Strategies to implement maternal vaccination: A comparison between standing orders for midwife delivery, a hospital based maternal immunisation service and primary care

Sushena Krishnaswamy\textsuperscript{a,b,*}, Euan M Wallace\textsuperscript{a,c}, Jim Buttery\textsuperscript{d,e}, Michelle L Giles\textsuperscript{a,b}

\textsuperscript{a} The Ritchie Centre, Department of Obstetrics and Gynaecology, Monash University, Melbourne, Australia
\textsuperscript{b} Monash Infectious Diseases, Monash Health, Melbourne, Australia
\textsuperscript{c} Safer Care Victoria, Victorian Department of Health and Human Services, Melbourne, Australia
\textsuperscript{d} Infection and Immunity, Monash Children’s Hospital, Melbourne, Australia
\textsuperscript{e} Monash Centre for Health Research and Implementation, Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia

\textbf{Abstract}

Maternal vaccination is a safe and effective strategy to reduce maternal and neonatal morbidity and mortality from pertussis and influenza. However, despite recommendations for maternal vaccination since 2010, uptake remains suboptimal. Barriers to uptake have been studied widely and include lack of integration of vaccination into routine pregnancy care and access to vaccination services. Standing orders for administration of vaccines without the need for a physician review or prescription have been demonstrated to improve uptake as part of multi-model interventions to increase antenatal influenza and post-partum pertussis vaccination.

Monash Health is a university-affiliated, public healthcare network in Melbourne, Australia providing maternity services across three hospitals. In this study we compared three different immunisation models – an immunisation nurse-led immunisation service, standing orders for midwife-administered pertussis vaccination within pregnancy care clinics, and delivery by general practitioners in primary care. Uptake of maternal pertussis vaccine was measured as recorded in the state-wide perinatal data collection tool.

Uptake improved significantly at all three hospitals over the study period with the most significant change (39% to 91%, \(p < .001\)) noted at the hospital where standing orders were introduced.

Our study highlights the diversity of immunisation service models available in maternity care settings. We demonstrated significant improvement in uptake of maternal pertussis vaccination with introduction of midwife-administered vaccination but each maternity service should consider the model best suited to their needs.

\(\odot\) 2018 Elsevier Ltd. All rights reserved.

1. Introduction

In recent years maternal immunisation has become an integral component of pregnancy care. Following the lead of the United Kingdom (UK) and the United States (US), many countries now recommend maternal influenza and pertussis vaccination during pregnancy. Both vaccines have been demonstrated to be highly efficacious in preventing maternal and neonatal morbidity and mortality [1–3].

However despite demonstrated efficacy and safety, uptake of these vaccines during pregnancy remains suboptimal. Barriers to uptake include failure to incorporate vaccination into routine pregnancy care, lack of healthcare provider (HCP) recommendation, concerns about safety, and access to vaccination services [4–6].

Numerous studies have highlighted the importance of HCP recommendation as an enabler of vaccination [7–10]. As providers of population level vaccination programs, primary care physicians are well versed in discussing immunisation and often have an established capacity to store and administer vaccines in their clinics. However, in Australia and the US, midwives or obstetricians are often the only HCP many pregnant women consult during pregnancy so the logistics of incorporating maternal vaccination into pregnancy care need to be considered. Barriers to maternity
services providing vaccination include lack of the necessary infra-
structure to support vaccination, lack of training and knowledge of
maternity care providers regarding current recommendations, and
concerns about liability and reimbursement [4,5].

Studies have also demonstrated that women's intention to be
vaccinated does not necessarily equate with receipt of vaccination.
Competing time pressures, priorities, and difficulty accessing
immunisation providers are barriers to vaccination despite an
intention to do so [11]. In a study of influenza vaccination in preg-
nancy, women were 2.7 (CI 1.1–6.9; p = .035) times more likely to
be vaccinated if the vaccine was offered at their pregnancy care
facility compared to those who had to get the vaccine elsewhere
[7].

At some locations, further barriers to vaccine administration
include a requirement for a prescription from a doctor and obtain-
ing the vaccine from a pharmacy. Such barriers can be readily over-
come by instituting standing orders for midwife administration of
vaccines without the need for physician review or prescription. The
US Advisory Committee on Immunisation Practices has recom-
manded the use of standing orders to improve immunisation rates
for more than a decade [12]. One community hospital in the US
increased their post-partum pertussis vaccine uptake from 18% to
69% (p < .001) with introduction of standing orders [13]. Similarly, 
two other US hospitals implemented standing order models and
reported increased vaccination rates to approximately 80% com-
pared to only 20% overall in the US [14–16].

In this study we implemented standing orders for midwife
administration of acellular pertussis-containing vaccine (dTpa)
during the third trimester and report on the impact of this change.
In addition, with three different immunisation models utilised
within the same healthcare network, this study provides a unique
opportunity to directly compare different immunisation models in
the Australian context.

2. Materials and methods

Monash Health is the largest public healthcare network in Mel-
bourne, Australia providing maternity care to over 10,000 women
per year across three hospitals. Hospital A is a tertiary obstetric
referral centre with an onsite immunisation service. Hospital B
provides primary and secondary level maternity care to a large
migrant and refugee population with approximately 3000 deliver-
ies per annum. Hospital C provides primary and secondary level
maternity care for approximately 3000 women each year.

All States and Territories in Australia fund dTpa for pregnant
women. Women can access vaccination through primary care, local
government immunisation services and in some states through
pharmacies. In addition, at our institution pregnant women are
offered free vaccination through a nurse-led immunisation service
located at hospital A. Despite being available to all pregnant women of
the health network, our earlier work suggests that the immuni-
sation service is almost exclusively accessed by women receiving
pregnancy care at hospital A [8]. This is most likely due to the geo-
graphic distance of both Hospital B and Hospital C from hospital A.
Therefore, prior to this study women attending hospital A received
their vaccination through the immunisation service, and women
attending hospital B and hospital C were predominantly referred
to their general practitioner (primary care) for vaccination.

To facilitate equitable access to onsite maternal vaccination
across all three maternity services, and improve uptake, the exist-
ning standing order for post–partum administration of dTpa by mid-
wives was expanded to include antepartum administration. The
amendment was approved in June 2015. A standing order enables
midwives to administer vaccination after obtaining informed con-
sent from the woman, without the need for a prescription or order
from a medical doctor. Standing orders were implemented at hos-
pital B in October 2016, but had not yet been implemented at hos-
pital C at the time of the study. As such we were able to compare
three different models of immunisation service delivery– a dedi-
cated immunisation nurse-led immunisation service (hospital A),
standing orders for midwife administration within pregnancy care
clinics (hospital B), and provision by primary care (hospital C).
Education regarding standing orders was provided to maternity
care staff at hospitals B and C in the week prior to and week follow-
ing implementation of standing orders at hospital B.

Prior to hospital discharge pregnant women's self-reported
receipt of antenatal pertussis and influenza vaccines is recorded by
midwives as part of the Victorian Perinatal Data Collection in the
Birthing Outcome System (BOS) database at all three maternity
services. Prior to 17th January 2017 the antenatal vaccination field
could only be completed post-partum. Since 17th January 2017
midwives have also been able to complete these fields during any
antenatal visit.

The accuracy of BOS in capturing maternal vaccination was val-
ified by comparing vaccination records from the immunisation
service at hospital A with the subsequent entry on BOS. This was
performed for women vaccinated between March and May 2016. This
validation study was repeated for women vaccinated in Febru-
ary–April 2017 following the changes facilitating antepartum data
entry to determine the effect of this change on the accuracy of the
database.

A time series analysis of dTpa uptake as captured in BOS was
performed to assess the impact of the introduction of standing
orders at hospital B. Power calculations determined that a sample
size of 500 women was needed in both pre- and post-
implementation groups based on 90% power to detect a 10% differ-
ence in uptake. We estimated 20 vaccinations would be adminis-
tered per week at hospital B and therefore required uptake data
for 6 months post-implementation. Uptake was assessed in fort-
nights from 1st September 2015 to 30th June 2017 at all three hos-
pital sites. This provided uptake rates for births 13 months prior to
the introduction of standing orders and for eight months following
with data during the month of implementation not included in the
analysis. The post-implementation period was further divided to
account for the delay between administration of dTpa at 28–32
weeks gestation and those women birthing. Thus the three periods of
comparison were (1) Pre-implementation of standing orders: 1st
September 2015–26th September 2016; (2) First three months
post-implementation: 8th November 2016–30th January 2017;
(3) Subsequent post-implementation period: 31st January 2017–
3rd July 2017 (when women vaccinated using standing orders
were likely to have birthed and therefore be entered into BOS).

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 Mann Whitney U test was used to determine the signif-
icance of differences in uptake between periods 1 and 2 and 2 and
3 at each hospital. To evaluate the difference in accuracy of BOS a
Pearson chi-squared test was performed. A p-value of less than .05
was deemed to be significant for all analyses. The study was
approved by our institution’s research support service as a Quality
and Service Improvement project (5th May 2017, Ref RES-17-0000-
248Q).

3. Results

3.1. Uptake

At hospital B uptake was recorded for 2848 deliveries over 56
weeks prior to implementation of standing orders and for 1766
دریافت فوری
متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات