

Vaccines: The Week in Review
29 November 2010
Center for Vaccine Ethics & Policy

<http://centerforvaccineethicsandpolicy.wordpress.com/>

A program of

- Center for Bioethics, University of Pennsylvania
<http://www.bioethics.upenn.edu/>
- The Wistar Institute Vaccine Center
<http://www.wistar.org/vaccinecenter/default.html>
- Children's Hospital of Philadelphia, Vaccine Education Center
<http://www.chop.edu/consumer/jsp/microsite/microsite.jsp>

This weekly summary targets news and events in the global vaccines field gathered from key governmental, NGO and company announcements, key journals and events. This summary provides support for 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 now also posted in a blog format at <http://centerforvaccineethicsandpolicy.wordpress.com/>. Each item is treated as an individual post on the blog, allowing for more effective retrospective searching. Given email system conventions and formats, you may find this alternative more effective. This blog also allows for RSS feeds, etc.

Comments and suggestions should be directed to

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WHO: Cholera in Haiti - update 4

24 November 2010 -- As of 20 November 2010, the Haitian Ministry of Public Health and Population (MSPP) reported 60,240 cumulative cholera cases including 1,415 deaths at the national level. The case fatality rate in hospitals at the national level is 2.3%, with 67% of the deaths occurring at health services level and 33% at community level...

WHO/PAHO and partners, including the GOARN (Global Outbreak Alert and Response Network) continue to support the Haitian MSPP in the response to the outbreak. Civil unrest since 15 November has slowed down several activities, including delivery of supplies for prevention and treatment of patients, particularly in the Northern city of Cap Haitien. Trainings on cholera treatment and initiatives to chlorinate water for 300,000 people had to be postponed...

Recommendation

WHO does not recommend restrictions to international travel or trade due to the cholera outbreak in Haiti.

http://www.who.int/csr/don/2010_11_24/en/index.html

The GAVI Alliance opened a new application round from developing countries "in anticipation of continuing strong support from its donors, which currently include, among others, 17 countries and the Bill & Melinda Gates Foundation."

GAVI Interim CEO Helen Evans commented, "GAVI is determined to continue supporting countries with life-saving vaccines. Far too many children in developing countries continue to remain vulnerable to vaccine-preventable diseases. This new round of applications offers the opportunity for eligible countries to continue reaching more children and save more lives." The GAVI announcement noted that "although GAVI is facing a major funding challenge, the Executive Committee of the GAVI Alliance Board felt confident that donors would recognise the importance of these cost-effective vaccines and provide the necessary support to ensure that countries which have applications approved will be able to deliver urgently-needed vaccines." GAVI said that "to continue its mission to save lives and protect people's health by increasing access to immunisation, (it) GAVI needs to raise approximately US\$3.7 billion more within the next five years. GAVI estimates that a fully-funded programme would prevent approximately 4 million future deaths by 2015, and enable the introduction of new vaccines including importantly those that tackle major causes of the world's two biggest killers of children, pneumonia and diarrhoea."

GAVI said the deadline for applications is 15 May 2011, allowing approximately six months for countries to prepare proposals. The timely submission of new proposals "will provide donors with clear evidence of the level of country demand for new life-saving vaccines when they meet in June for the first GAVI pledging conference."

http://www.gavialliance.org/media_centre/press_releases/new_applications.php

GAVI said the International Finance Facility for Immunisation (IFFIm) priced its inaugural Australian dollar benchmark. The AUD\$400 million, five-year bonds "provide investors with a unique opportunity to help protect millions of children in the world's poorest countries against preventable diseases." This most recent offering from IFFIm "demonstrates institutional investors' continued support for IFFIm and its humanitarian purpose. IFFIm raises funds that are used by the GAVI Alliance to save children's lives and protect people's health by increasing access to immunisation in developing countries." Alan R. Gillespie, Chairman of IFFIm's Board, said, "This new offering introduces IFFIm as a benchmark issuer in another market – the Australian Dollar market. It follows IFFIm's debut in the USD benchmark market in 2006, its institutional GBP offering in 2009, and a series of bonds for institutional and retail investors in Japan and the UK. We are extremely pleased that the transaction was received with great enthusiasm by such a diverse group of investors that seized the opportunity to purchase IFFIm bonds, while enabling IFFIm to deliver cost-efficient financing for much needed immunisation programmes in the poorest countries through the GAVI Alliance."

http://www.gavialliance.org/media_centre/press_releases/iffim_australia.php

The **Weekly Epidemiological Record (WER) for 26 November 2010**, vol. 85, 48 (pp 473–488) includes: Meeting of the national onchocerciasis task forces, September 2010; Maternal and neonatal tetanus elimination in Bali and Java, Indonesia, 2010

<http://www.who.int/entity/wer/2010/wer8548.pdf>

Journal Watch

[Editor's Note]

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. Our initial scan list includes the journals below. If you would like to suggest other titles, please write to David Curry at david.r.curry@centerforvaccineethicsandpolicy.org

Clinical Infectious Diseases

15 December 2010 Volume 51, Number 12

<http://www.journals.uchicago.edu/toc/cid/current>

[Reviewed last week]

Emerging Infectious Diseases

Volume 16, Number 12–December 2010

<http://www.cdc.gov/ncidod/EID/index.htm>

[No relevant content]

Human Vaccines

Volume 6, Issue 11 November 2010

<http://www.landesbioscience.com/journals/vaccines/toc/volume/6/issue/11/>

[Reviewed earlier]

JAMA

Vol. 304 No. 20, pp. 2205-2314, November 24, 2010

<http://jama.ama-assn.org/current.dtl>

Commentaries

The Evolution of Population Science: Advent of the Mega Cohort

J. Michael Gaziano

Extract

As more attention and resources have been focused on the health of populations over the last 2 centuries, epidemiology has emerged as an essential tool for gaining knowledge about disease and reducing the associated burden. Driven by the discovery of biomarkers, the advent of DNA analysis, and high-powered statistical software, as well as numerous other technological advances, epidemiology has evolved to a point at which massive cohorts with hundreds of thousands of participants are needed. Each step in this evolution can be defined by an enabling technology that aided in a better understanding of exposure-disease relationships, and in many cases, to transformative

changes in public health efforts related to health care delivery. This commentary describes this evolution, from early descriptive studies to the new mega cohorts of today.

Journal of Infectious Diseases

15 December 2010 Volume 202, Number 12

<http://www.journals.uchicago.edu/toc/jid/current>

[Reviewed earlier]

The Lancet

Nov 27, 2010 Volume 376 Number 9755 Pages 1799 - 1872

<http://www.thelancet.com/journals/lancet/issue/current>

Comment

Childhood pneumonia: a neglected, climate-sensitive disease?

Stuart Paynter, Robert S Ware, Philip Weinstein, Gail Williams, Peter D Sly

Preview

Reports from WHO and the Intergovernmental Panel on Climate Change (IPCC) list undernutrition, diarrhoea, and vector-borne disease as the most important health effects of climate change.^{1,2} Although these disorders are of major importance, childhood pneumonia, which is responsible for 17% of childhood deaths worldwide,³ is rarely mentioned in the context of climate change. Respiratory infections follow seasonal patterns. In temperate settings, respiratory illness is most common in winter months.⁴ However, the epidemiology is quite different in tropical settings, where most childhood deaths due to pneumonia occur, with the incidence of lower respiratory-tract infection being generally increased during the rainy season.

What do children die from in India today?

Emmanuela Gakidou, Alan D Lopez

Preview

In The Lancet, The Million Death Study Collaborators make an important contribution to a topic of great public health significance: the causes of child mortality in India and their distribution across sexes and geographical regions. As the deadline of 2015 for achieving the Millennium Development Goals (MDGs) looms, the urgency for scaling up interventions becomes more pressing—especially in India, where 29.3% of global neonatal deaths and 16.1% of global child deaths occur. This new study shows the first estimates of the leading causes of child mortality from direct measurement of 23,152 child deaths captured across the country.

Viewpoint

Universal access to malaria medicines: innovation in financing and delivery

Olusoji Adeyi, Rifat Atun

Preview

In recent years, several constraints have impeded access to effective treatments for malaria due to *Plasmodium falciparum*. First, the parasite has become increasingly resistant to established cheap drugs, such as chloroquine and sulfadoxine-pyrimethamine. Second, development assistance has been routed largely through public channels, whereas affected individuals seek treatment mostly through the private sector. Finally, new artemisinin-based combination treatments (ACTs), recommended by WHO

for uncomplicated falciparum malaria,¹ are too expensive for many people who seek treatment in the private sector.

The Lancet Infectious Disease

Dec 2010 Volume 10 Number 12 Pages 813 - 892

<http://www.thelancet.com/journals/laninf/issue/current>

Reflection and Reaction

Can HPV vaccination help to prevent anal cancer?

Joel Palefsky

Preview

In *The Lancet Infectious Diseases* today, Jane Kim reports¹ a cost-effectiveness analysis of vaccination with the quadrivalent human papillomavirus (HPV) vaccine (for HPV types 6, 11, 16, and 18) in men who have sex with men (MSM) to prevent anal intraepithelial neoplasia and cancer related to vaccine-type HPV. MSM, especially those with HIV infection, have one of the highest risks of anal cancer,^{2–4} and incidence of anal cancer is increasing every year in men and women in developed countries.⁵

The Lancet conference on mass gatherings medicine

John McConnell, Ziad Memish

Preview

What constitutes a mass gathering is challenging to define. Ensuring a safe environment and provision of health care during mass gatherings can be equally challenging. The event that formed the focus of The Lancet conference on mass gatherings medicine (Jeddah, Saudi Arabia, Oct 23–25, 2010) was the annual Hajj pilgrimage, which takes place in and around the city of Mecca, not far from the venue of the conference. The Hajj occurs over 5 days during the final month of the Islamic calendar (officially beginning this year on Nov 14 of the Gregorian calendar), attracts 2–3 million visitors, and is the largest annual mass gathering.

Articles

Targeted human papillomavirus vaccination of men who have sex with men in the USA: a cost-effectiveness modelling analysis

Jane J Kim

Summary

Background

A vaccine targeting human papillomavirus (HPV) types 16 and 18, which are associated with 80% of anal cancers, is efficacious in men. High-risk populations such as men who have sex with men (MSM) might especially benefit from vaccination. I aimed to estimate the cost-effectiveness of HPV vaccination of MSM in the USA.

Methods

I constructed decision-analytic models to estimate the direct health and economic outcomes of HPV vaccination (against types 6, 11, 16, and 18) for prevention of HPV-related anal cancer and genital warts. The model parameters that were varied were age at vaccination (12 years, 20 years, and 26 years), previous exposure to vaccine-targeted HPV types, and prevalence of HIV-1. I used the models to conduct sensitivity analyses, including duration of vaccine protection, vaccine cost, and burden of anal cancer and genital warts.

Findings

In a scenario of HPV vaccination of MSM at 12 years of age without previous exposure to HPV, compared with no vaccination, vaccination cost US\$15 290 per quality-adjusted life-year gained. In scenarios where MSM are vaccinated at 20 years or 26 years of age, after exposure to HPV infections, the cost-effectiveness ratios worsened, but were less than \$50 000 per quality-adjusted life-year under most scenarios. For example, HPV vaccination of MSM at 26 years cost \$37 830 per quality-adjusted life-year when previous exposure to all vaccine-targeted HPV types was assumed to be 50%. Outcomes were most sensitive to variations in anal cancer incidence, duration of vaccine protection, and HIV prevalence in MSM.

Interpretation

HPV vaccination of MSM is likely to be a cost-effective intervention for the prevention of genital warts and anal cancer.

Funding

US National Cancer Institute.

Review

Priorities for tuberculosis research: a systematic review

Jamie Rylance, Madhukar Pai, Christian Lienhardt, Paul Garner

Reliable and relevant research can help to improve tuberculosis control worldwide. In recent years, various organisations have assessed research needs and proposed priorities for tuberculosis. We summarise existing priority statements and assess the rigour of the methods used to generate them. We found 33 documents that specifically outline priorities in tuberculosis research. The top priority areas were drug development (28 articles), diagnosis and diagnostic tests (27), epidemiology (20), health services research (16), basic research (13), and vaccine development and use (13).

Nature

Volume 468 Number 7323 pp475-588 25 November 2010

http://www.nature.com/nature/current_issue.html

[No relevant content]

Nature Medicine

November 2010, Volume 16 No 11

<http://www.nature.com/nm/index.html>

[Reviewed earlier]

New England Journal of Medicine

November 25, 2010 Vol. 363 No. 22

<http://content.nejm.org/current.shtml>

[No relevant content]

NEJM Online First: November 24, 2010 (10.1056/NEJMp1012300)

<http://www.nejm.org/doi/full/10.1056/NEJMp1012300>

Perspective

A National Cholera Vaccine Stockpile — A New Humanitarian and Diplomatic Resource

Matthew K. Waldor, M.D., Ph.D., Peter J. Hotez, M.D., Ph.D., and John D. Clemens, M.D.

The Pediatric Infectious Disease Journal

December 2010 - Volume 29 - Issue 12 pp: A9-A10,1067-1157,e80-e99

<http://journals.lww.com/pidj/pages/currenttoc.aspx>

Original Studies

Estimating the Rotavirus Hospitalization Disease Burden and Trends, Using Capture-recapture Methods

Staat, Mary Allen; Rice, Marilyn A.; Donauer, Stephanie; Payne, Daniel C.; Bresee, Joseph S.; Mast, T. Christopher; Curns, Aaron T.; Cortese, Margaret M.; Connelly, Beverly; McNeal, Monica; Ward, Richard L.; Bernstein, David I.; Parashar, Umesh D.; Salisbury, Shelia

Pediatric Infectious Disease Journal. 29(12):1083-1087, December 2010.

doi: 10.1097/INF.0b013e3181fb8f7b

Abstract:

Background: Rotavirus surveillance is needed to provide estimates of disease burden and to evaluate the effect of vaccination programs. Our objective was to use capture-recapture methods to estimate rotavirus hospitalization rates and to examine trends over time.

Methods: Children <3 years of age residing in Hamilton County, Ohio hospitalized with acute gastroenteritis, and laboratory-confirmed rotavirus between 1997 and 2008 were identified through 2 independent surveillance systems: an active system with prospective enrollment of children admitted with acute gastroenteritis and a passive system of children identified by rotavirus testing as part of their usual medical care. Capture-recapture methods compared cases from both systems to estimate the number of missed cases from either system. Using census data for Hamilton County, rates per 10,000 with 95% confidence intervals (CI) for rotavirus hospitalizations were estimated.

Results: Overall, 486 cases were identified using active surveillance and 244 using passive surveillance, with 127 cases captured by both. Using capture-recapture methods, the overall rate in children <3 years old was 26.9/10,000; CI: 24.1, 30.6.

Rates varied by year: highest in 1998 (48.1/10,000; CI: 32.4, 92.2) and lowest in 2008 (3.2/10,000; CI: 2.1, 6.1) after rotavirus vaccine introduction. Among children <5 years old, rates were highest in <3-month-old children (51.8/10,000; CI: 39.4, 75.1) and lowest in older age groups: 24 to 35 months (20.5/10,000; CI: 14.7, 30.3) and 36 to 59 months (4.1/10,000; CI: 2.9, 7.2). Rates from capture-recapture methods and adjusted active system were comparable.

Conclusions: Capture-recapture methods were a useful tool to estimate rotavirus disease burden and to monitor trends, especially in the era of rotavirus immunization.

Pediatrics

November 2010 / VOLUME 126 / ISSUE 5

<http://pediatrics.aappublications.org/current.shtml>

[Reviewed earlier]

PLoS Medicine

(Accessed 28 November 2010)

http://medicine.plosjournals.org/perlserv/?request=browse&issn=1549-1676&method=pubdate&search_fulltext=1&order=online_date&row_start=1&limit=10&document_count=1533&ct=1&SESSID=aac96924d41874935d8e1c2a2501181c#results
Which Path to Universal Health Coverage? Perspectives on the World Health Report 2010

Sara Bennett, Sachiko Ozawa, Krishna D. Rao

Perspective, published 22 Nov 2010 doi:10.1371/journal.pmed.1001001

Opening

From the US to China, South Africa to India, governments and citizens are engaged in an active debate about how best to protect people from catastrophic health care costs while ensuring access to health care of adequate quality. While it is widely known that in the US there are 50 million uninsured, it is perhaps less well known that across the world 100 million people are pushed into poverty each year because of health care expenditures. This is an avoidable tragedy.

With the financial crisis still looming over many countries, this year's World Health Report: "Health Systems Financing: The path to universal coverage" could not be more timely in addressing the question of how to ensure that all people have access to health care services, without suffering financial hardship. In a hundred easy-to-read pages, the report synthesizes evidence concerning effective strategies to achieve universal coverage, drawing upon the now substantial body of published literature from around the world, as well as a number of background papers commissioned especially for the report.

Science

26 November 2010 vol 330, issue 6008, pages 1145-1272

<http://www.sciencemag.org/current.dtl>

[No relevant content]

Science Translational Medicine

24 November 2010 vol 2, issue 59

<http://stm.sciencemag.org/content/current>

[No relevant content]

Vaccine

Volume 28, Issue 50 pp. 7825-8048 (23 November 2010)

<http://www.sciencedirect.com/science/journal/0264410X>

[Reviewed last week]

Vaccine, In Press, Corrected Proof, Available online 26 October 2010

Economic analysis of the global polio eradication initiative

Original Research Article

Radboud J. Duintjer Tebbens, Mark A. Pallansch, Stephen L. Cochi, Steven G.F.

Wassilak, Jennifer Linkins, Roland W. Sutter, R. Bruce Aylward, Kimberly M. Thompson

Abstract

The global polio eradication initiative (GPEI), which started in 1988, represents the single largest, internationally coordinated public health project to date. Completion remains within reach, with type 2 wild polioviruses apparently eradicated since 1999 and fewer than 2,000 annual paralytic poliomyelitis cases of wild types 1 and 3 reported since then. This economic analysis of the GPEI reflects the status of the program as of February 2010, including full consideration of post-eradication policies. For the GPEI intervention, we consider the actual pre-eradication experience to date followed by two distinct potential future post-eradication vaccination policies. We estimate GPEI costs based on actual and projected expenditures and poliomyelitis incidence using reported numbers corrected for underreporting and model projections. For the comparator, which assumes only routine vaccination for polio historically and into the future (i.e., no GPEI), we estimate poliomyelitis incidence using a dynamic infection transmission model and costs based on numbers of vaccinated children. Cost-effectiveness ratios for the GPEI vs. only routine vaccination qualify as highly cost-effective based on standard criteria. We estimate incremental net benefits of the GPEI between 1988 and 2035 of approximately 40–50 billion dollars (2008 US dollars; 1988 net present values).

Despite the high costs of achieving eradication in low-income countries, low-income countries account for approximately 85% of the total net benefits generated by the GPEI in the base case analysis. The total economic costs saved per prevented paralytic poliomyelitis case drive the incremental net benefits, which become positive even if we estimate the loss in productivity as a result of disability as below the recommended value of one year in average per-capita gross national income per disability-adjusted life year saved. Sensitivity analysis suggests that the finding of positive net benefits of the GPEI remains robust over a wide range of assumptions, and that consideration of the additional net benefits of externalities that occurred during polio campaigns to date, such as the mortality reduction associated with delivery of Vitamin A supplements, significantly increases the net benefits. This study finds a strong economic justification for the GPEI despite the rising costs of the initiative.