Global Immunizations: Health Promotion and Disease Prevention Worldwide

Janelle L. B. Macintosh  
*Brigham Young University - Provo*, janelle-macintosh@byu.edu

Lacey M. Eden  
*Brigham Young University - Provo*

Karlen E. Luthy  
*Brigham Young University - Provo*

Aimee E. Schouten  
*Brigham Young University - Provo*

Follow this and additional works at: [https://scholarsarchive.byu.edu/facpub](https://scholarsarchive.byu.edu/facpub)

Part of the [Other Nursing Commons](https://scholarsarchive.byu.edu/facpub)

**Original Publication Citation**

**BYU ScholarsArchive Citation**
[https://scholarsarchive.byu.edu/facpub/5199](https://scholarsarchive.byu.edu/facpub/5199)

This Peer-Reviewed Article is brought to you for free and open access by BYU ScholarsArchive. It has been accepted for inclusion in Faculty Publications by an authorized administrator of BYU ScholarsArchive. For more information, please contact ellen_amatangelo@byu.edu.
Abstract

Background: Immunizations are one of the most important health interventions of the 20th century, yet people in many areas of the world do not receive adequate immunizations. Approximately 3 million people worldwide die every year from vaccine-preventable diseases; about half of these deaths are young children and infants. Global travel is more common; diseases that were once localized can be found in communities around the world.

Problem: Multiple barriers to immunizations have been identified. Healthcare access, cost, and perceptions of safety and trust in healthcare are factors that have depressed global immunization rates.

Interventions: Several global organizations have focused on addressing these barriers as part of their efforts to increase immunization rates. The Bill and Melinda Gates Foundation, The World Health Organization, and the United Nations Children’s Emergency Fund each have a part of their organization that is concentrated on immunizations.

Clinical Implications: Maternal child nurses worldwide can assist in increasing immunization rates. Nurses can participate in outreach programs to ease the burden of patients and families in accessing immunizations. Nurses can work with local and global organizations to make immunizations more affordable. Nurses can improve trust and knowledge about immunizations in their local communities. Nurses are a powerful influence in the struggle to increase immunization rates, which is a vital aspect of global health promotion and disease prevention.

Key words: Barriers to immunizations; Global health; Health behavior; Immunization.
Immunizations are one of the most important health interventions of the 20th century (Centers for Disease Control and Prevention [CDC], 1999). In 2015, approximately 85% of children worldwide were vaccinated for tuberculosis, polio, diphtheria, tetanus, pertussis, and measles (World Health Organization [WHO], & United Nations International Children’s Emergency Fund [UNICEF], 2016). Since 2010, nearly 235 million children and young adults were vaccinated for meningitis A in the “meningitis belt,” an area that covers 26 countries in sub-Saharan Africa (WHO Regional Office for Africa, 2016). Global immunizations are estimated to save 2.5 million lives per year and are responsible for the near eradication of polio (CDC, 2016a; UNICEF, 2016a). Although these statistics on global immunization rates indicate significant achievement, 3 million people still die every year from vaccine-preventable diseases; approximately half of those deaths are young children and infants (WHO & UNICEF, 2016).

Because worldwide travel is more common, risk of spreading vaccine-preventable diseases across the globe has increased. There are many reasons for world travel such as tourism, visiting exchange students, adoption from foreign countries, work, and refugee assistance. Consequently, worldwide travel makes communicable diseases a more integrated global problem. One recent example of the global migration of disease includes a measles outbreak that began at Disneyland, California that spread measles to seven other states in the United States, and the neighboring countries of Canada and Mexico in 2014. The origination of the outbreak is unknown; however, “the measles virus type in this outbreak was identical to that recently found in the large measles outbreak in the Philippines” (CDC, 2016b, para. 4). Worldwide immunization should be a focus of health promotion in all parts of the world. We briefly discuss selected barriers to immunizations, several organizations focused on overcoming these barriers, and suggest ways nurses and medical professionals can implement and be proactive agents of change.

Barriers
Current global immunization efforts reveal several barriers to immunizations based on culture and geographic location. Obvious difficulties that occur in developing countries include isolated locations and limited access to healthcare, inadequate storage of vaccines, and insufficient funding (Delamonica, 2016; Prinja, Gupta, Singh, & Kumar, 2010). However, barriers present in highly developed communities are just as, if not more, alarming. Misconceptions, misunderstandings, and misinformation have caused many to start refusing immunizations for their children. Some believe that the diseases vaccines prevent are no longer a problem, at least in developed countries, or that vaccines do more harm than good (Luthy, Beckstrand, & Callister, 2010; Salmon et al., 2005; Wenger, McManus, Bower, & Langkamp, 2011). Nurses can help overcome some barriers to immunization such as access to healthcare, cost, and perceptions of safety and trust.

Access to Healthcare
Access to healthcare includes ability to make and keep appointments, ability to communicate with healthcare professionals, and availability of vaccines. Favin, Steinglass, Fields, Banerjee, and Sawhney (2012) reported distance (travel conditions/access), poor health staff motivation and attitude (performance, knowledge, ability to communicate with mothers), and lack of resources/logistics (e.g., insufficient funding and stock that affect reliability, missed opportunities to immunize and cold chain [documentation of temperature of vaccine from production to delivery]) as common barriers to immunization and are found globally.

Limited access to healthcare and life-saving vaccines can be culturally grounded. For example, China does not recognize migrants from North Korea as legal citizens. Therefore, children of North Korean refugee parents are deemed “stateless” in China and are not eligible for medical care. Children born of North Korean mothers and Chinese fathers are also not recognized as legal citizens of China and are also not eligible for medical care (Chung, Han, Kim, & Finkelstein, 2016). Because of culturally based gender issues, a female in Israel may encounter barriers to healthcare access (Schwartz et al., 2013).

Religious beliefs can also be a barrier to access to healthcare, specifically immunizations. For example, trypsin is a component of oral polio vaccine and is extracted from pork pancreas, which is prohibited in Islam. Therefore, in Islam dense regions, such as Pakistan, religious beliefs are a formidable barrier to receiving the polio vaccine (Khan et al., 2015).

Cost
Barriers to immunization also include cost. Cost in both loss of time from work or household endeavors as well as payment issues continue to plague people across the world and limit immunizations. Poorer children are often not adequately protected by herd immunity, as they are often underimmunized and geographically clustered (Hossein-
poor et al., 2016). In a study of immunizations in 51 low-income and middle-income countries, large disparities based on socioeconomic status were reported in and between countries (Hosseinpoor et al.). Immunization rates within countries can be as much as a 72 percentage points different, whereas differences between countries can be as much as 40 percentage points. This disparity is reflected worldwide.

Two studies revealed monetary cost as a barrier to receiving immunizations in Asia. In Japan, medical students chose to not be immunized because it was too expensive (Okamoto et al., 2008). In India, pediatricians most commonly reported cost as a barrier to recommending immunizations to their patients (Kahn, Thacker, Nimbalkar, & Santosham, 2014).

Mothers in Ethiopia felt that the costs associated with immunizations were beyond monetary. McKnight and Holt (2014) found mothers felt overwhelmed with the responsibility to feed their families. The logistics of getting their children immunized was not worth the time it took away from the household (McKnight & Holt). Ethiopian mothers felt getting their children vaccinated would be an unpleasant demeaning task due to negative interactions with medical personnel. Favin et al. (2012) in a study evaluating why children are not vaccinated in various parts of the world including Africa, Asia, Latin America, and the Middle East reported “unpleasant experiences with healthcare services (e.g., refusal of care, post vaccination abscesses, verbal abuse or public humiliation)” (p. 231) as considerable barriers.

Trust and Perception of Safety
Parents have immense influence in the immunization of their children; therefore, it is imperative parents trust the information given by healthcare personnel (Luthy et al., 2010). Medical and nursing personnel must inform parents that immunizations are not 100% risk free; however, immunizations are safe and risks are minimal. Unpleasant interactions with medical personnel may increase levels of distrust, thus resulting in erroneous ideas about immunizations and decreasing perceptions of safety.

Accurate knowledge is paramount to increasing immunization rates. Khan et al. (2015) reported that almost one third of participants, in Pakistan, feared infertility due to the polio vaccine. Cultural myths and beliefs of locals in Nigeria create barriers to immunizations (Babalola, 2011). Mistrust and erroneous ideas about immunization in Europe and North America have been compounded by the falsified and eventually retracted study linking the measles, mumps, rubella vaccine to autism (Wakefield et al., 1998; WHO, 2003).

Access to healthcare, cost, and perceptions of safety and trust are barriers to immunizations.
Organizations Fighting to Increase Immunization Rates

Global organizations have collaborated to reduce immunization barriers and improve health worldwide. An overarching goal of these organizations is to overcome multiple barriers to immunizations in all countries so that all people, especially children, have access to life-saving vaccines. In 2012, the World Health Assembly endorsed the Decade of Vaccines, and the Global Vaccine Action Plan (GVAP) (WHO, 2016a).

The GVAP is a guide for achieving the goal of increasing vaccination coverage around the world. The primary goal of GVAP is to prevent 25 million deaths by providing access to immunizations for people of all communities by 2020. Goals of at least 90% coverage in country and at least 80% in every district are set to be completed by 2020. The vision of the GVAP is on all vaccine-preventable diseases; however, the first milestone is set for polio eradication while encouraging research and development of the next generations of immunizations (WHO, 2016c). A secondary goal of GVAP is to increase quality of life and productivity in all nations. The push to improve rates worldwide has increased.

Although there are many organizations working to prevent death from communicable diseases, not all organizations will be discussed. We focus on three organizations that have the largest impact on global immunization rates. The following organizations’ missions and strategies are highlighted: 1) World Health Organization (WHO), 2) The Bill and Melinda Gates Foundation, and 3) United Nations International Children’s Emergency Fund (UNICEF). Accomplishments of each organization are listed in Table 1.

**The World Health Organization (WHO)**

**Mission.** The mission statement of the WHO is “to build a better, healthier future for people all over the world. The WHO ensures the safety of the air people breathe, the food they eat, the water they drink—and the medicines and vaccines they need” (WHO, 2016b, para. 1). Five of their six leadership priorities involve immunizations: 1) enabling countries to sustain or expand access to all needed health services, 2) addressing unfinished and future challenges to completing the eradication of polio, 3) ensuring that all countries can detect and respond to acute public health threats (i.e., disease outbreaks), 4) increasing access to quality, safe, efficacious, and affordable medical products (i.e., vaccines), and 5) addressing the social, economic, and environmental determinants of health as a means to promote health outcomes and reduce health inequalities worldwide (WHO, 2016a).

**Strategies.** With offices in more than 150 countries, the WHO partners with the United Nations, public communities, countries, research institutes, and other organizations. Members of the WHO seek to provide leadership on crucial health problems and set the standards of good health. The WHO is a major supporter and leader in the GVAP.

**Bill and Melinda Gates Foundation**

**Mission.** The mission statement of the Gates Foundation is also a major supporter and contributor to the GVAP. Their goal is to save lives on an international scale, especially children’s lives.

| Fear of side effects of immunizations is also a barrier linked to trust. Favin et al. (2012) reported that parents may refuse immunization for younger children after witnessing side effects in older children, or hearing about side effects in an acquaintance’s child. Increased trust with medical and nursing personnel and accurate knowledge can help dispel some of the misconceptions and break through barriers concerning safety of immunizations. |

### Table 1.

Accomplishments of Global Organizations

<table>
<thead>
<tr>
<th>The World Health Organization (WHO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Creation of World Immunization Week 2016 slogan Close the Immunization Gap</td>
</tr>
<tr>
<td>• 180 countries participated</td>
</tr>
<tr>
<td>• Vaccine-centered training</td>
</tr>
<tr>
<td>• Round tables</td>
</tr>
<tr>
<td>• Informational campaigns</td>
</tr>
<tr>
<td>• Vaccine distribution campaigns</td>
</tr>
<tr>
<td>• MenAfriVac program*</td>
</tr>
<tr>
<td>• Custom vaccine developed for meningitis A</td>
</tr>
<tr>
<td>• African male focus</td>
</tr>
<tr>
<td>• 16 countries</td>
</tr>
<tr>
<td>• &gt;237 million men and boys</td>
</tr>
<tr>
<td>• Ages 1–29 years</td>
</tr>
<tr>
<td><strong>Bill and Melinda Gates Foundation</strong></td>
</tr>
<tr>
<td>• Health equality for women and children</td>
</tr>
<tr>
<td>• Focus on polio eradication</td>
</tr>
<tr>
<td>• Disease surveillance</td>
</tr>
<tr>
<td>• Improve outbreak response</td>
</tr>
<tr>
<td>• Galvanize political support for immunizations</td>
</tr>
<tr>
<td>• Immunization campaigns</td>
</tr>
<tr>
<td>• Reduced number of children’s deaths by half</td>
</tr>
<tr>
<td>• 40% of world children immunized in 2014</td>
</tr>
<tr>
<td>• Quadruple global childhood immunization rates</td>
</tr>
<tr>
<td>• &gt;118 million women immunized for tetanus</td>
</tr>
<tr>
<td>• Thus providing immunization to newborns as well</td>
</tr>
<tr>
<td>• Reduce death from measles by 71%</td>
</tr>
<tr>
<td>• Polio eradication program*</td>
</tr>
<tr>
<td>• 0 cases of polio in Nigeria in 2015</td>
</tr>
</tbody>
</table>

* The Bill and Melinda Gates Foundation cosponsored program
Strategies. The Bill and Melinda Gates Foundation understands that global vaccination strategies are incredibly complex as there are unique struggles associated with each location, population, and cultural situation. Therefore, the first priority when working in any region is to partner with locals to create a unique and specific plan. The foundation contributes to development and innovation of vaccines from discovery to delivery, by investing in research to develop stronger vaccines, thereby lowering the amount of antigen needed per dose and reducing the cost. Lowering the price of vaccine is an integral part of the battle to bring immunizations to individuals globally. This foundation is working with private industries to lower immunization costs as much as possible. They depend on systems within each country to ensure vaccines are safely and effectively supplied and delivered to each individual.


Strategies. As the world’s largest buyer of vaccines, UNICEF provides vaccines to 40% of the world’s children (UNICEF, 2015). In 2011, to help drive down the cost of vaccination, UNICEF began publishing the prices they paid for each vaccine. The extensive outreach enabled UNICEF members to negotiate the lowest price per vaccine possible. They also work with other partner organizations. Kiwanis International, an organization centered on service, is one major partner. Together they provide more than 18 million volunteer hours every year and raise over $100 million annually. Rotary International has joined UNICEF in the fight to eliminate polio worldwide since 1985. Rotarians span over 200 countries, providing critical backing to UNICEF in
vaccine delivery, transportation, and training healthcare providers (UNICEF, 2016d).

Promoting Immunizations by Overcoming Barriers
By learning about a variety of organizations working to bring vaccines to all people in all parts of the world, nurses are better able to join forces and add their voices in the fight for global immunizations (see Table 2). As champions of health in their communities, maternal child nurses around the world should become involved in this global effort because what is being done abroad affects those at home. Although making a difference worldwide might seem out of reach for many, there are various ways nurses can assist in overcoming barriers and increase vaccination rates worldwide. See Table 2.

Barriers-Access. Improving access to immunizations in remote area of the world is paramount. Maternal child nurses can participate in increasing availability of immunizations by helping to increase the work force available to give immunizations. Maternal child nurses can become outreach nurses. Nurses can become educated on the process of protecting vaccines through temperature regulation and then following those processes to bring vaccines to rural or underserved communities. Maternal child nurses can improve access by advocating for underimmunized populations. Nurses can bring vaccines to people who are home bound or not allowed by culture to enter hospitals. Female nurses could take immunizations to homes of mothers and children in places where women are not allowed to interact with male healthcare workers. Nurses can partner with Global Alliance for Vaccines and Immunizations, WHO, and UNICEF and their local partner to be the agent of change and improve immunization rates in children and people of their community.

Barriers-Cost. Cost is closely linked to how available immunizations are in many areas. Loss of valuable work time may be offset by nurses organizing vaccine campaigns where they work and help to immunize workers in factories, fields, or office buildings. The monetary costs that often impeded immunizations may be offset by nurses working with Global Alliance for Vaccines and Immunizations, WHO, UNICEF, and the Bill and Melinda Gates Foundation. Nurses can work with local healthcare officials to apply for grants to assist communities and individuals to pay for immunizations. Nurses can work with local and global organizations to provide incentives for communities who improve immunization rates.

Barriers-Perceptions. Nurses can contribute by joining forces and voices to increase community knowledge and understanding of immunizations. Social media can be used to advocate for vaccines and dispel misconceptions. Maternal child nurses are essential to education. Women and mothers are vital to the acceptance and practice of health behaviors in communities around the world. Outreach campaigns that use local nurses to talk with community members and discuss the importance of immunizations are integral to instilling trust and resolve issues of apprehension in communities.

Clinical Implications
Vaccines are an important health discovery and have saved millions of lives. By protecting against disease, vaccines keep communities and children healthy. The world can be considered a smaller place than 20 years ago, as global travel is easier and more common than ever before. Vaccine-preventable diseases are more likely to affect a greater number of communities.

Many barriers have been identified that impede global immunization rates. Nurses are at the forefront in the fight against underimmunization. Nurses can improve access to immunizations by participating in outreach

Table 2. Nursing Actions to Overcome Barriers to Immunizations

<table>
<thead>
<tr>
<th>Access to Health Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Establish and participate in outreach programs</td>
</tr>
<tr>
<td>• Ensure temperature regulation protocols are followed when handling vaccines</td>
</tr>
<tr>
<td>• Advocate for underimmunized populations</td>
</tr>
<tr>
<td>• Partner with local and global organizations to improve immunization rates in their community</td>
</tr>
<tr>
<td>• Bring immunizations to people and places that are not allowed to interact with male healthcare personnel (female nurses)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Organize campaigns to bring vaccine into work places</td>
</tr>
<tr>
<td>• Apply for grants and other funding to help offset cost of immunizations for their community</td>
</tr>
<tr>
<td>• Work with organizations to help provide incentives for improvement in immunization rates</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Use social media to help dispel misconceptions about immunizations</td>
</tr>
<tr>
<td>• Work with local women and mothers to instill trust and resolve apprehension about immunizations</td>
</tr>
</tbody>
</table>
Maternal child nurses should be involved in local efforts to improve immunization rates.

programs that focus on undervaccinated communities. Maternal child nurses can improve immunization rates by working with local and global organizations to ease the burden of receiving immunizations. Nurses also play a major role in educating and interacting with patients and can improve understanding in their own communities. Maternal child nurses must answer the call to fight against the low immunization rates, and thereby improve health around the world.

Janelle L. B. Macintosh is an Assistant Professor at Brigham Young University College of Nursing, Provo, UT. The author can be reached via e-mail at Janelle-macintosh@byu.edu
Lacey M. Eden is an Assistant Professor at Brigham Young University College of Nursing, Provo, UT.
Karlen E. Luby is an Associate Professor at Brigham Young University College of Nursing, Provo, UT.
Aimee E. Schouten is a BSN student at Brigham Young University College of Nursing, Provo, UT.

There are no potential conflicts of interest, real or perceived.

Copyright © 2017 Wolters Kluwer Health, Inc. All rights reserved.

DOI:10.1097/NMC.0000000000000337

References


