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## What is the Health Impact of Day Care Attendance on Infants and Preschoolers?

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## What is the Health Impact of Day Care Attendance on Infants and Preschoolers?

The impact of various child care arrangements on the health of infants and preschool children is not known in any systematic way, yet by 1990 more than 10 million of these children may be receiving their care in day care facilities (1). Concerns over the health of these children and health practices within day care facilities have already led some States to place regulation of day care facilities under the jurisdiction of the department of health (2,3), and others are presently considering such legislation. In addition, the American Academy of Pediatrics has recently published "Health in Day Care," a manual for health professionals who are being increasingly called upon for advice concerning health issues related to children in day care facilities (4).

We reviewed the medical, psychosocial, and legal literature to ascertain the extent of research on the health impact of day care attendance on children. Computer-assisted searches using Medline for the years 1975–86 and the Legal Resources Index for 1980–86 were performed to identify all articles related to day care. In addition, we explored recent and ongoing efforts at the local, State, and Federal level to define further the type and extent of health-related problems and benefits that may be related to day care attendance. In this article we present an overview of these efforts as related to four areas: (a) infectious diseases, (b) injuries, (c) psychosocial development, and (d) health promotion-disease prevention.

### Infectious Diseases

The transmission of infectious disease within day care facilities is well documented. These diseases include viral diseases, (for example, infections with hepatitis A and cytomegalovirus), bacterial diseases (*Haemophilus influenzae* infections, salmonellosis, and shigellosis), and parasitic diseases (giardiasis and cryptosporidiosis) (5,6).

Evidence also suggests that children attending day care facilities are at an increased risk for contracting both upper respiratory illness and otitis media

(5,7–10). An increased risk of otitis media has major implications; in terms of costs and long-term effects, sequelae such as conductive hearing impairment may lead to impaired intellectual, linguistic, and emotional development in children. The cost of medical treatment alone of otitis media reaches \$2 billion per year in the United States, and at least 1 million tympanostomies are performed (5).

As a result, recommendations have been formulated and disseminated to aid in decreasing the risk of infectious disease transmission in day care facilities (11).

### Intentional Injuries

Qualitative descriptions of child abuse or maltreatment within day care facilities are published in the psychosocial literature; both overt and covert forms of maltreatment are described anecdotally (12); however, few sources of quantitative information are available. The Kansas Department of Social and Rehabilitation Services recorded 269 confirmed child abuse and neglect cases in day care facilities during a 30-month period ending in 1982 (2). Institutional neglect and child abuse have been documented within day care programs on military bases (13).

Reports on child abuse in day care frequently appear in legal journals and deal primarily with liability issues. However methods of prevention, such as screening child care workers for criminal backgrounds and premise searches without warrants, are being used with increasing frequency. For example, background criminal record checks might have prevented many widely publicized incidents of sexual abuse in child care facilities (14). Such findings have led to the recognition of a need for comprehensive legislation to ensure the safety and quality of child care services. Other reports illustrate the "protective" value and other benefits of day care for infants and preschool children from socioeconomically deprived homes or homes in which abuse has occurred or is suspected (15,16).

### Unintentional Injuries

Only sporadic reports are available on unintentional injuries to children in

day care facilities. Using data collected by the U.S. Consumer Safety Product Commission, Centers for Disease Control researchers have estimated that more than 27,000 playground-related injuries requiring emergency room visits occur in preschool age children attending day care facilities each year (17). Examination of 422 insurance claims from a U.S. company covering more than 140,000 day care children showed that use of climbing structures caused the most injuries, followed by slides, hand toys and blocks, other playground equipment, doors, and floors (18). Between 1980 and 1984, Kansas recorded 104 legal interventions in day care facilities for violations, including 39 for safety and fire violations, 14 for play equipment, and 4 for injuries (19). A Danish study describes hand injuries resulting from glass panes in doors of day care facilities (20).

### Psychosocial Development

In the past decade there has been tremendous growth in knowledge of the preschool experiences that may affect normal emotional and social development of children. Much of the research has focused on the emotional and intellectual development of children cared for in a variety of settings (21). A general consensus exists on some features of "quality" child care. Children respond positively to a setting that includes stability and continuity of the caregiver; a caregiver educated in early childhood development; favorable group size and child-staff ratios; and adequate space, toys, and activities. It is likely that children of different ages respond differently to day care, but few data on this subject are available (21).

### Health Promotion

Day care facilities are a potential site for health promotion activities since they provide one of the few captive environments where preschool children congregate. Again, few studies have discussed use of this setting for health promotion or disease prevention. One study demonstrated the feasibility of screening children for health conditions prevalent in the under-6 population: growth and development, dental

disorders, hearing and visual defects, and behavioral problems (22).

Forty-six States require full immunization of those attending licensed day care centers and, in general, immunization levels among children in licensed day care centers are high. Children 1–4 years of age who attend day care centers have immunization levels 8–15 percent higher than children who do not attend day care centers (23). Among low-income inner-city households, 76 percent of children attending day care centers had received multiple immunizations, but only 54 percent of children not attending day care centers had a similar immunization status (24). In Kansas, 95 percent of the 46,000 children surveyed in regulated day care facilities were immunized appropriately for age as compared with the national estimate of 60–70 percent of preschool children (19).

Children under supervised group care can be taught basic hygiene through structured play and learning activities, and child day care workers can transmit information about hygiene to children and families (25). The potential of teaching seat-belt safety and dental health, among other health promotion activities, within a day care setting have been recognized. A poison prevention program was introduced successfully in a preschool program in Minnesota (26).

Pediatricians have been urged to exchange information about their patients with the day care provider, especially children with chronic illnesses or disabilities (27,28). We found no information on the potential effect of day care attendance on the severity or incidence of most chronic diseases or conditions (for example, enuresis, asthma, or obesity).

## Discussion

We know of no systematic surveillance of morbidity or mortality resulting from day care attendance. It is unknown whether exposure to day care settings poses an increased (or decreased) risk for numerous illnesses and conditions, or whether children with chronic illness or disabilities fare differently in out-of-home care compared with a home setting. Minimal effort has been extended by the public health community to ascertain the risk of noninfectious diseases and conditions that may be associated with day care attendance.

In 1985, the National Center for Clin-

ical Infant Programs explicitly expressed the need for pediatricians and epidemiologists to study the health impact of day care centers on children and advised that Federal agencies conduct such research (29). More recently Haskins and Kotch, in a supplement to *Pediatrics*, called on the Centers for Disease Control to expand its efforts to convene committees of experts to assess scientific evidence and make recommendations to day care centers, citing CDC's recent work in infectious diseases at these sites (5). In addition, they urged the Federal Government to fund a research program to examine issues about health of children in day care including "large-scale, epidemiologic research on geographically and socioeconomically representative populations."

Public health surveillance of specific health events in day care settings should be considered. Monitoring heightens awareness and improves performance. Currently, infectious disease surveillance is being initiated in many child day care centers; its objectives are geared to improving policies and practices aimed at disease prevention (30). Surveillance of specific health events such as injuries should also be done, especially if injuries are suspected to be attributable to day care attendance. Where possible, information regarding day care attendance should be added to existing surveillance systems (31).

Case-control studies collecting ambulatory care data and parental questionnaire responses must be conducted to ascertain the impact of day care attendance on a number of prevalent psychosomatic conditions (for example, obesity and enuresis) as well as on the use of physicians for preventive care, episodic acute health care, and care for chronic conditions (for example, diabetes mellitus and seizures). Such studies can be accomplished through collaboration with health maintenance organizations or other health care providers.

The possibilities for use of the day care setting for health promotion efforts (for example, seat belt use, dental health, and injury prevention) and as a setting for screening (for example, vision and hearing testing) should be explored more thoroughly. Nutrition programs in child care establishments should be evaluated for appropriateness and long-term effects on eating patterns.

Publicly and privately funded research on the health benefits and risks of day care attendance has not kept pace with the tremendous growth in the population of young children exposed to the day care environment. Child care practices in this country must be systematically studied to determine their impact on our nation's health. At the same time, prevention and control measures should be implemented in day care settings and their efforts evaluated. As effective measures are demonstrated, their use should be encouraged by the public health community. Federal agencies can and should play a leadership role in assuring the physical and mental health of children in day care facilities.

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## Gene Mapping Project Grants Provided by NIH

Gene mapping, the process of determining the locations of genes on chromosomes, helps geneticists to understand inherited diseases and may lead to new ways to diagnose, treat and

prevent such disorders. Genome analysis involves the development of new capabilities for studying genomes—the complete genetic endowments of humans and model organisms such as yeast, fruit flies, and mice.

The National Institutes of Health, PHS, recently awarded 55 research grants under a gene mapping and genome analysis initiative begun in fiscal year 1988 with special funds from Congress. The first-year costs of the recent awards exceed \$13.5 million, bringing the total spent on this initiative in fiscal year 1988 to \$17.2 million. Some scientists supported under this initiative will be determining the sequence, or order, of subunits of the genetic material, known as DNA.

The awards are part of an effort by the National Institute of General Medical Sciences (NIGMS) to characterize, or map, the genomes of humans and other complex organisms. What separates grants supported under the NIGMS initiative from similar research supported over the past several decades is the systematic approach geneticists and other scientists will take in mapping all of an organism's genes and in analyzing complete genomes, rather than searching for and studying specific genes of interest.

## Secretary Bowen Announces Awards for AIDS Facilities

HHS Secretary Otis R. Bowen, MD, recently announced the award of the first federal funds, almost \$7 million, to construct health care facilities for AIDS patients.

"The awards were made to facilities that were able to demonstrate a comprehensive, cost-effective approach to providing care," Secretary Bowen said. "A variety of traditional and nontraditional facilities received the funds, which are to be regarded as seed money."

Grants were awarded to 19 facilities to renovate or construct nonacute care intermediate and long-term care facilities for patients with AIDS. The facilities are in Arizona, California, Indiana, Maryland, Massachusetts, New Jersey, New York, Texas, and Washington. The recipients must assure that a reasonable volume of services will be provided to patients unable to pay. They also must make services available to all persons residing in or employed in a facility service area.

The grant recipients and amounts

awarded are: Phoenix Shanti Group, Inc., Phoenix, AZ, \$369,000; Barlow Hospital, Los Angeles, CA, \$300,000; Davies Medical Center, San Francisco, CA, \$605,858; San Francisco (CA) Department of Public Health, \$355,952; AIDS Task Force, Inc., Fort Wayne, IN, \$100,000; Earthtide, Inc., Baltimore, MD, \$61,268; Boston (MA) Department of Health and Hospitals, \$250,000; St. John of God Hospital, Brighton, MA, \$350,000; Hospice West, Inc., Waltham, MA, \$250,000; Department of Public Health (Lemuel Shattuck Hospital), Jamaica Plain, MA, \$250,000; Integrity Inc., Newark, NJ, \$205,000; AIDS Resource Center, Inc., New York, NY, \$600,000; Cabrini Medical Center, New York, NY, \$401,902; Housing and Services, Inc., New York, NY, \$400,000; St. Clare's Hospital and Health Center, New York, NY, \$725,140; PWA Coalition of Dallas (TX) Inc., \$439,774; Southwest AIDS Committee, El Paso, TX, \$488,106; Bering Community Service Foundation, Houston, TX, \$50,000 and AIDS Housing of Washington, Seattle, WA, \$500,000.

The program is administered by a Public Health Service agency, the Health Resources and Services Administration.

## Council Urges Quick Action on Single Medical Knowledge Exam for GME Candidates

"The Federal Government should not attempt [at the present time] to influence physician manpower supply in the aggregate. Instead, the public and private sectors should focus their efforts on influencing clearly identified problems such as the geographic maldistribution of physicians, the continued underrepresentation of minorities in medicine, specialty shortages, and concerns regarding quality of care."

These recommendations highlighted more than 40 recommendations advanced by the Council on Graduate Medical Education (COGME) the summer of 1988 in its first mandated report to the Congress and the Secretary of the Department of Health and Human Services (HHS). Established by the Congress in 1986 for a 10-year period, COGME was created to make recommendations regarding current and future adequacies of physician supply, both in the aggregate and by specialty; foreign medical graduates (FMGs); and medical education programs and fi-