

Cost of Vaccine for Children Program from Center for Disease Control and Prevention According to Brandname

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Abstract

Background. *The role of health cost in vaccination programmes cannot be overemphasized: it has contributed significantly to creating and sustaining demand for vaccination services and improving vaccination coverage. In Centre for Disease Control and Prevention (CDC), numerous cost approaches have been deployed but these interventions are not without challenges. We therefore aimed to compare the CDC cost of vaccine according to brand name and find out which manufacturer produces the most expensive and the cheapest vaccine.*

Methods. *We used a quantitative approach and conducted a comparative study using the 5 manufacturers published on CDC website: Sanofi Pasteur, GlaxoSmithKline, Merck, Pfizer, Grifols and their vaccine brand names respectively. We identified cost of each vaccine for children program for September 2019 form CDC website. We also reviewed relevant documents. Secondary Data generated were analyzed manually because the data was small.*

Results. *The CDC cost for all the vaccine for children program are cheaper than the private sector cost. The cheapest vaccine is Hiberix manufactured by GlaxoSmithKline for both CDC and private sector cost (\$9.46 and \$ 10.85). The most expensive vaccine is Gardasil manufactured by Merck for both CDC and private cost (\$178.14 and \$217.11).*

Conclusions. *It is important to realize that health is wealth and a healthy nation is a wealthy nation! For every \$1 spent on childhood vaccinations, United State of America saves \$10.90. And CDC estimates that for the vaccination of children born between 1994 and 2018 has saved the U.S. nearly \$406 billion in direct medical costs and \$1.88 trillion in total society costs.*

Keywords: VACCINE, COST, CDC, Sanofi Pasteur, GlaxoSmithKline, Merck, Pfizer, Grifols.

Introduction

Vaccination is undoubtedly one of the most important preventive measures of modern times; epidemics are feared as one of the most damaging phenomena in human societies¹. With the latest advances in science and technology, today, safe and effective vaccines exist for many of the most common infectious diseases, such as small pox, measles, polio, influenza, hepatitis, chicken pox and diphtheria and the use of vaccines has been estimated to save millions of children's lives per year². However, due to high economic cost of vaccination and often also personal beliefs and the fear of vaccination after effects, people usually regard vaccination as a voluntary rather than compulsive measure. In this sense, behavioral vaccination, cost, borrowing the framework of behavior dynamics in the game theory and psychology, becomes a useful research framework to elucidate real – word disease spreading and prevention^{1, 3-5}.

The costs of delivering routine immunization services vary widely across facilities within countries and across countries^{6, 7, 8, 9}. Understanding the reasons for such variation can provide insights into site operations and help improve programme efficiency.

Globally, vaccination is recognized as a cost-effective public health measure for decreasing childhood mortality and morbidity¹⁰. Strategies which improve the uptake of vaccination include 'supply-side' interventions, such as ensuring a constant supply of potent vaccines, strong health systems to ensure delivery of these vaccines and sufficient health personnel to administer vaccines¹¹; and 'demand side' components which focus on individual and household determinants of health-seeking behaviours, such as building the knowledge base of individuals to utilize vaccination programmes to their advantage. Addressing vaccine hesitancy linked to parental knowledge,

understanding, attitudes, beliefs, and behaviours is an important example of a demand-side component¹²⁻¹⁸.

Cost information is important for several purposes in budgeting the costs calculated are the financial cost required to acquire the resources such as vaccine. Cost of a program can be estimated retrospectively and prospectively. Cost can be identified by two approaches: checklist approach and decision-making approach. There are many ways of evaluating costs. The most simple is to consider only financial cost – how much money is paid for resources used. However, the type of cost that should be considered depends on the purpose of the study and the perspective used. The simplest is to consider only financial cost –how much money is paid for resources used.

Cost, if not addressed, can undermine several components of vaccination delivery, including vaccine acceptance. Improving vaccination cost is therefore crucial to achieving better vaccination outcomes as well as the greater goal of knowledgeable caregivers and communities – important contributors to improving child health in many settings. Affordable cost could improve uptake of childhood vaccination, address incomplete vaccination or missed children, further strengthen routine immunization programmes, and encourage the use of new and underused vaccines. Although cost is an invaluable tool in routine and campaign childhood vaccination activities, as well as in other health programmes, it is rarely addressed in a systematic way compared with other components of vaccination programmes. Ideally, vaccination cost should complement and boost other immunization components, such as service provision, quality of care, capacity-building, communication and the skills of health personnel, and disease notification and surveillance.

Aim of study

The quantitative study of cost of vaccine for children program has captured the attention of Public Health Specialist since long. The project aims to unveiling how the interplay between vaccine brand name and cost gives rise to non – linear responses in vaccine uptake.

Background of study

Vaccination prices have gone from single digits to sometimes triple digits in the last two decades, creating dilemmas for doctors and their patients as well as straining public health budgets. In San Antonio US and elsewhere, some doctors have stopped offering immunizations because they say they cannot afford to buy these potentially lifesaving preventive treatments that insurers often reimburse poorly, sometimes even at a loss¹⁹.

Childhood immunizations are so vital to public health that the Affordable Care Act mandates their coverage at no out-of-pocket cost and they are generally required for school entry. Once a loss leader for manufacturers, because they are often more expensive to produce than conventional drugs, vaccines now can be very profitable¹⁹.

Old vaccines have been reformulated with higher costs. New ones have entered the market at once-unthinkable prices. Together, since 1986, they have pushed up the average cost to fully vaccinate a child with private insurance to the age of 18 to \$2,192 from \$100, according to data from the Centers for Disease Control and Prevention. Even with deep discounts, the costs for the federal government, which buys half of all vaccines for the nation’s children, have increased 15-fold during that period.

Like many vaccines, Prevnar requires multiple jabs. Each shot is priced at \$136, and most states in the US require children to get four doses before entering day care or preschool. Pfizer, the sole manufacturer, had revenues of nearly \$4 billion from its Prevnar vaccine line last year, about double what it made from high-profile drugs like Lipitor and Viagra, which now face generic competitors.

Even before the advent of Prevnar, children under 5 rarely died of pneumococcal illness — about 200 in the United States annually, according to the C.D.C. So, in urging countries to adopt Prevnar 13, Pfizer produced extensive studies emphasizing the vaccine’s broad indirect benefits and cost, such as reductions in a parent’s lost work time as well as the fact that the grandparent of an immunized baby is less likely to contract the disease. A C.D.C. economic review based on data from earlier studies estimated that in 2009, Prevnar prevented 2.3 million cases of pneumococcal disease including ear infections, 5,056 deaths of all ages, and saved \$965 million in direct costs and \$2.7 billion in societal costs in the United States.

The committee decided to approve it anyway because it would save a few families from the tragedy of an infant's death; the vaccine later proved more effective than the study had anticipated. Most other developed countries demand better cost-effectiveness numbers before approval and can use that to negotiate for discounts, said Anthony Newall, a health economist at the University of New South Wales in Australia¹⁹.

Statement of the problem

Financial costs were estimated by country and year for reaching 90% coverage with all existing vaccines; introducing a discrete set of new vaccines (rotavirus, conjugate pneumococcal, conjugate meningococcal A and Japanese encephalitis); and conducting immunization campaigns to protect at-risk populations against polio, tetanus, measles, yellow fever and meningococcal meningitis²⁰.

The 72 poorest countries of the world spent US\$ 2.5 (range: US\$ 1.8–4.2) billion on immunization in 2005, an increase from US\$ 1.1 (range: US\$ 0.9–1.6) billion in 2000. It was anticipated before 2015 that by 2015 annual immunization costs will on average increase to about US\$ 4.0 (range US\$ 2.9–6.7) billion. Total immunization costs for 2006–2015 are estimated at US\$ 35 (range US\$ 13–40) billion; of this, US\$ 16.2 billion are incremental costs, comprised of US\$ 5.6 billion for system scale-up and US\$ 8.7 billion for vaccines; US\$ 19.3 billion is required to maintain immunization programmes at 2005 levels²⁰.

In 2005, the World Health Assembly approved, and the United Nations Children's Fund (UNICEF) Executive Board endorsed, the Global Immunization Vision and Strategy (GIVS).^{21,22} The primary objective of GIVS is to reduce vaccine-preventable disease mortality and morbidity by two-thirds by 2015 compared to 2000, a contribution towards achieving the Millennium Development Goals, especially Goal 4, which calls for a two-thirds reduction of under-5 mortality by 2015.²³ GIVS articulates more than 25 new ideas and innovative approaches, and it is anticipated that countries will adopt the strategies most suited to their needs. GIVS was developed in the context of increasing resources for immunization; in 1999 a public-private partnership, The Global Alliance for Vaccines and Immunization (GAVI Alliance) was initiated to provide financial support for immunization in the world's poorest countries.^{24, 25, 26} By the end of 2005, government and private sources had pledged a total of US\$ 3.3 billion to the GAVI Alliance, enabling it to provide support to 73 of 75 eligible countries. Between 2000 and 2005, total GAVI Alliance disbursements were US\$ 760.5 million.²⁷ GAVI Alliance's resource outlook over the next decade has improved with the launch of two innovative funding mechanisms: the International Finance Facility for Immunization (IFFIm),²⁸ which could provide up to US\$ 4 billion over the next 10 years, and the Pneumo Advance Market Commitment (AMC),²⁹ which will provide US\$ 1.5 billion to support low-income countries for the purchase of new vaccines against *Streptococcus pneumoniae*, a leading cause of childhood meningitis and pneumonia mortality. In 2005, WHO and UNICEF undertook, as a companion to the GIVS document, to estimate the costs to reach immunization goals;³⁰ this paper reports on the cost of CDC vaccine for children program according to brand name and manufacturer.

Methodology

Study design: This study used a secondary data vaccine for children program for September 2019 from Center for Disease Control and Prevention website³¹

Study setting: The setting for the study was Centers for Disease Control and Prevention (CDC), the leading national public health institute of the United States³². The CDC is a United States federal agency under the Department of Health and Human Services and is headquartered in Atlanta, Georgia.³³

Its main goal is to protect public health and safety through the control and prevention of disease, injury, and disability in the US and internationally.³⁴ The CDC focuses national attention on developing and applying disease control and prevention. It especially focuses its attention on infectious disease, food borne pathogens, environmental health, occupational safety and health, health promotion, injury prevention and educational activities designed to improve the health of United States citizens.

Study population: The study groups were made up of 5 vaccine manufacturing companies, Sanofi Pasteur, GlaxoSmithKline, Merck, Pfizer, Grifols.

Sampling technique: Convenience sampling for the 5 manufacturers of CDC vaccine for children program.

Data collection methods and data analysis: Secondary data collection was used for this research which was published on CDC website. Secondary Data generated were analyzed manually because the data was small.

Results

Table 1. Cost of DTaP vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
DtaP [1]	Daptacel®	10 pack – 1 dose vial	\$18.071	\$30.84	Sanofi Pasteur
DtaP [1]	Infanrix®	10 pack – 1 dose vial	\$18.67	\$24.71	GlaxoSmithKline
		10 pack – 1 dose syringe	\$18.67	\$24.71	

We can see that for CDC cost of DtaP vaccine that Daptacel manufactured by Sanofi Pasteur is cheaper than Infanrix manufactured by GlaxoSmithKline but for private sector cost Infanrix manufactured by GlaxoSmithKline is cheaper than Daptacel manufactured by Sanofi Pasteur.

Table 2. Cost of DTaP – IPV vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
DTaP-IPV [2]	Quadracel™	10 pack – 1 dose vial	\$40.667	\$53.13	Sanofi Pasteur
DTaP-IPV [2]	Kinrix®	10 pack – 1 dose vial	\$41.31	\$52.12	GlaxoSmithKline
		10 pack – 1 dose syringe	\$41.31	\$52.12	

From table 2, the CDC cost of DTaP – IPV vaccine is cheaper for Quadracel manufactured by Sanofi Pasteur than Kinrix manufactured by GlaxoSmithKline but for the private sector cost Kinrix manufactured by GlaxoSmithKline is cheaper than Quadracel manufactured by Sanofi Pasteur.

Table 3. Cost of DTaP-hep B-IPV vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
DTaP-Hep B-IPV [4]	Pediarix®	10 pack – 1 dose syringe	\$59.05	\$79.15	GlaxoSmithKline
DTaP-IP-HI [4]	Pentacel®	5 pack – 1 dose vial	\$59.422	\$96.14	Sanofi Pasteur

Table 3 indicates that both the CDC and private cost of DTaP – Hep B-IPV for Pediarix manufactured by GlaxoSmithKline is cheaper than Pentacel manufactured by Sanofi Pasteur.

Table 4. Cost of hepatitis A vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Hepatitis A Pediatric [5]	Vaqta®	10 pack – 1 dose syringe	\$19.66	\$32.66	Merck
Hepatitis A Pediatric [5]	Havrix®	10 pack – 1 dose syringe	\$20.52	\$32.89	GlaxoSmithKline

Surprisingly table 4, for CDC and Private cost of Hepatitis A Pediatric vaccine, Vaqta manufacture by Merck is cheaper than Havrix manufactured by GlaxoSmithKline.

Table 5. Cost of hepatitis B vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Hepatitis B [5] Pediatric/Adolescent	Engerix B®	10 pack – 1 dose syringe	\$16.02	\$23.72	GlaxoSmithKline
Hepatitis B [5] Pediatric/Adolescent	Recombivax HB®	10 pack – 1 dose vial	\$12.30	\$23.95	Merck
		10 pack – 1 dose syringe	\$12.30	\$23.95	

Cost of Hepatitis B vaccines is cheaper for Recombivax manufactured by Merck and the private cost of Engerix manufactured by GlaxoSmithKline are almost the same with Recombivax.

Table 6. Cost of HIB vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Hib [5]	PedvaxHIB®	10 pack – 1 dose vial	\$13.21	\$26.23	Merck
Hib [5]	ActHIB®	5 pack – 1 dose vial	\$9.484	\$16.51	Sanofi Pasteur
Hib [5]	Hiberix®	10 pack – 1 dose vial	\$9.46	\$10.85	GlaxoSmithKline

The CDC cost and private cost of HIB vaccine is cheaper for Hiberix manufactured by GlaxoSmithKline.

Table 7. Cost of MENB – meningococcal vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
MENB – Meningococcal Group B [5]	Trumenba®	10 pack – 1 dose syringe	\$108.95	\$139.52	Pfizer
MENB – Meningococcal Group B [5]	Bexsero®	10 pack – 1 dose syringe	\$108.53	\$170.75	GlaxoSmithKline

The CDC cost of MENB – Meningococcal vaccine for trumenba manufactured by Pfizer and Bexsero manufactured by GlaxoSmithKline are almost the same while the private sector cost for Treumba are cheaper.

Table 8. Cost of meningococcal conjugate vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Meningococcal Conjugate (Groups A, C, Y and W-135) [5]	Menactra®	5 pack – 1 dose vial	\$93.45	\$122.31	Sanofi Pasteur
Meningococcal Conjugate (Groups A, C, Y and W-135) [5]	Menveo®	5 pack – 1 dose vial	\$76.02	\$130.75	GlaxoSmithKline

Table 8 shows us that for Meningococcal Conjugate (Groups A, C, Y and W-135) vaccine, Menveo manufactured by GlaxoSmithKline is cheaper for CDC cost while Menactra manufactured by Sanofi Pasteur is cheaper for private sector cost.

Table 9. Cost of measles, mumps and rubella vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Measles, Mumps and Rubella (MMR) [1]	M-M-R®II	10 pack – 1 dose vial	\$21.22	\$75.04	Merck
MMR/Varicella [2]	ProQuad®	10 pack – 1 dose vial	\$131.40	\$214.37	Merck

The Cost of Measles, Mumps and Rubella vaccine for M-M-R manufactured by Merck is cheaper for both CDC and private sector cost.

Table 10. Cost of pneumococcal

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Pneumococcal 13-valent [5] (Pediatric)	Pprevnar 13 TM	10 pack – 1 dose syringe	\$137.01	\$188.26	Pfizer
Pneumococcal Polysaccharide (23 Valent)	Pneumovax®23	10 pack – 1 dose syringe	\$56.30	\$100.19	Merck

The cost of Pneumococcal vaccine for Pneumovax manufactured by Merck is cheaper for both CDC and private sector cost.

Table 11. Cost of rotavirus, live, oral vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Rotavirus, Live, Oral, Pentavalent [5]	RotaTeq®	10 pack – 1 dose tube	\$70.49	\$82.89	Merck
		25 pack – 1 dose tube	\$70.49	\$82.89	
Rotavirus, Live, Oral, Oral [5]	Rotarix®	10 pack – 1 dose vial	\$94.69	\$120.95	GlaxoSmithKline

The cost of Rotavirus, live, oral vaccine for RotaTeq manufactured by Merck is cheaper for both CDC and private sector cost.

Table 12. Cost of tetanus and diphtheria toxoids vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Tetanus and Diphtheria Toxoids [3]	Tenivac®	10 pack – 1 dose syringe	\$20.607	\$33.83	Sanofi Pasteur
		10 pack – 1 dose vial	\$20.607	\$33.83	
Tetanus and Diphtheria Toxoids [3]	TDVAX™	10 pack – 1 dose vial	\$16.027	\$25.122	Grifols

The cost of Tetanus and Diphtheria Toxoids vaccine for TDVAX manufactured by Grifols is cheaper for both the CDC and private sector cost.

Table 13. Cost of tetanus toxoid, reduced diphtheria toxoid and acellular pertussis vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis [1]	Boostrix®	10 pack – 1 dose vial	\$32.24	\$41.19	GlaxoSmithKline
		10 pack – 1 dose syringe	\$32.24	\$41.19	
Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis [1]	Adacel®	10 pack – 1 dose vial	\$31.75	\$45.50	Sanofi Pasteur
		5 pack – 1 dose syringe	\$31.75	\$45.50	

The Cost of Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis vaccine for Adacel manufactured by Sanofi Pasteur is cheaper for CDC cost while Boostrix manufactured by GlaxoSmithKline is cheaper for private sector cost.

Table 14. Cost of varicella vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/ Dose	Manufacturer
Varicella [5]	Varivax®	10 pack – 1 dose vial	\$104.09	\$129.30	Merck

Table 15. Cost of polio vaccine e – IPV vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
e-IPV [5]	IPOL®	10 dose vial	\$13.55	\$33.53	Sanofi Pasteur

Table 16. Cost of HPV – human papillomavirus 9-valent vaccine

Vaccine	Brandname/ Tradename	Packaging	CDC Cost/Dose	Private Sector Cost/Dose	Manufacturer
HPV – Human Papillomavirus 9-valent [5]	Gardasil®9	10 pack – 1 dose syringe	\$178.14	\$217.11	Merck

Discussion

The CDC cost for all the vaccine for children program are cheaper than the private sector cost. The cheapest vaccine is Hiberix manufactured by GlaxoSmithKline for both CDC and private sector cost (\$9.46 and \$ 10.85). The most expensive vaccine is Gardasil manufactured by Merck for both CDC and private cost (\$178.14 and \$217.11), followed by Pneumococcal 13 – valent Pediatric (Pevnar 13) manufactured by Pfizer, Proquad and Variax manufactured by Merck respectively.

It is not clear how much Pfizer is profiting from Pevnar in the United States. But one measure is to look at the price at which Pfizer sells Pevnar for use in the poorest countries through a World Health Organization initiative: \$3.30 a dose. Even at those prices, “I do not think pharmaceutical manufacturers are losing money,” said Dr. Hinman, the former C.D.C. official¹⁹.

Since Pfizer bought Wyeth Pharmaceuticals and acquired Pevnar, its most visible research efforts have involved studies to prove its value. Company scientists have shown, for example, that Pevnar 13 is more cost effective than Synflorix, a competing vaccine made by GlaxoSmithKline that is far cheaper, but is effective against only 10 strains. It is not available in the United States¹⁹.

In 2014, Pfizer submitted a new study to the C.D.C. showing that Prevnar 13 is effective in preventing pneumonia in people over 65, and is hoping that the vaccination committee will recommend it for all Americans over 50. People in that age group typically get a different type of vaccine against pneumococcal bacteria that has been around for decades and is only \$30, but is not effective in babies¹⁹.

Dr. Hinman said Prevnar 13 is a “really good vaccine” that is probably more effective than the older version, and he himself hopes to get it once it is available. But in 2012, when Pfizer tried to get Prevnar 13 recommended for use in adults in Britain, the Joint Committee on Vaccination and Immunization said no because of the cost. If the United States recommends it for use in all healthy adults, analysts say it will mean an additional \$1 billion in annual sales for Pfizer.

The C.D.C., must walk a delicate line pressing drug companies to modulate prices: When there is one manufacturer, as with Prevnar 13, the company could raise charges or slow production, creating disastrous shortages¹⁹.

“What leverage does the C.D.C. have really?” Dr. Freed asked. “They’re in a terrible bind and it will only get worse as prices rise.”

Meanwhile, Dr. Irvin feels the pressure as other doctors stop offering shots, and parents like Ms. Farris go searching.

Clark Petty, who runs a public immunization clinic in San Antonio, said his store of vaccines from the C.D.C. is meant for the poor and people without insurance. Patients with private insurance must pay full list price and an administration fee and would have to apply for reimbursement themselves¹⁹.

The family practice doctor downstairs in Dr. Irvin’s office building has stopped immunizing children. A local obstetrician recently told her in tears that she cannot afford to give pregnant patients a shot recommended to boost the mother’s immunity to whooping cough, protection that is transferred to her unborn baby for the first months of after birth.

Nationally less than 10 percent of pregnant women are getting this recommended shot. Though there are many reasons women go unvaccinated, studies show that patients are far less likely to get a vaccine if their doctors do not offer it. And the consequences can be grave: In 2013, two babies, each a month old, died of whooping cough here in San Antonio. Their mothers had not been vaccinated during pregnancy¹⁹.

Limitation

1. Due to the nature of research and lack of time I didn’t conduct a clinical research to find out if a particular brand name is more effective than the other.
2. I didn’t also find out if cost affect the behavior or influence mothers to get the children vaccinated because I didn’t give mothers any questionnaire.

Recommendation

1. Adopting the Universal health coverage is a step in the right direction.
2. Affordable health insurance scheme. The government should give American citizens affordable health insurance scheme. This will encourage citizens to practice preventive medicine by getting their children vaccinated.
3. CDC and the US government should look passionately into subsidizing the cost of vaccine, a step in that direction would be crucial in the elimination of emerging and re-emerging diseases, prevention and control of communicable diseases, reducing infant mortality, saving indirect cost of taking care of a sick child instead being at work earning money and ultimately, the attainment of some sustainable development goals.
4. **Sensitization:** Health workers need to be the change they want to see in health sector by starting a campaign in their communities (i.e. a faith-based setting, workplace, school, or civic group) to encourage parents to make an appointment for their children’s vaccination.
5. Achieving efficiency is about comparing costs and benefits of competing healthcare interventions and ensuring that resources are allocated in such a way to maximize gains to society³⁵.

Conclusion

It is important to realize that health is wealth and a healthy nation is a wealthy nation! For every \$1 spent on childhood vaccinations, our country saves \$10.90. And CDC estimates that for the vaccination of children born between 1994 and 2018 has saved the U.S. nearly \$406 billion in direct medical costs and \$1.88 trillion in total society costs³⁶.

Unfortunately, the U.S. is currently dealing with outbreaks of measles in a number of states. Since 2014, over 1,900 cases of measles have occurred in the U.S. The CDC estimates that it costs approximately \$140,000 to contain each individual case of measles, and every single measles case requires follow up. That adds up to more than \$266 million spent by public health to stop the spread of measles just in the past several years³⁶.

Protecting our loved ones as they become adults is also critical however, each year our United States spends nearly \$27 billion treating adults for diseases that could have easily been prevented through vaccinations.

By eliminating racial and ethnic disparities in vaccination coverage among minority communities and vulnerable adult populations, we have the potential to save lives and public health dollars. Currently, African American, Asian, and Latino adults receive recommended vaccinations at much lower rates than white adults. We can and must do better.³⁶

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