Vaccines: The Week in Review
15 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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American Public Health Association (APHA) Annual Conference attendees voted 82% to 18% in support of the APHA position statement titled "Annual Influenza Vaccination Requirements for Health Workers." According to an APHA officer, the vote indicates "broad support across the organization and its state affiliates beyond the explicit endorsement by 11 of 27 Sections." The position statement calls for "institutional, employer, and public health policy to require influenza vaccination of all health workers as a precondition of employment and thereafter on an annual basis, unless a medical contraindication recognized in national guidelines is documented in the worker's health record."

WHO reported that "risk of further international spread of the ongoing polio outbreak in Central Asia and the North Caucasus Federal Region in Russia continues to be high." In Central Asia, genetic sequencing of the poliovirus isolated from a child paralyzed in Kazakhstan on 12 August 2010 has confirmed ongoing circulation of the virus which caused the Tajikistan outbreak and subsequently spread to the Russian Federation, Turkmenistan and possibly Uzbekistan. In the Russian Federation, the detection of an additional case of polio with onset on 25 September in the Republic of Dagestan confirms ongoing poliovirus transmission in the North Caucasus Federal Region.

WHO said that countries at risk of poliovirus importation from Central Asia or the North Caucasus Federal Region of the Russian Federation "should continue to strengthen surveillance for AFP cases, ensure processing of all specimens at a WHO-accredited poliovirus laboratory, maintain high routine immunization coverage against polio, and conduct supplementary OPV immunization activities as needed to close gaps in population immunity." As per recommendations in the WHO's International Travel and Health guidelines, travelers to and from polio-affected countries should be fully protected by vaccination. Travelers who have in the past received three or more doses of OPV should be offered another dose of polio vaccine before departure. Any unimmunized individuals intending to travel to a polio-infected area should have a complete course of polio vaccination. Travelers from polio-affected areas should have a full course of vaccination against polio before leaving, with a minimum one dose of OPV before departure.
http://www.who.int/csr/don/2010_11_13/en/index.html

The Bill & Melinda Gates Foundation announced 65 grants of US$100,000 each "to pursue bold ideas for transforming health in developing countries" as part of its Grand Challenges Explorations program, a five-year, $100 million initiative to promote innovation in global health. The current grantees "were selected from more than 2,400 proposals. A wide range of disciplines are represented, including applicants from traditional life sciences, public health, engineering, math and computer sciences. They are based at universities, research institutes, hospitals, nonprofit organizations, and private companies around the world." Funded projects in the vaccine area include:
- Michael Chan of the Ohio State Research Foundation will develop a safe strain of the Tuberculosis bacterium and use it to ferment beans used in the traditional Asian dish natto, which could then be eaten as an oral TB vaccine;
- Ali Salanti of the University of Copenhagen in Denmark will develop and test a vaccine combining a novel placental malaria vaccine candidate with the cervical cancer vaccine, with the potential of inducing a strong protective response against both diseases;
- Steven Meshnick and Carla Hand of the University of North Carolina will develop a biodegradable "synthetic lymph node" that could be placed under the skin to deliver more effective vaccines.
http://www.gatesfoundation.org/press-releases/Pages/gce-round-five-winners-101109.aspx

The IFPMA (International Federation of Pharmaceutical Manufacturers & Associations) published its 2010 "Status Report on Pharmaceutical Industry R&D for Diseases of the Developing World." The report "highlights the increasing efforts of IFPMA member companies, working with partners or alone, to develop medicines and vaccines for the 10 diseases of the developing world (DDW) prioritized by the TDR tropical disease research and training organization." The 10 diseases are, in order of decreasing mortality: tuberculosis, malaria, human African trypanosomiasis (sleeping sickness), leishmaniasis, dengue, onchocerciasis (River blindness), American trypanosomiasis (Chagas disease), schistosomiasis, leprosy and lymphatic filariasis.

IFPMA said the number of DDW medicine and vaccine projects undertaken by IFPMA companies "has increased from 84 in 2009 to a total of 102 this year. The number of tuberculosis projects grew from 25 to 31 and malaria projects from 34 to 41, while projects for the remaining eight tropical diseases increased from 25 to 30."
Mr. Haruo Naito, President of the IFPMA and President & CEO of Eisai Co., Ltd., speaking at the IFPMA Assembly in Washington DC, said, "This latest Developing World Disease R&D Status Report shows that our industry is serious about helping to address human diseases, including those which otherwise risk being neglected because they affect poor countries. In October, the Director General of the World Health Organization called on companies to help improve access to medicines for neglected tropical diseases – and IFPMA companies responded with significant new or expanded donation programs. Today, we see that our companies are also equally committed to help develop new medicines and vaccines for these diseases. The latest report also shows that industry is not alone in its R&D efforts, for nearly four out of five DDW research projects are undertaken in cooperation with non-industry partners…"
http://www.ifpma.org/News/NewsReleaseDetail.aspx?nID=13810

The **Weekly Epidemiological Record (WER) for** 12 November 2010, vol. 85, 46 (pp 453–460) includes: Meeting of the WHO working group on polymerase chain reaction protocols for detecting subtype influenza A viruses – Geneva, June 2010; Fourth meeting of National Influenza Centres in the WHO Western Pacific Region – May 2010.
http://www.who.int/entity/wer/2010/wer8546.pdf

Events/Conference Watch

[Editor's Note]

Vaccines: The Week in Review is now monitoring key events and conferences and will include summaries of key announcements and other content. ***Event Watch* is not intended to be exhaustive, but indicative of themes and issues the Center is actively tracking.** If you would like to suggest events and conferences for coverage, please write to David Curry at david.r.curry@centerforvaccineethicsandpolicy.org

IVI Symposium: IVI convenes an International Vaccine Symposium to Honor the Career and Achievements of Prof. Zhi Yi Xu IVI, Seoul, November 23, 2010
http://www.ivi.org/publication/Agenda_Symposium_ProfXu.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
1 December 2010 Volume 51, Number 11
http://www.journals.uchicago.edu/toc/cid/current
[No relevant content]

Emerging Infectious Diseases
Volume 16, Number 11–November 2010
http://www.cdc.gov/ncidod/EID/index.htm
[Reviewed earlier]

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. 18, pp. 1985-2084, November 10, 2010
http://jama.ama-assn.org/current.dtl
[No relevant content]

Journal of Infectious Diseases
1 December 2010 Volume 202, Number 11
http://www.journals.uchicago.edu/toc/jid/current
[Reviewed earlier]

The Lancet
Nov 13, 2010 Volume 376 Number 9753 Pages 1617 - 1710
http://www.thelancet.com/journals/lancet/issue/current
Comment
Poliomyelitis eradication: another step forward
Nigel W Crawford, Jim P Buttery
Preview
In The Lancet today, Roland Sutter and colleagues1 provide randomised data for a new combination bivalent type 1 and 3 oral poliovirus vaccine (bOPV) in India. This vaccine will be important for the poliomyelitis endgame, which formally began in 1988 when the World Health Assembly outlined plans for worldwide poliomyelitis eradication by 2000.2

With four endemic poliomyelitis countries remaining (India, Pakistan, Afghanistan, and Nigeria) and with intermittent epidemics worldwide, this goal remains elusive.

Research priorities for malaria elimination

Kevin Marsh

Preview

The Lancet's four-paper Series examines the need for, and prospects of, malaria elimination. The papers make sobering reading. Elimination will be hard work, it will take a long time, and it will be expensive. Moreover, elimination requires that we first control malaria to the point where it is no longer a public health problem, and this is by far the most important, immediate target for increased and sustained international investment.1 Nonetheless, elimination (and eventually eradication) is still important as a long-term goal, both for countries that are currently or will shortly be in a position to consider it, and worldwide.

World Report

Defrauding of the Global Fund gives Sweden cold feet

Ann Danaiya Usher

Sweden has withheld its pledge to the Global Fund because of concerns about the misuse of US$25 million in grants in four African countries. Ann Danaiya Usher reports. At the third pledging round of the Global Fund to Fight AIDS, Tuberculosis and Malaria in New York, Sweden's AIDS Ambassador Anders Nordström surprised the gathering by announcing that Sweden would not be making a pledge. The decision is a response to findings by the Global Fund's Office of the Inspector General, which has identified cases of misappropriated grant money in Cameroon, Mauritania, Mali, and Zambia.

Articles

Immunogenicity of bivalent types 1 and 3 oral poliovirus vaccine: a randomised, double-blind, controlled trial

Roland W Sutter, T Jacob John, Hemant Jain, Sharad Agarkhedkar, Padmasani Venkat Ramanan, Harish Verma, Jagadish Deshpande, Ajit Pal Singh, Meghana Sreevatsava, Pradeep Malankar, Anthony Burton, Arani Chatterjee, Hamid Jafari, R Bruce Aylward

Summary

Background

Poliovirus types 1 and 3 co-circulate in poliomyelitis-endemic countries. We aimed to assess the immunogenicity of a novel bivalent types 1 and 3 oral poliovirus vaccine (bOPV).

Methods

We did a randomised, double-blind, controlled trial to assess the superiority of monovalent type 2 OPV (mOPV2), mOPV3, or bOPV over trivalent OPV (tOPV), and the non-inferiority of bivalent vaccine compared with mOPV1 and mOPV3. The study was done at three centres in India between Aug 6, 2008, and Dec 26, 2008. Random allocation was done by permuted blocks of ten. The primary outcome was seroconversion after one monovalent or bivalent vaccine dose compared with a dose of trivalent vaccine at birth. The secondary endpoints were seroconversion after two vaccine doses compared with after two trivalent vaccine doses and cumulative two-dose seroconversion. Parents or guardians and study investigators were masked to treatment allocation. Because of multiple comparisons, we defined $p \leq 0{\cdot}01$ as statistically significant. This trial is registered with Current Controlled Trials, ISRCTN 64725429.

Results

900 newborn babies were randomly assigned to one of five vaccine groups (about 180 patients per group); of these 70 (8%) discontinued, leaving 830 (92%) for analysis. After the first dose, seroconversion to poliovirus type 1 was 20% for both mOPV1 (33 of 168) and bOPV (32 of 159) compared with 15% for tOPV (25 of 168; p>0·01), to poliovirus type 2 was 21% (35 of 170) for mOPV2 compared with 25% (42 of 168) for tOPV (p>0·01), and to poliovirus type 3 was 12% (20 of 165) for mOPV3 and 7% (11 of 159) for bOPV compared with 4% (7 of 168) for tOPV (mOPV3 vs tOPV p=0·01; bOPV vs tOPV; p>0·01). Cumulative two-dose seroconversion to poliovirus type 1 was 90% (151 of 168) for mOPV1 and 86% (136 of 159) for bOPV compared with 63% (106 of 168) for tOPV (p<0·0001), to poliovirus type 2 was 90% (153 of 170) for mOPV2 compared with 91% (153 of 168) for tOPV (p>0·01), and to poliovirus type 3 was 84% (138 of 165) for mOPV3 and 74% (117 of 159) for bOPV compared with 52% (87 of 168) for tOPV (p<0·0001). The vaccines were well tolerated. 19 serious adverse events occurred, including one death; however, these events were not attributed to the trial interventions.
Interpretation
The findings show the superiority of bOPV compared with tOPV, and the non-inferiority of bOPV compared with mOPV1 and mOPV3.
Funding: GAVI Alliance, World Health Organization, and Panacea Biotec.

The Lancet Infectious Disease
Nov 2010 Volume 10 Number 11 Pages 737 - 812
http://www.thelancet.com/journals/laninf/issue/current
[Reviewed earlier]

Nature
Volume 468 Number 7321 pp133-340 11 November 2010
http://www.nature.com/nature/current_issue.html
News
Vaccine offers meningitis hope
First affordable and effective weapon against killer meningococcal meningitis A rolled out in Africa.
Declan Butler

Nature Medicine
November 2010, Volume 16 No 11
http://www.nature.com/nm/index.html
[Reviewed earlier]

New England Journal of Medicine
November 11, 2010 Vol. 363 No. 20
http://content.nejm.org/current.shtml
[No relevant content]

The Pediatric Infectious Disease Journal
November 2010 - Volume 29 - Issue 11
http://journals.lww.com/pidj/pages/currenttoc.aspx
[Reviewed earlier]

Pediatrics
November 2010 / VOLUME 126 / ISSUE 5
http://pediatrics.aappublications.org/current.shtml
[Reviewed last week]

PLoS Medicine
(Accessed 14 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
[No relevant content]

Science
12 November 2010 Vol 330, Issue 6006, Pages 881-1008
http://www.sciencemag.org/current.dtl
[No relevant content]

Science Translational Medicine
10 November 2010 vol 2, issue 57
http://stm.sciencemag.org/content/current
[No relevant content]

Vaccine
http://www.sciencedirect.com/science/journal/0264410X

Volume 28, Issue 49 pp. 7713-7824 (16 November 2010)
Regular Papers
Public vaccination programmes against hepatitis B in The Netherlands: Assessing whether a targeted or a universal approach is appropriate
Original Research Article
Pages 7723-7730
Hans Houweling, Christiaan F.W. Wittevrongel, Marcel Verweij, E. Joost Ruitenberg and on behalf of the National Immunisation Programme Review Committee of the Health Council of the Netherlands
Abstract
To date, the policy to control hepatitis B in the Netherlands is to vaccinate specific risk groups, rather than all children. Low incidence of the disease has fueled debate whether

such a targeted vaccination strategy or rather a universal strategy, as recommended by the World Health Organization, is appropriate. The standard framework for assessing whether a particular vaccination should be included in a public programme, as recently proposed by the Health Council of the Netherlands (HCN), was applied to the various options for hepatitis B vaccination. This framework includes seven selection criteria, grouped under five thematic headings: seriousness and extent of the disease burden, effectiveness and safety of the vaccination, acceptability of the vaccination, efficiency of the vaccination, and priority of the vaccination. From about 1990 the disease burden has stayed more or less the same over time and careful assessment has made it clear that the targeted approach has failed to reach a significant part of the risk groups. Models suggest that the public health benefits obtained through targeted programmes could be augmented considerably by universal vaccination. Based on the assessment that universal vaccination means better protection for high-risk groups as well as the whole population, the HCN calls for universal immunisation, even though hepatitis B to a large extent is limited to specific high-risk groups. Should the Netherlands adopt universal vaccination, several immunisation programmes targeted to high-risk groups will, however, remain of crucial importance for years to come.

Forecasting the economic value of an Enterovirus 71 (EV71) vaccine

Original Research Article

Pages 7731-7736

Bruce Y. Lee, Angela R. Wateska, Rachel R. Bailey, Julie H.Y. Tai, Kristina M. Bacon, Kenneth J. Smith

Abstract

Enterovirus 71 (EV71) is a growing public health concern, especially in Asia. A surge of EV71 cases in 2008 prompted authorities in China to go on national alert. While there is currently no treatment for EV71 infections, vaccines are under development. We developed a computer simulation model to determine the potential economic value of an EV71 vaccine for children (<5 years old) in China. Our results suggest that routine vaccination in China (EV71 infection incidence ≈0.04%) may be cost-effective when vaccine cost is $25 and efficacy ≥70% or cost is $10 and efficacy ≥50%. For populations with higher infection risk (≥0.4%), a $50 or $75 vaccine would be highly cost-effective even when vaccine efficacy is as low as 50%.

Peruvian FSWs: Understanding HPV and barriers to vaccination

Original Research Article

Pages 7743-7747

Brandon Brown, Cesar Carcamo, Magaly M. Blas, Maria Valderrama, Neal Halsey

Abstract

Vaccine acceptability and vaccine-related knowledge data were collected from female sex workers (FSWs) in Lima, Peru to determine their awareness of HPV and barriers to the potential acceptability of HPV vaccine. FSWs were found to have low knowledge of HPV, HPV vaccine, and cervical cancer. Due to high reported sexual exposure, FSWs are likely at increased risk of cervical cancer, and should have access to HPV vaccine. FSWs should be targeted for HPV education campaigns and barriers to vaccination should be addressed. Future studies should assess HPV prevalence in this population and examine retention issues for vaccine dose completion.

Vaccine

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

Volume 28, Issue 48 pp. 7577-7712 (10 November 2010)

Editorial

World Pneumonia Day: Fighting pneumonia with safe and affordable vaccines

Pages 7577-7578

Ron Dagan, Gregory Poland

Meeting Report

Report of the international forum on pandemic influenza 2010: Qingdao, China, 24–25 July 2010

Pages 7579-7582

Andre Varella

The 2009 H1N1 influenza pandemic is the first pandemic to hit the world in the 21st century. According to World Health Organization (WHO) reports, as of 18 July 2010, more than 214 countries and overseas territories or communities have reported laboratory confirmed cases of pandemic influenza H1N1 2009, and over 18,336 people have died as a result of the disease [1]. In an effort to facilitate the exchange of strategic and operational experience in the fight against the pandemic, the Chinese Center for Disease Control and Prevention (China CDC), supported by the China Ministry of Health, in collaboration with WHO, the World Bank, the U.S. CDC, and co-organised with the Elsevier Publishing Group, hosted the International Forum on Pandemic Influenza 2010 in July. The two-day meeting, attended by over 600 international delegates, saw human health and animal health professionals discuss the current situation of the pandemic, the global response and vaccination strategies, pandemic surveillance and preparedness, and the animal–human interface in influenza and other emerging infectious diseases. A summary of the discussions is presented here.

Review

Summary of invasive pneumococcal disease burden among children in the Asia-Pacific region

Review Article

Pages 7589-7605

Tzou-Yien Lin, Nitin K. Shah, Dennis Brooks, Carmen S. Garcia

Abstract

Invasive pneumococcal disease (IPD) burden is significant in the Asia-Pacific region. This review describes the epidemiology and Streptococcus pneumoniae (SP) serotype distribution of IPD in children in the Asia-Pacific region from studies published from 1999 to 2010. IPD incidence varies widely in Asia-Pacific countries depending on the method of surveillance, the population studied, and the time period. Incidences are highest for younger children, with rates near 100–200 cases per 100,000 children aged <1 or 2 years. Incidences of preventable disease are estimated to be 6–200 cases per 100,000. Heptavalent pneumococcal conjugate vaccine (PCV7) serotype coverage shows a very wide range over the Asia-Pacific region. Ten countries have high vaccine serotype coverage (>70%), and six countries have low vaccine serotype coverage (<50%). The majority of SP serotypes in children with IPD in most countries in the Asia-Pacific region are susceptible to penicillin (intermediate and resistant <50%); a few countries have SP serotypes with high level resistance to penicillin (intermediate and resistant >50%). Japan, Taiwan, and Thailand have high PCV7 serotype coverage. Countries with low pneumococcal resistance to antimicrobials have shown increasingly higher nonsusceptibility with time. National vaccination programmes that include PCV7, 10-

valent pneumococcal conjugate vaccine (PCV), or 13-valent PCV would significantly affect IPD burden in children aged <5 years in the Asia-Pacific region, as well as the burden of penicillin-nonsusceptible IPD.

Regular Papers

Cost-effectiveness of dual influenza and pneumococcal vaccination in 50-year-olds

Original Research Article
Pages 7620-7625
Kenneth J. Smith, Bruce Y. Lee, Mary Patricia Nowalk, Mahlon Raymund, Richard K. Zimmerman

Abstract
Influenza vaccination is now recommended for all ages; CDC pneumococcal polysaccharide vaccination (PPV) recommendations are comorbidity-based in nonelderly patients. We constructed a Markov model to estimate the cost-effectiveness of dual influenza and pneumococcal vaccination in 50-year-olds. Patients were followed for 10 years, with differing time horizons examined in sensitivity analyses. With 100% vaccine uptake, dual vaccination cost $37,700/QALY gained compared to a CDC recommendation strategy; with observed vaccine uptake, dual vaccination cost $5,300/QALY. Results were sensitive to shorter time horizons, favoring CDC recommendations. We found dual vaccination of all 50-year-olds economically reasonable. Shorter duration models may not fully account for PPV effectiveness.

Public health and economic impact of the 13-valent pneumococcal conjugate vaccine (PCV13) in the United States

Original Research Article
Pages 7634-7643
Jaime L. Rubin, Lisa J. McGarry, David R. Strutton, Keith P. Klugman, Stephen I. Pelton, Kristen E. Gilmore, Milton C. Weinstein

Abstract
The 7-valent pneumococcal conjugate vaccine (PCV7) has dramatically decreased pneumococcal disease incidence, and the 13-valent vaccine (PCV13) protects against 6 additional Streptococcus pneumoniae serotypes. A decision-analytic model was constructed to evaluate the impact of infant vaccination with PCV13 versus PCV7 on pneumococcal disease incidence and mortality as well as the incremental benefit of a serotype catch-up program. PCV13 effectiveness was extrapolated from observed PCV7 data, using assumptions regarding serotype prevalence and PCV13 protection against additional serotypes. The model predicts that PCV13 is more effective and cost saving compared with PCV7, preventing 106,000 invasive pneumococcal disease (IPD) cases and 2.9 million pneumonia cases, and saving $11.6 billion over a 10-year period. The serotype catch-up program would prevent an additional 12,600 IPD cases and 404,000 pneumonia cases, and save an additional $737 million compared with no catch-up program.

Importance of vaccination habit and vaccine choice on influenza vaccination among healthy working adults

Original Research Article
Pages 7706-7712
Chyongchiou J. Lin, Mary Patricia Nowalk, Seth L. Toback, Matthew D. Rousculp, Mahlon Raymund, Christopher S. Ambrose, Richard K. Zimmerman

Abstract

This randomized cluster trial was designed to improve workplace influenza vaccination rates using enhanced advertising, choice of vaccine type (intranasal or injectable) and an incentive. Workers aged 18–49 years were surveyed immediately following vaccination to determine factors associated with vaccination behavior and choice. The questionnaire assessed attitudes, beliefs and social support for influenza vaccine, demographics, and historical, current, and intentional vaccination behavior. Of the 2389 vaccinees, 83.3% received injectable vaccine and 16.7% received intranasal vaccine. Factors associated with previous influenza vaccination were older age, female sex, higher education and greater support for injectable vaccine (all $P < .02$). Current influenza vaccination with intranasal vaccine vs. injectable vaccine was associated with higher education, the study interventions, greater support for the intranasal vaccine and nasal sprays, less support of injectable vaccine, more negative attitudes about influenza vaccine, and a greater likelihood of reporting that the individual would not have been vaccinated had only injectable vaccine been offered (all $P < .01$). Intentional vaccine choice was most highly associated with previous vaccination behavior ($P < .001$). A key to long term improvements in workplace vaccination is to encourage first time influenza vaccination through interventions that include incentives, publicity and vaccine choice.