

Increasing Childhood Immunization in Low- and Middle-Income Countries



Rigorous Evidence on Increasing Demand for Vaccinations



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Childhood immunization¹ is one of the most successful and cost-effective public health interventions to date, preventing an estimated 2 to 3 million deaths every year² and severe morbidity for millions more children from devastating diseases such as polio and the hepatitis B virus.³ Although there have been substantial gains in childhood immunization globally, coverage still lags in many countries, leaving millions vulnerable to disease.⁴ A particular challenge is on the demand side—low acceptance and uptake despite availability of vaccine supplies and services. Demand-side interventions target the barriers to acceptance and uptake, such as lack of awareness about the schedule and benefits, low prioritization of immunization, financial obstacles, or distrust in immunization. These interventions will only move the needle in the context of a functioning vaccine supply chain and effective health services. In this brief, Innovations for Poverty Action’s Path-to-Scale Research team has compiled the evidence for demand-side interventions to increase child immunization in low and middle-income countries (LMICs).

Based on the research, the following are key lessons to consider:



Mobile phone reminders may improve timely immunization in contexts with functioning and reliable health records and communication systems.



Immunization education may improve coverage of some vaccines.



Socially-embedded education interventions may be particularly effective in contexts where misconceptions and distrust of vaccination are key drivers of low coverage.



Financial incentives have mixed impacts on child immunization. In-kind incentives may improve coverage and timeliness of immunization.



Social incentives that allow caregivers to signal their child’s vaccination status may improve uptake.



Mobile phone reminders may improve timely immunization in contexts with functioning, reliable health records and communication systems.

It is important that children complete the full immunization schedule in a timely manner, but keeping track of when a child is eligible for a subsequent dose can be challenging. Reminder interventions delivered through phone calls or text messages keep track of a child's vaccination status and alert caregivers when a child is due or overdue for vaccination.

Evidence from Ghana found that voice call reminders improved coverage of timely immunization by 10.5 percentage points,⁵ and evidence from urban areas of Nigeria and Zimbabwe found that text reminders improved timely immunization completion by 8.7 to 16.3 percent, respectively.⁶ Mixed positive effects were found in urban Burkina Faso and semi-rural Nigeria,⁷ and null results were found in rural Kenya.⁸ In India, SMS reminders alone had no impact but did effectively complement a package of interventions including local immunization ambassadors, and incentives that increased in amount with each immunization, for a 44 percent increase in measles vaccination.⁹

Given that phone ownership and up-to-date health records for children are far from universal in LMICs, reminder interventions may only effectively reach a subset of caregivers. The poorest and hard-to-reach caregivers, who may lack access to a phone, and have limited contact with health providers may be systematically excluded.



Immunization education may improve coverage of some vaccines.

Educational interventions aim to address gaps in knowledge or understanding about the schedule, safety, and benefits of the childhood immunization series. A Cochrane review found moderate evidence that community-based health education improved coverage of all three doses of DTP (Diphtheria, Tetanus, and Pertussis) by 68 percent. Information campaigns utilizing posters, leaflets, and other media increased coverage of at least one dose of a vaccine by 43 percent.¹⁰ Another systematic review found that 36 percent of educational interventions were associated with a positive effect on immunization uptake, 18 percent were mixed-positive and 45 percent showed null effect.¹¹



Socially-embedded education interventions may be particularly effective in contexts where misconceptions and distrust of vaccination are key drivers of low coverage.

Leveraging community social networks and leaders to disseminate information and build support for immunization can be effective in improving immunization uptake in some contexts. In India, community members



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selected for their skills in relaying information acted as “ambassadors,” and shared immunization information throughout their social networks, leading to a 26 percent increase in measles vaccination.¹² A recent study engaging communities through traditional and religious leaders in Nigeria, where pockets of vaccine distrust persist,¹³ effectively reduced the number of unvaccinated children from 7 percent to 0.4 percent and improved the timeliness of later vaccines.¹⁴



Financial incentives have mixed impacts on child immunization, while in-kind incentives may improve coverage and timeliness of immunization.

Monetary or in-kind incentives aim to reward immunization uptake or alleviate financial obstacles such as transport costs. A conditional cash transfer (CCT) program in northwest Nigeria significantly improved self-reported vaccination coverage for BCG (16 percentage points), the first dose of pentavalent (21 percentage points), and measles (14 percentage points) compared to children in comparison clinics.¹⁵ In rural Kenya, a small monetary incentive (KES 200/US\$1.82) combined with text message reminders led to increases in full immunization by 9 percentage points.¹⁶ Vaccination promotion from community health volunteers and a small monetary incentive (GHC1/US\$0.25) led to 49.5 percentage point higher coverage in Ghana.¹⁷ Additional evidence is mixed: A 2017 systematic review found null results for cash transfer (including conditional and unconditional) studies on immunization and mixed positive results for a cash transfer combined with services strengthening and community-based nutrition programming.¹⁸ A 2016 review¹⁹ found evidence that monetary incentives have little to no effect on immunization uptake and a 2007 review²⁰ found unclear results for CCTs.



In-kind incentives have proven effective in a few high-quality studies. In Pakistan, food and medicine coupon incentives for immunization led to a two-fold increase in up-to-date DTP coverage at the recommended age.²¹ In India, reliable immunization, i.e. regular availability of immunization services on the supply side, combined with an in-kind incentive—1 kg of lentils per vaccine and a set of metal plates upon completion of the full schedule—led to 39 percent of children being fully immunized compared to 18 percent in villages receiving a reliable immunization intervention only, and 6 percent in the comparison villages.²²

Because features of incentive programs vary widely, it is difficult to draw strong conclusions about their effectiveness. However, given the high value of vaccination, if effective, the benefit of incentives may vastly outweigh the costs.



Social incentives that allow caregivers to signal their child's vaccination status may improve acceptance and uptake.

Distinct from monetary and in-kind incentives are rewards for immunization designed to simultaneously signal receipt of immunization and shape social norms in favor of immunization. There has only been one high-quality trial on social signaling in immunization, which produced promising evidence. In Sierra Leone, colored bracelets were used to signal that a child had initiated vaccination, progressed in the schedule, or completed all first-year vaccinations on time.²⁷ All three treatments led to a significant increase in the number of vaccines a child received by age 1, but

only the completion-signaling bracelet led to a significant increase in the share of children that had completed all required vaccinations on time. Bracelets signaling completed first-year vaccinations increased timely and complete vaccination by 14 percentage points at a cost of approximately US\$1 per child.

The promise of social incentives lies in leveraging and amplifying existing community norms in favor of vaccination through low-cost social signals. When caregivers and their children are able to visibly “signal” their vaccination status and community vaccination norms, other caregivers may be propelled to vaccinate their children so they are part of the community majority. Social incentive interventions may therefore be more sustainable than traditional monetary or food incentives which rely on individual financial need as a driver of vaccine uptake.

Implications for Practice

This review focused on demand-side interventions. Demand-side interventions are only advisable if demand-side challenges—low acceptance and uptake in spite of available vaccine supplies and services—are the primary obstacles to complete and timely childhood vaccination coverage. If supply chain issues are at the root of low vaccination coverage, stimulating demand is unlikely to move the needle on immunization completion, and may even have detrimental consequences to future demand and uptake. While this evidence can be considered relevant across a wide range of populations and settings, local research to identify the context-specific determinants of vaccination will inform targeted uptake interventions, and the subsequent impact.

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