Infectious disease patterns a major concern

Interview with Professor Diana Lennon

"Some parts of New Zealand's North Island have infectious disease patterns, which are unacceptable in a developed country such as New Zealand" says Professor Lennon, Professor of Population Child and Youth Health at Auckland University. "Young Tamariki Māori and Pacific Island children in particular are suffering the burden of these infections."

Respiratory infections are a huge problem

Infectious diseases, mainly respiratory, are the primary reason for hospital attendance in young children. The majority of these are viral infections with hypoxia being the usual reason for admission. Respiratory infections, predominantly bronchiolitis and also pneumonia, are the principle causes of hospital admission for children under two years of age.

Respiratory infections are a huge problem in the upper parts of the North Island, particularly in winter when hospital admissions peak. Part of the underlying cause is extended family living, particularly where families double up and share housing to cope with high rents.

Professor Lennon notes an increasing emergence of bronchiectasis in these disadvantaged children. A link to recurrent episodes of bronchiolitis, although being considered, has yet to be established. Historically bronchiectasis has been linked to measles, whooping cough and adenoviral infections and Professor Lennon warns that our measles immunisation rates are less than optimal making a measles epidemic possible.

Key messages for primary care:

- Recognise children with severe bronchiolitis who need hospitalisation
- Carefully evaluate chronic cough in children
- Contribute to improved measles immunisation rates
- Provide letters for housing improvement for children with recurrent respiratory infections including bronchiolitis

Rheumatic fever in some parts of New Zealand is unacceptably high

Rheumatic fever is a serious but preventable chronic disease, which is rare in most developed countries, but unacceptably common in some parts of the North Island.

Rheumatic fever in New Zealand almost always occurs in Tamariki Māori and Pacific Island children. Children of European or Asian descent and children living in the South Island rarely suffer from the illness.

Professor Lennon says 50–60% of children with rheumatic fever develop clinically apparent heart disease and 10–20% of children who get rheumatic fever will be left with permanent serious heart damage, some will require repeated surgery and have a shortened life span. Heart damage can be identified with echocardiography in up to 80% of children who suffer from the disease.

The key to the primary prevention of rheumatic fever is treating streptococcal throat infections in at-risk children

Children who have had rheumatic fever require ongoing monthly penicillin injections until they are 21-years-old to prevent further attacks of rheumatic fever, that are even more likely to cause permanent heart disease.

There is strong evidence that treating streptococcal sore throats in at-risk children is effective in preventing rheumatic fever. Streptococcal sore throats are very infectious with up to 50% risk in siblings in a household.

Crowded housing increases the risk of rheumatic fever and at-risk children often have poor access to treatment for various reasons, for example transport to primary care. The idea of developing a programme for throat swabbing children with sore throats at schools in high-risk areas, particularly metropolitan Auckland and the upper North Island, is being explored. This is based on a New Zealand research project and similar community projects overseas.

Professor Lennon has recently been involved in the development of New Zealand guidelines for the treatment of sore throats and prevention of rheumatic fever that will be published shortly (www.nhf.co.nz). She is quick to point out that she does not advocate blanket use of penicillin for sore throats, and the focus in the new guidelines is on the concept of treating children at risk of rheumatic fever and reducing antibiotic use in those at low risk.

Rheumatic fever is extremely uncommon in advantaged children, mostly of non-Māori or Pacific origin. Symptomatic treatment of pharyngitis should be paramount in these children. The carriage of *S. pyogenes* in the throats of children without sore throat or clinical pharyngitis is a distractor. It does not increase rheumatic fever risk and does not benefit from treatment.

She says that post streptococcal glomerulonephritis also persists as a problem in the upper North Island. It usually follows on from impetigo and occasionally streptococcal sore throats. However, impetigo caused by *S. pyogenes* has not been linked to rheumatic fever and as yet, there is no explanation for this curious mixture of relationships.

In New Zealand there is a different raft of serotypes of *S. pyogenes* causing rheumatic fever. This means a vaccine developed and recently trialled in the US is unlikely to be effective in this country. However other vaccines are being developed.

Key message for primary care:

- Target antibiotic treatment for sore throats to children who are at risk of rheumatic fever, not those at low risk

Immunisation preventable disease

The incidence of meningococcal disease is falling rapidly and appears to be related to the MeNZB immunisation programme. Professor Lennon is concerned, that while the programme appears very successful, the phase four evaluation has not so far been transparent. She believes more detail is needed to understand the relative contributions of the programme and the already waning epidemic.

There are currently four new immunisations competing for introduction into New Zealand:

- Pneumococcal conjugate vaccine: pneumococcal disease prevention
- Varicella: chickenpox prevention
- Rotavirus: gastroenteritis prevention
- Human papilloma virus: cervical cancer prevention

Professor Lennon supports them all, despite being expensive. She believes the priority is to immunise children against pneumococcus. Pneumococcal meningitis is a devastating disease and although febrile illnesses in children are usually viral, one of the main reasons for using antibiotics is suspicion of pneumococcal infection.

Immunising children with pneumococcal conjugate vaccine reduces the carriage of the organism in the community. This herd immunity has the added benefit of reducing pneumococcal disease in older adults.

Key messages for primary care:

- Immunisation provides effective primary prevention for many infectious diseases, which can destroy the health of children.
- The results of immunisation are best when immunisation rates are high.
- Primary care has a vital role in maintaining these rates.