

Speakers Science Forum

Professor Innes Asher, 24 June 2008

Preventable Diseases in New Zealand Children, we can do better

Please note

Refer to power point presentation accompanying this talk. To show videos of p̄rtussis and bronchiolitis, the video files .wmv attached must also be on the desktop of the computer.

Slide 1

Title slide

Slide 2

In this talk I will be showing information about preventable injuries and infectious diseases in children. I will show comparisons between NZ and OECD countries and within NZ by deprivation and ethnicity and trends over time. I will then look at cause or factors of these diseases and evidence based solutions.

Slide 3

Last year UNICEF published their report on child wellbeing in rich nations. They created a variable for health and safety for children which was composed of infant deaths, immunisation rates and deaths from injury. Among OECD countries NZ was 24th out of 25th for Health and Safety. This information was no surprise to health professionals working with children in NZ. For a long time we have been concerned about child health outcomes and more concerned about their recent deteriorations.

Slide 4

A large burden of disease in NZ children is from infectious diseases and their complications. I will illustrate some of these diseases now.

Slide 5

Meningococcal Disease

This occurs when the meningococcal bacteria enters the blood stream and causes serious blood infection. This can cause death or serious complications resulting in disability, although some children do well.

Slide 6

Serious Skin Infection

This occurs when a scratch, an insect bite or a cut becomes infected and the infection spreads to the deep tissues under the skin. This often results in the need for hospital treatment with intravenous antibiotics and sometimes surgery for abscesses.

Slide 7

Whooping cough (Pertussis)

This is a very infectious respiratory infection which starts as a cold and goes on as a serious prolonged coughing illness. It is very serious in babies who are the worst affected. They can stop breathing, suffer from lack of oxygen and some die.

Slide 8

Bronchiolitis

This is a serious chest infection in babies. It starts as a cold, goes to the chest causing wheezing, rapid breathing, struggling to breathe, poor feeding and lack of oxygen. Sometimes babies die.

Slide 9

Pneumonia

This is a chest xray and you can see the heart in the middle. The lungs are the dark areas behind the ribs. Where pneumonia is present the lungs look whiter as you can see on the right hand part of the slide and a smaller area on the left. Pneumonia is similar to Bronchiolitis but the baby does not have wheezing. It is the commonest cause of deaths in children in the world outside of the newborn period. It causes difficulty in breathing, lack of oxygen and poor feeding.

Slide 10

Bronchiectasis

Bronchiectasis is damaged airway walls from repeated or severe pneumonia. This picture of the lungs on the top left shows normal lungs except the area on the right at the bottom which has Bronchiectasis. The picture below it shows Bronchiectasis in all areas of the lungs, this damage is permanent. This boy with Bronchiectasis on the right is standing beside his younger brother who is healthy. You can see he is thinner and smaller than his younger brother. He has Bronchiectasis in all parts of his lungs which look like the bottom picture. He coughs up a cup of mucous mixed with pus each day. He is likely to die as an older teenager or a young adult. Some of these children are chronically disabled adults.

Slide 11

Rheumatic fever

Rheumatic fever is a complication of streptococcal sore throat. In a small number of people an immune reaction develops in the body to the streptococcal germ. This can damage one or two of the main heart valves. The heart damage leads to serious heart failure, shown as a big heart in this xray. Some of these children die in childhood or young adulthood or are chronically disabled.

Slide 12

This slide shows our rates for infectious diseases with NZ compared to other OECD countries where data is available. I have shown the rates of other countries as 1 to make it easy to compare the figures. In the meningococcal disease, at the peak of the disease in 1998 our rates were 5-17 times higher than Australia, Canada and USA. Our rates have now fallen to the same rates as those countries. For serious skin infections our rates are double other countries. For whooping cough and pneumonia our rates are 5 to 10 times those of other countries. For Bronchiectasis our rates are 8 times those of Finland, the only other country studied. For Rheumatic fever our rates are 13.8 times higher than other countries.

Slide 13

In 2004 the NZ Child and Youth Epidemiology Service was established. This service reported its findings in 2007. The service is led by Dr Liz Craig as a joint venture between the Paediatric Society of NZ and Universities. Funding comes from the Ministry of Health and the District Health Boards. This service has made available for the first time standardised data on outcomes for NZ children analysed by degree of deprivation, ethnicity and trends over time.

Slide 14

This slide shows hospitalization for infectious disease analysed by deprivation index. The NZDep1 is the least deprived 10% of households and NZDep10 is the most deprived 10% of households. Compared with the least deprived households, children from the most deprived household have much higher rates of admission to hospital for these diseases. Rates are at least 3.7 times higher, and up to 28.65 for Rheumatic fever.

Slide 15

This slide shows rates of hospitalisation by ethnicity. Maori have at least twice the rate of hospitalisation compared to European. For Bronchiectasis it is 4 times and for Rheumatic fever 23 times. Pacific childrens' rates of hospitalisation are even higher.

Slide 16

I will now look at trends in these diseases over time. Income is the single most important determinant of health. Therefore in looking at trends in child health over time, it is worthwhile to set the back drop of trends and income over time.

Slide 17

This shows changes in income and inequality for OECD countries from the mid 1980s to 2000. During this period NZ has the greatest increase in income and inequality.

Slide 18

This shows the proportion of NZ children in poverty between 1982 and 2004. You will see that during the 1980s 11-15% of children were in poverty – too many – but this figure rose during the 1990s to a high of 30% in 2001, and they fell slightly in 2004. I will now look at the rates of hospitalization for infectious diseases during the same time period.

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Meningococcal Disease

Slide 20

I will just explain this graph as the following ones have a similar format. On the x-axis are years from 1990 to 2006 and on the y-axis are admissions and deaths. You will see the rise in the meningococcal epidemic during the early 1990s and the effect of mass vaccination which was helpful as a 'circuit breaker' for the epidemic although if it had been introduced earlier more lives and disabilities would have been saved.

Slide 21

A study of possible risk factors for meningococcal disease showed that the strongest risk factor by far was household crowding. This diagram illustrates how adding 6 adults to a 2-3 adult household increases the risk of meningococcal disease nearly 11 fold.

Slide 22

Serious Skin Infection

Slide 23

This shows a doubling in hospital admissions for serious skin infections between the early 1990s and 2000. To see a doubling of a highly preventable disease like this over a 5 year period is unheard of in western society, unless something has gone terribly wrong.

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Serious skin infections are related to poverty, poor nutrition, inadequate home hygiene and poor health care.

Slide 25

Whooping cough

Slide 26

Whooping cough is related to inadequate immunisation rates. The World Health organisation (WHO) recommends immunising 90% of children on time. In NZ in 2005 we immunised only 77.4% of children, and only 42.4% of all children were immunised on time.

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The evidence based intervention for whooping cough is to give 90% of children immunisation on time.

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Bronchiolitis

Slide 29

This slide shows a doubling of hospital admissions for Bronchiolitis between 1990 and 2003 with a slight fall since.

Slide 30

Bronchiolitis is related to poverty, living in a house that is damp, household crowding and cigarette smoke exposure.

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Pneumonia

Slide 32

This slide shows that hospital admissions for pneumonia are more common in young children than young adults. An increase in hospital admissions for pneumonia is shown, an increase of 30% although not as large an increase as for the other diseases.

Slide 33

Pneumonia in NZ children is related to child underweight, previous chest infections, living in a house that is damp, household crowding and cigarette smoke exposure.

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Evidence based intervention for pneumonia is to treat it early with antibiotics- get to the doctor and get the antibiotics

Slide 35

Bronchiectasis

Slide 36

This shows a doubling of hospital admissions for Bronchiectasis from mid 1990s till now.

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Bronchiectasis is related to poverty, previous pneumonias, poor nutrition, low immunisation rates and poor health care. Evidence based intervention for Bronchiectasis is that pneumonia needs to be fully treated.

Breaking news – the Health Research Council has just funded an intervention study for children from 0-8 years with Bronchiectasis to try and improve their long term health.

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Rheumatic fever

Slide 40

This shows an increase in admissions for rheumatic fever during this period although it is not as marked an increase as for the other diseases. Very importantly, the rate has not gone down.

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Rheumatic fever is related to household crowding, poverty and poor health care.

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Evidence- based interventions for rheumatic fever include:

- Healthy housing
- Detection of streptococcal sore throat
- Get to the doctor
- Get antibiotics

If previous rheumatic fever, give monthly penicillin injections

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For NZ child infectious diseases comparisons

- NZ with OECD countries - our rates are much higher
- Within NZ by 'deprivation' index there is marked inequality
- Within NZ by ethnicity there is marked inequality
- Within NZ trends over time some have doubled

Causal factors for infectious diseases are:

- poverty
- poor housing
- poor nutrition
- poor health care

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Preventable diseases in NZ children. Can we change trajectories?

Slide 45

Yes, of course we can

Slide 46

NZ Housing Research

Randomised controlled study of insulating housing in low income communities (Wellington) 2001-2

For people in homes with insulation compared with no insulation:

- Warmer & less humid houses
- Less money spent on heating
- Less poor health
- Reduced respiratory symptoms
- Children less time off school
- Less likely to be admitted to hospital for respiratory illness
- Cost effective

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NZ Housing Research Healthy Housing Programme (Auckland) in neighbourhoods with low income and high infectious diseases (2004-2007)

After three years:

- Improved health
- 37% reduction in housing-related
- preventable admissions
- Children with respiratory diseases helped most

So these are the type of programmes, addressing the underlying determinants of health, that we need to roll out nationwide.

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We need to improve primary health care so it meets the needs of all children at all times.

We need to:

- Make immunisation delivery 'watertight'
- for all NZ children
- Make primary health care more accessible
- Free health care and medicines for
- children under 18 yr
- 24 hrs a day 7 days a week

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We must reduce child poverty as it underpins all these terrible diseases

To do so we must

- Focus on the most disadvantaged children first
- Plan a programme to halve child poverty as soon as possible
- Aim for adequate income for all children's basic needs

Slide 50

We need to move rapidly to improve the situation. We know what the solutions are.

We need to move rapidly to:

- Halve child poverty
- Extend healthy housing programmes to all low income homes
- Provide accessible affordable health care for all children at all times
- Increase immunisation rate to 90%

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Ma tōu rourou, ma tōku rourou,
Ka ora ai nga tamariki

With your small basket and my small basket
we can keep the children well