RESEARCH INSIGHTS

Can reminders boost vaccination rates?

- While families in rural Guatemala recognize the value of vaccination and mostly vaccinate their children at early ages, they often fail to follow through with the course of treatment, drastically reducing the probability of immunization.
- To encourage members of underserved communities to complete the vaccination cycle, community health workers were given monthly lists of children due for vaccination at the clinic, enabling them to send timely reminders to families.
- Reminders increased the likelihood that children completed their vaccination treatment by 2.2 percentage points in the treatment communities. For children in treatment communities who were due to receive a vaccine, and whose parents were expected to be reminded of the due date, the probability of vaccination completion increased by 4.6 percentage points.

CONTEXT

In the last years, Guatemala implemented supply-side interventions to boost vaccination rates: vaccines are freely provided, and there have been constant efforts to ensure their availability. In the mid-1990s, the government established the Coverage Extension Program (known by its Spanish-language acronym PEC), a program providing free basic health care services to children under the age of five and women of reproductive age, with a focus on preventive care. The Ministry of Health then hired local NGOs to operate a network of basic mobile clinics that visited rural communities once a month to provide those services.

As a result, vaccination rates increased dramatically. However, while coverage rates for vaccines due in the first months of life were high, they decreased markedly for vaccines due after children turn one year old. Moreover, survey data indicated that a clear majority of mothers were convinced of the benefits of vaccination and believed their children would receive all recommended vaccines. These patterns suggested that families recognized the value of vaccination and were willing to incur the (time) costs involved in vaccinating their children. Nonetheless, families often failed to follow through and complete the vaccination cycle.

THE PROJECT

In 2011 and 2012, 130 communities were randomly assigned to a treatment or a control group. In treatment communities, health care workers received lists of children due for vaccination at the clinic in the following month, enabling them to send timely reminders to the relevant families. These lists were based on electronic medical records maintained by the NGOs operating the network.

The lists were distributed to community health workers at monthly meetings at the NGO offices, along with information on the medical team's

upcoming visit to their clinic. While health workers in all communities covered by the PEC were expected to provide some kind of reminder, health workers in treatment communities received concise, up-to-date information on which families to remind, whereas health workers in control communities had to rely on their own records, which they may or may not have created and maintained. The specific type of reminder depended on the initiative of the workers. After six months of implementation, the rate of children that had received all vaccines recommended for their age (complete vaccination) was compared among groups.

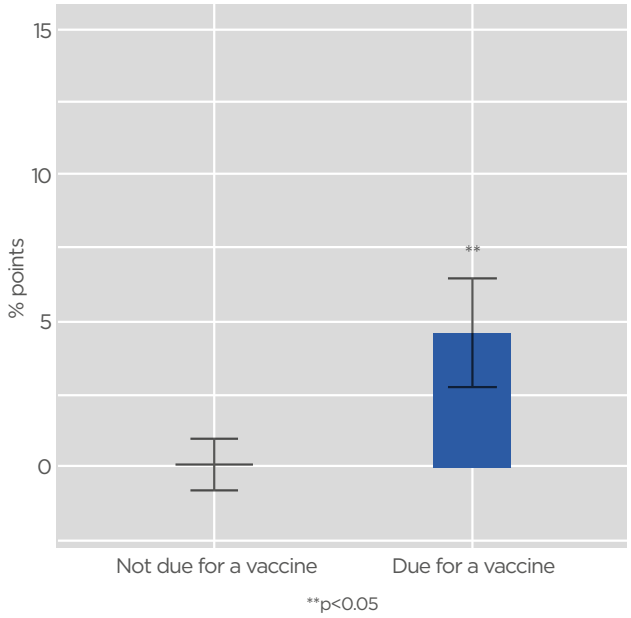
RESULTS

1. The intervention increased the probability of vaccination completion by 2.2 percentage points among all children in treatment communities, representing intention-to-treat—ITT—effects. For children in treatment communities who were due to receive a vaccine, and whose parents were thus expected to be reminded of that due date, the probability of vaccination completion increased by 4.6 percentage points (Figure 1).

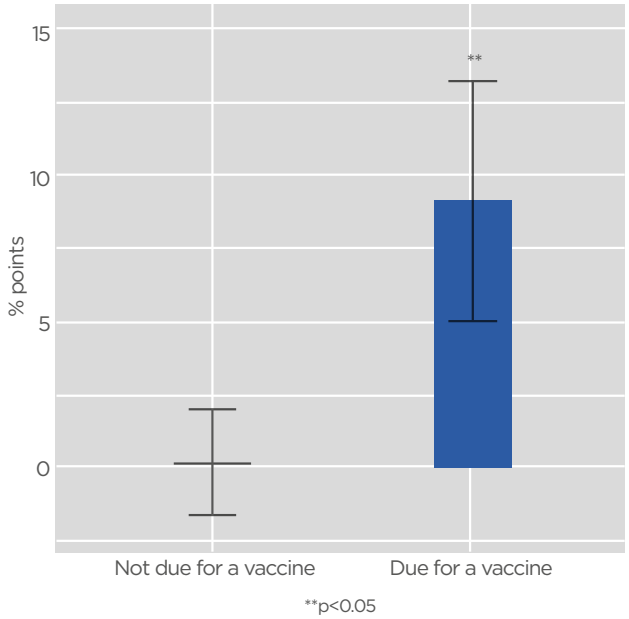
2. As a follow-up survey suggested that not all workers in the treatment group received the patients' lists, we also estimate a local average treatment effect (LATE) where actual usage of the lists was instrumented with the clinics' random assignment to treatment. The estimate shows a stronger effect, increasing the probability of complete vaccination by 4.5 percentage points for all children in treatment communities and 9.1 percentage points for children due for a vaccine (Figure 2).

3. Estimated effects for children of parents not expected to be reminded are essentially zero, suggesting that the intervention did not generate spillovers for these children within treatment communities.

ITT on Achieving Complete Vaccination



LATE on Achieving Complete Vaccination



POLICY IMPLICATIONS

1. The overall effects of providing reminders are remarkable in light of their low cost. The estimated total cost of scaling up this intervention in Guatemala is only US$0.17 per child for the six-months intervention. The cost per additional child with complete vaccination due to this intervention is expected to be around US$7.50. Reminders are found to be a cheaper tool than other options (such as conditional transfers) to increase immunization. The low cost-to-benefit ratio makes this a scalable option for other goals, such as malaria.

2. The project illustrates how behavioral interventions can complement more traditional measures such as supply-side interventions and informational campaigns. Indeed, even when convinced of the benefits of vaccination and provided with free vaccines, *cognitive overload* can impair parents' ability to find the time to plan ahead and follow through with the intention of taking their children to the immunization center. Reminders can be a simple but powerful tool to address this barrier.

Key concept

COGNITIVE OVERLOAD

We all have limited cognitive resources and a finite amount of time to make decisions, and we are susceptible to decision fatigue—i.e., when we are required to make decisions without a chance to recover, the quality of decisions deteriorates over time.

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FULL STUDY

Busso, M., J. Cristiá and S. Humpage (2015). Did You Get Your Shots? Experimental Evidence on the Role of Reminders.

Also published in the *Journal of Health Economics.*

DEPARTMENT OF RESEARCH AND CHIEF ECONOMIST

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