Vaccines: The Week in Review
12 December 2011
Center for Vaccine Ethics & Policy (CVEP)
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/service/vaccine-education-center/home.html

This weekly summary targets news 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 now also posted in pdf form and as a set of blog posts at http://centerforvaccineethicsandpolicy.wordpress.com/. This blog allows full-texting searching of some 2,000 content items.

Comments and suggestions should be directed to
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Editor and
Executive Director
Center for Vaccine Ethics & Policy
david.r.curry@centerforvaccineethicsandpolicy.org

WHO: The Meningitis Vaccine Project - where we are today
9 December 2011
At the end of 2011, Cameroon, Chad and Nigeria are vaccinating more than 22 million individuals aged 1-29 years with the new meningococcal A conjugate vaccine, MenAfriVac, which has the potential to eliminate the leading cause of meningitis epidemics in Africa. In audio files (in French), four individuals closely involved either in the clinical trials for the vaccine, the organization of mass campaigns, or the health of those living in a rural community participating in the trials, talk about their work and the impact that the vaccine is expected to have on the health of people living in the meningitis belt: Doctor Marie-Pierre Preziosi (Responsible for research and development of meningitis vaccines, WHO, Geneva); Doctor Carol Tevi-Benissan (Responsible for logistics planning of meningitis vaccine campaigns, WHO, Geneva); Doctor Aldiouma Diallo (Principal Investigator, MenAfriVac clinical trials, Institut de recherche pour le développement (IRD), Niakhar, Senega); Doctor Seynabou Gaye (District Medical Officer of Niakhar, Sénégal).
http://www.who.int/immunization/newsroom/multimedia/podcasts_meningitis_vaccine_project/en/index.html

Conference: **CSIS Conference on the Strategic Power of Vaccines**
Center for Strategic and International Studies
Washington, DC 9 December 2011
"This conference grows out of the remarkable surge of interest in vaccines in public health efforts worldwide. Last year, the Bill & Melinda Gates Foundation committed $10 billion to help research, develop, and deliver vaccines over the next ten years, which it

christened the Decade of Vaccines. Recent analyses in The Lancet, Nature, Health Affairs, and elsewhere have portrayed vaccines as a "best buy," a cost-effective global health tool in a tough fiscal environment. In June, at its first pledging conference, the GAVI Alliance received $4.3 billion in commitments from governments and private donors, surpassing its $3.7 billion target.

Along with this growing awareness of the value of vaccines, there has arisen a heightened grasp of the complexities of global immunization efforts. There is uncertainty about continued funding and sustainable programs, shoring up public trust in immunization, bringing current campaigns to a successful conclusion, creating the market conditions for the research and development of new vaccines, and guaranteeing their availability and delivery to those most in need, particularly in unstable and insecure environments.

Webcast of conference available here the week of 12 December 2011: SmartGlobalHealth.org.

Keynote speeches:
- Rajiv Shah, Administrator, U.S. Agency for International Development
- Anthony Fauci, Director, National Institute of Allergy and Infectious Diseases, NIH

Panelists including:
- Stephen Cochi, CDC
- Helen Evans, GAVI Alliance
- Admiral William Fallon
- Markus Geisser, International Committee of the Red Cross
- Julie Gerberding, Merck Vaccines
- Amanda Glassman, Center for Global Development
- Orin Levine, Johns Hopkins Bloomberg School of Public Health
- Margaret McGlynn, International AIDS Vaccine Initiative
- Regina Rabinovich, Bill & Melinda Gates Foundation
- Anne Schuchat, CDC
- Eric Schwartz, U. of Minnesota Humphrey School of Public Affairs

http://csis.org/event/csis-conference-strategic-power-vaccines

Speech: **Adolescent Rights: What Progress** by Anthony Lake, UNICEF Executive Director at the Harvard Conference on Adolescent Rights
Plenary Session: The Social and Political Costs of Inaction
FXB Center for Health and Human Rights, Harvard University
Boston, 8 December 2011
Extract:

The coming of age of the Convention on the Rights of the Child is the ideal time to reflect on the generation of adolescents who have grown up under its auspices … to take stock of progress made in improving their lives … to consider how we can build on that progress … and to confront what could happen if we do not.

The CRC was and is a milestone in promoting the welfare and protection of children everywhere. It has been more quickly and widely ratified than any human rights treaty to date – and it will be even more effective when it is universally ratified. I hope sooner rather than later.

The CRC is the foundation of all our work at UNICEF: It provides our mission and our mandate. The rights of children and our emphasis on equity, in all our advocacy and programs around the world, are inseparable. Because to the degree children are disadvantaged – for reasons of geography or gender or ethnicity … or because they live with disabilities or disease … or are stigmatized and bullied for any reason – to exactly that degree, their rights are being violated.

So let me here sketch out two propositions for our discussion.

First, that sustainable, tangible progress in children's global welfare depends – in practice as well as in principle – on a focus on equity.

Second, more broadly, and tentatively, that we should not only advocate for policies that promote equity as an outcome of economic growth, but also –conversely – we should make the case that promoting equity helps produce sustainable growth, a proposition that is supported by a growing body of evidence. …

Full text here: http://www.unicef.org/media/media_60917.html

The **MMWR Weekly for December 9, 2011** / Vol. 60 / No. 48 includes:

- Update: Influenza Activity — United States, October 2–November 26, 2011
- Announcements: Clinical Vaccinology Course — March 9–11, 2012
- Announcements: 15th Annual Conference on Vaccine Research

15th Annual Conference on Vaccine Research

The 15th Annual Conference on Vaccine Research, the largest scientific forum devoted exclusively to the research and development of vaccines and related technologies for prevention and treatment of disease through immunization, will be held May 7–9, 2012, at the Hyatt Regency Inner Harbor Hotel in Baltimore, Maryland. The conference brings together the diverse fields of human and veterinary vaccinology to encourage collaboration and multidisciplinary approaches among disease-specific and methodologic experts.

Clinical developments in vaccine discovery, rotavirus, meningococcal vaccine, vaccines for enteric diseases, food safety vaccines, vaccine adjuvants, and adverse events are among topics scheduled for discussion during the conference. In addition, a preconference workshop, Creating Outstanding Scientific Communications: Talks, Abstracts, and Posters, will be offered by expert faculty.

Applications for travel grants to subsidize attendees from countries with limited resources must be submitted by December 16, 2011. The deadline for online submission of general abstracts is January 6, 2012. Abstracts from eligible authors may be designated for consideration for the Maurice R. Hilleman Early-Stage Career Investigator Award, which provides $10,000 for research expenses and a travel stipend and registration for the 2013 conference.

The conference is being sponsored by the National Foundation for Infectious Diseases (NFID), in collaboration with CDC and 13 other national and international agencies and organizations. Additional information is available at http://www.nfid.org

The **Weekly Epidemiological Record (WER) for 9 December 2011**, vol. 86, 50 (pp 565–580) includes: Validation of elimination: maternal and neonatal tetanus –

Uganda, 2011; Performance of acute flaccid paralysis (AFP) surveillance and incidence of poliomyelitis, 2011; Monthly report on dracunculiasis cases, January–October 2011 http://www.who.int/entity/wer/wer8650.pdf

Twitter Watch

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

PIH Partners In Health
"Poverty doesn't need to be the chief determinant of whether or not someone gets health care" -Paul Farmer ow.ly/7QJb0
2 hours ago

UNICEF UNICEF
On 11 December, UNICEF celebrates our 65th anniversary ~~~ bit.ly/rDiVQG ~~~ Thank you all for your support over the years ~~~ @UN

unfoundation UN Foundation
63 years ago today, the #UN adopted Universal Declaration of #HumanRights. #CelebrateRights by learning about yours: ow.ly/7Vdrc
10 Dec

pahowho PAHO/WHO
#PAHO launches new human rights report, honors leaders on the right to health bit.ly/vHBXEo
9 Dec

globalfundnews The Global Fund
ICASA conference: Global Fund: We're here to stay - Dr. Debrework Zewdie, Deputy Executive Director icasa2011addis.org/home/205-globa…
9 Dec

sabinvaccine Sabin Vaccine Inst.
Help @Global_Network see the end of 7 diseases by 2020 - check out their new @END_7 campaign! ow.ly/7TjsD
8 Dec

DrFriedenCDC Dr. Tom Frieden
Healthcare workers: Gotten a flu shot yet? Get it today for Natl Flu Vaccination Week. Stop, not spread the flu go.usa.gov/56s #NIVW
8 Dec

unfoundation UN Foundation
RT @shotatlife: @unfoundation CEO shares what u can do to support @ShotAtLife & give kids a shot at holiday magic! bit.ly/tqBNru

8 Dec

AIDSvaccine IAVI
#ICASA2011 ends w hopeful, positive closing ceremony. 10,000 ppl from 103 countries took part in conf. #HIV #vaccine #endofAIDS @ICASA2011
8 Dec

JeffDSachs Jeffrey D. Sachs
American Society of Tropical Medicine and Hygiene: "Sachs issues call to action on Global Fund slowdown" bit.ly/v3aT9T
7 Dec

MalariaVaccine PATH MVI
RTS,S malaria vaccine candidate named 2nd biggest medical breakthrough of the year by TIME Magazine! tiny.cc/xfu4d
7 Dec

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. 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
December 6, 2011; 155 (11)
http://www.annals.org/content/current
Original Research
Maternal Immune Response and Neonatal Seroprotection From a Single Dose of a Monovalent Nonadjuvanted 2009 Influenza A(H1N1) Vaccine: A Single-Group Trial
Vassilis Tsatsaris, Catherine Capitant, Thomas Schmitz, Corine Chazallon, Sophie Bulifon, Didier Riethmuller, Olivier Picone, Patrice Poulain, Fanny Lewin, Fabrice Lainé, Evelyne Jacqz-Aigrain, Jean-Pierre Aboulker, and Odile Launay, for the Inserm C09-33 PREFLUVAC (Immunogenicity and Safety of an Inactivated Nonadjuvanted A[H1N1v] Influenza Vaccine in Pregnant Women) Study Group
Ann Intern Med December 6, 2011 155:733-741;
Summary
Pregnant women and infants who get influenza are at increased risk for severe illness. In this prospective, multicenter, single-group clinical trial from France, nearly all women

who received a single dose of a nonadjuvant 2009 influenza A(H1N1) vaccine in their second and third trimesters had antibody titers that were considered protective. Antibody titers in cord blood samples from 95% of the infants were also at a level considered protective. A single dose of influenza vaccine administered to women during pregnancy should protect both mothers and their newborns.

British Medical Bulletin
Volume 100 Issue 1 December 2011
http://bmb.oxfordjournals.org/content/current
[No relevant content]

British Medical Journal
10 December 2011 (Vol 343, Issue 7835)
http://www.bmj.com/content/current
[No relevant content]

Cost Effectiveness and Resource Allocation
(Accessed 11 December 2011)
http://www.resource-allocation.com/
[No new relevant content]

Emerging Infectious Diseases
Volume 17, Number 12—December 2011
http://www.cdc.gov/ncidod/EID/index.htm
[No relevant content]

Globalization and Health
[Accessed 11 December 2011]
http://www.globalizationandhealth.com/
Globalization and Health is an open access, peer-reviewed, online journal that provides an international forum for high quality original research, knowledge sharing and debate on the topic of globalization and its effects on health, both positive and negative. The journal is affiliated with the London School of Economics (LSE Health).
[No new relevant content]

Health Affairs
December 2011; Volume 30, Issue 12
http://content.healthaffairs.org/content/current
[No relevant content]

Health Economics, Policy and Law

Volume 6 - Issue 04 - 06 September 2011
http://journals.cambridge.org/action/displayIssue?jid=HEP&tab=currentissue
[Reviewed earlier]

Health Policy and Planning
Volume 26 Issue 6 November 2011
http://heapol.oxfordjournals.org/content/current
[Reviewed earlier]

Human Vaccines
Volume 7, Issue 12 December 2011
http://www.landesbioscience.com/journals/vaccines/toc/volume/7/issue/12/
[Reviewed earlier]

International Journal of Infectious Diseases
Volume 15, Issue 12, Pages e807-e888 (December 2011)
http://www.sciencedirect.com/science/journal/12019712
[No relevant content]

JAMA
December 7, 2011, Vol 306, No. 21, pp 2293-2404
http://jama.ama-assn.org/current.dtl
[No relevant content]

Journal of Infectious Diseases
Volume 204 Issue 12 December 15, 2011
http://www.journals.uchicago.edu/toc/jid/current
[No relevant content]

The Lancet
Dec 10, 2011 Volume 378 Number 9808 p1975 – 2048 e19 - 21
http://www.thelancet.com/journals/lancet/issue/current
Editorial
What constitutes full access to data in industry-funded trials?
The Lancet
Preview
Open any medical journal and you are likely to find significant results outnumbering those that are non-significant. Novel, positive findings evoke greater interest than do confirmatory or "negative" trials, although the latter are equally as important. Such publication bias at a journal level has long been judged problematic. But might selective data reporting at a study level be even more sinister? The answer is yes.
Online First

Comment
Dec 09, 2011
Why we need a Commission on Global Governance for Health
Ministers of Foreign Affairs of Brazil, France, Indonesia, Norway, Senegal, and Thailand
Preview
5 years ago, the foreign ministers of Brazil, France, Indonesia, Norway, Thailand, Senegal, and South Africa, launched the Global Health and Foreign Policy Initiative1 in recognition of the central importance of health and its connection to multiple global governance processes. In many ways, protecting and enhancing the health of its population is one of the most important goals and duties of any state. With globalisation and increased interdependency among countries, health issues have become even more central to states' interests.

The Lancet Infectious Disease
Dec 2011 Volume 11 Number 12 p887 - 970
http://www.thelancet.com/journals/laninf/issue/current
[Reviewed earlier]

Medical Decision Making (MDM)
November/December 2011; 31 (6)
http://mdm.sagepub.com/content/current
[No relevant content]
Online First
November 29, 2011
Jeffrey T. Vietri, Meng Li, Alison P. Galvani, and Gretchen B. Chapman
Vaccinating to Help Ourselves and Others
Med Decis Making 0272989X11427762, first published on November 29, 2011 as doi:10.1177/0272989X11427762
Abstract
Background. Many behaviors affect not only the self but also others. The utility of a vaccination to each individual depends on population immunity, the cumulative result of individual vaccination decisions. However, little is known about how the benefit to others influences vaccination decisions.
Methods. In a series of 3 experiments (N = 292, 316, and 299) using hypothetical scenarios and college student respondents, we tested whether the vaccination decisions of individuals were sensitive to the level of immunity in the population when it had implications for either altruistic or free-riding vaccination behavior.
Results. Our findings indicate that decisions of individuals were sensitive to opportunities both to free ride by refusing vaccination and to vaccinate altruistically. Although individuals were most willing to get vaccinated when they were at risk themselves, they were also sensitive to the amount of good they could do for others. This altruistic sensitivity was strongest when individuals were not vulnerable to the disease themselves.
Conclusions. The most effective vaccination strategies, from a public health perspective, often entail vaccinating the disease transmitters rather than those who are most vulnerable. Consequently, those who bear the burden of vaccination and those who

benefit are not the same individuals. Thus, effective vaccination campaigns require that disease transmitters vaccinate even when it is not in their self-interest to do so. Our results suggest that it may be possible to encourage vaccination by appealing to altruistic motives.

Nature
Volume 480 Number 7376 pp151-284 8 December 2011
http://www.nature.com/nature/current_issue.html

Specials

Outlook Influenza
Herb Brody
Epidemiology: Racing against the flu
Duncan Graham-Rowe
Q&A: The flu catcher
Richard Webby
Prevention: Vaccine for all seasons
Jana Schlütter
Drugs: Lines of defence
Roxanne Palmer
Public health: Life lessons
Laura Vargas Parada
Morbidity: A personal response
Christine Junge

Nature Medicine
December 2011, Volume 17 No 12
http://www.nature.com/nm/index.html

Commentary

Improving the efficacy of translational medicine by optimally integrating health care, academia and industry - pp1567 - 1569
Stefan R Bornstein & Julio Licinio
doi:10.1038/nm.2583
Preview

Translational medicine has become a global priority, but there is still a major gap between the arrival of new treatments and the investment that many countries have made on this front. Here we discuss often unrecognized roadblocks in the translational process and offer potential solutions for further advancement through enhanced integration of health care, academia and industry.

Although understanding of biological mechanisms is on the rise, the process of translating fundamental knowledge to the clinic remains disappointing. Essential issues that have been widely recognized to account for the transitional gap include the need for increased investment in early-stage research and, in preclinical and early clinical work, the need for the capacity to stretch out beyond the boundaries of individual disciplines, for a more transparent dialogue between companies and regulators, for an approval process that does not always sacrifice efficacy in the name of safety and for other considerations that ultimately prevent new drugs from making it to the market1,

2, 3, 4, 5, 6, 7, 8. However, there are additional problems that have not received sufficient attention and need to be addressed to improve success in translational medicine…

New England Journal of Medicine
December 8, 2011 Vol. 365 No. 23
http://content.nejm.org/current.shtml
Norovirus Vaccine against Experimental Human Norwalk Virus Illness
R.L. Atmar and Others

The Pediatric Infectious Disease Journal
December 2011 - Volume 30 - Issue 12 pp: 1019-1051,e225-e247
http://journals.lww.com/pidj/pages/currenttoc.aspx
[No relevant content]

Pediatrics
December 2011, VOLUME 128 / ISSUE 6
http://pediatrics.aappublications.org/current.shtml
[Reviewed last week]

Pharmacoeconomics
December 1, 2011 - Volume 29 - Issue 12 pp: 1011-1014
http://adisonline.com/pharmacoeconomics/pages/currenttoc.aspx
[Reviewed earlier]

PLoS One
[Accessed 11 December 2011]
http://www.plosone.org/article/browse.action;jsessionid=577FD8B9E1F322DAA533C413369CD6F3.ambra01?field=date
The Increasing Burden of Imported Chronic Hepatitis B — United States, 1974–2008
Tarissa Mitchell, Gregory L. Armstrong, Dale J. Hu, Annemarie Wasley, John A. Painter
PLoS ONE: Research Article, published 07 Dec 2011 10.1371/journal.pone.0027717
Abstract
Background
Without intervention, up to 25% of individuals chronically infected with hepatitis B virus (HBV) die of late complications, including cirrhosis and liver cancer. The United States, which in 1991 implemented a strategy to eliminate HBV transmission through universal immunization, is a country of low prevalence. Approximately 3,000–5,000 U.S.-acquired cases of chronic hepatitis B have occurred annually since 2001. Many more chronically infected persons migrate to the United States yearly from countries of higher prevalence. Although early identification of chronic HBV infection can reduce the

likelihood of transmission and late complications, immigrants are not routinely screened for HBV infection during or after immigration.
Methods
To estimate the number of imported cases of chronic hepatitis B, we multiplied country-specific prevalence estimates by the yearly number of immigrants from each country during 1974–2008.
Results
During 1974–2008, 27.9 million immigrants entered the U.S. Sixty-three percent were born in countries of intermediate or high chronic hepatitis B prevalence (range 2%–31%). On average, an estimated 53,800 chronic hepatitis B cases were imported to the U.S. yearly from 2004 through 2008. The Philippines, China, and Vietnam contributed the most imported cases (13.4%, 12.5%, and 11.0%, respectively). Imported cases increased from an estimated low of 105,750 during the period 1974–1977 to a high of 268,800 in 2004–2008.
Conclusions
Imported chronic hepatitis B cases account for approximately 95% of new U.S. cases. Earlier case identification and management of infected immigrants would strengthen the U.S. strategy to eliminate HBV transmission, and could delay disease progression and prevent some deaths among new Americans.

PLoS Medicine
(Accessed 11 December 2011)
http://www.plosmedicine.org/article/browse.action?field=date
The Primacy of Public Health Considerations in Defining Poor Quality Medicines
Paul N. Newton, Abdinasir A. Amin, Chris Bird, Phillip Passmore, Graham Dukes, Göran Tomson, Bright Simons, Roger Bate, Philippe J. Guerin, Nicholas J. White Essay, published 06 Dec 2011
doi:10.1371/journal.pmed.1001139
Summary Points
- Poor quality essential medicines, both substandard and counterfeit, are serious but neglected public health problems. Anti-infective medicines are particularly afflicted.
- Unfortunately, attempts to improve medicine quality have been hampered by confusion and controversy over definitions. For counterfeit (or falsified) medicines, this has arisen from perceived differences between public health and intellectual property approaches to the problem.
- We argue that public health, and not intellectual property or trade issues, should be the prime consideration in defining and combating counterfeit medicines, and that the World Health Organization (WHO) should be encouraged and supported to take a more prominent role in improving the world's medicine quality and supply.
- An international treaty on medicine quality, under WHO auspices, could be an important step forward in the struggle against both substandard and counterfeit (or falsified) medicines.

Proceedings of the National Academy of Sciences of the United States of America

(Accessed 11 December 2011)
http://www.pnas.org/content/early/recent
[No new relevant content]

Science
9 December 2011 vol 334, issue 6061, pages 1313-1460
http://www.sciencemag.org/current.dtl
Vol. 334 no. 6061 pp. 1362-1366
DOI: 10.1126/science.1213199
AAAS Affairs
Presidential Address
[Free full-text: http://www.sciencemag.org/content/334/6061/1362.full]
Passions
Alice S. Huang
Extract
What is the secret to success in science or anything else? Hard work alone is not enough. It is being passionate about something, enough to make a whole-hearted commitment of creativity, rigor, and determination. Let me share my lifelong passions. Foremost, I am passionate about investigating viruses and finding ways to control their growth. Along the way, I have also developed other passions: using science to build international bridges, improving science education, and maximizing access to science for diverse populations, especially women and minorities….
Research Articles
Imaging of Plasmodium Liver Stages to Drive Next-Generation Antimalarial Drug Discovery
Stephan Meister, David M. Plouffe, Kelli L. Kuhen, Ghislain M. C. Bonamy, Tao Wu, S. Whitney Barnes, Selina E. Bopp, Rachel Borboa, A. Taylor Bright, Jianwei Che, Steve Cohen, Neekesh V. Dharia, Kerstin Gagaring, Montip Gettayacamin, Perry Gordon, Todd Groessl, Nobutaka Kato, Marcus C. S. Lee, Case W. McNamara, David A. Fidock, Advait Nagle, Tae-gyu Nam, Wendy Richmond, Jason Roland, Matthias Rottmann, Bin Zhou, Patrick Froissard, Richard J. Glynne, Dominique Mazier, Jetsumon Sattabongkot, Peter G. Schultz, Tove Tuntland, John R. Walker, Yingyao Zhou, Arnab Chatterjee, Thierry T. Tiagana, and Elizabeth A. Winzeler
Science 9 December 2011: 1372-1377.
Published online 17 November 2011 [DOI:10.1126/science.1211936]
Abstract
Most malaria drug development focuses on parasite stages detected in red blood cells, even though, to achieve eradication, next-generation drugs active against both erythrocytic and exo-erythrocytic forms would be preferable. We applied a multifactorial approach to a set of >4000 commercially available compounds with previously demonstrated blood-stage activity (median inhibitory concentration < 1 micromolar) and identified chemical scaffolds with potent activity against both forms. From this screen, we identified an imidazolopiperazine scaffold series that was highly enriched among compounds active against Plasmodium liver stages. The orally bioavailable lead imidazolopiperazine confers complete causal prophylactic protection (15 milligrams/kilogram) in rodent models of malaria and shows potent in vivo blood-stage therapeutic activity. The open-source chemical tools resulting from our effort provide

starting points for future drug discovery programs, as well as opportunities for researchers to investigate the biology of exo-erythrocytic forms.

Science Translational Medicine
7 December 2011 vol 3, issue 112
http://stm.sciencemag.org/content/current
[No relevant content]

Tropical Medicine & International Health
December 2011 Volume 16, Issue 12 Pages 1465–1561
http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1365-3156/currentissue
[No relevant content]

Vaccine
http://www.sciencedirect.com/science/journal/0264410X
Volume 30, Issue 1 pp. 1-102 (9 December 2011)
[Reviewed earlier]

Value in Health
December 2011, Vol. 14, No. 8
http://www.valueinhealthjournal.com/home
[No relevant content]
Articles in Press
Modeling the Effects of H1N1 Influenza Vaccine Distribution in the United States
05 December 2011
Richard C. Larson, Anna Teytelman
Abstract
Objective: We analyzed the effects of the timing of vaccine distribution in 11 US states during the 2009 H1N1 influenza pandemic.

Methods: By using reported data on the fraction of patients presenting with flu-related symptoms, we developed a transformation that allowed estimation of the state-specific temporal flu wave curve, representing the number of new infections during each week. We also utilized data describing the weekly numbers of vaccine doses delivered and administered. By using a simple difference equations model of flu progression, we developed two influenza wave curves: first, an "observable" curve that included the beneficial effects of vaccinations, and second, an unobservable curve that depicted how the flu would have progressed with no vaccine administered. We fit the observable curve to match the estimated epidemic curve and early exponential growth associated with R0, the reproductive number. By comparing the number of infections in each scenario, we estimated the infections averted by the administration of vaccine.

Results: Southern states experienced peak infection several weeks before northern states, and most of the vaccine was delivered well after the peak of the southern flu wave. Our models suggest that the vaccine had minimal ameliorative impact in the

southern states and measurable positive impact in the northern states. Vaccine delivery after peak also results in a smaller fraction of the population's seeking the vaccine.

Conclusions: Our analysis suggests that current Centers for Disease Control and Prevention policy of allocating flu vaccine over time in direct proportion to states' populations may not be best in terms of averting nationally the maximum possible number of infections.