Excluding Sick Child-Care Workers

A 2010 outbreak of E. coli infected 60% of children and staff at a Colorado child-care center. Health authorities insisted on a strict policy of excluding sick individuals, which reduced the spread of disease.

Public Health Reasons

The immune system of children under 24 months is not fully developed, making them particularly vulnerable to pathogens that cause gastrointestinal illnesses. In addition, the infectious doses (minimum amount of infectious agent required to cause illness) for some pathogens in a susceptible host are quite low. For example, an infectious dose of human norovirus is estimated to be as low as 10 to 100 viral particles. In addition, pathogens can survive on environmental surfaces or human hands long enough for transmission to other susceptible hosts. The transmission of pathogens to children can happen in many ways, including while they are interacting with child-care workers.

It is necessary to exclude child-care workers who are symptomatic with diarrhea, vomiting, jaundice, or suffering from a disease likely to be transmitted through food or person-to-person contact. Sometimes a child-care worker might experience vomiting or diarrhea symptoms from a non-infectious condition, such as Crohn's disease or "morning sickness" during early stages of a pregnancy. In these instances, the worker may remain working in a full capacity as long as they can prove that the symptom is from a noninfectious condition. The child-care worker can substantiate this by providing medical documentation proving that the symptom is from a noninfectious condition.

Because of the high infectivity (ability to invade and multiply) and/or virulence (ability to produce severe disease) of *Salmonella* Typhi and hepatitis A virus, a child-care worker diagnosed with an active case of an illness caused by either of these two pathogens must be excluded from the child-care center. The exclusion is based on the high infectivity and/or the severe medical consequences to individuals infected with these organisms. A child-care worker diagnosed with an active case of illness caused by noroviruses, *Shigella* spp., *Escherichia coli* O157:H7, other enterohemorrhagic *E. coli* (EHEC), or shiga toxin-producing *E. coli* (STEC) must be excluded if exhibiting symptoms of vomiting and diarrhea, but can be allowed to work as the level of risk of pathogen transmission decreases.

Child-care workers diagnosed with typhoid fever (caused by a *Salmonella* Typhi infection) must always be excluded, even if they have no gastrointestinal symptoms because these symptoms are not typically exhibited with typhoid fever. Outbreaks of foodborne illness involving *Salmonella*

Typhi have been traced to asymptomatic food employees who have transmitted the pathogen to food, causing illness. The high virulence combined with the extremely high infectivity of *S*. Typhi warrant exclusion from the child-care center until the employee has been cleared by a physician or has completed antibiotic therapy.

Child-care workers infected with *E. coli* O157:H7, other EHEC, or STEC must also be also excluded. This is because of the documented ease of transmission from person-to-person in a child-care setting and because characteristics of foodborne outbreaks suggest a low infectious dose and the potential for the organism to be transmitted through food contaminated by soiled hands. The severity and consequences of infection, including hemolytic uremic syndrome (HUS), associated with Shiga toxin-producing *E. coli* warrant the institution of rigorous disease interventions.

Asymptomatic shedders are child-care workers who do not exhibit the symptoms of gastrointestinal illness, but who are identified through diagnosis or laboratory confirmation of their stools. The risk that child-care workers who are asymptomatic shedders will transmit a communicable disease varies depending upon the hygienic habits of the worker, if preparing food and how it is prepared, the susceptibility of the population served, and the infectivity of the organism. Asymptomatic child-care workers diagnosed with noroviruses, *Shigella* spp., *E. coli* O157:H7, other EHEC, or STEC may not work with food until they have medical documentation that they are no longer infected with the disease.

Practices

On a daily basis, the administrator of the facility or head caregiver/teacher must observe staff members, substitutes, and volunteers for obvious signs of illness (such as recent diarrhea, vomiting, or sore throat). They must instruct staff members, substitutes, and volunteers to report immediately to their supervisor any illnesses they experience at the facility or elsewhere, especially those that might affect the health of others in the facility. Finally, staff members, substitutes, and volunteers who are ill must go home.

Exclusion Of Sick Employees

Exclude an employee with:

- vomiting
- diarrhea
- jaundice
- sore throat with fever

Exclude an employee who is diagnosed with:

- norovirus
- hepatitis A virus
- *Shigella* spp.
- enterohemorrhagic or shiga toxin-producing *Escherichia coli*
- *Salmonella* Typhi

When Sick Employees Can Return To Work

- Norovirus – Employees can return after 48 hours without any symptoms or with written medical documentation that the employee is free of the norovirus infection.
- *Shigella* spp. – Employees can return after seven days without any symptoms or with written medical documentation that the employee is free of *Shigella* spp. infection based on test results showing two consecutive negative stool samples no earlier than 48 hours after stopping antibiotic use and at least 24 hours apart.
- Enterohemorrhagic or shiga toxin-producing *E. coli* – Employees can return after seven days without any symptoms or with written medical documentation that the employee is free of infection based on test results that show two consecutive negative stool samples no earlier than 48 hours after stopping antibiotic use and at least 24 hours apart.
- Hepatitis A virus – Employees can return if they have been jaundiced for more than 7 days, have had symptoms other than jaundice for more than 14 days, or with written medical documentation that the employee is free of infection.
- *Salmonella* Typhi – Employees can return with written medical documentation that they are free from *S.* Typhi infection.

References

1. American Academy of Pediatrics, American Public Health Association, & National Resource Center for Health and Safety in Child Care and Early Education. 2011. *Caring for our children: National health and safety performance standards: Guidelines for early care and education programs.* 3rd Ed. Elk Grove Village, IL: American Academy of Pediatrics; Washington, D.C.: American Public Health Association.
2. Brown, J. A, Hite, D. S., Gillim-Ross, L. A., Maguire, H. F., Bennett, J. K., Patterson, J. J., Comstock, N. A., Watkins, A. K., Ghosh, T. S., & Vogt, R. L. 2011. Outbreak of *shiga* toxin-producing *Escherichia coli* serotype O26: H11 infection at a child care center. *Pediatric Infectious Disease Journal* 4:384-388.
3. Food and Drug Administration. 2009. Food Code. DHHS Publication no. PB2009-112613. Alexandria, VA: U.S. Department of Commerce Technology Administration.
4. Liu, P. B., Chien, Y. W., Papafragkou, E., Hsiao, H. M, Jaykus, L. A., & Moe, C. 2009. Persistence of human norovirus on food preparation surfaces and human hands. *Food and Environmental Virology* 1:141-147.
5. Teunis, P. F., Moe, C. L., Liu, P., Miller, S. E., Lindesmith, L., Baric, R. S., Le Pendu, J., & Calderon, R. L. 2008. Norwalk virus: how infectious is it? *Journal of Medical Virology* 80 (8): 1468-1476.
6. Wilson, M. P, Babu, A. S., and Omaye, S. T. 2008. Survey of food safety behavior in Nevada child caregivers. *International Journal of Food Safety, Nutrition, and Public Health* 1 (2): 116-126.

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Excluding Sick Children

A 2010 outbreak of E. coli infected 60% of children and staff at a Colorado child-care center. Health authorities insisted on a strict policy of excluding sick individuals, which reduced the spread of disease.

Public Health Reasons

Children who attend child-care centers are twice as likely to experience gastrointestinal illnesses as those who do not. Therefore, the likelihood of an outbreak occurring increases in a child-care setting. When several individuals become sick, steps must be taken to control the spread of disease, otherwise the situation can quickly turn into an outbreak.

Children are particularly vulnerable to the rapid spread of infectious diseases, including gastrointestinal illnesses, for several reasons. Very young children and infants (younger than 12 months old) have a natural curiosity that leads to handling objects and surfaces frequently and a tendency to put their hands and objects in their mouths. This natural behavior increases their exposure to potential sources of illness. Also, children's immune systems are still developing and because they are smaller than adults, they often have more pronounced reactions to infections. Finally, children are more likely to suffer severe consequences from diseases that cause vomiting or diarrhea because they have smaller body fluid reserves than adults.

Transmission of pathogens can happen in a number of ways. Vomiting episodes produce droplets containing pathogens that may be aerosolized then inhaled and swallowed by others. The droplets produced from vomit as well as diarrhea can settle onto nearby surfaces, which can then infect people who come in contact with the contaminated surface. Also, children who have experienced diarrhea or vomiting may spread pathogens with their contaminated hands or clothing by coming in direct contact with other people. To avoid the spread of pathogens, it is important to exclude sick children from child-care centers.

Although most centers agree on the need to exclude seriously ill children from group programs, policies for the exclusion and return of mildly ill children are controversial and vary considerably. Exclusion policies create conflicts:

- for parents who have a continuing need for childcare even when their child has a mild infectious illness; and
- for child-care centers, who have a responsibility to provide optimal care for all children in the group and limit the transmission of infectious agents; and
- for both parents and child-care providers, who have responsibility for the well-being of the ill child.

Policies that are too lenient may place both ill and healthy children at risk. Whereas, policies that are overly stringent may incur high social, economic, and medical costs. Bell et al. reported that 40% of parental absenteeism from the workplace is attributable to the illness of a child. Moreover, centers that require examination by a physician before an ill child can return increase both parental expenditures and use of healthcare resources.

The American Academy of Pediatrics, the American Public Health Association, and the Federal Bureau of Maternal and Child Health have collaborated to develop health and safety standards for child-care centers, including criteria for the exclusion and return of sick children. They recommend that most children with mild illness should *not* be excluded from the regular child-care program *except* in the presence of one or more of the following conditions:

- the illness prevents the child's comfortable participation in group activities
- the illness necessitates more care than the center can provide
- other children are likely to become ill because of a significant risk of transmission
- the child has signs or symptoms suggesting a more serious illness that requires medical attention

Practices

Procedures For When A Child Is Sick

- When a child vomits, has diarrhea, or complains of nausea, separate the child from well children. It is best to move her to a separate room, but if this is not an option, keep her 30 feet away from the others.
- Have someone who knows the child well care for the child in a place where she will be comfortable. Have this child-care provider continue to monitor the child for new or worsening symptoms.
- Contact the family to pick up the child as soon as possible.
- Talk to the family member who picks up the ill child about any observations of symptoms and what is required for the child to return to childcare.
- Ask the family to relay the observations made by the program staff to the child's healthcare provider and the information from the healthcare provider to the child-care staff. The healthcare provider's information does not need to be in written form unless a medical visit is deemed necessary by the healthcare provider or the program staff requires clarification directly from the healthcare provider. Telephone advice and electronic transmissions of instructions are acceptable without an office visit.
- Contact the local health department if there is a question about a notifiable communicable disease. If there are conflicting opinions from different healthcare providers about the management of a child with a notifiable communicable disease, the health department has the legal authority to make a final determination. (For a list of nationally mandated notifiable diseases visit the Centers for Disease Control and Prevention website at: http://www.cdc.gov/osels/ph_surveillance/nndss/phs/infdis.htm)
- Document details in the child's file noting the date, time, symptoms, actions taken, and care giver's name with signature.
- Disinfect toys and other items the child may have contaminated by mouthing or handling and continue to practice good handwashing techniques (see "Cleaning and Disinfecting High-Touch Surfaces" and "Hand Hygiene for Care Providers" fact sheets).

When To Exclude A Child

Exclude children if they have the following symptoms or have been diagnosed with any of the following illnesses:

Symptoms

- Persistent abdominal pain (continuing for two or more hours) or intermittent abdominal pain accompanied by fever, dehydration or other systemic symptoms
- Fever accompanied by behavior changes or other signs and symptoms that are suggestive of a severe illness

    - For infants less than 4 months of age, a rectal temperature 101.0°F (38.3°C) or greater
    - For infants and children older than 4 months of age
        - Rectal temperature 102.0°F (38.8°C) or greater
        - Axillary (under the arm) temperature 100.0°F (37.7°C) or greater
        - Oral temperature 101.0°F (38.3°C) or greater
- Vomiting two or more times during a 24 hour period
- Diarrhea (three or more loose stools in a 24 hour period)
- Jaundice
- Sore throat with a fever

Diagnosed Illnesses

- Norovirus
- Rotavirus
- Hepatitis A virus
- *Shigella* spp.
- Enterohemorhagic or shiga toxin-producing *Escherichia coli*
- *Salmonella* Typhi and other *Salmonella* spp.
- *Campylobacter* spp.
- *Giardia lamblia*

When a Child Can Return to the Center

Diarrhea

- Children can return to the child-care center after diarrhea has stopped or after a doctor clears the child to return.
- Children having diarrhea with blood or mucus *must* have a medical note to return to the child-care center.

Vomiting

- A child who has vomited two or more times in 24 hours should not return until the vomiting stops unless she is known not to be contagious.

Infections

For the following infections, children can return with the resolution of the listed symptoms *and* a medical note.

- *Campylobacter* – After diarrhea stops
- Norovirus – After diarrhea and vomiting stops
- Rotavirus – After diarrhea stops
- *Shigella* – After diarrhea stops *and* after five days of antibiotics or a negative lab test
- *Salmonella* spp. – After diarrhea stops

- *Salmonella* Typhi
    - Children under 5 years of age: Exclude until diarrhea stops and three stool cultures are negative for *Salmonella* Typhi
- Children 5 years of age and older: Exclude until 24 hours without diarrhea
- *Escherichia coli* – After diarrhea stops
- *E. coli* O157:H7 –After diarrhea stops *and* two lab tests taken 24 hours apart are negative
- *Giardia* – After diarrhea stops or the child has taken antibiotics for at least 24 hours
- Hepatitis A virus – One week after onset of illness or jaundice if symptoms are mild

References

1. American Academy of Pediatrics, American Public Health Association, & National Resource Center for Health and Safety in Child Care and Early Education. 2011. *Caring for our children: National health and safety performance standards; Guidelines for early care and education programs*. 3rd edition. Elk Grove Village, IL: American Academy of Pediatrics; Washington, D.C.; American Public Health Association.
2. American Public Health Association & American Academy of Pediatrics. 1992. *Caring for our children. National Health and Safety Performance Standards: guidelines for out-of-home child care programs*. Washington, D.C.; American Public Health Association 65–114.
3. Aronson, A. S., & Shope, T. R. eds. 2008. *Managing infectious diseases in childcare and schools: a quick reference guide*. 2nd Edition. Elk Grove Village, IL: American Academy of Pediatrics.
4. Bell, D. M., Gleiber, D. W., Mercer, A. A., Phifer, R., Guinter, R. H., Cohen, A. J., Epstein, E. U., and Narayanan, M. 1989. Illness associated with child day care: a study of incidence and cost. *American Journal of Public Health* 79:479–84.
5. Brown, J. A, Hite, D. S., Gillim-Ross, L.A., Maguire, H. F., Bennett, J. K., Patterson, J. J., Comstock, N. A., Watkins, A. K., Ghosh, T. S., & Vogt, R. L. 2011. Outbreak of shiga toxin-producing *Escherichia coli* serotype O26: H11 infection at a child care center. *Pediatric Infectious Disease Journal* 4:384-388.
6. Bureau of Disease Control. 2011. Childcare exclusion list: official list of conditions requiring exclusion from out-of-home childcare settings for 2011-2012, with guidance section. South Carolina Department of Health and Environmental Control. http://www.hammondschool.org/uploaded/pdf/health_forms/2011-2012_Childcare_Exclusion_List.pdf (accessed October 2, 2012).
7. Byun, R., Sheppeard, V., & Bull, R. 2010. Bug breakfast in the bulletin: Gastroenteritis outbreaks in institutions. *NSW Public Health Bulletin* 21 (12): 267-268.
8. Centers for Disease Control and Prevention (CDC). 2012. National Center for Health Statistics. http://www.cdc.gov/nchs/ (accessed October 30, 2012).
9. Cordell, R. L., MacDonald, J. K., Solomon, S. L., Jackson, L. A., & Boase, J. 1997. Illnesses and absence due to illness among children attending child care facilities in Seattle-Kings County, Washington. *Pediatrics* 100:850–5.
10. Kahan, E., Gross, S., & Cohen, H. A. 2005. Exclusion of ill children from child-care centers in Israel. *Patient Education and Counseling* 56:93-97.
11. Huskins, W. C. 2000. Transmission and control of infections in out-of-home child care. *Journal of Pediatric Infectious Disease* 19 (10): S101-110.
12. Landis, S. E., Earp, J. A. L., & Sharp, M. 1988. Day-care center exclusion of sick children: comparison of opinions of day-care staff, working mothers, and pediatricians. *Pediatrics* 81 (5): 662-667.
13. Louhiala, P. J., Jaakkola, N., Ruotsalainen, R., & Jaakkola, J. J. 1997. Day-care centers and diarrhea: A public health perspectives. *Journal of Pediatrics* 131:476–9.
14. Robinson, J. 2001. Infectious diseases in school and child care facilities. *Pediatrics in Review* 22:39–45.
15. Wald, E. R., Guerra, N., & Byers, C. 1991. Frequency severity of infections in day care: Three-year follow-up. *Journal of Pediatrics* 118:509–14.

Authors and Acknowledgements

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Monitoring Children's Health

A 2010 outbreak of E. coli infected 60% of children and staff at a Colorado child-care center. Health authorities insisted on a strict policy of excluding sick individuals, which reduced the spread of disease.

Public Health Reasons

Children who attend child-care centers are twice as likely to experience gastrointestinal illnesses as those who do not. This is presumably because they are more likely to be exposed to children who are sick than are those who are cared for in their own home.

Children are particularly vulnerable to the rapid spread of infectious diseases, including gastrointestinal illnesses, for several reasons. To begin with, very young children and infants (under 12 months old) have a natural curiosity that leads to handling objects and surfaces frequently and a tendency to put their hands and objects in their mouths. This natural behavior increases their exposure to potential sources of illness. Also, children's immune systems are still developing, and because they are smaller than adults, they often have more pronounced reactions to infections. Finally, children are more likely to suffer severe consequences from diseases that cause vomiting or diarrhea because they have smaller body fluid reserves than adults.

Transmission of pathogens can happen in a number of ways. Vomiting episodes produce droplets containing pathogens that may be aerosolized then inhaled and swallowed by others. The droplets produced from vomit as well as diarrhea can settle onto nearby surfaces, which can then infect people who come in contact with the contaminated surface. Also, children who have experienced diarrhea or vomiting may spread pathogens with their contaminated hands or clothing by coming in direct contact with other people. To avoid the spread of pathogens, it is important to exclude sick children from child-care centers.

When an illness occurs, an outbreak can be avoided if illness patterns are recognized promptly. Child-care workers who are familiar with the behavior and appearance of enrolled children can easily assess a child's health status both when the child arrives and periodically throughout the day. Doing a daily health check and keeping symptom records is a good way for child-care workers to monitor trends and watch for signs of an outbreak. When a potential problem arises, symptom records are necessary for the staff to determine what to do and, if necessary, obtain appropriate advice about how the facility must respond from a public health official or healthcare provider.

Practices

It is recommended that a log be kept of the children's health to track any emerging outbreaks. To do this, use a notebook and write the date at the top of the page. Then write down each child's name and her current health. This log is very useful in the case of an outbreak because the facility will be able to look back and see when the first cases began to emerge.

Daily Health Check

- Each day a trained staff member must conduct a health check of each child as soon as possible after the child enters the center and whenever a change in the child's behavior or appearance is noted while at the center.
- Instruct the staff member to document the following:
    - reported or observed illness or injury affecting the child or their family members since their previous day of attendance
    - reported or observed changes in behavior (lethargy or irritability) or appearance in the child since the previous day at the facility
    - any skin rashes, itchy skin or scalp, impetigo, or the presence of one or more living lice
    - signs of a fever, such as flushed appearance or shivering (temperature monitoring, in the absence of behavior change, is not recommended)
    - complaints of pain or not feeling well
    - vomiting or diarrhea
    - drainage from eye(s)
    - cuts/lacerations

References

1. American Academy of Pediatrics, American Public Health Association, & National Resource Center for Health and Safety in Child Care and Early Education. 2011. *Caring for our children: National health and safety performance standards; Guidelines for early care and education programs*. 3rd Ed. Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association.
2. Aronson, A. S., & Shope, T. R. eds. 2008. *Managing infectious diseases in child care and schools: a quick reference guide*. 2nd Ed. Elk Grove Village, IL: American Academy of Pediatrics.
3. Centers for Disease Control and Prevention (CDC). 2012. National Center for Health Statistics. http://www.cdc.gov /nchs/ (accessed October 30, 2012).
4. Kahan, E., Gross, S., & Cohen, H. A. 2005. Exclusion of ill children from child-care centers in Israel. *Patient Education and Counseling* 56:93-97.
5. Laborde, D., Weigle, A., Weber, J., & Kotch, B. 1993. Effect of fecal contamination on diarrheal illness rates in day-care centers. *American Journal of Epidemiology* 138:243–255.
6. Nwachuku, N. & Gerba, C. 2004. Microbial risk assessment: Don't forget the children. *Current Opinion in Microbiology* 7:206–209.

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