Updated Recommendations on the Use of Pneumococcal Conjugate Vaccine in a Setting of Vaccine Shortage—Advisory Committee on Immunization Practices

MMWR. 2001;50:1140-1142

In September 2000, CDC published an interim vaccination schedule recommended by the Advisory Committee on Immunization Practices (ACIP) to be used during a pneumococcal conjugate vaccine shortage that was anticipated to be brief.1,2 Because the duration of the shortage has been longer and the severity has been greater than anticipated, ACIP has revised these recommendations to health-care providers who had been advised to conserve vaccine by decreasing the number of doses administered to healthy infants rather than to leave some infants unvaccinated. For infants who receive their first dose before age 6 months, vaccination with a maximum of 3 doses is recommended; the fourth dose should be deferred. All health-care providers should reduce the number of vaccine doses used and ordered, regardless of their current supply, so that vaccine is more widely available until supplies are adequate.

Because of greater-than-expected demand, vaccine has been back ordered for the public sector throughout most of 2001. In August, the situation worsened when facility and product testing-related limitations at the manufacturer’s production sites halted distribution for several weeks. Under a full vaccination schedule, approximately 1.5 million doses are needed per month; the manufacturer estimates that 90% of the doses are used for the 4-dose infant vaccination series, and 10% are used for catch-up vaccination. During September, approximately 700,000 doses were distributed (47% of the 4-dose infant schedule), and in October, approximately 600,000 doses were distributed (40%). The manufacturer anticipates the distribution of approximately 1.2 million doses per month during November 2001-March 2002 (86%) and approximately 2.0 million doses per month during April 2002-mid-2002 (142%).

Until adequate supplies are available, ACIP recommends the following:

1. Vaccine should be administered to high-risk children aged <5 years as recommended by ACIP in October 2000,1 including children with sickle cell disease and other hemoglobinopathies; anatomic asplenia; chronic diseases (e.g., chronic cardiac and pulmonary disease, and diabetes); cerebrospinal fluid leak; human immunodeficiency virus infection and other immunocompromising conditions; immunosuppressive chemotherapy or long-term systemic corticosteroid use, and children who have undergone solid organ transplantation.

2. Healthy infants and children aged <24 months should receive a decreased number of pneumococcal conjugate vaccine doses on the basis of the age at which vaccination is initiated and the estimated amount of vaccine available to the health-care provider’s practice (Table 1). On the basis of birth, cohort size and recent experience with vaccine supply, if health-care providers estimate a shortfall of <25% of the 4-dose infant schedule, a moderate shortage schedule is recommended. If estimates suggest a greater shortfall, the severe shortage schedule is recommended. If shortages are estimated to be more severe (>50%), health-care providers should set infant vaccination priorities based on the assessment of risk, deferring infants at lowest risk. Demographic risk factors for invasive infections include being black or American Indian; exposure risk factors include not breastfeeding and attendance at out-of-home child care.3

Limited data support a 2-dose schedule among infants; however, this regimen is preferable to vaccinating some children with 3 doses and not vaccinating others. Efficacy data from a randomized controlled trial prelicensure suggest that 1 or 2 doses of pneumococcal conjugate vaccine are protective during the 2-month interval before the next dose with a point estimate of 86% efficacy but a 95% confidence interval that includes zero.4 Immunogenicity data indicate increases in antibody titer following 2 doses for all vaccine serotypes except 6B.5 For all serotypes, 2 doses of conjugate vaccine probably increase antibody avidity and induce immunologic memory that is boosted by subsequent antigenic exposure. Acceptable 2-dose regimens include vaccination at ages 2 and 4 months, 2 and 6 months, or 4 and 6 months. The major advantage of regimens that begin at age 2 months is earlier provision of protection. Immunogenicity may be improved by increasing the interval between doses and vaccinating at ages 2 and 6 months or by vaccinating at ages 4 and 6 months. “Carrier priming” has been documented with the CRM197 Haemophilus influenzae type b conjugate vaccine,6 but the impact has not been evaluated for pneumococcal conjugate vaccine. Although immunogenicity would be greater if pneumococcal conjugate vaccination were deferred until after age 6 months (e.g., ages 7 and 9 months), this regimen would leave younger infants unprotected and would require additional vaccination visits.

3. Health-care providers should maintain a list of children for whom conjugate vaccine has been deferred so that it can be administered when the supply allows. The highest priority for vaccination among children who have been deferred is infants vaccinated with 2 doses. Infants who have received 3 doses...
and are eligible for a fourth dose would be a second priority group.

4. Pneumococcal polysaccharide vaccine is not licensed or recommended for children aged <2 years. Although a study indicated that administration of this vaccine at age 15-18 months may substantially boost antibody levels among children primed with 3 doses of conjugate vaccine (University of Chicago, unpublished data, 1995), this study did not use the licensed conjugate preparation. ACIP recommends additional study to evaluate the immune response to a polysaccharide vaccine booster dose among children aged 12-15 months.

Because data are limited on the long-term efficacy of a 3-dose or 2-dose vaccine regimen for young infants, healthcare providers are encouraged to report invasive pneumococcal disease following pneumococcal conjugate vaccine to CDC through state health departments. If pneumococcal isolates are available from vaccinated children, CDC can perform serotyping to determine whether it is a type included in the vaccine. Additional information about this study is available at http://www.cdc.gov/nip/home-hcp.htm; other information is available at CDC’s Respiratory Diseases Branch, telephone 404-639-2215; fax 404-639-3970.

REFERENCES
6 available

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Respiratory Syncytial Virus Activity—United States, 2000–01 Season

MMWR. 2002;51:26-28
1 figure omitted

Respiratory syncytial virus (RSV) has a widespread distribution and can cause serious lower respiratory tract illness (LRTI). RSV is most commonly considered a pathogen among infants and young children; however, it can cause serious LRTI throughout life, especially among those with compromised respiratory, cardiac, or immune systems and the elderly. In temperate climates, RSV infections occur primarily during annual outbreaks, which peak during winter months. In the United States, RSV activity is monitored by the National Respiratory and Enteric Virus Surveillance System (NREVSS), a laboratory-based surveillance system. This report summarizes trends in RSV activity reported to NREVSS during July 2000–June 2001 and presents preliminary surveillance data from the weeks ending July 7 through December 8, 2001, indicating the onset of the 2001-02 RSV season. Health-care providers should consider RSV in the differential diagnosis of lower respiratory tract disease in persons of all ages, use isolation procedures to prevent nosocomial transmission, and consider use of immune globulin or monoclonal antibody prophylaxis in premature infants or infants and children with chronic lung disease.

A total of 81 clinical and public health laboratories in 47 states and the District of Columbia report weekly to CDC the number of specimens tested and the number positive for several respiratory and enteric viruses by antigen detection and virus isolation methods. During July 2000–June 2001, 64 laboratories representing 41 states reported 138,984 tests for RSV; 18,605 (13.4%) were positive. Widespread RSV activity began the week of November 11, 2000, and continued for 24 weeks until April 21, 2001. Activity peaked in late December in the southern region of the United States, and in late February in all other regions.

State-specific RSV season onset and conclusion dates varied widely, with a range of outbreak onsets during August 26–January 20, and a range of conclusions during January 29–May 26. Regional RSV outbreaks occurred earliest in the South (23 sites reporting; median weeks of onset and conclusion: October 21 and May 19, respectively), later in the Northeast (six sites; November 25 and May 5), and latest in the Midwest (20 sites; December 9 and May 26) and West (14 sites; October 21 and May 26).

Although 94% of RSV detections were reported for the week ending October 30 through the week ending March 25, sporadic detections were reported throughout the year. During July-August 2001, laboratories in Arizona, California, Florida, Hawaii, Nevada, Ohio, Texas, Virginia, Washington, and West Virginia reported sporadic isolates of RSV.

For the current reporting period (July 7 through December 13, 2001), 55 laboratories in 37 states reported results of testing for RSV. Since November 3, 2001, 25 participating laboratories have reported RSV.

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<table>
<thead>
<tr>
<th>Age at first vaccination</th>
<th>No shortage</th>
<th>Moderate shortage</th>
<th>Severe shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 months</td>
<td>2, 4, 6, and 12-15 months</td>
<td>2, 4, and 6 months (defer 4th dose)</td>
<td>2 doses at 2-month interval in 1st 6 months of life (defer 3rd and 4th doses)</td>
</tr>
<tr>
<td>7-11 months</td>
<td>2 doses at 2-month interval; 12-15 month dose</td>
<td>2 doses at 2-month interval; 12-15 month dose</td>
<td>2 doses at 2-month interval (defer 3rd dose)</td>
</tr>
<tr>
<td>12-23 months</td>
<td>2 doses at 2-month interval</td>
<td>2 doses at 2-month interval</td>
<td>1 dose (defer 2nd dose)</td>
</tr>
<tr>
<td>&gt;24 months</td>
<td>1 dose should be considered</td>
<td>No vaccination</td>
<td>No vaccination</td>
</tr>
</tbody>
</table>

* The vaccine schedule for no shortage is included as a reference. Providers should not use the no shortage schedule regardless of their vaccine supply until the national shortage is resolved.

† Assumes that approximately 85% of vaccine is administered to healthy infants beginning at age <7 months; approximately 5% is administered to high-risk infants beginning at age <7 months; and approximately 10% is administered to healthy children beginning at age 7 to 24 months. Actual vaccine savings will depend on a provider’s vaccine use.
CDC Editorial Note: For the July 2000–June 2001 surveillance period, the number of specimens that tested positive for RSV, median months of onset activity, and regional trends were similar to trends reported during previous years. The duration of the 2000-2001 RSV season also was consistent with that of previous years, including the characteristic earlier onset of RSV outbreaks reported by southern laboratories.

RSV causes bronchiolitis and pneumonia in infants and young children; RSV causes an estimated 31 bronchiolitis-associated hospitalizations per 1,000 children aged <1 year per year. The rate of RSV-associated hospitalizations is higher in certain populations, such as American Indian/Alaska Native children receiving care through the Indian Health Service (62 per 1,000 children aged <1 year per year). Because RSV infection confers only partial protection from subsequent infection, reinfections occur throughout life. As a result, health-care providers should consider RSV as a cause of acute respiratory disease in all age groups during community outbreaks. Persons with underlying cardiac or pulmonary disease, compromised immune systems, and the elderly are at increased risk for serious complications of RSV infection, including LRTI and death. The disease burden of RSV infections might be ≥50% of that associated with influenza. RSV infection among recipients of bone marrow transplants has been associated with mortality rates >50%. Rapid diagnostic techniques for clinicians vary in sensitivity and specificity. Some assays are sensitive for diagnosis in infants and young children but not in older children and adults. PCR-based assays are the most sensitive. No effective treatment for RSV-associated LRTI exists. Ribavirin initially was reported to be an effective treatment; however, subsequent trials could not substantiate a benefit from this therapy. NREVSS data can alert public health officials and health-care providers to the timing of seasonal RSV activity. Although no RSV vaccine is available, RSV immune globulin intravenous and a humanized murine anti-RSV monoclonal antibody are available as prophylaxis for some high-risk infants and young children (e.g., those born prematurely or with chronic lung disease) to prevent serious RSV disease. Contact isolation procedures are recommended for prevention and control of nosocomial transmission of RSV.

The findings in this report are subject to at least three limitations. First, laboratory data indicate when RSV is circulating in a community; however, the correlation of these data to disease burden in the population is uncertain. Second, few laboratories represent some regions. Finally, diagnostic methods are not standardized among contributing laboratories, and the sensitivity and specificity of these methods probably vary among reporting laboratories.


REFERENCES

lance of disaster-related health effects is an integral part of effective disaster planning and response.

Within 6 hours of the WTC attack, a NYCDOH rapid assessment team began collecting demographic and clinical data on all persons who sought emergency care from 8 AM September 11 to 8 AM September 13 at the five Manhattan hospitals. Information about each person included sex, age, mode of arrival at the hospital, date and time of registration or initial assessment, type and anatomic location of injury or illness, whether the injury or illness was attributable to the attack, and whether the person was admitted for additional treatment or was discharged from the ED. Whether the injury or illness was attributable to the attack, and whether the person was admitted for additional treatment or was discharged from the ED. Whether the injury or illness was attributable to the attack, and whether the person was admitted for additional treatment or was discharged from the ED.

Among the 1,688 ED patients who received care at the sampled hospitals during the assessment period, 1,103 (65%) were survivors treated for injuries or illnesses related to the attack. A link between injury or illness and the attack was not established for 96 (6%) patients because of incomplete documentation; specific injury or illness was missing for 161 (15%), and admission and discharge data were not documented for 108 (10%). The median age of 1,103 survivors was 39 years (range: <1-95 years), 729 (66%) were male, 282 (26%) arrived by emergency medical vehicle, and 320 (29%) were rescue workers (e.g., firefighters, police officers, and emergency medical services personnel). A total of 810 (73%) were treated and released from EDs, 181 (16%) were hospitalized for additional treatment, and four (0.4%) died during emergency care. Among the survivors, 152 (14%) had WTC-related noninjury conditions (e.g., cardiac, respiratory, neurologic, or psychiatric illness).

Within 12 hours of the first crash, emergency care was sought by 511 (71%) of the 723 survivors with recorded injuries and time of assessment (Figure 1). The survivors with injuries requiring admission and additional treatment presented earlier than those treated and released. Approximately 50% of the survivors admitted for treatment presented within 4 hours of the event (interquartile range: 2.4-8.9 hours). In comparison, approximately 50% of the survivors treated and released from the ED presented within 7.6 hours (interquartile range: 3.5-15.3 hours). Rescue workers arrived later than other survivors and accounted for 59 (51%) of 115 survivors presenting to the EDs during the first 24-48 hours after the attack (Figure 1).

Among 790 survivors with injuries, 386 (49%) had inhalation injuries and 204 (26%) had ocular injuries (Table 1). Most inhalation and ocular injuries were attributed to smoke, dust, debris, or fumes. A total of 443 (56%) survivors were treated for inhalation injury, ocular injury, or a combination of both without additional injuries. Among survivors hospitalized with injuries, 32...
sustained inhalation injuries and 27 (19%) sustained burns. Most survivors with fractures (59%), burns (69%), closed head injuries (57%), or crush injuries (75%) were hospitalized for additional treatment. The injury pattern among rescue workers differed from the pattern among other survivors (Table 2). A significantly higher percentage of rescue workers sustained ocular injuries (39% versus 19%; \( p < 0.0001 \)), and a significantly lower percentage of rescue workers sustained burns (2% versus 6%; \( p < 0.01 \)).

**CDC Editorial Note:** Similar to injured survivors of other terrorist attacks on buildings, most survivors of the WTC incident sustained injuries that were treated on an outpatient basis. The hospital admission rate among survivors of the Murrah Federal building bombing in Oklahoma City, Oklahoma, was approximately 20%. However, admission rates associated with terrorist bombings should be compared with caution because the number at risk, the location of survivors at the time of the attack, and building and blast effects vary with each event. Inhalation and ocular injuries were diagnosed and treated more frequently following the WTC attack than the attacks in Oklahoma City and on the U.S. Marine barracks in Beirut, Lebanon. This difference might be the result of more extensive exposure to smoke and respirable dust after the WTC attack.

**TABLE 1. Number and percentage of injuries reported by five hospitals after attack on World Trade Center, by injury — New York City, from 8 a.m. September 11 to 8 a.m. September 13, 2001**

<table>
<thead>
<tr>
<th>Injury</th>
<th>Hospitalized (n=139)</th>
<th>Treated and released (n=606)</th>
<th>Undocumented follow-up care (n=45)</th>
<th>Total (n=780)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Inhalation</td>
<td>52 (37)</td>
<td>300 (50)</td>
<td>58 (76)</td>
<td>386 (49)</td>
</tr>
<tr>
<td>Ocular</td>
<td>10 (7)</td>
<td>185 (31)</td>
<td>9 (70)</td>
<td>204 (26)</td>
</tr>
<tr>
<td>Laceration</td>
<td>25 (18)</td>
<td>80 (13)</td>
<td>6 (11)</td>
<td>110 (14)</td>
</tr>
<tr>
<td>Sprain or strain</td>
<td>17 (12)</td>
<td>85 (14)</td>
<td>6 (13)</td>
<td>108 (14)</td>
</tr>
<tr>
<td>Contusion</td>
<td>29 (21)</td>
<td>66 (11)</td>
<td>3 (7)</td>
<td>98 (13)</td>
</tr>
<tr>
<td>Fracture</td>
<td>27 (19)</td>
<td>19 (3)</td>
<td>0 (0)</td>
<td>46 (6)</td>
</tr>
<tr>
<td>Burn</td>
<td>27 (19)</td>
<td>12 (2)</td>
<td>0 (0)</td>
<td>39 (5)</td>
</tr>
<tr>
<td>Closed head</td>
<td>8 (6)</td>
<td>6 (1)</td>
<td>0 (0)</td>
<td>14 (2)</td>
</tr>
<tr>
<td>Crush</td>
<td>6 (4)</td>
<td>2 (0.3)</td>
<td>0 (0)</td>
<td>8 (1)</td>
</tr>
</tbody>
</table>

*Excludes unspecified injuries or illnesses.*

*Includes two survivors who died during emergency care.*

*Totals might exceed total number of survivors because some survivors might have sustained multiple injuries.*

*Totals might exceed 100% because some survivors might have sustained multiple injuries.*

**TABLE 2. Number and percentage of injuries to rescue workers and nonrescue survivors reported by five hospitals after attack on World Trade Center, by injury — New York City, from 8 a.m. September 11 to 8 a.m. September 13, 2001**

<table>
<thead>
<tr>
<th>Injury</th>
<th>Rescue workers (n=278)</th>
<th>Nonrescue survivors (n=511)</th>
<th>Total (n=789)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Inhalation</td>
<td>118 (42)</td>
<td>268 (52)</td>
<td>387 (49)</td>
</tr>
<tr>
<td>Ocular</td>
<td>108 (39)</td>
<td>96 (19)</td>
<td>204 (26)</td>
</tr>
<tr>
<td>Sprain or strain</td>
<td>44 (16)</td>
<td>64 (13)</td>
<td>110 (14)</td>
</tr>
<tr>
<td>Laceration</td>
<td>23 (8)</td>
<td>87 (17)</td>
<td>110 (14)</td>
</tr>
<tr>
<td>Contusion</td>
<td>44 (16)</td>
<td>54 (11)</td>
<td>98 (13)</td>
</tr>
<tr>
<td>Fracture</td>
<td>13 (5)</td>
<td>33 (6)</td>
<td>46 (6)</td>
</tr>
<tr>
<td>Burn</td>
<td>6 (2)</td>
<td>33 (6)</td>
<td>39 (5)</td>
</tr>
<tr>
<td>Closed head</td>
<td>3 (1)</td>
<td>11 (2)</td>
<td>14 (2)</td>
</tr>
<tr>
<td>Crush</td>
<td>3 (1)</td>
<td>5 (1)</td>
<td>8 (1)</td>
</tr>
</tbody>
</table>

*Excludes unspecified injuries or illnesses.*

*Totals might exceed number of survivors because some survivors might have sustained multiple injuries.*

*Totals might exceed 100% because some survivors might have sustained multiple injuries.*

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CDC distributed information on these topics through NYCDOH, including information on eye safety (http://www.cdc.gov/niosh/eyesafe.html), respiratory exposures (http://www.cdc.gov/niosh/erfaqs.html), general rescue site safety (http://www.cdc.gov/niosh/emhaz2.html), and respirator cleaning and reuse (http://www.cdc.gov/niosh/respclin.html).

The findings in this report are subject to at least two limitations. First, the rapid assessment of the health effects of the WTC attack was a sample that did not encompass all injured survivors who sought emergency medical care near the crash site and did not provide population-based estimates of injury occurrence.1,2 Second, data describing injury circumstances, clinical conditions, treatments, and follow-up care were missing from many survivor records reviewed by the rapid assessment team. Some survivors were treated and released from temporary triage stations outside hospitals without documentation. Numerous survivors were treated by more distant hospitals in New York, New Jersey, and Connecticut, by private physicians, onsite triage stations, or they treated themselves.

The rapid assessment of injuries among WTC attack survivors reinforces the need to strengthen capacity for postdisaster surveillance before disasters occur.7,8 Use of electronic data can improve timeliness of surveillance, and in October 2001, NYCDOH began an automated electronic surveillance system to monitor chief complaints reported in 29 area EDs. Standardized patient record keeping can improve completeness of point-of-care data collection and public health reporting. In North Carolina and Oregon, CDC pilot projects are using Data Elements for Emergency Department Systems (DEEDS), a set of recommended specifications for ED patient record systems.9 Improving ED record keeping and reporting systems will assist in the surveillance of disaster-related health effects and are an integral part of effective disaster planning and response.10

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10 available

Fibrosing Skin Condition Among Patients With Renal Disease—United States and Europe, 1997–2002

MMWR. 2002;50:25-6

DURING MAY 1997–NOVEMBER 2000, eight (3%) of 265 kidney transplant recipients at a hospital in California developed an unusual skin condition post-transplant. On clinical examination, the patients had fibrotic skin lesions histologically resembling scleromyxedema on their distal extremities and trunk, resulting in severe contractions and limited mobility. However, the usual IgG lambda paraprotein associated with scleromyxedema was not observed in these patients. Personnel in the dermatopathology section at the University of California, San Francisco, reviewed the biopsies and concluded that this skin disorder had not been described previously. As a result, health-care providers at the hospital where the index patient was treated asked the California Department of Health Services (CDHS) and CDC to assist in the investigation. This report summarizes preliminary findings from the investigation.

A case was defined as large areas of hardened skin with slightly raised plaques or papules, with or without pigment alteration, in a patient with a skin biopsy indicating increased dermal fibroblasts and mucin and an abnormal dermal collagen bundle pattern. Additional patients were identified by responses to a publication describing the condition,1 by colleague referral, and by contacting members of the American Society of Dermatopathology, who were asked to alert other clinicians about the condition and to refer potential patients to CDHS. As of January 2002, 49 patients have been identified throughout the United States and Europe. Although having renal disease is not a part of the case definition, all patients have had underlying renal disease; approximately half have had renal transplantation. No consistently effective treatment exists; however, several patients have improved.

To identify risk factors for this condition, in February 2001, CDHS conducted a case-control study among the eight case-patients at the index hospital, all of whom had renal disease and had undergone renal transplantation. Three controls were selected per case, matched by closest renal transplant date. Medical records for case- and control-patients were reviewed for demographic characteristics, procedures, infections, laboratory values, measures of renal function, and medication exposures. Case- and control-patients were similar demographically, in the type and duration of immunosuppressive therapy or type of pretransplant dialysis, kidney transplant type, invasive procedures (e.g., surgical or diagnostic), or post-transplant infections.

Case-patients were more likely than controls to have poor renal function post-transplantation, which included requiring hemodialysis and receiving medications associated with severe disease. Because this investigation involved a small number of patients who had undergone renal transplantation, the case-control study should be expanded to include other reported cases, including cases among nontransplant patients.

Clinical and histopathologic photographs of this condition are available at http://www.pathmax.com/dermweb. Information about patients with this condition can be reported to mgoveia@dhs.ca.gov until July 2002.

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REFERENCE
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