

Top Tier Evidence Initiative:

Evidence Summary for Childhood Immunization Campaign With Incentives

HIGHLIGHTS:

- **Intervention:** Monthly, well-publicized immunization camps in poor villages in rural India, combined with small incentives for parents to have their children immunized (e.g., a \$1 bag of lentils per immunization).
- **Evaluation Methods:** A well-conducted randomized controlled trial.
- **Key Findings:** Increased the percent of children age 1-3 fully immunized from 6% to 39%, at a cost of about \$12 per targeted child; the small incentives were shown to be a key factor causing the increase.
- **Other:** A study limitation is that villages in the sample were all located in one area of western India. Thus, corroboration of these findings in a second trial, in another setting, would be desirable to show that the effects generalize to other settings where the intervention might normally be implemented.

I. The Top Tier initiative’s Expert Panel has identified this intervention as *Near Top Tier*.

The Panel finds that this intervention meets the “Near Top Tier” evidence standard, defined as:

Interventions shown to meet almost all elements of the Top Tier standard (i.e., well-conducted randomized controlled trials... showing sizable, sustained effects), and which only need one additional step to qualify. This category includes, for example, interventions that meet all elements of the standard in a single site, and just need a replication trial to confirm the initial findings and establish that they generalize to other sites.

II. Description of the Intervention:

The intervention is a child immunization campaign for children age 0-3 conducted in an impoverished area of rural India with unreliable immunization services (e.g., high staff absenteeism). The intervention included two main components –

- (i) Monthly, well-publicized, reliable immunization camps. Monitoring confirmed that 95% of the planned camps took place. Social workers publicized the camps, informing mothers of young children about the camps’ availability and the benefits of immunization.
- (ii) Small incentives for parents to have their children age 0-3 immunized. These included: (a) a 1 kg bag of raw lentils – worth about \$1 – for every immunization their child received; and (b) a set of metal plates used for meals – worth about \$2 – for completion of their child’s full immunization course (requiring at least five visits).

The full immunization course provided protection against diphtheria, whooping cough, tetanus, tuberculosis, polio, and measles. The intervention’s cost was about \$12 per targeted child (2014 dollars).¹ [Click here for more information on this intervention.](#)

¹ The three largest cost components were the salaries of the nurses and assistants providing the immunizations (29% of total cost), the incentives (28%), and the monitoring to make sure the camps took place as planned (23%). Monitoring was necessitated by the unusually poor health infrastructure in this part of India.

III. Evidence of Effectiveness:

This summary of the evidence is based on a systematic search of the literature, and correspondence with leading researchers, to identify all well-conducted randomized controlled trials of this intervention. Our search identified one such trial, as follows.

Overview of the study design: Randomized controlled trial in rural India, conducted 2004-2007.

This was a randomized controlled trial of 134 poor, rural villages in the Udaipur district in the state of Rajasthan in western India – an area where only 2% of children age 1-2 have been fully immunized. The villages were randomly assigned to one of three groups:

- **Camps + Incentives**: Villages in this group received the full intervention as described above.
- **Camps-only**: Villages in this group received the first component of the intervention – monthly, well-publicized, reliable immunization camps – but not the incentives for parents to have their children immunized.
- **Services as usual (i.e., the control group)**: Villages in this group continued their usual (unreliable) vaccination services, with no incentives.

Within each village, a random sample of 30 households with young children was selected, and surveyed at the start of the study and again at the 18-month follow-up to obtain immunization data for all of their children age 1-3 at follow-up. The number of households in the sample with age-eligible children was 2,158 at the start of the study; the average child age was about 10 months; and the average household income was about \$980 per year (in 2014 dollars).

Effects 18 months after the start of the intervention on children age 1-3:

The following table shows the effects on all main outcomes that the study measured –

	Percent <i>fully</i> immunized ^a	Percent <i>partly</i> immunized ^b (i.e., at least one immunization)	Average number of immunizations per child ^c
Camps + Incentives	39%	74%	2.85
Camps-only	18%	78%	2.35
Control	6%	49%	1.20

Notes:

^a All three group differences were statistically significant at the 0.05 level.

^b The difference between each treatment group and the control group was statistically significant at the 0.05 level. The difference between the two treatment groups was not statistically significant.

^c All three group differences were statistically significant at the 0.05 level.

As shown in the table, while Camps-only had a sizable effect, adding the incentives greatly strengthened it.

The incentives' added effect was to get parents to bring their children in for additional immunizations beyond the first. Specifically, the incentives had no effect on the percent of children *partly* immunized compared to the Camps-only group, but more than doubled the percent of children *fully* immunized (39% vs. 18%), and increased the average number of immunizations per child by 21% (2.85 vs. 2.35).

The intervention also produced sizable spillover effects on villages adjacent to the villages in the main sample.

For example, 20% of children age 1-3 in the villages adjacent to the Camps + Incentives group were fully immunized, compared to 11% in villages adjacent to the Camps-only group and 6% in villages adjacent to the Control group. All three of these group differences were statistically significant at the 0.05 level.

Discussion of study quality:

- The study evaluated the intervention as implemented on a large scale in rural India, thus providing evidence of its effectiveness under real-world implementation conditions.
- The study had low sample attrition: Outcome data were obtained for all 134 villages in the sample, and for 83% of the village households randomly selected to participate in the survey (with virtually identical follow-up rates across the three randomized groups).
- At the start of the study, the households and children in the three randomized groups were highly similar in demographics and number of child immunizations.
- The study measured outcomes for all villages assigned to the Camps + Incentives or Camps-only groups, regardless of how well they actually implemented their assigned intervention (i.e., the study used an intention-to-treat analysis).
- Vaccination outcomes were measured with a survey interview of parents that was checked against official records and children's tuberculosis immunization scar. Parents' reports were found to be largely valid, with no systematic over- or under-reporting of vaccinations.
- Interviewers conducting the parent surveys were kept unaware ("blinded") as to which villages were in which randomized group.
- The study's statistical analysis accounted for the fact that villages, rather than households or children, were randomly assigned.
- A study limitation is that the villages in the sample were all located in one state and district in western India. The Top Tier initiative's Expert Panel believes that corroboration of the above findings in a second trial, conducted in another setting by the same or other researchers, would be desirable to strengthen evidence of the intervention's effectiveness across the range of settings where it might normally be implemented.

IV. Summary of the Intervention's Benefits and Costs:

If taxpayers (in India and/or the international community) fund the delivery of this intervention, what benefits to society can they expect to result, and what would be their net cost? The following table provides a summary. This is intended to be a general overview of social benefits in relation to taxpayer cost, rather than a comprehensive benefit-cost analysis. It assigns monetary value to particular benefits and costs only when doing so requires minimal assumptions. The monetary amounts shown are in 2014 dollars.

<u>Benefits To Society</u>
<ul style="list-style-type: none">▪ An increase in the percent of children age 1-3 who were fully immunized from 6% to 39%, 18 months after the start of the intervention.
<u>Cost To Taxpayers</u>
<ul style="list-style-type: none">▪ The program cost approximately \$12 per targeted child.

V. References:

[Banerjee, Abhijit](#), [Esther Duflo](#), [Rachel Glennerster](#), and Dhruva Kothari. "Improving Immunization Coverage in Rural India: Clustered Randomised Controlled Evaluation of Immunization Campaigns With and Without Incentives." *British Medical Journal*, June 12, 2010, vol. 340, c2220. [The full study is posted here.](#)