

doi: 10.1111/1753-6405.12772

Uptake of maternal vaccinations by Indigenous women in Central Australia

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Despite evidence supporting the effectiveness and safety of both pertussis (dTpa) and influenza (IIV) vaccines during pregnancy, uptake remains suboptimal.¹ In the Northern Territory (NT), IIV uptake improved from 2.2%, prior to the 2009 H1N1 pandemic, to 41% during pandemic.² More recently, Overton reported IIV uptake of 64% and dTpa of 22% among Indigenous women.³ Uptake of dTpa was lower compared with studies in non-Indigenous Australian women. In this study, we surveyed Indigenous women in Central Australia to evaluate uptake of dTpa two years following maternal dTpa recommendations in Australia. Self-reported uptake was correlated with the NT Immunisation register to assess the validity of self-report.

We surveyed women admitted to the maternity unit at Alice Springs after delivery of a healthy newborn between November 2016 and April 2017. The survey collected demographics, women's attitudes and knowledge of antenatal vaccines and vaccination status. Women living in Alice Springs and Tennant Creek were considered town-resident, and outside these remotely resident. Self-reported vaccination status was compared to that recorded in the NT Immunisation register, an all-ages immunisation register used since 1991. Women who received IIV within the influenza season, but prior to the pregnancy itself, were considered to have received 'antenatal' vaccination as they would not be re-vaccinated during pregnancy.

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS; IBM Corporation. IBM SPSS Statistics for Windows, Version 22.0. Armonk, New York: IBM Corp, Released 2013). The study received

approval from the Central Australian Human Research and Ethics Committee.

Surveys were completed by 85% (47/55) of women approached. The mean age was 25 years (SD 5). A total of 53% (25/47) of women spoke an Aboriginal language at home; 36% (9/25) of whom spoke Arrernte. Seventy per cent of participants (33/47) lived in remote communities; 55% (26/47) were high school educated but 40% had completed only primary school education. One-quarter of women were employed, and 34% (16/47) of women were primigravid. Only 11% (5/47) identified a doctor as their main maternity care provider, reflecting the predominance of women living in remote communities receiving midwife (22/47, 47%) or remote area nurse-led care (19/47, 40%).

More women were aware of IIV than dTpa: 44/47 (94%) compared to 26/47 (55%). Self-reported uptake of IIV was 49% (23/47) and of dTpa was 28% (13/47). Forty-seven per cent (22/47) of women surveyed were unsure if they had received dTpa and 32% (15/47) IIV during pregnancy. More women received IIV and dTpa according to the immunisation register; 70% (32/46) IIV and 50% (23/46) dTpa. A significant proportion of women who reported vaccination during pregnancy were vaccinated post-partum (9% for IIV, 23% for dTpa). More than half of women who were unsure of their vaccination status received maternal vaccination.

Almost all women reported dTpa vaccination to protect themselves or their baby; whereas, half of women reporting IIV did so because of healthcare provider (HCP) recommendation. The most common reason cited for non-vaccination was lack of HCP recommendation or advice from a HCP to be vaccinated post-partum.

Our main findings are: 1) awareness and uptake of influenza vaccine was greater than pertussis vaccine; 2) self-reported vaccination status underestimated vaccine coverage; 3) the public health message of maternal vaccination for maternal and neonatal protection against pertussis has been well understood; and 4) lack of HCP recommendation is the predominant reason reported for non-vaccination.

Uptake of IIV in our study was similar to that reported by Overton;³ however, uptake of dTpa was substantially higher (50% vs 27%). Our study was conducted 18 months following the recommendation of maternal dTpa in Australia and, as has been seen with IIV, uptake has increased with the passage of time. As in previous studies of Indigenous women, uptake of IIV is higher than dTpa, probably due to greater familiarity with IIV

among Indigenous women, in whom annual IIV is recommended from 15 years of age.

Self-report significantly underestimated vaccine coverage, although more so for dTpa than IIV, likely reflecting greater awareness of IIV and therefore more accurate self-report.

Our study also highlights the importance of an all-ages immunisation register such as the Adult Immunisation Register (AIR), which has recently been introduced nationally. The register was particularly useful for women who were unsure, which led to underestimating vaccine coverage. With increasing interest in maternal vaccination, the ability to corroborate vaccination history through AIR will be invaluable.

Our study adds to reports emphasising the importance of HCP recommendation in women's decision making around vaccination.^{4,5}

Encouragingly, uptake of both maternal IIV and dTpa are higher in our study than reported among Indigenous women previously. While uptake of IIV is comparable to non-Indigenous Australian women, there is much room for improvement for dTpa. HCP recommendation is likely to be the most influential strategy and HCP should therefore be equipped with the evidence, recommendations and support to provide maternal vaccination in a culturally sensitive way. Streamlining reporting to immunisation registers will be important in ensuring these tools provide robust measures of vaccine coverage in the future.

Acknowledgements

This work was supported by an Australian Government Research Training Scholarship, and Glaxo Smith Kline Small Project Grant.

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