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ABSTRACT

Children under 3 years of age who are in group care face special health risks. The U.S. Centers for Disease Control indicate the existence of a causal relationship between infant group day care and certain diseases that are spread through contact at day care centers. Children in group care who are still in diapers are especially vulnerable to hepatitis A, diarrheal diseases, and Hemophilus influenzae type b. Adults who contact these children are also especially susceptible to these diseases. Preventive measures include home care for non-toilet-trained children and scrupulous hand washing when infants are cared for in groups. Infant caregivers need information about precautions and appropriate procedures. Policy recommendations include: (1) improved state and federal regulation; (2) subsidy of infant day care; and (3) increased use and support of home care options. Nearly 50 references are cited. (Author/RH)

Infant Group Care Risks

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Running head: INFANT CARE RISKS

Abstract

Children under the age of three years who are in group care face special health risks. The U.S. Centers for Disease Control ascertain a causal relationship between infant group day care and certain diseases that are spread through day care contact. Children in group care who are still in diapers are especially vulnerable to hepatitis A, diarrheal diseases, and Hemophilus influenzae type b. Adult contacts of these children are also especially susceptible to these diseases. Prevention measures include home care for non-toilet trained children and scrupulous hand washing when infants are cared for in groups. Infant care givers need information about precautions and appropriate procedures. Policay recommendations suggested include (1) improved state and federal regulation, (2) subsidy of infant day care, and (3) increased use of and support for home-care options.

Infant and toddler care in the United States has changed drastically during the last two decades. A dramatic increase in out-of-home care of children under two years of age was brought about by (1) the women's movement, (2) economic constraints dictating that both parents work, and (3) an increase in the number of single parent households. Two debates about infant care are in progress: One centers on how these youngest children should be cared for (Caring for Children: Challenge to America, 1989) (Belsky, 1988; Phillips, 1987); the second focuses on the extent of health risks for children in diapers who are enrolled in group care (Goldmann, Glode, Hadler & Osterholm, 1986). This paper addresses the latter issue. Since young children routinely fall victim to various diseases the question is whether infants in group care have a higher incidence of certain diseases than those in their own homes or in family day homes.

This paper contends that infant/toddler group care offers health risks for the children, their parents, and the staff that is greater than the risks inherent in other types of care. This paper attempts to bridge the information gap that exists in disseminating the information amassing from the Centers for Disease Control (CDC) and other epidemiological studies to day

care professionals. Professional organizations, college professors, licensing staff, and those setting up infant programs can use this information to inform staff and parents of risks and precautions. A better understanding of the potential for disease spread can improve prevention measures in infant and toddler centers. Resources and policy implications for infant day care are suggested.

Before 1970 U.S. day care centers rarely admitted children who were not toilet trained. Since the mid-70s the "use of day care centers for infants and toddlers has increased ten-fold" (Pickering, 1986, p. 623). Infant and toddler care problems encompass more than health risks. Infant and toddler day care too often resembles preschool care. Curriculum and health procedures alike continue as though designed for older preschool children. Toddler rooms may be decorated with the alphabet; hygiene practices often provide insufficient protection for non-toilet-trained children.

All too often day care providers and health care professionals do not communicate. Medical journals are not readily available, or usually of interest, to child care providers. The U.S. child care profession continues to resist recognition of the health risks in infant day care, even though the popular press began to

publicize health risks in infant day care as early as 1983 (Kendall, 1983). In 1984 national symposium (Osterholm, Klein, Aronson & Pickering, 1987) to bring together health care and day care professionals attracted public health personnel and medical researchers but few providers of day care or child development researchers. The current proliferation of information on infant day care for providers and parents often gives little emphasis to the health problems associated with infant day care. Infant and toddler care in the United States continues in short supply; few early childhood authors want to discourage programs from providing infant and toddler care. Others may resist acknowledging health risks to spare parents guilt about leaving very young children in day care; others may fear a threat to the child care business.

Young Children recently published an otherwise excellent article entitled "Quality Infant/Toddler Caregiving" that had no reference to health risks other than a simple recommendation that "scrupulously careful handwashing procedures can reduce the frequency of infectious illness, particularly diarrhea" (Honig, 1989, p. 8). Considering the severity of the disease threat to infants and toddlers, such a statement hardly suffices in an article on quality caregiving.

Infant Care Health Issues

Illness in children, especially those in out-of-home care, causes family disruption and economic loss. When children become ill, their adult contacts may also become ill or miss work (Pickering, 1986). Early investigations of infant day care health issues centered on respiratory infection rates for home-reared and group-care infants (Doyle, 1975; Loda, Glezen & Clyde, 1972). Day care studies from 1948-1976 reviewed by Haskins and Kotch (1986) did not report diarrheal diseases and type A hepatitis spread. A comprehensive examination of health issues in day care made by Aronson and Pizzo (1976) made no mention of the risk of the spread of hepatitis A to children or adults associated with infant group care.

Too often information readily available to care givers omits discussion of appropriate techniques for protecting both children and adults associated with infant group care. In otherwise sound textbooks for training infant providers, Morrison (1988) and Fowler (1980) included no information on disease spread through infant group care contact; however, in their texts, both Weiser (1982) and Leavitt and Eheart (1985) advise careful handwashing after diapering. Weiser's in-press revision includes a quite complete section on prevention

of day care disease spread.

Infant care and health issues are inextricably linked; unfortunately, for too long in the United States few but epidemiologists have recognized the disease potential in infant group care settings (Kendall, 1983). The literature on institutionalized groups of children still in diapers has long recognized the threat of hepatitis A (Capps, Bennett & Mills, 1955)[cited in Haskins & Kotch, 1986]; however, many infant day care providers are not yet aware of their own vulnerablility and that of the youngest children in their care. The Centers for Disease Control has tracked day care disease spread when large numbers of infants are in group care. Pickering (1986) notes that attack rates of common respiratory as well as severe and life threatening conditions are highest in young children and that these infections occur more frequently in infants and toddlers in day care centers than in their peers who remain at home (p. 623). The day care community and the public are gradually becoming aware of the problem and recognizing their roles in solving the problem.

Day Care Diseases

The Bush Institute for Child and Family Policy reviewed day care studies as far back as 1948. They concluded that there is a "moderate" problem but that "illness of children in day care is a policy problem of unknown magnitude. Children in day care are at risk for increased incidence of several acute illnesses, and some of these illnesses have short- and long-term costs to individuals and society" (Haskins & Kotch, 1986, p. 979). Accumulating evidence indicates that infants in group care are particularly vulnerable to five types of diseases identified as those spread through day care contact: respiratory diseases (Haskins & Kotch, 1986), hepatitis type A (Centers for Disease Control, 1980), diarrheal diseases (Black et al., 1981), Hemophilus influenzae type b infections (otitis media and meningitis) (Centers for Disease Control, 1982), and cytomegalovirus (CMV) infections (Goldmann, Glode, Hadler, Osterholm & Pickering, 1986, p. 10). The Bush Institute ranks the respiratory illness risk for day care staff and household contacts as weak. They rank gastrointestinal illnesses, hepatitis type A, and Hemophilus influenzae meningitis as strong risks for children under three; adult contacts are seen as having strong risks for all but the latter, which they rank as

weak to moderate (p. 965). Although the Bush report tends to minimize infant care risks they suggest consumers deserve the information needed to make informed choices. Because of the infant and toddler care shortage in the U.S., many parents perceive themselves with few choices and may not want information indicating that day care centers place their infants at risk.

Sources of the problem. Why is day care a particular health hazard for children in diapers? Why is infection control in day care centers difficult? A number of characteristics of infants and day care provide the following reasons: (1) These children are in the sensorimotor stage of development (Piaget, 1952) when they examine the environment through the senses, mouthing anything that comes into their hands. They are not yet toilet trained and lack an understanding of the importance of hygiene. (2) Day care "staff members frequently do not understand how diseases are transmitted" and "their level of education does not correlate with the knowledge needed to prevent, recognize, control, and report infectious diseases common to day care centers" (Lopez, DiLiberto & McGuckin, 1988, p. 28). (3) Day care is "a labor-intensive loosely regulated custodial educational

business that lacks basic infection control practices" (p. 26). (4) Day care staffs have few disease prevention resources appropriate for their use; in the Lopez et al. six-month study of 12 licensed centers "48% received no in-service training and 70% had no pre-service training" (p. 26). (5) Chronic short staffing and rapid staff turnover add to the problem of disease spread. Considering these factors there is little wonder that a health problem exists.

Day care characteristics associated with disease. Day care center characteristics identified as those likely to be linked to the spread of disease are (1) the presence of young, non-toilet-trained children; (2) staff who both diaper infants and regularly prepare food; (3) centers operated for profit; (4) sole use of guidelines provided by state regulartory agencies (Pickering, Bartlett & Woodard, 1986). Hadler's Arizona study indicated that centers with large enrollments that include infants and are open longer hours are vulnerable to hepatitis A outbreaks, but the salient characteristic is the presence of children under the age of two. He suggests: (a) that 1% to 3% of centers enrolling infants under one year will have hepatitis A outbreaks (involving three or more families over a three-month period) and (b) that an estimated 10% to 15% of

hepatitis A cases in the U.S. result directly from day care contact (Goldmann et al., 1986, p.9).

Transmission of diseases

Respiratory transmission. "Attack rates of common respiratory and enteric [intestinal] diseases as well as severe and life threatening conditions, such as infections due to Hemophilus influenzae type b, are highest in young children. In addition, it is becoming more commonly recognized that these infections occur more frequently in infants and toddlers in day care centers than in their peers who remain home bound" (Pickering, 1986, p. 623). Upper respiratory infections are, by far, the most commonly diagnosed illnesses in day care centers (Trumpp & Karasic, 1983). Loda and associates (1972) at the Frank Porter Graham Child Development Center found that illnesses similar to those isolated from sick children in the community occurred in day care. About 10% of the asymptomatic children showed viruses when cultured. The major concern about day care children with common respiratory conditions focuses on when they should be excluded from the center. There is wide variation in state and center guidelines on exclusion with experts expressing doubt that any exclusion practice will have much impact on the number of ill children or the severity of the illnesses

experienced. Shapiro, Kuritsky, and Potter (1986, p. 625) suggest that, in view of the lack of compelling evidence that exclusion is efficacious, policy should focus on the needs of the ill child and whether the child will be comfortable and easily attended at the center.

The communicability of hemophilus influenzae type b among young children was not recognized until recently (Trumpp & Karasic, 1983). H. influenzae is thought to be transmitted by respiratory droplets or direct contact with an infected person or asymptomatic carrier. Both CDC and Swedish studies suggest a strong association between day care center attendance and upper respiratory problems. While otitis media (inflammation of the middle ear), with a need for "tubes in the ears," is the likeliest outcome from H. influenzae exposure, H. influenzae is also responsible for the most common cause of bacterial meningitis in the U.S. in the preschool age group with a consistent fatality rate of three to five per cent (Trumpp & Karasic, 1983, p. 222). Siblings younger than two years are at particular risk from H. influenzae carriers.

Fecal/oral route transmission. Infant day care center environments are especially likely to be sites where diseases spread through fecal/oral transmission occur. Children not toilet trained, still at an age to mouth whatever is within reach, are catalysts for disease spread through the fecal/oral route. Day care centers enrolling children in diapers have been implicated in outbreaks of hepatitis A which spread to the community, as well as in outbreaks of diarrhea, including Shigella, Giardia, Campylobacter, Salmonella, and rotavirus (Trumpp & Karasic, 1983, p. 222). Children under the age of three are particularly susceptible to diarrhea (Tacket & Cohen, 1983). Infants tend to remain in "the carrier state" longer than adults, and infants have a higher rate of illness and motality (Chorba, Meriwether, Jenkins, Gunn & MacCormack, 1987, p. 981). Toddlers are more likely to come in contact with contaminated objects than younger infants who are not as mobile.

Non-toilet trained children are also carriers of hepatitis A. While the children rarely have more than a mild illness, their adult contacts often become quite ill. Hepatitis A community outbreaks in Arizona, Alaska, Louisiana and Texas have been tracked by the CDC to day care centers with large numbers of children in

diapers. A total of 11 outbreaks associated with child care were found in New Orleans in a two-year period. Of 168 cases, 13 percent were associated with day care contacts (Storch, McFarland, Kelso, Heilman & Caraway, 1979). Hepatitis A represents a slight threat to infants; their symptoms are mild, and the infected infants are not very ill. The illness may be quite different for caregivers and parents. This illness is severe, expensive, and debilitating for adults. Infants serve as carriers of hepatitis A; adults in contact with them suffer the effects of the disease. "Studies of recent outbreaks of hepatitis A in communities have made it clear that a significant proportion (up to 30%) of cases orginate in day care centers" (Trumpp & Karasic, 1983, p. 224). The single factor that was the main determinant of whether hepatitis would spread in centers was the presence of children under the age of two.

Cytomegalovirus (CMV). Concern about CMV transmission in day care is increasing. Pickering states that CMV is ubiquitous in day care centers with 10% to 80% of the children in centers excreting CMV in their urine (Goldmann, et al., 1986, p. 10). As in the case of hepatitis A, the children are carriers. The fetuses of pregnant women exposed to CMV are at risk for mental retardation, serious hearing loss, and 23% die

before age five (Haskins & Kotch, 1986, p. 965). Pregnant women who wash their hands frequently and exercise good hygiene should not necessarily be excluded from working in day care, but they need information to make informed decisions.

Other diseases occur in day care centers, but those dicussed here are the most prevalent in the United States and the ones linked specifically to infant center day care contact.

Preventive Procedures

Short of exclusion of non-toilet trained children, handwashing is recognized as the most effective preventive procedure for controlling diseases spread through the fecal/oral route (Osterholm et al., 1987).

Basic hygiene practices suggested for staff are:

1. Wash hands after arriving at the center, diaper changing, wiping noses, and after using the toilet, as well as before handling food.

2. Use warm, soapy water and dry with disposable towels.

3. Turn off the faucet with a towel to avoid re-contamination, or wear disposable gloves for diaper changing. Remove and dispose of gloves after each change.

4. Use a bleach solution (1 part household bleach to 9 parts water) made daily to disinfect the diapering area after each use.

5. Separate the diapering area from the food preparation area. The diapering area should be within easy access of a sink.

6. Dispose of diapers in a covered can, lined with a plastic bag, removed from infant room twice a day.

7. Prepare, label, and store food properly. Disinfect table surfaces and highchair trays after use (Chu, 1988, pp. 1-2).

8. Adults who care for and diaper children should not also prepare food (Pickering, Bartlett & Woodard, 1986).

9. Close the center to new enrollees during an outbreak of diarrhea.

10. Establish an isolation room; provide adequate staff for monitoring; exclude children and staff with diarrhea (Tauxe, Johnson, Boase, Helgerson & Blake, 1986).

Public health authorities will test symtomatic children, staff, and household contacts and assist with disease control strategies. Licensing counselors can provide basic education materials for day care centers in appropriate disease identification and control measures (Kendall, Aronson, Goldberg & Smith, 1986). Achieving all of these suggestions would prove difficult for most day care centers. Most infant/toddler centers are unable to provide the staffing required to meet the ratios needed for developmentally appropriate programming and dealing with the ongoing threat of illnesses among children under three. Although child care manuals are increasingly incorporating day care disease researchers' recommendations, publications written by and for child care professionals tend to take a "soft" approach when compared with health professionals' recommendations. The lack of both information and the resources to address fully these disease-prevention suggestions means that day care staff may not know how to provide sufficient protection for children or themselves.

Resources

Resources available to infant day care staffs are proliferating. A Reference Guide for the Prevention and Control of Communicable Disease in Child Care Centers (1987) contains a detailed description of various diseases and the prevention and treatment of each. Vaccine-preventable childhood diseases included are rubella, whooping cough, mumps, and measles. The youngest day care enrollees may not be immunized against measles, mumps, and rubella and, therefore, are susceptible to these diseases (Trumpp & Karasic, 1983, p. 219). Procedures for dealing with nuisance diseases, such as scabies, pinworms, and head lice, are included along with procedures for preventing the serious diseases occurring in day care: Hepatitis A, meningitis, H-flu, and cytomegalovirus.

The National Association for the Education of Young Children's (NAEYC) Healthy Young Children: A Manual for Programs (Kendrick, Kaufmann & Messenger, 1988) includes directions for an "alternative to running water" (pp. 28-29), implying that groups of infants can be adequately cared for where running water is unavailable. Such a suggestion is irresponsible or uninformed in view of the severity of health problems related to infant programs. In the U.S., urban day care centers should

not find it necessary to operate without running water, and rural infant centers are rarely needed.

Materials for staff, parents, and children are contained in What to Do to Stop Disease in Child Day Care Centers: A Kit for Child Day Care Directors (1984) and are published jointly by the U.S. Department of Health and Human Services, the Public Health Service, and the Centers for Disease Control. The American Academy of Pediatrics has published day care materials (Deitch, 1987) and a brochure for parents entitled Tips on Selecting the "Right" Day Care Facility (1985). "Tips" reminds parents to look for a center in which caregivers wash hands frequently before feedings, after diapering and toileting, and where diapering areas are sanitized with a diluted bleach solution.

Policy Implications

Policy Review

Current infant and toddler group care regulations in the U.S. do not sufficiently take into account the prevention of disease spread. Day care policies of the 50 states lack congruence (Kendall, 1989; Kendall & Walker, 1984; Young & Zigler, 1986). The National State of Child Care Regulation 1986 by Gwen Morgan is the most comprehensive of the licensing surveys and highlights the wide range of licensing standards across the 50

states. Morgan found that only 34 states include program requirements for infants and toddlers, and most of these states had minimal requirements. "Sixteen states still do not mention handwashing in their regulations, even though handwashing is the single most effective method of preventing disease. Only 28 states require [a sink] in the infant changing room" (p. 10-1). Hadler notes that staffing ratios of one worker for four toddlers exist in Massachusetts, while Texas and Arizona allow a ratio of one to every eight or ten. A strong parent lobby in many states has prevented the passage of legislation that could improve the quality of care while increasing costs. Hadler concludes that "if we're going to have day care centers that provide satisfactory educational and social experience and minimize the transmission of infectious diseases, day care will have to be subsidized" (Goldmann, et.al, 1986, p, 11).

Given the nature of children and the close contact between them and their caregivers, policies must address health issues such as the exclusion of sick children, how to deal with AIDS (Blackman & Appel, 1987), who administers medication, and how to look after mildly ill children (Fredericks, Hardman, Morgan & Rodgers, 1986). Aronson (1986) and Landis and Carp (1988) suggest that the day care center should have written health policies

that are reviewed by staff and parents. Aronson provides a checklist for center directors to use to determine health and safety conditions. Such a checklist enables day care directors to track the frequency and extent of illness among staff and children and assumes that directors have the expertise to use the checklist.

Given the health problems in group care, perhaps an even more significant U.S. policy issue is the support of home-care options for infants and toddlers. Policies that allow a parent even a few months time at home with a new baby, with the guarantee of a job upon return, could significantly improve infant disease control. Maternity leave policies in western Europe, Great Britain, and other countries make the United States appear less civilized by comparison. Australia provides 9 weeks maternity leave; Belgium 14 weeks with 100% salary; France, 16 weeks with 90% salary; Israel, 3 months with 100% pay, 40 more weeks without pay but the right to return to the job; Norway, 18 weeks with 100% pay [Organisation Mondiale pour l'Education Prescolaire (OMEP) 1988 figures]. U.S. companies typically allow six weeks leave without pay at the time of birth. American Telephone and Telegraph (AT&T) recently announced a much more generous leave plan for employees

caring for newborns, ill children, or aged parents. Labor negotiations in the U.S. are beginning to focus more on such benefits; other large companies are exploring similar benefit packages.

The U.S. must support family options and research on infant and toddler day care options that reduce the current rate of disease. Modest family day home support could increase this option's availability. Relatives, neighbors, and family day homes currently provide care for most U.S. children under the age of three. Although many infants and toddlers are in homes, if support and information about the advantages of such care were available, more families might make use of this choice.

Federal funding can increase availability and improve day care quality, especially for poor families. Single parent families are the "new poor" in the U.S.; 25% of U.S. children are born in poverty, and that figure is likely to increase in the next decade (Children's Defense Fund, 1988a, p. iii). Only affluent families can afford the true cost of adequate child care. The working poor have not been able to find day care that is affordable. Federal support could increase the availability of care for those who cannot afford adequate care.

Recommendations and Implications

Given the risk to infants, their parents, and caregivers when very young children are in large groups, sound policy dictates that the United States find alternatives to center care for children still in diapers. There are implications for both federal and state governments and for the private sector. According to the U.S. Census Bureau the largest number of U.S. children under the age of five are still cared for in their own or someone else's home (6.3 million as contrasted with 1.9 million in centers) increasing numbers of centers offer infant care. In my city of Nashville 297 child care facililties provide day care service for children ages six weeks to 35 months [1989 figures from the Tennessee Department of Human Services]; however, licensed child care programs are available for only one in five infants and toddlers who need care (Children's Defense Fund, 1986, p. 32). Other U.S. cities probably have similar numbers of infant centers; even so, the greatest day care shortage continues to be for children under the age of three, while the fastest growing segment of women in the work force are those with preschool children. The Children's Defense Fund (1988b, p. 175) predicts that by 1995 two-thirds of all U.S. children will have mothers in the

work force.

Government responses. The federal government is increasing its role in day care. Osterholm (1986) notes that, except for government publications, little day care initiative has come from the federal level since the early 1970s. Day care grants have been modest during the last decade and a half. The National Institute of Health has had no day care grants; there has been little federal support for education of day care workers. During 1989 congressional members from both parties, with liberal and conservative voting records, are sponsoring day care bills.

State governments have traditionally played a watch-dog role for day care. Monitoring day care is increasingly difficult as (1) day care use increases, (2) states cut the number of day care monitoring staff (Kendall & Walker, 1984), and (3) the number of centers increases, while (4) the problems of sexual abuse, disease spread, and staff turnover in day care multiply (Kendall, 1989).

Professional organizations. New roles emerge for professional organizations that support day care. The National Association for the Education of Young Children (NAEYC) has taken the lead in improving the quality of child care. NAEYC's Developmentally Appropriate

Practice (Bredekamp, 1987) for children birth to eight years has positively influenced state legislation on children's issues and encouraged federal support to improve the quality of day care.

NAEYC initiated a voluntary accreditation process in 1984. The National Academy for Early Childhood Programs enables centers to gain recognition for meeting national accreditation guidelines. Parents can look for accredited programs as assurance that more than minimum state regulations have been met. More than 1000 programs are accredited and more than 2,500 are in the process of seeking accreditation [1989 Academy figures]. The incentive to go beyond state minimum requirements assists programs in improving the quality of care provided. Hadler (Goldman, Glode, Hadler, Osterholm & Pickering, 1986) found that centers that rely on state standards as the sole measure of ratio and staffing patterns tend to experience disease spread.

Perhaps the most feasible approach to improving infant day care is to increase support for home options. The newly formed National Family Day Care Association has 2,100 members and publishes resources, such as Better Baby Care: A Book for Family Day Care Providers. Presently, home care is not an option for many parents because (1) adequate family day care is not available

and (2) the cost of care in one's own home is prohibitive.

Conclusion

Illness occurs in most infants. In family situations the small number of children involved eliminates some of the threat of diseases spread through day care center contact With large numbers of infants and toddlers in centers, what has changed is the severity of illness experienced and the threat of increased disease outbreaks in the community. If from 10 to 30% of hepatitis A outbreaks in the U.S. result directly from infant day care contact, meningitis resulting from H. influenzae type b is fatal in 3 to 5% of the cases, and CMV causes death before the age of five in 23% of the fetuses infected, health risks related to infant group care have possible severe, negative outcomes for the children, their adult contacts, and the community.

The implications for infant programs are: (1) raise the age of entry; (2) arrange changing tables adjacent to sinks; (3) post handwashing procedures; (4) monitor compliance; (5) provide staff training so that proper sanitation procedures are routine; and (6) limit the number of diapered children admitted. Turnover of day care staff in some U.S. communities is as high as

40-60% of day care teachers leaving their jobs annually (Whitebook & Granger, 1989, p. 11); directors struggle to fill vacant positions. Staff training related to disease control must be continuous if it is to be effective. Better pay, training, and retention are required to keep the trained staff needed.

Centers must limit the number of infants below the age of one year enrolled and limit the number admitted who are still in diapers. Centers cannot admit all infants and toddlers needing care. Knowing what we know about germ theory and disease spread through group care, we need to limit the number of children in diapers and admit only those for whom adequate staff and space exist. Larger centers, open long hours, have a greater likelihood of health problems. Centers with infants need to limit their size and hours of availability.

Policies at the state level need upgrading. States that still do not require a sink in the infant changing room need to recognize in their licensing standards that handwashing is necessary to maintain the health of infants and their caregivers; a sink adjacent to the changing area must be mandated.

States regulate adult-child ratios. Godwin and Schrag (1988, p. viii) recommend a 1:3 ratio of adults to infants if caregivers are to have time to wash hands

upon arrival, before every feeding, after nose wiping, after each diaper change, and toileting. Reality in many states is a ratio well beyond even one adult to four infants. But, surely, infant caregivers must still find time to rock babies, hold bottles, offer toys and comfort. Honig (1989) suggests that quality caregiving for infants and toddlers requires adults who are predictable and kind who can offer rich language interchanges. These essentials cannot happen when too many infants or too few trained caregivers are available. Infant care must be more than keeping babies while their mothers work. Although optimal care by a fulltime parent is not available for many infants, surely safer infant care can be made available in the United States.

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