

2021

State of Child Health in Aotearoa New Zealand



ACKNOWLEDGMENTS

ADVISORY GROUP

Royal Australasian College of Physicians

Dr Hamish McCay

Paediatric Society of New Zealand

Assoc Prof Nicola Austin

NZ Child and Youth Epidemiology Service, University of Otago

Dr Mavis Duncanson

Glenda Oben

Dr Judith Adams

New Zealand Ministry of Health

Dr Tim Jelleyman

Cure Kids and Advisors

Dr Bruce Scoggins

Tara Satyanand

Prof Stephen Robertson

Prof Stuart Dalziel

Prof Sally Merry

Prof Andrew Day

Prof Te Kani Kingi

Prof Cameron Grant

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Every endeavour has been made to use accurate data in this report. Nevertheless, variations in the way data are collected by various agencies may result in errors, omissions or inaccuracies in the information in this report. We do not accept liability for any inaccuracies arising from the use of these data in the production of these reports, or for any losses arising as a consequence.

FOREWORD

Kia kuru pounamu te rongō: all mokopuna live their best lives

The role of Children’s Commissioner was established to ensure that Aotearoa New Zealand supports children to have their rights met and to promote wellbeing of mokopuna¹. The UN Convention on the Rights of the Child affords every child access to the best healthcare possible. Our mokopuna have a right to be healthy and safe in their homes and in schools, and to be able to thrive in our communities. This means we must treasure every child, and create the environment which enables children in New Zealand to flourish – he mokopuna he taonga. With flourishing mokopuna and families/whānau we can achieve the future vision we all aspire to.

This State of Child Health report clearly shows we are a long way from achieving this goal. In fact, on many measures, New Zealand is currently one of the worst places in the developed world to be a child. Many of our mokopuna start accumulating health issues from their very first days, and by the time they are young adults they are carrying a heavy burden of disease. The burden is not equally spread. Almost one third of our mokopuna bear the brunt of health conditions, and therefore experience significant disadvantage, often along with social and economic deprivation, which is clearly shown to be associated with poor health.

This report focuses on dental disease, respiratory conditions, skin infections, and rheumatic fever and heart disease.

To take just the first example, the high rates of tooth decay among our children is exacerbated by the high and growing consumption of sugary drinks from an early age and challenging access to dental services, particularly for our mokopuna Māori and Pasifika. Children with dental disease often live with regular toothache which can affect their general wellbeing, and their ability to learn at school and interact socially. The report shows that this is the leading cause of planned hospital admissions for children, and in many cases baby teeth must be extracted, with resulting implications for children’s appearance, including into adulthood. All of these problems can have significant long-term impacts for our young people.

I welcome the efforts of Cure Kids, the Paediatric Society, the Royal Australasian College of Physicians, and the New Zealand Child and Youth Epidemiology Service at the University of Otago in producing this annual report. It compiles the most reliable statistics available, to produce a compelling argument for action to reduce the high rates of hospital admissions for mokopuna – particularly those more disadvantaged. To reduce hospital admissions, we need to act much earlier in children’s lives, by addressing poverty in families, and providing access to preventative healthcare targeted to the needs of mokopuna and their whānau and caregivers. Our government has committed to halve child poverty and hardship by 2028. We can no longer accept the levels of poverty and disadvantage which condemn children to ill health.

The global COVID-19 pandemic has overlaid additional challenges for families, communities, and for the health system as the cornerstone of our prevention and control efforts. Now we must regroup, assess the complex results of the pandemic on our mokopuna across Aotearoa, and refocus our efforts to reverse the unacceptable trends in outcomes for child health.

We must create the foundations for all our mokopuna and make a concerted effort to understand the conditions needed to foster health and wellbeing. We need to introduce targeted interventions to prevent diseases, to care for and treat mokopuna who are ill, and to get them back to good health as soon as possible to minimise long-term impact on their physical and social development, educational achievement, and participation in society. These efforts must be targeted to mokopuna who need it the most. Health is a minimum baseline for the lives of all mokopuna, transforming the health of our mokopuna, our children is fundamental to ensuring a healthy future for all New Zealanders.

Children’s Commissioner,
Judge Frances Eivers (Ngāti Maniapoto, Waikato)

¹ Drawing from the wisdom of Te Ao Māori, the Office of the Children’s Commissioner has adopted the term mokopuna to describe all children and young people aged under 18 years of age. This acknowledges the special status held by mokopuna in their whānau, hapū and iwi and reminds us all that who they are, and where they come from matters, at every stage of their life.

01

INTRODUCTION

Tēnā koutou katoa,

Fifty years ago, Cure Kids was founded by Professor Sir Bob Elliott and Dr Ron Caughey, with the vision that New Zealand mokopuna should have the same rights to health as children anywhere in the world. These two paediatricians had the foresight to understand that New Zealand desperately needed a paediatric research program, specific to our own unique population and its challenges.

In the past 50 years, Cure Kids has invested more than \$66 million in research to address these issues, and we are proud of the resulting breakthroughs which have saved the lives of thousands of children and improved care and treatment for many more. The highlights include major advances in the understanding of stillbirth, premature birth, sudden unexpected deaths in infancy (which have enabled strategies to reduce the risks), discovery of innovative ways to treat brain injury and burns, and development of a new method for diagnosis of cystic fibrosis. Looking forward to the next 50 years, Cure Kids remains focused on the goal of delivering the research needed to enable healthier children, with brighter futures.

Sadly, New Zealand continues to report a disproportionate burden of disease among our mokopuna.

In this report we have partnered with some of New Zealand's most knowledgeable experts: the Paediatric Society of New Zealand, the Royal Australasian College of Physicians, and the New Zealand Child and Youth Epidemiology Service at the University of Otago. The report presents the available data on the health of our mokopuna, drawing attention to four areas where our statistics are shameful compared to other OECD countries:

- dental disease
- respiratory conditions
- skin infections
- rheumatic fever and heart disease.

Within this report we aim to highlight the significant burden of disease for children in New Zealand, and to galvanise action to reduce these health issues. The statistics clearly show what a daunting challenge we face: not only in the rates of disease, but also in the clear pattern of inequity. Reversing these trends will require collaborative efforts across New Zealand, and not only by the hardworking healthcare professionals who care for our children in our hospitals and clinics around the country.

Cure Kids is committed to investing in the big research questions which hold back progress in eliminating these diseases.

We hope that this report on the State of Child Health in Aotearoa NZ will galvanise all New Zealanders to get behind the evidence-based actions needed to transform this negative picture. We want future reports to show that these negative long-term trends in child health are reversing, and that we are starting to see healthier children with brighter futures.

Frances Bengé

Chief Executive, Cure Kids

02

MEASURING THE STATE OF CHILD HEALTH

CHILDREN IN AOTEAROA NEW ZEALAND

The estimated population of Aotearoa NZ includes about 1 million children younger than 15 years – almost a fifth of the total population.¹ This report generally defines children based on an age-range of 0 to 14 years (inclusive), which spans from infancy through to early adolescence, but in some cases a different definition is used because of a specific data source or health condition.

HEALTH CONDITIONS

This report will summarise the best available data for four health issues which affect children in Aotearoa NZ:

- dental disease
- respiratory conditions
- skin infections
- acute rheumatic fever and rheumatic heart disease.

These health issues have been selected based on their prevalence and burden of disease, public importance,² rates of hospitalisation or death, and availability of robust published data for Aotearoa NZ, including both recent and current data.

DATA SOURCES

The report focuses on data which are nationally representative, to enable population-level comparisons. The report draws predominantly on national administrative collections held by the NZ Ministry of Health, which gather information as part of service delivery (e.g. the National Minimum Dataset) and national surveys undertaken by the Ministry of Health or by Stats NZ, which are administered to adults or caregivers of children (e.g. the New Zealand Health Survey). The data utilised in this report were as at September 2021. Future reports will incorporate information from other collections, or utilise routine linkage data, including from the Stats NZ Integrated Data Infrastructure.

The National Minimum Dataset (NMDS) is an administrative data collection, held by the NZ Ministry of Health, which captures information about all discharge events from publicly funded hospitals in Aotearoa NZ.³ This report presents data, extracted in June 2021, on discharges as representative of hospitalisations. Note that data are limited to acute and arranged admissions to hospital (see Glossary).

Information on hospitalisations helps to identify differences in illness status and access to health services. This report presents the most frequent causes of hospitalisation, which have been summarised based on the primary diagnoses, and therefore are not a complete list. Events were excluded if there were transfers, short stays in the Emergency Department (fewer than 3 hours) or if the events were for overseas visitors. Unless stated otherwise, hospitalisation information is presented by calendar year (Jan to Dec), prioritised ethnicity, or NZ Index of Deprivation (NZDep). Prioritised ethnicity means that each child can nominate several ethnic groups to which they identify, but the NMDS allocates them to a single group according to the following order of priority: Māori, Pasifika, Asian/ Indian, MELAA (Middle Eastern, Latin American, and African), and European/Other.

Started in 2011, the New Zealand Health Survey (NZHS) is an annual survey which includes both adults and children. The 2019/20 NZHS included 3,290 children (generally by surveying their parents or caregivers).⁴ The NZHS data report each child in all the ethnic groups that they identify with (i.e. potentially multiple groups).

METHODS

Unless otherwise stated, rates are age-specific. An age-specific rate is defined as the number of observed discharge events for a specified age group over a specified period (for example, a year) divided by the total population at risk of the event in that age group. Rates of hospitalisation are per 1,000 children.

Population attributable fraction, or potential rate reduction, measures the relative difference in one group's health ($rate_{group}$) compared to the health of the group with the lowest rate of illness or best health ($rate_{ref}$).⁵⁻⁸ It estimates the potential health improvements for all groups if they had the same experiences as the reference group.

$$PAF\% = \frac{rate_{group} - rate_{ref}}{rate_{group}}$$

Unless stated otherwise, rates are calculated using the NZ Child and Youth Epidemiology Service (NZCYES) estimated resident population. This population-based denominator is derived from customised Stats NZ census data with linear interpolation for non-census years.

GAPS IN DATA ON CHILD HEALTH

Although national data collections enable assessment of the health of children over time, they only record the most severe health events, which require secondary- and tertiary-level care. In order to measure the state of child health, rather than rates of severe disease, significant data gaps must be filled. Some gaps affect the overall quality of reporting; others are specific to health areas.

There are also opportunities to overcome limitations which affect the overall quality of reporting. For example, relatively few routine national surveys include the views and voices of children. However, the *Youth2000 series*,⁹ the *Mai World: Child and Youth Voices*¹⁰ project by the Office of the Children's Commissioner, and the longitudinal *Growing Up In New Zealand*¹¹⁻¹³ study do include child-reported data. Therefore, their results highlight important determinants of health and development, and add value to the national data collections.

Health data are also limited for several groups of children who are at increased risk of experiencing health inequities in Aotearoa New Zealand. These include children with disabilities, children whose families are refugees or asylum seekers, children who are culturally or linguistically diverse, who are gender or sexually diverse, who live in out-of-home or state care, who live in rural or isolated areas, and children who are involved with youth justice.^{1,2,14}

This series of reports will highlight gaps overall, and for specific health issues and groups.

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03

DENTAL DISEASE

2 in 5 children under 15 years do not brush their teeth at least twice daily with a standard fluoride toothpaste



Children living in the most deprived areas have **THREE TIMES** as many teeth extracted as those in the least deprived areas



KEY FINDINGS

- On average, in 2019, 41% of 5-year-olds and 31% of Year-8 children (aged around 12 years) had evidence of tooth decay.
- Since 2000, average rates of dental decay have declined overall, but the rate of hospitalisations for children with serious dental decay has also increased steadily.
- In 2019, 3.5% of NZ children aged 1 to 14 years had had teeth extracted in the previous 12 months due to decay, abscesses, infection, or gum disease.
- Rates of tooth decay and hospitalisation have been consistently highest for Pasifika and Māori children. In 2019, 40% of Māori children and 46% of Pasifika children had evidence of tooth decay in their permanent teeth at Year 8.
- The rate of hospitalisation for tooth decay was highest for children living in the most deprived areas, who also had more than three times the number of teeth extracted as those in the least deprived areas.
- Two in every five children younger than 15 years did not brush their teeth at least twice daily with a standard fluoride toothpaste.

WHY PRIORITISE DENTAL DISEASE IN CHILDREN?

Dental decay is one of the most common chronic diseases in children.¹ Decay forms when bacteria in the mouth feed on sugars and produce acids that soften the outer covering (enamel) of children's teeth, which is softer and thinner than on adult teeth.² Progression of gum infection and tooth decay can lead to cavities, with children experiencing pain, and difficulty with eating, sleeping, and concentrating.² Therefore dental disease affects children's general health, mental and physical wellbeing, learning, and quality of life.²⁻⁷

Dental decay is preventable. Research has shown that growth of bacteria in the mouth can be minimised if children maintain good oral hygiene and reduce their dietary intakes of sugary drinks and foods.^{3, 8-10} During the first 2 years of life, diets high in sugar or refined starch are strongly associated with dental caries.⁹⁻¹² Fluoride can also inhibit decay by strengthening tooth enamel, interfering with bacterial growth, and helping to repair the early stages of tooth decay.¹³ However, fluoridated water supplies have only been available in four main cities; two fifths of New Zealand's population live in other towns or cities or in rural areas, and may not use fluoride toothpaste regularly to compensate. A recent law change will require all water suppliers in New Zealand to fluoridate water supplies, but the necessary changes in infrastructure will take some time to implement.

WHAT IS THE STATE OF ORAL HEALTH FOR CHILDREN IN AOTEAROA NZ?

TREND:

Figure 3.1 shows that the proportion of children without tooth decay at age 5 and in Year 8 at school has gradually improved over these two decades. Over the same period, the average number of decayed, missing, or filled teeth for Year-8 children (aged 12-13 years) has also declined (Figure 3.2).

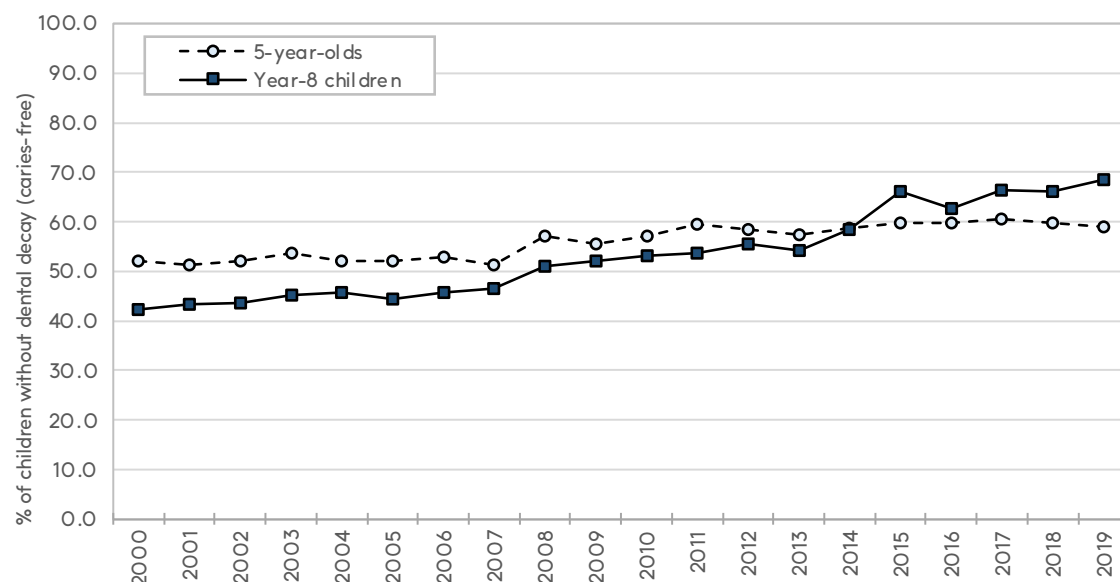


Figure 3.1: Trends in the proportion of children without dental decay (caries-free) by age at examination, Aotearoa NZ, 2000-19.

Source: Community Oral Health Services (COHS) data.

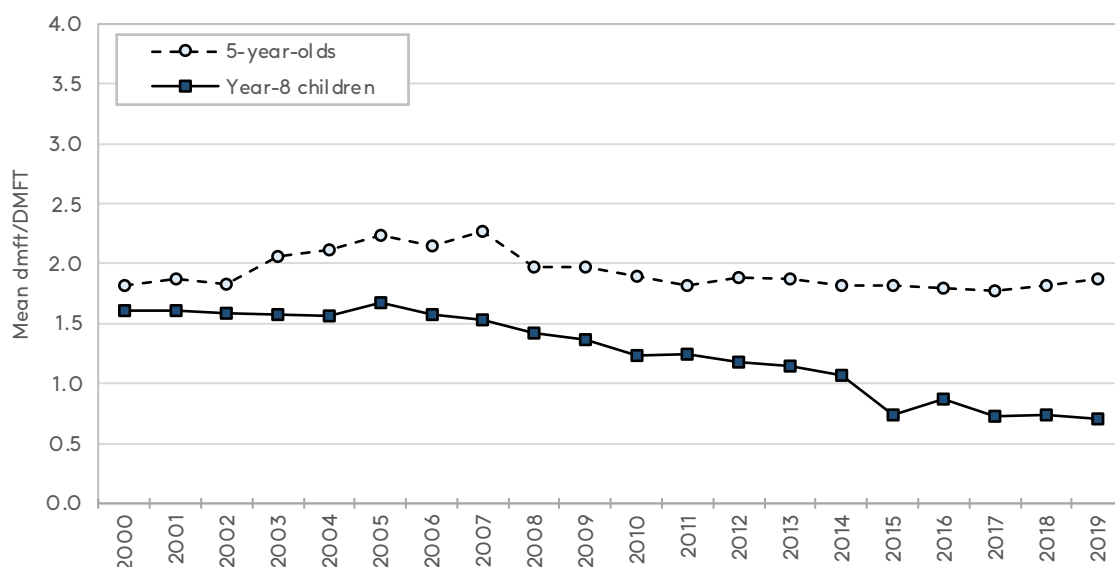


Figure 3.2: Trends in the mean number of decayed, missing and filled teeth by age at examination, Aotearoa NZ, 2000–19.

Source: COHS data.

DMFT and dmft refer to the number of primary (deciduous, baby, or milk) teeth or permanent teeth, respectively, which are decayed, missing due to caries, or filled due to caries.

LATEST DATA:

In 2019, nearly 69% of Year-8 children (aged 12–13 years) examined by the Community Oral Health Servicesⁱⁱ had no obvious tooth decay (i.e. their permanent teeth were ‘caries-free’). On average Year-8 children had 0.7 teeth which were decayed, missing, or filled.¹⁴ However, since most children have no decayed, missing, or filled teeth, and children not examined by the Services presumably have higher rates of decay due to access barriers, these averages do not reflect the severity of dental disease among those who do have decay. There was less improvement in 5-year-olds, more than 40% of whom had obvious tooth decay in 2019, with an average of 1.9 decayed, missing, or filled teeth.¹⁴

Tooth decay in young children is caused by frequent consumption of sugary drinks and foods and by insufficient oral hygiene.^{9–11} The 2019/20 NZ Health Survey of parents of children aged 2 to 14 years found that 8.9% of children were consuming fizzy drinks at least three times per week, and that 6.6% were eating fast food three or more times per week.¹⁵ Two in every five children aged 0–14 years (39.6%) were not brushing their teeth at least twice daily with a standard fluoride toothpaste.¹⁵

In Aotearoa NZ, children and adolescents have publicly funded access to basic oral health services such as routine examinations, cleaning, sealants, fluoride treatments, fillings, and extractions.^{16,17} In 2019, parents said that approximately 80% of children aged 1 year and older had visited a dentist or other dental healthcare worker in the past 12 months, and 3.5% of children had had teeth removed due to decay, abscesses, infection, or gum disease.¹⁵ Not all children received dental care; 2.6% of parents reported that they had avoided a dental visit for a child aged 1 to 14 years because of perceived cost.¹⁵

Children with tooth decay need dental care to prevent further deterioration. However, access to dental care is reliant on cost, ease of booking, transport, and parental responsibility, and access to early treatment varies around New Zealand. If dental visits are delayed or avoided, children may develop severe decay and need to be treated in hospital. One in four New Zealand children who need a procedure in hospital will go on a waiting list for a dental procedure.¹⁸

ii Note that this excluded MidCentral DHB due to data collection issues.

TREND:

Figure 3.3 shows that the rate at which children were hospitalised for treatment of dental decay increased steadily over these two decades, although hospitalisations fell during the COVID-19 pandemic period, with rates in 2020 21% lower than the previous year. Despite this drop, around 6,000 hospitalisations were needed to treat dental decay in children in 2020, representing a rate of 6.2 hospitalisations per 1,000 children.

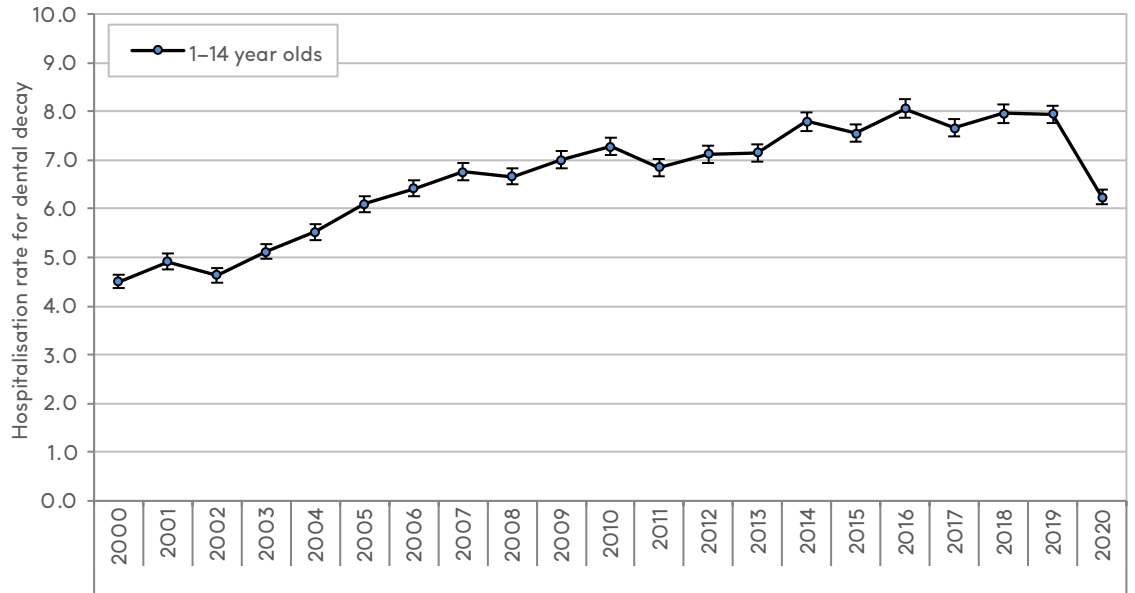


Figure 3.3: Trend in the rate of children (aged 1 to 14 years) hospitalised for dental decay, Aotearoa NZ, 2000–20. Source: National Minimum Dataset (NMDS) and NZ Child and Youth Epidemiology Service (NZCYES) estimated resident population.

Rate per 1,000 1–14 year olds.

LATEST DATA:

The need for surgical management of dental decay (caries) was the main reason for these hospitalisations (Figure 3.4). Between 2016 and 2020, 80% of hospital admissions for dental disease in children aged 1 year and older were to treat tooth decay.

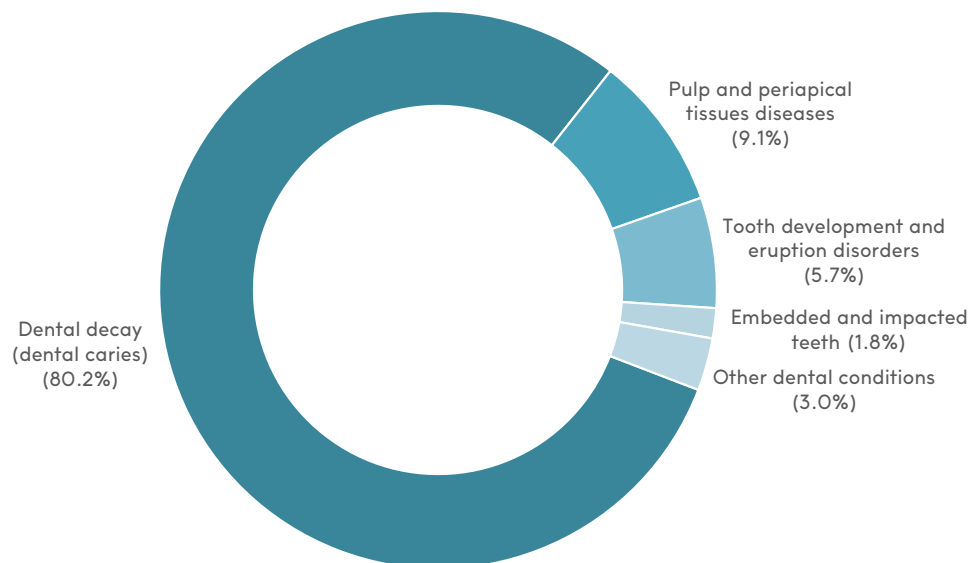


Figure 3.3: Causes of hospitalisation due to dental disease in children aged 1 year and older, Aotearoa NZ, 2016–20.

Source: NMDS.

INEQUALITIES IN ORAL HEALTH FOR CHILDREN IN AOTEAROA NZ

Rates of dental decay vary widely for children in Aotearoa NZ. Figure 3.4 shows that in 2019, the proportion of Pasifika children who were free of dental decay was half that of children of other ethnicities at the age of 5 years. Māori and Pasifika children also had more than double the average number of decayed, missing, or filled teeth at this age (Figure 3.5).

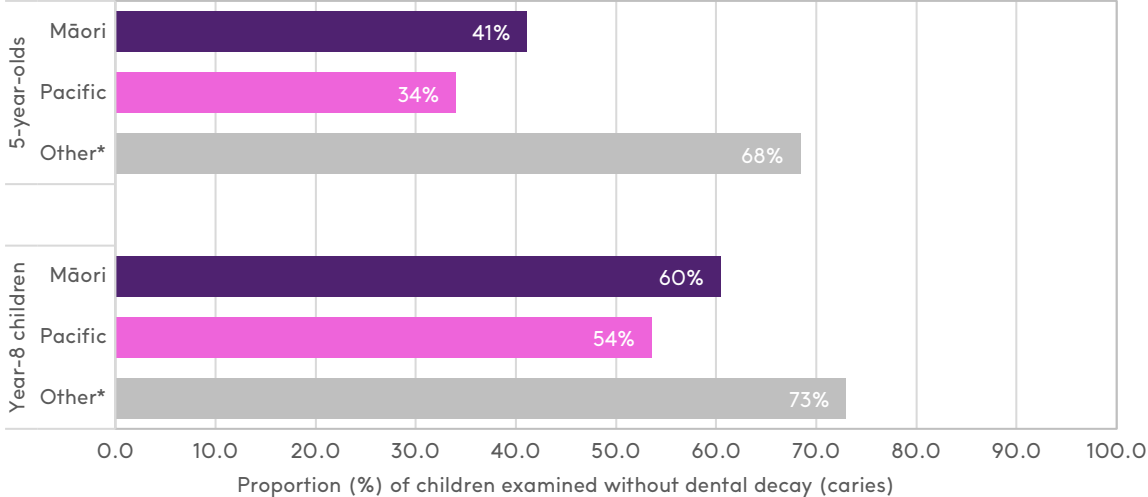


Figure 3.4: Proportion of children without dental decay (caries-free) by age at examination and ethnicity group, Aotearoa NZ, 2019.

Source: COHS data.

*Other includes all non-Māori, non-Pasifika ethnic groups, plus Pasifika children who don't reside in the seven District Health Boards with the highest numbers of Pasifika children.

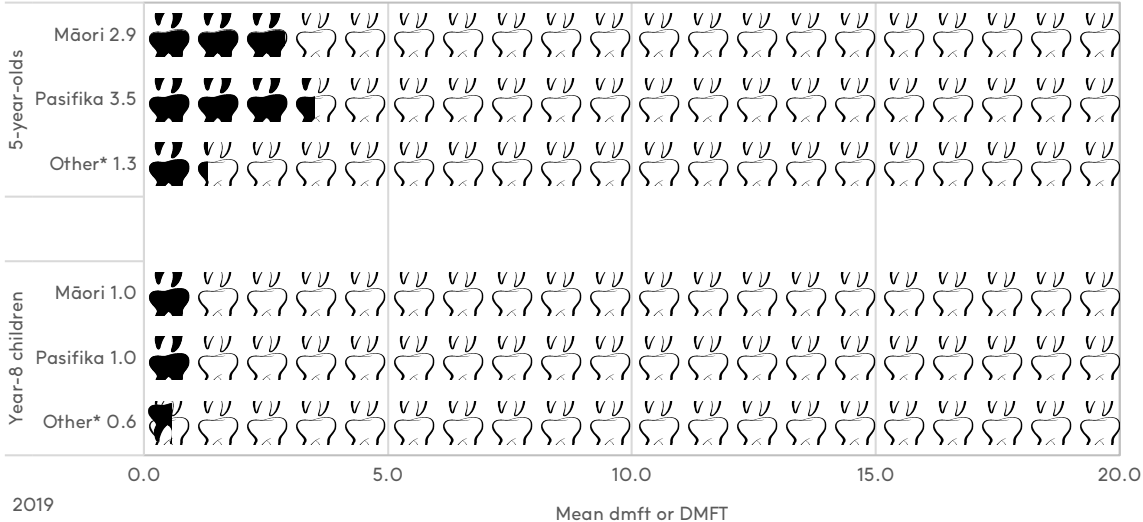


Figure 3.5: Average number of decayed, missing, or filled teeth by age at examination and ethnicity, Aotearoa NZ, 2019.

Source: COHS data.

Please note: most children have 20 primary teeth, which are gradually replaced by 32 permanent teeth. This graph represents number of teeth, not percentage.

*Other includes all non-Māori, non-Pasifika ethnic groups, plus Pasifika children who don't reside in the seven DHBs with the highest numbers of Pasifika children.

TREND:

Figure 3.7 shows that dental decay disproportionately affects Māori and Pasifika children, although the proportion of Māori 5-year-olds who had no evidence of decay has gradually increased since 2003. Other data show that average numbers of decayed, missing, or filled teeth have also declined slightly at Year 8 for Māori children.¹⁸

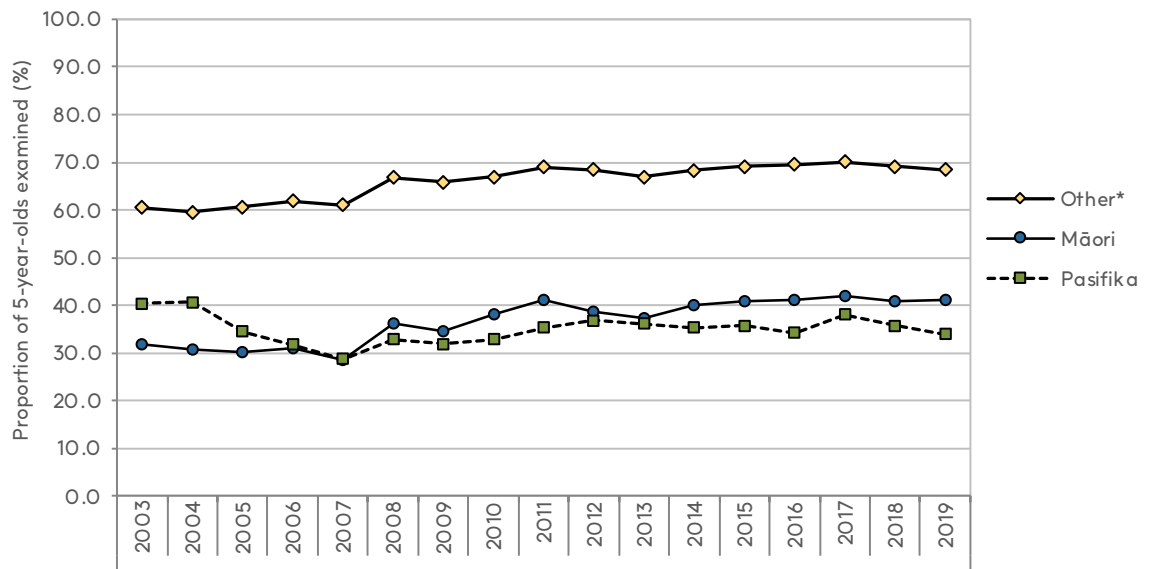


Figure 3.7: Trends in the proportion of children without dental decay (caries-free) at age 5 years by ethnic group and year, Aotearoa NZ, 2003-19.

Source: COHS data.

*Other includes all non-Maori, non-Pasifika ethnic groups, plus Pasifika children who don't reside in the seven DHBs with the highest numbers of Pasifika children.

Rates of hospitalisations needed to treat severe dental decay also differ by ethnic group. Figure 3.6 presents the proportion of hospitalisations that could potentially be avoided if inequalities were eliminated. For instance, from 2016 to 2020, if Māori or Pasifika children had the same low rate of hospitalisation for dental decay as children of "European or Other" ethnicities (reference group), their rate of hospitalisations would have been 49% lower. This graph shows that rates of dental decay are also disproportionately high in children of Middle Eastern, Latin American, or African ethnicity.

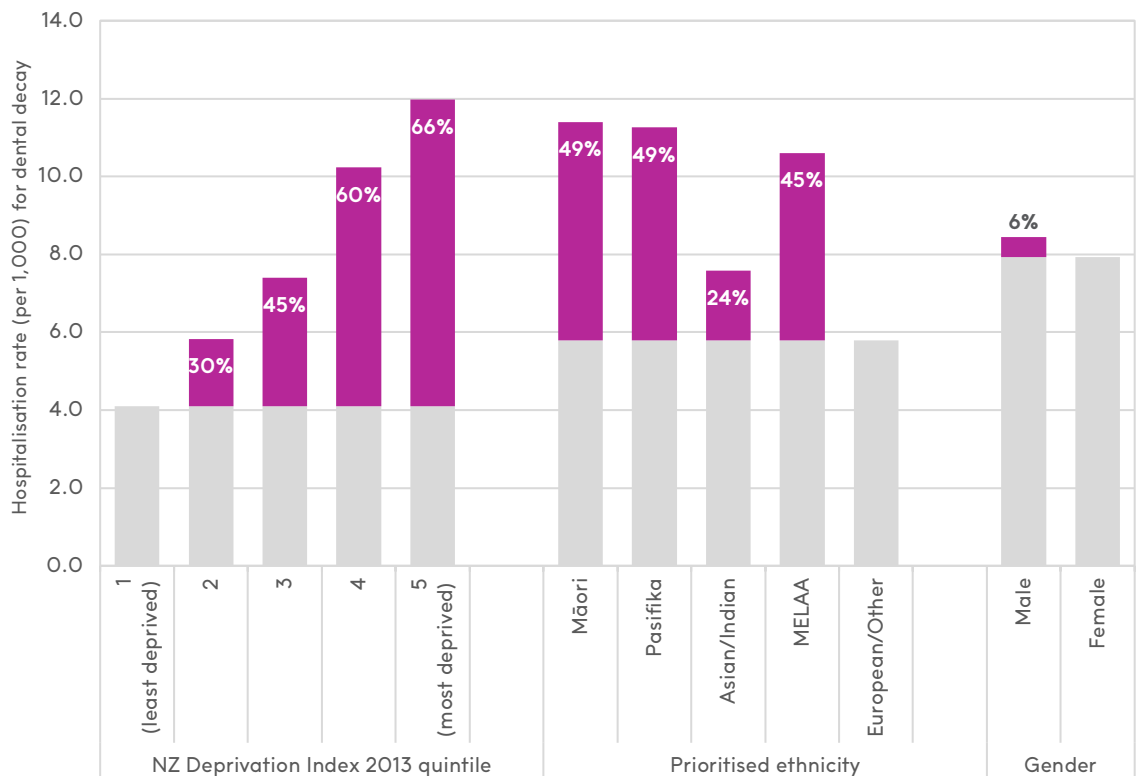


Figure 3.6: Potential reduction (attributable fraction) in hospitalisation rate for dental decay in children aged 1 year and older by demographic factors, Aotearoa NZ, 2016-20.

Source: NMDS and NZCYES estimated resident population.

MELAA= Middle Eastern, Latin American, or African

Children who live in neighbourhoods with the most socioeconomic deprivation also experience the most severe disease. Figure 3.6 shows that if socioeconomic inequalities were eliminated for children living in the most deprived areas, their rate of hospitalisations would have decreased by 66%. According to the 2019/20 NZ Health Survey, the ratio of tooth extractions in the past 12 months for children who lived in the most deprived areas was almost four times higher (3.86) than for those in the least deprived areas.¹⁴

DATA ON DENTAL DISEASE

Community Oral Health Services (COHS) around New Zealand are funded to provide annual dental examination for children aged from 1 year up to and including Year 8 of school (around 12 to 13 years-old), although not all children have equal access to this service in practice.¹⁶ The Services report on numbers of teeth which are either decay-free (caries-free), or decayed, missing, or filled due to caries.

This report specifically looks at COHS examinations of children during their first years at primary school and at intermediate school (Years 1 and 8). For 5-year-olds these data relate to primary (deciduous, baby, or milk) teeth; for children in Year 8, data relate to permanent teeth.

Children enrolled in COHS are usually examined every 6–12 months (or at up to 18 months if they're at low risk) and offered any necessary treatment.¹⁶ In 2019, the COHS reported to the New Zealand Ministry of Health on examination of 39,662 children at 5 years of age and 51,478 children at Year 8.¹⁴ The 2019 data excluded examinations from MidCentral DHB due to data collection issues.¹⁴ COHS data could not be matched to the fluoridation status or relative deprivation of children's residential addresses.

New Zealand's National Minimum Dataset (NMDS)¹⁹ shows the rate of children aged 1 year and older who have been treated in hospital for dental decay, and the leading causes of hospitalisation due to dental disease and oral-health-related conditions. This report summarises NMDS data for dental disease based on primary diagnosis of an oral-health-related condition (ICD-10-AM: K00–K08).

The New Zealand Health Survey in 2019/2020 was only able to collect responses for three-quarters of the year due to COVID-19 restrictions introduced in March 2020. The Survey asked caregivers whether children (aged 2–14 years) consumed fast food or fizzy drinks.^{15,20} The Survey defined fast food as food purchased from a fast-food place or takeaway shop (e.g. fish and chips, burgers, fried chicken, or pizza), but excluded certain foods (e.g. sushi, wraps, or curries). Soft or fizzy drinks included sports drinks and energy drinks, but excluded diet drinks, reduced-sugar varieties, sparkling water, flavoured waters, fruit juices, and drinks made from cordial, concentrate, or powder. The Survey also reported on whether children (aged 0–14 years) brushed their teeth with a standard fluoride toothpaste, defined as any brand that contained at least 1000ppm fluoride (0.221% sodium fluoride or 0.76% sodium monofluorophosphate).^{15,20}

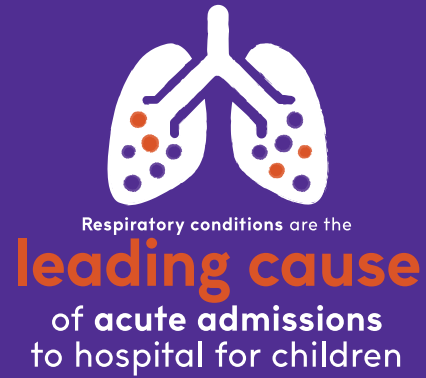
Although publicly accessible national data for this indicator are currently limited, the Ministry of Health has engaged external contractors to implement nationally consistent electronic reporting of oral health records, which should be available for future reports.^{21,22}

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04

RESPIRATORY CONDITIONS



KEY FINDINGS

- Respiratory conditions are the leading cause of acute admissions to hospital for children in Aotearoa NZ.
- Since 2000, the rate of hospitalisations for children with severe respiratory conditions has increased, most notably for bronchiolitis, asthma, and wheeze.
- Māori children and Pasifika children have the highest rates of hospitalisations for respiratory disease, including bronchiolitis, pneumonia, asthma, and wheeze.
- Economic deprivation is a major factor in respiratory disease: children living in areas with the most deprivation have the highest rates of hospitalisations for asthma and wheeze.

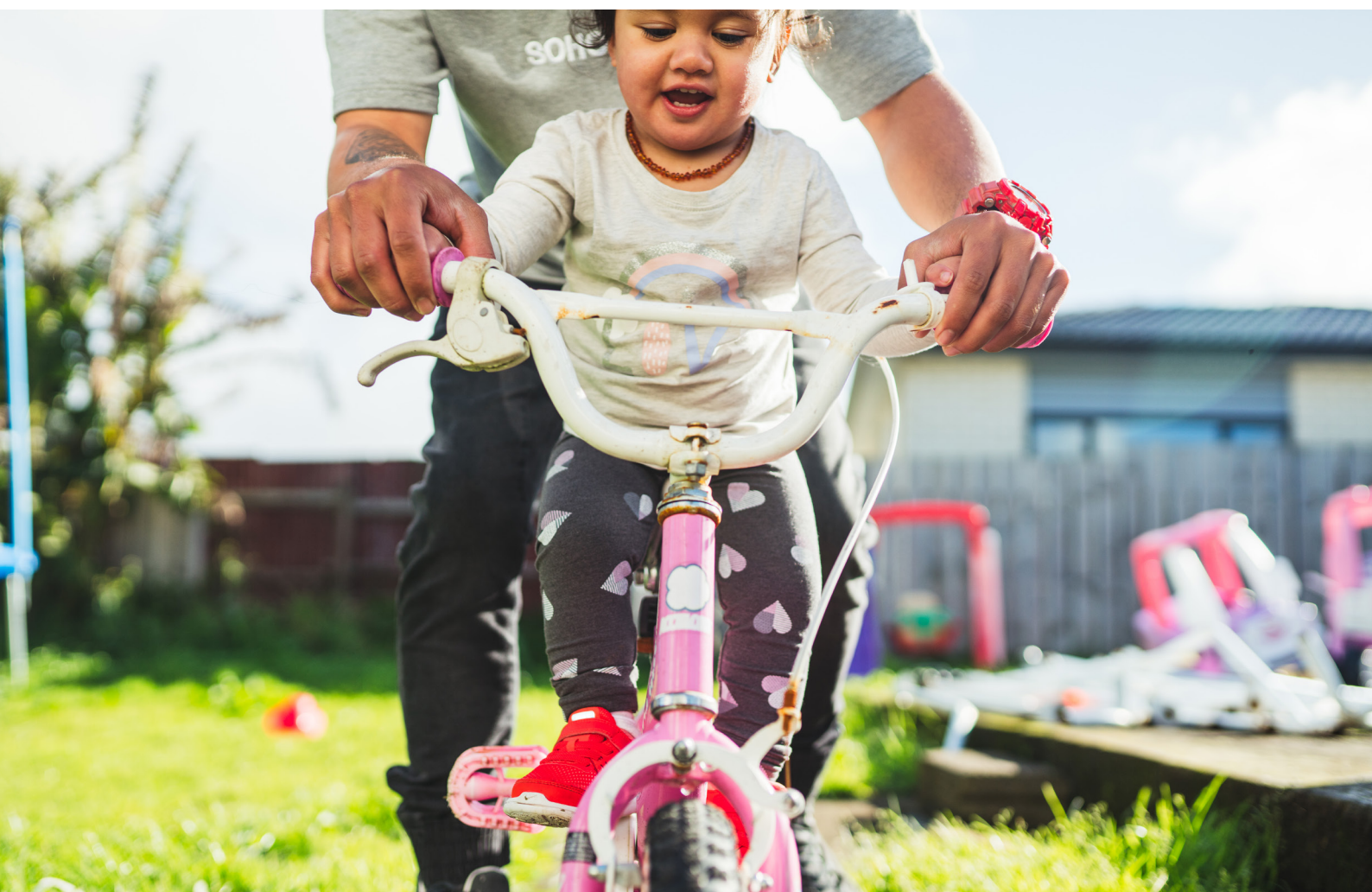
WHY PRIORITISE RESPIRATORY CONDITIONS IN CHILDREN?

Children with respiratory conditions can experience wheezing, cough, tightness in the chest, or difficulty breathing. These symptoms disturb children's sleep, disrupt education and other activities, and need urgent healthcare.

The most common causes of respiratory symptoms in children are acute respiratory infections, preschool wheeze, and asthma. Respiratory infections can affect the upper respiratory tract (e.g. rhinitis and otitis media) or the lower respiratory tract and lungs (e.g. pneumonia, bronchiolitis, influenza, and pertussis). In most cases, the symptoms are mild and children recover within a few weeks, but some children experience acute breathing difficulties which are severe enough to require hospital admission. Some children experience recurrent respiratory infections, which may lead to permanent damage to their middle ears or lungs, and long-term chronic disease.¹

Asthma is the most common non-communicable chronic disease in children, and the prevalence of childhood asthma in Aotearoa New Zealand is one of the highest in the world.² Asthma symptoms are most frequently triggered by acute respiratory infection, but can also be triggered by cold air, exercise, or psychological distress.^{1,3} Mild symptoms of asthma can generally be managed at home or in primary care, but severe symptoms may require admission to hospital and can be life-threatening.^{4,5} Wheeze is the most common cause of hospital admission for preschool-aged children in New Zealand.^{6,7}

Respiratory conditions are preventable, and hospitalisations should be avoidable. Research shows that risk factors for childhood respiratory conditions include economic deprivation, which results in poor-quality living conditions and malnutrition during pregnancy and childhood, and lack of access to appropriate primary and secondary healthcare, including vaccination during pregnancy and childhood.^{1,3,8-12}



WHAT IS THE STATE OF RESPIRATORY HEALTH FOR CHILDREN IN AOTEAROA NZ?

Around 35% of all acute hospital admissions for children are due to respiratory conditions.¹³ Hospitalisation rates are highest for children younger than 2 years old.^{13,14}

TREND:

Figure 4.1 shows that the rate of hospitalisations for respiratory conditions increased over these two decades, most notably for 'asthma and wheeze' and acute bronchiolitis. During this period, rates of diagnoses shifted from asthma towards diagnoses of wheeze, in alignment with changes in national guidelines, and recognition that preschool wheeze is a distinct entity from bronchiolitis and from asthma.^{5,13}

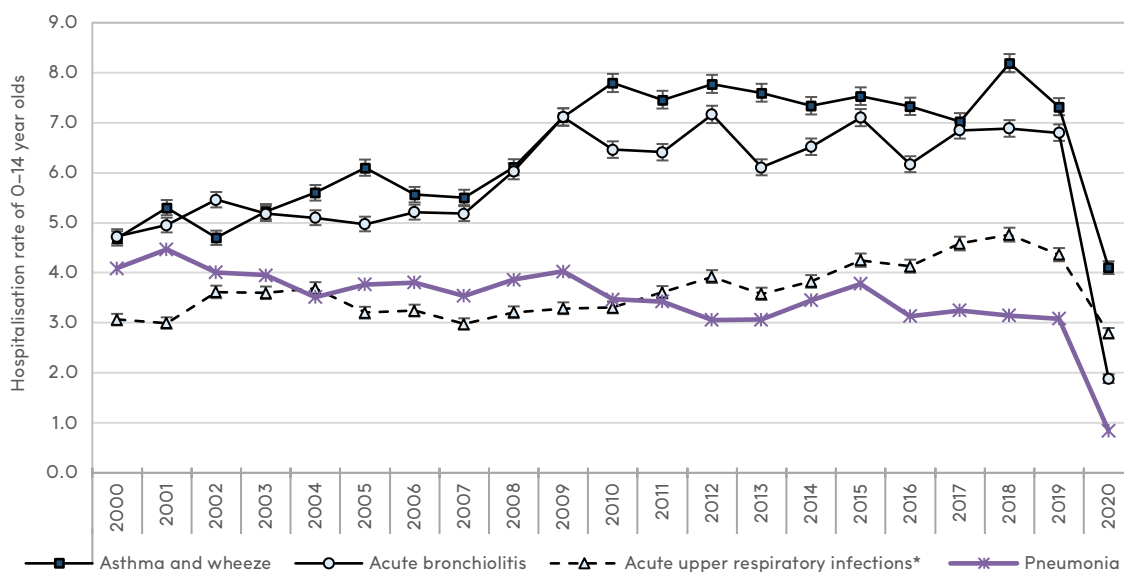


Figure 4.1: Trends in rates of hospitalisation of children for respiratory conditions, by primary diagnosis, Aotearoa NZ, 2000–20

Source: NMDS and NZCYES estimated resident population.

* Multiple or unspecified sites

LATEST DATA:

During the period of restrictions associated with the COVID-19 pandemic in 2020, hospitalisations for respiratory conditions fell, with overall rates 52% lower in 2020 than in the previous year. The greatest changes were for acute bronchiolitis and for 'asthma and wheeze'.

In 2020, nearly 6,500 hospitalisations were for acute bronchiolitis, more than 4,100 were for acute upper respiratory infections, around 4,000 were for 'asthma and wheeze', and almost 3,000 were for pneumonia.

LATEST DATA:

Figure 4.2 shows that from 2016 to 2020, the diagnoses for children hospitalised for respiratory conditions were either 'asthma and wheeze', acute bronchiolitis, acute upper respiratory infections, or other acute respiratory conditions (including pneumonia).

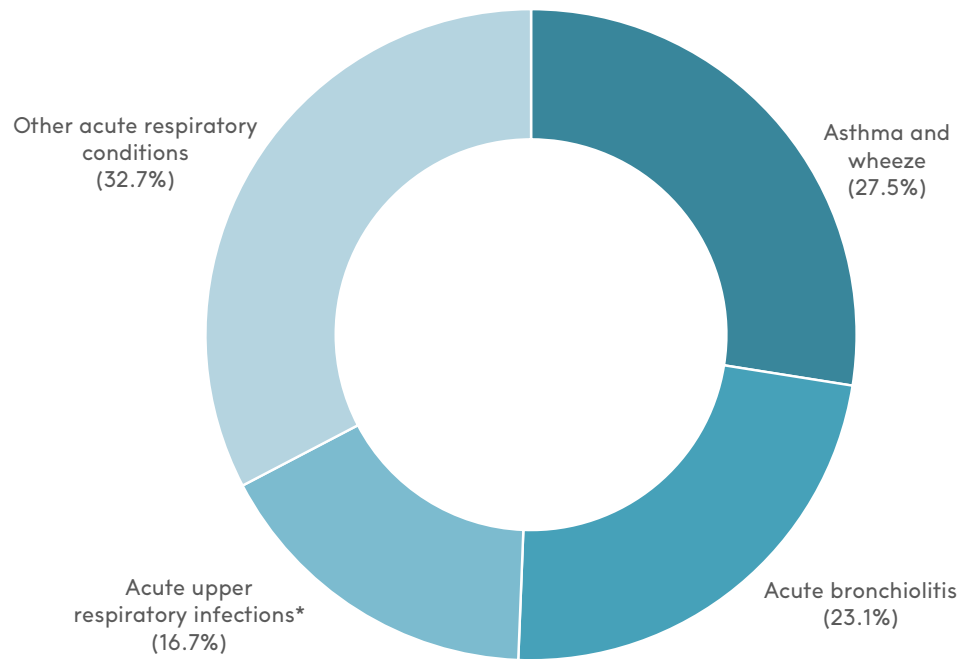


Figure 4.2 Causes of hospitalisations for respiratory conditions in children, Aotearoa NZ, 2016–20.

Source: NMDS.

*Multiple or unspecified sites

Other acute respiratory conditions include influenza and lower respiratory infections such as bronchitis, pneumonia, and bronchiectasis (excluding cystic fibrosis).

Figure 4.3 shows that respiratory conditions vary by age. The most frequent cause of hospitalisation for children younger than 5 years was acute bronchiolitis. The most frequent cause of hospitalisation for older children over this 5-year period was asthma.

AGE GROUP	MOST FREQUENT	SECOND-MOST COMMON	THIRD-MOST COMMON
0–4 years	Acute bronchiolitis (28.5%)	Acute upper respiratory infections* (18.6%)	Wheeze (15.5%)
5–9 years	Asthma (35.2%)	Pneumonia (11.8%)	Acute upper respiratory infections* (9.1%)
10–14 years	Asthma (39.3%)	Pneumonia (11.7%)	Acute lower respiratory infection (7.3%)

Figure 4.3: Leading causes of hospitalisations for respiratory conditions in children by age group, Aotearoa NZ, 2016–20.

Source: NMDS.

*Multiple or unspecified sites; Organism unspecified; Unspecified sites.

TREND:

Since 2000, rates of hospitalisations for asthma and wheeze have increased, and most notably for children younger than 5 years (Figure 4.4). During the period of restrictions associated with the COVID-19 pandemic in 2020, the rate of hospitalisation for asthma and wheeze declined by 44% to 4.1 hospitalisations per 1,000 children in 2020. The most significant reductions were for younger children, but even after this drop the rate for children younger than 5 years remained high, at about 9.0 hospitalisations per 1,000 children in 2020. The government’s 2019/20 Health Survey¹⁵ found that in 2020, one in seven children aged 2–14 years (13.5%) were using medication for diagnosed asthma.

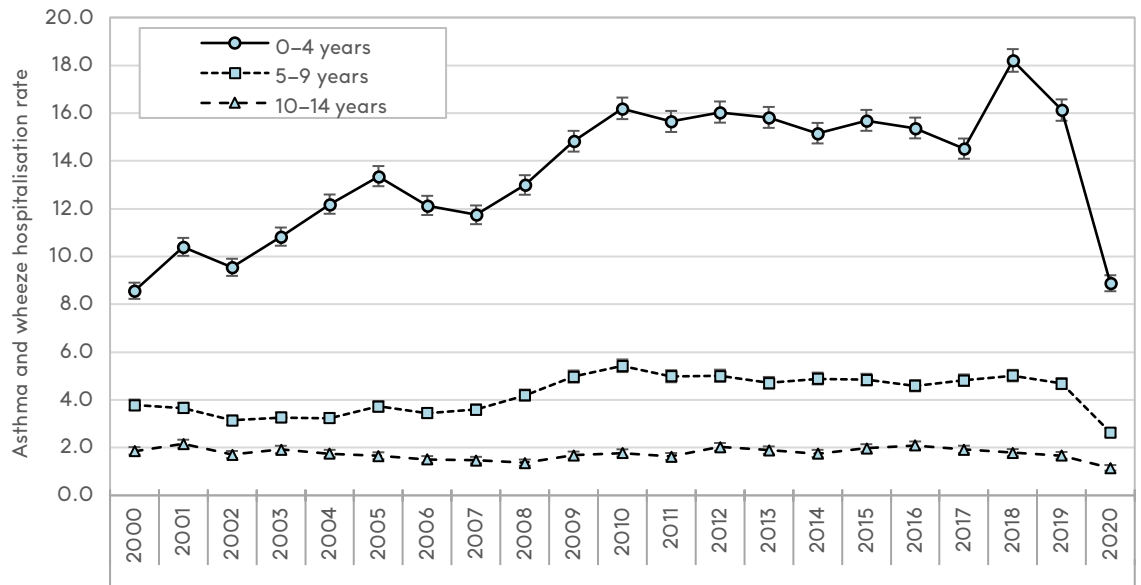


Figure 4.4: Trends in hospitalisations of children for asthma and wheeze by age, Aotearoa NZ, 2000–20.
 Source: NMDS and NZCYES estimated resident population.
 Rate per 1,000 0–14 year olds

INEQUALITIES IN RESPIRATORY HEALTH IN AOTEAROA NZ

Rates of hospitalisations for respiratory conditions vary widely for children in different ethnic and socioeconomic groups in Aotearoa NZ, revealing a high degree of inequality.^{3,13,16,17}

According to the 2019/20 NZ Health Survey,¹⁵ asthma prevalence in children aged 2–14 years was highest in Māori children (22.4%) compared with other ethnic groups. The risk of being hospitalised for asthma and wheeze was almost double for Pasifika and Māori children compared with other children.^{13,16} Pneumonia hospitalisation rates are four times higher for Pasifika children, and 60% higher for Māori children, than for children of other ethnic groups.¹²

Figure 4.5 shows the proportion of hospitalisations that could potentially be reduced if inequalities were eliminated. For instance, from 2016 to 2020, if Pasifika children had the same rate of hospitalisation for asthma and wheeze as children of “European/Other” ethnicities (reference group), their rate of hospitalisations would decrease by 66%. This graph shows that rates of hospitalisation for asthma and wheeze were also disproportionately high in children of Middle Eastern, Latin American, and African ethnicities.

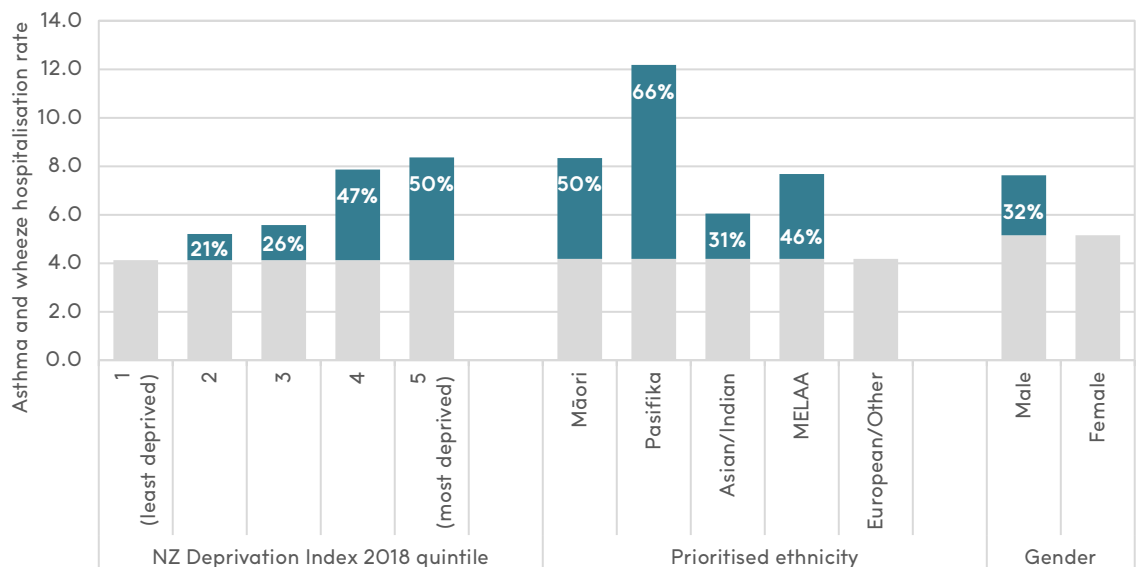


Figure 4.5: Potential reduction (attributable fraction) in hospitalisation rates for asthma and wheeze in children 1 year and older by demographic factors, Aotearoa NZ, 2016–20.
 Source: NMDS and NZCYES estimated resident population.
 MELAA = Middle Eastern, Latin American, or African

Figure 4.6 shows that over the past two decades the hospitalisation rates for asthma and wheeze increased for all children except those of “European/Other” ethnicities. Pasifika children have consistently experienced the highest rates of hospitalisation, but Māori children and children of Middle Eastern, Latin American, African, Asian, and Indian ethnicities also experienced higher rates than children of European / other ethnicities.

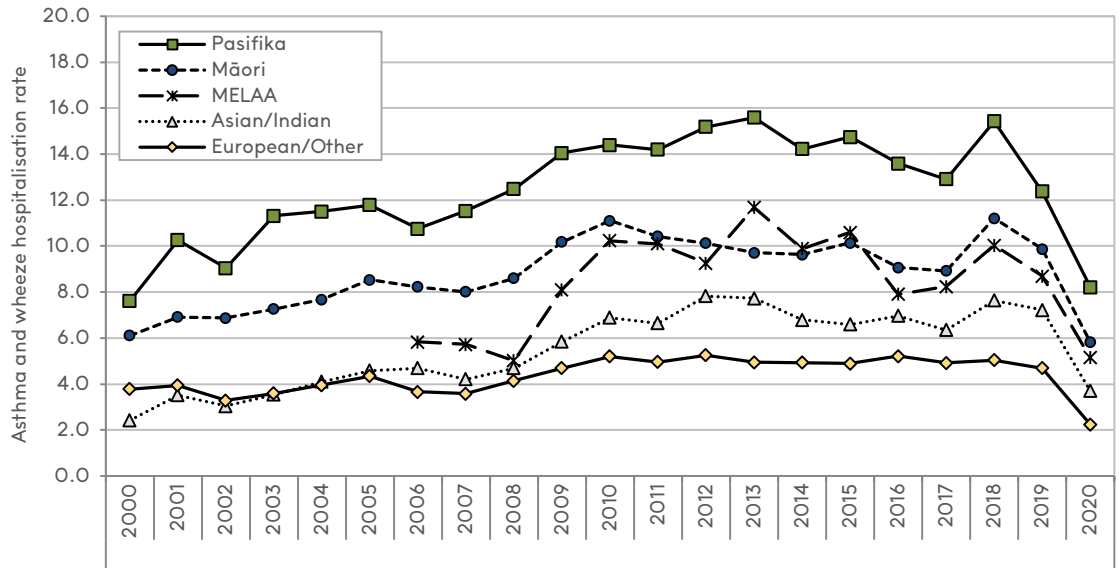


Figure 4.6: Trends in hospitalisation rates of children for asthma and wheeze by ethnic group, Aotearoa NZ, 2000–20.

Source: NMDS and NZCYES estimated resident population.
MELAA = Middle Eastern, Latin American, or African

According to the 2019/20 NZ Health Survey,¹⁵ asthma in children aged 2–14 years was most common for children who lived with the most socioeconomic deprivation (15.5%). Acute (upper and lower) respiratory infections, acute bronchiolitis, ‘asthma and wheeze’, and pneumonia were all independently associated with socioeconomic deprivation.¹³ The risk of being hospitalised for ‘asthma and wheeze’ was almost doubled for children who lived in areas of high socioeconomic deprivation.^{13,16}

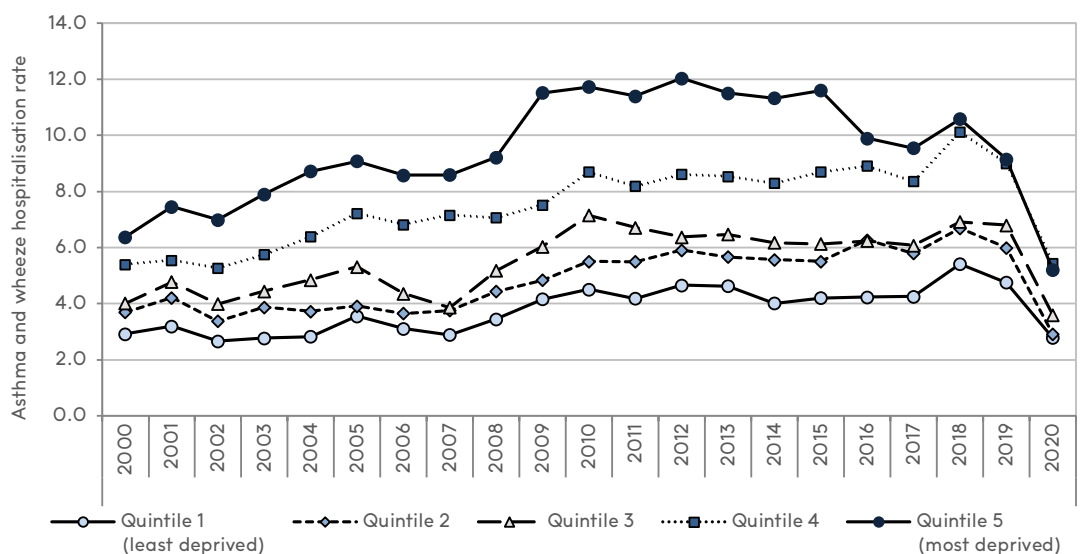


Figure 4.7: Trends in hospitalisation rates of children for asthma and wheeze by deprivation quintile, Aotearoa New Zealand, 2000–20.

Source: NMDS and NZCYES estimated resident population.

Figure 4.7 shows that children living in areas with the most deprivation have had the highest hospitalisation rates for 'asthma and wheeze' over the past two decades. However, during the period of restrictions associated with the COVID-19 pandemic in 2020, the hospitalisation rates for 'asthma and wheeze' decreased for children of all ethnicities and those living with all levels of deprivation.

DATA ON RESPIRATORY CONDITIONS

The rates of children treated in hospital for respiratory-related conditions have been calculated using numerator data from the National Minimum Dataset (NMDS).¹⁸ Hospitalisations due to respiratory conditions in children were identified using the diagnostic codes at discharge (between Jan 2000 and May 2021). Definitions used for identifying hospitalisations were: acute and arranged (semi-acute) hospitalisations with acute upper respiratory infections (ICD-10-AM: J00–J06), asthma and wheeze (J45, J46, R06.2), acute lower respiratory infections – including acute bronchitis (J20), acute bronchiolitis (J21), pneumonia (J12–J16, J18, J10.O, J11.O) – and bronchiectasis (J47; excluding cystic fibrosis), or influenza (J09–J11) as the primary diagnosis.

Data on diagnosed asthma were sourced from the New Zealand Health Survey, based on the prevalence of asthma diagnosed by a doctor among children aged 2 to 14 years who were currently using inhalers, medicine, tablets, pills, or other medication.^{15,19}

Currently, data are not available for children seen by primary care services (such as in general practice or in nurse-led school clinics) and available data on dispensed treatments are limited. Future reports will consider inclusion of other sources, such as visits to the emergency department lasting less than 3 hours and pharmacy-dispensed treatments.



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05

RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE

On average **140** children are hospitalised for acute rheumatic fever or rheumatic heart disease every year



Hospitalisations for acute rheumatic fever are **140 times** higher for Pasifika children than for children in European and other ethnic groups

KEY FINDINGS

- The rates of hospitalisations for children with acute rheumatic fever and rheumatic heart disease have remained high over the past 20 years in New Zealand, despite efforts to reduce them through targeted programmes.
- This burden of disease is particularly high for Pasifika children, for whom hospitalisation rates for acute rheumatic fever were 140 times higher than for children of “European or Other” ethnic groups between 2016 and 2020.
- Māori children also experienced inequitable rates of disease, with almost 50 times the rate of hospitalisation for acute rheumatic fever than children of “European or Other” ethnicities during this period.
- Children living in areas with the most deprivation experience the highest hospitalisation rates for acute rheumatic fever and rheumatic heart disease.

WHY PRIORITISE RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE IN CHILDREN?

Acute rheumatic fever (ARF) is an autoimmune disease which can arise from an infection with Group A Streptococcus (GAS) bacteria. GAS can infect the upper respiratory tract (typically presenting as a sore throat) or the skin.¹⁻⁴

The more times a child has an episode of ARF, the more likely they will be to develop rheumatic heart disease (RHD). RHD is long-term damage to heart valves caused by recurrent episodes of ARF which scar and stiffen the valves. The resulting heart disease can be very serious, causing complications such as stroke, pregnancy complications, and early death if not treated. In Aotearoa New Zealand, on average around 140 people die from RHD every year.⁵

More research is needed to understand the risk factors and triggers for both RF and RHD.^{3,4,6-10} Evidence shows that early detection and treatment of GAS infections, with regular injections of antibiotics to prevent future infections, can reduce the risk of developing ARF, and consequently RHD.¹¹ Echocardiography can be used to scan children in high-risk groups, and to detect damage to heart valves at an early stage, when regular antibiotics can prevent development of severe disease. However, early detection requires community awareness of the disease, screening programmes including school-based clinics, effective secondary prevention services, and better access to and quality of primary healthcare services.¹²⁻¹⁶

Current preventative treatment consists of a long-acting antibiotic (benzathine penicillin G) which must be administered on a monthly basis over 10 years or more to maintain protection against recurrence of ARF. Healthcare professionals face significant challenges in ensuring that children keep up this schedule of injections over such a long period.

Because recurrent GAS infections, and therefore RF and RHD, are associated with socioeconomic deprivation, measures such as improvement of housing and household conditions can also support prevention of these diseases.

WHAT IS THE STATE OF RHEUMATIC FEVER FOR CHILDREN IN AOTEAROA NZ?

Rates of both ARF and RHD in New Zealand are among the highest reported in developed countries around the world. Since 2000, nearly 3,000 children aged 0–14 years have been hospitalised with ARF or RHD in New Zealand.

Between 1 July 2012 and 30 June 2017, the NZ government funded a Rheumatic Fever Prevention Programme which involved increasing disease awareness via health promotion campaigns and school-based screening and treatment for sore throats in the ten regions which together contained 91% of ARF cases in NZ. All ten of these District Health Boards were in the North Island of New Zealand, Te Ika ā Māui.

LATEST DATA:

Figures 5.1 and 5.2 show that before the implementation of the NZ Rheumatic Fever Prevention Programme, the rate of hospitalisation for either ARF or RHD had been gradually increasing. Hospitalisations for both conditions were reduced during the implementation of the Programme, and subsequently increased in 2019.

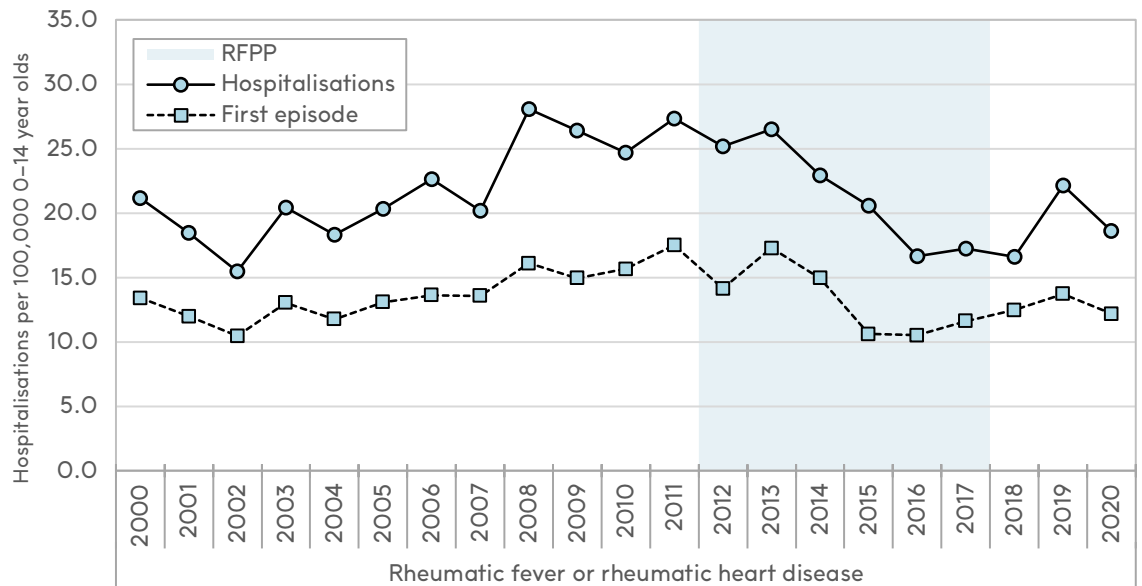


Figure 5.1: Number of hospitalisations for rheumatic fever or rheumatic heart disease in children aged 0–14 years, Aotearoa NZ, 2000–20.

Source: NMDS and NZCYES estimated resident population.

RFPF = Rheumatic Fever Prevention Programme (July 2012–June 2017)

Rate (per 100,000)

LATEST DATA:

Between 2016 and 2020, nearly 500 children had a first episode of acute rheumatic fever requiring hospital admission (a rate of 10 per 100,000 children), and around 80 had a first admission to hospital with RHD with no preceding hospitalisation for ARF (2 per 100,000 children).

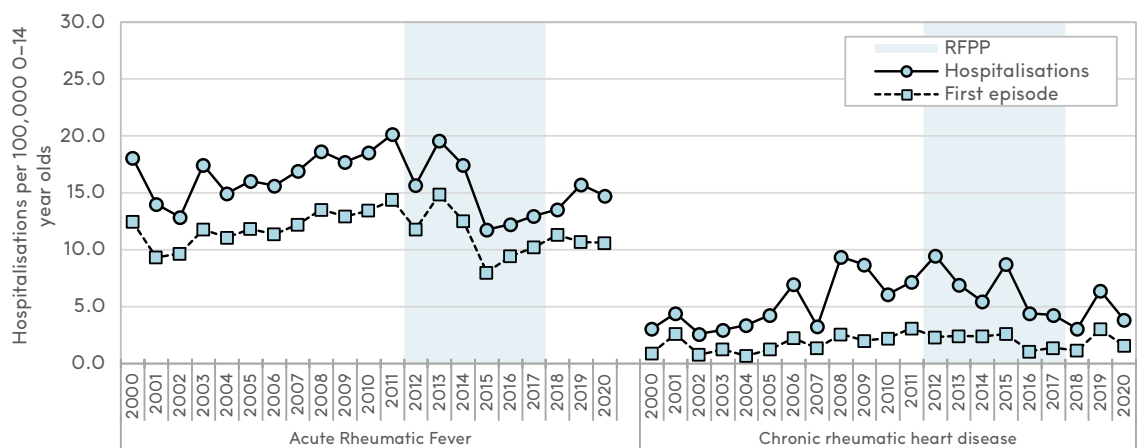


Figure 5.2: Trends in hospitalisations of children for rheumatic fever or rheumatic heart disease, by primary diagnosis, Aotearoa NZ, 2000–20.

Source: NMDS and NZCYES estimated resident population.

RFPF = Rheumatic Fever Prevention Programme (July 2012–June 2017)

LATEST DATA:

After restrictions associated with the COVID-19 pandemic in 2020, the number of hospitalisations of children with ARF and for RHD decreased, with a 15% decline compared to 2019. Hospitalisations of children with ARF decreased by 6% and by 40% for RHD compared to 2019. In 2020, children experienced about 140 hospitalisations for ARF and around 40 for RHD. More research is needed to understand the reason for these temporal trends in hospitalisation rates.

LATEST DATA:

Almost all children (93%; 122 children) hospitalised in 2020 with ARF or RHD were aged between 5 and 14 years, and more than half were aged 10–14 years. The ARF hospitalisation rate in 2020 was 16 per 100,000 for 5–9-year-olds and 25 per 100,000 for 10–14-year-olds. Fewer than 10 hospitalisations for ARF in 2020 involved under-5-year-olds; however, in the preceding decade there were only two hospitalisations per year in this age group.

TREND:

Figure 5.3 shows that hospitalisation rates for both ARF and RHD have remained highest in older children over the past two decades.

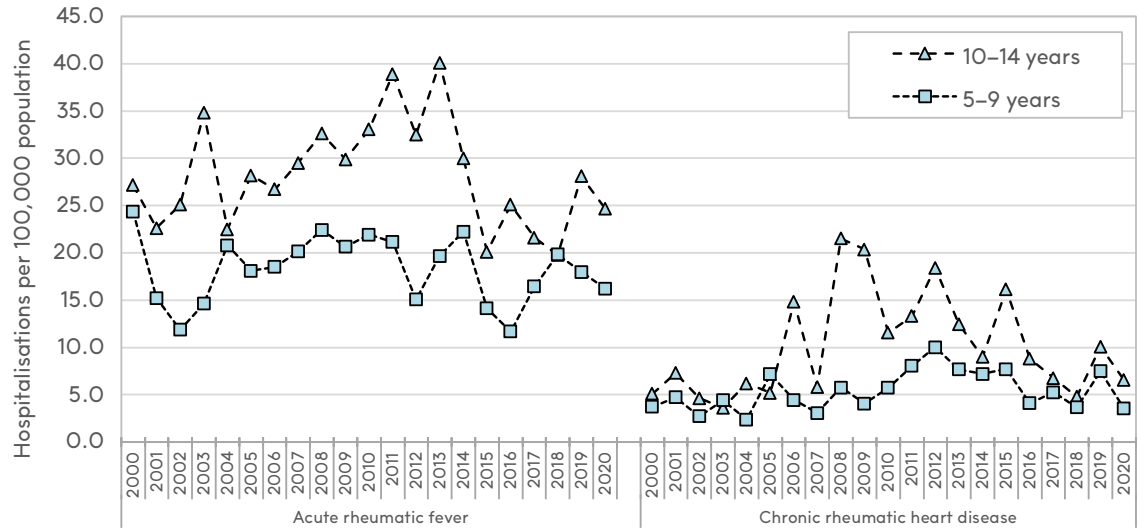


Figure 5.3: Trends in hospitalisations of children for rheumatic fever or rheumatic heart disease, by primary diagnosis and age group, Aotearoa NZ, 2000–20.

Source: NMDS and NZCYES estimated resident population. Rates for under-5 year olds suppressed due to small numbers



During 2016–2020,
Pasifika children
were 140 times
more likely and

Māori children
49.5 times
more likely

to be hospitalised for
Rheumatic Fever than
'European/Other' children



INEQUALITIES IN RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE IN AOTEAROA NZ

Data show that Pasifika children experience higher rates of hospitalisation for ARF and RHD than others, as do Māori children and children living in more socioeconomically deprived areas, particularly in the North Island.^{11,17,18}

Figures 5.4 and 5.5 show significant differences in hospitalisation rates for ARF and RHD, respectively. For instance, between 2016 and 2020, the rate of hospitalisations of Pasifika children with ARF was 140 times higher than the rate for children of “European/Other” ethnic groups (reference group). Māori children also experienced relatively high rates of hospitalisation, as did those living in areas of high socioeconomic deprivation. High rates of disease are associated with barriers that affect early diagnosis and appropriate care in the health system, such as geographic distance, cost, and lack of communication and trust between health providers and communities.¹⁹

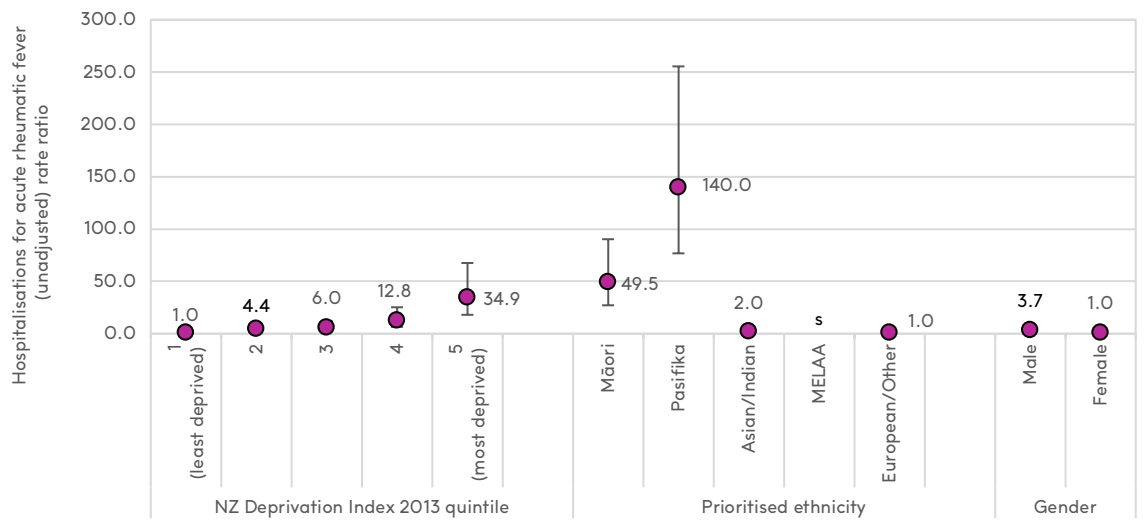


Figure 5.4: Relative differences in hospitalisation rates of children with acute rheumatic fever by demographic factors, Aotearoa NZ 2016–20

Source: NMDS and NZCYES estimated resident population.

MELAA = Middle Eastern, Latin American, or African. “s” suppressed rates. Rates for MELAA were suppressed due to small numbers.

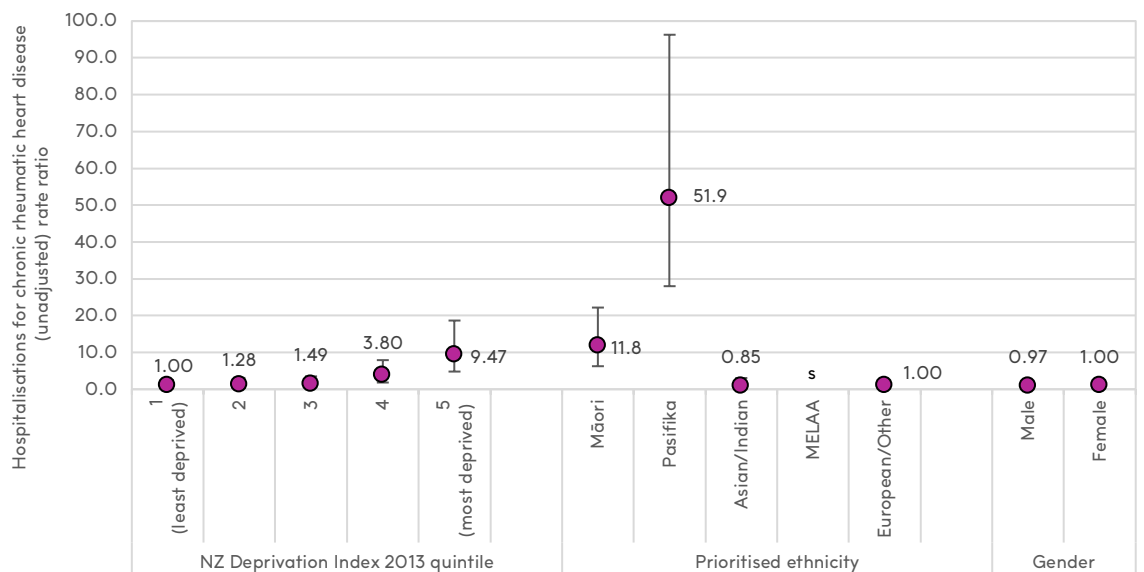


Figure 5.5: Relative differences in hospitalisation rates of children with rheumatic heart disease by demographic factors, Aotearoa NZ, 2016–20.

Source: NMDS and NZCYES estimated resident population.

MELAA = Middle Eastern, Latin American, or African. “s” suppressed rates. Rates for MELAA were suppressed due to small numbers.

Figure 5.6 shows that Pasifika children have experienced the highest rates of hospitalisation for both ARF and RHD over the two decades between 2000 and 2020. Hospitalisation rates have also remained disproportionately high for children living in areas with the most socioeconomic deprivation (Figure 5.7).

After the COVID-19 pandemic restrictions in 2020, hospitalisations for ARF decreased, for Pasifika children, for children of European/Other ethnic groups, and regardless of deprivation quintile.

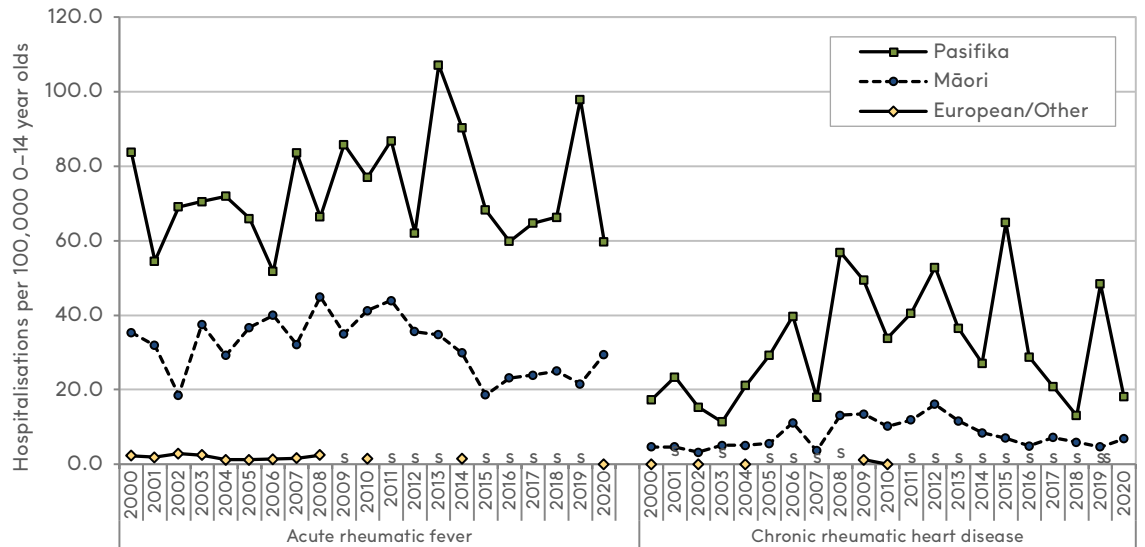


Figure 5.6: Trends in hospitalisation rates of children with rheumatic fever or with rheumatic heart disease by ethnicity, Aotearoa NZ, 2000–20.

Source: NMDS and NZCYES estimated resident population.

“s” suppressed rates. Rates for Asian/Indian and MELAA were suppressed due to small numbers

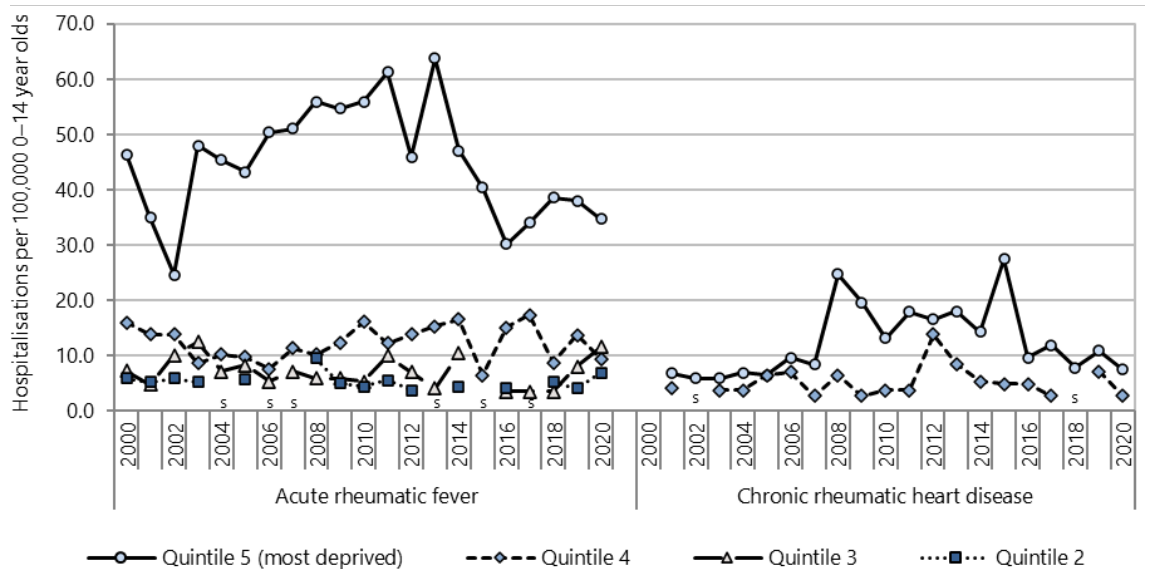


Figure 5.7: Trends in hospitalisation rates of children with rheumatic fever or with rheumatic heart disease by deprivation quintile, Aotearoa NZ, 2000–20.

Source: NMDS and NZCYES estimated resident population.

“s” suppressed rates. ARF rates suppressed due to small numbers for quintile 1 (least deprived) and RHD rates suppressed for quintiles 1–3

DATA ON RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE

The data for hospitalisation rates of children treated for acute rheumatic fever and/or rheumatic heart disease use numerator data from the National Minimum Dataset (NMDs).²⁰

Hospitalisations for ARF and/or RHD in children were identified using the diagnostic codes at discharge. Definitions used for identifying hospitalisations were: hospitalisations with acute rheumatic fever (ICD-10-AM: I00–I02) or rheumatic heart disease (ICD-10-AM: I05–I09) as the primary diagnosis. The first episode of hospitalisation for acute rheumatic fever was defined as the first hospitalisation where ARF was the primary diagnosis and there had been no previous hospitalisation for either ARF or RHD from 1988. It is possible that hospitalisation data can over-count cases due to miscoding or misdiagnosis. Episodes of ARF are notifiable, and data are available, but may also undercount the true figures.

National data for acute rheumatic fever and rheumatic heart disease are limited, although all regions with high prevalences of ARF have developed registers for the delivery of secondary prophylaxis.²¹ A national survey found very low (4%) recurrence rates for rheumatic fever in the young due to these registers, but multiple factors led to higher recurrence rates in adolescents and young adults.^{21,22} The government has agreed to fund a national ARF/RHD patient register.

Currently, no data are available for children seen by primary care services (such as in general practice or in nurse-led school clinics) and limited data are available on dispensed treatment. Future reports will consider inclusion of other sources, such as pharmacy-dispensed treatments.

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06

SKIN INFECTIONS



Children younger than

2 years

are more likely to be admitted to

hospital

for skin infections than older children.



Children in Aotearoa New Zealand
have some of the

highest rates

of **serious skin infections**

among **resource-rich countries**

KEY FINDINGS

- Skin infections are very common in New Zealand children, but most can be treated in the community.
- Serious skin infections like cellulitis make up nearly 4% of hospital admissions for children, with the highest rates in 1-year-olds and other young children.
- The rate of hospitalisations for children with serious skin infections was increasing until 2011, but has been gradually decreasing since then.
- Māori and Pasifika children have higher rates of hospitalisation for skin and soft tissue infections compared with children of European and other ethnicities.
- Hospitalisation rates for skin infections are highest in children living in areas with the most socioeconomic deprivation.

WHY PRIORITISE SKIN INFECTIONS IN CHILDREN?

Skin infections are very common in children in Aotearoa New Zealand. They can be caused by bacteria, fungi, viruses, or parasites.¹ Skin damage (through burns, insect or animal bites, cuts and abrasions, chickenpox, scabies, or skin conditions such as eczema) can provide an entry point for infection. Children in Aotearoa NZ have relatively high rates of childhood skin infections, particularly for serious skin infections such as cellulitis.²

Children with skin infections experience symptoms such as itching, pain, redness, swelling, and tenderness, and may also have fever. Hair follicles which become infected can fill with pus to become boils or abscesses, depending on their size and depth. Sores can be blistered, crusted, or weeping. Most mild skin infections can be treated at home by keeping infected sores clean and covered, and using over-the-counter medicines. Other infections can be effectively managed in primary care.³

If skin infections are not detected and treated early, children may need to be admitted to hospital.⁴ Serious skin infections may need intravenous antibiotics (e.g. to treat cellulitis or sepsis) or surgical interventions for abscesses or complex wounds.^{5,6}

WHAT IS THE STATE OF SKIN HEALTH FOR CHILDREN IN AOTEAROA NZ?

For every child who is sent to hospital for a skin infection, GPs and other primary-care providers are estimated to treat 14 cases of skin infections in the community.⁷

Skin infections make up nearly 4% of hospitalisations for children.⁸ Children younger than 2 years have higher rates of hospitalisations for skin infections than other children.⁸

TREND:

Between 2000 and 2011, hospitalisation rates for children with skin infections increased, but since then, they have decreased, most notably for children younger than 5 years (Figure 6.1). The reduction in rates coincided with the implementation of the Rheumatic Fever Prevention Programme from 2012 to 2017, which primarily focused on school-based management of sore throats, but was extended in eight of the ten District Health Boards where the Programme was implemented to include prevention and management of skin infections.¹¹

During the period of restrictions associated with the COVID-19 pandemic in 2020, hospitalisation rates for skin infections decreased, with rates in 2020 being 26% lower than during the previous year; the largest proportionate decreases were in hospitalisation rates for children younger than 10 years old. Despite this, children had more than 2,100 hospitalisations with skin infections in 2020. Hospitalisation rates remained highest for those younger than 5 years (3.8 hospitalisations per 1,000 children).

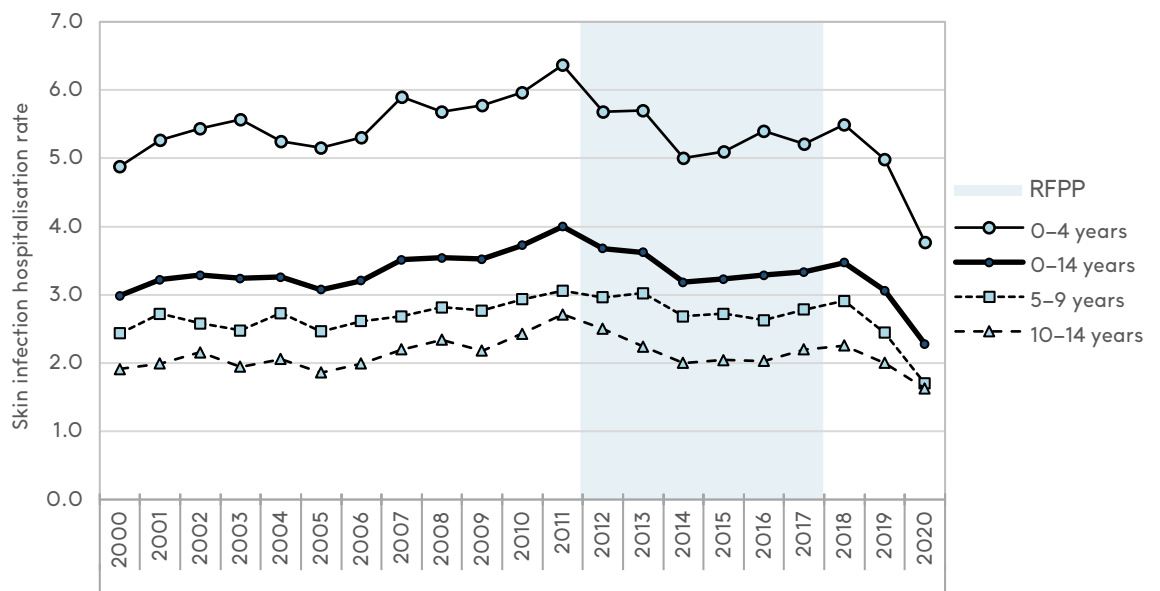


Figure 6.1: Trends in hospitalisations of children for skin infections by age, Aotearoa NZ, 2000-20.

Source: NMDS and NZCYES estimated resident population.

RFPF = Rheumatic Fever Prevention Programme (July 2012–June 2017)

LATEST DATA:

The main causes for hospitalisation due to skin infections are cellulitis, cutaneous abscesses, furuncles, and carbuncles (boils and blocked pores).⁸ Figure 6.2 shows that from 2016 to 2020, the cause of hospitalisation for skin infections was most often recorded as 'cellulitis', followed by diagnosis of 'cutaneous abscess, furuncle, and carbuncle'.⁸

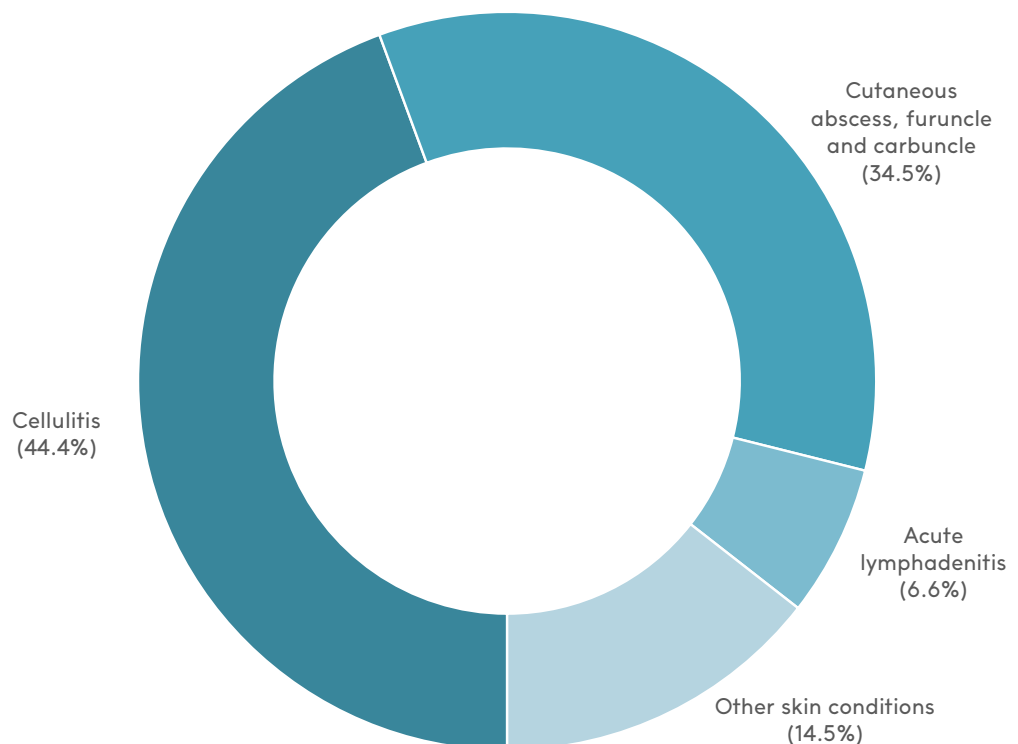


Figure 6.2 Causes of hospitalisation due to skin infections in children, Aotearoa NZ, 2016-20.

Source: NMDS.

INEQUALITIES IN SKIN HEALTH FOR CHILDREN IN AOTEAROA NZ

Rates of skin infection differ widely in children from different ethnic and socioeconomic groups.

The rates of both primary care consultations and hospitalisations for skin infections were significantly higher for Māori than for other children.⁹ Both Pasifika and Māori children were at higher risk of being hospitalised for skin infections than other children.⁹ Figure 6.3 shows the proportion of hospitalisations that could potentially be reduced if inequalities were eliminated. For instance, during 2016–2020, if Pasifika children had the same hospitalisation rate for skin infections as children of Asian or Indian ethnicities (reference group), their rate of hospitalisation would have decreased by 84%.

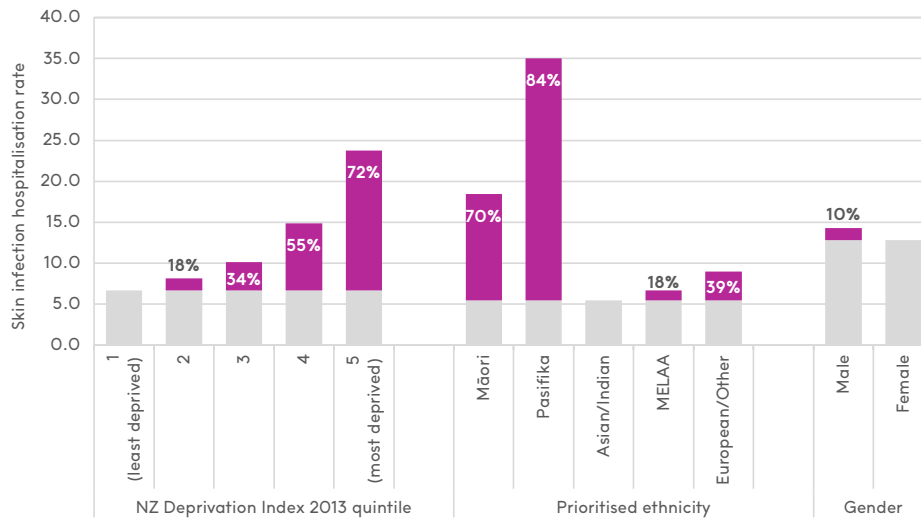


Figure 6.3: Potential reduction (attributable fraction) in hospitalisation rate for skin infections in children aged under-15 years by demographic factors, Aotearoa NZ 2016–20.

Source: NMDS and NZCYES estimated resident population.

Since 2000, rates of hospital admissions for Pasifika children with skin infections have been higher than those for other children (Figure 6.4).

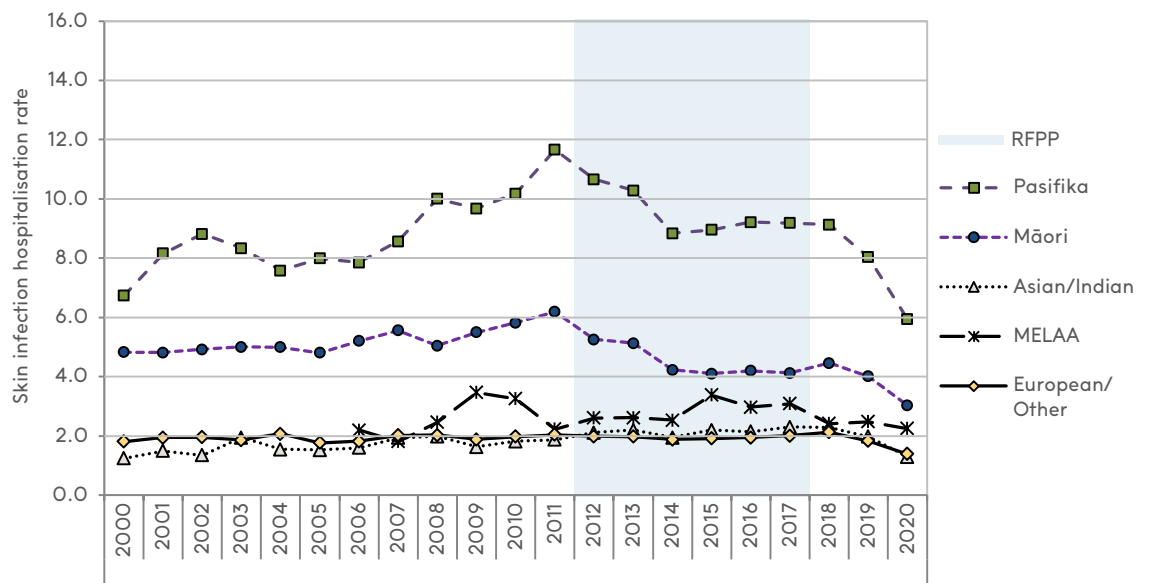


Figure 6.4: Trends in rates of hospitalisations for serious skin infections by ethnicity, Aotearoa NZ 2000–20.

Source: NMDS and NZCYES estimated resident population.

MELAA = Middle Eastern, Latin American, or African
RFPF = Rheumatic Fever Prevention Programme (July 2012–June 2017)

Research has shown that rates of hospitalisations for skin infections are affected by factors such as malnutrition (including obesity), crowded housing conditions, and affordability of hot water, electricity, and machines for washing and drying clothes.² Children living in areas with more socioeconomic deprivation are at higher risk of being hospitalised for skin infections than children living in less deprived areas.⁹ Since 2000, rates of hospitalisation for skin infections have remained highest for children living in areas with the most socioeconomic deprivation, although these differences have become smaller since 2011 (Figure 6.5).

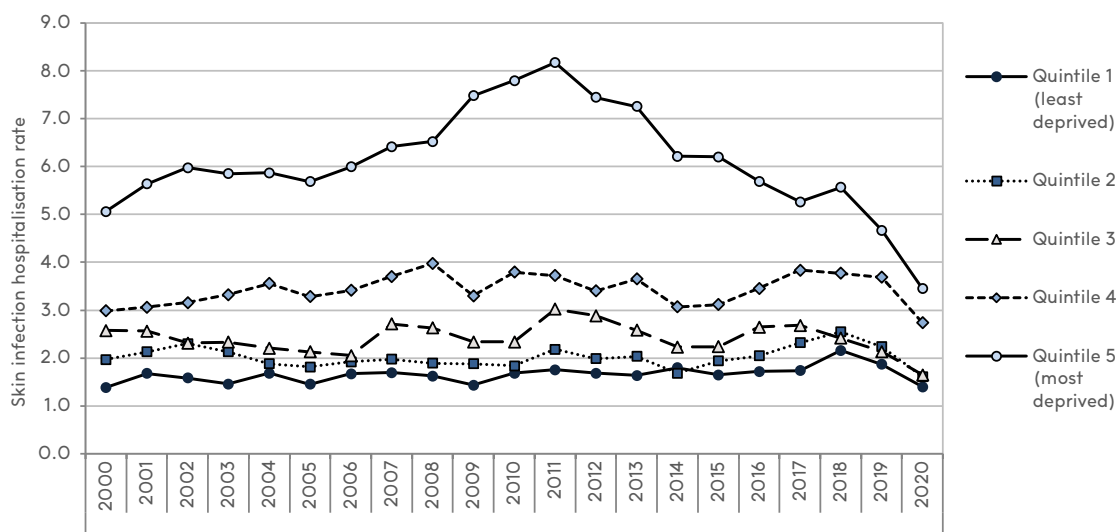


Figure 6.5: Trends in rates of hospitalisations for serious skin infections by deprivation quintile, Aotearoa NZ, 2000–20.

Source: NMDS and NZCYES estimated resident population.

DATA ON SKIN INFECTIONS

The rate of hospitalisations for children with skin infections uses numerator data from the NMDS.¹⁰ Hospitalisations due to skin infections were identified from diagnostic codes for cause of hospital attendance (between 2000 and 2020). These data are limited to acute and arranged admissions to hospital of 0–14 year-olds. Definitions used for identifying hospitalisations for children were: acute and arranged (semi-acute) hospitalisations with skin and subcutaneous tissue infections (ICD-10-AM L00–L08; includes staphylococcal scalded skin syndrome, impetigo, cutaneous abscess, furuncle and carbuncle, cellulitis, acute lymphadenitis, pilonidal cyst); hordeolum and other deep inflammation of eyelid (H00.0); blepharitis (non-infectious dermatoses of eyelid; H01.0); abscess, furuncle and carbuncle of the nose (J34.0); and pyogenic granuloma (L98.0) as the primary diagnosis.

Except for reports of hospital events, national data for skin infections are limited. No data are available for children seen by primary care services (such as in general practice or in nurse-led school clinics). Future reports may include other sources, such as visits to the emergency department lasting less than 3 hours or pharmacy-dispensed treatments.

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07

CONCLUSION

The intention of this exercise has been to collate available data on the serious health problems and inequities for children in Aotearoa New Zealand, and use it to generate consensus on priorities for child health, and galvanise the efforts of government, healthcare professionals, not-for-profit organisations, and wider society. Cure Kids' 50-year mission is to transform the "State of Child Health", by enabling research which has the potential to solve the toughest challenges for children.

The four health conditions described in this report have been selected because of the high burden of disease among children in Aotearoa New Zealand. All four can have serious acute effects, as well as long-term effects which compromise the health and wellbeing of children, and their ability to thrive. Relying solely on treating rather than preventing these conditions creates a significant burden for communities and for the health system, with associated costs for the government. The rates of all four diseases among children in Aotearoa New Zealand are too high relative to other resource-rich countries, and for two of the four (dental disease and respiratory conditions) rates of hospital admissions have continued to increase over the past two decades.

All of these diseases affect underserved communities within our population, with unacceptably high rates for Māori and Pasifika children, and for children living in areas with the most socioeconomic deprivation. However, the pattern of hospitalisation rates with respect to socioeconomic disparities for these four health conditions does not exactly match the pattern for ethnic disparities, revealing the complexity of risk factors for some of these diseases.

In some ways, New Zealand's experience during the COVID-19 pandemic represented an unrepeatable natural experiment, which changed the patterns of disease and hospital admissions for all four of these health conditions. However, interpretation of the data from the COVID-19 era is complex. For example, for dental disease, the 21% reduction in hospitalisations in 2020 compared with the previous year likely reflects measures such as lockdowns which prevented dental services from operating, and forced postponement of scheduled treatments. By contrast, for respiratory conditions, COVID-19 response measures such as closing the borders, mask-wearing, and community lockdowns did have had a real effect on transmission of respiratory infections, with a 52% reduction in hospitalisations between 2019 and 2020. Subsequently however, hospitals have seen sharp increases in admissions due to serious respiratory infections. The effects of COVID-19 on both skin infections and rheumatic fever were also complex, with different patterns seen during lockdowns and subsequently.

Research is needed to elucidate the reasons for these temporal changes, which might include factors such as transmission of disease, conditions in children's immediate environments, or access to healthcare during the pandemic period. New Zealand has an opportunity to investigate whether there are feasible elements of the pandemic-response measures used to control COVID-19 which could be used to reduce the burden of some of these diseases for children on an ongoing basis. Successful strategies such as community-led delivery of vaccination and health education could potentially avert some of the inequalities shown so clearly in this report.

This report highlights the urgent need for New Zealand to prioritise implementation of evidence-based measures to detect, prevent, and treat disease as early as possible, and to improve healthcare for children. Our efforts to reverse these trends will only be successful if they incorporate holistic, collaborative, and culturally appropriate approaches, with leadership from Pasifika and Māori communities. These measures should include strategies to allow whānau to self-manage care for their children, with equitable access to healthcare. Upstream measures designed to end poverty and address risk factors such as unsafe housing conditions and poor nutrition, can be expected to have positive effects on all four of these health issues.

However, where evidence gaps remain, there is a need for research to develop a pipeline of vital information and tools that will accelerate the efforts of healthcare professionals.

Cure Kids has partnered with researchers at the NZ Child and Youth Epidemiology Service and with clinicians in the Paediatric Society and Royal Australasian College of Physicians (Paediatrics and Child Health Division) to present the best data currently available at the national level. However, this exercise has highlighted gaps in the data, and the need for initiatives to better monitor these health conditions over time. For example, in 2022, the government agreed to fund a national patient register for acute rheumatic fever and rheumatic heart disease, which will assist healthcare professionals to provide continuous care, treatment, and prevention for individual children, and also support preventative public health measures by enabling real-time evaluation of changes.

We have committed to continuing to monitor these four issues, and in 2023, the next report in this series will also present data on the mental health of children in Aotearoa New Zealand.

GLOSSARY OF KEY TERMS

Acute admission to hospital: An unplanned admission on the day of presentation at the admitting healthcare facility.

Arranged admission to hospital: A planned admission to hospital less than 7 days after the decision that hospitalisation is necessary.

Asthma: A common lung condition in which airways become inflamed and narrow. The symptoms include difficulty breathing, chest pain, cough and wheezing.

Bronchiolitis: A chest condition caused by a viral infection, which usually affects infants, and causes rapid breathing, wheezing, and retraction of the chest wall. Bronchiolitis involves inflammation of the bronchioles, the smallest airways in the lungs.

Bronchiectasis: A long-term lung condition where damaged airways cause mucus build-up and repeated, serious lung infections. The main symptom is a wet, chesty cough.

Carbuncle: A cluster of boils that develop under the skin. Carbuncles can cause severe infections and leave scars.

Cellulitis: A common bacterial infection of the lower dermis and subcutaneous tissue. It results in a localised area of red, painful, swollen skin, and systemic symptoms.

Chronic obstructive pulmonary disease: A group of lung diseases that damage the lungs and block airflow. Symptoms include shortness of breath, wheezing or a chronic cough.

Cutaneous abscess: A cavity filled with pus, on any skin surface. Symptoms and signs are a hot, red, swollen and painful lump. The abscess contains white blood cells, dead tissue and bacteria. Treatment is incision and drainage.

Deciduous teeth: Primary or 'baby' teeth that emerge during infancy. A child usually has 20 deciduous teeth.

Dental caries: A disease process that can lead to cavities in the tooth structure that compromise both the structure and the health of the tooth, commonly known as tooth decay.

Furuncle: Also known as a boil; a painful bacterial infection that forms around a hair follicle and contains pus.

Non-communicable diseases: Chronic diseases that cannot pass from one person to another. They are often long-term conditions which significantly reduce quality of life.

Permanent teeth: Secondary or 'adult' teeth that start to emerge at around 6 years of age. A child usually has 32 permanent teeth.

Pneumonia: Serious infection causing inflammation of the lungs (usually viral or bacterial). Children with pneumonia can experience symptoms such as cough, difficulty breathing, fever, chills, and chest pain. If untreated, very severe pneumonia can be fatal.

Wheeze: Defined clinically as musical, continuous sounds caused by breathing through narrowed airways. The underlying causes of wheezing in younger children include bronchiolitis (in infants), preschool wheeze (also called viral-induced wheeze), and asthma.

Rheumatic fever: an inflammatory disease that occurs following an infection with the Group A streptococcus bacteria.

Rheumatic heart disease: a condition in which permanent damage to heart valves is caused by rheumatic fever.



Tribute to Dr Bruce Scoggins

The initiative to create an annual collaborative report on child health in Aotearoa New Zealand came from Dr Bruce Scoggins, as the Chair of Cure Kids' Medical & Scientific Advisory Committee.

Sadly, Bruce passed away in March 2022, after guiding Cure Kids' research strategy for 15 years.

With typical foresight, Bruce saw the need for an annual "snapshot" of the health of children in New Zealand, which could enable Cure Kids to partner with clinicians and researchers to interpret available evidence and target investment to the most urgent priorities for research.

Bruce dedicated his career to health research, and was known for his unfailing energy and encyclopaedic knowledge. His contributions to the research sector in New Zealand have been significant, and his foresight, principles, and wry wit will long be missed.

He Poroporoaki, He Mihi Aroha
E Bruce, moe mai ra e te Rangatira i roto i ngā ringa kaha o te Atua