



## Global Health Challenges

Winter 2016

### Improve Vaccine Supply Chains

*1.5 million childhood deaths a year could be prevented by giving \$30 childhood vaccinations, and though many vaccination programs are adequately funded, as many as half of vaccines are currently wasted through poor delivery management. Pilot a supply chain management system to identify cold chain and stocking problems as well as to implement solutions to the most serious known issues. A successful model will be evidence-based, will include continuous monitoring and testing, and a commitment to change if evidence suggests your approach is not working.*

**The Problem:** Many infectious diseases could have been eradicated decades ago. Yet polio, measles, mumps, whooping cough, diphtheria, and others continue to cause severe global health burdens in many developing countries. The WHO estimates that 1.5 million childhood deaths per year, or 17 percent of all childhood deaths around the globe, could be averted by delivering existing childhood vaccinations. (Excluding children less than one month old, this figure rises to 29 percent.<sup>1</sup>)

**The Proven Solution:** Childhood vaccines remains one of the most cost-effective health intervention in the world.<sup>2</sup> Nearly-adequate funding exists for widespread vaccination of large numbers of children. For roughly \$30, a child can be immunized against a broad variety of deadly diseases for life.<sup>3</sup> Distribution strategies include routine vaccination and one-time campaigns. Often strategies will combine the two. Routine facility-based strategies have significantly lower costs per fully immunized child (FIC).

Unfortunately, childhood immunizations are not yet universal. The WHO has found that up to 50 percent of vaccines produced for sub-Saharan Africa expire or are otherwise wasted.<sup>4</sup> Additionally, the cost of delivering

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<sup>1</sup> [http://www.who.int/immunization/monitoring\\_surveillance/global\\_immunization\\_data.pdf](http://www.who.int/immunization/monitoring_surveillance/global_immunization_data.pdf)

<sup>2</sup> <http://www.gavi.org/about/value/cost-effective/>

<sup>3</sup> Brenzel, Logan. "What have we learned on costs and financing of routine immunization from the comprehensive multi-year plans in GAVI eligible countries?" *Vaccine 33S (2015) A93–A98.*

<sup>4</sup> <http://www.gavi.org/library/gavi-documents/white-papers/outsourcing-the-distribution-component-of-vaccine-and-medicine-supply-chains/>

vaccines can be nearly equal to the cost of the vaccines themselves.<sup>5</sup> More effective supply chain and inventory management systems have the potential to impact enormous numbers of children.<sup>6</sup>

**Your Challenge:** We will award up to \$20,000 to a social entrepreneur who can create a simple supply chain management system that tracks vaccine supplies in central stocks and in primary-through-tertiary health facilities. The system should be piloted within one supply chain, and have a path to scale nationwide within two years.

You must have a localized plan that can manage uncertainty, including:

- An evidence-based model which identifies the strongest factors limiting access to vaccines, specific to the region in which you will operate
- An evidenced-based model of how and why your intervention will boost completion of childhood vaccine treatment schedules in the long run
- A plan for continuous testing and evaluation of the program
- A commitment to change the plan if the evidence suggests that the approach isn't working

#### **Market Information:**

- Geographically, two-thirds of under-immunized children live in 14 countries, concentrated in South Asia and Africa.<sup>7</sup> GAVI Alliance, a large and established NGO, publishes country level data and maps.<sup>8</sup>
- Nearly every African country with data had higher DTP3 vaccine coverage in urban areas, with urban/rural disparities as high as 33 percent.<sup>9</sup> However, gaps in urban areas are often masked, since capital cities are better covered than other urban areas. Coverage in the poorest slum and peri-urban areas within cities can be even worse than in rural areas.<sup>10</sup>
- There is considerable variation in country-specific costs. One study in Zambia found a total cost per fully immunized child around \$66, more than twice the average cost across the continent.<sup>11</sup>
- It is not enough to collect data on problem areas. The management system should identify supply chain issues *and* implement a broad variety of interventions (e.g. propane-powered refrigerator for a rural clinic, marketing campaign in dubious communities) to correct the most serious problems.
- Over time, new vaccines are introduced into the routine package that may often require new methods for handling and distributing.
- Past winners of this challenge include [Miti Health](#) (Kenya), and [Blueprint International](#) (South Africa).

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<sup>5</sup> Brenzel 2015

<sup>6</sup> [http://www.who.int/immunization/call-to-action\\_ipac-iscl.pdf](http://www.who.int/immunization/call-to-action_ipac-iscl.pdf)

<sup>7</sup> <http://data.unicef.org/child-health/immunization.html>

<sup>8</sup> <http://www.gavi.org/country/>

<sup>9</sup> <http://www.action.org/resources/item/undervaccination-by-the-numbers>

<sup>10</sup> <http://bmcpublihealth.biomedcentral.com/articles/10.1186/1471-2458-11-6>

<sup>11</sup> Schütte et al. "Cost analysis of routine vaccination in Zambia." *Vaccine* 33S (2015) A47–A52.

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