Vaccines: The Week in Review
28 April 2012
Center for Vaccine Ethics & Policy (CVEP)

This weekly summary targets news, announcements, articles and events in global vaccines ethics and policy gathered from key governmental, NGO and industry sources, key journals and other sources. This summary supports ongoing initiatives of the Center for Vaccine Ethics & Policy, and is not intended to be exhaustive in its coverage. Vaccines: The Week in Review is also posted in pdf form and as a set of blog posts at http://centerforvaccineethicsandpolicy.wordpress.com/. This blog allows full-text searching of some 2,500 entries.

Comments and suggestions should be directed to
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Editor’s Notes:
- A pdf version of this issue is available here: http://centerforvaccineethicsandpolicy.wordpress.com/

GAVI said that Ghana has become the first African country to introduce pneumococcal and rotavirus vaccines at the same time. In Ghana, these diseases, together, account for approximately 20% of the country’s under-five child mortality. Ghana’s First Lady H.E. Dr Ernestina Naadu Mills was joined by the country’s Minister of Health Hon. M Alban S. K. Bagbin, GAVI Alliance CEO Dr Seth Berkley, WHO Deputy Director General Dr Anarfi Asamoa-Baah, UNICEF Country Representative Dr Iyabode Olusanmi, and other international guests at a special ceremony in Accra, where the first doses of the vaccines were administered to children. Health Minister Hon. Alban S. K. Bagbin said, “Our children have been dying from these vaccine-preventable diseases for too long, but this moment begins a major fight back. With these vaccines, we want to, and we will, achieve MDG4, the two-thirds reduction of our child mortality by 2015.”
26 April 2012

UNICEF Executive Director Anthony Lake, with partners in the renamed Measles and Rubella Initiative, launched “a new global strategy aimed at reducing measles deaths and congenital rubella syndrome to zero.” The announcement was accompanied by new data showing that accelerated efforts have resulted in a 74 per cent reduction in global measles mortality, from an estimated 535,000 deaths in 2000, to 139,000 in 2010. UNICEF noted that through increased routine immunization coverage and large-scale immunization campaigns, Africa made the most progress with an 85 per cent drop in measles deaths between 2000 and 2010. [see The Lancet - Online First content below in Journal Watch] The new strategy is focused on “…cutting global measles deaths by at least 95 per cent by 2015 compared with 2000 levels, and achieving measles and rubella elimination in at least five World Health Organization (WHO) regions by 2020. The strategy includes: high vaccination coverage; monitoring spread of disease using laboratory-backed surveillance; outbreak
preparedness and response and measles case management; communication and community engagement; and research and development.”

UNICEF said that under the new strategy, 63 countries currently not using rubella vaccines are encouraged to use their measles vaccination delivery system to introduce rubella vaccines into their national immunization schedule, protecting children against both diseases with one combined shot. Founded originally as the Measles Initiative in 2001, the new Measles and Rubella Initiative is led by the American Red Cross, the United Nations Foundation, the U.S. Centers for Disease Control and Prevention (CDC), UNICEF and WHO.

25 April 2012
http://www.unicef.org/immunization/index_62289.html

The WHO coverage of this announcement included links to the following content:

**News**
Measles mortality news release
24 April 2012
European countries must take action now to prevent continued measles outbreaks in 2012
2 December 2011
The Measles Initiative vaccinates one billion children in first decade
4 August 2011

**Strategic plan**
Global Measles and Rubella Strategic Plan 2012-2020
pdf, 1.39Mb

**Press Conference Materials**
April 2012

World Immunization Week was implemented for the first time, involving over 180 countries and running 21-28 April 2012. The theme of the week -- Protect your world: Get vaccinated – “aims to reinforce the importance of immunization and encourage people everywhere to vaccinate themselves and their children against serious diseases. It is also a time to recall that, in this rapidly globalizing world, disease outbreaks can affect communities everywhere.”

Additional coverage:

Statement: Director-General commemorates World Malaria Day
Dr Margaret Chan
Director-General of the World Health Organization
Statement on World Malaria Day
Oshakati, Namibia
25 April 2012
The Global Fund announced that “an innovative initiative...to put affordable and effective anti-malaria medicines in remote communities in Africa, is making rapid progress in Ghana, Kenya, Madagascar, Nigeria, Tanzania and Uganda.” The Affordable Medicines Facility for Malaria (AMFm), which is managed by the Global Fund, “allows people to buy life-saving malaria treatment in private stores and pharmacies for less than one U.S. dollar. Comparable malaria medicines outside the program cost up to ten to twenty times as much.” Dr. Olusoji Adeyi, who heads the AMFm initiative at the Global Fund in Geneva, said, “The innovation is working, bringing relief to millions who need quality anti-malaria medicines at affordable prices. The AMFm is a game-changer in financing access to malaria treatments.” AMFm is “making anti-malaria medicines, called artemisinin-based combination therapies (ACTs), available as widely and inexpensively as possible to those who need them. It allows people to obtain effective drugs without having to travel long distances to reach public health clinics. AMFm is also helping to drive out ineffective medicines off the market, making effective ACT treatment available and accessible to millions of people.”

GAVI said the “under the leadership of its Chair Dagfinn Høybråten, it is strengthening its governance structure by improving its gender balance and streamlining its executive committee composition.” GAVI had earlier announced the appointment of three new independent Board members, all of them women, “achieving the target it set for itself in 2010 of at least 40% representation for both genders. Eleven out of 26 Board members are now female.” In the current announcement, GAVI noted “the restructuring of the Board’s Executive Committee to simplify the process concerning commercially-sensitive decision making.” Mr Høybråten commented, “We believe our governance standards are world class and transparent, and we are always looking to improve and streamline our processes.” The restructuring involves the Board’s 12-member Executive Committee, which “is empowered to make time-sensitive decisions on behalf of the Board between scheduled Board meetings. Since 2008, one of these seats has been assigned to a representative of the vaccine manufacturing industry. Following a decision by vaccine manufacturers not to seek
reappointment to the Executive Committee, the Executive Committee will contract to 11 members: the Board Chair, the Vice Chair, eight additional Board members, and the non-voting CEO.” Mr. Høybråten added, “This voluntary move by the Developing Countries Vaccines Manufacturers Network (DCVMN) and the industrialized countries vaccines manufacturers will simplify our discussions and decision making processes even further. Vaccine manufacturers continue to be an important partner in our Alliance and on the Board.” GAVI said that “under existing procedures, conflicted members and members with even a perceived conflict of interest must remove themselves from discussion and voting on sensitive items related to their respective constituencies.”


**The Sabin Vaccine Institute announced the release of its sponsored special supplement to** *Vaccine* **titled** "Smallpox Eradication after 30 Years: Lessons, Legacies and Innovations." Sabin said its President, Dr. Peter Hotez, and Sabin Executive Vice President Dr. Ciro de Quadros, “share their insights on global health innovations and advancements since the eradication of smallpox was certified by the World Health Assembly in 1980.” The issue captures content from a special symposium “which reviewed the major lessons from smallpox eradication and how they could be useful to future health initiatives, and also featured research and discussions regarding issues that require more attention from the global health community such as the need for new vaccines to confront infectious diseases in developing countries.” The symposium, organized by the Fogarty International Center, the Sabin Vaccine Institute and FIOCRUZ took place in Rio de Janeiro, Brazil in August of 2010. Dr. Breman commented, "The symposium went far beyond assembling many giants of smallpox eradication in one place. Scientific and public health leaders addressed the control and eradication of guinea worm, polio, measles, rubella, malaria and neglected tropical diseases. They were able to describe how research, epidemiological surveillance, and good management that contributed to smallpox eradication are being applied to their programs." The entire special supplement and a summary of the 2010 symposium can be accessed at [http://www.sciencedirect.com/science/journal/0264410X/29/supp/S4](http://www.sciencedirect.com/science/journal/0264410X/29/supp/S4)

24 April 2012


**Twitter Watch** [accessed 28 April 2012 – 16:42]

Items of interest from a variety of twitter feeds associated with immunization, vaccines and global public health. This capture is highly selective and is by no means intended to be exhaustive.

Mirta Roses Periago @mirtaroses
We arrived to the end of the 10th Vaccination Week in the Americas, but #health workers will continue to vaccinate every day of the year.
9:53 AM - 28 Apr 12
Sabin Vaccine Inst. @sabinvaccine
It is estimated that a child dies of a vaccine-preventable disease every 20 sec. What are we going to do about that? http://bit.ly/Jqh8Ht
4:02 PM - 27 Apr 12

WHO @WHO
Meet our new super heroes: VacciBoy and ImmuGirl http://goo.gl/VrwX2 #vaccineswork
8:18 AM - 27 Apr 12

Roll Back Malaria @RollBackMalaria
Ban Ki-moon says he has made #malaria "a priority for his second term as a UN Secretary General" in a #WMD video: http://bit.ly/HY UdCX
Retweeted by Malaria Consortium
6:07 PM - 26 Apr 12

UNICEF @UNICEF
Did you know that UNICEF supplies 2.5 billion doses of vaccines to 99 countries? That’s 58 per cent of the world’s children #vaccineswork infographic: http://ow.ly/i/AB1P
9:30 AM - 27 Apr 12

Seth Berkley @GAVISeth
My latest blog: “We have to extend the vaccine revolution to every child in every corner of our world” http://ind.pn/IeROX5 #vaccineswork
4:26 PM - 26 Apr 12

WHO @WHO
Keep your child’s school, kindergarten, caregivers updated on your child’s vaccination status http://goo.gl/pbcp1 #vaccineswork
3:11 PM - 26 Apr 12

Dagfinn Høybråten @Hoybraten
Read my latest blog “Why immunisation is an act of immeasurable love” #vaccineswork http://bit.ly/ziZ1h8
Retweeted by GAVI Alliance
2:26 PM - 26 Apr 12

UNICEF @UNICEF
8 mn ppl are walking today as a result of the effort to eradicate #polio. Most children in the world live in polio-free areas #vaccineswork
12:31 PM - 26 Apr 12

Seth Berkley @GAVISeth
Just honored to be one of 5 vaccinators to give first 5 courses of pneumo and Rota together in Ghana with first lady and MoH. #vaccineswork
9:34 AM - 26 Apr 12

UN Foundation @unfoundation
Let's get ready to rumble! Today is the national launch of @shotatlife! Join this morning 9-12 to discuss #vaccineswork http://ow.ly/awXaQ

8:38 AM - 26 Apr 12

GAVI Alliance @GAVIAlliance
Today, #Ghana has become the 1st African country 2 introduce #pneumo and #rotavirus #vaccines at the same time! http://ht.ly/awVEg

8:38 AM - 26 Apr 12

Report/Research/Book Watch
Vaccines: The Week in Review is expanding its coverage of new reports, books, research and analysis published independent of the journal channel covered in Journal Watch below. Our interests span immunization and vaccines, as well as global public health, health governance, and associated themes. If you would like to suggest content to be included in this service, please contact David Curry at: david.r.curry@centerforvaccineethicsandpolicy.org

Report: Facing the Reality of Drug-Resistant Tuberculosis: Challenges and Potential Solutions in India - Summary of a Joint Workshop by the Institute of Medicine, the Indian National Science Academy, and the Indian Council of Medical Research
An estimated 8.8 million people fell ill with tuberculosis (TB) in 2010 and 1.4 million died from the disease. Although antibiotics to treat TB were developed in the 1950s and are effective against a large percentage of TB cases, resistance to these antibiotics has emerged over the years, resulting in the growing spread of multi-drug resistant (MDR) TB. The IOM held a workshop April 18-19, 2011, in New Delhi, India, in collaboration with the Indian National Science Academy and the Indian Council of Medical Research, to highlight key challenges to controlling the spread of drug-resistant strains of TB in India and to discuss strategies for advancing and integrating local and international efforts to prevent and treat drug-resistant TB.
Read the Report >>

Council on Foreign Relations | April 2012
The field of global health is witnessing a shift in focus from disease-driven initiatives to projects aimed at increasing the sustainability and strengthening of health systems. A crucial component to this is universal health coverage (UHC), which seeks to address financing schemes for health, separate from efforts to provide both adequate numbers of health workers and structures for health-care delivery. ...In The New Global Health Agenda: Universal Health Coverage, authors Oren Ahoobim, Daniel Altman, Laurie Garrett, Vicky Hausman, and Yanzhong Huang discuss this rise in support for universal health coverage and the financial benefits that may be reaped by implementing such schemes, and provide examples of models used to date by countries in establishing universal health coverage.
Journal Watch

Vaccines: The Week in Review continues its weekly scanning of key journals to identify and cite articles, commentary and editorials, books reviews and other content supporting our focus on vaccine ethics and policy. Journal Watch is not intended to be exhaustive, but indicative of themes and issues the Center is actively tracking. We selectively provide full text of some editorial and comment articles that are specifically relevant to our work. Successful access to some of the links provided may require subscription or other access arrangement unique to the publisher.

If you would like to suggest other journal titles to include in this service, please contact David Curry at: david.r.curry@centerforvaccineethicsandpolicy.org

Annals of Internal Medicine
April 17, 2012; 156 (8)
http://www.annals.org/content/current
[Reviewed earlier]

British Medical Bulletin
Volume 101 Issue 1 March 2012
http://bmb.oxfordjournals.org/content/current
[Reviewed earlier]

British Medical Journal
27 April 2012 (Vol 344, Issue 7854)
http://www.bmj.com/content/344/7854
[No relevant content]

Bulletin of the World Health Organization
Volume 90, Number 4, April 2012, 245-320
Special theme: influenza
[Reviewed earlier]

Cost Effectiveness and Resource Allocation
(Accessed 28 April 2012)
http://www.resource-allocation.com/
[No new relevant content]

Emerging Infectious Diseases
The main health threat in developing states today is not plagues or parasites but illnesses such as cancer and diabetes, noncommunicable diseases long associated with the rich world. NCDs are striking poorer, younger populations, and this could debilitate states and the global economy. The best way for the West to help is by pushing for governance reform.
**Commentary**

Pauline Paterson and Heidi J Larson

**The role of publics in the introduction of new vaccines**


**Extract**

**KEY MESSAGES**

- The ‘public’ in public engagement could be a variety of stakeholders.
- Engaging with the public builds trust and helps to identify concerns that need to be addressed.
- There is a need for more research on the impact of different public engagement strategies on vaccination programmes to improve their effectiveness.
- The importance of listening to and engaging publics in the design and implementation of immunization policies and programmes has been well established (Waisbord 2004; Cooper et al. 2008; Obregon 2009; Larson et al. 2010; Larson et al. 2011). There are a number of examples of the costs (financial and social) of not involving publics early, the most acute being the boycott of polio vaccination in five states in Northern Nigeria in 2003 (Yahya 2007).
- Several papers in this special issue highlight potential roles of publics in the introduction of new vaccines, mostly at the level of implementation, but some point to the importance of bringing the role of citizen voices earlier into the decision-making process—i.e. not just as players to implement decisions made by central authorities, but to be a part of decision-making processes (Wonodi et al. 2012).
- The ‘public’ in public engagement could be a variety of stakeholders; such as individuals, parents, policy-makers (Mantel and Wang 2012), researchers and clinicians (Burchett et al. 2012), immunization programme managers (Brooks and Ba-Nguz 2012; Gordon et al. 2012), ‘global/regional bodies’ (Makinen et al. 2012), advocacy groups, or influential individuals (Makinen et al. 2012), such as religious leaders (Wonodi et al. 2012). ...

**Editorial**

Carsten Mantel and Susan A Wang

**The privilege and responsibility of having choices: decision-making for new vaccines in developing countries**


**Extract**

Decisions to introduce new vaccines into national immunization programmes have become a highly complex endeavour. When the Expanded Programme on Immunization (EPI) was established in 1974 through a World Health Assembly resolution to build on the success of the global smallpox eradication programme and to ensure that all children in all countries benefit from life-saving vaccines, the first six diseases targeted by EPI were diphtheria, pertussis, tetanus, polio, measles and tuberculosis (WHO 1974). Today, thanks to scientific advancements and renewed global interest in immunization, more
than a dozen antigens have been made available through public health services in developing countries, with increasingly reduced time delay compared with introduction in industrialized countries. Country decision-makers can select vaccines from a portfolio of options. This is a privilege and a serious responsibility requiring due consideration, as any decision to select one vaccine will need to be taken in light of the opportunity costs of not investing in another vaccine or another (health) intervention. Moreover, country decision-makers do not form their decisions in a vacuum; the number of immunization stakeholders in both the public and the private sectors has vastly increased and those stakeholders are equipped with varying levels of knowledge and expertise and may have vested interests.

The multitude of factors influencing country decisions to introduce new vaccines, and the process for making these decisions is becoming increasingly important. These factors and processes are briefly outlined and discussed below.

Sources of information and the decision-making process

One of the main and undisputed sources of information for decision making on new vaccine introduction in developing countries is the World Health Organization (WHO) global recommendations and policy guidelines, such as the vaccine position papers. These position papers are based on a thorough and graded review of available evidence by an independent Strategic Advisory Group of Experts in immunization (SAGE) and they

Original articles


New vaccine adoption: qualitative study of national decision-making processes in seven low- and middle-income countries


W Scott Gordon, Andrew Jones, and John Wecker

Abstract

As more new and improved vaccines become available, decisions on which to adopt into routine programmes become more frequent and complex. This qualitative study aimed to explore processes of national decision-making around new vaccine adoption and to understand the factors affecting these decisions.

Ninety-five key informant interviews were conducted in seven low- and middle-income countries: Bangladesh, Cameroon, Ethiopia, Guatemala, Kenya, Mali and South Africa. Framework analysis was used to explore issues both within and between countries. The underlying driver for adoption decisions in GAVI-eligible countries was the desire to seize GAVI windows of opportunity for funding. By contrast, in South Africa and Guatemala, non-GAVI-eligible countries, the decision-making process was more rooted in internal and political dynamics.

Decisions to adopt new vaccines are, by nature, political. The main drivers influencing decisions were the availability of funding, political prioritization of vaccination or the vaccine-preventable disease and the burden of disease. Other factors, such as financial sustainability and feasibility of introduction, were not as influential. Although GAVI procedures have established more formality in decision-making, they did not always result in consideration of all relevant factors. As familiarity with GAVI procedures increased, questioning by decision-makers about whether a country should apply for funding appeared to have diminished.

This is one of the first studies to empirically investigate national processes of new vaccine adoption decision-making using rigorous methods. Our findings show that
previous decision-making frameworks (developed to guide or study national decision-making) bore little resemblance to real-life decisions, which were dominated by domestic politics. Understanding the realities of vaccine policy decision-making is critical for developing strategies to encourage improved evidence-informed decision-making about new vaccine adoptions. The potential for international initiatives to encourage evidence-informed decision-making should be realised, not assumed.

**Introducing multiple vaccines in low- and lower-middle-income countries: issues, opportunities and challenges**
C B Wonodi, L Privor-Dumm, M Aina, A M Pate, R Reis, P Gadhoke, and O S Levine

**Using social network analysis to examine the decision-making process on new vaccine introduction in Nigeria**
Marty Makinen, Miloud Kaddar, Vivikka Molldrem, and Lara Wilson

**Abstract**
Objectives Lower-middle-income countries (LMICs) are lagging behind both high-income and low-income countries in new vaccine adoption. Our study involved the following objectives: (1) understand the decision-making processes of LMICs on new vaccine adoption, (2) identify the factors influencing LMIC decisions, (3) obtain the views of vaccine manufacturers about LMIC markets for new vaccines, and (4) make recommendations concerning how to speed up and improve decision making, including proposing mechanisms for implementation of the recommendations.

Methods Collect and analyse qualitative data from participants in decision making in 15 case study countries [12 LMICs and three upper-middle-income countries (UMICs)] and multinational and developing country vaccine manufacturers.

Findings Interviews of actors in decision making indicate that the aspects deemed most important for adoption are: World Health Organization (WHO) recommendations, the existence of local epidemiological data and a set of factors comprising affordability, cost-effectiveness and overall cost of the new vaccine for the programme. National Immunization Technical Advisory Groups (NITAG) have a key role in advising decision-makers, although their resources and capacity vary. Country decision-makers and manufacturers both see advantages in pooled procurement mechanisms for vaccine purchasing. Recommendations for countries and the international community involve assisting with making epidemiological data and vaccine market information accessible to countries, building and reinforcing related analysis capacity, and assisting with purchasing mechanisms and practices such as pooled procurement.

**New vaccine adoption in lower-middle-income countries**
Alan Brooks and Antoinette Ba-Nguz

**Country planning for health interventions under development: lessons from the malaria vaccine decision-making framework and implications for other new interventions**

**Review**
H E D Burchett, S Mounier-Jack, U K Griffiths, and A J Mills

**National decision-making on adopting new vaccines: a systematic review**

**Abstract**
In recent years numerous new vaccines have been developed, offering potential reductions in the morbidity and mortality caused by a range of diseases. This has led to increased interest in decision-making about the adoption of new vaccines into national immunization programmes. This paper aims to systematically review the literature on national decision-making around the adoption of new vaccines.

A thematic framework was developed inductively through analysis of the vaccine adoption decision-making frameworks included in the review. This thematic framework was then applied to the remaining studies included in the review. In total, 85 articles were included in the review: 39 articles describing examples of vaccine adoption decision-making, 26 presenting vaccine decision-making frameworks, 21 empirical articles of decision-making relating to vaccine adoption and 19 theoretical essays.

An analysis of vaccine adoption decision-making frameworks identified nine broad categories of criteria: the importance of the health problem; vaccine characteristics; immunization programme considerations; acceptability; accessibility, equity and ethics; financial/economic issues; impact; alternative interventions and the decision-making process.

The quality of the empirical studies was varied. Although some of the issues included in the frameworks were similar to those considered in the studies, there were also some notable differences. On the whole, the frameworks were more comprehensive than the studies, including a greater range of criteria.

The existing literature provides a good foundation for further research into vaccine adoption decision-making. The current review, in pulling together what is already known and by identifying strengths, weaknesses and gaps in the existing evidence base, aims to encourage a more focused and rigorous approach to the topic in future. This could help to identify the most appropriate ways to develop vaccine adoption decision-making, so as to improve decisions and, ultimately, health outcomes.

Human Vaccines & Immunotherapeutics (formerly Human Vaccines)
Volume 8, Issue 4 April 2012
[Reviewed earlier]

International Journal of Infectious Diseases
Volume 16, Issue 6 pp. e413-e468 (June 2012)
http://www.sciencedirect.com/science/journal/12019712
Original Reports
Comparison of attitudes about polio, polio immunization, and barriers to polio eradication between primary health center physicians and private pediatricians in India
Original Research Article
Pages e417-e423
Summary
Objectives
The objectives of this study were to compare attitudes and perceptions of primary health center (PHC) physicians and pediatricians in Uttar Pradesh and Bihar toward polio disease, immunization, and eradication, and to identify barriers to polio eradication.

Methods
PHC physicians from blocks with at least one confirmed polio case during January 2006 to June 2009 were selected for an in-person survey. Pediatricians were members of the Indian Academy of Pediatrics and were selected from a national directory of members for telephone or mail survey.

Results
A higher percentage of PHC physicians than pediatricians reported that an unvaccinated child was susceptible to polio (82.1% vs. 63.0%, \( p < 0.0001 \)) and that polio disease was severe in a child aged 1–5 years (77.7% vs. 62.2%, \( p < 0.0001 \)). PHC physicians and pediatricians expressed confidence in the protectiveness and safety of oral polio vaccine and cited parents’ lack of awareness of the importance of polio eradication as an important barrier to eradication. Strengthening routine immunization efforts was reported as the leading intervention required to eradicate polio.

Conclusions
PHC physicians and pediatricians support and have confidence in the success of polio eradication efforts. These findings will be useful for policy-makers involved in the planning of eradication strategies. Providers and parents need to maintain confidence in polio vaccination if polio is to be eradicated.

JAMA
http://jama.ama-assn.org/current.dtl

Original Contributions
Effect of a Text Messaging Intervention on Influenza Vaccination in an Urban, Low-Income Pediatric and Adolescent Population: A Randomized Controlled Trial
Melissa S. Stockwell, Elyse Olshen Kharbanda, Raquel Andres Martinez, Celibell Y. Vargas, David K. Vawdrey, Stewin Camargo

Abstract
Context Influenza infection results in substantial costs, morbidity, and mortality. Vaccination against influenza is particularly important in children and adolescents who are a significant source of transmission to other high-risk populations, yet pediatric and adolescent vaccine coverage remains low. Traditional vaccine reminders have had a limited effect on low-income populations; however, text messaging is a novel, scalable approach to promote influenza vaccination.

Objective To evaluate targeted text message reminders for low-income, urban parents to promote receipt of influenza vaccination among children and adolescents.

Design, Setting, and Participants Randomized controlled trial of 9213 children and adolescents aged 6 months to 18 years receiving care at 4 community-based clinics in the United States during the 2010-2011 influenza season. Of the 9213 children and adolescents, 7574 had not received influenza vaccine prior to the intervention start date and were included in the primary analysis.
Parents of children assigned to the intervention received up to 5 weekly immunization registry–linked text messages providing educational information and instructions regarding Saturday clinics. Both the intervention and usual care groups received the usual care, an automated telephone reminder, and access to informational flyers posted at the study sites.

Main Outcome Measures Receipt of an influenza vaccine dose recorded in the immunization registry via an electronic health record by March 31, 2011. Receipt was secondarily assessed at an earlier fall review date prior to typical widespread influenza activity.

Results Study children and adolescents were primarily minority, 88% were publicly insured, and 58% were from Spanish-speaking families. As of March 31, 2011, a higher proportion of children and adolescents in the intervention group (43.6%; n = 1653) compared with the usual care group (39.9%; n = 1509) had received influenza vaccine (difference, 3.7% [95% CI, 1.5%-5.9%]; relative rate ratio [RRR], 1.09 [95% CI, 1.04-1.15]; P = .001). At the fall review date, 27.1% (n = 1026) of the intervention group compared with 22.8% (n = 864) of the usual care group had received influenza vaccine (difference, 4.3% [95% CI, 2.3%-6.3%]; RRR, 1.19 [95% CI, 1.10-1.28]; P < .001).

Conclusions Among children and adolescents in a low-income, urban population, a text messaging intervention compared with usual care was associated with an increased rate of influenza vaccination. However, the overall influenza vaccination rate remained low. Trial Registration clinicaltrials.gov Identifier: NCT01146912

Editorials

Text Messaging: A New Tool for Improving Preventive Services
Peter G. Szilagyi, William G. Adams

Extract
Prevention of influenza disease through vaccination is a public health challenge. Influenza disease causes substantial morbidity and mortality in children, adolescents, and adults; vaccination is the best method to prevent this disease. In light of the increasing understanding of the burden of influenza among children and adolescents and its spread from children to adults, the Advisory Committee on Immunization Practices expanded its influenza vaccination recommendations in 2008 to include all children and adolescents between 6 months and 18 years of age.1 More than 65 million children and adolescents should be vaccinated annually, usually within a short timeframe of several months when the vaccine is available. While influenza vaccination coverage nationwide has increased, it remains low—only about half of all children and adolescents are vaccinated.

In the United States, primary care practices bear the major burden of vaccinating children and adolescents, and because most do not have health care visits ...
Viruses
Nicholas C. Grassly, Hamid Jafari, Sunil Bahl, Raman Sethi, Jagadish M. Deshpande, Chris Wolff, Roland W. Sutter, and R. Bruce Aylward

Waning Intestinal Immunity After Vaccination With Oral Poliovirus Vaccines in India

Abstract
Background The eradication of wild-type polioviruses in areas with efficient fecal-oral transmission relies on intestinal mucosal immunity induced by oral poliovirus vaccine (OPV). Mucosal immunity is thought to wane over time but the rate of loss of protection has not been examined.

Methods We examined the degree and duration of intestinal mucosal immunity in India by measuring the prevalence of vaccine poliovirus in stool samples collected 4–28 days after a “challenge” dose of OPV among 47 574 children with acute flaccid paralysis reported during 2005–2009.

Results Previous vaccination with OPV was protective against excretion of vaccine poliovirus after challenge, but the odds of excretion increased significantly with the time since the child was last exposed to an immunization activity (odds ratio, 1.39 [95% confidence interval .99–1.97], 2.04 [1.28–3.25], and 1.31 [1.00–1.70] comparing ≥6 months with 1 month ago for serotypes 1, 2, and 3, respectively). Vaccine administered during the high season for enterovirus infections (April–September) was significantly less likely to result in excretion, especially in northern states (odds ratio, 0.57 [95% confidence interval, .50–.65], 0.58 [.41–.81], and 0.48 [.40–.57] for serotypes 1, 2, and 3).

Conclusions Infection with OPV (vaccine “take”) is highly seasonal in India and results in intestinal mucosal immunity that appears to wane significantly within a year of vaccination.

Bacteria
Peter C. Wroe, Jonathan A. Finkelstein, G. Thomas Ray, Jeffrey A. Linder, Kristen M. Johnson, Sheryl Rifas-Shiman, Matthew R. Moore, and Susan S. Huang

Aging Population and Future Burden of Pneumococcal Pneumonia in the United States

Abstract
Pneumococcal pneumonia is concentrated among the elderly. Using a decision analytic model, we projected the future incidence of pneumococcal pneumonia and associated healthcare utilization and costs accounting for an aging US population. Between 2004 and 2040, as the population increases by 38%, pneumococcal pneumonia hospitalizations will increase by 96% (from 401 000 to 790 000), because population growth is fastest in older age groups experiencing the highest rates of pneumococcal disease. Absent intervention, the total cost of pneumococcal pneumonia will increase by $2.5 billion annually, and the demand for healthcare services for pneumococcal pneumonia, especially inpatient capacity, will double in coming decades.
Measles: the burden of preventable deaths
Walter A Orenstein, Alan R Hinman

Measles has been, and remains, a major killer of children around the world. Despite the introduction of the measles vaccine in 1963, measles caused an estimated 2·6 million deaths in a single year as recently as 1980.1 In The Lancet, Emily Simons and colleagues2 estimate that, after more than 45 years of measles vaccine availability, the disease caused nearly 140 000 deaths in 2010.

Articles
Apr 24, 2012
Assessment of the 2010 global measles mortality reduction goal: results from a model of surveillance data
Emily Simons, Matthew Ferrari, John Fricks, Kathleen Wannemuehler, Abhijeet Anand, Anthony Burton, Peter Strebel

Summary
Background
In 2008 all WHO member states endorsed a target of 90% reduction in measles mortality by 2010 over 2000 levels. We developed a model to estimate progress made towards this goal.

Methods
We constructed a state-space model with population and immunisation coverage estimates and reported surveillance data to estimate annual national measles cases, distributed across age classes. We estimated deaths by applying age-specific and country-specific case-fatality ratios to estimated cases in each age-country class.

Findings
Estimated global measles mortality decreased 74% from 535 300 deaths (95% CI 347 200—976 400) in 2000 to 139 300 (71 200—447 800) in 2010. Measles mortality was reduced by more than three-quarters in all WHO regions except the WHO southeast Asia region. India accounted for 47% of estimated measles mortality in 2010, and the WHO African region accounted for 36%.

Interpretation
Despite rapid progress in measles control from 2000 to 2007, delayed implementation of accelerated disease control in India and continued outbreaks in Africa stalled momentum towards the 2010 global measles mortality reduction goal. Intensified control measures and renewed political and financial commitment are needed to achieve mortality reduction targets and lay the foundation for future global eradication of measles.

Funding
US Centers for Disease Control and Prevention (PMS 5U66/IP000161).
Putting adolescents at the centre of health and development

The Lancet

Unprecedented momentum is gathering to put adolescents into the centre of global health policies. This opportunity has the potential not only to benefit young people directly but also to have wide-ranging effects on the health of adults and national economic development. The 45th session of the United Nations (UN) Commission on Population and Development, held in New York from April 23 to 26, has chosen Adolescents and Youth as its central theme. In the same week, UNICEF releases its report—Progress for Children: A Report Card on Adolescents—with data from developing countries.

TDR: a time to live or die?
The Lancet

Since 1975, the UN Special Programme for Research and Training in Tropical Diseases (TDR) has been examining needs and gaps in health research on the diseases of poverty. Co-sponsored by UNICEF, UNDP, the World Bank, and WHO, TDR has emphasised research in neglected areas and scientific collaboration, and has trained thousands of researchers in developing countries to help strengthen research capacity. TDR has also led five major elimination campaigns for neglected diseases, co-developed 12 new drugs for tropical parasitic diseases, and helped document the effectiveness of artemisinin-combination therapy for malaria.

Comment

Seizing the opportunities of adolescent health

Michael D Resnick, Richard F Catalano, Susan M Sawyer, Russell Viner, George C Patton

Economic and social change have brought great opportunities and threats to adolescent health for rich and poor nations alike. The health transition, together with changes in adolescent social roles, has shifted the burden from childhood infectious diseases towards adolescent injuries and health-jeopardising behaviours in all but the poorest countries. Fortunately, research has clarified many determinants of these behaviours, and wide-ranging prevention approaches to minimise harm and promote health have been identified.

Adolescent health in the 21st century

Robert W Blum, Francisco IPM Bastos, Caroline W Kabiru, Linh C Le

Series

Adolescence: a foundation for future health

Susan M Sawyer, Rima A Afifi, Linda H Bearinger, Sarah-Jayne Blakemore, Bruce Dick, Alex C Ezeh, George C Patton

Adolescence is a life phase in which the opportunities for health are great and future patterns of adult health are established. Health in adolescence is the result of interactions between prenatal and early childhood development and the specific biological and social-role changes that accompany puberty, shaped by social determinants and risk and protective factors that affect the uptake of health-related behaviours. The shape of adolescence is rapidly changing—the age of onset of puberty is decreasing and the age at which mature social roles are achieved is rising.

Adolescence and the social determinants of health
Russell M Viner, Elizabeth M Ozer, Simon Denny, Michael Marmot, Michael Resnick, Adesegun Fatusi, Candace Currie

Preview
The health of adolescents is strongly affected by social factors at personal, family, community, and national levels. Nations present young people with structures of opportunity as they grow up. Since health and health behaviours correspond strongly from adolescence into adult life, the way that these social determinants affect adolescent health are crucial to the health of the whole population and the economic development of nations. During adolescence, developmental effects related to puberty and brain development lead to new sets of behaviours and capacities that enable transitions in family, peer, and educational domains, and in health behaviours.

Worldwide application of prevention science in adolescent health
Richard F Catalano, Abigail A Fagan, Loretta E Gavin, Mark T Greenberg, Charles E Irwin, David A Ross, Daniel TL Shek

Preview
The burden of morbidity and mortality from non-communicable disease has risen worldwide and is accelerating in low-income and middle-income countries, whereas the burden from infectious diseases has declined. Since this transition, the prevention of non-communicable disease as well as communicable disease causes of adolescent mortality has risen in importance. Problem behaviours that increase the short-term or long-term likelihood of morbidity and mortality, including alcohol, tobacco, and other drug misuse, mental health problems, unsafe sex, risky and unsafe driving, and violence are largely preventable.

Health of the world’s adolescents: a synthesis of internationally comparable data
George C Patton, Carolyn Coffey, Claudia Cappa, Dorothy Currie, Leanne Riley, Fiona Gore, Louisa Degenhardt, Dominic Richardson, Nan Astone, Adesola O Sangowawa, Ali Mokdad, Jane Ferguson

Preview
Adolescence and young adulthood offer opportunities for health gains both through prevention and early clinical intervention. Yet development of health information systems to support this work has been weak and so far lagged behind those for early childhood and adulthood. With falls in the number of deaths in earlier childhood in many countries and a shifting emphasis to non-communicable disease risks, injuries, and mental health, there are good reasons to assess the present sources of health information for young people.

Correspondence
In support of the US Centers for Disease Control and Prevention
Jeffrey P Koplan, James Curran, Haile Debas, Carlos del Rio, Lawrence O Gostin, Gerald T Keusch, Judith N Wasserheit

Preview
Richard Horton (March 3, p 788)1 harshly criticises the structure and performance of the Center for Global Health (CGH) at the US Centers for Disease Control and Prevention (CDC). He offers no evidence in support of his criticism, but instead uses anonymous statements that are unacceptable in impartial investigative journalism. This particularly concerns us because, as a leading medical journal, The Lancet should publish the most rigorous, evidence-based reports.

In support of the US Centers for Disease Control and Prevention
Tedros Adhanom Ghebreyesus  
Preview
I welcome the opportunity to describe our close partnership with the US Centers for Disease Control and Prevention (CDC). A paragon of scientific excellence in public health, CDC’s scientific approach to health promotion, disease prevention, and emergency preparedness is a model my Ministry aspires towards. To bolster reform and expansion efforts, we continue to look to CDC's well established institutional organisation and management structure to improve our surveillance and response systems. For decades, CDC has supported our responses to HIV/AIDS, tuberculosis, malaria, meningitis, rabies, dracunculiasis, smallpox, poliomyelitis, and public health emergencies.

In support of the US Centers for Disease Control and Prevention
Mirta Roses Periago  
Preview
I am surprised by Richard Horton's Offline piece, which criticises the global health efforts of the US Centers for Disease Control and Prevention (CDC), largely on the basis of anonymous correspondence from disgruntled CDC employees.

In support of the US Centers for Disease Control and Prevention
Marek Ma

The Lancet Infectious Disease  
May 2012 Volume 12 Number 5 p355 - 422  
http://www.thelancet.com/journals/laninf/issue/current

Newsdesk
Global rabies elimination: are we stepping up to the challenge?
Preview
A 1 year assessment of the Rabies Blueprint website, a detailed online guide developed to support countries aiming to eliminate canine rabies in an effort to prevent human rabies, shows that it has been successful in terms of outreach. “We know that visitors have come from virtually all continents, including 150 countries or territories and 1827 cities”, reports lead author Tiziana Lembo (University of Glasgow, UK, and the Global Alliance for Rabies Control, USA). “We are also aware that this toolkit is being used as a guide for the implementation of canine rabies control programmes in various places, for example the Philippines, Uganda, Benin, Afghanistan, Peru, Bolivia, Haiti, and Indonesia.

Media Watch
Eradication: ridding the world of diseases forever?
Salmaan Keshavjee
Preview
In this well researched and well written book, historian Nancy Leys Stepan uses the diaries and aspirations of Fred Soper—former Director General of the Pan American Health Organization, described in the book as an arch-eradicationist—to recount a social history of public health. In so doing, she critically analyses the very idea of eradication, exposes the weak scientific basis of many of the past century's greatest battles against disease, and provides lessons for the challenges that lie ahead.

Advances in virus research 79: research advances in rabies
Hildegund CJ Ertl
Preview
Tragically, half of people infected with rabies are children aged younger than 15 years. Most tragic is that all of these deaths could have been prevented by appropriate postexposure prophylaxis consisting of wound cleaning, active immunisation with a safe rabies vaccine, and passive immunisation with a rabies immunoglobulin. The high cost of this prophylaxis prevents its use in low-income countries and, as a result, people die. The 486 page book with its 21 chapters written by experts is thus a welcome reminder that research into rabies has to continue to reduce its deadly toll.

**Review**

**Passive immunity in the prevention of rabies**
Leonard Both, Ashley C Banyard, Craig van Dolleweerd, Daniel L Horton, Julian K-C Ma, Anthony R Fooks

**Preview**

Prevention of clinical disease in those exposed to viral infection is an important goal of human medicine. Using rabies virus infection as an example, we discuss the advances in passive immunoprophylaxis, most notably the shift from the recommended polyclonal human or equine immunoglobulins to monoclonal antibody therapies. The first rabies-specific monoclonal antibodies are undergoing clinical trials, so passive immunisation might finally become an accessible, affordable, and routinely used part of global health practices for rabies.

**Medical Decision Making (MDM)**
March–April 2012; 32 (2)
http://mdm.sagepub.com/content/current
[Reviewed earlier]

**Nature**
Volume 484 Number 7395 pp415-558 26 April 2012
http://www.nature.com/nature/current_issue.html

**Specials**

**Outlook: Malaria**
Malaria
Michelle Grayson
The numbers game
Priya Shetty

Drug development: Holding out for reinforcements
Michael Eisenstein

Public health: Death at the doorstep
Amy Maxmen

Perspectives: The missing pieces

Vaccines: The take-home lesson
Sarah DeWeerdt

Vector control: The last bite
Lauren Gravitz
The Pediatric Infectious Disease Journal
May 2012 · Volume 31 · Issue 5
pp: A7-A8,431-537,e73-e77
http://journals.lww.com/pidj/pages/currenttoc.aspx

The Worldwide Impact of the Seven-valent Pneumococcal Conjugate Vaccine
Fitzwater, Sean P.; Chandran, Aruna; Santosham, Mathuram; Johnson, Hope L.
doi: 10.1097/INF.0b013e31824de9f6

Abstract:
Background: Pneumococcal conjugate vaccines (PCV) are emerging as one of the most promising means to prevent pediatric disease. The 7-valent PCV (PCV-7) has been extensively evaluated in clinical trials, and recent evidence from the introduction of PCV-7 through national immunization programs has demonstrated impact on pneumococcal disease.

Methods: Clinical trials have shown PCV-7 to be effective against the more severe forms of pneumococcal infections: pneumonia and invasive pneumococcal disease (IPD), as well as overall child mortality. A review shows the tremendous impact PCV-7 has had to date, and the potential further benefits of the emerging multi-valent vaccines.

Results: Since its introduction, the PCV-7 has substantially reduced the incidence of IPD, hospital admissions due to pneumonia and acute otitis media in numerous, mostly high income, low-disease burden countries. The reductions in IPD and pneumonia have also been observed among unvaccinated age groups in countries with routine use of PCV-7, demonstrating that PCV-7 provides herd immunity. Some settings observed an
increase in rate of Nonvaccine serotype IPD, yet rates of overall and vaccine-serotype IPD show marked reductions post-PCV-7 introduction. Limited data are available on the impact of PCV-7 in lower income countries. The available data from efficacy trials from The Gambia and South Africa suggest that PCV-7 will have substantial impact on reducing pneumococcal disease.

Conclusion: PCV-7 has shown dramatic reduction in disease and mortality rates in the countries in which it has been introduced. The newly introduced 10-valent and 13-valent pneumococcal vaccines are expected to have substantial disease impact, but monitoring is essential to determine their true impact and sustain further introduction of pneumococcal conjugate vaccines.

**Pediatrics**
April 2012, VOLUME 129 / ISSUE 4
[Reviewed earlier]

**Pharmacoeconomics**
May 1, 2012 - Volume 30 - Issue 5 pp: 355-445
[Reviewed last week]

**PLoS One**
[Accessed 28 April 2012]
Synthetic Biology: Mapping the Scientific Landscape
Paul Oldham, Stephen Hall, Geoff Burton
PLoS ONE: Research Article, published 23 Apr 2012 10.1371/journal.pone.0034368
Abstract
This article uses data from Thomson Reuters Web of Science to map and analyse the scientific landscape for synthetic biology. The article draws on recent advances in data visualisation and analytics with the aim of informing upcoming international policy debates on the governance of synthetic biology by the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the United Nations Convention on Biological Diversity. We use mapping techniques to identify how synthetic biology can best be understood and the range of institutions, researchers and funding agencies involved. Debates under the Convention are likely to focus on a possible moratorium on the field release of synthetic organisms, cells or genomes. Based on the empirical evidence we propose that guidance could be provided to funding agencies to respect the letter and spirit of the Convention on Biological Diversity in making research investments. Building on the recommendations of the United States Presidential Commission for the Study of Bioethical Issues we demonstrate that it is possible to promote independent and transparent monitoring of developments in synthetic biology using modern information tools. In particular, public and policy understanding and engagement with synthetic biology can be enhanced through the use of online
interactive tools. As a step forward in this process we make existing data on the scientific literature on synthetic biology available in an online interactive workbook so that researchers, policy makers and civil society can explore the data and draw conclusions for themselves.

**PLoS Medicine**
(Accessed 28 April 2012)
http://www.plosmedicine.org/article/browse.action?field=date

**Where There Is No Health Research: What Can Be Done to Fill the Global Gaps in Health Research?**
doi:10.1371/journal.pmed.1001209

**Summary Points**
- Efforts to strengthen capacity in health research have, so far, concentrated on countries where there is existing capacity rather than those where it is almost completely lacking.
- Judged by absolute numbers of scientific papers, those with the fewest are mainly small islands and a few countries that are politically isolated.
- Judged by papers per capita, the lowest include countries in the former Soviet Union and Africa, both regions experiencing declines in life expectancy in recent years, and states experiencing conflict.
- Although there is a positive association between economic development and research output, some relatively wealthy countries seriously underperform.
- There are many examples of good practice, including regional networks and international partnerships.
- There is a strong argument for donors to look to the long term and consider how best to build health research capacity where it is virtually absent.

**PLoS Neglected Tropical Diseases**
April 2012
http://www.plosntds.org/article/browseIssue.action
[No relevant content]

**PNAS - Proceedings of the National Academy of Sciences of the United States of America**
(Accessed 28 April 2012)
http://www.pnas.org/content/early/recent
[No new relevant content]

**Public Health Ethics**
Volume 5 Issue 1 April 2012
http://phe.oxfordjournals.org/content/current
[Reviewed earlier]
Monitoring EU Emerging Infectious Disease Risk Due to Climate Change

Elisabet Lindgren 1, Yvonne Andersson 2, Jonathan E. Suk 3, Bertrand Sudre 3, Jan C. Semenza 3,*
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2 Formerly at the Swedish Institute for Communicable Disease Control I, SE-171 82 Solna, Sweden.

In recent years, we have seen transmission of traditionally “tropical” diseases in continental Europe: chikungunya fever (CF) in Italy in 2007, large outbreaks of West Nile fever in Greece and Romania in 2010, and the first local transmission of dengue fever in France and Croatia in 2010 (1–3). These events support the notion that Europe is a potential “hot spot” for emerging and re-emerging infectious diseases (EIDs) (4).

Major EID drivers that could threaten control efforts in Europe include globalization and environmental change (including climate change, travel, migration, and global trade); social and demographic drivers (including population aging, social inequality, and lifestyles); and public health system drivers (including antimicrobial resistance, health care capacity, animal health, and food safety) (5, 6). Climate change is expected to aggravate existing local vulnerabilities by interacting with a complex web of these drivers (6). For example, increases in global trade and travel, in combination with climate change, are foreseen to facilitate the arrival, establishment, and dispersal of new pathogens, disease vectors, and reservoir species.
Rotavirus Vaccines for Children in Developing Countries
Edited by A. Duncan Steele, Kathleen M. Neuzil and Umesh D. Parashar

Editorials and Commentaries

Rotavirus vaccines for children in developing countries: Understanding the science, maximizing the impact, and sustaining the effort
Kathleen M. Neuzil, Umesh D. Parashar, A. Duncan Steele
No preview or abstract

Rotavirus vaccines in developing countries: The potential impact, implementation challenges, and remaining questions
Original Research Article
Pages A3-A6
Thomas Cherian, Susan Wang, Carsten Mantel

Abstract
Diarrhoeal disease is one of the commonest causes of death in children, especially in developing countries in Africa and Asia. Rotavirus has been consistently identified as the commonest pathogen associated with severe diarrhoea. Hence, the availability of vaccines against this organism provides the opportunity to reduce child mortality. Data from efficacy trials in developing countries in Africa and Asia showed that the vaccine efficacy was lower than that observed in other countries. Nevertheless, the vaccines are expected to be of significant benefit in high mortality countries in these regions. While the reports published in this supplement add to our understanding about the performance of these vaccines in developing countries in these regions, questions remain over the overall impact of these vaccines when used in national programmes of developing countries in Africa and Asia, the optimal vaccination schedules and the impact of age restrictions for vaccine use on immunization coverage. Additional research is required to improve understanding on the performance of these vaccines in developing countries in Africa and Asia and measures that may improve performance. Data that will assist in the definition of the optimal immunization schedule and possibly allow relaxation of the age restrictions for vaccine use may help in enhancing the impact of the vaccines in these countries. Finally, disease surveillance and studies are required to document the impact of vaccination and monitor changes in disease epidemiology.

Global Perspectives

Projected health and economic impact of rotavirus vaccination in GAVI-eligible countries: 2011–2030
Original Research Article
Pages A7-A14
Deborah E. Atherly, Kristen D.C. Lewis, Jacqueline Tate, Umesh D. Parashar, Richard D. Rheingans

Abstract
Rotavirus is the leading cause of diarrheal disease in children under 5 years of age. It is responsible for more than 450,000 deaths each year, with more than 90% of these deaths occurring in low-resource countries eligible for support by the GAVI Alliance. Significant efforts made by the Alliance and its partners are providing countries with the opportunity to introduce rotavirus vaccines into their national immunization programs, to help prevent childhood illness and death. We projected the cost-effectiveness and health impact of rotavirus vaccines in GAVI-eligible countries, to assist decision makers in prioritizing resources to achieve the greatest health benefits for their populations.
A decision-analytic model was used to project the health outcomes and direct costs of a birth cohort in the target population, with and without a rotavirus vaccine. Current data on disease burden, vaccine efficacy, immunization rates, and costs were used in the model.

Vaccination in GAVI-eligible countries would prevent 2.46 million childhood deaths and 83 million disability-adjusted life years (DALYs) from 2011 to 2030, with annual reductions of 180,000 childhood deaths at peak vaccine uptake. The cost per DALY averted is $42 for all GAVI countries combined, over the entire period. Rotavirus vaccination would be considered very cost-effective for the entire cohort of GAVI countries, and in each country individually, as cost-effectiveness ratios are less than the gross domestic product (GDP) per capita. Vaccination is most cost-effective and has the greatest impact in regions with high rotavirus mortality.

Rotavirus vaccination in GAVI-eligible countries is very cost-effective and is projected to substantially reduce childhood mortality in this population.

**Distributional impact of rotavirus vaccination in 25 GAVI countries:**
**Estimating disparities in benefits and cost-effectiveness**

Original Research Article
Pages A15-A23
Richard Rheingans, Deborah Atherly, John Anderson

*Abstract*

**Background**

Other studies have demonstrated that the impact and cost effectiveness of rotavirus vaccination differs among countries, with greater mortality reduction benefits and lower cost-effectiveness ratios in low-income and high-mortality countries. This analysis combines the results of a country level model of rotavirus vaccination published elsewhere with data from Demographic and Health Surveys on within-country patterns of vaccine coverage and diarrhea mortality risk factors to estimate within-country distributional effects of rotavirus vaccination. The study examined 25 countries eligible for funding through the GAVI Alliance.

**Methods**

For each country we estimate the benefits and cost-effectiveness of vaccination for each wealth quintile assuming current vaccination patterns and for a scenario where vaccine coverage is equalized to the highest quintile’s coverage. In the case of India, variations in coverage and risk proxies by state were modeled to estimate geographic distributional effects.

**Results**

In all countries, rates of vaccination were highest and risks of mortality were lowest in the top two wealth quintiles. However countries differ greatly in the relative inequities in these two underlying variables. Similarly, in all countries examined, the cost-effectiveness ratio for vaccination ($/Disability-Adjusted Life Year averted, DALY) is substantially greater in the higher quintiles (ranging from 2–10 times higher). In all countries, the greatest potential benefit of vaccination was in the poorest quintiles. However, due to reduced vaccination coverage, projected benefits for these quintiles were often lower. Equitable coverage was estimated to result in an 89% increase in mortality reduction for the poorest quintile and a 38% increase overall.

**Conclusions**

Rotavirus vaccination is most cost-effective in low-income groups and regions. However in many countries, simply adding new vaccines to existing systems targets investments
to higher income children, due to disparities in vaccination coverage. Maximizing health benefits for the poorest children and value for money require increased attention to these distributional effects.

Additional articles in this Supplement are organized under the following headings:
- Rotavirus Vaccines in Africa
- Rotavirus Vaccines in Asia
- Rotavirus Strain Studies
- Clinical Studies
- Intussusception

Value in Health
Vol 15 | No. 2 | March-April 2012 | Pages 215-400
http://www.valueinhealthjournal.com/current
[Reviewed earlier]

World Journal of Vaccines
Volume 02, Number 01 (February 2012)
[Reviewed earlier]

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