

## **Maternal pertussis vaccine – the first dose every baby gets?**

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Even in the pre vaccine era, although deaths from pertussis occurred in older children, they were most common in infants less than 6 months. Soon after early crude preparations of whole cell vaccine became available in the 1930s, trials of multiple doses in the latter stages of pregnancy appeared promising to prevent early mortality, before the first infant vaccine doses, but did not enter routine practice. In countries like Australia, with long-standing high infant pertussis vaccine coverage, deaths from pertussis now almost exclusively occur in the first 2 months of life. Maternal immunisation in the third trimester of pregnancy was first recommended in the United States, in the face of low uptake of the “cocoon” strategy of pertussis vaccine for adult contacts of newborns, and uncertainties about its impact. In 2012, the United Kingdom put in place an “emergency programme” of maternal pertussis vaccination, following more than 12 early infant deaths in less than one year, using a low-dose formulation of pertussis vaccine with inactivated polio (Repevax) which was available because of its routine use as a pre-school booster. Evaluation of the UK programme found an effectiveness of > 90% against severe pertussis in infants <3 months of age and no significant adverse effects among pregnant women, reported in 2014. This evidence, spurred along by public pressure following the death in WA of a neonate born to a mother who had received a cocoon dose after her previous pregnancy, has led to every Australian jurisdiction funding dose of acellular pertussis vaccine for pregnant women at 28-32 weeks in 2015.

In Australia, unlike the UK in 2012, there is no evidence of a current pertussis epidemic. However, evaluation of jurisdictional programs suggests high uptake, in some settings approaching 90%. Should a PBAC submission occur, and maternal pertussis vaccine be deemed cost effective, it could be funded on the National Immunisation Program and become “the first dose for every infant”, being recommended at present to be given in every pregnancy, as is currently the case for influenza vaccine. Knowledge is accumulating about how maternal vaccine impacts on infant responses and on adverse event profiles, especially with repeated doses in successive pregnancies, but unlike other immunisation programs, there was no lead up of immunogenicity and safety studies for different formulations. We are learning as we go, with much remaining to learn, but no measure so far has been shown to be as successful in bridging the “immunity gap” in protection against severe pertussis in the first 3 months of life