



Commentary

Maternal immunization: A call to accelerate progress

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ABSTRACT

Maternal immunization provides an excellent evidence-based strategy for preventing severe disease and decreasing neonatal and infant mortality. A substantial proportion of these deaths are due to infectious diseases, most of them vaccine-preventable, then, there is a real opportunity for intervention.

Maternal immunization has been an underexploited area for many years, with the exception of neonatal tetanus. There are now programs for influenza and acellular pertussis vaccination in many countries and two maternal vaccine targets under development are focused on decreasing the burden of infant respiratory syncytial virus (RSV) and Group B Streptococcus (GBS). Bodies like the Strategic Advisory Group of Experts (SAGE) on Immunization established by the WHO, the Global Vaccine Action Plan (GVAP) and Gavi, The Vaccine Alliance, have recognized the relevance of maternal immunization on several occasions. However, why is the field not moving faster, as one might expect?

Major initiatives and programs should consider spelling out more clearly the role and benefits of this intervention and calling for specific actions, including future strategic approaches for the post 2020 immunization strategy following the GVAP; and single out the area as one of its priorities as a key component of immunization across the life course. While waiting for the new vaccines like RSV and GBS and optimizing the use of influenza and pertussis there is momentum now to coordinate efforts, address the missing information and action gaps, and call to accelerate progress.

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Maternal immunization provides an excellent evidence-based strategy for preventing severe disease and decreasing neonatal and infant mortality. The Sustainable Development Goals call urgently for reducing by half preventable deaths of newborns and those of children under-five by 2030 [1]. In the preceding 15 years, the progress on decreasing mortality in neonates has been slow [2]. Since a substantial proportion of these deaths are due to infectious diseases, most of them vaccine-preventable, there is a real opportunity for intervention.

Maternal immunization has been an underexploited area for many years, with the exception of the fight against neonatal tetanus, which remains nonetheless an urgent unfinished task [3]. Understandably, there are many concerns, both real and perceived, with the administration of drugs or vaccines during this period of life, as safety for the unborn fetus must be assured. The 2009 H1N1 influenza pandemic did help remove barriers, including the perception of higher risk than benefit, for administration of vaccines

like influenza in pregnancy given the gains for both mothers and neonates.

The field has advanced in recent years. There are now programs for influenza and acellular pertussis vaccination in many countries based on assessment of risk versus benefit of the vaccination and on progressive safety and effectiveness data collection. Prospective clinical trials for both influenza and pertussis have also contributed to acceptance of these new programs. Two maternal vaccine targets currently under development are focused on decreasing the burden of severe neonatal and young infant infection with respiratory syncytial virus (RSV) and with Group B Streptococcus (GBS). Cytomegalovirus is also being targeted as potentially preventable through maternal vaccination. Other existing vaccines, like hepatitis E or pneumococcal vaccines that could offer additional benefits in those first weeks of life are also being explored.

Bodies like the Strategic Advisory Group of Experts (SAGE) on Immunization established by the World Health Organization (WHO), the Global Vaccine Action Plan (GVAP) and Gavi, The Vaccine Alliance, have recognized the relevance of maternal immunization on several occasions with discussion of needs, products, strategies, hurdles and benefits. More accurate disease burden

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estimates, clinical development and assessment of safety and efficacy of novel candidates vaccines, assessment of effectiveness of already licensed vaccines, and identification of barriers in delivery and uptake have been highlighted as key areas to concentrate efforts [4,5].

Given this situation, why is the field not moving faster, as one might expect? There are challenges, which vary by type of vaccine. For tetanus, which could be considered the “gold standard” of current global maternal immunization programs, the challenges are in the slow progress in elimination; reaching the hard to reach populations is proving difficult in a number of countries. For licensed vaccines such as pertussis and influenza vaccines, there is still an incomplete picture of the true burden of disease in many countries, often no in country recommendations, particularly for low and middle-income countries, and limited uptake and demand even in some high income countries. For vaccines under clinical development such as RSV [6] and GBS, their evaluation entails a long process requiring considerable technical and financial investment. The field could indeed benefit from more complete disease burden data i.e better documentation of needs in different settings and contexts; better delivery strategies tailored to the countries and context, and effectively integrated into existing platforms (e.g. antenatal care programs, expanded program on immunization, etc...); and increased communication and education to all levels. For all maternal vaccines, a good linkage will need to be established between vaccine programs, maternal and infant health experts, and the overall health system at the global and country levels in order to optimize delivery.

Clear and honest communication is not only a big need at all levels (health care providers, pregnant women, families and community), but a key element for successful implementation [7]. People need to be educated on the particular immunizations so they can understand and become aware of the benefits and the risks avoided. Given that adverse events of varying types are relatively common during any pregnancy, particularly in low and middle-income settings, it is crucial to explain that they are not all attributable to the vaccination. We also need effective information and communication strategies tailored to fit varying populations in each country. For success there must be buy-in not only from pregnant women, their families and their health care workers, but also from communities and local and national leaders.

While there are still a number of knowledge gaps, several studies relevant to missing information on disease burden, clinical development and implementation are ongoing and are expected to yield results in the near future. In addition, recent initiatives including detailed data gathering and gap analysis of disease burden, acceptance, delivery and programmatic issues have supported the generation of a roadmap for effective action [8,9]. Attention will need to be given to which will be the most important policy issues in countries, including better disease morbidity and mortality burden data, which ultimately demonstrates if there is a problem and how it fares as compared to other health interventions and priorities. Cost effectiveness studies should also contribute to support these decisions.

The field is definitely in motion, but strong advocacy and good programmatic coordination are needed for accelerating results and

outcome benefits. The over-arching goal of the WHO 13th General Programme of Work (GPW 13) translates into priorities like Universal Health Coverage and Healthier Populations, for which maternal immunization can be a major contributor [10]. Major initiatives and programs should consider spelling out more clearly the role and benefits of this intervention and calling for specific actions, including future strategic approaches for the post 2020 immunization strategy, following the GVAP, to single out the area as one of its priorities as a key component of immunization across the life course.

Maternal immunization programs also offer the unique opportunity to address more than one gap; benefit for the mother and for the infant. Administration through the antenatal care platform may be the preferred way and at the same time, it may also support improved attendance at prenatal clinics especially in middle and low-income countries. It can also be used to start a dialogue on prevention, emphasizing the importance of timely and complete vaccination for their children. Maternal immunization is well aligned with SDG3 and a core pillar of Universal Health Care, helping to ensure the health of mother and child as a continuum of care. Because healthy life expectancy has not increased at the same pace as life expectancy, approaches that can significantly contribute to healthier outcomes are encouraged by GPW 13 to be adopted by all countries [10].

This is an exciting time for maternal immunization with increasing recognition of the need and broader public health, health care provider and public engagement. While waiting for the new vaccines like RSV and GBS and optimizing the use of influenza and pertussis there is momentum now to coordinate efforts, address the missing information and action gaps, and call to accelerate progress.

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References

- [1] UN, Sustainable Development Goal 3. <https://sustainabledevelopment.un.org/sdg3> [accessed Jan 23, 2019].
- [2] UNICEF, Levels & trends in child mortality; 2015. http://www.childmortality.org/files_v20/download/igmereport2015childmortalityfinal.pdf [accessed Jan 23, 2019].
- [3] Burgess C et al. Eliminating maternal and neonatal tetanus and closing the immunity gap. *Lancet* 2017;389(10077):1380–1.
- [4] Weekly epidemiological record. World Health Organization. 27 May 2016, 91th Year. No. 21, 2016, 91, 265–84.
- [5] Weekly epidemiological record. World Health Organization. 28 Aug 2015, 90th Year. No. 90, 2012, 87, 433–60.
- [6] PATH. RSV Vaccine and mAb Snapshot. Seattle: PATH; 2018. Available at: https://path.azureedge.net/media/documents/RSV-snapshot-2018Dec_High_Resolution_V3.pdf [accessed Feb, 2019].
- [7] Omer SB. Maternal Immunization. *N Engl J Med* 2017;376(13):1256–67.
- [8] PATH. Advancing RSV Maternal Immunization: a Gap Analysis Report. Seattle: PATH; 2018.
- [9] PATH. A Roadmap for Advancing RSV Maternal Immunization. Seattle: PATH; 2018.
- [10] WHO Thirteenth General Programme of Work 2019–2023, http://apps.who.int/gb/ebwha/pdf_files/WHA71/A71_4-en.pdf?ua=1.