequent primary diagnoses assigned to those with eczema or dermatitis, while bronchiolitis and asthma and wheeze were the most frequent non-eczema related reasons for admission (**Table 1**).

Admissions with Eczema or Dermatitis as a Primary Diagnosis

Distribution by Age

In New Zealand during 2008–2012, hospital admissions for infective dermatitis and other forms of eczema and dermatitis were highest in infants aged less than one year, with rates then tapering off during the preschool years. Admission rates were lowest amongst children over five years of age (**Figure 1**).

Figure 1. Hospital Admissions for Children with a Primary Diagnosis of Eczema or Dermatitis by Age, New Zealand 2008–2012



Source: Numerator: National Minimum Dataset, hospital admissions for children with eczema or dermatitis listed as a primary diagnosis; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

Distribution by Ethnicity and Gender

In New Zealand during 2008–2012, hospital admissions for those with a primary diagnosis of infective eczema, or other eczema and dermatitis were both *significantly* higher in males than females. Admission rates for both outcomes were also *significantly* higher for Māori and Pacific > Asian/Indian > European/Other children (**Table 2**).

Trends by Ethnicity

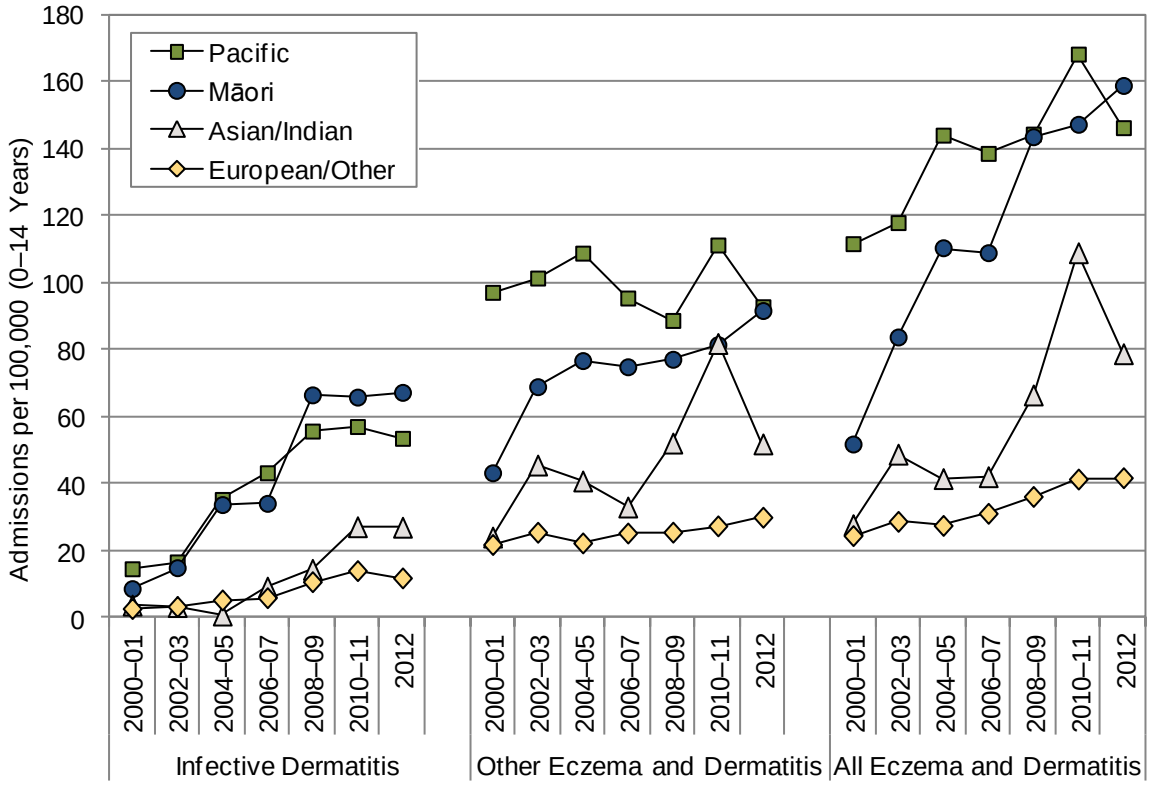
Similarly during 2000–2012, hospitalisations for infective eczema and other eczema and dermatitis were consistently higher for Māori and Pacific children, than for European/Other and Asian/Indian children. While admission rates for Asian/Indian and European/Other children were similar during the early 2000s, rates for Asian/Indian children became higher than for European/Other children from the mid to late 2000s onwards. Admission rates for both outcomes increased for children of all ethnic groups during this period (**Figure 2**).

Table 2. Hospital Admissions for Children Aged 0–14 Years with a Primary Diagnosis of Eczema or Dermatitis by Ethnicity and Gender, New Zealand 2008–2012

Variable	Rate	Rate Ratio	95% CI	Variable	Rate	Rate Ratio	95% CI
Infective Dermatitis							
Asian/Indian	22.24	1.82	1.45–2.29	Female	27.45	1.00	
European/Other	12.19	1.00		Male	34.87	1.27	1.14–1.41
Māori	66.24	5.43	4.75–6.22				
Pacific	55.66	4.57	3.86–5.41				
Other Eczema and Dermatitis							
Asian/Indian	64.02	2.37	2.06–2.72	Female	48.24	1.00	
European/Other	27.04	1.00		Male	55.22	1.14	1.05–1.24
Māori	81.69	3.02	2.73–3.34				
Pacific	98.48	3.64	3.23–4.11				
All Eczema and Dermatitis							
Asian/Indian	86.25	2.20	1.95–2.48	Female	75.69	1.00	
European/Other	39.23	1.00		Male	90.09	1.19	1.12–1.27
Māori	147.93	3.77	3.48–4.08				
Pacific	154.14	3.93	3.56–4.33				

Source: Numerator: National Minimum Dataset, hospital admissions for children with eczema or dermatitis listed as a primary diagnosis; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Ethnicity is Level 1 Prioritised; Rate is per 100,000 population

Figure 2. Hospital Admissions for Children Aged 0–14 Years with a Primary Diagnosis of Eczema or Dermatitis by Ethnicity, New Zealand 2000–2012



Source: Numerator: National Minimum Dataset, hospital admissions for children with eczema or dermatitis listed as a primary diagnosis; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: Ethnicity is Level 1 Prioritised

South Island DHBs Distribution and Trends

Admissions with Eczema or Dermatitis in First 15 Diagnoses

Distribution by Primary Diagnosis

In the South Island DHBs during 2008–2012, only a minority (range 12.5%–30.1%) of children hospitalised with eczema or dermatitis in any of their first 15 diagnoses, had eczema or dermatitis listed as the primary reason for their admission. Atopic and other dermatitis and infective dermatitis were the most frequent primary diagnoses assigned in those with eczema or dermatitis in all South Island DHBs/areas (**Table 3**,**Table 4**).

Table 3. Hospital Admissions for Children 0–14 Years with Eczema or Dermatitis by Primary Diagnosis, Nelson Marlborough, South Canterbury, Canterbury and the West Coast 2008–2012

Primary Diagnosis	No. of Admissions: Total 2008−2012	No. of Admissions: Annual Average	Rate per 100,000	% of Admissions in those with Eczema and Dermatitis
Eczema and Dermatitis				
Nelson Marlborough				
Atopic and Other Dermatitis	46	9.2	35.03	16.1
Infective Dermatitis	25	5.0	19.04	8.8
Dermatitis due to Food Ingestions	4	0.8	3.05	1.4
Contact Dermatitis	3	0.6	2.29	1.1
Other Diagnoses	207	41.4	157.64	72.6
Nelson Marlborough Total	285	57.0	217.04	100.0
South Canterbury				
Atopic and Other Dermatitis	16	3.2	30.76	18.2
Infective Dermatitis	5	1.0	9.61	5.7
Dermatitis due to Food Ingestions	3	0.6	5.77	3.4
Other Diagnoses	64	12.8	123.03	72.7
South Canterbury Total	88	17.6	169.17	100.0
Canterbury				
Infective Dermatitis	127	25.4	27.26	12.8
Atopic and Other Dermatitis	104	20.8	22.32	10.5
Diaper Dermatitis	20	4.0	4.29	2.0
Eczema Herpeticum	15	3.0	3.22	1.5
Contact Dermatitis	11	2.2	2.36	1.1
Seborrhoeic Dermatitis	10	2.0	2.15	1.0
Dermatitis due to Food Ingestions	6	1.2	1.29	0.6
Other Diagnoses	699	139.8	150.01	70.5
Canterbury Total	992	198.4	212.90	100.0
West Coast				
Infective Dermatitis	3	0.6	9.61	7.5
Atopic and Other Dermatitis	<3	s	s	s
Other Diagnoses	35	7.0	112.13	87.5
West Coast Total	40	8.0	128.14	100.0

Source: Numerator: National Minimum Dataset, hospital admissions by primary diagnosis for children with eczema or dermatitis listed in any of their first 15 diagnoses; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); s: suppressed due to small numbers

Table 4. Hospital Admissions for Children 0–14 Years with Eczema or Dermatitis by Primary Diagnosis, Otago and Southland 2008–2012

Primary Diagnosis	No. of Admissions: Total 2008−2012	No. of Admissions: Annual Average	Rate per 100,000	% of Admissions in those with Eczema and Dermatitis
Eczema and Dermatitis				
Otago				
Infective Dermatitis	37	7.4	23.24	12.3
Atopic and Other Dermatitis	11	2.2	6.91	3.6
Contact Dermatitis	5	1.0	3.14	1.7
Dermatitis due to Food Ingestions	5	1.0	3.14	1.7
Eczema Herpeticum	3	0.6	1.89	1.0
Other Diagnoses	241	48.2	151.39	79.8
Otago Total	302	60.4	189.71	100.0
Southland				
Atopic and Other Dermatitis	36	7.2	32.03	13.0
Infective Dermatitis	30	6.0	26.69	10.9
Eczema Herpeticum	6	1.2	5.34	2.2
Dermatitis due to Food Ingestions	5	1.0	4.45	1.8
Contact Dermatitis	3	0.6	2.67	1.1
Seborrhoeic Dermatitis	3	0.6	2.67	1.1
Other Diagnoses	193	38.6	171.73	69.9
Southland Total	276	55.2	245.58	100.0

Source: Numerator: National Minimum Dataset, hospital admissions by primary diagnosis for children with eczema or dermatitis listed in any of their first 15 diagnoses; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

Admissions with Eczema or Dermatitis as a Primary Diagnosis

South Island Distribution

In the South Island during 2008–2012, 61 Nelson Marlborough, 15 South Canterbury, 236 Canterbury, 4 West Coast, 49 Otago and 65 Southland children were hospitalised with a primary diagnosis of eczema or dermatitis. Admission rates per 100,000 in all of the South Island DHBs were *significantly* lower than the New Zealand rate, with the exception of Southland, where rates while lower, were not *significantly* different from the New Zealand rate (**Table 5**).

South Island Trends

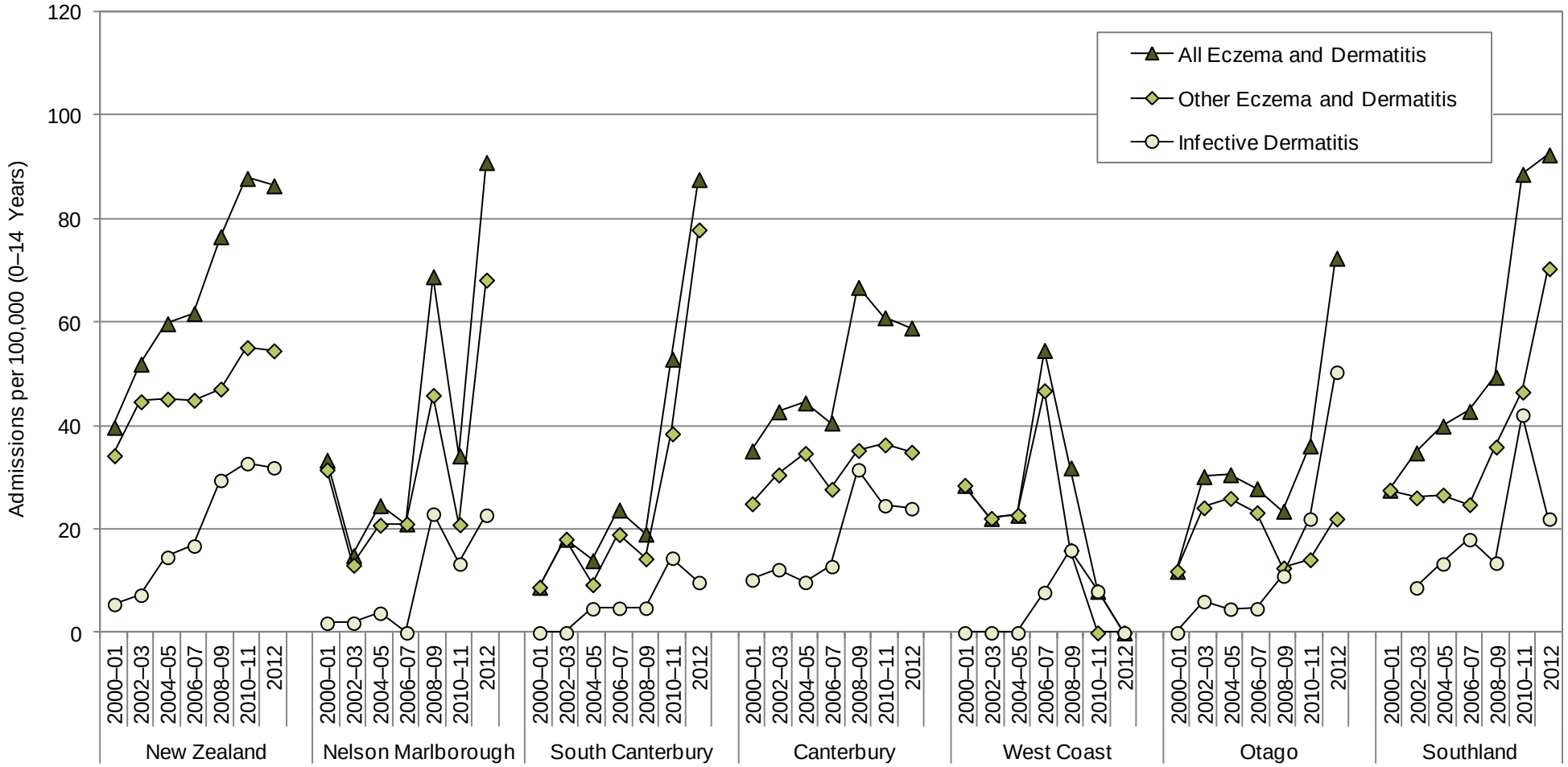
In all of the South Island DHBs except the West Coast during 2000–2012, hospital admissions for children with a primary diagnosis of eczema or dermatitis exhibited a general upward trend, although trends for individual components (infective dermatitis, other eczema and dermatitis) varied by DHB. In the West Coast, large year to year variations made trends difficult to interpret (**Figure 3**).

Table 5. Hospital Admissions for Children Aged 0–14 Years with a Primary Diagnosis of Eczema or Dermatitis, South Island DHBs vs. New Zealand 2008–2012

DHB/Area	Total Number of Individuals 2008−2012		Total Number of Admissions 2008−2012	Average Number of Admissions per Individual per Year	Admission Rate per 100,000 Population	Rate Ratio	95% CI
	A*	B*					
Eczema and Dermatitis							
Nelson Marlborough	61	61	78	0.26	59.40	0.72	0.57–0.89
South Canterbury	14	15	24	0.32	46.14	0.56	0.37–0.83
Canterbury	236	236	293	0.25	62.88	0.76	0.67–0.85
West Coast	4	4	5	0.25	16.02	0.19	0.08–0.46
Otago	49	49	61	0.25	38.32	0.46	0.36–0.59
Southland	64	65	83	0.26	73.85	0.89	0.72–1.10
New Zealand	2,781		3,705	0.27	83.07	1.00	

Source: Numerator: National Minimum Dataset, hospital admissions for children with eczema or dermatitis listed as a primary diagnosis; Denominator: Statistics NZ Estimated Resident Population (projected from 2007); Note: A*: Each individual only counted once in DHB in which they first reside (i.e. DHB total = NZ total); B*: Each individual counted once in each DHB in which they reside (i.e. the sum of DHB totals exceeds New Zealand total); Rate Ratios are compared to New Zealand rates and have not been adjusted for population demographics

Figure 3. Hospital Admissions for Children Aged 0–14 Years with a Primary Diagnosis of Eczema or Dermatitis, South Island DHBs vs. New Zealand 2000–2012



Source: Numerator: National Minimum Dataset, hospital admissions for children with eczema or dermatitis listed as a primary diagnosis; Denominator: Statistics NZ Estimated Resident Population (projected from 2007)

Local Policy Documents and Evidence-Based Reviews Relevant to the Diagnosis or Management of Eczema or Dermatitis

In New Zealand there are no Ministry of Health policy documents specific to eczema and dermatitis, although a small number of other local publications are relevant to this topic. These are reviewed in **Table 6**, along with a range of evidence-based reviews which consider these issues in the overseas context.

Table 6. Local Policy Documents and Evidence-Based Reviews Relevant to Eczema and Dermatitis

Ministry of Health Policy Documents
There are currently no national guidelines in New Zealand for preventing or managing eczema and dermatitis.
International Guidelines
Scottish Intercollegiate Guidelines Network - National Government Agency, 2011. **Management of atopic eczema in primary care. A national clinical guideline. 2011 Mar. NGC: 008790** http://www.sign.ac.uk/pdf/sign125.pdf This guideline provides recommendations for the management of atopic eczema in children and adults in primary care, based on current evidence for best practice.
National Institute of Health & Clinical Excellence (NICE) Guideline, 2007. **Atopic eczema in children management of atopic eczema in children from birth up to the age of 12 years.** http://www.nice.org.uk/nicemedia/live/11901/38559/38559.pdf This clinical guideline concerns the management of atopic eczema in children from birth up to the age of 12 years. It has been developed with the aim of providing guidance on the diagnosis and assessment of the impact of the condition, the management during and between flares, and information and education to children and their families/caregivers about the condition.
Bourke J, et al. 2009. **Guidelines for the management of contact dermatitis: an update**. Br J Dermatol, 160(5), 946-54. http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2133.2009.09106.x/abstract This clinical guideline aims to provide evidence-based guidance for the diagnosis and treatment of patients with contact dermatitis. It covers both children and adults. These guidelines have been prepared for dermatologists on behalf of the British Association of Dermatologists. They present evidence-based guidance for investigation and treatment, with identification of the strength of evidence available at the time of preparation of the guidelines, including details of relevant epidemiological aspects, diagnosis and investigation.
Cochrane Systematic Reviews
Bath-Hextall FJ, et al. 2010**. Interventions to reduce Staphylococcus aureus in the management of atopic eczema: an updated Cochrane review.** Br J Dermatol, 163(1), 12-26. This systematic review of 26 studies with 1229 subjects from randomised controlled trials published between 1980 (EMBASE) or 2000 (MEDLINE) to 2009 assessed if atopic eczema could be improved by antistaphylococcal agents. Studies were generally poor quality and short term. There was no significant difference in global outcome for clinically infected eczema when oral antibiotics were compared with placebo [one study, relative risk (RR) 0.40, 95% confidence interval (CI) 0.13-1.24] or when topical steroid antibiotic combinations were compared with steroid alone (two studies, RR 0.52, 95% CI 0.23-1.16). One study of children with infected eczema that added bleach to bathwater showed a significant improvement in eczema severity when compared with bathwater alone, although the difference could have been explained by regression to the mean. Although antistaphylococcal interventions reduced S. aureus numbers in people with clinically uninfected eczema, none of the studies showed any clinical benefit. They concluded that there was no evidence that commonly used antistaphylococcal interventions are clinically helpful in people with eczema that is not clinically infected.
Bath-Hextall FJ, et al. 2009. **Dietary exclusions for established atopic eczema**. Cochrane Database of Systematic Reviews(4). This review assessed the effects of dietary exclusions for the treatment of established atopic eczema. The general quality of the studies was poor. There was some evidence from one study for the use of an egg-free diet in infants with a suspected egg allergy who have positive specific IgE antibodies to eggs. There was little evidence to support the use of various exclusion diets in unselected people with atopic eczema. Lack of benefit may be because people were not allergic to those substances but may also be because the studies were too small and poorly reported.

Cochrane Systematic Reviews with no conclusive evidence

The following Cochrane Systematic Reviews showed no conclusive or only limited evidence and therefore are not currently recommended for the prevention or management of eczema and dermatitis in children. This may have been due to poorly conducted studies or no convincing results. In some reviews, further high quality research is recommended.

Osborn DA & Sinn KHJ. 2013. **Prebiotics in infants for prevention of allergy**. Cochrane Database of Systematic Reviews(3).

Gu S, et al. 2013. **Chinese herbal medicine for atopic eczema**. Cochrane Database of Systematic Reviews(9).

Bamford TMJ, et al. 2013. **Oral evening primrose oil and borage oil for eczema**. Cochrane Database of Systematic Reviews(6).

Apfelbacher CJ, et al. 2013. **Oral H1 antihistamines as monotherapy for eczema**. Cochrane Database of Systematic Reviews(5).

Kramer MS & Kakuma R. 2012. **Maternal dietary antigen avoidance during pregnancy or lactation, or both, for preventing or treating atopic disease in the child**. Cochrane Database of Systematic Reviews(9).

Bath-Hextall FJ, et al. 2012. **Dietary supplements for established atopic eczema**. Cochrane Database of Systematic Reviews(2).

Other Systematic Reviews

Torley D, et al. 2013. **What's new in atopic eczema? An analysis of systematic reviews published in 2010-11**. Clin Exp Dermatol*,* 38(5), 449-56.

A review of 24 systematic reviews of atopic eczema (AE) published between 1 August 2010 and 31 December 2011. An update of published summaries from previous years.

Epidemiological evidence points to the protective effects of early day-care, endotoxin exposure, consumption of unpasteurized milk, and early exposure to dogs, but antibiotic use in early life may increase the risk for AE.

Prevention of AE: there is currently no strong evidence of benefit for exclusive breastfeeding, hydrolysed protein formulas, soy formulas, maternal antigen avoidance, omega-3 or omega-6 fatty-acid supplementation, or use of prebiotics or probiotics.

Treatment of AE: the most compelling new systematic review evidence was for proactive treatment with topical anti-inflammatory agents (topical corticosteroids and topical calcineurin inhibitors) for the prevention of AE flares in patients with moderate to severe AE. A meta-analysis of 4 trials confirmed the superiority of tacrolimus 0.1% over pimecrolimus for the treatment of AE, and a review of 17 trials found that tacrolimus (0.1% or 0.03%) was broadly similar in efficacy to mild/moderate topical corticosteroids.

Evidence for the role of education in the management of AE was less conclusive, with evidence from randomized controlled trials showing mixed results. Further work is needed in this area to conduct high-quality trials of educational interventions that are clearly described and reproducible.

There is no clear evidence for the efficacy of homeopathy, botanical extracts or Chinese herbal medicine in the treatment of AE, as large well-designed trials are lacking in these areas.

Garritsen FM, et al. 2013. **Photo(chemo)therapy in the management of atopic dermatitis: an updated systematic review with the use of GRADE and implications for practice and research**. Br J Dermatol.

A review of 19 RCTs with 905 participants on phototherapy for the management of atopic dermatitis. Formal meta-analysis was not feasible due to heterogeneity. Due to small study sizes and varying quality conclusions are cautious. Phototherapy can be a valid therapeutic option for the management of atopic dermatitis with preference to UVA1 and NB-UVB. Further well-designed, adequately powered RCTs are needed.

Pelucchi C, et al. 2012. **Probiotics supplementation during pregnancy or infancy for the prevention of atopic dermatitis: a meta-analysis**. Epidemiology*,* 23(3), 402-14.

This meta-analysis of randomised controlled trials of 18 publications from 14 studies investigated whether probiotic use during pregnancy and early life decreases the incidence of atopic dermatitis and immunoglobulin E (IgE)-associated atopic dermatitis in infants and young children. The meta-analysis demonstrated that probiotic use decreased the incidence of atopic dermatitis (RR=0.79, 95% CI 0.71–0.88. Studies were fairly homogeneous (I = 24%). The corresponding RR of IgE-associated atopic dermatitis was 0.80 (95% CI 0.66–0.96). No appreciable difference emerged across strata, nor was there evidence of publication bias. This provides evidence of a moderate role of probiotics in the prevention of atopic dermatitis and IgE-associated atopic dermatitis in infants. The favourable effect was similar regardless of the time of probiotic use (pregnancy or early life) and who received probiotics (mother, child or both).

Bae JM, et al. 2013. **Efficacy of allergen-specific immunotherapy for atopic dermatitis: a systematic review and meta-analysis of randomized controlled trials**. J Allergy Clin Immunol*,* 132(1), 110-7.

Systematic review and meta-analysis of 8 randomised controlled trials with 385 subjects to assess the efficacy of allergen-specific immunotherapy (allergen-SIT) for patients with atopic dermatitis. They found that SIT has a significant positive effect on atopic dermatitis (odds ratio [OR], 5.35; 95% CI, 1.61–17.77; number needed to treat, 3; 95% CI, 2–9). SIT also showed significant efficacy in long-term treatment (OR, 6.42; 95% CI, 1.50–27.52) for patients with severe atopic dermatitis (OR, 3.13; 95% CI, 1.31-7.48), and when administered subcutaneously (OR, 4.27; 95% CI, 1.36–13.39). This meta-analysis provides moderate evidence for the efficacy of SIT against atopic dermatitis but these findings are based on a small number of randomised controlled trials with considerable heterogeneity.

Ernst E. 2012. **Homeopathy for eczema: a systematic review of controlled clinical trials**. Br J Dermatol, 166(6), 1170-2.

This article systematically reviewed the evidence from controlled clinical trials of any type of homeopathic treatment for any type of eczema. Only one randomised and two non-randomised trials were included. All were methodologically weak. The evidence from controlled trials did not demonstrate the efficacy of homeopathy for the treatment of eczema.

Doege K, et al. 2012. **Impact of maternal supplementation with probiotics during pregnancy on atopic eczema in childhood--a meta-analysis**. Br J Nutr, 107(1), 1-6.

A meta-analysis of seven randomised, double-blind trials published between 2001 and 2009 was conducted for comparison of the development of atopic eczema in children whose mothers took probiotics during pregnancy v. placebo. The meta-analysis showed a significant risk reduction for atopic eczema in children aged 2–7 years by the administration of probiotics during pregnancy (reduction 5.7 %; P=0.022). However, this effect was only significant for lactobacilli (reduction 10.6 %; P=0.045), but not for a mixture of various bacterial strains as probiotics (difference 3.06 %, P=0.204). In conclusion, the meta-analysis shows that the administration of lactobacilli during pregnancy prevents atopic eczema in children aged 2–7 years. However, a mixture of various bacterial strains does not affect the development of atopic eczema, independent of whether they contain lactobacilli or not.

Kremmyda L-S, et al. 2011. **Atopy risk in infants and children in relation to early exposure to fish, oily fish, or long-chain omega-3 fatty acids: a systematic review**. Clinical reviews in allergy & immunology, 41(1), 36-66.

A review of epidemiologic studies identified through Ovid Medline (1950–2009) and Embase (1980–2009) investigating the effect of maternal fish consumption during perinatal life on atopic outcomes in infants or children. Five studies were found: three prospective cohort, one retrospective cohort, and one case control study with three studies reporting on eczema or atopic dermatitis. Protective effect of high fish consumption during pregnancy on atopic dermatitis at one to five years varied from 25% t0 43%.

van den Oord RA & Sheikh A. 2009. **Filaggrin gene defects and risk of developing allergic sensitisation and allergic disorders: systematic review and meta-analysis**. BMJ, 339, b2433.

A systematic review and meta-analysis to investigate whether filaggrin gene defects increase the risk of developing allergic sensitisation and allergic disorders. 24 genetic epidemiological studies (family, case-control) were included. The odds of developing atopic eczema was 1.99 (1.72–2.31) in the family studies and 4.78 (3.31–6.92) in the case-control studies. Filaggrin gene defects increase the risk of developing allergic sensitisation, atopic eczema, and allergic rhinitis. Evidence of the relation between filaggrin gene mutations and atopic eczema was strong, with people manifesting increased severity and persistence of disease. Filaggrin gene mutations also increased the risk of asthma in people with atopic eczema. Restoring skin barrier function in filaggrin deficient people in early life may help prevent the development of sensitisation and halt the development and progression of allergic disease.

Other Relevant Publications and Websites

http://dermnetnz.org/

DermNet NZ is provided by the New Zealand Dermatological Society Incorporated to present authoritative facts about the skin for consumers and health professionals in New Zealand and throughout the world. It was launched in March 1996. This site gives specific information about dermatitis and eczema http://dermnetnz.org/dermatitis/dermatitis.html

Starship Children's Health Clinical Guideline for Eczema, 2009

http://www.adhb.govt.nz/starshipclinicalguidelines/_Documents/Eczema.pdf

A clinical guideline for managing children with eczema which outlines the differential diagnosis, indications for admission, inpatient treatment, flow chart for inpatient care, and outpatient treatment.

Managing Eczema. Best Practice Journal, 2009 (BPAC NZ). Key Reviewer Dr Amanda Oakley

http://www.bpac.org.nz/BPJ/2009/September/eczema.aspx

An article outlining the best practice management for eczema in the New Zealand setting.

The kidshealth website has been created by a partnership between the Paediatric Society of New Zealand (PSNZ) and the Starship Foundation

http://www.kidshealth.org.nz/eczema-atopic-dermatitis

PSNZ is a multi-disciplinary Society committed to improving the health of children and young people. With its membership of a broad range of child and youth health professionals, PSNZ is well-placed to develop content for the kidshealth website that is useful for parents and is up-to-date, accurate and valid. kidshealth information is for: New Zealand parents, caregivers, family and whānau and anyone else involved in caring for New Zealand children; and for the range of professionals in New Zealand who work with parents every day - doctors, nurses, early childhood staff, teachers, mental health professionals and others.

Note: The publications listed were identified using the search methodology outlined in Appendix 1 (Search Methods for Policy Documents and Evidence-Based Reviews)

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3. Odhiambo JA, Williams HC, Clayton TO, et al. 2009. Global variations in prevalence of eczema symptoms in children from ISAAC Phase Three. *Journal of Allergy and Clinical Immunology* 124(6) 1251-58.e23.