Target revision

The target levels for men should be revised in 1999 as it now appears that the current targets are well on the way to being met. However, female lung cancer mortality targets may require further revision as the current trends, which represent smoking behaviour 20–30 years previous, indicate that the trend may continue upward for some time yet.

Immunisation

Key points

- Immunisation has made an important contribution to the control of a number of infectious diseases in New Zealand, including polio, diphtheria, tetanus, Haemophilus influenzae type b (Hib) disease, congenital rubella, and hepatitis B.
- The incidence of Hib disease has fallen by 94 percent since the introduction of the Hib vaccine in 1994.
- Immunisation has led to polio being eliminated in many parts of the world, and a surveillance system has been set up to certify the elimination of polio in New Zealand within three years.
- Some vaccine-preventable diseases continue to be important public health problems in New Zealand, especially pertussis (whooping cough) and measles.
- Immunisation coverage levels in 1997 show that there may have been a decline in immunisation rates during 1997, and further impetus will be required if the year 2000 target of 95 percent is to be reached for all immunisations.
- There is a significant gap in immunisation rates between Māori and ‘other’ children, and this gap may be increasing. The gap between Pacific and ‘other’ children may also be increasing.
- The national immunisation strategy, Immunisation 2000, was launched in February 1996 to achieve the immunisation targets. The information system part of the strategy has yet to be implemented, and is urgently needed together with further work to achieve these targets.

TARGETS

To increase the proportion of New Zealand children with completed early childhood immunisation by the time they are two years old to 85 percent or more by the year 1997, and to 95 percent or more by the year 2000.

To increase immunisation coverage in Māori to match the non-Māori rate by 1997.

To increase immunisation coverage in areas or populations with low coverage to within 10 percent of the overall population rate by 1997.

Target derivation

Targets were developed by the Public Health Commission in the document Immunisation: The Public Health Commission’s advice to the Minister of Health 1993–1994 (PHC 1994g) by
comparing New Zealand coverage levels with levels recommended internationally (WHO 1988), and setting an achievable time horizon within which to bridge the gap.

**Indicator**

Immunisation coverage rates.

**Data sources**

Coverage rates are estimated from:

- immunisation benefit claim forms from Health Benefits Limited (HBL) and North Health (from May 1997)
- national or regional surveys (Department of Health 1992a; North Health 1997)
- information from ESR (McNicholas and Baker 1996; McNicholas et al 1998).

The data includes information on coverage up to December 1997.

**Related target**

- Child hearing loss

**Health impact**

Immunisation is one of the most cost-effective and successful health strategies available (McDonnell and Askari 1997). The incidence of polio, diphtheria, tetanus, congenital rubella, Hib disease and hepatitis B have been reduced dramatically by immunisation, and smallpox has been eradicated from the world (Lennon and Reid 1994; Baker and Martin 1995; ESR 1995).

Some vaccine-preventable diseases remain important public health problems in New Zealand. Low immunisation rates, particularly among some high-risk groups such as Māori and Pacific children, have been identified as an area of concern in a recent review of child health programmes carried out by the Ministry of Health (Ministry of Health 1998a). High immunisation rates are necessary to prevent epidemics of some vaccine-preventable diseases such as measles and pertussis (whooping cough) (Galazka 1992; Reid and Baker 1993; Lennon and Reid 1994; Tobias et al 1997).

The most recent immunisation success in New Zealand has been over Hib disease, which was the most common cause of life-threatening bacterial infection in children under five years. Hib vaccine was added to the immunisation schedule in January 1994, and by the end of that year the incidence of invasive Hib disease had fallen by over 80 percent (Baker and Martin 1995). There were only nine cases of Hib isolated in New Zealand for all ages in 1997 compared with an average of 143 cases per year over the 1991–93 period – a decline of 94 percent (Baker and Martin 1995; ESR 1998a). Elimination of Hib disease may be possible if high immunisation levels are achieved and maintained.

Pertussis is among the most serious infectious diseases of infants and young children (Benenson 1995). In New Zealand, hospitalisation data from 1950 reveal epidemics every three to five years (Lennon et al 1995). There has been a five-year gap between the last three epidemics, suggesting that the next epidemic will start late in the year 2000. In epidemic years for pertussis, several hundred children are still hospitalised in New Zealand. Māori are
over-represented among cases hospitalised for pertussis, with a hospitalisation rate more than double that of non-Māori. The last pertussis epidemic was centred on 1996, and as with previous epidemics spanned three calendar years. During this epidemic there were close to 800 hospitalisations (Blakely et al 1997).

Measles is caused by a virus and can be associated with serious complications including ear infections, pneumonia, diarrhoea, encephalitis (inflammation of the brain) and death (Clements et al 1992). Measles epidemics occur regularly in New Zealand (Cullen and Walker 1996). In 1991, a measles epidemic led to an estimated 30 000 to 60 000 cases, 629 hospitalisations (primary or secondary diagnosis), 10 cases of encephalitis and seven deaths. In 1996, modelling carried out by the Ministry of Health predicted another measles epidemic in 1997 or 1998 (Tobias et al 1997). Parents and immunisation providers were advised to catch up on missed immunisations in December 1996 (Ministry of Health 1996i), but this was insufficient to prevent the epidemic. The epidemic had started by mid-April, during the planning for a mass campaign to prevent the epidemic, which offered MMR vaccine to all children aged 2–10 years. The campaign was brought forward and limited the size of the epidemic, but did not achieve sufficient immunisation coverage to stop virus circulation. During the 1997 epidemic there were over 2000 measles notifications, approximately 300 children were hospitalised for measles, but there were no deaths reported (Mansoor, Blakely et al 1998; New Zealand Health Information Service 1998). This compares to the prediction of 45 000 cases with 600–900 hospitalisations and 6–9 deaths (Tobias et al 1997).

Hepatitis B is a serious disease which can lead to major long-term health complications including chronic hepatitis, cirrhosis and liver cancer (Lee 1997). Prior to the introduction of the hepatitis B vaccine in 1985 there were up to 600 cases of hepatitis B notified annually. In 1997, there were 136 cases – a reduction of 77 percent (ESR 1997, unpublished data).

Diphtheria is a disease which primarily affects the airways and occasionally the skin. The bacteria which cause the disease produces a toxin which may affect nerves (causing paralysis) and heart muscle (causing heart failure). Between 5 and 10 percent of people who develop the disease die from it (Benenson 1995). Regular epidemics of infection occurred in New Zealand until 1950. In August 1998 a case of diphtheria was identified in an unimmunised 18-month-old child. This was the first case in New Zealand since 1980.

Polio is a potentially serious viral infection which can cause flaccid paralysis in about one percent of cases (Hull and Ward 1992). In 1988, the World Health Organization set a goal for the eradication of polio by the year 2000 (Hull and Ward 1992). Polio has been eliminated in the Western hemisphere and in many developed countries, but in less advantaged countries it remains endemic and at times epidemic (Ministry of Health 1996c). In New Zealand there have only been five cases of polio reported since 1962 and no indigenous cases of polio have occurred since at least 1977 (Ministry of Health 1996c). As part of the eradication process, however, each country needs to certify that it is polio free. In order to achieve this, New Zealand set up a surveillance system for acute flaccid paralysis in October 1997. If no cases of poliomyelitis are detected for three years, New Zealand will be able to declare that it has officially eliminated polio (Ministry of Health 1996c).

Tetanus is a disease caused by the toxin of bacteria which are commonly found in the environment (Benenson 1995). The disease occurs when organisms enter a wound at the time of even trivial injury. The disease has a high fatality rate and occurs spasmodically in New Zealand. There were no cases of tetanus in New Zealand in 1997, but there were three cases
in 1996 (ESR 1997, unpublished data). It is not possible to eliminate the risk of tetanus as organisms are present widely in the environment, but individuals can be protected by immunisation (Ministry of Health 1995b).

Rubella is usually a mild viral illness which occurs in epidemics. It is important because if a pregnant woman becomes infected it can cause abnormalities in the developing foetus, including blindness, deafness, heart damage and brain damage (Benenson 1995). Rubella became notifiable in June 1996 (Baker and Roberts 1996). In 1997 there were 79 cases of the disease, although no cases of congenital rubella were notified. The last rubella epidemic was during 1995, when there were over 1500 confirmed cases (ESR 1997, unpublished data).

**Progress toward targets**

Immunisation coverage rates are given in Figures 26 and 27. In Figure 26 coverage rates for DTP/DTPH3 are given for 1994–97. The coverage levels for individual vaccines were determined by analysis of immunisation benefit claim data (number of claims received for each vaccine, divided by the number of children in the birth cohort after adjustment for capitated general practices which do not submit claims to HBL). The immunisation schedule change of February 1996 limits the capacity to calculate coverage levels for some vaccines during the transitional period. The coverage for DTPH3, unaffected by these changes, dropped from 90.6 percent in 1996 to 87.3 percent in 1997 (Mansoor, Sarfati et al 1998). Note that the figures for DTPH coverage in the 1997 *Progress on Health Outcome Targets* (Ministry of Health 1997I) were incorrect for the years 1994 and 1996. The correct figures are supplied here.

The coverage levels shown in Figure 27 were determined by surveys (Department of Health 1992a; North Health 1997). They show the proportion of children fully immunised in the Northern region by age two years, according to the immunisation schedule. Between 1992 and 1996, there was an increase in the proportion of fully immunised two-year-olds in the Northern region from 55.4 percent to 63.1 percent. This increase was not statistically significant. The most recent survey carried out by North Health showed that around 45 percent of Māori children and 53 percent of Pacific children were immunised by age two years, which remains well below the 72 percent for ‘other’ children (North Health 1997).
Figure 26: National immunisation coverage rates for DTP/DTPH3, 1994–97

Source of data: ESR
* Targets were set for full immunisation, not individual immunisations.

Figure 27: Proportion of fully immunised two-year-olds, by ethnicity, in Northern region

Source of data: Department of Health and North Health
Assessment

Data quality and limitations of indicator

Both datasets (survey and benefit claims) have limitations. The survey methodology, by requiring documented immunisation status, provides a lower bound for coverage, but is also subject to selection bias in the sampling. The benefit data are unreliable for a variety of reasons, but are useful as an indicator of trends.

Data on rates of full immunisation coverage and coverage by ethnicity are only available from the 1992 national survey (Department of Health 1992a) and the 1996 North Health survey (North Health 1997), so a trend can only be extrapolated for this one region.

Interpretation of trend

There is an apparent improvement in immunisation coverage between 1994 and 1996 for the DTPH3. However, coverage levels in 1997 show a decline. This drop in coverage was largest in North Health and may in part be related to the change in processing of immunisation claims since May 1997 in that region (McNicholas et al 1998). Another possible factor may be the recent media reporting of immunisation ‘scares’ (Mansoor, Sarfati et al 1998). For example, the media has recently given prominence to a claim of a link between MMR vaccine and Crohn’s disease. On the other hand, research failing to find this association has not been reported (Metcalf 1998; Feeney et al 1997).

The 1996 North Health survey data suggest that it is unlikely that the 1997 target to have immunised fully 85 percent or more of two-year-olds has been reached. This survey also shows that, in the Northern region, the gap between immunisation rates of Māori children and ‘other’ children has increased from 23 percent in 1992 to 28 percent in 1996 (Rainger et al 1998). Similarly the gap between Pacific children and ‘other’ children has increased from 10 percent to 19 percent over the same time period. Therefore, the second and third targets are unlikely to have been met, although the data are available only from this one region.

These data suggest that further impetus will be required to meet the immunisation targets.

Strategies

<table>
<thead>
<tr>
<th>National Immunisation Strategy</th>
<th>In order to achieve the immunisation targets, the National Immunisation Strategy, Immunisation 2000, was launched in February 1996. The key elements of this strategy are as follows (Ministry of Health 1995b).</th>
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<td>• Improving the quality of immunisation service delivery. The HFA contracts with a number of different providers, eg, GPs, Plunket, the Māori Women’s Welfare League and Tipu Ora, to provide accessible and culturally safe services for all children. The HFA holds providers accountable for achieving high levels of coverage by specifying appropriate coverage target rates in contracts and by ensuring that all immunisation providers have a reminder and recall facility. Local immunisation co-ordinators have been employed in some areas to improve the integration of immunisation services.</td>
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<td>• Improving the effective provision of immunisation. The immunisation schedule has been rationalised so that parents and caregivers have to make fewer visits to their vaccinator to get fully vaccinated. Immunisations are provided free of charge. Also, vaccinators are being trained according to best-practice guidelines to ensure consistency between them.</td>
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### National Immunisation strategy (cont’d)

- **Improving the monitoring and surveillance of immunisation.** The notifiable disease schedule was amended in June 1996 (Baker and Roberts 1996) to include all vaccine-preventable diseases so that the incidence of these diseases could be more carefully monitored. The information systems currently in use to monitor immunisation coverage rates are still insufficient.

- **Ensuring that parents and caregivers carry out their responsibilities for children’s immunisation** by providing them with adequate information to make an informed choice, and to assist those who decide in favour of immunising their child to complete their child’s early childhood immunisations. Parents and caregivers are provided with an immunisation certificate which records the immunisation status of their child.

- **Reducing the incidence of vaccine-preventable diseases** by requiring the heads of schools and early childhood centres to check the immunisation certificate of each child. Children with incomplete certification will be referred to their family vaccinator to assist them in completing their immunisations, provided that their parents or caregivers do not conscientiously object to immunisation, and that there are no medical reasons for not vaccinating. In an outbreak of disease, the local medical officer of health will be able to identify unimmunised children and take action to protect these children.

### Child Health Strategy

In 1998 the Ministry of Health published this strategy document looking at what is required to improve child health services, and ultimately the health status of New Zealand’s children (Ministry of Health 1998b). The six future directions identified in this document are:

1. a greater focus on health promotion, prevention and early intervention
2. better co-ordination of services for children
3. to develop a national child health information strategy
4. to develop the child health workforce
5. to improve health evaluation and research
6. to take leadership in child health.

Four priority population groups were identified:

- tamariki Māori
- Pacific children
- children with high health and disability support needs
- children from families experiencing multiple social and economic disadvantage.

It is hoped that implementation of the child health strategy will help to improve immunisation rates, and to reduce inequalities in rates of immunisation between ethnic groups.

### Public education and workforce training

To improve immunisation coverage rates, there continues to be educational material developed and delivered to the public and to health professionals, eg, the *Immunisation Handbook* (Ministry of Health 1996c). There is particular emphasis on culturally appropriate material produced for Māori and Pacific peoples. The Immunisation Advisory Centre has been set up in Auckland to promote awareness and knowledge of immunisation, to influence attitudes by the provision of knowledge and to encourage action to increase immunisation coverage rates.
Target revision

Although it is unlikely that the 1997 targets were reached, the year 2000 target is still attainable with continuing implementation of the Immunisation 2000 and Child Health strategies. In particular, the further development of information systems which enable the identification and follow-up of children for completion of their immunisation programme, is critical.

Sudden Infant Death Syndrome (SIDS)

SIDs

Key points

• The total SIDS rate declined marginally in 1996, continuing a pattern of gradual decline over the last five years.
• For 1996, two-thirds of SIDS cases were recorded as being in the Māori ethnic group, with the Māori rates continuing to be very high relative to other ethnic groups.
• There have been marked changes in the recording of ethnicity for births and infant deaths from September 1995; 1996 is the beginning of a new time series for ethnic-specific rates.
• A provisional target for Māori has been set to reflect the changes in the coding of ethnicity.
• In 1998 a review of the survey methods for collecting data relating to SIDS was completed. A survey incorporating recommendations from this review is planned to begin in 1999/2000.

TARGETS

To reduce the total SIDS rate to 1.5 per 1000 livebirths or less by 1997, and to 1.0 per 1000 or less by the year 2000.

To reduce the Māori SIDS rate to 3.7 per 1000 livebirths or less by 1997, and to 2.1 per 1000 or less by the year 2000.

Target derivation

In 1994 the Public Health Commission published *Sudden Infant Death Syndrome (SIDS): The Public Health Commission’s advice to the Minister of Health 1993–1994* (PHC 1994l). The target rates for total SIDS and Māori SIDS were included in that publication. The total SIDS target was based on an analysis of the time series and assumed a continuation of the downward trend, after the national campaign of 1991. The Māori SIDS target took account of the differential between Māori and non-Māori SIDS rates, and was set to be challenging yet achievable.

Provisional revisions of the Māori target levels have been made because of the change in recording of ethnicity in September 1995. Provisional targets for Māori have been set based on the change in Māori infant mortality between 1994 and 1996. The target revision assumes all of the change in Māori infant mortality is due to the change in ethnicity coding, as there was no change in the rate of infant death for the total population. The 18 percent decrease in