Promoting Healthy Children & Families in Connecticut:

Part #1: Health Problems of Infancy & Early Childhood

By: Marilyn R. Sanders, M.D.
Child Health and Development Institute of Connecticut, Inc.

Mary Alice Lee, Ph.D.
Children's Health Council

Prepared with funding from the Children's Fund of Connecticut, Inc.

IMPACT

Ideas and Information to Promote the Health of Connecticut's Children

Issue No. 3 March 2003

CHDI The Child Health and Development Institute of Connecticut, Inc.

Introduction

Early childhood is a time of rapid and dramatic developmental change — a time of risk as well as opportunity. The health of children in early childhood has a direct bearing on school readiness and a strong correlation with health in adulthood. Therefore, strategies aimed at ensuring healthy pregnancies, optimal birth outcomes, and good health for young children are sound investments in the future of the families and the communities in which they live.

As part of its educational mission, the Child Health and Development Institute of Connecticut (CHDI) brings the results of health research and best practices to policymakers, health care practitioners, educators, business and community leaders, and child advocates.

This first report in the series, written in collaboration with the Children's Health Council, provides a brief overview of significant health problems in early childhood. These conditions are relatively common and, without early detection and intervention, can result in significant long-term disability and suffering. Families with affected children incur significant costs for health care and special services.

Amidst increasing concern about childhood obesity, the second report, produced in collaboration with the University of Connecticut College of Agriculture and Natural Resources, will focus on nutrition in early childhood. In recent years, growing numbers of children are overweight, physically inactive, and at risk for early onset of adult chronic diseases such as high blood pressure and diabetes.

The roots of some serious health problems in early childhood lie in poor maternal health. The third report in the series will describe how women's health before, during, and after pregnancy affects health in infancy and early childhood.

The series will conclude with a report that will describe policy vehicles for improving children's health, with financing strategies to support the recommendations.

The series, prepared by CHDI, will draw particular attention to the health problems experienced by Connecticut's most vulnerable young children, that is, those who live in families and communities struggling with poverty, poor health, violence, substance abuse, and other stress that adversely

Recent data suggest that about one in eight children from birth to 5 years old have some chronic physical, developmental, behavioral, or emotional condition.

This four-part Impact series on early childhood health will describe:

- Significant health problems that affect young children;
- Effect of nutrition on early childhood health;
- Effect of women's health before, during, and after pregnancy on the health of infants and young children;
- Strategies for improving children's health and development by increasing access to health care and integrating health promotion into early childhood programs that serve young children and their families.

affects healthy growth and development in early childhood. This series will focus on strategies and interventions in the health care system; however, healthy growth and development also depend on other factors, such as economic security, healthy homes, safe communities, and high quality education, to ensure that children thrive in their families, schools, and communities.

Marilyn R. Sanders, M.D.
Series Editor
Child Health and Development Institute
of Connecticut, Inc.

Part #1:

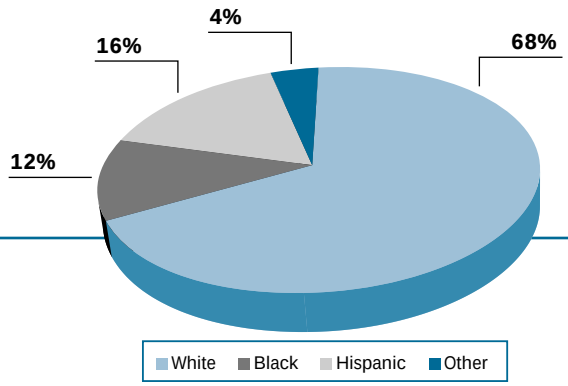
Health Problems of Infancy and Early Childhood

The majority of young children in the United States enjoy good health and well-being. However, recent data suggest that about one in eight children from birth to 5 years old have some chronic physical, developmental, behavioral, or emotional condition and use health services beyond those generally required for children of the same age. This number increases to one in five in later childhood and adolescence as new health concerns present or evolve from earlier in childhood.

A century ago, the major childhood health issues were primarily acute infectious illnesses such as diarrhea, pneumonia, diphtheria, or measles — diseases that could cause severe complications and which, all too often, meant early death. Sound public health measures including safe water and milk supplies, childhood immunizations, and a system of ongoing preventive care and health surveillance have largely eliminated concerns about life-threatening infectious

IMPACT
March 2003

Figure 1:
Connecticut Births by Maternal Race/Ethnicity, 1999



n=43,299

Source: Connecticut Department of Public Health, 1999

disease in the United States. Increasingly, chronic health conditions, including asthma, obesity, and behavioral or emotional problems, threaten young children's growth and development, adversely affect their performance in school, and lead to increased needs for health care.

One-third of Connecticut's children from birth to 6 years old live in or near poverty (income <200% of federal poverty level). Therefore, it is impossible to address health problems in early childhood without addressing the conditions of poverty. Poor children bear a disproportionate share of childhood health and developmental problems. They are also at increased risk for death in infancy or early childhood and for most major health conditions, including prematurity and low birth weight, unintentional injuries, abuse and neglect, asthma, lead poisoning, cavities, obesity, and social or emotional problems. Unfortunately, poor children are also less likely to get preventive care, thereby increasing their risk for complications, hospitalization, or even death from health problems that might have been prevented or successfully managed. A description of the major health and health-related problems affecting Connecticut's young children follows.

Preterm birth and low birth weight rates

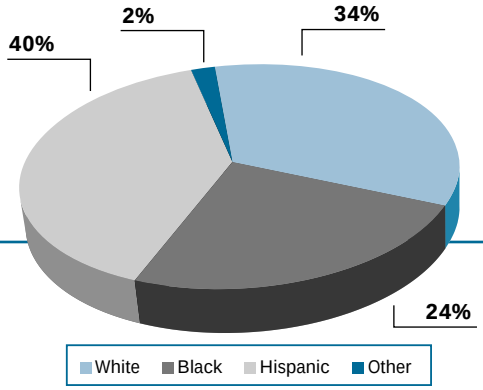
Just as a healthy early childhood sets the stage for health and well-being in adulthood, healthy babies who are born on time and with normal weight are more likely to thrive and develop normally. Babies born early or with low birth weight are more likely to have health problems in early childhood and developmental problems that may affect their performance in school.

In 2000, 7.6% of all infants born in the United States, and 7.4% of Connecticut births were of low birth weight (less than 2,500 grams or 5 lbs. 8 oz). Connecticut ranked 22nd among states for low birth weight infants, worse than all of the other New England states. Annually, about 3,200 Connecticut newborns are low birth weight; most are also preterm (less than 37 weeks' gestation).

As in the United States, racial and ethnic disparities in birth outcomes for Connecticut women are significant. In 1999, Black women in Connecticut had a three-fold increased risk, compared to non-Hispanic White women, of delivering a very low birth weight infant (less than 1,500 grams or 3 lbs. 5 oz), the smallest and most vulnerable preterm infant.

These racial and ethnic disparities in birth outcomes are even more stark for teenage mothers. As Figure 1 illustrates, only one in four Connecticut births in 1999 were to Black and Hispanic women. Yet two-

Figure 2:
Connecticut Births to Teens by Maternal Race/Ethnicity, 1999



n=3,433

Source: Connecticut Department of Public Health, 1999

thirds of all births to Connecticut teenagers (<19 years old) were to Black and Hispanic mothers (Figure 2). Teen mothers are at increased risk for giving birth to a preterm or low birth weight infant. The risk is particularly high for Connecticut mothers less than 15 years old: one in seven infants is low birth weight; one in four is preterm.

Death in early childhood

INFANT MORTALITY

One of the key measures of health in any country is infant mortality (death of infants under 1 year of age). Despite steady decreases in the rate of infant mortality, the infant mortality rate in the United States is twice as high as other industrialized nations such as Japan and Sweden. While Connecticut's infant mortality in 2001 was slightly less than the national average of 6.9 per 1,000 live births, Connecticut had the highest infant mortality rate of any New England state (Table 1, next page).

Despite its disappointing ranking for infant mortality, Connecticut ranked 3rd in the United States for deaths of very low birth weight infants in the newborn period, behind only Utah and Rhode Island.

In Connecticut, as elsewhere throughout the country, Black and Hispanic infants have infant mortality rates 1.5 to 2.5 times higher than non-Hispanic White infants. The increased risk for death in Black and Hispanic infants is related largely to higher rates of preterm birth and low birth weight infants. Black infants are also at increased risk for sudden infant death syndrome (SIDS) in part, due to higher rates of low birth weight and preterm births and because they are less likely to be placed on their backs to sleep, which is protective against death from SIDS.

EARLY CHILDHOOD MORTALITY

Childhood death is much less common than infant death. As children grow from infants to toddlers, the causes of death shift from birth-related conditions, such as prematurity and birth defects, to injuries and illnesses. Overall, early childhood death rates in the United States continue to decline, although Black and Native American children have twice the child death rates as other groups.

Poor nutrition

Poor nutritional practices in early childhood can contribute to a range of health problems,

including obesity, iron deficiency anemia, and dental disease beginning in children as young as 1 year old. Poor children who live in urban areas are particularly likely to be overweight as early as preschool age. Childhood obesity greatly increases the risk for the development of later health problems, including high blood pressure, diabetes, respiratory problems, orthopedic problems, behavioral problems, and adult obesity.

OBESITY

Children in Connecticut and throughout the United States are increasingly likely to be obese. Children whose weight for height assessments are greater than or equal to the 95th % tile for children of the same age and gender are referred to as obese. Children whose weight for height assessments are greater than or equal to the 85th % tile but less than the 95th % tile are at risk for obesity. Nationally, about 8% of 4 to 5 year old children are obese, a substantial increase since the 1980's. However, as shown in Figure 3 (next page), school children in the city of Hartford are at increased risk of being obese at school entry and throughout school. In a sample of Hartford adolescents using school-based health clinics in the late 1990s, 13% had been obese at kindergarten entry. By sixth grade, 26% of these children were obese. By sixth grade, nearly 44% of these Hartford children were either obese or at risk for obesity.

Table 1:
Infant Mortality in New England States, 2001

State	Infant deaths under 1 yr. per 1000 liveborns
Connecticut	6.6
Vermont	6.3
Rhode Island	6.0
New Hampshire	5.7
Maine	4.9
Massachusetts	4.6

Source: MacDorman MF, Minino AM, Strobino DM, Guyer B. Annual summary of vital statistics: 2001. Pediatrics, 2002; 110:1037-1052.

HUNGER

A troubling paradox exists in relation to childhood nutrition: even as American children on average are getting heavier, many children do not get enough to eat. In 2001, 102,000 Connecticut children received emergency food assistance. Many of Connecticut's low-income children depend upon subsidized breakfast and lunch programs in schools. For these children, "summer vacation" may mean a lapse in access to nutrition. During the 2000-01 school year, 125,000 low-income Connecticut children participated in the National School Lunch Program; however, only 27,000 children participated on a daily basis during the summer.

DENTAL CAVITIES

Poor infant and maternal oral hygiene, inappropriate nutritional practices in infancy, and excessive consumption of snack foods by young children contribute to another major health problem: dental cavities. For young children, tooth decay is a communicable disease, involving passage of bacteria in oral secretions from parent to infant when they share cups and silverware. Poor nutrition

Nationally, about 8% of 4 to 5 year old children are obese, a substantial increase since the 1980's.

compounds the problem by increasing susceptibility to cavity formation in baby teeth.

Tooth decay is found in as many as four out of five young children 2 to 5 years old whose families live at or near the poverty level. Yet, low-income children in Connecticut have difficulty finding dentists for preventive care or treatment services. Between 1998 and 2001, utilization of dental services declined among children enrolled in Connecticut's Medicaid Managed Care Program. In 2001, only one-third (35%) of all 3 to 5 year olds enrolled in the Medicaid Managed Care Program had a preventive dental visit, despite Medicaid requirements and recommendations of professional organizations that routine dental referrals begin by 3 years of age.

Social and emotional health problems

Families, educators, pediatric care providers, and other professionals report increasing concern about serious emotional and behavioral problems, often beginning in early childhood. The lack of systematically collected state or national data seriously limits understanding of the scope of the problem. Lack of data also hinders the development of systemic approaches to early identification and treatment of children with emerging or serious emotional or behavioral health concerns. However, available data suggest an increase in young children whose behaviors are concerning to families, child care providers, or teachers.

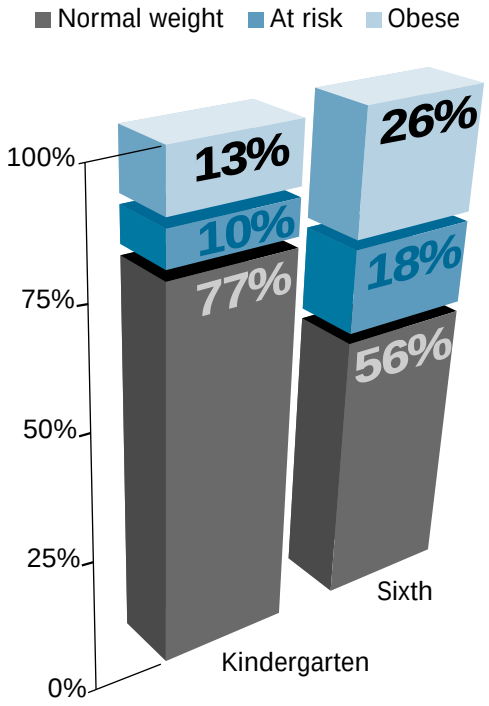


Figure 3: Hartford School Children, Weight Assessment by Grade

Kindergarten, n=999; Sixth grade, n=1252

Source: Burke G, Maljanian R, Sabo M, Clark PJ, Estrada E. 7th Annual Maternal and Child Health Epidemiology Conference, Florida, December 2001 Published with permission.

Obese ≥ 95th %tile, At risk ≥ 85th %tile and < 95th %tile, Normal weight < 85th % tile

Reported disciplinary offense actions doubled for Connecticut kindergarten children over three years.

Information from pediatric outpatient settings reflects the pervasive concern of families for their children's social and emotional well-being. Parents report social and emotional issues at nearly one in five non-emergency visits to pediatricians' offices. Studies of diverse populations of preschool children indicate that about one in ten children exhibit behaviors predictive of early school failure. However, national data on behavioral and emotional problems in early care and education often come from sites serving only low-income children, such as Head Start programs. In these settings, 27% to 40% of low-income children in preschool or kindergarten had problem behaviors.

Early childhood educators are concerned about the apparent increase in severely disruptive or aggressive behaviors among young children.

This trend is evident in data on significant formal disciplinary actions as early as kindergarten. Between 1998-1999, when reporting began, and 2000-2001, the Connecticut State Department of Education reported that disciplinary offense records doubled for kindergarten children (Figure 4). Significant, though less dramatic increases, were reported for children at all early elementary grade levels.

Most children who received formal disciplinary actions were regular education, rather than identified special education students. The majority (80%) were males. In 2000-2001, 5,217 Connecticut children in kindergarten to third grade received formal disciplinary actions. While most children (83%) had one or two incidents, 872 children had up to twelve.

Figure 4: Disciplinary Offense Records Reported by Grade, 1998-2001

Source: Connecticut State Department of Education, 2002. Disciplinary offense records reported for in-school, out-of-school suspension, or expulsion, or if the offense involved alcohol, drugs or weapons.

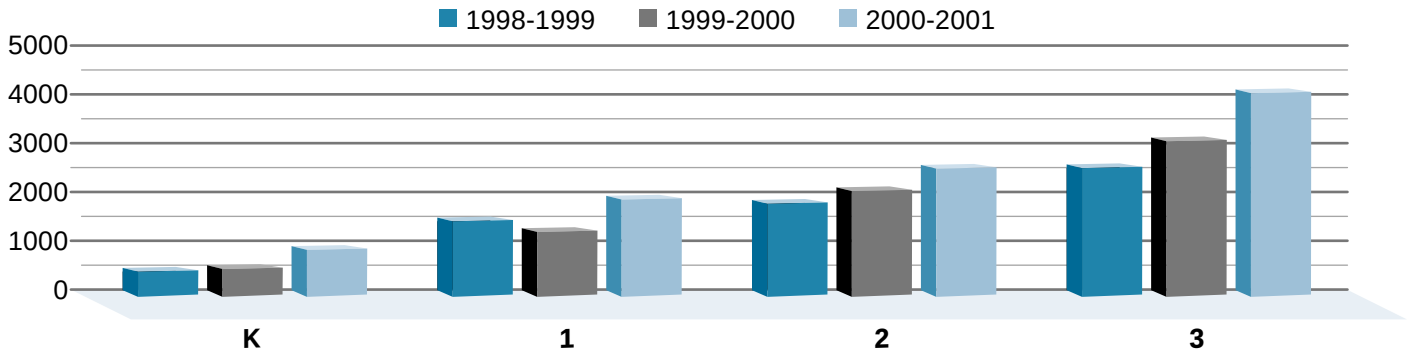


Table 2:
Hospital Admissions Due to Unintentional Injuries, 1990-1997

Leading Causes of Injury	Rank 0-4 years	Rank 5-9 years
Falls	1	1
Poisoning	2	9
Other	3	2
Fire/Hot object	4	10
Motor vehicle (occupant)	5	6
Natural/Environmental	6	8
Struck By/Against	7	4
Suffocation	8	_
Motor vehicle (pedestrian)	9	3
Cut/Pierce	10	7
Drowning/Submersion	11	_
Pedalcycle-Other	12	5

Source: Injury Prevention Center at Connecticut Children's Medical Center, 2003. Table based on rates of injury per 10,000 Connecticut children. Dash indicates cause of injury negligible for age group.

Definitions:

Natural/Environmental: Includes injuries due to exposures to weather, changes in air pressure, thirst, lack of food, and animals

Struck By/Against: Includes bumping into or against an object or person

Cut/Pierce: Includes accidents caused by cutting and piercing instruments or objects

Pedalcycle: Any road transport vehicle operated solely by pedals, including bicycles and tricycles, excluding motorized bicycles

Injuries

INJURIES DUE TO ABUSE AND NEGLECT

The impact of childhood abuse and neglect has both short- and long-term effects upon young children. Abused and neglected infants and young children are at risk for injuries, poor nutrition and failure to thrive, sexually transmitted diseases, neurological problems, and serious behavioral/mental health problems. The psychological aftermath of abuse may be seen in adolescence and adulthood with higher rates of substance abuse, depression, and even suicide. After a peak in the mid 1990's, the incidence of substantiated cases of child abuse and neglect has decreased throughout the United States. In 2000, Connecticut had the 8th highest overall victimization rate in the United States. Over 7,400 Connecticut children under eight years old were the victims of substantiated abuse and/or neglect. Children under three years old were more than three times as likely to be victims of abuse and neglect than 16 to 17 year olds. In virtually all substantiated cases, both in Connecticut and nationally, the perpetrator was a parent, often a mother acting alone. Tragically, children under six years of age accounted for 85% of all fatalities nationwide due to abuse and neglect.

UNINTENTIONAL INJURIES

Unintentional injuries are a major cause of medical costs, short and long-term disability, and death in young children. For each childhood death due to injury, 160 children are admitted to a hospital, and 2,000 children have emergency room visits. Injuries in children less than 5 years old are more likely to be fatal than in any other age group, except 15-19 year olds. As children grow and develop both physically and cognitively, their immediate surroundings shift from the home to the neighborhood, street, and playground. These new locations result in shifts in the mechanism of injury from poisonings and scaldings to motor vehicle-and bicycle-related risks (Table 2).

Hazards in the environment

ASTHMA

Asthma rates for children in all age groups throughout the United States have increased since the 1980s. Asthma is a major cause of childhood illness, limitations in daily activities, and lost days from school and work. According to 1998 nationwide data, about one in twenty children under 5 years of age received a diagnosis of asthma. Identifying young children with asthma, educating their families, and instituting preventive regimens to decrease the severity of their symptoms are proven strategies to decrease the likelihood that children will have symptoms severe enough to warrant an emergency room visit or hospitalization.

Asthma rates are also clearly affected by poverty and race. Over one year, more than one in ten Connecticut children under 5 years old enrolled in the Medicaid Managed Care Program received a diagnosis of asthma. Hospital discharge data shows Black children in Connecticut were three times as likely to be hospitalized and three to four times as likely to visit the emergency room as non-Hispanic White children. Asthma hospitalization rates for children in Connecticut's largest cities, especially, Hartford and Bridgeport, were more than twice the average for Connecticut children.

LEAD POISONING

Exposure to lead from ingesting peeling paint or dust in older or poorly maintained homes remains a significant risk, especially for low-income young children in urban environments. Chronic lead exposure causes learning and behavioral problems even when only minute amounts are present in the blood and brain. It is critical to identify children with elevated lead levels to eliminate environmental risks, alter their diets, and for the most severely affected, to provide lead chelation therapy to decrease overall body lead levels.

In 1999, about one in four of all Connecticut children under 6 years of age had a lead screening test performed. Among children 1 to 2 years of age, 3.5% had elevated lead levels. Young children living in Bridgeport, Hartford, New Haven, Norwich, and Waterbury were at the highest risk for elevated lead levels. Unfortunately, one-third to one-half of young children at greatest risk, that is, children living in Hartford, Bridgeport, and New Haven, were not screened. Lead screening data for Connecticut show that children over 3 are also at risk for elevated lead levels; however, many health care providers do not routinely screen preschool children at risk for lead exposure.

Early childhood is a time of rapid and dramatic developmental change – a time of risk as well as opportunity.

Conclusions & Implications

Most infants and young children in Connecticut are healthy and receive the recommended primary and preventive health care services that are so important for maintaining good health. However, for Connecticut's young children who live in or near poverty, the picture is less rosy. Children in low-income families are at higher-than-usual risk for acute and chronic health problems. They also may not get the comprehensive well-child care, preventive dental care, and other services necessary to promote health and well-being. Uninsured children and those who lack an ongoing relationship with a trusted health care provider are particularly at risk for failure to access health services.

In an era of limited financial resources, the best investments in children's health will target the children at the greatest risk for poor health outcomes. Current health research and scientific knowledge suggest that the most effective strategies for improving health and well-being in early childhood are aimed at:

ENSURING GOOD HEALTH IN PREGNANCY

Healthy mothers are more likely to have healthy babies. Access to high quality health care throughout adolescence and young adulthood increases the likelihood that pregnancies will be planned and that pregnant women will be healthy. Health insurance is key for ensuring access to comprehensive well-woman care during and between pregnancies. After birth, healthy mothers are best able to ensure the optimal growth and development of infants and young children.

ENSURING A NUTRITIOUS DIET IN INFANCY AND EARLY CHILDHOOD

A healthy diet is key to optimal physical and cognitive development in early childhood. Efforts to promote good nutrition should begin in pregnancy and continue with support for breastfeeding, especially among low-income women. The safety net of federal, state, and local food assistance programs is essential for ensuring nutritional security and healthy eating in many families.

ENSURING ACCESS TO COMPREHENSIVE PRIMARY AND PREVENTIVE HEALTH CARE

Ideally, children should receive regular, age-appropriate primary care from known and trusted health care providers. Children who receive timely well-child care are less likely to rely on emergency care for treatment of common childhood illnesses and minor injuries. Primary care visits are also opportunities for health education and guidance aimed at promoting good nutrition and safe and healthy homes and neighborhoods.

References

Introduction

Cauthen NK, Knitzer J, Ripple CH. Map and Track: 2000 Edition. New York, New York, National Center for Children in Poverty, April 2001 (http://www.nccp.org/mt00text.html).

Newacheck PW. Poverty and childhood chronic illness. Arch Pediatr Adolesc Med. 1994; 148:1145-1149.

Newacheck PW, Strickland B, Shonkoff JP et al. An epidemiologic profile of children with special health care needs. Pediatrics.1998; 102:117-123.

Preterm and Low Birth Weight

Connecticut Department of Public Health. Provisional statistics. Hartford, CT: DPH, 1999.

MacDorman MF, Minino AM, Strobino DM, Guyer B. Annual summary of vital statistics: 2001. Pediatrics, 2002; 110:1037-1052.

Early Childhood Death

Annie E. Casey Foundation. Kids Count 2002. Baltimore, Maryland. The Annie E. Casey Foundation (http://www.aecf.org/kidscount/kc2002/)

Connecticut Department of Public Health. Provisional statistics. Hartford, CT: DPH, 1999.

MacDorman MF, Minino AM, Strobino DM, Guyer B. Annual summary of vital statistics: 2001. Pediatrics. 2002; 110:1037-1052.

Willinger M, Ko CW, Hoffman HJ et al. Factors associated with caregivers' choice of infant sleep position, 1994-98: the National Infant Sleep Position Study. JAMA. 2000; 283:2135-2142.

Nutrition

America's Second Harvest. (www.secondharvest.org/policy/state/state_ct.html)

Burke G, Maljanian R, Sabo M, Clark PJ, Estrada E. Incidence of obesity among Hartford school children. Presentation at the 7th Annual Maternal and Child Health Epidemiology Conference, sponsored by US Centers for Disease Control and Prevention/Maternal and Child Health Bureau,Clearwater, Florida, December 2001.

Ogden CL, Troiano RP, Briefel RR. Prevalence of obesity among preschool children in the United States, 1971 through 1994. Pediatrics. 1997; 99:1-7.

Rio JT, ed. Connecticut Food News. 2002; 11(1):1-6 (http://www.ctfoodbank.org).

Oral Health

Children's Health Council. Dental care utilization unchanged among children enrolled in HUSKY A:FFY 2001: Methods and findings. Hartford, CT: CHC, 2002.

Mouradian WE, Wehr E, Crall JJ. Disparities in children's oral health and access to dental care. JAMA. 2000; 284:2625-2631.

Social, Emotional and Behavioral health

Amirault D. Private communication. Bureau of Student Assessment and Research, Connecticut State Department of Education, 2002.

Kelleher KJ, McIrney TK, Gardner WP et al. Increasing identification of psychosocial problems: 1979-1996. Pediatrics. 2000; 105:1313-1321.

Knitzer J. Building services and systems to support the healthy emotional development of young children. New York, New York. National Center for Children in Poverty, January 2002 (http://www.nccp.org/ProEmoPP1.html).

Abuse and Neglect

Administration on Children, Youth and Families. Child Maltreatment 2000: Reports from the states to the National Child Abuse and Neglect Data System. Washington, D.C.: U.S. Government Printing Office, 2002 (http://www.calib.com/nccanch/stats/index.cfm #ncands).

Childhood Injury

Innocenti Research Center. Child deaths by injury in rich nations. Florence, Italy: United Nations Children's Fund, 2001.

Lapidus G. Private communication. Hartford, CT: Injury Prevention Center at Connecticut Children's Medical Center, 2003.

Miller TR, Romano EO, Spicer RS. The cost of childhood unintentional injuries and the value of prevention. The Future of Children. 2000; 10:137-163.

Asthma

Centers for Disease Control and Prevention. Surveillance for asthma, United States, 1980-1999. Morbidity and Mortality Weekly Report. 2002; 51:8-13.

Children's Health Council. Asthma affects nearly one in ten children enrolled in HUSKY Part A in 1999-2000. Hartford, CT: CHC, 2001.

Connecticut Department of Public Health. Asthma in Connecticut., 2001. Hartford, CT: DPH, 2001.

Lead

Connecticut Department of Public Health. Lead screening and follow-up of Hartford children in Medicaid managed care. Hartford, CT: DPH, 1999.

Conclusions & Implications

Department of Health and Human Services (HHS). HHS blueprint for action on breastfeeding. HHS Office on Women's Health, Washington D.C., 2000 (http://www.cdc.gov/breastfeeding/report-blueprint.htm).

Hakim RB, Bye BV. Effectiveness of compliance with pediatric preventive care guidelines among Medicaid beneficiaries. Pediatrics. 2001; 108:90-97.

Kahn RS, Zuckerman B, Bauchner H, Homer CJ, Wise PH. Women's health after pregnancy and child outcomes at age 3 years: a prospective cohort study. American Journal of Public Health. 2002; 92:1312-1318.

The Child Health and Development Institute of Connecticut, Inc.

270 Farmington Avenue
Suite 325
Farmington, CT 06032

860.679.1519 office
CHDI@adp.uchc.edu
www.chdi.org