

# Impact of Conditional Cash Transfers on Routine Childhood Immunizations: Evidence from North West Nigeria



CCT Disbursement at Outreach Session in Katsina State ©New Incentives 2020

## PROGRAM OVERVIEW

New Incentives – All Babies Are Equal Initiative (NI-ABAE) uses conditional cash transfers (CCTs) to increase vaccination rates in North West Nigeria. NI-ABAE educates caregivers about the importance of vaccinating children and disburses cash incentives that are conditional on infants receiving each of four life-saving vaccines. These vaccinations are part of the routine schedule of infant immunization in Nigeria and are provided for free at government clinics. Caregivers can receive up to 4,000 Naira (\$11) if the infant receives all doses in the routine immunization (RI) schedule.

The program was evaluated by a randomized control trial (RCT) from July 2017 until late February 2020. **The goal of this evaluation was to measure the impact of NI-ABAE's CCTs for RI Program on coverage for routine childhood vaccines in North West Nigeria.**

## KEY RESULTS

**Increased Coverage:** Children in NI-ABAE catchment areas were 27 percentage points more likely to be fully immunized than children in control areas.

**Improved Timeliness:** Infants who received Measles vaccines were 33 percentage points more likely to receive it within one month of the recommended age.

**Positive Externalities:** Children in areas served by the program had higher coverage for all major injectable vaccines – including those not directly incentivized by the program – and were more likely to have visited a health clinic.

**Improved Knowledge and Attitudes:** Caregivers in the catchment areas served by the program had better knowledge and more favorable attitudes towards immunization.

**Reduced Stockouts:** Government clinics with the NI-ABAE program were 18 percentage points less likely to report vaccine stockouts during the last 12 months.

**Supplemented Existing Efforts:** The program generated impact on top of underlying increases in vaccination rates.

## SUMMARY OF RECOMMENDATIONS

- We recommend that policymakers in Nigeria consider expanding access to CCTs for routine childhood immunization as a complement to other demand-side and supply-side programs in regions that have low immunization coverage.
- Additional research is needed to assess the indirect effects of CCTs for routine immunizations on economic empowerment and health decision-making, the long-term effects of CCTs on health service delivery, and sustained effects after phasing out incentives.

## CONTEXT

Childhood vaccines prevent an estimated 2 to 3 million deaths every year.<sup>1</sup> They are recognized as one of the most cost-effective child health interventions in low-income countries.<sup>2</sup> Yet, an estimated 19.4 million infants around the world did not receive routine vaccinations in 2018.<sup>3</sup> Low immunization rates are a significant contributor to Nigeria's high under-five mortality ratio (120 deaths per 1,000 live births<sup>4</sup>) – 40% of under-five deaths in Nigeria are from vaccine-preventable diseases.<sup>5</sup> North

West Nigeria, specifically, has the lowest vaccination coverage in Nigeria.<sup>6</sup>

Evidencesuggeststhatcashandin-kindincentives can be successful demand-side interventions to increase coverage of immunization and other child health interventions, especially in low coverage settings.<sup>7-12</sup> To our knowledge, there is no rigorous evidence on the effectiveness of conditional cash transfers for immunizations in Nigeria.

## NEW INCENTIVES – ALL BABIES ARE EQUAL INITIATIVE

New Incentives is an NGO that uses conditional cash transfers to increase childhood immunization rates in Nigeria.

NI-ABAE's CCTs for Routine Immunizations (RI) Program incentivizes BCG vaccine, Pentavalent (Penta) vaccine, Pneumococcal Conjugate Vaccine (PCV), and Measles vaccine. These vaccinations were chosen due to their impact on reducing under-five mortality and improving health outcomes for children.



NI-ABAE advertises locally with town criers, advertising cards and posters



On each RI day, NI-ABAE staff encourage the clinic staff to procure more vaccines if stock is low



Caregivers bring their infants to the clinic or to outreach sites according to Nigeria's recommended immunization schedule

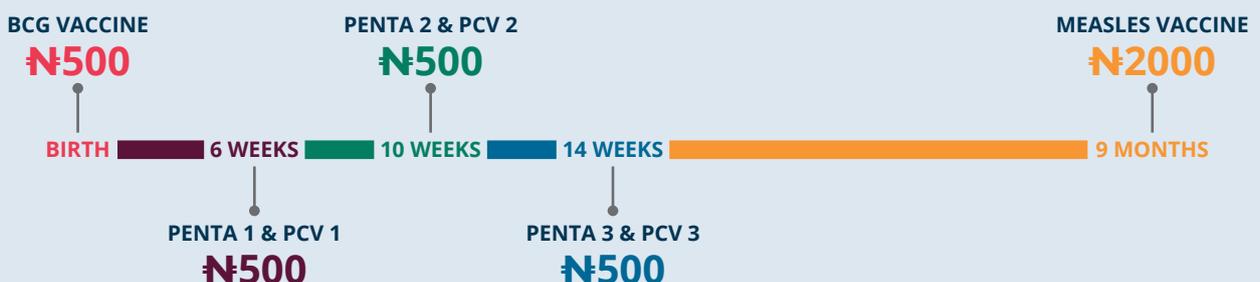


After immunization, NI-ABAE staff provide cash to those who meet the eligibility criteria

Caregivers in North West Nigeria have relatively low mobile phone penetration and minimal mobile money penetration<sup>13</sup>. Consequently, New Incentives must provide their incentives as physical cash unlike other comparable programs around the world. While distributing cash transfers increases operational complexity for New Incentives, receiving cash likely increases caregivers' chances to directly control the money they receive from the program.

As of December 2019, NI-ABAE was operating in **98 government clinics** across **Zamfara, Katsina, and Jigawa States**. They had dispersed **708,000 cash transfers** to caregivers of **194,000 enrolled infants**, totaling **542,000,000 Nigerian Naira**.

### Timing of Vaccines and Incentive Amounts



## EVALUATION OVERVIEW

**Intervention:** NI-ABAE provided conditional cash transfers to caregivers who brought eligible infants to a program clinic to receive childhood immunizations. This was coupled with awareness-raising activities in clinic catchment areas and sensitization at the clinic.

**Evaluation Design:** Clustered randomized control trial.

**Evaluation Timeline:** August – October 2017 (Baseline); November 2019 – February 2020 (Endline).

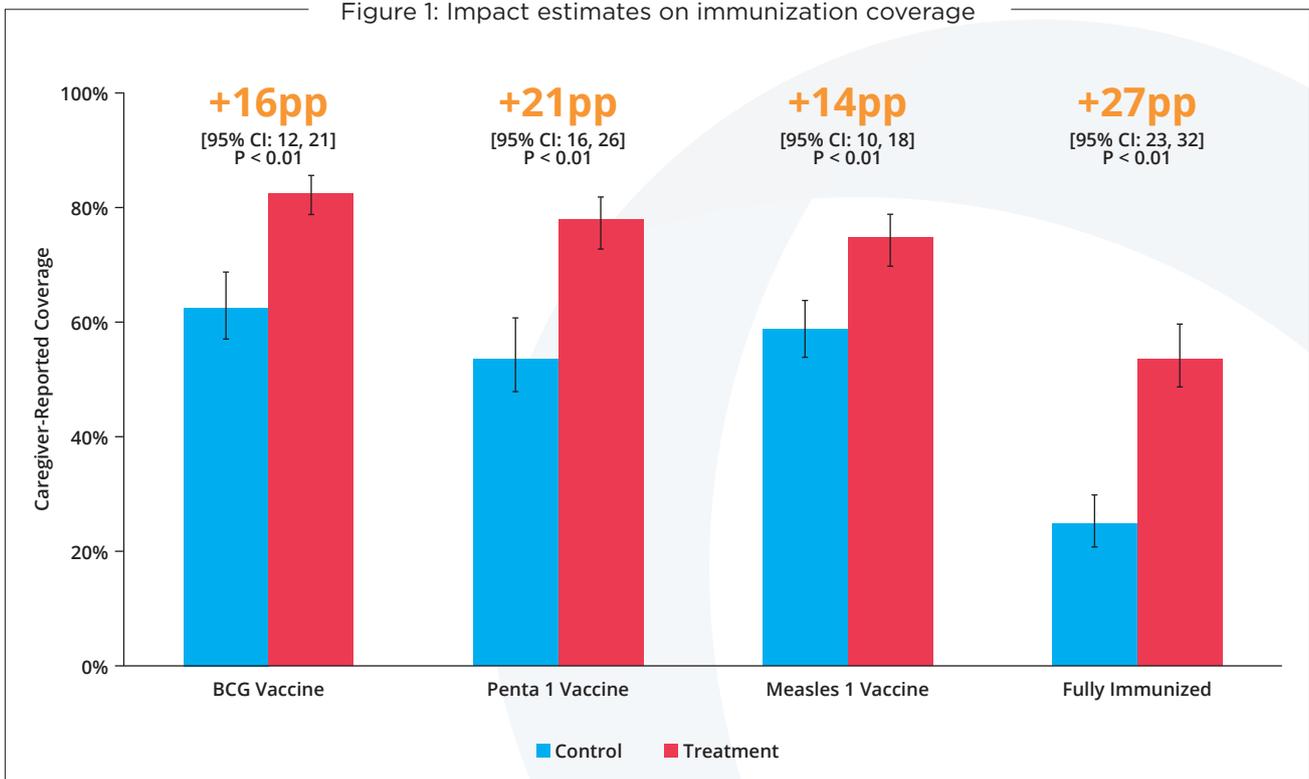
**Setting and Evaluation Sample:** This evaluation was conducted in the catchment areas around 167 government clinics (84 treatment and 83 control) across Katsina, Zamfara, and Jigawa States. Clinics were screened by NI-ABAE prior to the baseline to ensure they met their operational requirements. We then selected clinics to include in the evaluation, ensuring a minimum distance of 17km between pairs of study clinics to reduce the likelihood of caregivers living in control catchment areas bringing their children to treatment clinics to access the program. For the endline, we surveyed 5,173 children aged 12 to 16 months.

**Data Collection Methods:** Measures of primary outcomes were based on the report by the caregiver of their child’s vaccination status (self-reported data). These outcomes were cross-checked against health cards with immunization records (e.g. child health cards, campaign cards, etc) and immunization registers at the clinics.

## KEY FINDINGS

**Increased Coverage:** Children in NI-ABAE catchment areas were 27 percentage points more likely to be fully immunized<sup>14</sup> than children in control areas. This indicates that the incentive induces caregivers to continue to come back for routine immunizations. This is especially important since the final vaccine in the RI schedule is Measles vaccine, and evidence suggests that there is greater potential health impact from the Measles vaccine.<sup>15</sup> Further, NI-ABAE’s program had a large, consistent positive impact on coverage of

Figure 1: Impact estimates on immunization coverage





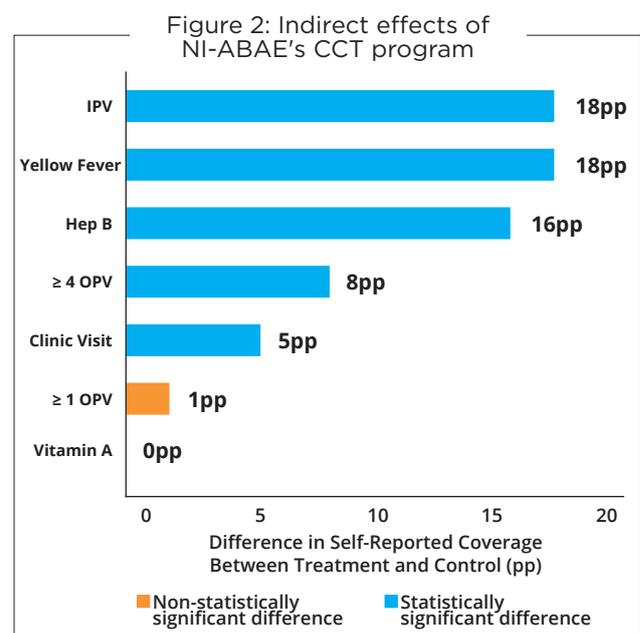
individual vaccines, including BCG vaccine, Penta 1 vaccine and Measles vaccine. The percentage of children who had received any injectable vaccine was similar in the treatment and control groups. A deeper look at the data suggests that this may be in part driven by the recent Measles, Yellow Fever, and Injectable Polio Vaccine campaigns that took place in the study areas just before endline.

Overall, these findings suggest that conditional cash transfers can successfully increase coverage of routine childhood immunizations (*Figure 1*).

**Improved Timeliness:** Infants who received Measles vaccine were 33 percentage points more likely to receive it within one month of the recommended age. Children in the treatment group were also 39 percentage points more likely to have received it within 2 weeks of the recommended age. This matters because vaccines that are received at the recommended age achieve maximal protection against disease. The incentive also improved the timeliness (within 2 weeks) of the first dose of Penta vaccine, though this impact was no longer evident within 1 month of the recommended age. The incentive had no statistically significant effect on the timeliness of the BCG vaccine.

**Positive Externalities:** Children in areas served by the program had higher coverage for all major injectable vaccines – including those not directly incentivized by the program – and were more likely to have visited a health clinic. Caregivers in the treatment catchment areas reported

higher coverage for all major injectable vaccines included in the Nigerian RI schedule – including those vaccines which are not directly incentivized by the program.<sup>16</sup> The program did not appear to have an effect on coverage for Vitamin A or receipt of at least one dose of Oral Polio Vaccine (OPV). Children in the treatment group were also more likely to have visited a health clinic than those in the control group. This suggests that the incentives are increasing interactions with the health facility, which may facilitate receipt of non-immunization health services or result in continued use of the health system if this first interaction was positive (*Figure 2*).



**Improved Knowledge & Attitudes: Caregivers in the catchment areas served by the program had better knowledge and more favorable attitudes towards immunization.**

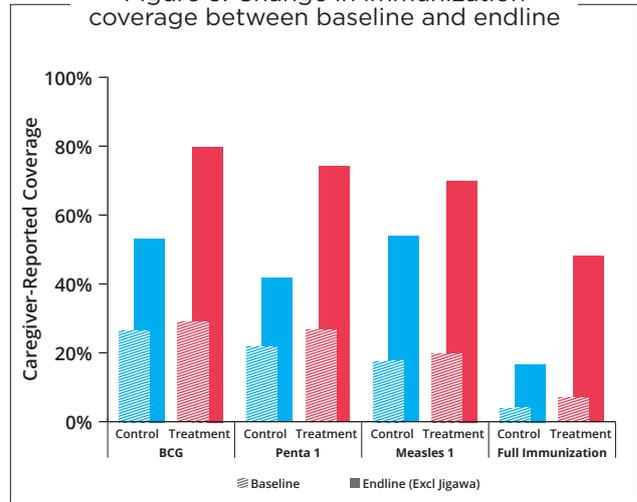
Caregivers in the treatment areas had higher knowledge of where to get vaccines for their child (7 percentage point increase), at what age their child should receive the first injectable vaccine (7 percentage point increase), and the number of vaccines a child should receive by 1 year of age (15 percentage point increase).

The NI-ABAE CCTs for RI Program had some modest effects on caregivers' attitudes towards vaccines. Caregivers in treatment catchment areas were slightly more likely to say that they thought that vaccines were more beneficial than harmful for children (2 percentage point increase) and they were slightly less likely to say that it is difficult for their community to vaccinate their children (3 percentage point decrease). Caregivers in the treatment facilities were more likely to have heard positive messages about vaccines from local leaders (5 percentage point increase). These findings suggest that the incentives are improving caregivers' knowledge and attitudes toward vaccines. These increases were modest, however, which suggest that knowledge and favorable attitudes alone are insufficient; the incentive also induces caregivers to act.

**Reduced Stockouts: Government clinics in NI-ABAE catchment areas were 18 percentage points less likely to report vaccine stockouts during the last 12 months.** The percentage of treatment clinics that reported no vaccine stockouts during the 12 months preceding the endline survey was 18 percentage points higher than the percentage of control clinics. Our data shows that this significant difference between treatment and control clinics in the frequency of vaccinations stockouts did not exist prior to the implementation of the NI-ABAE CCTs for RI Program. This effect is likely observed as a result of NI-ABAE's staff checking the quality and stock of vaccines on RI day. If vaccine stock is low, NI-ABAE staff encourage clinic staff to procure more vaccines. This finding suggests that the program's impact goes beyond strengthening the demand for vaccines and includes the reduction of supply side constraints.

**Supplemented Existing Efforts: The program generated impact on top of underlying increases in vaccination rates.** We conducted a baseline coverage survey among evaluation clinics in

Figure 3: Change in immunization coverage between baseline and endline



Note: Data is from Katsina and Zamfara since Jigawa was added to the RCT after baseline was completed. The difference in height between the patterned and solid bars represents change over time; the difference between the solid blue and red bars for a given vaccine represents program impact in Katsina and Zamfara States.



Katsina State and Zamfara State in August - November 2017. A little over two years later (Nov 2019 - Feb 2020), our endline found a meaningful increase in immunization coverage among control clinics. This suggests that the widespread attention that the Government of Nigeria has devoted to improving immunization across northern Nigeria is achieving impact (Figure 3). The impacts of the NI-ABAE program described in this brief added to these underlying increases in vaccination rates, demonstrating that the NI-ABAE program complemented existing efforts and helped to fill the remaining gap in coverage.



## POLICY IMPLICATIONS

In recent years, policymakers, development practitioners, and the donor community have invested substantially in improving supply-side infrastructure for routine immunization in Nigeria and as a result, coverage has increased.<sup>17</sup> This evaluation found that NI-ABAE's CCT for RI Program caused substantial additional increases in coverage of routine childhood immunizations in Katsina, Zamfara, and Jigawa States. These findings suggest that CCTs could have a profound impact on ensuring that children in North West Nigeria access life-saving immunizations and could be an important complement to other ongoing programs. We recommend that policymakers in Nigeria consider expanding access to CCTs for routine childhood immunization as a complement to other demand-side and supply-side programs in regions that have low immunization coverage.

Further research could complement this study by examining the indirect effects of CCTs for routine immunization on economic empowerment and health decision-making, the long-term effects of CCTs on health service delivery, and sustained effects after phasing out incentives.

- 1 Vaccination and immunization Statistics [Internet]. UNICEF DATA. [cited 2020 May 16]. Available from: <https://data.unicef.org/topic/child-health/immunization/>
- 2 Jamison DT, Breman JG, Measham AR, Alleyne G, Claeson M, Evans DB, et al. Disease Control Priorities in Developing Countries. World Bank Publications; 2006. 1449 p.
- 3 Child Mortality [Internet]. UNICEF DATA. [cited 2020 May 17]. Available from: <https://data.unicef.org/topic/child-survival/under-five-mortality/>
- 4 Nigeria has the 2nd highest median under-five mortality ratio in the world according to UNICEF's 2018 child mortality estimates. Child Mortality [Internet]. UNICEF DATA. [cited 2020 May 17]. Available from: <https://data.unicef.org/topic/child-survival/under-five-mortality/>
- 5 National Routine Immunization Strategic Plan (NRISP) Advisory Committee. National Routine Immunization Strategic Plan 2013-2015: Intensifying Reaching Every Ward through Accountability [Internet]. Abuja, Nigeria: Federal Ministry of Health – Nigeria; 2013. Available from: [http://www.nitag-resource.org/sites/default/files/2b302ead55915d61468ac747e2e437aee65871b1\\_1.pdf](http://www.nitag-resource.org/sites/default/files/2b302ead55915d61468ac747e2e437aee65871b1_1.pdf)
- 6 National Population Commission (NPC) [Nigeria], ICF. Nigeria Demographic and Health Survey 2018 [Internet]. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF; 2019. Available from: <https://dhsprogram.com/pubs/pdf/FR359/FR359.pdf>
- 7 Banerjee AV, Duflo E, Glennerster R, Kothari D. Improving immunization coverage in rural India: clustered randomised controlled evaluation of immunization campaigns with and without incentives. *BMJ*. 2010 17;340:c2220.
- 8 Chandir S, Khan AJ, Hussain H, Usman HR, Khowaja S, Halsey NA, et al. Effect of food coupon incentives on timely completion of DTP immunization series in children from a low-income area in Karachi, Pakistan: a longitudinal intervention study. *Vaccine*. 2010 Apr 26;28(19):3473-8.
- 9 Loevinsohn BP, Loevinsohn ME. Improvement in coverage of primary health care in a developing country through use of food incentives. *Lancet Lond Engl*. 1986 Jun 7;1(8493):1314-6.
- 10 Gibson DG, Ochieng B, Kagucia EW, Were J, Hayford K, Moulton LH, et al. Mobile phone-delivered reminders and incentives to improve childhood immunization coverage and timeliness in Kenya (M-SIMU): a cluster randomised controlled trial. *Lancet Glob Health*. 2017;5(4):e428-38.
- 11 Sato R, Takasaki Y. Peer Effects on Vaccination Behavior: Experimental Evidence from Rural Nigeria. *Econ Dev Cult Change*. 2019 Oct 1;68(1):93-129.
- 12 Cruz RCS, Moura LBA, Soares Neto JJ. Conditional cash transfers and the creation of equal opportunities of health for children in low and middle-income countries: a literature review. *Int J Equity Health*. 2017;16(1):161. Published 2017 Aug 31. doi:10.1186/s12939-017-0647-2.
- 13 See [https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/05/GSMA\\_Country\\_Feasibility\\_Report\\_Nigeria\\_20141.pdf](https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/05/GSMA_Country_Feasibility_Report_Nigeria_20141.pdf)
- 14 Child received BCG, three doses of Penta, and Measles vaccines.
- 15 See IHME data for by-cause mortality: <http://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2017-permalink/d1a61ecb86c01b9ac1499bd2b718d189>
- 16 NI-ABAE provides incentives during the routine immunization visits where HepBO, IPV, OPV, and Yellow Fever vaccine are administered. However, these vaccinations are not part of the minimum required vaccines that are required for the incentives to be disbursed. Nevertheless, impact on these vaccines was also positive, statistically significant, and of generally similar magnitude to the program vaccines.
- 17 National Routine Immunization Strategic Plan (NRISP) Advisory Committee. National Routine Immunization Strategic Plan 2013-2015: Intensifying Reaching Every Ward through Accountability [Internet]. Abuja, Nigeria: Federal Ministry of Health – Nigeria; 2013. Available from: [http://www.nitag-resource.org/sites/default/files/2b302ead55915d61468ac747e2e437aee65871b1\\_1.pdf](http://www.nitag-resource.org/sites/default/files/2b302ead55915d61468ac747e2e437aee65871b1_1.pdf)

**Note:** This RCT in Katsina, Jigawa, and Zamfara States was preceded by a small pilot study conducted in Anambra, Akwa Ibom, and Nasarawa States primarily to help our implementing partner determine the optimal incentive amount for the Measles vaccine. This pilot study is different from the study presented here and is the subject of an inquiry by the National Health Research Ethics Committee, Nigeria (NHREC) related to timing of the ethical review and omission of local authors. IDinsight has provided responses to NHREC's questions and awaits a resolution of that matter. IDinsight has retracted the related publication and has updated its internal policies. The RCT reported in this post is separate: it took place in Jigawa, Katsina, and Zamfara States and had the necessary approvals and permissions.