1. Prenatal and infant health

Health status

Key points

- ▶ *In recent years infant death rates have decreased but infant hospitalisation rates have increased.*
- ▶ *There is a significant disparity between Māori and non-Māori death and hospitalisation rates.*
- ▶ *The significant decrease in the SIDS rate which has taken place since 1989 has occurred primarily in the New Zealand European population.*

- Between 1985 and 1994 the infant mortality rate decreased from 10.9 to 7.2 deaths per 1000 live births. In 1994, infant deaths totalled 414 (Ministry of Health 1998a).
- The Māori infant death rate is higher than the non-Māori infant death rate. In 1985 the Māori infant mortality rate was 1.4 times that of the total infant population. In 1994 this disparity was 1.9 (Ministry of Health 1998a).
- Low birthweight infants were more likely to die than other infants in 1994 (Ministry of Health 1998a).
- Between 1992 and 1994, SIDS accounted for 29 percent of infant deaths, congenital abnormalities for 28 percent and perinatal conditions for 27 percent (Ministry of Health 1998b).
- Between 1985 and 1994 the SIDS rate decreased 50 percent for the total population. The reduction rates were not even, with the non-Māori rate decreasing 62 percent and the Māori rate decreasing only 13 percent (Ministry of Health 1998a).
- The SIDS rate among Pacific infants appears to be increasing (Tukuitonga 1996).
- Between 1988 and 1995 there was an average annual increase of 4.9 percent for infant hospitalisations related to ill health (Ministry of Health 1998b).
- Perinatal conditions account for more infant hospitalisations than any other set of conditions (40 percent in 1995) (Ministry of Health 1997b).
- Respiratory conditions accounted for 14 percent of hospitalisations in 1995, congenital abnormalities 8 percent and infectious diseases 5 percent (Ministry of Health 1997b).
- The Māori rate of hospitalisation for infants was over twice the rate for non-Māori (Ministry of Health 1997b).

Implications

Key point

- ▶ *New Zealand infant death rates and SIDS rates are high in comparison with other OECD countries.*

Despite a decline in rates of infant mortality and sudden infant death syndrome (SIDS), both these rates are high in comparison to other OECD countries. New Zealand has the highest SIDS rate among OECD countries. The SIDS rate was 4.5 times higher among Māori than non-Māori in 1992–94 (Ministry of Health 1998b).

Factors influencing health status

Key point

- *A range of inter-related factors are associated with an increased risk of SIDS and other poor health outcomes.*

Factors associated with poor infant health outcomes:

- tobacco-smoking parents
- socioeconomic disadvantage
- young age of mother
- low birthweight
- non-breastfeeding
- poor prenatal care
- poor maternal education
- unmarried or sole parent
- low maternal education status

(Morrell 1990; Silva and Stanton 1996; Niven and Harding 1995; Clements et al 1997; Ford et al 1993; Mitchell and Scragg 1994).

Interventions

1 Universal access to free maternity services and systematic population-based delivery of preventive and early intervention services that ensure all pregnant women and infants receive the planned intervention and appropriate follow-up

Key point

- *There are a large number of evidence-based preventive and well child activities that are delivered during pregnancy and infancy. These include prenatal clinic services, prenatal classes, personal advice and well child checks.*

There are a large number of evidence-based preventive and well child activities that are delivered during pregnancy and infancy. These include prenatal clinic services, prenatal classes, personal advice and well child checks (USPSTF 1996; DHHS 1989). Most of these activities are generally considered to be part of the basic minimum standards of care that should be delivered to mothers and infants with appropriate follow-up (see Co-ordination and Integration of Services below).

2 Early identification including maternal, foetal and newborn screening programmes

Clinical screening

Key point

- *There are a wide range of screening activities undertaken during pregnancy and soon after birth. Most of these are supported by evidence.*

There are a wide range of screening activities undertaken during pregnancy and soon after childbirth. These include screening for diabetes and pre-eclampsia, blood typing and antibody testing. Most of these are supported by evidence (USPSTF 1996) (see Implications for Policy and Services below).

In New Zealand, infants are routinely screened at birth for seven metabolic diseases. There is good evidence that screening for phenylketonuria and hypothyroidism is effective and cost-efficient (USPSTF 1996).

Psychosocial risk screening

Key point

- *Further research, analysis and evaluation is required in order to develop the best psychosocial risk screening process for use during pregnancy and infancy.*

Certain populations of infants and caregivers (that is, low income, young maternal age, sole parent) benefit from home-visiting support and education interventions (see 'Parent support and home visiting' below). It is unclear, however, how those infants at risk of poor outcomes should be identified. Single-episode screening processes may lack precision (MacMillan et al 1994). Possible approaches to identify infants and caregivers who may benefit from home-visiting intervention include: (1) a two-stage identification process to improve specificity, (2) allowing late referrals of families with identified need, and (3) including clinical judgement of trained professionals. The impact of early attachment failure and other poor parenting factors suggest that over-inclusion of cases in the early months is justified.

3 Parent support and home visiting

Key point

- *Evidence favours continuing to develop home-visiting programmes both during pregnancy and, during the child's infancy. Home-visiting services that provide parent support and education and that commence during pregnancy have the potential to positively influence a wide range of poor infant outcomes.*

Controlled trials of the delivery of social and psychological support during pregnancy have found no negative effects and substantial psychological and behavioural benefits (Chalmers et al 1989). Home-visiting programmes that commence during pregnancy have also been

found to have a greater impact on childhood outcomes than those commenced postnatally (Larson 1980). The impact on low birthweight or pre-term birth, based on current evidence, appears to be modest. The beneficial effects of prenatal tobacco cessation counselling are noted elsewhere. Prenatal home-visiting programmes that deliver social and psychological support are therefore justified based on current evidence. Smoking reduction is also a potential gain from home visiting.

The most recent Cochrane review (Hodnett and Roberts 1997) on postnatal home-based support for socially disadvantaged mothers found that these programmes have no known risks and may have important benefits. The reviewers noted: 'programs which capitalise on the skills of experienced mothers living in the communities may be less expensive and more culturally sensitive than purely hospital-based programs led by teams of health care professionals'. A summary of the benefits identified in randomised control trials (RCTs) examined in the Cochrane review are as follows:

- reduced childhood injuries
- reduced incomplete well-child immunisations
- reduced hospital admissions
- reduced emergency department visits.

4 Appropriate clinical interventions during pregnancy, childbirth and following the birth of a child

Clinical interventions during normal childbirth are intended to prevent poor outcomes for mother and infant (see section on appropriate clinical interventions below).

5 Tobacco smoking cessation and reduction

Fiscal and regulatory measures to control tobacco smoking (some social and policy issues are covered below; more information on smoking cessation is contained in section 4 Tobacco Control and Child Health).

6 Educational approaches to influence knowledge, attitudes and behaviours related to alcohol, nutrition, prone sleeping position, inherited risks and utilising preventive health services

(See section 12 Food and Nutrition.)

Key point

▶ *There is evidence that educational approaches can positively affect infant health outcomes.*

Attendance at prenatal classes has been found to be a protective factor against SIDS in New Zealand (Mitchell et al 1991). There is some evidence that prenatal home-visiting produces positive effects in reducing pre-term delivery and low birthweight, and increasing knowledge of available services (Olds and Kitzman 1993).

There is also evidence for the effectiveness of educational approaches in producing behavioural change (sleep position and bed sharing) (Scragg et al 1993). There is concern that the national SIDS campaign messages have failed to a certain extent to reach the Māori

population (PHC 1994). It has been suggested that the difference in SIDS mortality rates between Māori and non-Māori can be largely explained by differences in the prevalence of known risk factors (Mitchell and Scragg 1994; Mitchell and Tipene-Leach 1996).

7 Environmental measures such as control of injury hazards and teratogenic toxins in products and the environment and enhancement of protective factors such as folate in food (See section 12 Food and Nutrition and section 3 Preventing Unintentional Injuries.)

Infection with *Listeria* is a rare but potentially serious cause of adverse pregnancy outcomes. Specific food hygiene standards relating to the presence of *Listeria* in processed foods and related information are currently distributed.

8 Immuno-chemoprophylaxis using vaccines and preventive therapeutic agents to whole or selected maternal and infant populations (See section 2 Control of Communicable Diseases.)

Implications for policy and services

1 Screening

Key point

- *Current prenatal screening activities could be reviewed with a view to improving the effectiveness and efficiency of prenatal care.*

There are a number of screening activities that are either not supported by evidence or may not be cost-effective. These include universal screening for syphilis, gonorrhoea, chlamydia, and mid-trimester and third trimester ultrasound (USPSTF 1996; Nicoll and Moisley 1994; Nettleman and Bell 1991; Neilson 1997; Pearson 1994). There are screening procedures that are justified but which may not be systematically undertaken in New Zealand. Those include universal screening for neural-tube defects, hepatitis B, and tobacco, alcohol and drug use (USPSTF 1996; PHC 1995a) and targeted screening for group B streptococcal carriage in the intrapartum period (American Academy of Pediatrics 1997, Committee on Infectious Disease and Committee on Fetus and Newborn). There is currently no information on the degree to which universal prenatal screening is undertaken in New Zealand.

2 Appropriate clinical interventions during pregnancy, childbirth and after a child's birth

Key point

- *A review of childbirth outcomes, appropriate clinical interventions and monitoring procedures could be undertaken to ensure the best outcomes for mothers and infants.*

Clinical interventions during normal childbirth are intended to prevent poor outcomes for mother and infant. New Zealand has both low perinatal and maternal mortality rates.

Obstetric care (and when appropriate intensive obstetric care) needs to start well before birth and be available immediately after the baby's birth. Neonatal services are vital for ensuring the survival and health of infants born pre-term.

3 Māori infants

Key point

- *Given the inequities in health status between Māori infants and non-Māori infants efforts to identify and provide culturally effective services must be undertaken.*

4 Socioeconomic disadvantage

Key point

- *Socioeconomic disadvantage has been identified as being associated with a range of prenatal and infant conditions including SIDS.*

Socioeconomic disadvantage has been described as a risk factor for pre-eclampsia, pre-term birth, low birthweight, infant mortality, and poorer pregnancy outcomes in general (DHHS 1989). New Zealand studies have identified correlations between low socioeconomic status (or proxies for this) and adverse infant health outcomes including sudden infant death syndrome (SIDS), increased injury rates, mortality, and low immunisation coverage (Mitchell and Tipene-Leach 1996; Ford and Nelson 1995; Tuohy et al 1993) (see Factors Influencing Health Status in the front of this report for further discussion on socioeconomic disadvantages).

5 Tobacco control

Key point

- *Effective smoking cessation treatments are available, are cost-beneficial, but have not been widely implemented, and there is justification for every pregnant women or parent who smokes to be offered one or more of these treatments.*

There are effective, evidence-based interventions available to reduce tobacco smoking among pregnant women and infant caregivers. These interventions are not currently widely used in New Zealand. There is potential for significant health gain, especially among Māori infants, if evidence-based tobacco cessation services are implemented.

Three treatment elements, in particular, are effective (DHHS 1996), and one or more of these should be included in smoking reduction and cessation treatment:

- nicotine replacement therapy[5]
- social support (provider encouragement and assistance)
- skills training/problem solving.

5 The safety of using nicotine replacement therapy during pregnancy is unclear. Potential risks make it advisable to avoid replacement therapy during pregnancy and lactation (New Ethicals Compendium 1997).

Effectively reducing tobacco use requires the health purchasing and provider systems to make administrative changes that result in systematic identification of, and interventions with, all tobacco users at every visit (DHHS 1996).

In the United States having tobacco smoking as a monitoring indicator in contracts with providers is effective in increasing clinician intervention rates (DHHS 1996). Tobacco smoking is not currently a variable on perinatal or primary care minimum data sets in New Zealand.

6 Co-ordination and integration of services

Key point

- *There are indications that services for infants, pregnant women and other caregivers could be better co-ordinated.*

There has been concern expressed by professional groups about co-ordination of services during pregnancy, childbirth and infancy (see Appendix 1 for the surveys of providers). Issues relate to midwife and medical care during pregnancy and childbirth, handover from maternity to well-child providers, and co-ordination between various well-child providers especially GPs, child health nurses and family support services. Existing service contracts specify a requirement on practitioners to ensure proper referral and handover of care procedures during and after birth. The HFA has started to audit compliance with these specifications.

Some services for infants, such as early intervention for newborn infants at high risk of disabilities, may function in a way which prevents access to infants who need them. For example, very low birthweight infants, who have a significant risk of long-term disability may miss out on early intervention services because they are not classified as having a disability (Darlow et al 1997).

Key point

- *There are indications for further developing population-based methods for systematically delivering planned preventive and early intervention services to all infants and pregnant women.*

There is no population-based information available on the delivery of many of the activities provided during pregnancy and infancy. There have been several attempts by both professionals, and health administrators to develop perinatal and child health information systems. Perinatal data are currently being collected and will form the basis for a better information system. The purpose of such systems is primarily to improve outcomes for children by ensuring full coverage of preventive activities, appropriate targeting of services and follow-up of children and caregivers as appropriate.

7 Health education

Key point

- *Routine prenatal visiting at home or in clinics offers essential opportunities for providing advice about diet, exercise, SIDS prevention, alcohol and drug and tobacco intake, and parenting skills.*

The following related issues are covered in other sections:

- reducing teenage pregnancy rates and increasing birth spacing (see section 8 Sexual and Reproductive Health)
- population-based tobacco control strategies (see section 4 Tobacco Control and Child Health)
- further population-based measures to increase folate intake among pregnant women (see section 14 Disability)
- developmental screening (see section 14 Disability)
- environmental measures and injury control (see section 3 Preventing Unintentional Injuries)
- home visiting (a fuller review of home visiting can be found in the section on Key Interventions to Improve Health Gain for Children and Improve Family Functioning, at the front of this report).

8 Child mortality reviews (See section on Key Interventions to Improve Health Gain for Children and Improve Family Functioning, in the front of this report.)

Key point

- *A national child mortality review system has been proposed by various groups and individuals as a way of learning from the deaths of children in order to help prevent future deaths.*

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