

## Vaccine Safety: *What Legislators Need to Know*

Doctor's visits, missed work days, hospitalization and even death can result from illnesses that can be prevented by vaccines. These repercussions impact health care costs and quality of life, especially when considering that vaccines are readily available for much of the population. Despite the potential savings and proven effectiveness and safety of vaccines, some parents continue to be concerned about the need for vaccines and their potential side effects, particularly those vaccines with the mercury-containing preservative thimerosal. This leaves many state leaders and legislators in the difficult position of needing to understand both the science behind vaccine safety and the safety concerns of some parents.

The Council of State Governments recently launched its Healthy States Initiative, a partnership between CSG and the Centers for Disease Control and Prevention. The initiative is designed to help state leaders access the information they

need to make informed decisions about public health issues. Through the Healthy States Initiative, CSG is hosting a series of Web conferences on trends in public health issues. In February, CSG hosted its second Web conference in the series on Vaccine Safety.

The Web conference speakers included:

- Mrs. Betty Bumpers, vice president and co-founder, Every Child By Two
- Dr. Harry Hull, state epidemiologist, Minnesota
- Dr. Melinda Wharton, acting deputy director, National Immunization Program, Centers for Disease Control and Prevention

To view the archives of this and other events, please visit [www.healthystates.csg.org](http://www.healthystates.csg.org), (keyword: Web conference).

### **The Importance of Vaccines for Public Health**

Devastating illnesses such as polio, measles and rubella were once a common public health threat in the United States. These diseases routinely resulted in serious disability and death for many infants, children and adults until advancements in vaccines were able to prevent or eradicate these diseases and improve the public's health overall.

Even though the US population is much better protected now than 50 years ago, many of the viruses and bacteria that cause these infectious diseases still exist and can be spread by those who are not protected by vaccines. Communities with high vaccination rates are the best protected from these illnesses. Susceptibility to these diseases increases even when only a few are not immunized.

### **Health Care Cost Savings**

Public health experts agree that immunization, also known as vaccination, is a very cost-effective public health measure. Immunization experts in Minnesota estimate for every dollar spent on the state's immunization program, \$15 is saved by preventing illnesses later. "The states have a huge financial interest in maintaining high immunization rates. It's not just an issue of preventing suffering; it's also an issue of controlling health care costs," said Dr. Harry Hull. By preventing these diseases through vaccination, the high costs of treatment are thwarted.

### **The Science Behind Vaccine Safety**

Regardless of the many quality of life and cost saving benefits of vaccinations, current vaccination policies are not without controversy. Some states have proposed legislation to reduce the amount and the types of vaccines available to the public. Much of this legislative activity results from questions surrounding the mercury-containing preservative thimerosal that is included in some vaccines.

Many are concerned about the potent side effects of thimerosal because they have heard warnings about mercury in the environment. It is important to understand that the type of mercury used to preserve vaccines is not the same form of mercury that can be found in some types of fish. According to the CDC, exposure to high levels of the type of mercury in fish is toxic and can cause mental retardation, cerebral palsy and seizures. The mercury found in thimerosal—which is used as a preservative in some vaccines—has not been proven to cause harm.



## key facts: vaccine safety

- Thimerosal is a preservative used in some vaccines. It contains mercury, but not the same type of mercury that causes harm, such as that found in some fish.
- Even though thimerosal isn't proven to be dangerous, it has not been used in recommended vaccines since early 2004 to reduce children's overall exposure to mercury.
- There is no scientific link established between the mercury used in thimerosal and autism.
- The CDC continually evaluates and updates its immunization recommendations as research findings provide new information on any adverse effects.

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**Immunization is the wall that keeps the diseases away from the community, and if the wall comes down, the diseases come back.**

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—Dr. Melinda Wharton, Centers for Disease Control and Prevention

According to CDC, thimerosal has been used in very small amounts for more than 50 years to prevent bacterial contamination of vaccines packaged in multi-dose vials. Some concern has been expressed about a potential link between health problems, particularly autism, and vaccines containing thimerosal preservative. There is no convincing evidence, according to the CDC, that the small amount of thimerosal contained in vaccines causes harm.

In the late 1990s, some parents and researchers worried that as the number of recommended childhood immunizations increased, infants were exposed to more mercury through vaccination, possibly causing neurological damage, such as autism, in some children. In order to address this concern and maintain parental support for vaccinations, the U.S. Public Health Service and the American Academy of Pediatrics issued a joint statement in 1999 that called for expedited removal of thimerosal from vaccines given to children under 6 months of age. Although there was no proven harm from the mercury in vaccines, eliminating it was seen as more feasible compared to the difficult or impossible tasks of reducing other environmental sources, such as reductions in some foods. Over the next four years, vaccine manufacturers voluntarily removed thimerosal preservative from the majority of routinely recommended childhood vaccines.

Because of the dramatic increase in diagnosed cases of autism in children in the late 1990s, critics' greatest concerns have been a possible link between autism and thimerosal exposure. In 2004, the Institute of Medicine released a report, *Vaccines and Autism*<sup>1</sup>, concluding that there was no scientific evidence to support a linkage between the two. Additionally, a report published in 2003 in the journal *Pediatrics*<sup>2</sup> also showed no link between thimerosal and autism. This study was conducted in Denmark, where the use of thimerosal-containing childhood vaccines was discontinued after 1992.

Therefore, the incidence of autism in children exposed to thimerosal through vaccination before 1992 could be compared to the incidence of autism in children who were not exposed to thimerosal after 1992. According to the study, “The discontinuation of thimerosal-containing vaccines in Denmark in 1992 was followed by an increase in the incidence of autism. Our ecological data do not support a correlation between thimerosal-containing vaccines and the incidence of autism.” See Figure 2.

CDC continually evaluates and updates its immunization recommendations as research findings provide new information on any adverse effects. Today, with the exception of some flu vaccines, none of the vaccines used in the United States to protect preschool children against 12 infectious diseases contain thimerosal as a preservative. Although most of the flu shots available in the United States do contain thimerosal, limited supplies are available without the mercury-containing preservative.

### State Trends in Vaccination

Advancements in medical research are producing more new vaccines, and public health officials will be anxious to provide these to the public. Although these vaccines can prevent some serious infectious diseases and improve the overall public's health, some experts predict that tight federal and state budgets and the persistent concerns surrounding vaccine safety may make implementing new vaccine mandates a difficult and unpopular task for state leaders. Despite these difficulties, several states have developed programs and techniques that have led to very successful immunization rates.

#### Minnesota

Minnesota has one of the highest immunization rates in the nation. Dr. Harry Hull, Minnesota's Epidemiologist, cites several reasons why they have been so successful in immunizing the public.

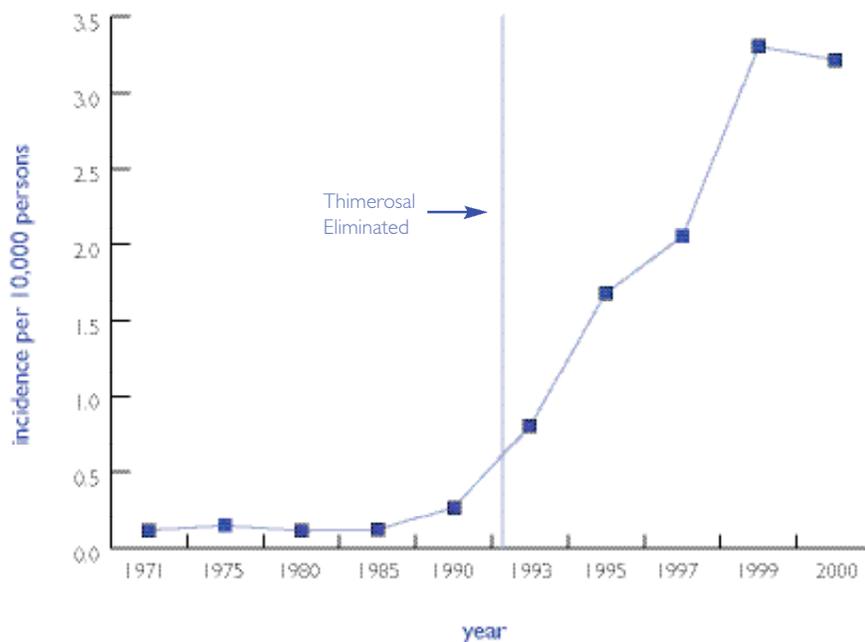
- An advisory board is given the task of overseeing and revising the immu-

Figure 1:  
Decline in Annual Illness and Deaths from Vaccine-Preventable Diseases<sup>3</sup>

Disease	Annual Cases Prior to Vaccine Introduction*	2004 Annual Cases
Smallpox	48,164	0
Diphtheria	175,885	0
Measles	503,282	37
Mumps	152,209	236
Pertussis	147,271	18,957
Polio (paralytic)	16,316	0
Rubella	47,745	12
Congenital Rubella Syndrome	823	0
H. influenza (type b and unknown)	20,000 (estimated)	172

\* Estimated annual cases based on available data. See *MMWR* Volume 48; Number 12.

Figure 2: Incidence of Autism in Denmark After Thimerosal Eliminated in 1992<sup>2</sup>



—Reproduced by permission of *Pediatrics*, 2003; Vol. 112(3), pg. 604–606.

nization sequence for children and adults to ensure patient safety and maximum prevention of disease.

- Newsletters, Web site updates and mailers are used to maintain good communication with the public and the health community. Additionally, a toll-free hotline is available to answer any questions for providers and the general public.
- Public and private partnerships between family associations, school organizations and medical experts are used to build relationships and enhance educational programs on the immunization requirements and their value.
- An immunization registry has been established with 1.9 million people enrolled.

#### Other State Legislative Trends

In addition to concerns about thimerosal-containing vaccines, several states have introduced legislation that provides vaccination exemptions for religious or philosophical objections, not just medical reasons. In other cases, legislation would enact vaccine requirements for children entering pre-schools and daycare centers, home-schooled children, children in protective and foster care systems and homeless children.

#### Conclusion

State policy-makers face the difficult task of balancing their responsibility to protect the health of all their constituents while also responding to the concerns of some about the potential adverse effects from vaccines.

In order to protect the public's health, they must support policy to improve immunization coverage in the greater population and ensure that public health leaders have the tools and powers needed to respond quickly in the event of an infectious disease epidemic. By using the most advanced immunization research and national policy recommendations, the costs associated with death and disability from vaccine-preventable diseases can be avoided, and the public's health can be protected statewide, nationally and globally.

Moreover, state policy-makers must respond to constituents with concerns regarding the possibility of unproven health hazards from vaccines. These concerns are very real to those afflicted with diseases with unknown causes. Policy-makers must stay informed of any changes in nationally recommended policies as additional scientific findings become available.

—This publication was prepared by Sarah Donta Razor, health policy research associate for The Council of State Governments

#### References:

1. Institute of Medicine (2004). Immunization Safety Review: Vaccines and Autism. <http://www.iom.edu/report.asp?id=20155>
2. Thimerosal and the Occurrence of Autism: Negative Ecological Evidence From Danish Population-Based Data. *PEDIATRICS* Vol. 112 No. 3 (Madsen, 2003) <http://pediatricsaapublications.org/cgi/content/>
3. Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report April 2, 1999. 48: 242–264 <http://www.cdc.gov/mmwr/PDF/wk/mm4812.pdf>



## resources on vaccine safety

- American Academy of Family Physicians  
[www.aafp.org/index.xml](http://www.aafp.org/index.xml)
- Institute of Medicine  
[www.iom.edu](http://www.iom.edu)
- The Centers for Disease Control; National Immunization Program  
[www.cdc.gov/nip/default.htm](http://www.cdc.gov/nip/default.htm)
- Every Child By Two  
[www.ecbt.org](http://www.ecbt.org)
- State immunization program Web site  
[www.immunize.org/states/index.htm](http://www.immunize.org/states/index.htm)
- Minnesota Immunization Homepage  
[www.health.state.mn.us/divs/idepc/immunize/index.html](http://www.health.state.mn.us/divs/idepc/immunize/index.html)

## healthy states brief: vaccine safety

Volume 1, Number 2

*Healthy States Briefs* highlight trends and promising practices in state public health policy.

The Healthy States Initiative is a partnership among The Council of State Governments (CSG), the National Black Caucus of State Legislators (NBCSL) and the National Hispanic Caucus of State Legislators (NHCSL). The initiative is supported by the Centers for Disease Control and Prevention.

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Funding for CSG's Healthy States initiative is provided by the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, under cooperative agreement U38/CCU424348.

## healthy states resources for state policy-makers

New information resources produced under the Healthy States initiative include:

- **Healthy States Web Site.** This unique Web site offers resources on many public health issues. Visit [www.healthystates.csg.org](http://www.healthystates.csg.org) for information, to sign up for publications, and to view the calendar and other information on the initiative.
- **Healthy States Publications.** Periodic publications assist state legislatures interested in public health topics such as cancer and chronic disease prevention, HIV/AIDS and sexually transmitted disease prevention, vaccines, health disparities and school health.
- **Healthy States e-weekly.** This free weekly electronic newsletter brings the latest public health news, resources, reports and upcoming events straight to your inbox.
- **Healthy States Quarterly.** CSG's free quarterly newsletter covers public health legislative and policy trends, innovative best practices from the executive and legislative branches, current research, and information on Healthy States activities.
- **Forums and Web Conferences.** Web conferences on a variety of topics allow public health experts, legislators and legislative staff to discuss priority public health issues. Forums include educational sessions on public health issues, new legislator training, and roundtable discussions with peers and public health experts

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