

OREGON PUBLIC HEALTH DIVISION • DEPARTMENT OF HUMAN SERVICES

**GUILLAIN-BARRE SYNDROME: SHOULD WE WORRY?**

Oregon is preparing for a nasty spike in pandemic H1N1 flu this fall/winter. But an effective and lifesaving vaccine arrives in October 2009, and Oregonians are asking their health care providers “Should I get the vaccine?” and “What are the risks?” During the 1976 swine flu vaccination campaign, there were rare reports of Guillain-Barre syndrome (GBS) following vaccination. In this *CD Summary*, we brush up on GBS; highlight actions the Oregon Public Health Division (OPHD) is taking to monitor pandemic flu vaccine safety; and suggest talking points to patient questions on the new vaccine.

**1976 SWINE FLU**

In February 1976, influenza virus isolates from two Army recruits at Fort Dix, New Jersey were identified as a new influenza A strain, the “swine flu”.<sup>1</sup> After serologic testing indicated that person-to-person transmission had occurred in over 200 recruits, public health officials were convinced this was the beginning of another influenza pandemic along the lines of the 1918 “great flu” that killed up to an estimated 100 million persons worldwide. Plans to produce enough vaccine for the entire U.S. population were implemented, and eventually 45 million Americans received the swine flu vaccine. But the anticipated pandemic... never... happened. Instead, there were rare reports of GBS; studies later showed one additional case of GBS per 100,000 persons vaccinated. The feds announced a moratorium on the swine flu vaccine in December 1976, and were criticized for “jumping the gun” for promoting a national mass vaccination campaign without evidence of a pandemic.

**GUILLAIN-BARRE SYNDROME**

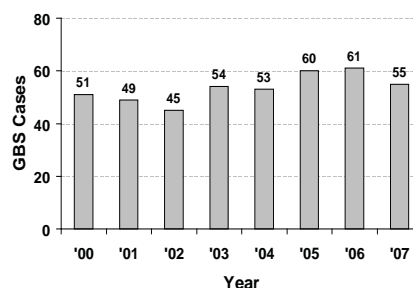
GBS is an acute, bilateral and relatively symmetric weakness/paralysis of the limbs that may involve respiratory and cranial nerve-innervated muscles.<sup>2</sup> The weakness/paralysis

typically ascends from legs to arms. Initial symptoms may include pain, numbness, paresthesia, and/or weakness in the limbs. Deep tendon reflexes are decreased or absent in the affected limbs. The autonomic nervous system may be involved and lead to urinary retention, ileus, postural hypotension, sinus tachycardia, or even cardiac arrest. The death rate for GBS is about 4-15%. In most cases, the weakness reaches a peak between 12 hours and 28 days, followed by plateau and subsequent improvement. Electrophysiological studies are consistent with polyneuropathy, especially demyelinating patterns in North America and Europe, but studies done less than seven days after weakness onset may be normal. Cerebrospinal fluid classically demonstrates an elevated protein with a minimal increase in WBC. Treatment entails supportive care, and either IV immunoglobulin or plasma exchange. Despite modern treatment, up to 20% of survivors are disabled after one year.

**THE EPIDEMIOLOGY OF GBS**

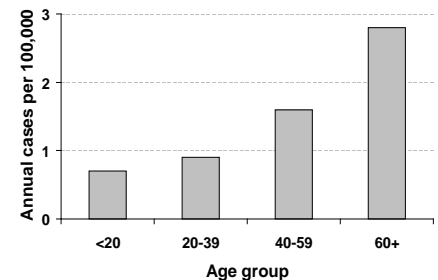
GBS occurs worldwide at an annual incidence of 1-2 cases per 100,000. Men are 1.5 times more likely than women to develop GBS. Based on published data, we would expect 38-76 new GBS cases in Oregon annually. Oregon hospital discharge data from 2000-2007 showed 45-61 GBS hospitalizations annually (Figure 1).\*

Figure 1 GBS cases, Oregon, 2000-2007



\*Source: hospital discharge data

Figure 2 Average annual GBS cases per 100,000 persons by age group



GBS incidence increases with age; in Oregon, GBS rates in the 60 years and older age group were four times greater than the <20 years age group (Figure 2).<sup>\*</sup> Unlike seasonal flu vaccine, the pandemic H1N1 vaccine will not target persons ≥65 years age.

**INFLUENZA VACCINATION AND GBS**

Multiple infectious illnesses, including *Campylobacter jejuni* and upper respiratory infections, are associated with GBS. It is important to remember that influenza infection itself may trigger GBS. One study estimated that influenza-related GBS was four to seven times higher than the risk of 1976 swine flu vaccine-associated GBS.<sup>3</sup> There have been mixed reports on whether GBS follows seasonal influenza vaccine. No studies of influenza vaccine following the 1976 swine flu vaccine have demonstrated a substantial risk in GBS, and the current estimated risk of GBS based on the few positive studies is one additional case per 1 million persons vaccinated.<sup>4</sup> Influenza vaccine prevents serious illness, hospitalization, and death; and outweighs any risk of GBS or other adverse events. A review of FDA/CDC Vaccine Adverse Events Reporting System (VAERS) showed sixteen reports of GBS following influenza vaccination among Oregonians from 1990-2008. This doesn't necessarily imply causality.<sup>†</sup>

† Over 130 million doses of seasonal flu vaccine will be produced in 2009-2010. With that much vaccine in circulation, we are going to see GBS cases following vaccination by chance alone.



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### MONITORING VACCINE SAFETY

The pandemic H1N1 vaccine is currently in clinical trials. A vaccine adjuvant is not anticipated in the U.S. To date, there have not been reports of serious adverse events. The vaccine is predicted to work well in preventing pandemic flu and its complications; the match between the vaccine and circulating pandemic H1N1 is good. Based on the available scientific evidence, we are confident that the pandemic H1N1 vaccine will be effective and safe, and will save lives for Oregonians in the priority groups for vaccination.

So how will we be monitoring vaccine safety? First, we will be closely monitoring influenza-related illnesses, hospitalizations, and deaths to assess the burden of disease and gauge the effectiveness of vaccine implementation efforts. But what does this have to do with safety? Any conversation on vaccine risk needs to be put into the context of vaccine benefit and burden of disease. During the 1976 swine flu, even a small risk of GBS was unacceptable given there was no pandemic. This year is not 1976; the pandemic is here and flu is taking lives. Second, we are starting enhanced surveillance for all GBS, regardless of vaccination status. Health care providers are asked to report GBS cases to OPHD using a simple one-page form.<sup>‡</sup> Finally, health care providers should report any adverse events following vaccination to VAERS ([www.vaers.hhs.gov](http://www.vaers.hhs.gov)). Vaccine safety monitoring is a shared responsibility and we can't do our job without <sup>‡</sup> Download the form at [www.oregon.gov/DHS/ph/acd/reporting/forms/forms.shtml](http://www.oregon.gov/DHS/ph/acd/reporting/forms/forms.shtml). Do it today!

the cooperation of clinicians on the front lines. Reporting is easy, quick and secure; you can even complete a report on-line!

### WHAT DO WE TELL PATIENTS?

Here are talking points to keep you and your practice "on message".

*The risk of GBS following pandemic H1N1 vaccine is unknown, but there is no evidence to suggest risk will be higher than seasonal influenza vaccine.* Don't get trapped into saying that the pandemic H1N1 vaccine has "no risk." A risk profile similar to seasonal influenza vaccine means that at worst, one in 1 million vaccinated may develop GBS. This is acceptable, especially given that...

*The benefits of H1N1 vaccination will likely far exceed the risks.* Ever since April, we have been reassuring an anxious public that the pandemic won't be Armageddon. But let's not downplay pandemic H1N1 as "just a few sniffles." As of Aug 22, 2009, there have been 8,843 hospitalizations and 556 deaths in the U.S. (92 hospitalizations and 11 deaths in Oregon). The highest incidence of hospitalization has been in children less than 4 years age.<sup>5</sup>

*Guillain-Barre syndrome has many causes, including influenza virus.* Remember that the majority of GBS cases follow GI and respiratory infections. In fact, the risk of GBS from flu will likely be higher than the risk of GBS from vaccine.

*Lead by example.* Nothing will address people's fears and concerns about the pandemic H1N1 vaccine more than a personalized message that the health care provider will get the vaccine for oneself and his/her family.

This presumes that you will follow CDC and OPHD recommendations on priority groups<sup>§</sup> for pandemic H1N1 vaccination.<sup>6</sup>

### RESOURCES

Pandemic H1N1 is a moving target! Keep up with the latest at [www.flu.oregon.gov](http://www.flu.oregon.gov) and [www.cdc.gov/h1n1flu](http://www.cdc.gov/h1n1flu).

### ACKNOWLEDGEMENT

Many thanks to Dr. Jau-Shin Lou at OHSU Neurology for reviewing the GBS clinical section for accuracy!

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- 6 Centers for Disease Control and Prevention. Use of influenza A (H1N1) 2009 monovalent vaccine: Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2009. *MMWR* 2009;58(No. RR-10):1–8.

§Pregnant women; people who live with or provide care for infants <6 months of age; health care and emergency medical services personnel; children and young adults aged 6 months–24 years; persons aged 25–64 years who have medical conditions that put them at higher risk for influenza-related complications