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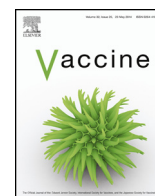
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## Commentary

## Maternal immunization: The new “normal” (or it should be)

Heidi J. Larson<sup>a,b,\*</sup><sup>a</sup> Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, United Kingdom<sup>b</sup> Department of Global Health, University of Washington, Seattle, USA

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The growing portfolio of maternal vaccines becoming available offers a valuable lever to make a quantum shift in the maternal and child health landscape.

The world has made tremendous strides in child survival, but we are not there yet. Far too many neonates, approximately 600,000, still do not survive infections every year [1]. The fight to reduce global maternal mortality has also made progress with a 45% reduction between 1990 and 2013. However, the current average of 210 maternal deaths per 100,000 live births is still unacceptable [2]. With such high numbers of persisting, mostly preventable, maternal and neonatal deaths, something needs to change.

Maternal immunization is the missing link, adding to important existing antenatal interventions, to protect both mother and infant during some of the most vulnerable moments in both of their lives.

The success of the maternal and neonatal tetanus initiative demonstrates that maternal immunization can work and can have global impact [3]. In Bangladesh, for instance, maternal tetanus immunization coverage increased from 4% in 1986 to 90% in 2001, leading to a decrease in tetanus-related newborn deaths from 40 per 1000 live births to only 3 per 1000 over the same time period [4].

In addition to maternal tetanus, used primarily in low- and middle-income countries, influenza and pertussis vaccines are now also recommended during pregnancy in some countries, including the UK and US, and have successfully demonstrated impact in

reducing illness and saving lives [5,6]. New vaccines, such as group B streptococcus and respiratory syncytial virus (RSV), are also in the pipeline, but they will need an investment in preparedness well in advance of their delivery.

There have been bumps in the road and lessons continue to be learned in the roll out of the maternal and neonatal tetanus elimination campaigns, and a growing body of research on determinants of influenza and pertussis uptake during pregnancy, all of which is an archive of knowledge to inform and support the introduction of valuable new maternal vaccinations in different settings. One thing is clear. Despite their proven efficacy, maternal influenza and pertussis vaccines are not being accepted as widely as they could be due to a range of issues, including inadequate information, lack of—or hesitating—recommendation by the health provider, and safety anxieties. Other barriers have included inadequate engagement of the community, peers and trusted networks all of whom influence decisions to vaccinate during pregnancy.

Last year, for instance, twenty year-old rumours about the tetanus vaccine causing sterilization resurfaced in a press statement issued by the Catholic Bishops of Kenya [7]. The issue that prompted the concerns was perceived lack of transparency and inadequate engagement of the religious leaders in the tetanus campaign. “We the Catholic Bishops in Kenya,” the press statement read, “are concerned about the following issues regarding the ongoing tetanus vaccination campaign: (1) there has not been adequate stakeholder engagement for consultation both in the preparation and implementation of the campaign. The Catholic Church has not been engaged unlike other public health initiatives where we have been invited to participate as a key stakeholder. (2) There has been limited public awareness unlike other national health initiatives

\* Correspondence to: Department of Infectious Disease Epidemiology, London School of Hygiene & Tropical Medicine, United Kingdom.

E-mail address: [Heidi.Larson@lshtm.ac.uk](mailto:Heidi.Larson@lshtm.ac.uk)

that are preceded by a public launch where the public can ask questions. (3) Lack of public information on the rationale with a background that has informed the initiative." All of these concerns underline the importance of ensuring that engagement is not only at the level of those being targeted for vaccination, but also those who influence and support their decisions—not only around vaccination but also in their daily lives.

### Context matters

Reviews of the global literature on factors influencing individual vaccine acceptance during pregnancy highlight a number of issues that can inform strategies to support the introduction of new maternal vaccines. Many of the themes which emerge are similar to those raised around vaccines more generally: "Is the vaccine safe? Is it effective? Do I really need this particular vaccine? And, can I afford it?" In the case of maternal immunization, safety concerns are often the most prominent, particularly related to any real or perceived risks around the safe development of the foetus [8–10]. Building the confidence of pregnant women to accept additional vaccination means understanding their perspective and the mix of both concerns and supportive influences that surround them.

In even the most remote corners of the world, most women have at least one, and often more, interaction with a health care provider or midwife during pregnancy [11]. And, one of the most important influences in vaccination decisions is the recommendation of the health provider. One study found that women who had received a recommendation to be vaccinated post-partum were 6.9 times more likely to report intention to vaccinate [12], while a global literature review reported that the studies reviewed showed that mothers who had a supportive recommendation from their health care provider were 20–100 times more likely to get the vaccine under consideration [8].

But, what happens when the health care provider is not confident? A number of studies have shown that while a positive recommendation can leverage acceptance of a vaccination, hesitation or the absence of a recommendation on the part of the health care provider or midwife can lead to non-acceptance. Building provider confidence is therefore a key link in the confidence chain between women considering vaccination and the policies and programmes that support their delivery.

The primary context for maternal immunization is antenatal care, supported by family, trusted information sources and community members. The requirements already established for tetanus maternal immunization programmes can provide a valuable support to the introduction of newer maternal vaccinations [13]. But, beyond the infrastructural and policy requirements, building the confidence and engagement of the vaccinators, women of reproductive age, their families and community is key. Pregnancy and child bearing in any culture is a celebrated, but sensitive, time.

Introducing maternal vaccination needs to consider the existing context, preferences, and risk perceptions of the women—whether in high, middle or low-income settings and in each unique religious or socio-cultural context. Risk perceptions will also vary depending on previous experience with vaccinations and familiarity with the diseases being addressed. Most importantly, how women feel about pregnancy and the other issues surrounding it need to be part of the conversation as this emotional context will also be key in the decision to vaccinate [14].

Familiarity, ease of access, trust, and awareness of benefits and risks to minimize uncertainty, will all be important for the sustained support of existing and new maternal vaccinations. Examples where key community members have not been engaged, leading to subsequent feelings of exclusion and the undermining of the vaccination programme [7], should be a lesson for the future. With adequate engagement and confidence building, maternal immunization could become the new "normal".

### Conflict of interest statement

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**Heidi J. Larson** is an anthropologist, Director of The Vaccine Confidence Project and Senior Lecturer at the London School of Hygiene & Tropical Medicine, and Associate Clinical Professor in the Department of Global Health, University of Washington, Seattle (USA).