

# Maternal and Child Health

## Key Findings:

- More than 73% of children ages 19 to 35 months have all recommended vaccinations.
- Approximately 83% of women have prenatal care in their first trimester.
- The poorest children are less likely to be fully immunized and more likely to be hospitalized for pediatric gastroenteritis.
- Parents of children with disabilities and special health care needs are consistently less likely to report that their child's doctor listens carefully, explains things clearly, and always shows respect for what the parent has to say.

## Background and Impact

Measures of maternal, infant, and child mortality are widely tracked and are used in every major comprehensive national and international report as basic performance measures of health and health care delivery.<sup>1,2,3,4,5</sup> Despite this, quality measures and data sources for maternal and child health remain limited.

Key reasons for tracking the quality of maternal and child health include:

- Childbirth and reproductive health are the most common reasons for women of childbearing age to use health care. More than 11,000 babies are born each day, and childbirth is the most common reason for hospital admission in the United States. If complications occur, they have long-term implications for both the mother and newborn.
- Low vaccination rates raise the possibility of outbreaks of infections. An example is the measles outbreak in the United States in 1989 to 1991.<sup>6</sup>
- Children in poverty are generally in poorer health.<sup>7</sup>

In maternal and child health, minimal investments in preventive care can have a high impact. For example, benefits range from \$2 to \$24 for every dollar saved on vaccinations.<sup>2</sup> Prenatal care may help prevent neonatal deaths and avoid complications such as preterm births, premature rupture of membranes, placenta previa, fetal growth restriction, or post-term pregnancy.<sup>8</sup> Furthermore, there is some evidence that adequate prenatal care can result in health care savings in expenditures for newborn and postpartum care.<sup>9,10</sup>

## How the NHQR Measures Maternal and Child Health Quality of Care

This section of the report addresses a subset of maternal and child health care indicators. These indicators are based on traditional definitions of maternal and child health care and include prenatal care, labor and delivery, basic child and adolescent health care, immunizations, and dental care. Good quality of care in maternal and child health<sup>i</sup> is measured by performance in these areas (see full list of measures at end of this section):

- Delivering basic childhood and adolescent preventive services (such as childhood and adolescent immunizations and preventive dental care for children).
- Preventing unnecessary hospitalizations for conditions such as pediatric gastroenteritis.
- Providing good quality maternity care.

Pediatric gastroenteritis accounts for nearly 10% of all hospital admissions of children under 5 years of age.<sup>11</sup> Moreover, proper outpatient treatment may reduce admissions for gastroenteritis; clear guidelines for such treatment have been established by the CDC and the American Academy of Pediatrics.<sup>12,ii</sup>

Information on children with special health care needs is offered in this section. Children with special health care needs (CSHCN) are defined as children with one or more limitations or needing or using more health care than is considered normal for the child's age. This definition and the CSHCN data screening tool were developed through a national collaborative process as part of the Child and Adolescent Health Measurement Initiative (CAHMI) coordinated by the Foundation for Accountability.<sup>13</sup>

The self-reported data on CSHCN in this report are from the Medical Expenditure Panel Survey. The CSHCN analysis uses a five-question screening tool and questions that focus on topics and services relevant for CSHCN.<sup>iii</sup>

---

<sup>i</sup> The term "maternal and child health" is widely used by many national and international organizations for the set of services related to maternity care and basic childhood health care such as deliveries and immunizations. However, defined as such, this view of maternal and child health is more limited than what most experts would agree constitutes comprehensive health care for women and for children. Both Healthy People 2010, the guide for inclusion of priority conditions in the first NHQR, and the Institute of Medicine's report, Priority Areas for National Action: Transforming Health Care Quality, support the tracking of maternal and child health.

<sup>ii</sup> The tracking of measures of preventable hospitalizations is not meant to imply that every admission for a condition such as pediatric gastroenteritis is a mistake. These measures are meant to be tracked, as they are in this report, so that opportunities for improving the rate of preventable hospitalizations can be noted. For more information on measures such as this, readers are encouraged to examine information on the Quality Indicators at [www.qualityindicators.ahrq.gov](http://www.qualityindicators.ahrq.gov).

<sup>iii</sup> The CSHCN analysis uses the Maternal and Child Health Bureau's July 1998 definition as a starting point for identifying children for the measurement set: "Children with special health care needs are those who have...a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally." McPherson M, Arango P, Fox H, Lauver C, McManus M, Newacheck PW, et al. A new definition of children with special health care needs. *Pediatrics* 1998;102(1 Pt 1):137-40.

## How the Nation Is Doing<sup>iv</sup>

National performance in maternal and child health is mixed. There are opportunities for improvement in both process and outcome measures of quality of care for women and children.

### Delivering Basic Childhood and Adolescent Preventive Services

Early childhood immunization has been one of the success stories in the U.S. health care system, as States and national partners have worked together to ensure that children are protected against basic infectious diseases. Major efforts within HHS over the past 10 years have resulted in record numbers of children being immunized. Seventy-four percent of children ages 19 to 35 months in 2001 received all recommended vaccinations (NIS, 2001).<sup>v</sup>

However, there is some opportunity for improvement in the provision of dental services to children. Forty-seven percent of children between 2 and 17 visited a dentist in the past year; for children in fair or poor health, this percentage was 38%.<sup>vi</sup>

### Preventing Hospitalization of Young Children for Gastroenteritis

Pediatric gastroenteritis leads to 320,000 hospitalizations (approximately 10% of all hospitalizations) and 3.7 million physician visits annually in children under age 5.<sup>14</sup> Although not all hospitalizations for pediatric gastroenteritis can be prevented, proper hydration and good quality care at home, at the primary care office, and in the emergency room may prevent hospitalization. The Nation's performance is improving, and hospital admissions significantly decreased between 1994 and 2000 (129.6 per 100,000 population versus 108.6 per 100,000). However, the poorest children are nearly twice as likely to be admitted to the hospital for gastroenteritis (HCUP, 2000).

### Children With Special Health Care Needs

According to parents' reports, differences exist for children with special health care needs. Parents of CSHCN are consistently less likely than parents of children without such needs to report that their doctor always listens carefully (61% versus 67%), always explains things clearly (65% versus 70%), and always shows respect for what the parents have to say (63% versus 69%) (MEPS, 2000).

---

<sup>iv</sup> Adjusting for known contributing factors, such as gender, age, and insurance status (multivariate analysis), would allow for more detailed exploration of the data, but this generally was not feasible for this report. Any adjustments that were done are noted in the detailed tables. The data presented in this report do not imply causation.

<sup>v</sup> The data reported here are based on Healthy People 2010 goal 14-24a, that children aged 19 to 35 months receive the following vaccines: four doses of diphtheria, tetanus, pertussis (DTPaT) vaccine; three doses of polio vaccine; one dose of measles, mumps, rubella (MMR) vaccine; three doses of Haemophilus influenzae type b (Hib) vaccine; and three doses of hepatitis B vaccine. This schedule does not protect children during the earliest period of life in which the vaccines are effective. The National Vaccine Advisory Committee, the American Academy of Family Physicians, and the American Academy of Pediatrics recommend that children receive the following vaccines within first 18 months of life, beginning shortly after birth: four doses of diphtheria, tetanus, pertussis vaccine; three doses of polio vaccine one dose of measles, mumps, rubella vaccine; four doses of H. influenzae type b vaccine; one dose of hepatitis B vaccine; and one dose of varicella vaccine. Under the CDC's Advisory Committee on Immunization Practices (ACIP) schedule, additional doses, to complete series of certain vaccines, should be received before age 6.

<sup>vi</sup> See National Healthcare Quality Report, Tables Appendix, Table 1.63.

## Prenatal Care

In general, there have been improvements over time in the delivery of prenatal care services and the outcomes of those services. In 2000, 7.6% of babies were born at 2,500 grams or less (low birthweight), and 1.4% of babies were born at 1,500 grams or less (very low birthweight). This number did not change between 1998 and 2000. Fewer infants died in 2000 versus 1998 (6.9 per 1,000 live births vs. 7.2 per 1,000 live births). Approximately 83% of women have prenatal care in the first trimester of their pregnancies (Vital Statistics, 2000).

## What We Don't Know

It is difficult to draw broad conclusions about the performance of the Nation's health care system in caring for mothers and children because of the gaps in our knowledge about quality of care for these populations. For example, while we have talked about performance in preventive care, which preventive services beyond immunization are most important for the long run? Although there may be consensus on what constitutes basic quality of care for adults with diabetes (see Diabetes section in this chapter), it is unclear whether these quality measures are appropriate for children.

Some measures of quality of care in maternal and child health are well documented at national and State levels, such as infant mortality and birthweight. Differences in these measures may be linked to variations in the quality of prenatal, labor, delivery, and early infant care. However, there are some areas about which we need to know more:

- The traditional measures of maternal and child health used in this report do not represent the full spectrum of health care for women and children. This spectrum includes the priority conditions highlighted in other sections of this report (e.g., diabetes and end stage renal disease). Although representative of inpatient care, development and refinement of existing measurement systems such as the AHRQ Quality Indicators— which currently include some measures of maternal health, such as mode of delivery and obstetric safety—could offer a more complete picture of how well the health care system serves mothers. Improved tracking in areas such as maternal mortality will greatly improve our understanding of maternal and child health.<sup>15</sup>
- National quality measurement for care of children poses challenges. First, children undergo tremendous physical, mental, and emotional change in a short time period, meaning that health care for children— and the assessment of that care—is more age-specific than for adult health care. A large part of national survey reporting is done for children as a block (i.e., ages 0 to 17), even though the processes of care for toddlers are very different from those for young children which are very different from those for adolescents. Assessing care nationally for children involves special sampling considerations versus tracking care for adults. Moreover, the tools of self-report used so often in national surveys for adults generally have not been used for children. “Proxy” reporting for children by parents through parent-administered questionnaires can be valid

when properly designed,<sup>16</sup> but this proxy reporting creates challenges with many diseases.

- Innovative work is being done by organizations such as the Foundation for Accountability whose Child and Adolescent Health Measurement Initiative aims to develop and use quality measures for children in areas such as age appropriate medical guidance and parental education, family-centered care, and assessing care for children with special health care needs.<sup>17</sup>

## **What Can Be Done**

This section has highlighted some areas where the Nation needs more information on care for children and areas for improving national performance in delivery of quality maternal and child health services. However, there are areas of promising research and demonstrated improvement that can also be highlighted.

Work by researchers from HHS/AHRQ and Harvard's School of Public Health highlighted the potential for improving quality of care measurement for children by adapting existing measures for adults. Generic measures based on events such as prolonged stays in the emergency department (ED) or monitoring of vital signs for trauma could be adapted by developing uniform definitions for pediatric-specific denominators and numerators. Other improvements in measurement include developing techniques that overcome the problem of small numbers for quality of care analyses. Such techniques would include aggregating cases across conditions to create generic measures such as followup of diagnostic tests performed in the ED. A second approach, which would have relevance in other areas of this report, is to create composites of quality of care, quality of life, and functional status across multiple chronic diseases.<sup>18</sup> Both these approaches have limitations.

Other organizations are moving from research into practice by attempting to make the business case for improving health care quality for children. AHRQ held an international expert meeting in early 2003 to explore improving children's health care quality. Participants were asked to focus on identifying how to enhance the level of public support for improvements in children's health care quality.

## List of Measures

### Maternal and Child Health

<i>Measure Title</i>	<i>National</i>	<i>State</i>
<b>Maternity care:</b>		
Process: % of pregnant women receiving prenatal care in first trimester	Table 1.48a (00)	Table 1.48d (00)
	Table 1.48b (99)	Table 1.48e (99)
	Table 1.48c (98)	Table 1.48f (98)
Outcome: % of liveborn infants with low and very low birthweight (less than 2,500 grams, less than 1,500 grams)	Table 1.49a (1500,00)	Table 1.49g (1500,00)
	Table 1.49b (1500,99)	Table 1.49h (1500,99)
	Table 1.49c (1500,98)	Table 1.49i (1500,98)
	Table 1.49d (2500,00)	Table 1.49j (2500,00)
	Table 1.49e (2500,99)	Table 1.49k (2500,99)
	Table 1.49f (2500,98)	Table 1.49l (2500,98)
Outcome: Infant mortality per 1,000 live births	Table 1.50a (00)	Table 1.50d (99)
	Table 1.50b (99)	Table 1.50e (98)
	Table 1.50c (98)	
Outcome: Maternal deaths per 100,000 live births	Table 1.51a (00)	Table 1.51c (00)
	Table 1.51b (99)	Table 1.51d (99)
[See Safety measures for complications of obstetric care]		
<b>Immunization, childhood:</b>		
Process: % of children 19-35 months who received all recommended vaccines	Table 1.52a (01)	
	Table 1.52b (00)	
	Table 1.52c (99)	Table 1.52e (01)
	Table 1.52d (98)	Table 1.52f (00)
Process: % of children 19-35 months who received 4 doses of DPaT vaccine	Table 1.53a (01)	
	Table 1.53b (00)	
	Table 1.53c (99)	Table 1.53e (01)
	Table 1.53d (98)	Table 1.53f (00)
Process: % of children 19-35 months who received 3 doses of polio vaccine	Table 1.54a (01)	
	Table 1.54b (00)	
	Table 1.54c (99)	Table 1.54e (01)
	Table 1.54d (98)	Table 1.54f (00)
Process: % of children 19-35 months	Table 1.55a (01)	Table 1.55e (01)

who received 1 dose of MMR vaccine	Table 1.55b (00) Table 1.55c (99) Table 1.55d (98)	Table 1.55f (00)
------------------------------------	--	------------------

## Maternal and Child Health

<i>Measure Title</i>	<i>National</i>	<i>State</i>
<b>Immunization, childhood (cont.)</b>		
	Table 1.56a (01) Table 1.56b (00)	
Process: % of children 19-35 months who received 3 doses of Hib vaccine	Table 1.56c (99) Table 1.56d (98)	Table 1.56e (01) Table 1.56f (00)
	Table 1.57a (01) Table 1.57b (00)	
Process: % of children 19-35 months who received 3 doses of hepatitis B vaccine	Table 1.57c (99) Table 1.57d (98)	Table 1.57e (01) Table 1.57f (00)
	Table 1.58a (01) Table 1.58b (00)	
Process: % of children 19-35 months who received 1 dose of varicella vaccine	Table 1.58c (99) Table 1.58d (98)	Table 1.58e (01) Table 1.58f (00)
<b>Immunization, adolescent:</b>		
Process: % of adolescents (age 13-15) reported to have received 3 or more doses of hepatitis B vaccine	Table 1.59 (00)	N/A
Process: % of adolescents (age 13-15) reported to have received 2 or more doses of MMR vaccine	Table 1.60 (00)	N/A
Process: % of adolescents (age 13-15) reported to have received 1 or more doses of tetanus-diphtheria booster	Table 1.61 (00)	N/A
Process: % of adolescents (age 13-15) reported to have received 1 or more doses of varicella vaccine	Table 1.62 (00)	N/A
<b>Childhood dental care:</b>		
Process: % of people over 2 years who report dental visit in last year	Table 1.63 (00)	N/A

**Treatment of pediatric gastroenteritis:**

---

Outcome: Hospital admissions for pediatric gastroenteritis per 100,000 population less than 18 years of age	Table 1.64 (00)	N/A
---	-----------------	-----

**Note:** See Tables Appendix for tables listed above.

## References

---

- <sup>1</sup>National Center for Health Statistics. Health, United States, 2002. Hyattsville, MD: Public Health Service; 2002. Table 6.
- <sup>2</sup>U.S. Department of Health and Human Services. Healthy people 2010: understanding and improving health. 2 ed. Washington, DC: U.S. Department of Health and Human Services; 2000 Nov. Available at: <http://www.healthypeople.gov/document/pdf/uih/2010uih.pdf>. Accessed October 30, 2003.
- <sup>3</sup>World Health Organization. World health report 2002: reducing risks, promoting healthy life. Geneva: World Health Organization; 2002.
- <sup>4</sup>United Nations Children's Fund. The state of the world's children 2003. New York, NY: United Nations Children's Fund; 2003.
- <sup>5</sup>Leatherman S, McCarthy D. Quality of health care in the United States: a chartbook. New York, NY: The Commonwealth Fund; 2002 Apr.
- <sup>6</sup>Institute of Medicine. Calling the shots: immunization finance policies and practices. Washington, DC: National Academies Press; 2000.
- <sup>7</sup>Federal Interagency Forum on Child and Family Statistics. America's children: key national indicators of well being. 2002. Available at: <http://www.childstats.gov/ac2002/pdf/ac2002.pdf>. Accessed November 7, 2003.
- <sup>8</sup>Vintzileos AM, Ananth CV, Smulian JC, et al. The impact of prenatal care on neonatal deaths in the presence and absence of antenatal high-risk conditions. *Am J Obstet Gynecol* 2002;186(5):1011-6.
- <sup>9</sup>Schramm WF. Weighing costs and benefits of adequate prenatal care for 12,023 births in Missouri's Medicaid program, 1988. *Public Health Rep* 1992;107(6):647-52.
- <sup>10</sup>Huntington J, Connell FA. For every dollar spent--the cost-savings argument for prenatal care. *N Engl J Med* 1994;331(19):1303-7.
- <sup>11</sup>Burkhart DM. Management of acute gastroenteritis in children. *Am Fam Physician* 1999;60(9):2555-63, 2565-6.
- <sup>12</sup>Agency for Healthcare Research and Quality. Guide to prevention quality indicators: hospital admission for ambulatory care sensitive conditions. Rockville, MD: Agency for Healthcare Research and Quality; 2001. AHRQ Publication No. 02-R0203. Available at: [http://www.qualityindicators.ahrq.gov/downloads/pub/ahrqqi/pqi\\_guide\\_rev2.pdf](http://www.qualityindicators.ahrq.gov/downloads/pub/ahrqqi/pqi_guide_rev2.pdf). Accessed January 5, 2004.
- <sup>13</sup>Bethell CD, Read D, Stein RE, et al. Identifying children with special health care needs: development and evaluation of a short screening instrument. *Ambul Pediatr* 2002;2(1):38-48.
- <sup>14</sup>Prescilla RP. Gastroenteritis. *eMedicine Journal* 2002;3(4). Available at: <http://www.emedicine.com/PED/topic834.htm>. Accessed December 23, 2003.
- <sup>15</sup>Bennett TA, Adams MM. Safe motherhood in the United States: challenges for surveillance. *Matern Child Health J* 2002;6(4):221-6.
- <sup>16</sup>Senturia YD, Bauman LJ, Coyle YM, et al. The use of parent report to assess the quality of care in primary care visits among children with asthma. *Ambul Pediatr* 2001;1(4):194-200.

<sup>17</sup>Child and Adolescent Health Measurement Initiative. Internet homepage. Available at: <http://www.facct.org/facct/site/cahmi/cahmi/home>. Accessed November 10, 2003.

<sup>18</sup>Palmer RH, Miller MR. Methodological challenges in developing and implementing measures of quality for child health care. *Ambul Pediatr* 2001;1:39-52. Available at: <http://ampe.allenpress.com/pdfserv/i1530-1567-001-01-0039.pdf>. Accessed November 10, 2003.