

# Who is saying what about immunisation: evidence from *Growing Up in New Zealand*



Immunisation is one of the most cost-effective means of preventing disease and improving health.

The timeliness of immunisation delivery is important, including for the diseases preventable by vaccination to which very young infants are particularly vulnerable, such as pertussis (also known as whooping cough) and invasive pneumococcal disease.

We understand some of the barriers and enablers to improving rates of timely immunisation, but there are still gaps in our knowledge in the New Zealand context, particularly regarding the following:

- Most women make their decisions regarding their infant's immunisations whilst they are still pregnant, yet we know little about the influence of fathers' immunisation intentions on infant immunisation timeliness.
- We do not have a full picture of where families get their information about immunisation from, what information they trust, and the impact of this information on infant immunisation timeliness.
- We need to know more to improve timely immunisation for some groups within our population that have high intentions for immunisation, but whose intentions are not always met with our current approach.

These are all important knowledge gaps to fill in order to maximise policy effectiveness, and to minimise the serious risks and inequitable effect of vaccine-preventable diseases in New Zealand.

This policy brief from *Growing Up in New Zealand* focuses on the intentions for immunisation, the sources of encouraging and discouraging information for pregnant women and their partners, and the impact that this information has on timely immunisation for the new generation of New Zealand children.

# Evidence from *Growing Up in New Zealand*

## Information collected

The *Growing Up in New Zealand* longitudinal study provides a unique opportunity to understand these specific knowledge gaps, and other determinants of immunisation delivery, timeliness and equity. Because this study started before the birth of the 6853 children enrolled in the cohort study, it is able to provide evidence both of intentions to immunise in pregnancy as well as the reality for families and children. Immunisation information gathered to date includes:

- Information about intentions for full or partial immunisation by both mother and mother's partner before birth, including whether they had yet to decide on their immunisation intentions for their unborn child.
- Information about the sources of information about immunisation for both mothers and partners, including those that either encouraged or discouraged immunisation.
- Information about immunisation completeness and timeliness after birth, as determined by linkage to the National Immunisation Register (NIR). *Growing Up in New Zealand* obtained consent to link to NIR data for 6682 (98%) of the 6853 enrolled infants, and has established linkage to NIR records for the six-week, three-month and five-month immunisations for 6674 (97%) children in the cohort.

A total of 6822 women and 4,404 of their partners (predominantly the biological fathers of the child in the cohort) were enrolled into *Growing Up in New Zealand*.

Information about immunisation intentions was obtained before birth from 6172 women. Of those, 5014 (81%) intended for their child to be fully immunised, 4% intended their child to be partially immunised, 2% intended not to immunise their child, and 773 women (13%) were undecided about immunisation.

In addition, 4158 partners provided information about immunisation intentions in the pregnancy period. These partners were more likely than the mothers to be undecided about immunisation (22% compared to 13%;  $p < 0.001$ ), and less likely to have decided upon full immunisation (71% compared to 81%,  $p = 0.002$ ) (Figure 1).

## Immunisation information

In pregnancy, many women and their partners stated that they had received information about immunisation. Most parents had received information about immunisation from multiple sources.

### Encouraging information

Of those parents who provided information, 2416 mothers (39%) and 1255 (30%) of their partners had received information that encouraged them to immunise their child once s/he was born. In 16% of cases where both parents provided information (663

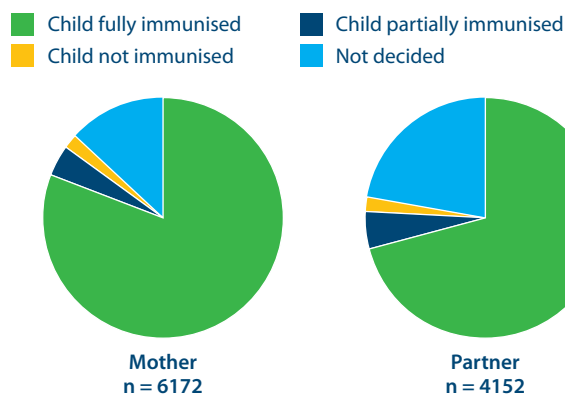


Figure 1: Intentions for immunisation of the *Growing Up in New Zealand* children before birth, by their mothers and their mothers' partners

out of 4123) both the pregnant women and her partner received encouraging information from at least one information source.

More than 50% of the women and 64% of their partners who received encouraging information about immunisation identified more than one information source.

The sources of information about immunisation identified by mothers and partners were grouped into four categories:

- Friends, family or whānau;
- Health care sources - family doctors, midwives, obstetricians, dieticians and nutritionists, alternative health practitioners and antenatal classes;
- Media - the internet, radio, television, books, magazines and newspapers; and
- A variety of other sources, for example parent and baby shows, and through their occupation.

Approximately 70% of women received encouraging information about immunisation from sources in one of the four categories, just under one quarter received information from two source categories, 7% from three, and less than 1% accessed information in all four source categories.

The encouraging information received by partners was from one of these source categories for 59%, and from two of these sources for 29%. There were 12% of partners who received information from three of these source categories and less than 1% who accessed all four types of sources.

The most common source of information that encouraged immunisation was a midwife (for 62% of mothers and 44% of their partners). A family doctor or GP was identified as a source of encouraging information by 36% of mothers and 29% of partners. Other specific sources of encouraging information are described in Figure 2.

A larger proportion of partners, compared to mothers, identified family (28% vs. 17%,  $p < 0.001$ ), friends (19% vs. 12%), the antenatal class (20% vs. 13%); television (23% vs. 9%), radio (8% vs. 3%) and the internet (10% vs. 5%) as sources of information that encourage immunisation.

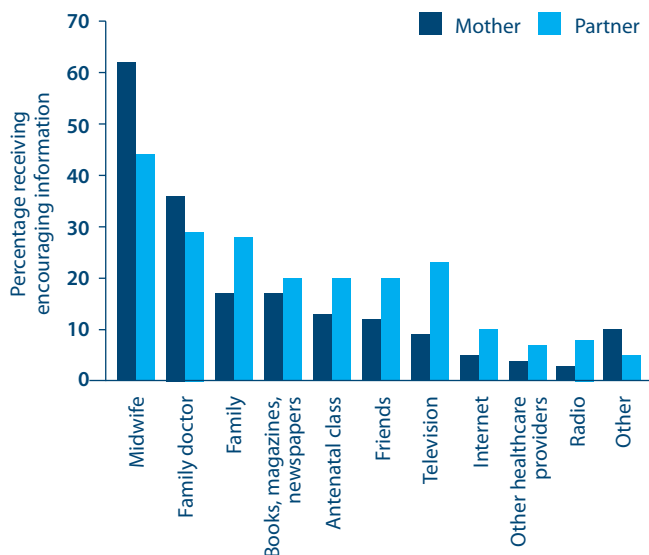


Figure 2: Sources of immunisation information for *Growing Up in New Zealand* parents that encouraged them to immunise their child once s/he was born

### Discouraging information

Overall, 846 mothers (14%) and 535 of their partners (13%) received information that discouraged them to immunise their child once s/he was born. In 5% of cases where both parents provided information (191 out of 4131), both the pregnant women and her partner received discouraging information about immunisation.

More than one source of discouraging information was identified by 40% of the women who received discouraging information, and by 39% of their partners.

Within the four categories of sources of immunisation information (family and whānau, health care, media, other) the discouraging information about immunisation received by mothers was from one of these categories for 58%, from two of these categories for 30%, from three for 12% and from four for less than 1%. Three quarters of partners received discouraging information about immunisation from one of these source categories, one in five received information from two of these categories, and 5% accessed sources from three of these categories.

Friends were the most common source of information that discouraged immunisation for both mothers and their partners, and over a third of parents described friends as at least one source that provided discouraging information about immunisation. In addition, books, magazines and newspapers; family; television and the internet were sources of discouraging information for both pregnant women and their partners as described in Figure 3.

There were 11% of pregnant women and 8% of their partners who described midwives as the source of discouraging information about immunisation, 8% received discouraging information in antenatal classes, and 3% of both pregnant women and their partners from a family doctor.

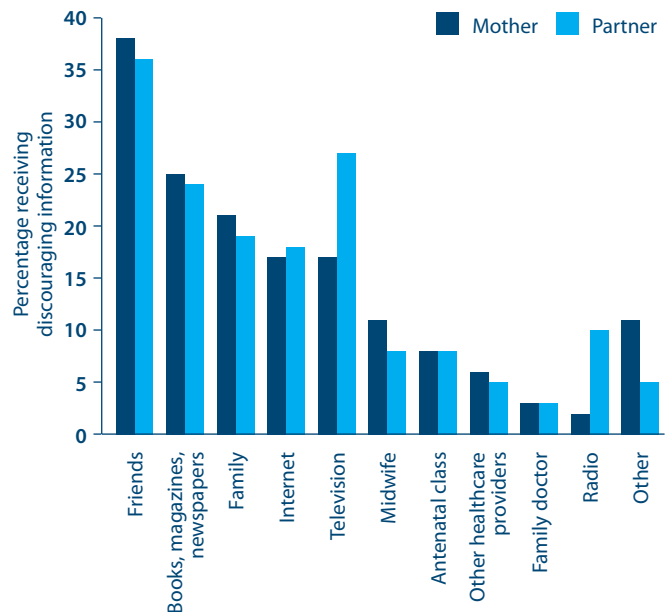


Figure 3: Sources of immunisation information for *Growing Up in New Zealand* parents that discouraged immunisation

In comparison with the pregnant women a larger proportion of partners stated that television (27% vs. 17%;  $p < 0.001$ ) and radio (10% vs. 2%;  $p < 0.001$ ) were sources of discouraging information.

### Receipt of both encouraging and discouraging information

As described, information that encouraged immunisation of the future child was received more frequently than information that discouraged immunisation. The majority of pregnant women and their partners (75% of each) who received information described as encouraging immunisation did not also receive information that discouraged immunisation. In comparison, only one third of the pregnant women and 42% of their partners who received discouraging information did not receive encouraging information.

### The impact of information on timely immunisation

The impact of receiving encouraging information on a child getting their first immunisations (6 week, 3 month and 5 month) on time was determined using the *Growing Up in New Zealand* information provided by the women and their partners about receipt of encouraging information and the data from the National Immunisation Register (NIR). The NIR data describes whether each of the two vaccines scheduled to be given at six weeks, and three and five months of age were given and, if so, the date each vaccine dose was given. Infants were considered to have been immunised on time if each of these vaccines were given within 30 days of the date they first became due. Overall, 71% of the children received all of these immunisations on time.

The likelihood of timely immunisation of the infant was not impacted by the receipt of encouraging information by the pregnant woman. 71% of the children whose mothers received encouraging information and the same percentage of children whose mothers did not receive encouraging information

were immunised on time. Similarly, the likelihood of timely immunisation of the infant was not impacted on by the receipt of encouraging information by the partner.

In contrast, receipt of discouraging information by either the mother or partner was associated with the child being less likely to be immunised on time. 60% of the children whose mothers received discouraging information and 73% of the children whose mothers did not receive discouraging information were immunised on time. After adjustment for variables describing the parental relationship, maternal age, maternal ethnicity, parity, pregnancy planning, level of education, employment, area level deprivation and the receipt of encouraging or discouraging immunisation information by the partner, it was found that the child of a pregnant woman who received discouraging information was twice as likely to have delayed immunisations.

64% of the children whose mother's partner received discouraging information and 74% of children whose mother's partner did not receive discouraging information were immunised on time. Where the partner received discouraging information, the child was 50% more likely to have delayed immunisations after adjustment for variables describing the parental relationship, partner age, partner ethnicity, partner education, employment, area level deprivation and the receipt of encouraging or discouraging immunisation information by the mother.

## What does this mean?

### Summary points

- There remains room for improvement in the equity of coverage and timeliness of immunisation for infants in New Zealand.
- Pregnancy is when most parents make their decisions regarding the immunisation of their future child.
- Over half (56%) of pregnant women do not receive any information regarding immunisation of their child prior to her/his birth.
- 39% of pregnant women received information that encouraged immunisation before their child was born. A smaller proportion of partners (30%) receive information that encourages them to immunise their future child.
- Midwives, family doctors and family members were the most common sources of information that encourages immunisation for both pregnant women and their partners.
- Family and friends, and media were the most common sources of information that discourages immunisation for both pregnant women and their partners.
- Television and radio are information sources from which partners of pregnant women are more likely to receive information that discourages immunisation.
- While health care providers were the most frequent source of encouraging information they were also the identified source of 16% of the discouraging information.
- A small, but important proportion of pregnant women only received discouraging information about immunisation.
- Receipt in pregnancy of discouraging information by either the future mother or father about immunisation was associated with a delay in immunisation timeliness.

### What can we do?

- Pregnancy is an important opportunity to receive information regarding immunisation, and more can be done to ensure that information is accessible and received.
- The role of partners in immunisation decision making needs further attention – particularly during pregnancy.
- We need to understand further why the encouraging message is not more effective in improving immunisation timeliness, and why the discouraging message is more effective in leading to immunisation delay. Media could be used more effectively for the provision of encouraging information.
- Further attention could be paid to the role of health care providers regarding the gaps in information provision, as well as their role as the source of discouraging information about immunisation for 1 in 6 of our pregnant women and their partners.

## About Growing Up in New Zealand

*Growing Up in New Zealand* is New Zealand's contemporary longitudinal study of child development, tracking the development of nearly 7000 children in the context of their diverse families and environments from before their birth until they are young adults.

Multidisciplinary longitudinal information has been collected from the *Growing Up in New Zealand* children, who were born in 2009 and 2010, and their families.<sup>1</sup> Each data collection of *Growing Up in New Zealand* seeks age-appropriate information across six inter-connected domains: family and whānau, societal context and neighbourhood, education, health and wellbeing, psychosocial and cognitive development, and culture and identity.<sup>2</sup> A number of face-to-face data collection waves have been conducted with the mothers, fathers and children of *Growing Up in New Zealand* from before birth and through the first 1000 days of life. It is intended for data collection waves to occur with the cohort every 2-3 years until they reach adulthood.

The *Growing Up in New Zealand* children are broadly generalisable to current New Zealand births,<sup>3</sup> and importantly the study collects evidence from families across the spectrum of socioeconomic status as well as ethnic diversity. The study includes significant numbers of tamariki Māori (1 in 4 of the cohort), Pacific children (1 in 5) and Asian children (1 in 6). Almost half of the cohort children are expected to identify with multiple ethnicities. This diversity of the families involved, as well as their ongoing commitment, helps to future-proof the information that can be provided from *Growing Up in New Zealand*. Retention rates are very high (over 92%) through to the preschool data collection wave which was completed in 2015.

The unique information collected within Growing Up in New Zealand is designed to contribute evidence to inform

- a better understanding of the causal pathways that lead to particular developmental outcomes in contemporary New Zealand, and
- the effective evaluation, development and implementation of programmes and policy to optimise: support for families; health and development of children; and equity of outcomes across and within the New Zealand population.

The study is run by as a multi-disciplinary team of experts at the University of Auckland, who work in partnership with experts at other academic institutions as well as a large number of government agencies including the Social Policy Evaluation and Research Unit (Superu) and the Ministries of Social Development, Education, Health and others to ensure that up-to-date and appropriate evidence is provided for policy translation. A number of key reports and publications have already been produced from *Growing Up in New Zealand* and the resource provided is being increasingly utilised. Data from the *Growing Up in New Zealand* study is available for access. For further information on data access arrangements, copies of existing study publications, and contact details for our team please view [www.growingup.co.nz](http://www.growingup.co.nz).

<sup>1</sup>Morton SMB, et al. (2012). How Do You Recruit and Retain a Pre-Birth Cohort? Lessons Learnt From Growing Up in New Zealand. *Evaluation & the Health Professions*; DOI: 10.1177/0163278712462717.

<sup>2</sup>Morton SM, et al. (2013). Cohort profile: Growing Up in New Zealand. *International Journal of Epidemiology* 42:65-75.

<sup>3</sup>Morton SMB, et al. (2014). Growing Up in New Zealand cohort alignment with all New Zealand births. *Australian and New Zealand Journal of Public Health*. In press.

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Morton, SM, et al. (2013). Cohort profile: Growing Up in New Zealand. *International Journal of Epidemiology*, 42:65-75

Morton SM, et al. (2015). Growing Up in New Zealand cohort alignment with all New Zealand births. *Australian and New Zealand Journal of Public Health*, 39(1): 82-7