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Editorial

Inequality in Immunization: Holding on to Equity as We 'Catch Up'

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1. Slowed Progress in Global Immunization Coverage

Immunization, hailed as one of the most successful public health interventions in the world, has contributed to major advancements in health as well as social and economic development [1]. Vaccines help to avert more than 20 life-threatening diseases and are responsible for preventing an estimated 3.5 to 5 million deaths each year [2]. Following the introduction of the Expanded Immunization Programme by the World Health Organization (WHO) in 1974 [3], there were dramatic gains in immunization coverage worldwide, bolstered by global collaborative efforts to increase coverage and expand immunization among under-vaccinated populations.

Yet, in recent years, progress has largely stalled and, in some cases, reversed. Although these trends were becoming evident prior to the COVID-19 pandemic [4], they have been greatly exacerbated since the onset of COVID-19 and associated disruptions in 2020. Childhood immunization programmes have lost ground, with an estimated 25 million children under the age of 1 not receiving a third dose of diphtheria-tetanus-pertussis-containing vaccine (DTP3) in 2021—the highest number for more than a decade; 18 million of these children did not even receive the first dose of DTP vaccine (zero-dose children) [5]. Between 2019 and 2021, there were decreases in global coverage of the first dose of Human Papillomavirus vaccine (HPV) among girls (from 20% in 2019 to 15% in 2021) [5], and coverage decreases were reported across many other WHO-recommended vaccines, including polio, pneumococcal, rotavirus, and measles-containing vaccines [6].

Against this backdrop of slowed progress, inequalities are an increasingly highlighted concern as certain population groups remain systematically at risk of being unvaccinated or under-vaccinated. More than 60% of unvaccinated or under-vaccinated children in 2021 lived in just 10 countries (India, Nigeria, Indonesia, Ethiopia, the Philippines, the Democratic Republic of the Congo, Brazil, Pakistan, Angola, and Myanmar) [5], and unvaccinated children remain disproportionately represented in impoverished, rural or urban slum areas, and situations of conflict or fragility [7]. Meanwhile, with recent disruptions to immunization programs, inequalities have emerged or become worse in many middle-income countries that have typically had high-performing programs [8].

2. Major Initiatives to Tackle Inequality in Immunization

As part of efforts to restore progress and tackle inequality, in 2020, the World Health Assembly endorsed the Immunization Agenda 2030 (IA2030) [9]. IA2030 sets forth an

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"ambitious, overarching global vision and strategy for vaccines and immunization for the decade 2021–2030" [9]. IA2030's third Strategy Priority places emphasis on coverage across subgroups of gender, age, location, or socioeconomic status and promotes principles of people-centredness and country ownership for processes that are premised on partnership and guided by data. Realizing the IA2030 vision—a world where everyone, everywhere, at every age fully benefits from vaccines for good health and well-being—is aligned with the Sustainable Development Goal (SDG) imperative of "leaving no one behind" [9]. Indeed, immunization is central to achieving the health-specific SDG (SDG3), and, furthermore, contributes to 14 of the 16 other SDGs [10].

Equity is a major priority area for Gavi, the Vaccine Alliance. Gavi, established in 2000 to improve access to vaccines among children in the poorest countries, has supported countries in the provision of vaccines to 981 million children in 77 countries through routine immunization programmes, and an additional 1.4 billion vaccinations through campaigns [11]. Gavi's current 2021–2025 strategy builds on this work, addressing within country equity as an organizing principle "with a high ambition to reduce the number of under-immunized children and an intensified focus on reaching the unreached" [12]. This includes additional support for countries such as the Identify–Reach–Monitor–Measure–Advocate (IRMMA) framework, a new Equity Accelerator Fund and Learning Hub [13].

Another noteworthy initiative is the Equity Reference Group for Immunization (ERG), an action-oriented thinktank consisting of senior experts in global health working with WHO, Gavi, the World Bank, the Bill and Melinda Gates Foundation, and UNICEF; academics in critical topics such as metrics, gender, and health systems development; and senior leaders from ministries of health. The ERG has four priority thematic areas: urban poor areas; remote rural areas; children affected by conflict; and gender-related inequities and barriers to immunization [14].

3. The Special Issue: Monitoring Inequalities and Understanding Drivers; Sharing Experiences and Impact of Equity-Focused Interventions

In this Special Issue, we bring together research and evaluation on Inequality in Immunization to contribute to growing evidence and insights on monitoring immunization inequalities and understanding drivers of coverage, as well as pathways towards enhancing and sustaining equity in immunization. The Special Issue features research, reviews, and commentaries that span a range of immunization topics and populations. While there is an emphasis on childhood vaccinations [15–18]—exploring inequalities in DTP and measles-containing vaccine (MCV) coverage [19–23] and patterns of inequality in unvaccinated or zero-dose children [24–29]—contributions also cover inequalities in adult immunization [30], including protection of pregnant women and their newborns against tetanus [31] and COVID-19 vaccination [32,33].

An encouraging observation while putting together this Special Issue has been the use of a variety of data sources to assess immunization inequalities. Studies have made use of traditional sources of immunization data like administrative data [19,23,32] and population surveys [18,21,22,27,29,30] (including Demographic and Health Surveys and/or Multiple Indicator Cluster Surveys [15,20,31]), while several other studies explored the potential of novel sources such as geospatial data [24,25], electronic immunization registries [34], dialogues [16], country appraisals and reports [35], and funding proposals [26]. Three review studies relied on synthesis and structured analyses drawing from a multitude of existing studies [17,33,36]. Indeed, the diversity of data sources represented across the articles of this Special Issue points to greater availability of data, and, critically, the innovative use of these data to delve more deeply into inequality analysis and inference. This is a practice that is welcome and will be key to generating new insights into immunization inequalities and progress in this area.

This collection of articles makes important contributions to understanding dimensions of immunization inequality—that is, the diverse demographic, socioeconomic, or geographical characteristics that define populations who are advantaged and disadvantaged, while

also highlighting the frequent co-occurrence and compounding of multiple deprivations. As dimensions of inequality present themselves and intersect in dynamic ways, our modes of understanding must keep up. Several studies in this Special Issue examined multiple dimensions of immunization inequality [18,19,21,27,29,31,33,36], while others focused on specific dimensions, such as gender barriers [20,34] or socioeconomic status [15,30,32].

There is an established and growing evidence base on exemplars of action on immunization equity, particularly among Gavi-supported countries, but also in other contexts with successful immunization programmes [26,35,37]. This research offers important insights into what strategies are being deployed to reduce inequalities ("the what") [35,37,38], while starting to shed light on how gains in immunization equity were achieved ("the how") [39,40]. There is, admittedly, a long way to go in expanding the evidence base in this latter "how" category and what is required to feasibly implement these strategies, including costs and drivers of sustained change.

Taken together, the articles in this Special Issue spotlight some of the most current and pressing areas of interest in the topic of inequality in immunization, though the absence of certain themes is notable. For instance, analyses pertaining to conflict or fragile state contexts were lacking. Several of the contributions to this Special Issue acknowledge the need for greater reliance on qualitative methodologies and longer-term engagement with affected populations. These approaches are vital to developing contextually tailored monitoring and planning mechanisms that foreground equity in the face of changing or worsening relationships of security or trust.

Our Special Issue launch in April 2023 is timed to coincide with the 2023 World Immunization Week, which this year focuses on the theme of 'The Big Catch-Up' [41]. This initiative calls for the year 2023 to be a coordinated, intensified period of vaccination catch-up—to close immunity gaps among persons missed during the pandemic—involving recovery and strengthening of immunization services. "The Big Catch-Up" is a concerted effort intended to be driven by communities and countries, regions working in partnership with IA2030 institutions and structures, to which equity is integral [42]. This requires vigilance to change local realities with more sensitive and flexible metrics and methods to understand the complex, intersectional and dynamic nature of inequities, alongside concerted collaboration, context-tailored, and community-driven responses that chip away at inequities. In short, it is crucial that we hold on to equity in immunization in our efforts to catch up on the IA2030 goals to realize the vision of a world where everyone, everywhere, at every age, fully benefits from vaccines to improve health and well-being [9].

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