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Summary of respiratory diseases among Aboriginal and Torres Strait Islander children



Australian Indigenous Health/InfoNet

The Australian Indigenous Health/InfoNet's mandate is to contribute to improvements in Aboriginal and Torres Strait Islander health by making relevant, high quality knowledge and information easily accessible to policy makers, health service providers, program managers, clinicians and other health professionals (including Aboriginal and Torres Strait Islander health workers) and researchers. The Health/InfoNet also provides easy-to-read and summarised material for students and the general community.

The Health/InfoNet achieves its commitment by undertaking research into various aspects of Aboriginal and Torres Strait Islander health and disseminating the results (and other relevant knowledge and information) mainly via its website (healthinfonet.ecu.edu.au). The research involves analysis and synthesis of data and other information obtained from academic, professional, government and other sources. The Health/InfoNet's work in knowledge exchange aims to facilitate the transfer of pure and applied research into policy and practice to address the needs of a wide range of users.

Recognition statement

The Australian Indigenous Health/InfoNet recognises and acknowledges the sovereignty of Aboriginal and Torres Strait Islander people as the original custodians of the country. Aboriginal and Torres Strait cultures are persistent and enduring, continuing unbroken from the past to the present, characterised by resilience and a strong sense of purpose and identity despite the undeniably negative impacts of colonisation and dispossession. Aboriginal and Torres Strait Islander people throughout the country represent a diverse range of people, communities and groups each with unique identity, cultural practices and spiritualities. We recognise that the current health status of Aboriginal and Torres Strait Islander people has been significantly impacted by past and present practices and policies.

We acknowledge and pay our deepest respects to Elders past and present throughout the country. In particular, we pay our respects to the Whadjuk Nyoongar peoples of Western Australia on whose country our offices are located.

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Tell us what you think

We welcome and value your feedback as part of our post-publication peer review process, so please let us know if you have any suggestions for improving this *Summary*.

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Summary of respiratory diseases among Aboriginal and Torres Strait Islander children

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The summary, reviews and more information about respiratory conditions among Aboriginal and Torres Strait Islander people can be viewed at: healthinonet.ecu.edu.au/respiratory.

Contents

About this summary	6
Introduction	6
Factors contributing to Aboriginal and Torres Strait Islander children’s respiratory health	7
The historical, social and cultural context	8
Factors during pregnancy	9
Environmental factors	10
Personal health	12
What do we know about respiratory disease among Aboriginal and Torres Strait Islander children?	13
Acute respiratory infections	14
Chronic respiratory diseases	17
Prevention and management	19
Prevention	19
Management	20
Programs and services	20
Policies and strategies	21
Future directions and research needs	22
Concluding comments	22
References	23



Cover artwork

Bardil by Hughie Brent

Featured icon artwork

by Frances Belle Parker

The HealthInfoNet commissioned Frances Parker, a proud Yaegl woman, mother and artist, to produce a suite of illustrated icons for use in our knowledge exchange products. Frances translates biomedical and statistically based information into culturally sensitive visual representations, to provide support to the Aboriginal and Torres Strait Islander workforce and those participating in research and working with Aboriginal and Torres Strait Islander people and their communities. Frances came to prominence winning the Blake Prize in 2000, making her the youngest winner and the first Indigenous recipient over the 65 year history of the prize.

“Birrinda is the Yaygirr name for the mighty Clarence River (NSW). It is this river that is the life giving vein for the Yaegl people. And it is this river which inspires much of my artwork. I am deeply inspired by my Mother’s land (Yaegl land) and the Island in the Clarence River that my Mother grew up on, Ulgundahi Island. The stories which are contained within this landscape have shaped me as a person as an artist and most recently as a Mother. This is my history, my story and it will always... be my responsibility to share this knowledge with my family and my children.”



About this summary

The Australian Indigenous HealthInfoNet has prepared the *Summary of respiratory diseases among Aboriginal and Torres Strait Islander children* as part of our contribution to support those in the Aboriginal and Torres Strait Islander workforce and those participating in research and working with Aboriginal and Torres Strait Islander people and their communities. This plain language and visual summary provides key information about respiratory diseases among Aboriginal and Torres Strait Islander children in Australia in a style that is easy to engage with and does not require our readers to have an academic or medical background. The summary provides information on how common respiratory diseases are among Aboriginal and Torres Strait Islander children, the risk factors that contribute to respiratory diseases and relevant programs and strategies in place to reduce its impact on individuals and communities.

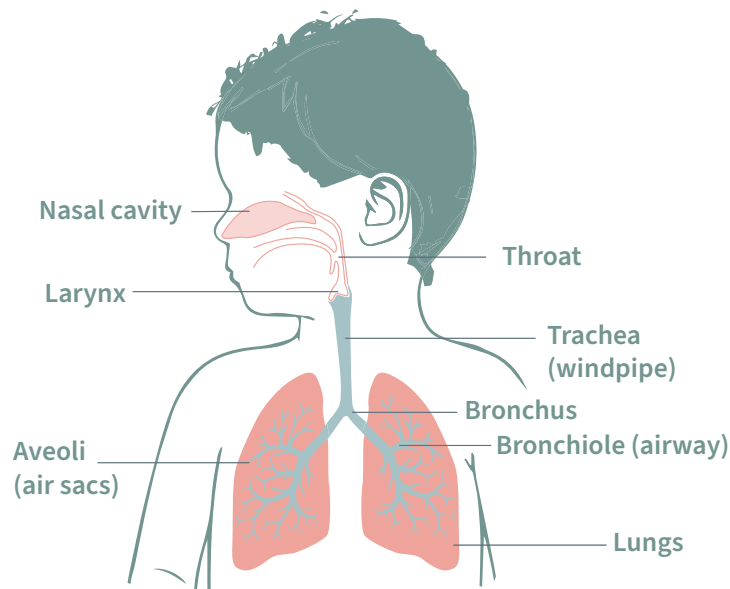
This summary uses information taken from journal articles, government reports, national data collections and national surveys that are available and can be accessed through the HealthInfoNet's publication database.

The accuracy of the identification of Aboriginal and Torres Strait Islander people in health data collections varies across the country. Information about hospitalisations is generally considered to be accurate for all states and territories: New South Wales (NSW), Victoria (Vic), Queensland (Qld), Western Australia (WA), South Australia (SA), Tasmania (Tas), the Australian Capital Territory (ACT) and the Northern Territory (NT). Other statistical information is only considered to be sufficient and complete for certain states and territories. Please note that the statistics presented in this summary do not always include all states and territories, see sources for details.

Introduction

Respiratory diseases affect the lungs or the other parts of the respiratory system [1]. All respiratory diseases reduce the lungs' ability to perform their essential functions of:

- moving oxygen from the lungs into the bloodstream
- removing carbon dioxide from the bloodstream to the lungs [2].

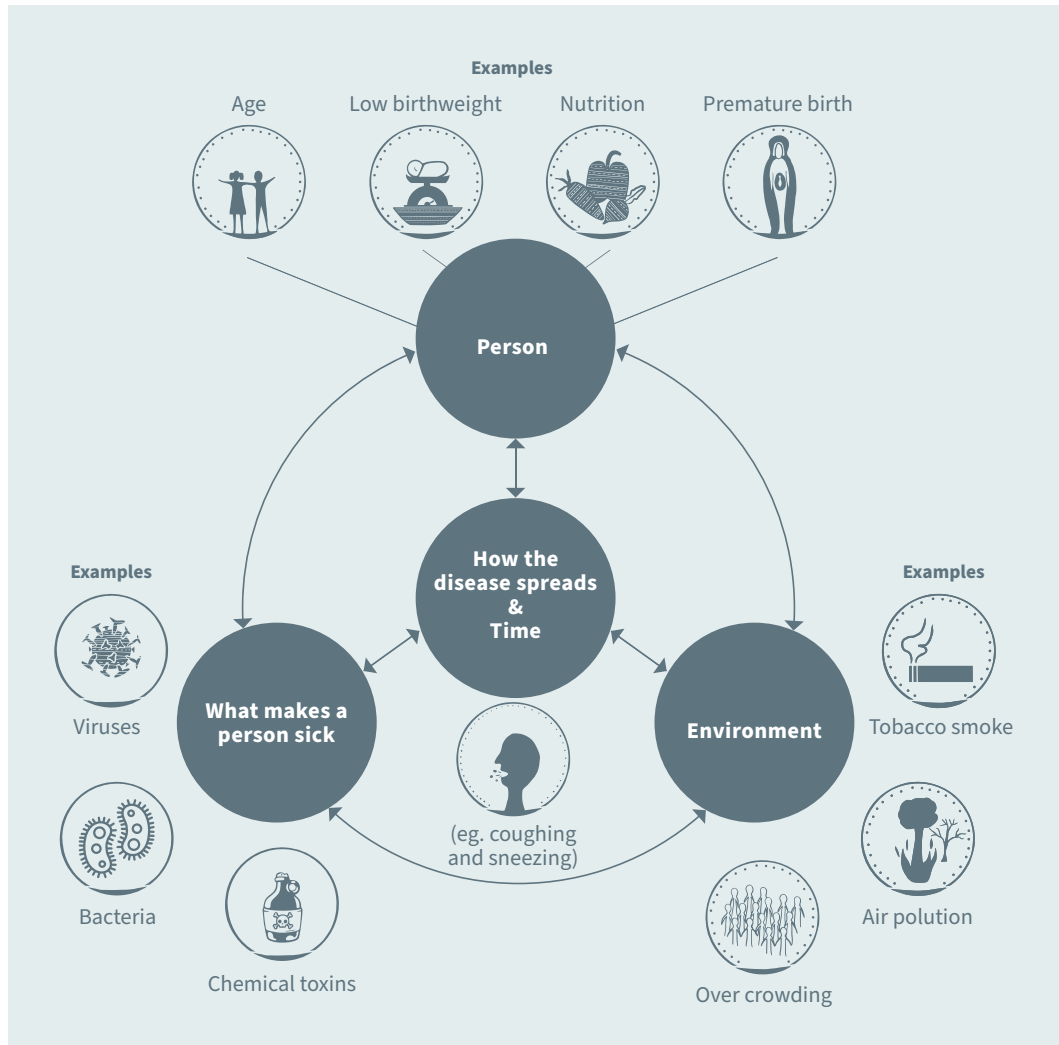


Respiratory diseases are major causes of poor health and even death for Aboriginal and Torres Strait Islander people of all ages [3]. This summary focuses on the respiratory health of Aboriginal and Torres Strait Islander children.

Factors contributing to Aboriginal and Torres Strait Islander children’s respiratory health

Respiratory diseases result from complicated interactions between the person, the environment they live or work in, the germs that cause the disease and how the disease spreads. While a person needs to be exposed to a virus or bacteria to get an infection, whether or not that person actually gets sick from that infection depends on many other factors.

Factors that influence whether or not a person gets a respiratory disease



Children can be exposed to respiratory diseases before and after they are born, and children are particularly at risk of getting respiratory infections. This is because children’s bodies are growing and changing quickly, which makes them vulnerable to hazards in the environment [4, 5].

It is likely that many common respiratory conditions that develop in adulthood (like chronic obstructive lung disease and bronchiectasis) actually have their roots in childhood [6]. The good news is that many childhood respiratory diseases are preventable, treatable or reversible [6-8], so if these conditions are tackled early in life it is likely to lead to better health when people are older.

The historical, social and cultural factors

Historical factors



Aboriginal and Torres Strait Islander people have lived and continue to live on their traditional lands across Australia, including the islands of the Torres Strait, for many thousands of years [9]. Before colonisation, Aboriginal and Torres Strait Islander people lived in family and community groups and moved across the land as the seasons changed. Colonisation of Australia occurred around 1788 and led to many changes in the way Aboriginal and Torres Strait Islander people lived [9-12]. It had significant negative impacts on their health and wellbeing.

Despite the problems faced by Aboriginal and Torres Strait Islander people since colonisation, communities have survived and many have thrived. This shows the resilience of individuals, families and communities [13]. This resilience is increasingly recognised as important to improving the health and wellbeing of Aboriginal and Torres Strait Islander people across Australia [14].

Socioeconomic factors

Poor respiratory health is common among children with lower 'socioeconomic status'. Socioeconomic status is a term used to talk about the education, money, and social status a person has, as well as their access to transportation, mobile phones, the internet, where they live and the type of house they live in. These socioeconomic factors have a big impact on a person's health and wellbeing. If a person has a low socioeconomic status, they are more likely to be sick more often and die younger than people with higher socioeconomic status. There is currently a substantial gap in socioeconomic status between Aboriginal and Torres Strait Islander people and non-Indigenous people in Australia [15], and this is a well-recognised cause of the higher level of respiratory disease in Aboriginal and Torres Strait Islander children [16].

Aboriginal and Torres Strait Islander culture and community



Aboriginal and Torres Strait Islander's traditional understanding of health is holistic [17]; it includes everything important in a person's life: land, environment, their body, community relationships and law.

Currently, there is not a lot of information on the perspectives of Aboriginal and Torres Strait Islander families about childhood respiratory health. One study of Aboriginal and Torres Strait Islander families in Brisbane, however, identified important factors to protect children from respiratory illnesses. These included:

- careful and attentive parenting, especially for managing respiratory illnesses
- access to support networks
- traditional Indigenous culture and values
- knowledge about respiratory illnesses and how to manage them
 - traditional Indigenous medicines and diets
 - social and emotional wellbeing
- not smoking during pregnancy or around children
- exercise [18].

Most of these protective factors were associated with traditional culture and values, showing that maintaining links to traditional culture and values was seen as vital to the health and wellbeing of the families in the study [18].

Factors during pregnancy

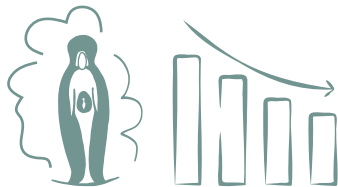
Mothers and fathers may be exposed to a variety of influences during pregnancy that can potentially affect the developing baby.

Smoking



If a mother smokes during pregnancy, it can harm the respiratory health of the mother and baby [19]. Unfortunately, a high proportion of Aboriginal and Torres Strait Islander mothers smoke during pregnancy. In 2017, almost half of Aboriginal and Torres Strait Islander mothers (44%) smoked during pregnancy.

But the good news is that this level is decreasing. The proportion of Aboriginal and Torres Strait Islander mothers who smoked during pregnancy decreased from 52% in 2009 to 44% in 2017, and 12% of Aboriginal and Torres Strait Islander mothers quit smoking after 20 weeks of pregnancy [20].



Proportion of mothers who smoked during pregnancy has decreased

Exposure to air pollution



Being exposed to air pollution during pregnancy is linked to poor outcomes for mothers and babies [21].

Stress



Stress during pregnancy is common for Aboriginal and Torres Strait Islander women [22-24]. Stress felt by pregnant women has been linked with wheezing, asthma and early infection (including respiratory infections) in children [25-27]. Stress can also contribute to behaviours like smoking during pregnancy [28, 29].

Vaccinations



Getting vaccinated during pregnancy can help prevent mothers from developing some respiratory illnesses (like pneumonia), which can lead to better outcomes for babies [30]. Vaccinations for influenza and whooping cough are recommended for pregnant women because they help protect their babies from these diseases [31-33]. Despite these benefits, not many mothers are vaccinated during pregnancy. This is due to a number of factors [34], but getting good antenatal care is key to ensuring mothers get the right vaccinations during pregnancy [35].

Antenatal and postnatal care



It is important for women to have access to good quality antenatal care during pregnancy and postnatal care after the baby is delivered, to ensure that mothers and babies are safe and healthy. Antenatal and postnatal care let health care professionals:

- screen for and manage a number of health conditions
- undertake health promotion activities
- help reduce any possible or identified risks.

The Australian Government Department of Health recommends 10 antenatal care visits for first-time mothers who do not have complications, and seven visits for subsequent uncomplicated pregnancies [36]. The good news is that the proportion of Aboriginal and Torres Strait mothers attending antenatal visits in their first trimester is increasing [20]. It has risen from 50% in 2012 to 63% in 2017.¹ In 2017, pregnant Aboriginal and Torres Strait Islander women attended an average of nine antenatal visits.



Proportion of mothers attending antenatal visits increased

Environmental factors

In the home

Respiratory conditions like asthma, allergies and severe respiratory infections are linked to exposures to:

- dust-mites
- cockroaches
- pet dander
- moisture and mould
- gas and wood stoves, kerosene or gas heaters
- mosquito coils
- BBQs
- candles
- toxic chemicals like as cleaning supplies, paint and asbestos [37-39].



Living in a crowded house may increase the risk of respiratory infections because it increases the opportunity for infections to get passed around among family members. Bacteria or viruses can easily spread through the air in crowded rooms without good air flow when people sneeze or cough [40, 41].

Living in overcrowded houses is a problem for some Aboriginal and Torres Strait Islander people. In 2016, 18% of Aboriginal and Torres Strait Islander people lived in an overcrowded house [42].

1. This excludes very preterm births.

Outside the home

Children who go to childcare centres tend to have respiratory infections more often, and the infections tend to be more severe, than for children who do not attend these centres [43-46]. One study of mostly Aboriginal and Torres Strait Islander children² found that going to childcare was a risk factor for developing a chronic cough (a cough that lasts for more than four weeks) after the child had an acute respiratory infection with a cough [47].

Exposure to dust, pollen, soot, industrial pollution and other particles have long-term effects on the respiratory and general health of children, with effects potentially starting even before the child is born [48-50]. This type of exposure has been associated with childhood chronic cough, wheezing, sore throat, allergy, bronchitis and an increased prevalence of asthma and more severe episodes of asthma [48].

Smoking and second-hand smoke



Smoking tobacco is very bad for respiratory health, and starting smoking at an early age is a major concern for the health of the Aboriginal and Torres Strait Islander population [15, 51].

The good news is that the level of Aboriginal and Torres Strait Islander young people who have never smoked has gone up [51]. For 15-17 year-olds it has gone up from 77% in 2012-13 to 85% in 2018-19, and for 18-24 year-olds it has gone up from 43% to 50%.

Smoking cannabis has also been associated with an increased risk of getting respiratory infections that can damage the airways [52]. In 2018-19, 28% of Aboriginal and Torres Strait Islander people had used cannabis in the last year [51]. Aboriginal and Torres Strait Islander young people begin using cannabis earlier, use for longer, and use greater quantities than non-Indigenous young people [53].



Second-hand smoking is when a person breathes in the smoke from someone else's cigarette, including when a smoker exhales or from the end of a burning cigarette. Second-hand smoke releases thousands of chemicals into the environment [54] and it can be bad for health, especially for children. Exposure to second-hand smoke in the home is of particular concern for Aboriginal and Torres Strait Islander children.

Second-hand smoke increases the likelihood that children will experience middle-ear disease, asthma, wheeze, cough, phlegm production, bronchitis, bronchiolitis and pneumonia [55]. In 2014–2015, 57% of Aboriginal and Torres Strait Islander children lived in a household with family members who smoked daily [56], and 13% of these children lived in households where people smoked indoors. Smoking around babies outside and while in the car is also a problem.

2. 90% of the children in the study were Aboriginal and Torres Strait Islanders

Personal health

Family health history

Having a family history of respiratory illnesses has been shown to be a risk factor for a number of respiratory diseases, including asthma, chronic obstructive pulmonary disease and lung cancer [57-59].

Personal health

The health and wellbeing of children, from birth throughout childhood, are important determinants of respiratory health. Health conditions that already exist, or where one or more exist at the same time, can affect how likely people are to get respiratory diseases and how these diseases affect their health. These factors include:

- being born with low birthweight or too early (prematurely)
- having birth defects (for example, 'congenital neonatal lung disease,' a respiratory condition that babies can be born with)
- disorders of the brain, spine and other parts of the nervous system (neurological disorders), which include Down syndrome and cerebral palsy [60, 61]
- swallowing disorders [62]
- gastro (gastroenteritis), which can impact children's immune systems and their ability to maintain good nutrition [63]
- helpful bacteria and other microorganisms in the gut, known as the 'gut microbiome' [64]
- having some acute respiratory infections when a person is baby. In particular, those that are associated with asthma and bronchiectasis. Bronchiectasis is a lung disease where there is permanent widening of the breathing tubes or airways of the lung due to inflammation or infection. Symptoms include a chronic cough with mucus production, shortness of breath, and chest pain [65-68].

Nutrition



Having good nutrition is an important protective factor for children's respiratory health [69]. Adequate and good quality nutrition in the first year of life, particularly from breastfeeding, is very important for the health of babies and children.

It is also important that, whenever possible, children maintain a healthy bodyweight. For a long time, being underweight was considered a major issue for Aboriginal and Torres Strait Islander children, but now evidence suggests that overweight and obesity are becoming a bigger issue [70]. Obesity is a particular problem for some chronic lung diseases like asthma, obstructive sleep apnoea, chronic obstructive pulmonary disease and bronchiectasis [71].

Exercise

Regular exercise is very good for a person's health, and exercise is important for maintaining good respiratory health. The good news is that Aboriginal and Torres Strait Islander children are, on average, getting quite a lot of exercise. In 2012-13 [72]:



2-4 year-olds in non-remote areas were physically active for an average of 6.6 hours each day



5-17 year-olds in non-remote areas were physically active for an average of 2 hours each day



48% of children met the recommended amount of physical activity

Microorganisms that cause respiratory infections in children

There are a large number of microorganisms that cause respiratory infections in children. They include bacteria, viruses and fungi. Studies have been done looking at many of the microorganisms that cause respiratory problems among Aboriginal and Torres Strait Islander babies and children [73-77]. The high levels of bacteria and viruses that Aboriginal and Torres Strait Islander babies encounter early in life are likely to be a key reason for the high levels of respiratory infections they experience. Being able to provide care, like vaccinations, for these childhood infections is very important to reducing respiratory diseases.

Statistical terms

Prevalence is a way of describing how common a disease or condition is. It is a proportion (%) of cases of a disease or condition in a population at a particular time.

Hospitalisation refers to a period of care for someone admitted to hospital. Hospitalisation rates are calculated as the total number of periods of care for admitted patients divided by the total number of members of the population. The rate is usually written per 1,000 or per 10,000 members of the population.



What do we know about respiratory disease among Aboriginal and Torres Strait Islander children?

Respiratory diseases are common among Aboriginal and Torres Strait Islander people throughout different age-groups [78]. Examples of the impact on children are:



19% of 0-14 year-olds had a respiratory condition lasting more than 6 months in 2018-2019 [51]



Certain respiratory diseases, like asthma and upper and lower respiratory conditions, were in the top ten conditions most responsible for the total 'burden of disease' in 2011 [80]



Up to 2 times more likely to be hospitalised for some respiratory conditions (asthma, influenza and pneumonia, whooping cough and acute respiratory infections) than non-Indigenous children in 2014-15 [79]



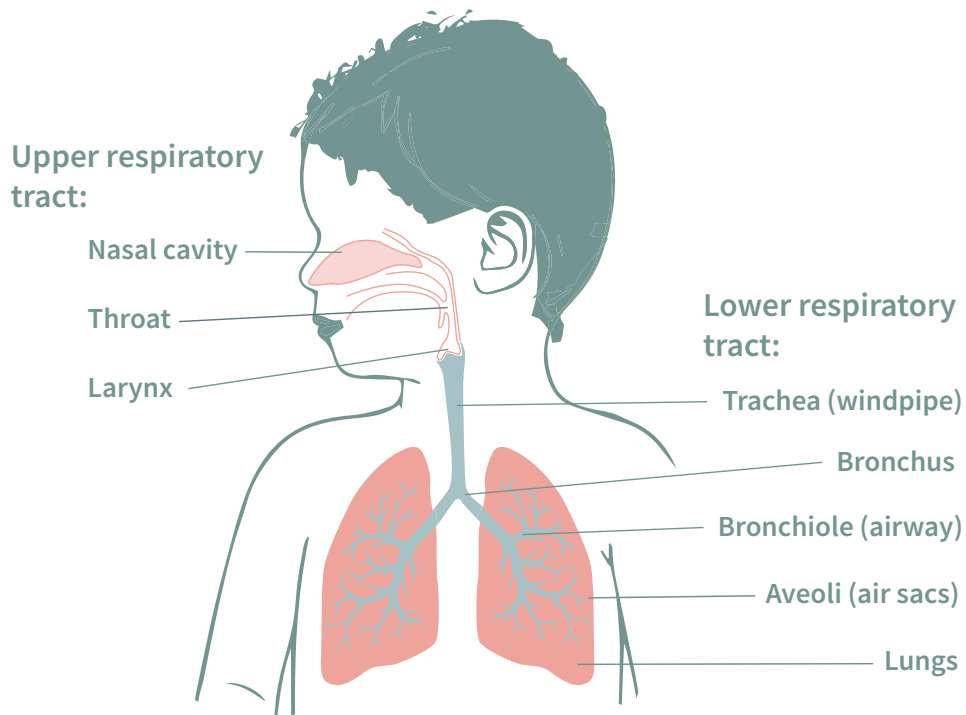
Babies less than a year old were 8.6 times more likely to die from a respiratory conditions than non-Indigenous babies [81]

Respiratory diseases are generally divided into two categories: acute (short-term) respiratory infections and chronic (long lasting) respiratory diseases.

Acute respiratory infections

Respiratory infections are classed as ‘acute’ when they last less than 14 days. The symptoms of acute respiratory infections include: congestion, runny nose, cough, sore throat, body aches and feeling tired.

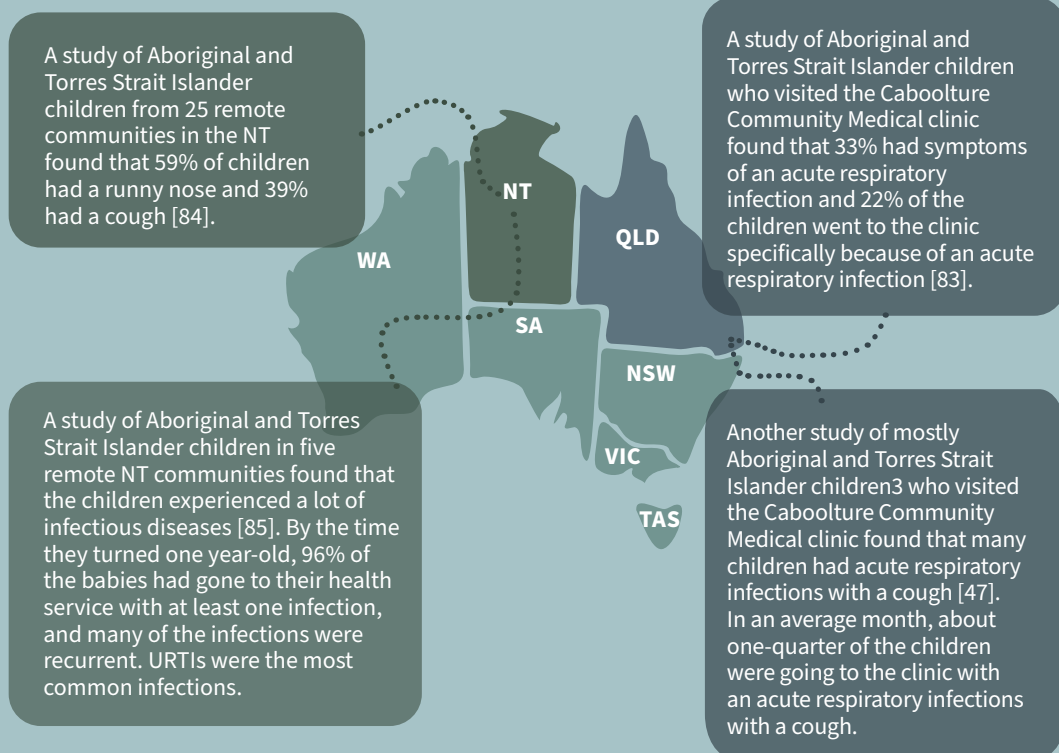
Acute respiratory infections can be either ‘upper respiratory tract infections’ (URTI) or ‘lower respiratory tract infections’ (LRTI). URIs include: the common cold, sinusitis, croup, pharyngitis and tonsillitis. They are generally mild, resolve on their own and/or cause no long-term health problems. LRTIs include: pneumonia, bronchitis, croup and bronchiolitis. LRTIs are more severe illnesses that last longer.



URTIs often lead to LRTIs. Many of the same viruses and bacteria can cause both upper and lower airway infections, for example the influenza virus. Acute respiratory infections that come back repeatedly are known as ‘recurrent’ acute respiratory infections. These recurrent infections, particularly those from early childhood, are linked to developing chronic lung diseases later in life [6-8, 82].

How common are acute respiratory infections among Aboriginal and Torres Strait Islander children?

There is currently no good source of national information about how common acute respiratory infections are among Aboriginal and Torres Strait Islander children. What we know comes from a number of community-based studies:



How often are Aboriginal and Torres Strait Islander children going to hospital for acute respiratory conditions?

There is not a lot of information on how often Aboriginal and Torres Strait children go to hospital for acute respiratory conditions. This is because the information on national and state/territory hospitalisations combine all respiratory diseases together, and do not provide separate information for hospital visits for acute respiratory infections. Overall, though, Aboriginal and Torres Strait Islander children go to the hospital more often for acute respiratory infections than non-Indigenous children do, regardless of where they live [86].

There is detailed national information on hospital admission for specific types of acute respiratory infections:

Influenza, 2005-2010

Hospitalisation rates for influenza for Aboriginal and Torres Strait Islander children were higher than those for non-Indigenous children [87].



2.9x
higher for children
under five years
of age



2.6x
higher for 5-15
years-olds

3. 90% of the children in this study were Aboriginal and Torres Strait Islander children [47].

Whooping cough, 2005-2010

Hospitalisation rates for whooping cough for Aboriginal and Torres Strait Islander children were higher than those for non-Indigenous children [87].



3.3x
higher for children
under five years
of age



1.8x
higher for 5-15
years-olds

Bronchiolitis

Bronchiolitis is a lung infection (usually caused by a virus) in young children and infants that causes inflammation and congestion in the small airways (bronchioles) of the lung. Bronchiolitis is a major cause of hospitalisation for Aboriginal and Torres Strait Islander children [88, 89], and some research suggests that the rates are rising [89]. Aboriginal and Torres Strait Islander children with bronchiolitis have more severe disease and are more likely to go to hospital repeatedly than non-Indigenous children [90].



In the NT, Aboriginal babies who were hospitalised for bronchiolitis and had persistent symptoms had an increased risk of developing bronchiectasis in the two years after they left the hospital [68].

What are the impacts of acute respiratory infections on Aboriginal and Torres Strait Islander children?

Diseases, illnesses and injuries can have a major impact on people's lives. While some people recover with no lasting problems, other people can live for years with ill health or disability, and other people will die from their illnesses. The 'burden of disease' is a way of looking at the impact that different diseases, injuries and risk factors can have on a whole population [91]. The burden of disease includes how much a disease, illness or injury contribute to deaths, disability and lasting ill health. These factors are used to calculate a number called 'disability-adjusted life years' (DALY). A DALY is a measure of years lost due to disability, ill-health or early death.

In 2011 [80]:

- Upper respiratory conditions were the 8th leading cause of the burden of disease (that did not result in death) for Aboriginal and Torres Strait Islander children under five years. For boys aged 5-15 years it was the 10th leading cause, and for girls it was 7th leading cause.
- Lower respiratory infections ranked 9th and 10th for boys and girls under five years of age, but was not in the top 10 for children aged 5-15 years.



The good news is that deaths of Aboriginal and Torres Strait Islander children from acute respiratory infections have decreased over recent decades and are now rare [15, 80]. This is likely because of early diagnosis and better management.

Chronic respiratory diseases



Chronic respiratory diseases are a group of diseases that block airflow and make it hard to breathe. The symptoms include: shortness of breath, wheezing or a chronic cough. Chronic respiratory diseases that are particularly important to the health of Aboriginal and Torres Strait Islander children include:

‘Recurrent protracted bacterial bronchitis’ (PBB): PBB is characterised by a chronic wet cough or a cough that produces mucus without signs of a different cause. It responds to two weeks of specific antibiotics [92]. If it recurs, it may lead to CSLD and bronchiectasis [93].

‘Chronic suppurative lung disease’ (CSLD) and bronchiectasis (particularly non-cystic fibrosis bronchiectasis): CSLD is characterised by recurrent episodes of wet cough that lasts a long time and may be present with other problems like recurrent chest infections, difficulty breathing when making a physical effort, growth failure and, occasionally, wheezing [94]. Bronchiectasis is similar to CSLD and is diagnosed using ‘high-resolution computed tomography’ (HR-CT), which shows if the outer airways are widened [95]. Bronchiectasis is a major concern for Aboriginal and Torres Strait Islander children [96]. Factors like being born prematurely or frequent or severe respiratory infections in early childhood may increase the risk of developing it.

Asthma: asthma is a condition where airways become inflamed, narrow and swell, and produce extra mucus, making it difficult to breathe. Symptoms include wheezing, shortness of breath, cough and tightness in the chest [97].

How common are chronic respiratory disease among Aboriginal and Torres Strait Islander children?

Currently, there is a lack of information on how common chronic respiratory diseases are among Aboriginal and Torres Strait Islander children. There is, however, some information on specific types of chronic respiratory conditions.

Bronchiectasis

To date, there is very little information about how common bronchiectasis is among Aboriginal and Torres Strait Islander children. The good news is that a national bronchiectasis register has been established, so it is likely that information about how common bronchiectasis is will improve in the coming years [98]. The information that is currently available comes from several small studies. One study of Aboriginal and Torres Strait Islander babies that were hospitalised in 2010-13 for bronchiolitis found that 19% ended up being diagnosed with bronchiectasis within 2 years of admission [99].

Asthma

There are questions about the accuracy of data on the prevalence of childhood asthma because other chronic respiratory diseases are often incorrectly diagnosed as asthma [100]. Despite that, the best current evidence suggests:



12% of Aboriginal and Torres Strait Islander children years had asthma in 2018-19 [51]



Asthma was more common among Aboriginal and Torres Strait Islander children in urban and regional areas than those in remote areas in 2012-13 [101]

How often are Aboriginal and Torres Strait Islander children going to hospital for chronic respiratory diseases?

There is very little information about how often Aboriginal and Torres Strait Islander children go to hospital for chronic respiratory diseases, and no information at all on PBB and CSLD.

Bronchiectasis

A study was done in Qld that looked at hospitalisation rates for bronchiectasis in 2005-09 [81]. It found that bronchiectasis hospitalisation rates for Aboriginal and Torres Strait Islander 0-14 year-olds increased during this five year period.⁴ The rates were higher for Aboriginal and Torres Strait children than non-Indigenous children, but the amount of difference varied by age:



Asthma

There is not a lot of reliable information about hospital admissions for asthma among Aboriginal and Torres Strait Islander children. The most current and reliable information we have showed that, in 2014-15, hospitalisation rates for asthma [79]:



What are the impacts of chronic respiratory diseases on Aboriginal and Torres Strait Islander children?

Overall, the impacts of chronic respiratory diseases are greater for Aboriginal and Torres Strait Islander people than for non-Indigenous people [80]. There is not much information available for specific chronic respiratory conditions except for asthma:

- In 2011, asthma was a major contributor to the 'burden of disease' for Aboriginal and Torres Strait Islander children [80].
- Asthma was the 8th leading contributor to total disease burden in Aboriginal and Torres Strait Islander boys under 5 years of age, and 2nd for 5-15 year-old boys.
- Asthma was not in the top 10 contributors to total disease burden in Aboriginal and Torres Strait Islander girls under 5 years of age, but was the number 1 contributor for 5-15 year-old girls.

There is not much information about deaths from chronic respiratory diseases in Aboriginal and Torres Strait Islander children. Respiratory diseases are not in the top five contributors to 'years of life lost' for Aboriginal and Torres Strait Islander children [80].

4. Hospitalisation rates for bronchiectasis increased for all Queenslanders during this period, but most noticeably for Aboriginal and Torres Strait Islanders [81].

Prevention and management

Prevention

A lot can be done to reduce respiratory illnesses among Aboriginal and Torres Strait Islander children. While it is important to improve the 'socioeconomic status' of Aboriginal and Torres Strait Islander children to improve their health, this may take a long time. The good news is that there are a lot of simpler measures that can be taken to improve children's respiratory health [18, 102, 103]:



Making sure that mothers are healthy before and after they give birth



Ensuring babies and children have access to healthy food



Reducing the chances of mothers and children being around second-hand smoke and other kinds of pollution



Helping young people to not start smoking



Making sure vaccines are provided to mothers and children, including those for flu, whooping cough and pneumococcal diseases



Giving parents and carers the education, confidence and support they need to get medical help if their children show symptoms of respiratory illness



Ensuring children finish their whole course of medication (e.g. antibiotics)



Making sure children go back to the doctor for a check-up after they have a respiratory infection, which can help to prevent chronic respiratory infections. This is especially true after a child has had a lower respiratory infection like pneumonia and bronchiolitis and the child develops a chronic cough.

Management

Aboriginal and Torres Strait Islander children should receive the best treatment for respiratory conditions. Key parts of effective treatment include:

- ✓ **Early detection:** Finding out about respiratory conditions early can lead to better management and treatment and improved quality of life for the child [100, 104]. The most common and earliest sign of chronic lung disease among children is a cough, and having a cough could also be a sign of a more serious illness [100]. It is important that Aboriginal and Torres Strait Islander children with signs of respiratory conditions are brought to the doctor early for assessment.
- ✓ **Cough management plans:** This is a tool that makes sure that health care processes are standardised, efficient and based on the evidence of ‘what works’. Using a cough management pathway can improve the quality of life for people who have had a chronic cough [104-106]. These management pathways can lead to the early diagnosis of serious chronic respiratory conditions.
- ✓ **Good follow-up care:** It is important for a child to get follow-up care at least 3–4 weeks after they have been released from hospital to decide how to treat all signs of respiratory problems [68]. The ideal way to do this is through a planned recall of children to a local clinic 3-4 weeks after they have been released from hospital following an acute respiratory condition.
- ✓ **Aboriginal and Torres Strait Islander health professionals:** It is beneficial to have an Aboriginal and Torres Strait Islander health or community worker or health aide available to assist parents or carers with the process of going to the hospital and to provide parents and carers with health education after they return home [107-109].
- ✓ **Working in partnership with the local community:** The best way to manage chronic diseases is through individualised care and comprehensive care with all required health professionals working together [95, 110].
- ✓ **Education for parents and carers:** Provide one-to-one culturally appropriate health education for adults who care for children with an acute or a chronic respiratory disease.
- ✓ **Aboriginal and Torres Strait Islander specific resources:** Resources designed specifically for Aboriginal and Torres Strait Islander people may help to educate parents, carers and children about respiratory conditions [111]. Currently there is a lack of these educational resources [18, 35, 112], but access to such resources can improve health education and, in turn, ensure children have good respiratory health [113].

Programs and services

Indigenous Respiratory Outreach Care program: This Queensland-based program aims to raise awareness of respiratory diseases through community engagement, lung health promotion, education, partnerships with local health providers, training and research [114]. This program provides culturally safe specialist respiratory outreach services for adults and children, which includes:

- lung health checks
- point-of-care chronic lung disease management
- treatment
- referrals to other health providers
- education.

Aboriginal and Torres Strait Islander specific Medical Benefits Schedule (MBS): The MBS includes items for the 715 health check and the Pharmaceutical Benefit Scheme's 'close the gap' initiative that provides medications at a reduced cost [115].

The National Immunisation Program (NIP): The NIP outlines a special vaccination schedule for Aboriginal and Torres Strait Islander children for several vaccines [116]:

- influenza vaccine: funded for children aged 6 months to 5 years-old, and for people 15 years and older
- 13-valent pneumococcal conjugate vaccine: an extra dose of vaccine is scheduled for babies 12-18 months and living in high risk areas of the NT, Qld, WA and SA.
- 23-valent pneumococcal polysaccharide vaccine: recommended for people 15-49 years-old with medical risk factors.

Collecting statistical information: Monitoring trends in disease over time is important. The regular collection, analysis and publication of data occurs through the *National Aboriginal and Torres Strait Islander health surveys*, the *Health performance framework* reports.



Policies and strategies

There is a broad range of policies and strategies at national, state, local government and community levels that can help address the respiratory health of Aboriginal and Torres Strait Islander children.

- The National Early Childhood Development Strategy [117] aims to strengthen maternal, child and health services. It includes specific programs like: New Directions: Mothers and Babies Services, Australian Nurse Family Partnership, Strong Fathers Strong Families and Healthy for Life.
- State governments have specific Aboriginal and Torres Strait Islander units and health strategies.
- At the community level, health service providers including Aboriginal community controlled health organisations, divisions of general practice, public health networks and not-for profit organisations have various programs ranging from smoking interventions to healthy housing initiatives.
- Aboriginal and Torres Strait Islander early child health and development is a priority in the Council of Australian Government's Close the Gap initiative [15].
- The National Aboriginal and Torres Strait Islander Health Plan 2013-2023 [118] includes an expansion of the focus on child health to broader issues in child development.



Future directions and research needs

Despite the importance of respiratory diseases among Aboriginal and Torres Strait Islander children, and the long-term consequences they can have, the information needed to inform and assess interventions is getting old and new research is required:

- **Research on children in urban and regional areas:** Most research on respiratory diseases has been done with Aboriginal and Torres Strait Islander children living in remote areas, so there is a lack of information on children in urban and regional areas. This is particularly important because a lot of Aboriginal and Torres Strait Islander people live in urban and regional parts of Australia.
- **More information about these conditions:** There is a lack of community-based studies looking at how common respiratory diseases are in the Aboriginal and Torres Strait Islander population, how things change over time, and how it is best to tackle these diseases. Most of what is available is limited to hospitalisation data.
- **Clinical and therapeutic trials:** Clinical and therapeutic (treatment) trials enrol patients for a specific treatment to see if, or how well, it works. There have not been many of these trials related to respiratory health among Aboriginal and Torres Strait Islander children, and these studies are needed to address the severity and consequences of common respiratory problems in this population [103].
- **Laboratory studies of infectious organisms:** With advances in laboratory techniques it is now becoming possible to better understand the role and importance of infectious organisms in respiratory diseases among children. This information is essential to understanding the best use of vaccines and antibiotics or antivirals.
- **Longitudinal studies of infection and immunity:** Longitudinal studies collect data from the same group of participants over a long period of time. These studies can show how things change over time. Longitudinal studies should be conducted looking at infection and immunity of Aboriginal and Torres Strait Islander children starting in the antenatal period and continuing throughout early childhood.
- **Evaluation programs:** Programs that support Aboriginal and Torres Strait Islander health care providers and community members to address lung health need to be properly evaluated to see 'what works'. There also needs to be evaluation of educational resources for Aboriginal and Torres Strait Islander families in remote, regional and urban areas.
- **Large studies:** Larger studies conducted in different settings are needed to better understand what Aboriginal and Torres Strait Islander people know about of respiratory health from an Indigenous perspective to make sure programs, strategies and interventions are relevant and acceptable.

Concluding comments

Respiratory illnesses among Aboriginal and Torres Strait Islander children are serious, important and too common [16, 119]. The good news is that chronic respiratory diseases are mostly preventable and there is a lot that can be done to reduce all respiratory diseases. To tackle respiratory illnesses among Aboriginal and Torres Strait Islander children, it is important to: improve socioeconomic factors, reduce harmful exposures for mothers and children (like smoking in crowded houses), provide best-practice medicine, and improve access to culturally acceptable health care and illness prevention programs [103].

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