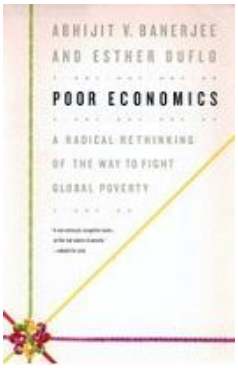
CHILD POVERTY INSIGHTS

JUNE 2011
SOCIAL AND ECONOMIC POLICY
UNICEF POLICY AND PRACTICE

A new look at an old problem: Why do so many poor children miss out on essential immunizations?

Abhijit Banerjee and **Esther Duflo**, founders and directors of the Abdul Latif Jameel Poverty Action Lab (J-PAL), Massachusetts Institute of Technology (MIT)



Our book *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*, is an attempt to synthesize what we have learned from fifteen years of work with the poor worldwide. Each chapter addresses a different facet of development, from education and entrepreneurship to microfinance and health, but in each case we draw upon the extensive body of evidence now available about the poor (from our work and that of others) and upon what we have learned from our personal encounters with poor people all over the world to identify patterns that provide insight into our central question—How is it that the poor can start with the same desires and abilities as everyone else, and yet end up with completely different lives? In this essay we focus one particular question that is central to UNICEF's mission. Immunization is recognized as one of the most effective and most cost effective ways to save life. And yet, according to the World Health Organization (2008) every year, 27 million children do not receive the essential vaccinations that are part of the Expanded Programme on Immunization (EPI). Given the well-established benefits, and the resources that individual countries and the international community devote to this problem, why do so many poor children miss out on essential immunizations?

When did we become interested in the problem of immunization?

Our first encounter with the seriousness and the urgency of the problem of immunization was in Udaipur, Rajasthan. In collaboration with a local NGO, Seva Mandir, who has been working with poor tribal populations in the district for over 50 years, we undertook a detailed survey on health status and health-seeking behavior in 100 villages. (The results are published in Banerjee, Deaton, and Duflo, 2004). We were very struck by the low level of immunization reported by parents: 16% of children below the age of 2 were reported to be fully immunized. (According to the 2005-2006 National Family Health Survey, a nationally representative survey modeled on the Demographic and Health Survey, only 22% of children aged 1 to 2 years were fully immunized in rural Rajasthan.)

Furthermore, our interviews with families suggested to us that the standard questionnaires to measure the immunization rate probably over-estimated immunization rates: most parents do not have their immunization card with them, and many appear to report having been immunized for everything as long as the child received at least the BCG[1].

[1] BCG vaccine is used in the prevention and control of Tuberculosis in infants and young children

A first step in solving a problem is to acknowledge its magnitude. Our first effort was thus to conduct, in 120 villages, a very detailed survey of immunization, relying on a survey questionnaire that was validated to ensure reliable answers. The baseline immunization rate we found in that survey instrument was below 2%.

A widely cited study (Lim et al, 2008) based on the comparison between the Demographic and Health Surveys and the official immunization statistics report that countries, under pressure to demonstrate results to get GAVI funds, overestimate the number of children that are immunized. A first lesson of this project, before any intervention had even started, was that even that article probably underestimates the extent of the immunization problem worldwide. There are probably many more than 25 million children every year who do not get all the essential immunizations that are available today.

Governments, but also international organizations (and those involved in the development of new vaccines) often react to these types of news with a somewhat defensive attitude. We remember sharing those results in front of a gathering of senior civil servants in India, who were quite offended that their country was made to look like a "random African country " (as it turns out, that would be flattering India, since immunization rates are in fact much higher in most African countries). In another event, a senior official from an international organization did not contest the results, but promptly tried to brush them aside with the comment that those low numbers "only" applied to India and Nigeria (two countries with populations of 1.2 billion and 155 million people, respectively), and that the rates were very high in Botswana (a country of 2 million people). He promptly moved on to discuss the importance of spending money on developing a new vaccine against pneumococcus.

While we could not agree more with the value of a pneumococcus vaccine for the developing world, it seems to us that denying that there is an issue with vaccine delivery is counterproductive, and representative of a "3i" problem often encountered in the fight against poverty: Policies conceived in *ideology* ("the poor must want to have their children immunized since this is obviously good for them"), designed in near total *ignorance* of the situation on the ground (we don't even have reliable measures of immunization rates worldwide) persist because of *inertia* (no one in the health system has a good reason to rock the boat, and reams of paper children continue to be immunized in report after report). The 3i problem has plagued efforts to help the poor worldwide, and our book is an attempt to outline a few first steps to fight it.

What are the explanations for the low immunization rates?

Why was the immunization rate so low in Udaipur? Certainly not because their parents did not care about their health. Even among the very poorest, 7% of the monthly budget is devoted to health care on average (Banerjee, Deaton and Duflo, 2004). But most of those expenses are for curative care (antibiotics, drips) and less than a quarter of the visits to a provider were done at a public facility.

One possible explanation for the low immunization rate is the poor performance of the public health care system. In a yearlong weekly survey of public facilities, we found that the local clinics, which are supposed to be offering preventive healthcare services, were closed more than half the time. We found essentially no trace of the immunization "camps" that were supposed to be occurring in the outlying hamlets at regular intervals.

A second explanation is that the poor have traditional beliefs that discourage them from getting immunized. This could be true in principle, but certainly not as a part of a general resistance to modern medicine: as we saw above the poor in Udaipur show a preference for allopathic private doctors; moreover about two-thirds of their visits to a private doctor result in a shot, and another 12% involve getting a drip. If anything the problem seems to be an excessive reliance on a specific type of modern medicine—that based on injectables.

A third possibility is that the problem is not with modern medicine in general but with the nature of preventive care. Worldwide, there seems to be some general evidence of a lack of demand for preventive care—take up for insecticide treated bed-nets, chlorine to purify water or oral rehydration solutions (six teaspoons of sugar and half a teaspoon of salt dissolved in a liter of boiled water) to prevent death from diarrhea and vitamin B to prevent night blindness all tend to be surprisingly low, given how affordable they are. Possible reasons why this happens is either that there are psychological/cognitive costs of implementing them (procrastination, inability to plan for or stick to a strict regime), or simply lack of faith in the efficacy of these strategies.

What interventions were tested?

Based on this understanding of the problem, Seva Mandir decided to pilot an intervention with two solutions. First, they would provide access to reliable service, by holding travelling immunization camps in the villages at a fixed and well-publicized date and time. Furthermore, a local village health worker was tasked with creating awareness of immunization. This structure was, in effect replicating, but in a fully functional way, the ideal government health care system.

Second, they would provide some communities with both reliable service and increased incentives, by promising all mothers a 1 kg bag of lentils (valued at 40 rupees, or just under a dollar, and about half of a day's minimum wage) for each immunization and a set of plates when they completed the full immunization. The incentive was not large enough to do anything if the problem was that they had strong anti-immunization beliefs. However if they were primarily failing because of procrastination or weak beliefs, incentives, including very small ones, could be very effective, because they provide a direct anti-dote to the reluctance to act now, or the feeling that it really does not matter.

It is worth emphasizing that, at the outset even the staff members at Seva Mandir were not necessarily convinced that this small incentive for immunization would make a difference. Indeed, some were outright skeptical. "Won't the local healer promise them more if they don't get immunized? Won't an incentive for immunization bring back old memories of the emergency periods, when people were tricked into getting sterilized against their will? Is it right to "bribe" people to do the right thing?"

However, Seva Mandir, and in particular its head, Neelima Khetan (who just left the organization after leading it for over a decade) understood that there was no reason to *not* try this out on a small scale, and in a rigorous way (a randomized trial) in order to learn what the effects were. If they were positive, the experiment could be continued or scaled up. If not, we would have learnt something and would have to go back to the drawing-board.

The interventions had not yet started, and we had already learned a second lesson. Besides, learning that immunization rates were lower than believed, we were learning that good organizations must be willing to take risks, move slightly out of their comfort zones, and allow for the possibility that they will be proved wrong.

What were the results?

The experiment compared three randomized groups: no additional intervention (for comparison), reliable service only, reliable service plus incentives. (The results are reported in Banerjee et al (2010) in the *British Medical Journal*.) Reliable service alone more than doubled full immunization rates, from 6% to 18%. But when incentives were added, the full immunization rate climbed to 39% in the treatment villages. What's more, there were spillovers. The incentives drew in parents from surrounding villages, which tripled the percent fully immunized among children aged 1 to 3 in the surrounding villages.

Perhaps somewhat counter-intuitively, incentives actually *reduced* the cost per child immunized. Because incentives increased attendance three-fold over reliable service alone, the nurses that went to the village to immunize the children were kept busy. As a result, the costs of full immunization per child were halved. In the reliable service only group, it costs about $56 per child immunized compared to $28 per child immunized in the reliable service plus incentives group.

What is surprising is not that incentives work—this much we knew already from evaluations of PROGRESA and other CCTs in Latin America—but that very small, non-cash incentives can have such a large impacts on the take up of crucial such as immunization.

But why are so many children not immunized?

In addition to offering a possible way forward, at least in this context, these results shed a little more light on the question we started with: why are so many children not immunized?

First, they suggest that even if governments were able to offer fully free and reliable preventive health services, it may not be sufficient to achieve universal immunization: even with reliable, high quality service, provided by an organization which villages fully trust, the full immunization rates only went up to 18% without incentives, which means that a lot of children—over 8 of 10—were still not getting fully immunized.

Second, the results also suggest that active distrust of immunization (fear of the evil eye, for example) is not the key issue, at least for a vast majority of parents: in villages where no incentive was provided, the rates of immunization were high for the first two shots: 78% of them got one shot, for example. It is after the third immunization that rates dropped off. Perhaps parents were disappointed because their child did not seem to be appreciably healthier after the first two shots.

Or perhaps, they ran out of the will to get it done. This is our third lesson: procrastination seems to seriously get in the way, especially after a few shots. It is as if parents no longer had the will to stay the course, and convinced themselves, month after month, that if they missed this month they could always come back. This is where the lentils helped: by providing a reason to act today, rather than to wait till next month, they convinced a substantial share of parents to stick to the plan.

Still, would it make sense for the parents to procrastinate so much if they were fully aware of the benefits of immunization? It is true that the benefits would be experienced in the future, while the costs to be experienced are now. But the benefits are so large that a parent who knows that she will end up indefinitely postponing the immunization would take it upon themselves to act. Thus—and this is our fourth lesson—these results also tell us that parents are either remarkably lacking in self-awareness or, more plausibly, that while they are not actively opposed to it, they may still be underestimating the gains from immunization.

What is the message for policy makers?

All in all, where valuable services are available but are not being accessed, policymakers should consider using small but salient incentives to increase immunization rates. These do not have to be monetary: in fact, immunization camps may be an effective venue to distribute for free goods that households value, and that it would be valuable to distribute on a large scale, particularly for households with small children. The WHO and the UNICEF have experimented with this approach in Africa, by distributing insecticide treated bed nets in measles immunization camps. This can improved both bed nets coverage and immunization, a double benefit. One could likewise imagine distributing free iodine fortified salt at immunization camps

Yet, across the political spectrum, there is a mistrust of giveaways, and even more of incentives. Governments often feel that they should first focus on strengthening supply, and only after this is done, start to worry about demand. It is clear that a minimum quality and reliability of immunization services is needed for any immunization program to work, but what the cost-benefit analysis of our experiment suggests is that working on the demand at the same time may increase cost effectiveness. Fifty-six dollars per fully immunized child is more than what most governments can afford, and more than what GAVI provides to eligible countries. However, $28 is much closer to what countries can afford. If demand can be strengthened, our experiment shows, households will walk the last mile: and it is much cheaper for the households to do so than for very well-paid nurses.

One could push this argument a bit further: it is not clear that the goal should be to make immunization available every day, or even every week. The temptation to procrastinate is actually greater if the cost of procrastination is low. What is the chance that your child will get measles between today and tomorrow? Hence, what is the cost of delaying by just a day? But the costs become larger when you have to wait a month before the next camp. Organizing immunization through monthly or even bi-monthly “camps” accompanied by well publicized campaigns may well create a “deadline” effect that may make immunization more salient, and increase compliance (we have not tested this hypothesis).

Even when governments or NGO’s are convinced that increasing the demand for immunization is important, they generally believe that this should be done through better information, and not incentives. The mistrust of incentives for immunization seems to come down to an article of faith for both those on the right and the left of the mainstream political spectrum: Don’t try to bribe people to do things that you think they ought to do. For the right, this is because it will be wasted; for the conventional left, which includes much of the public health community, this is because it degrades both what is given and the person who gets it. Instead, we should focus on trying to convince the poor of the benefits of immunization.

We think that both of these views are somewhat wrongheaded ways to think about this and other similar problems, for two reasons. First, our experiments demonstrate that, in Udaipur at least, while the poor might appear to believe in all kinds of things, there is not much conviction behind many of those beliefs: otherwise they would not change their mind so easily. Second, action does not always follow attention. Even if people were convinced of the value of immunization, children

would not necessarily be immunized. This tendency to procrastinate is of course not unique to poor people. But the big difference is how little help they are getting to make the right choices.

We would like to borrow the conclusion of this article from the conclusion of the chapter on health in our book:

"In rich countries, we are constantly helped to make the right decisions: We have no choice but to get our children immunized—public schools will not take them if they aren't—and even if we somehow manage to fail, our children will probably be safe because everyone else is immunized. Our health insurers reward us for joining the gym, because they are concerned that we will not do it otherwise. Furthermore, we can take a number of things for granted: water comes ready to drink from our taps, we don't need to sleep under a bed net because there is no malaria, etc. And perhaps most important, most of us do not have to worry where our next meal will come from. In other words, we rarely need to draw upon our limited endowment of self-control and decisiveness, while the poor are constantly being required to do so.

We should recognize that no one is wise, patient, or knowledgeable enough to be fully responsible for making the right decisions for their own health. The primary goal of health-care policy in poor countries should be to make it as easy as possible for the poor to obtain preventive care. This includes free services, but also everything we can think of to make things easier."

Some General Resources

- Banerjee, Abhijit and Duflo, Ester (2011). *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. New York: Public Affairs.
- Poor Economics Companion Website
- Banerjee, Abhijit, Angus Deaton and Esther Duflo (2004). "Health Care Delivery in Rural Rajasthan". Mimeo, MIT.
- Banerjee, Abhijit, Esther Duflo, Rachel Glennerster, and Dhruva Kothari (2010). "Improving Immunization Coverage in Rural India: A Clustered Randomized Controlled Evaluation of Immunization Campaigns with and without Incentives." Forthcoming, *British Medical Journal*.
- Lim Stephen S., Stein David B., Charrow Alexandra, Murray Christopher J. (2008). "Tracking progress towards universal childhood immunisation and the impact of global initiatives: a systematic analysis of three-dose diphtheria, tetanus, and pertussis immunisation coverage." *Lancet* 372:2031-46.
- National Family Health Survey, 2005-2006 (NHFS-3).
- WHO and UNICEF. Global immunization data. World Health Organization, 2008.
- Abdul Latif Jameel Poverty Action Lab (J-PAL)
- Esther Duflo: Social experiments to fight poverty – TED Talk