

# BEATING THE KILLER COUGH

The US and UK have introduced pertussis vaccination in pregnancy – why not Australia? Niamh Mullen reports.



DESPITE the success of the pertussis vaccine, introduced worldwide 60 years ago, there are still peaks of disease activity every 3–5 years, and public health specialists are still struggling to find the best way to protect infants who are too young to be immunised.

Ten infants have died in the UK this year, amid the country's worst outbreak of pertussis in two decades. In the US, 16 have died, while New Zealand is also in the grip of an epidemic that began last year.

In an attempt to protect this vulnerable group, the US Centers for Disease Control and Prevention (CDC) last year took the radical step of recommending the vaccination of pregnant women after 20 weeks' gestation. In September the UK followed, implementing a temporary program, while some district health boards in New Zealand are also offering the vaccine to pregnant women.

In Australia, the epidemic that claimed the life of four-week-old Dana McCaffery and seven others since 2008 has waned. Notifications have dropped from a high of 38,637 cases last year to 19,372 in early November.

Since her daughter's death,

Dana's mother Toni has been campaigning for vaccine awareness and is in contact with the parents of babies who have died in the UK.

"They are very relieved to see something happening because none of them were told about needing adult boosters. The UK did not have a cocooning program. It is so very sad that it takes deaths for anything to happen," she says.

She hopes Australia will move to implement vaccination in pregnancy but also complement it with the cocooning strategy of vaccinating fathers, grandparents and other relatives.

Cocooning programs implemented in 2009 have recently been scaled back or abandoned in most states. Health departments defend their decisions by citing the waning epidemic and the Pharmaceutical Benefits Advisory Committee's (PBAC) rejection of a subsidy for an adult booster, due to uncertainty about clinical effectiveness.

While no decision has been taken in Australia on vaccination during pregnancy, the Australian Technical Advisory Group on Immunisation (ATAGI) is considering possible future changes to

the schedule. ATAGI chair Professor Terry Nolan emphasises that the UK's recent announcement of a temporary program is a response to the current epidemic. Australia responded in a similar way to the epidemic here, when we introduced cocooning.

"Frankly there is no evidence for effectiveness of maternal immunisation yet. While there is no reason to believe it is not safe, for an ongoing program further evidence on safety will be required," he says.

A consultant in communicable disease control with the UK's Health Protection Agency and the editor of *Vaccines in Practice* magazine, Dr Peter English, says the UK's Joint Committee

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on Vaccination and Immunisation's decision is based on the US experience, where no safety concerns have been raised after more than a year.

The CDC's Advisory Committee on Immunization Practices (ACIP) relied on experience with tetanus and diphtheria

vaccination as well as manufacturers' registries, which include data on pregnant women inadvertently immunised for pertussis.

However Dr Mark Sawyer, chair of the CDC's pertussis working group, says he is not aware of any direct evidence on efficacy.

"I can simply quote the Californian experience where, after a record breaking year in 2010, we have had almost two years in a row of very low numbers. Whether that is directly related to the vaccination program I can't really prove," he says.

Another reason Australian experts cite for not yet implementing a similar program is

not last long enough. Immunising pregnant women could further blunt the effectiveness of the vaccine in children, he says, and put more pressure on reintroducing a booster for 18-month-olds – something already under consideration.

"It is all part of a sequence; you can't fiddle with one end of it. We have a pertussis working party which is actively looking at all of these things," he says.

Dr Sawyer says there are some data to suggest blunting may occur, but the ACIP decided it would be the lesser of two evils to shift disease to an older age group and prevent infant deaths.

Both the UK and US guidelines state the vaccine should be given to women during every pregnancy, regardless of the interval between pregnancies or the woman's history of pertussis vaccination.

Dr Sawyer says this is because it is becoming clear that immunity wanes quickly, particularly the antibodies in the bloodstream that are passed to the baby through the placenta.

Several years after vaccination the mother may still be protected but her antibody levels would not be high enough to give

the baby the same level of protection, he says.

The draft *10th Australian Immunisation Handbook*, which has been subject to public consultation and is due to be finalised next year, does not recommend routine vaccination for pregnant women but says it can be given to women in the third trimester as an alternative to pre-conception or postpartum vaccination.

It suggests an alternative is to vaccinate women who are planning to become pregnant, but Dr English says this would be difficult and unlikely to be effective due to the high number of unplanned pregnancies. Vaccination before pregnancy is also unlikely to provide babies with the same level of maternal antibodies they would get if the mother is vaccinated later during her pregnancy, he adds.

Medical Coordinator at the Communicable Disease Control Directorate in WA, Dr Paul Effler, says Australia would benefit from a strong national recommendation on the issue, rather than one that is permissive.

However Professor Robert Booy, head of clinical research at the National Centre for Immunisation Research and Surveillance, says the advice in the *Handbook* is not far short of a routine recommendation.

"My view right now is that we already feel that any time the risk of pertussis is elevated that it is an appropriate and good thing to vaccinate pregnant women after 20 weeks of pregnancy," he says.

Vice-president of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Associate Professor Stephen Robson, says the college would be very strongly supportive of a program to vaccinate pregnant women. It is due to consider the matter at a meeting this month with a view to developing a formal policy position.

While individual states or the federal government could implement programs for the vaccination of pregnant women, it would not be subsidised on the National Immunisation Program (NIP) unless a manufacturer submitted an application to the PBAC for approval.

Dr Effler says WA, where the cocooning program is due to finish at the end of the year, has been discussing the issue for months but his preference is for a national initiative.

A spokesperson for the Department of Health and Ageing says ATAGI is yet to make a recommendation to government about the routine vaccination of pregnant women.

In the meantime, research continues into the effectiveness

of the strategy. The CDC is gathering data and a study of 440 women is at the pilot stage in Halifax, Nova Scotia.

GlaxoSmithKline (GSK), sponsor of the Boostrix vaccine, is considering how it could generate data but says it is very difficult to conduct clinical trials in pregnant women.

A case-controlled study on the effectiveness of the cocooning strategy involving Queensland, NSW and Victoria is also ongoing with results due next year.

Meanwhile, Professor Booy says GPs can be assured there is a safe and effective vaccine that is appropriate to use in pregnant women after 20 weeks where they believe it is warranted.

And although free cocooning programs have been scaled back, it doesn't mean cocooning is not a good strategy, he says.

According to Professor Booy, anyone who is in close contact with a newborn, including fathers and grandparents, should pay for a booster before the baby is born.

#### Guidelines for pertussis vaccination in pregnancy

**US:** Vaccination after at least 20 weeks' gestation is recommended by the CDC, preferably during the third or late second trimester, and during subsequent pregnancies.

**UK:** The Department of Health is temporarily funding the vaccination of women when they are 28 to 38 weeks pregnant and during subsequent pregnancies.

**NZ:** The Ministry of Health recommends vaccination in the later stages of pregnancy. Some district health boards are offering free vaccination.

**Australia:** Not routinely recommended but can be given in the third trimester as an alternative to pre-conception or post-partum vaccination if a dose has not been given in the previous 10 years.