

## OREGON PUBLIC HEALTH DIVISION • DEPARTMENT OF HUMAN SERVICES

### IMMUNIZATION OF ADOLESCENTS

Adolescent immunization recommendations have changed quite a bit over the past few years. This issue of the *CD Summary* reviews the current recommendations and how well they are being implemented.

#### A QUICK RECAP

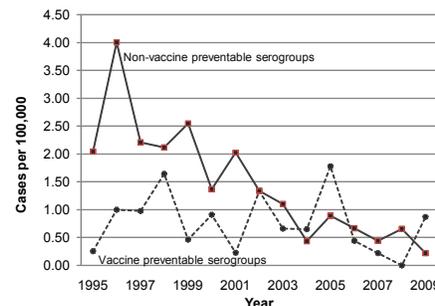
**Tdap** (tetanus-diphtheria-acellular pertussis). In addition to protecting against tetanus and diphtheria, Tdap vaccine protects against pertussis. There have been several pertussis outbreaks in Oregon schools over the past decade. The pertussis protection from childhood DTaP vaccination (recommended through age 6) wanes over time, so it's important for adolescents — and adults, too — to get the Tdap booster. Although pertussis in adolescents and adults may be mild, they can pass the disease to infants, in whom the disease can be serious or even fatal.

**HPV** (human papillomavirus). The three-dose series against human papillomavirus infection is recommended for females 9–26 years of age. Either of two brands may be used: the bivalent product Cervarix® protects against the two major oncogenic strains (16 and 18), which cause about 70% of cervical cancers; or the quadrivalent product Gardasil®, which additionally protects against the verrucagenic strains (6 and 11) that cause about 90% of genital warts. Quadrivalent HPV vaccine may also be given to males 9–26 years of age for prevention of genital warts.

**Meningococcal conjugate vaccine, quadrivalent (MCV4)**. This vaccine protects against infection by four serogroups of *Neisseria meningitidis*. Outside of infancy, adolescents are at highest risk. Annual rates of meningococcal disease among persons 11–19 years of age in Oregon have declined from a peak of 8 per 100,000 in 1994, leveling off at an average of 1.2 per 100,000 during 2005–2009; and during the same period, annual rates of disease caused by one of the four vac-

cine serogroups declined from 3.4 to 0.7 per 100,000 (Figure 1). Since 2005, the federal Advisory Committee on Immunization Practices (ACIP) has recommended that MCV4 be given to all 11-year-olds and to college freshmen living in dorms, as well as to others at high risk. Despite the vaccine's cost (~\$100/dose) and the low rates of disease, on October 27 ACIP recommended that adolescents be given a booster dose of MCV4 five years after the first dose, as antibody titers are known to wane.

**Figure 1. Incidence of meningococcal disease in Oregon among 11–19 year olds, 1995–2009**



**Influenza.** Universal vaccination of children and adolescents against the flu was first recommended for the 2008–2009 influenza season. Vaccination is now recommended annually for everyone, beginning at 6 months of age. Although adolescents are at low risk of hospitalization or death from influenza, they can certainly be made miserable by the disease for several days, and they can bring it home to higher-risk persons. Last season, 115 Oregon kids 10–19 years of age were hospitalized with laboratory-confirmed influenza.

Data from Oregon's sentinel immunization area indicate that 14% of adolescents 13–18 years of age received the seasonal flu vaccine last season. This season's trivalent vaccine incorporates the 2009 A(H1N1) pandemic strain, along with an A(H3N2) and a B strain. As this issue goes to press, influenza activity has been low across the country, but all three viruses

have been co-circulating; and in most reporting countries H3N2 has actually been more common than the pandemic H1N1 strain — so the vaccine is recommended even for those who got the pandemic vaccine last year.

#### ADOLESCENT IMMUNIZATION RATES

The National Immunization Survey (NIS) provides estimates of immunization rates from a sample of adolescents 13–17 years of age (“NIS Teen”). A comparison of 2008 and 2009 data is reassuring.<sup>1,2</sup> The rates for the “old” adolescent immunizations — i.e., two doses of MMR, three doses of hepatitis B, at least one dose of varicella — are holding steady at 87%–90%. The more recently recommended immunizations — Tdap, MCV4 and HPV — enjoyed double-digit increases among adolescents (Figure 2, *verso*). On the downside, these rates indicate a lot of unprotected teenagers. Keep vaccinating!

#### REQUIREMENTS AND RECOMMENDATIONS

School requirements for vaccination have been around for a long time — at least since 1827, when Boston required smallpox vaccination. In 1855 Massachusetts became the first State to require immunizations of school children.<sup>3</sup> Every State in the U.S. now has some requirement for immunization of school children.\* In Oregon, vaccinations were first required for school attendance in September 1973, but enforcement was anemic. A new law, featuring stronger enforcement by schools and local public health jurisdictions, was implemented beginning with the 1981–1982 school year.

The specifics of Oregon's school immunization requirements are determined by Oregon Public Health Division's Immunization Program, with input from an advisory committee. In 2008, the committee adopted 12 criteria for determining whether a vaccine should be required for school or child care attendance; these criteria include

\* States have different requirements.



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recommendation by the ACIP, the potential to prevent spread of disease within a school setting, cost effectiveness, public and medical provider acceptance of the vaccine, and funding.<sup>5</sup> Exemptions from the requirements may be claimed for medical or religious reasons.

Immunizations against the following diseases are currently required for school attendance in Oregon: polio, measles, mumps, rubella, varicella, hepatitis A, hepatitis B, tetanus, diphtheria, and pertussis.

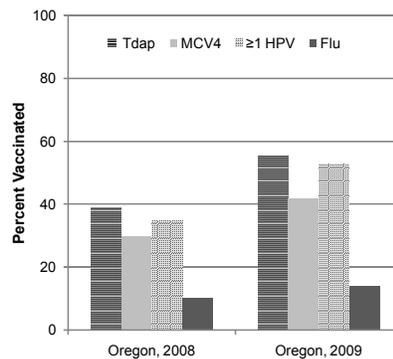
The requirement that all 7<sup>th</sup> graders receive Tdap vaccine, if it has been at least 5 years since their last tetanus-containing vaccine, should help increase adolescent immunization rates. This requirement has been phased in at a rate of one grade level per year since 2008, so that this school year, students in grades 7–9 need Tdap vaccine.

Note that the absence of a school requirement for a given vaccination doesn't imply a lack of importance; it may be that the terrible illness that the child may get doesn't threaten his classmates (e.g., HPV infection). The recommended vaccines are worthwhile, regardless of whether they are required; students just won't be excluded from school for lack of having received the non-required ones.

#### **HEPATITIS A VACCINE—FOR ADOLESCENTS?**

In 1997 Oregon, along with 10 other western states, was designated as a high-risk state for hepatitis A. CDC recommends hepatitis A vaccine for all children at one year of age, and for older children only if they are at

**Figure 2. Teen vaccination rates, Oregon, 2008 and 2009**



Source: NIS Data and ALERT sentinel data, 2008–09 and 2009–10 influenza seasons, respectively.

“high risk.” However, living in a state with historically high rates of hepatitis A — like Oregon — puts children into the high-risk category.<sup>4</sup> In 2008, hepatitis A vaccination was required for Oregon children 18 months of age and older in child care, preschool, and kindergarten. An additional grade has been added each year so that this fall, 2010, the vaccine is required for preschoolers, kindergarten, and grades 1 and 2. By school year 2014–2015, all Oregon students through grade 12 will be required to be vaccinated against hepatitis A. Providers are encouraged to vaccinate adolescents against hepatitis A when they come in for other visits. Submit the immunization to the ALERT Immunization Information System, and remind parents to update their child's immunization record with the school.

#### **CHANGES FOR THE FUTURE**

Starting January 1, 2011, Oregon pharmacists will be able to immunize adolescents 11 years and older. (Currently, pharmacists may only give influenza vaccine to adolescents 15 years and older.) Pharmacists will also give adolescents (or their parents) a reminder card to schedule a visit for adolescent health screenings. See [www.oregon.gov/DHS/ph/imm/docs/Adols-Flyer.pdf](http://www.oregon.gov/DHS/ph/imm/docs/Adols-Flyer.pdf).

#### **FOR MORE INFORMATION**

For more information about adolescent immunizations visit, [www.oregon.gov/DHS/ph/imm/teens/index.shtml](http://www.oregon.gov/DHS/ph/imm/teens/index.shtml).

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