

**IMMUNIZATION OF CHILDREN**

**Definition of Indicator**

Adequate immunization refers to the percentage of children in Orange County who are adequately immunized for four doses of DTP - diphtheria, tetanus, and pertussis (i.e., whooping cough); three doses of polio; and one dose of MMR - measles, mumps, and rubella by their second birthday. The Healthy People 2010 indicators also use three doses of hepatitis B, three doses of Haemophilus influenzae type B (Hib), and one dose of varicella (i.e., chickenpox) before three years of age. Data are based upon annual retrospective reviews of randomly selected kindergarten immunization records in Orange County and California.

**Findings**

Based upon the 2007 kindergarten survey, 78.9% of Orange County children had been adequately immunized at two years of age for diphtheria, tetanus, whooping cough, polio, measles, mumps, and rubella. That same year, the percentage of children with up-to-date immunizations at the State level was 75.7%. Coverage for three doses of hepatitis B was better in Orange County than in the State. For hepatitis B, Orange County attained 90.2% coverage in 2007 for children at 2 years of age compared to 89.8% for the State. This year Orange County surpassed the State in varicella coverage: 85.4% for Orange County versus 84.8% for the State. No data was available for Haemophilus influenzae type B vaccination coverage.

**Trends**

There has been an increase of 23.3% in children adequately immunized by the age of 2 in Orange County from 64% in 1998 to 78.9% in 2007. During the same period, the State percentage of immunized children improved by 18.3% from 64.0% to 75.7%. Between 1997 and 1999 the Orange County immunization rate remained steady at about 64%. From 2000 to 2004 the immunization rate fluctuated from 70% in 2000 to 73.8% in 2003. In 2005, Orange County had the largest single-year increase when immunization rates jumped to 77.6%. The rate went even higher in 2007, to 78.9%, a 7.5% increase in just 2 years. Currently about 1 out of 5 children still lack adequate immunizations by age 2 and may be at risk of contracting illnesses such as measles, whooping cough, tetanus, or polio. Trend data are not available for hepatitis B, varicella, or H. influenzae.

---

**STATEWIDE:**

According to Kindergarten Retrospective Surveys, immunization rates have increased from 63% in 1997 to 75.7% in 2007.

---

**RELATED INDICATORS:**
- Early Prenatal Care
- Infant Mortality
- Access to Healthcare

---

**HEALTHY PEOPLE 2010 GOAL:**

Maintain a vaccination coverage level of 90% for all children in licensed day care facilities and children in kindergarten through first grade.

Achieve 95% participation in an immunization registry by all children less than 6 years of age.

---

**Percent of Children Adequately Immunized by Two Years of Age for Orange County and California, 1998 to 2007**

<table>
<thead>
<tr>
<th>Year</th>
<th>Orange County</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>63.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>1999</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2000</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2001</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2002</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2003</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2004</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2005</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2006</td>
<td>64.0%</td>
<td>64.0%</td>
</tr>
<tr>
<td>2007</td>
<td>75.7%</td>
<td>75.7%</td>
</tr>
</tbody>
</table>

---

Percent Immunized
**IMMUNIZATION OF CHILDREN**

**Why is this Important?**

Childhood vaccinations are one of the most successful and cost-effective public health interventions of the 20th century. Early continuity of health care and immunizations has a profound and lasting effect on the long-term health of a child. Adequate immunizations protect children against diseases that killed or permanently impaired many children in past decades. Although the numbers have declined, there are still reported morbidity and mortality due to vaccine-preventable diseases such as whooping cough (pertussis), hepatitis B, measles, and chicken pox (varicella).

Vaccination coverage is particularly important before children enter preschool to prevent the spread of disease. Risk factors for under-immunization of children from birth to two years old include single parent status, inadequate prenatal care, low maternal education, limited English proficiency, recent immigration to the US, low socioeconomic status, and higher birth order. Over-immunization is also possible with increased fragmentation of health care and mobile families.

**What’s Happening in Orange County?**

All 50 states currently operate or are developing immunization registries, and Healthy People 2010 has set a national goal of enrolling 95% of all children under age 6 in an immunization registry.

- There is a high coverage for selected vaccinations but others lag behind. Many children lack a consistent medical home to provide for continuity of care.
- Since March 2005, a centralized computerized immunization registry has allowed for better tracking of immunizations.
- As of June 2008, 158,934 children were enrolled through 158 sites in the county.
- In February 2008, UCI Medical Center became the first birthing hospital in Orange County to begin entering into the registry information on the birth dose of hepatitis B of their newborn patients.
- Beginning August 2008, immunization records of children who are served by CalOptima will be included in the immunization registry.
- Beginning October 2008, all Orange County Health Care Agency WIC clinics, as well as some WIC clinics run by Planned Parenthood and Camino Health Center, will enter immunization history of WIC clients under two years of age into the immunization registry.

**What’s working:**

- The Immunization registry has resulted in improved quality of care for children and cost savings to families, providers, and institutions needing immunization records.
- As more children become enrolled, vaccination coverage will be better monitored in order to decrease coverage gaps and over-immunization.

---

**DATA SOURCES:**

Orange County Health Care Agency and State Department of Health and Human Services Agency/Immunization Branch

**NOTES:**

2. America’s Children: Key Indicators of Well-Being, 2002
4. California Department of Health Services, Immunization Branch, Fact Sheet, 2005
5. Centers for Disease Control & Prevention, National Immunization Program, National Immunization Survey, 2005

---

*See page 143 in Supplemental Tables for additional data*
## Indicator

### Adequate Immunization

**Percent of Adequately Immunized Children Enrolling in School Between 1998 through 2007 in Orange County and California**

<table>
<thead>
<tr>
<th>Assessment Year</th>
<th>Up-To-Date at Kindergarten Entry*</th>
<th>Up-To-Date at 2nd Birthday**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CA (%)</td>
<td>OC (%)</td>
</tr>
<tr>
<td>1998</td>
<td>89.3</td>
<td>89.7</td>
</tr>
<tr>
<td>1999</td>
<td>92.0</td>
<td>93.0</td>
</tr>
<tr>
<td>2000</td>
<td>92.2</td>
<td>92.2</td>
</tr>
<tr>
<td>2001</td>
<td>90.9</td>
<td>91.1</td>
</tr>
<tr>
<td>2002</td>
<td>92.3</td>
<td>93.1</td>
</tr>
<tr>
<td>2003</td>
<td>92.5</td>
<td>92.9</td>
</tr>
<tr>
<td>2004</td>
<td>92.9</td>
<td>92.7</td>
</tr>
<tr>
<td>2005</td>
<td>92.8</td>
<td>92.7</td>
</tr>
<tr>
<td>2006</td>
<td>92.7</td>
<td>92.1</td>
</tr>
<tr>
<td>2007</td>
<td>92.1</td>
<td>90.8</td>
</tr>
</tbody>
</table>

*Up-to-date (UTD) for kindergarten: Proof of immunizations is required to enter kindergarten. Children who are partially immunized are not considered UTD but may attend school as long as they are not overdue for doses needed to complete the vaccine series. Children with a written exemption based on personal beliefs or documented medical conditions are also not UTD but may attend school. 2006 Kindergarten Assessment Results, California Department of Health Services, Immunization Branch.

**Up-to-date at 2nd birthday: 3 doses of polio, 4 doses of DTP or DTaP (diphtheria, pertussis and tetanus) and 1 MMR (measles, mumps and rubella). Additional doses of each vaccine are required before school entry. 2006 Kindergarten Retrospective Survey Results, California Dept of Health Services, Immunization Branch.

Sources:

1. “2007 Kindergarten Assessment Results, California Department of Health Services, Immunization Branch.
2. “2007 Kindergarten Retrospective Survey Results California Department of Health Services, Immunization Branch.”

---

Report on the Conditions of Children in Orange County, 2008