Exploring pathways for building trust in vaccination and strengthening health systems resilience

September 25, 2019
7th Vaccine Acceptance Meeting

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Rising to the challenge

GAVI Alliance Partners’ Forum
5-7 December 2012, Dar es Salaam, Tanzania
Every $1 invested in childhood immunization during 2011-2020 across 94 countries can yield a net return of $16-$44.
For every $1 spent on childhood vaccines, you get $44 in benefits. You can’t beat that deal: b-gat.es/2ltQaJ7

“For every dollar spent on childhood immunizations, you get $44 in economic benefits.” gatesnotes.com/2017-annual-le … via @billgates
Modeling The Economic Burden Of Adult Vaccine-Preventable Diseases In The United States

ABSTRACT Vaccines save thousands of lives in the United States every year, but many adults remain unvaccinated. Low rates of vaccine uptake lead to costs to individuals and society in terms of deaths and disabilities, which are avoidable, and they create economic losses from doctor visits, hospitalizations, and lost income. To identify the magnitude of this problem, we calculated the current economic burden that is attributable to vaccine-preventable diseases among US adults. We estimated the total remaining economic burden at approximately $9 billion (plausibility range: $4.7–$15.2 billion) in a single year, 2015, from vaccine-preventable diseases related to ten vaccines recommended for adults ages nineteen and older. Unvaccinated individuals are responsible for almost 80 percent, or $7.1 billion, of the financial burden. These results not only indicate the potential economic benefit of increasing adult vaccination rates but also highlight the value of vaccines. Policies should focus on minimizing the negative externalities or spillover effects from the choice not to be vaccinated, while preserving patient autonomy.

http://dx.doi.org/10.1377/hlthaff.2016.0462

The Washington Post

The $5.8 billion argument for getting your flu shot


Forbes

Adults Not Getting Vaccinated Cost The U.S. $7.1B In 2015


Anti-vaxxers are costing Americans billions each year

Estimated economic impact of vaccinations in 73 low- and middle-income countries, 2001–2020

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Objective To estimate the economic impact likely to be achieved by efforts to vaccinate against 10 vaccine-preventable diseases between 2001 and 2020 in 73 low- and middle-income countries largely supported by Gavi, the Vaccine Alliance.

Methods We used health impact models to estimate the economic impact of achieving forecasted coverages for vaccination against Haemophilus influenzae type b, hepatitis B, human papillomavirus, Japanese encephalitis, measles, Nipah virus, meningococcal A, rotavirus, rubella, Streptococcus pneumoniae and yellow fever. In comparison with no vaccination, we modelled the costs – expressed in 2010 United States dollars (US$) – of averted treatment, transportation costs, productivity losses of caregivers and productivity losses due to disability and death. We used the value of a life-year method to estimate the broader economic and social value of living longer, in better health, as a result of immunization.

Findings We estimated that, in the 73 countries, vaccinations given between 2001 and 2020 will avert over 20 million deaths and save US$ 350 billion in cost of illness. The deaths and disability prevented by vaccinations given during the two decades will result in estimated lifelong productivity gains totalling US$ 330 billion and US$ 9 billion, respectively. Over the lifetimes of the vaccinated cohorts, the same vaccinations will save an estimated US$ 5 billion in treatment costs. The broader economic and social value of these vaccinations is estimated at US$ 820 billion.

Conclusion By preventing significant costs and potentially increasing economic productivity among some of the world’s poorest countries, the impact of immunization goes well beyond health.

Abstracts in العربية, 中文, Français, Русский and Español at the end of each article.

Bull World Health Organ 2017;95:629–638

Vaccinations given between 2001-2020 in 73 countries will avert over 20 million deaths and save $350 billion in cost of illness; broader economic and social value is estimated at $820 billion.
Is there economies of scale in immunization?

- Limited literature (n=42), few from LMICs
- Many studies report effectiveness without costs
- Increasing incremental costs required to reach higher coverage
Country financing of immunizations

19 countries to transition out of Gavi by 2020

Countries need evidence to finance immunization
Reaching the hard to reach for vaccination

- Nearly every country has populations that are difficult to reach to vaccinate.
- Source of disease outbreaks
- Link for infectious diseases to spread between populations

Why are some people hard to reach?
How can we build trust & resilience?
Why are some people hard-to-reach?

Hard-to-reach populations for vaccination (those that have never been vaccinated or have not consistently received all recommended doses of vaccines) cannot be defined based on vaccination outcome.

Rationale:
• Understanding what makes populations hard-to-reach can help estimate the size of target groups, identify strategies, and allocate adequate resources.
Conducted a literature search

- 5 databases (PubMed, Embase, Web of Science, Scopus, Google Scholar)
- Vaccination/immunization AND “hard to reach” (distant, isolated, remote, inaccessible, disadvantaged, deprived, hidden, vulnerable, mobile, displaced, unsettled, high-risk populations)
- Published since 2000

Identified literature gaps

- Comprehensive definitions of hard-to-reach populations not found
- Population groups were classified as hard to reach rather than their mechanisms
- Supply-side and demand-side barriers were not separated
- Few tools or scales were identified to measure how hard individuals are to reach
Conceptual framework

Mechanisms that make people hard-to-reach are different from those that make people hard-to-vaccinate.

Multiple mechanisms may be at play.

Fig. 1. Conceptual framework of hard-to-reach and hard-to-vaccinate populations.
## Hard-to-reach vs. Hard-to-vaccinate

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<thead>
<tr>
<th>Hard-to-reach (Supply-side)</th>
<th>Hard-to-vaccinate (Demand-side)</th>
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<tbody>
<tr>
<td>Geography by distance</td>
<td>Distrust</td>
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<tr>
<td>Geography by terrain</td>
<td>Religious beliefs</td>
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<tr>
<td>Transient/nomadic movement</td>
<td>Lack of awareness</td>
</tr>
<tr>
<td>Healthcare provider discrimination</td>
<td>Poverty and low socioeconomic status</td>
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<tr>
<td>Lack of healthcare provider recommendations</td>
<td>Lack of time</td>
</tr>
<tr>
<td>Inadequate vaccination systems</td>
<td>Gender-based discrimination</td>
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<td>War and conflict</td>
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<td>Home births / other home-bound mobility limitations</td>
<td></td>
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<tr>
<td>Legal restrictions</td>
<td></td>
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<tr>
<td>Geography by distance</td>
<td>Geography by terrain</td>
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<tr>
<td>Most studies did not specify a precise distance threshold</td>
<td>No studies mentioned how long populations were not accessible for vaccination</td>
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<tr>
<td>2 studies used 5km from a health center as a threshold</td>
<td>No studies described how much extra effort it may have taken to reach populations faced with terrain barriers</td>
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<td>One study described hard-to-reach areas as having only one way to move, by boat or on foot</td>
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## Gaps in the Hard-to-Reach Literature

<table>
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<tr>
<th>Category</th>
<th>Description</th>
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<tr>
<td>Lack of healthcare provider recommendations</td>
<td>• No studies measured or quantified the number of individuals who are hard to reach due to lack of healthcare provider recommendations</td>
</tr>
</tbody>
</table>
| Inadequate vaccination systems | • Supply chain disruptions have been recorded but the number of people affected are poorly characterized  
• Measures or thresholds for the degree of political commitment for immunizations are not available |
| War and conflict               | • No vaccination studies estimated the number of individuals who are hard to reach due to war and conflict                                      |
| Home births / other home-bound mobility limitations | • No vaccination studies quantified individuals who are hard to reach due to mobility limitations                                            |
| Legal restrictions             | • No vaccination studies focused on individuals who are hard to reach due to legal restrictions                                               |
Key Takeaways

- Hard-to-reach populations should not be defined based on vaccination outcome
- Mechanisms that make populations hard-to-reach should be distinguished from those that make people hard-to-vaccinate
- A clear definition is needed to assess target population size and interventions
- The literature poorly defines them without criteria or thresholds for classification
Trust is critical to generate and maintain demand for vaccines in low and middle income countries.

Rationale:
• There is little documentation on how health system insufficiencies affect trust in vaccination and the process of re-building trust once it has been compromised.
Trust in health systems & vaccination

Conducted a literature search
- 4 databases (PubMed, Health & Psychosocial Instruments, PsycINFO, Embase)
- Trust AND Health System; Trust AND Vaccine/immunization; Trust AND Systems Dynamics; Vaccine AND hesitancy
- Also explored grey literature

Identified literature gaps; Developed causal loop diagram

Trust in vaccination comes from interactions with the health system, through utilization and communication

Health system shocks not only influence trust in the health system, but spillover into trust in vaccination

Distrust reinforces feedback between vaccination and health systems and spills over in the broader health system

Positive social capital builds trust in vaccination
Trust in vaccination comes from interactions with the health system, through utilization and communication.

Need good healthcare experiences & communication.

Fig. 1 Role of trust and communication on utilizations of vaccines and the health system.
Health system shocks not only influence trust in the health system, but spillover into trust in vaccination. Need for crisis mitigation planning.
Distrust reinforces feedback between vaccination and health systems and spills over in the broader health system.

Anti-Vaccine Messages

Fig. 3 Scenario 2: Effect of anti-vaccine messages on trust and utilization of vaccines and health system.

Need trusted communication channels
Positive social capital (collective value of social networks of community members) builds trust in vaccination.
Measuring trust in vaccination

Overall trust in vaccines and medicines was high compared to traditional medicines.

Trust was associated with previous experiences and source of health information.

Respondents were most concerned about ease of access to and safety of vaccines & medicines.
Summary

1. Please publish costs alongside effectiveness of vaccination interventions – Economic evidence matters!

2. Let’s use a consistent definition of hard-to-reach populations based on reasons why they are hard-to-reach

3. Building trust & resilience in vaccination requires good healthcare experiences, trusted communication channels, positive social capital, and crisis mitigation planning.
Thank You!

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https://www.trendhunter.com/trends/vaccines-work-infographic