



Newsletter #2 for Fall '11

November 17th, 2011

The Science of Misinformation

by Joshua Prudent

Only a few months ago, Republican presidential candidate Michele Bachmann made headlines with her statements against vaccines, giving scathing remarks against fellow candidate Rick Perry's executive order mandating that all Texan girls entering 6th grade receive an HPV vaccine. Human papillomavirus (HPV) is a sexually transmitted disease that has been linked to cervical cancer, and the vaccine has proven fantastically effective in preventing its spread.²

Still, these initial remarks, which fall characteristically into Bachmann's anti-government political stance, were not where the issue truly arose. After the debate, in an interview with Fox News, Bachmann dropped a bombshell by stating that a "woman who came up crying" had claimed that her daughter suffered mental retardation as a result of the vaccine, which Bachmann immediately used to back-up her statements against Perry.²

Still, no such link between mental retardation and HPV has been proven. Even though the CDC lists the side effect of the vaccine as mere "fainting, pain, and swelling at the site of injection", scientifically incorrect statements like those of Bachmann can still be very damaging, causing many parents to avoid vaccines in their fear.² Such fears...
[continued on page 3.]

Nanotech Vaccine Breakthrough

by Joshua Ho

Imagine waiting in line to get your MMR (measles, mumps, and rubella) vaccine at the Tang Center when the nurse tells you, "This vaccine is only 50% effective, and you have a 30% risk of complication." After some quick calculations you realize that the vaccine has only a 35% chance of working correctly. According to Professor Mark Kendall of the University of Queensland, 30% of the vaccinations in Africa are unsafe due to cross-contamination and needle injury, while...

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Pre-med and Beyond!

by Tiffany Gee

Want to know what former officers of AMSA are up to now that they've graduated? Here is an update from our former president of AMSA (2010-2011), Tiffany Gee:

Hi everyone! My name is Tiffany Gee and I am a recent UCB graduate and former AMSA member. While in AMSA I was fortunate enough to serve as the Publicity Chair, Vice President of Membership and President.

Although I was a premedical student throughout my undergraduate education, I majored in public health... [continued on pg 4]

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Service Opportunities and Events

• Relay for Life- 4/28

A 24-hour event where participants celebrate survivors, remember lost loved ones, and fight back by fundraising, Relay for Life is the largest non-profit fundraiser on campus. Register a team for \$10 or individually for \$5 at www.relayforlife.org/ucberkeleyca.

• Toxicology Career Panel- 11/29

The Toxicology Student Association is inviting students to hear a panel of professional who are working in toxicology, to learn about career options in toxicology and network with professionals. The event is Tues, Nov 29th, 6-9PM in the Tan Oak Room, MLK.

• Alternative Winter Break

The manager of the Hospitalito Atitlan in Guatemala is hosting an alternative winter break program in early January (3rd-14th). Check hospitalitoatitlan.org/ for more details.

The Future of Needleless Vaccines

...50% do not work properly because of disruption of the “cold chain,” the refrigerated transportation system needed to maintain traditional syringe vaccines.⁵ Of course, our theoretical problem at the Tang Center cannot be compared to those in Africa, but the statistics are real. However, powerful new nanotechnology may soon be able to dramatically reduce these problems.

Through the Australian Institute for Bioengineering and Nanotechnology at the University of Queensland, Professor Mark Kendall has been pioneering a needle-free nanopatch vaccine delivery system. He said that the idea came to him around eight years ago while “doodling” on some paper at a conference.⁵ The nanopatch is smaller than a postage stamp and has 20,000 vaccine-coated projections per square centimeter. When applied to the skin, vaccine is released beneath the skin into a dense layer of immune cells. By contrast, syringes release vaccine into muscle, where immune cells are few. Because the vaccine is

directly applied to immune cells, the nanopatch is as effective as the syringe while using only 1/150th the amount of vaccine, significantly reducing production costs and allowing faster distribution of vaccine in the event of a pandemic.⁶

In addition, the nanopatch is dry-coated with vaccine, requiring no refrigeration. This greatly streamlines transportation by eliminating the need for the “cold chain.” Furthermore, the use of

“FOR IMMUNIZATION EXPERTS, THE NANOPATCH IS VACCINE UTOPIA...”

nano-projections rather than needles virtually eliminates the possibility of contamination and allows the patch to be easily administered. “For immunization experts, the Nanopatch is vaccine utopia. It is cheap, painless, very effective, can save countless lives at very low risk, can be transported without refrigeration and can be given without the need for extensive training,” says Frank Howarth, Director of the Australian Museum.⁷

Superior to the syringe in cost, efficiency, and safety, the nanopatch is poised to replace the



Professor Mark Kendall with the nanopatch.⁵

syringe in as little as 5-10 years. A consortium of investors led by OneVentures has placed \$15 million in venture capital for the development of the vaccine delivery system and the Federal Government has assisted in creating Vaxxas, a company focused on commercializing the nanopatch.⁸ In the meantime, clinical trials begin soon. “We’ve proven it in the mouse, the next step is to prove it in man,” Professor Kendall says.⁶



Wakefield to Bachmann: Scandal Around Vaccines

...over vaccines are costly for public health, with declines in vaccinations tied to recent US and Canadian outbreaks of whooping cough and measles.³

As long as there have been vaccinations, there has been public uncertainty about them, stoked by incorrect leaders and a misinformed media. The earliest attempts at vaccines by pioneers like Edward Jenner, commonly considered the

SUCH FEARS OVER VACCINES ARE COSTLY FOR PUBLIC HEALTH...

Father of Immunology, faced major hurdles in the early 19th century.³ Skepticism waned by the mid-20th century, with large-scale immunization campaigns struggling to defeat diseases like polio, measles, and diphtheria.³ However, this fear has resurged in the 21st century, likely due to vaccines’ benefits becoming less obvious. People in developed society aren’t afraid of paralysis by polio or deadly outbreaks of measles, thanks to their near eradication. Instead of fearing a disease, there is increased fear of potential complications from a disease’s vaccine. These fears are fueled further by an expanding and complicated vaccine schedule for younger children, with the US Centers for Disease Control and Prevention recommending 11

vaccines.³ Perhaps the biggest scandal over immunization to have occurred in recent memory is the 1998 paper by Dr Andrew Wakefield, published in the esteemed British medical journal The Lancet. In the paper, Wakefield proposed a link between “possible environmental triggers,” by which he meant the MMR (measles, mumps, and rubella) vaccine, and the development of autism.⁴ However, the paper featured many incorrect elements and unethical methods. These include a small sample group(only 12 children) and funds for the study coming from parents’ lawyers.⁴ Only recently has The Lancet finally re-

tracted the paper, after turning tens of thousands of parents away from the MMR vaccine. In the end, Bachmann’s blunder is likely not as bad as Dr. Wakefield’s. She at least admits to not knowing the truth, saying, “I have no idea....I am not a physician. All I was doing was reporting what a woman told me last night at the debate.”² In truth though, people will remember her shocking statement against the HPV vaccine much more than her accepted inaccuracy. Politicians have to be careful with what they say and not just report what they hear. In the end, they are simply spreading misinformation.

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The first person to fill out the Sudoku correctly and bring it to AMSA’s winter banquet will win a prize! Look for the upcoming article in our next

← AMSA at Berkeley Project October 15th, 2011

Life After Cal

...and decided to pursue a public health experience after graduation. In early March, I applied to a program with the Centers for Disease Control (CDC) and Prevention called the Public Health Associate Program (PHAP). It is a two year, paid fellowship that provides hands-on public health experience by placing its associates in state, local, or tribal health departments. I have been placed with the Los Angeles County Department of Public Health (LACDPH). For my first year, I am working with the Cross Connections and Water Pollution Control Program, and my second year I will be placed in the Emergency Preparedness and Response Unit with a focus on bioterrorism.

The Cross Connections program basically conducts water inspections for any public business that uses water to ensure that potable water lines are properly protected from cross contamination with a non-potable source. In this program, I have three major responsibilities: first, I am training to become a cross connections inspector by shadowing experienced inspectors and learning how to test back-flow prevention devices. I have really been enjoying this portion of my job because I get to shadow

inspectors during water surveys of some pretty awesome businesses, including the Staples Center, Coca Cola Factory, Terranea Resort, Bel Air Hotel, etc. Second, I am bulking up on water regulations, particularly the California Plumbing Code. Sounds like I'm becoming a super-plumber, right? Third, I am working on a special project concerning alternate water systems. Alternate water systems (AWS) use non-potable water sources like rain water, storm water, and urban runoff to offset potable water use for purposes like landscape irrigation and toilet flushing. It is a great movement for LA County because all of this county's potable water is imported from northern California. The shift toward AWS will not only help conserve potable water for essential uses, but it also promises to prevent further pollution of the ocean waters. My job is to ensure that the waters captured by AWS are not damaging to the public's health. Overall, it's been a great experience and I am learning a TON every day.

If you have any questions regarding the Public Health Associate Program, working for a local health department, pursuing careers in public health v. medicine v. both, moving to LA as a NorCal native, etc. please feel free to email me at tiffanygee11@gmail.com.



Tiffany Gee

Newsletter Biographies- Joshua Ho

My name is Joshua Ho, and I'm a first-year intended MCB or IB major. Some of my interests include playing the piano/guitar, volleyball, boxing, the color gray, and living in the Bay Area! I enjoy learning through writing, and I look forward to the opportunity of learning alongside all of you. Thanks for reading!



Footnotes

- 1) Joshua Brett, "Bachmann vaccine furor...", Wordpress.com, 21 Sep 2011. 2 Nov 2011.
- 2) Chris Moody, "Bachmann: 'I have no idea' if HPV vaccine...", The Ticket, Sep 14, 2011. 2 Nov 2011. <http://news.yahoo.com/blogs/ticket/bachmann-no-idea-hpv-vaccine-causes-mental-retardation-175201246.html>
- 3) Amanda Gardner, "Fear of Vaccines Has Long, Persistent History", HealthDay News, 26 Jan 2011. 2 Nov 2011. <http://www.medicinenet.com/script/main/art.asp?articlekey=125122>
- 4) Laura Eggertson, "Lancet retracts 12-year-old article linking autism to MMR vaccines", Canadian Medical Association Journal, 2010 March 9, 182(4):E199-E200
- 5) "UQ Researchers Develop a Dissolvable Needle-free Nanopatch for Vaccine Delivery." The University of Queensland. N.d. Web. 31 Oct 2011. < <http://www.aibn.uq.edu.au/uq-researchers-develop-a-dissolvable-needle-free-nanopatch-for-vaccine-delivery>>.
- 6) Cooper, Dani. "Nano-patch Could Replace Syringe." ABC Science. 26 Jul 2010. Web. 31 Oct 2011. < <http://www.abc.net.au/science/articles/2010/07/26/2964068.htm>>.
- 7) "Nanopatch Vaccination Team win Eureka Prize." One Ventures. 7 Sep 2011. Web. 31 Oct 2011. <<http://www.one-ventures.com/news/2011/09/07/nanopatch-vaccination-team-win-eureka-prize>>.
- 8) Mandal, Ananya. "Needle-free Nanopatch Vaccine Delivery System." The Medical News. 3Aug 2011. Web. 31 Oct 2011. <<http://www.news-medical.net/news/20110803/Needle-free-nanopatch-vaccine-delivery-system.aspx>>.