A focus on “zero dose” children: Key issues for consideration

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**Background**

With the development of the next strategic vision for global immunization, addressing immunization equity is a central tenet – and the concept of “zero dose” children is being positioned as the instrument to align efforts, allocate resources and define success.

This shift is warranted: the number of children globally today not receiving any vaccinations (zero dose) is twice the number that receive only partial vaccinations (see figure 1). Global immunization coverage improvements over the last ten years have mostly benefited children with some access to health services through reductions in immunization drop out. However, absolute numbers of zero dose children have for the most part remained static and refractory to substantial investments to date. Clearly, we need to do better, and concentrate our collective efforts to ensure that the lifesaving benefits of vaccines are realized by the children and communities most marginalized within society and therefore most vulnerable. We must also use this as a platform for enabling wider health and social engagement as envisaged under efforts to revitalize Primary Health Care (PHC) and Universal Health Care towards achieving the Sustainable Development Goals.

*Figure 1: Global Immunization Performance 2000 – 2018 (source: WHO/UNICEF WUENIC 2018)*

As the zero dose focus is developed, operationalized and positioned within the IA2030 and GAVI 5.0 strategies, and subsequently taken forward by key immunization implementing partners, it is important to reflect on outstanding questions regarding how to define, target, implement and measure this new focus, including identifying risks that need to be considered and mitigated.

**Issues considered at the Equity Reference Group January 2020 meeting**

The ERG met as a group in London, UK, on the 8th and 9th of January 2020. Questions posed to the ERG regarding a zero dose focus that were discussed and debated at this meeting included:
1. What should be the level of **ambition** for the zero dose focus and what constitutes success? Is the aim to realize an increase in the reach/access of immunization programs, or a wider increase in individual and community reduction in vaccine preventable diseases? Does a reduction in children receiving no vaccines constitute success if they have just one vaccine contact? Or should we consider success based on the number of zero dose children that progress through the immunization schedule continuum towards full vaccination? Is there such a thing as an acceptable/inevitable number of zero dose children, who would be protected by herd immunity?

2. How do we define “zero dose”? Will one universal definition be appropriate, or is it best to allow flexibility according to country and programmatic contexts (e.g. coverage levels, measles elimination status, immunization schedule or new vaccine introduction status) or perhaps a combination of the two (a universal definition with some additional country adaptations)? What does the term “zero dose” mean, e.g. who are we trying to target and with what services: children not receiving DTP, or children not receiving any vaccines through routine services, supplemental immunization campaigns or having no contact with the immunization program at all? Is it “zero dose” at 1 year of age, or earlier in a child’s life, or later, as MCV2 is introduced and implemented? Does the issue of timeliness of doses come into play, and if so how? How can we ensure that whatever indicator used to define zero dose (e.g. no DTP1) has universal program applicability and drives success across all immunization goals (e.g. measles and polio)?

3. Will **targets** for zero dose be established and how are they best developed (i.e., at global level or within countries, determined by epidemiologic or other criteria)? How do we ensure the engagement of national programs in defining this result, account for their various levels of realistic achievement and ensure their commitment within the timeframes established? If a country-based approach is undertaken, how do we ensure sub-national ownership, especially in the large federated countries where health systems are decentralized?

4. Will we be able to accurately **measure** zero dose with our current global and country data systems? Subnational zero dose measurement will suffer the same limitations around inaccurate denominator data that weaken current estimates of district level coverage – will numerator data be sufficient, or will accurate denominator data be essential to determine goals and achievements? How do we ensure that global data frameworks for zero dose monitoring align with national programs that have traditionally focused on reporting DTP1 coverage annually? Will countries’ health information systems be able to report accurately and annually on reductions in absolute numbers of zero dose children and will the current WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) modality support these reported numbers or require additional verification? Will a focus on zero dose numbers further strengthen immunization/heath information systems within countries, or result in a push from the current survey and administrative data framework towards parallel systems potentially using new data collection strategies, sentinel sites or modelling to estimate outcomes and require increased external technical capacity? Are divergences between reported and estimated data systems inevitable?

5. How do we link a zero dose focus with wider ambitions for positioning immunization as a platform for health system strengthening under **Primary Health Care and Universal Health Coverage**, and not
have this result in a further vertical intervention within an already highly vertical program, with short term achievement but no long-term sustainability? How do we ensure that a push to reaching zero dose children with vaccines is inclusive of a wider range of maternal and childhood services from the start, and not as an afterthought, and that we promote integrated approaches and leverage complementary resources and partnerships (e.g. the Global Financing Facility and the Global Fund)?

6. What will be the implications of a zero dose target on how current resources are allocated, and will this result in concentrated resources and focus towards a subset of countries? Most zero dose children are concentrated in Africa and South Asia (and particularly the high population countries of Nigeria, Ethiopia, Democratic Republic of Congo, India, Pakistan and Indonesia). Does this mean that our collective support should also be concentrated in these countries? Will WHO, UNICEF and the global immunization stakeholders, including Alliance partner support be linked to greater accountably for zero dose reductions globally, and by association these countries as well? How do we ensure our other critical and broader work is recognized in the new partnership accountability frameworks? Where will this leave our focus on zero dose and under-immunized children outside of these large countries, and how do we advocate for them to be recognized in any new measurement framework and ensure our efforts to improve their immunization outcomes are appropriately resourced?

7. Will a programmatic focus on zero dose and targets also result in unintended equity issues or other risk within countries? Might this result in a prioritization and allocation of resources towards the largest groupings of absolute numbers of zero dose children within countries, e.g. a prioritization of urban poor over remote rural, or one geographical region of a country over another? Might this leave some marginalized communities grouping even further neglected? Could a focus on zero dose, depending on how its defined, divert attention from efforts to reach the under-immunized child?

8. How do we balance programmatically our guidance to countries between a need to focus on those children/communities where zero dose numbers are highest, with the need for continued coverage improvements among children currently being reached, but not completing their full schedule (or completing this at a later time) especially given that most programs operate in resource limited environments? How do we ensure that as we prioritize zero dose we do not contribute to backsliding in immunization performance elsewhere? Given that partially immunized children are already being reached and are known, they should be easier and potentially cheaper for immunization programs to prioritize and achieve success (though current global coverage trends would suggest otherwise), but these two focus areas will need to be linked and seen as part of a wider continuum, not two separate parallel strategies. Reductions in zero dose and partially immunized children will need to move in tandem.

9. How do we position the focus on zero dose with the wider measurement and accountability framework under the Sustainable Development Goals, and the inclusion of immunization specific indicators under SDG3 – “Ensure healthy lives and promote well-being for all at all ages”? The indicators being used under the SDG framework focus on completion rates for the DTP, MCV, PCV
and HPV vaccination series, and it will be critical to ensure that any push for zero dose under IA 2030 and GAVI 5.0 clearly aligns with the SDG goal framework for immunization, and reinforces the major opportunity that the SDGs provide to keep immunizations at a high level of visibility and importance within the global development agenda.

Insights and agreements from the ERG meeting discussions

Discussions on the zero dose focus and its importance/role for improving immunization equity consumed most of the January 2020 ERG meeting, and provoked thoughtful and passionate discussion among the ERG members. There was a strong consensus on the opportunity that this new focus provides in accelerating immunization equity and aligning immunization partners’ activities over the coming decade, particularly given the new global strategies.

The zero dose concept was seen by the ERG members as a concrete representation of acute inequities which can powerfully highlight those children and communities most marginalized in society. This concept will help partners move their work beyond a somewhat academic focus on equity stratifiers, directly towards the communities affected. It provides a new entry point from which to consider the challenges in communities and facilitates consideration of how to best equip the service delivery modalities with practical skills/capacities with consideration of social determinants (e.g., gender, political economy etc.). This can in turn help programme managers and decision-makers to develop a set of practical strategies and a menu of options that can be explored, implemented and monitored.

Important observations and suggestions from the ERG included:

Ambition

1. The members agreed that now is the time and opportunity to position zero dose children at the collective centre of focus and targets, and that we need to set high levels of ambition across the work of global partners to see real progress. New ways of working both at global and country levels will be required to achieve this, and engagement expanded with a broader set of partners to ensure we can address all the elements that lead to children and communities not receiving immunization services. Incremental shifts will not be successful.

2. There was consensus that the ambition around a zero dose focus should be on realizing an increase in the number of fully immunized children, especially through reaching those children who are currently zero dose. It was also agreed that a definition of zero dose proposed by GAVI, that of children who have received no DTP dose, is a realistic and practical proxy, but the emphasis should be on ensuring a course of contacts with children (vs. one time only). Zero dose is therefore a starting point and not an end point of our collective ambition.

Measurement

1. Zero dose numbers and measurement are not the complete package for realizing success around equity, we cannot look at this workstream with a focus on zero dose alone. This work will be greatly strengthened by the inclusion of additional indicators of inequities/deprivations, from both within the immunization program (e.g. measles outbreaks and surveillance data) and non-traditional sources (e.g. gender, political economy) and an understanding of how we are succeeding in getting these children from zero dose to full immunization.
2. The ERG recognizes the limitation of current administrative data systems in accurately quantifying and localizing zero dose children and communities. While no specific solutions arose from their discussion, the importance of strong community engagement in developing methods for the identification, measurement and tracking of zero dose children was stressed as part of a wider learning agenda. Also, a focus on targeted surveys will likely be necessary in areas or population sub groups where national surveys show that there is a zero dose concentration. Successful practices and lessons from the polio programs, which have invested much in this area already should also be explored.

3. It will be important that we show how we can link a target/focus on zero dose children in immunization with the broader indicator under the SDG which looks at both the completion of vaccines series and takes a more life course approach to include, for example, providing adolescents with HPV vaccination.

4. The issue of zero dose target setting was not explicitly discussed during the meeting, and the ERG would be happy to provide further thoughts and feedback on this area as this moves forward under the GAVI 5.0 strategy and IA2030 whose monitoring and evaluation frameworks are being co-developed.

Identification and programmatic targeting

1. A pertinent word of caution was that the zero dose focus will be easiest to address if we take a siloed approach – but this is not the approach that should be taken. There are other important agendas within immunization that continue to need our collective focus – new vaccine introduction, disease elimination and eradication initiatives, reducing drop out and missed opportunities for vaccination, in addition to maintaining optimal levels of coverage. It will be critical that the zero dose approach is positioned to strengthen these initiatives, not compete, distract or detract from them.

2. The previous emphasis from the ERG calling for a greater focus on gender-related barriers and on urban poor, conflict-affected and remote rural contexts as the communities where immunization inequities are most acute, is philosophically and practically aligned with the zero dose focus. It is important that these now align programmatically. Within these communities, other dimensions need also to be considered, such as religion or ethnicity, that are likely related to zero dose prevalence and that may suggest innovative delivery channels and targeting approaches.

3. It was clear from modelling data referred to by the GAVI Secretariat that a significant burden of the zero dose will likely fall in conflict/fragile settings, areas where our engagement in the past has been weakest, our range of strategies limited (and primarily focused on vaccines that prevent disease outbreaks rather than a broader focus on routine EPI), partnerships fragmented and are situated in challenging humanitarian spaces. Greater emphasis should be given to the conflict context if the ambitions/targets around equity and zero dose are to be achieved.

4. The ERG members recognized that an opportunity of the zero dose focus lies with its power of alignment, especially between the disease specific programmes and the broader immunization and health agenda. The success of existing disease specific eradication and elimination efforts (e.g. polio, measles and maternal and neonatal tetanus elimination) is being challenged due to the inability of immunization programmes to reach these marginalized children and the communities they live in, and continue this on a regular basis.
Wider links with PHC and UHC

1. **The zero dose focus aligns with approaches to ensure the fundamental rights of a child** and can be used as a powerful advocacy tool across all country contexts. This should be linked with strong evidence and data derived from immunization programs that highlight those most marginalized. While certainly challenging, immunisation should be the programme to take this forward given its universality compared to other health interventions.

2. Zero dose can play a wider role in increasing the visibility of marginalized and excluded groups and communities and may provide an entry point for strengthening key services across agencies. But this needs to be balanced with a realization that immunization, while being a developmental tool, cannot be the sole catalyst of wider change.

**Conclusion**

The ERG members ended their discussions with a strong endorsement of the zero dose focus, with recognition of the opportunity that this provides for accelerating our achievements around immunization equity, but agreement that it is not without risks if key issues such as those outlined in this paper are not considered. There was a clear agreement that the opportunity of a zero dose focus must be realized through the routine immunization program and will be about extending the reach of routine immunization services and broader PHC interventions to missed families and communities, and not be limited to reaching zero dose children by other means such as supplementary immunization activities.

The potential to achieve more significant and longer-lasting impacts on the lives of these most marginalized children and their families will only be realized with consideration of the contexts in which they live, consideration of their broader needs, and by aligning efforts with a wide range of partners, including marginalized people themselves, working in tandem to realize their basic human rights.

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1. Mapping the characteristics of under/un-vaccinated children, WorldPop, University of Southampton, UK 2020