Communicable Disease Prevention and Outbreak Investigation

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Prevention Measures

- Hand washing *.2803*
- Communicable Diseases and Conditions *.2827*
- Sick child policy
- Toy Cleaning *.2822*
- Sink/Toilet/Counter Sanitation *.2817, .2818*
- Diapering Area Disinfection *.2819*
- Proper Food Handling *.2806, .2807, 2808*
- Separate Storage for Clothes *.2820*

Control Measures

- The spread of infection in child care is reduced if all staff, students and visitors adhere to basic hygiene measures.
- Sick policies
- Proper hand washing
- Proper wound management
- Follow NC child care rules, policies and Executive Orders

TRAINING-TRAINING-TRAINING

Working Parents

- In most families with children at home, the majority of mothers work outside the home for pay. Among married couple families, two-thirds of mothers are employed (**67.3 percent**)
- https://www.americanprogress.org

Sixty percent of the children of moms working outside the home receive care in a setting other than their home.

In most families, every adult works. When a child stays home sick someone must stay home to provide care—and this person is usually a mother, a wife, or an adult daughter.
https://www.caregiver.org/caregiver-statistics-demographics

- 4,607 licensed child care centers
- 246,622 children enrolled in licensed
- child care centers

- https://ncchildcare.ncdhhs.gov/County/Child-Care-Snapshot
- Source, Division of Child Development and Early Education Monthly Statistical Summary Report – May 2017 Number of Children Served Receiving Subsidy – 63,509

Impact and Cost of Illness

- Child illness accounts for 40 per cent of parental absenteeism from work.
- Children in child care are 30 percent more likely to contract a diarrheal illnesses than children cared for at home.
- Children in child care centers were 4.5 times more likely to be hospitalized than children in other settings.
- Parents of children in child care centers miss an average of 1 to 4 weeks of work each year to care for their sick children.
- Employee workdays lost to illness cost US businesses between $2 – $12 billion/yr.

WHAT YOU DO MAKES A DIFFERENCE!

Illness associated with child day care: a study of incidence and cost.
D M Bell, D W Gleiber, A A Mercer, R Phifer, R H Guinter, A J Cohen, E U Epstein and M Narayanan.
Department of Pediatrics, Memphis State University.
http://www.ajph.org/cgi/content/abstract/79/4/479?ck=nck

CHILD ILLNESS

What is the most common childhood surgery performed under general anesthesia?

The child's average age for this procedure is one to three years.

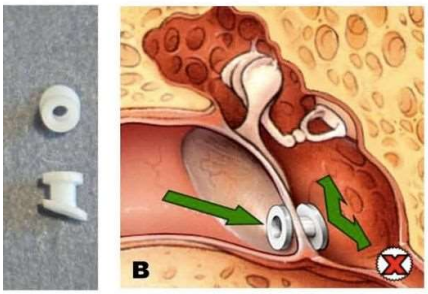
More than a million are performed in North America each year.

Ear tubes – tiny, hollow tubes, usually made of plastic or metal, that are surgically inserted into the eardrum creating an airway that ventilates the middle ear and prevents the accumulation of fluids behind the eardrum.

Doctors frequently recommend ear tubes if a child gets frequent ear infections or **if the condition affects hearing and speech.**

In children without tubes, ear infections are often treated with antibiotics by mouth or by injection. In children with tubes, the infection can drain out the tube and it can usually be treated with antibiotic eardrops.

In most children, ear tubes last somewhere between six months and two years before the body naturally pushes the tubes out and into the ear canal.



Seven percent of children in the U.S. receive a set of tubes by age three.

Risk Factors continued

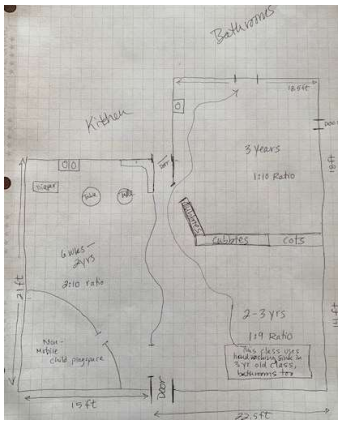
- Inadequate infection control
- Understaffing
- Staff turnover averages 40%
  - https://www.indeed.com/career/preschool-teacher/salaries/NC
  - Average salary for a preschool teacher in NC is $13.33
- Lack of Training
- Animals and pets
- Spread of infection often occurs prior to recognition of symptoms

Risk Factors of Illness

- The strongest predictor of illness is the number of children in the room: crowded conditions and close contact
- Poor personal hygiene
- Limited immunity
- Mobility of teachers and students
- Poor classroom design and layout

- *Illness associated with child day care: a study of incidence and cost. D M Bell, D W Gleiber, A A Mercer, R Phifer, R H Guinter, A J Cohen, E U Epstein and M Narayanan.*

Does this meet the requirements of .2802?



Modes of Transmission

- Fecal-Oral
- Blood
- Food and drinking water
- Surfaces
- Animal to human
- Airborne

Interim Guidance for Child Care Settings

https://covid19.ncdhhs.gov/media/220/download

Transmission of COVID-19:

COVID-19 is spread by respiratory droplets released when people talk, cough, or sneeze.

The virus may also spread to hands from a contaminated surface and then to the nose or mouth, causing infection.

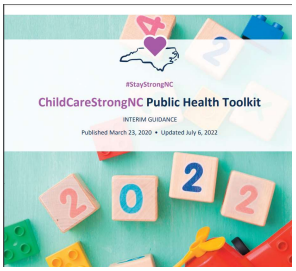
"…Personal prevention practices (such as handwashing and staying home when sick) and environmental cleaning and disinfection are important principles.....to help lower the risk of COVID-19 exposure and spread in child care settings."

COVID Cluster in childcare center

If you receive a report of a COVID cluster in a child care or school setting notify Veronica Bryant the Emergency Preparedness and Outbreak Coordinator for DPH and your communicable disease nurse.

Veronica Bryant, REHS
Mobile: 919-218-6943
Veronica.bryabt@dhhs.nc.gov
5605 Six Forks Road
1632 Mail Service Center
Raleigh, NC, 27699-1632
Emergency Preparedness and Outbreak Coordinator
Division of Public Health, Environmental Health Section
North Carolina Department of Health and Human Services

What's New
This Toolkit offers child care providers recommendations for implementing layered prevention strategies based on current COVID-19 trends in North Carolina.



Individual contact tracing and exclusion from child care after an identified exposure to COVID-19 are no longer a statewide requirement or recommendation.

Child care programs should continue to notify potentially exposed children and staff.

This is particularly important for settings that do not have other layered prevention strategies, such as universal masking, in place, and therefore have a higher risk of viral spread.

Individual contact tracing and exclusion from child care after an identified exposure to COVID-19 are no longer a statewide requirement or recommendation.

Although exclusion from child care is no longer required following an exposure, child care programs should continue to notify potentially exposed children and staff.

This is particularly important for settings that do not have other layered prevention strategies, such as universal masking, in place, and therefore have a higher risk of viral spread.

What is a COVID Cluster ?

In a child care or school setting, a COVID-19 cluster is defined as a minimum of **five positive cases** identified through a positive molecular (PCR) or positive antigen test result with illness onsets or initial positive results within a 14-day period and plausible epidemiologic linkage between cases.

As of 10/26/2021 - 12 Reported Clusters in NC child care settings…approximately 200 reported clusters in schools.

- Source: COVID-19 Ongoing Clusters in Child Care and School Settings: Updated Oct 26, 2021
- https://covid19.ncdhhs.gov/media/411/open

Child Care or School Setting with an Ongoing Cluster:

			Staff		Children		Total	
Setting Type	Setting County	Facility	Cases	Deaths	Cases	Deaths	Cases	Deaths
Child Care	Ashe	Learning Thru Play Too	0	0	5	0	5	0
Child Care	Caldwell	World of Discovery CDC Preschool	1	0	8	0	9	0
Child Care	Carteret	My School	2	0	16	0	18	0
Child Care	Carteret	Little Gem's Day Care Center	1	0	5	0	6	0
Child Care	Cumberland	Flaming Sword Christian Daycare	0	0	7	0	7	0
Child Care	Henderson	Creative Beginnings Preschool	1	0	6	0	7	0
Child Care	Johnston	Kids R Kids	1	0	6	0	7	0
Child Care	Moore	Sandhills Children Center	2	0	4	0	6	0
Child Care	Onslow	New Beginnings III	3	0	4	0	7	0
Child Care	Orange	Erwin Road Montessori School	1	0	4	0	5	0
Child Care	Pitt	Kids Paradise	2	0	7	0	9	0
Child Care	Wake	Bright Horizons at the Forum	1	0	6	0	7	0
K-12 School	Alamance	Alexander Wilson Elementary School	0	0	9	0	9	0
K-12 School	Alamance	Western High School	2	0	3	0	5	0
K-12 School	Alamance	R.Homer Andrews Elementary School	0	0	6	0	6	0
K-12 School	Alamance	Altamahaw-Ossipee Elementary School	0	0	7	0	7	0
K-12 School	Alamance	Grove Park Elementary	0	0	5	0	5	0
K-12 School	Alamance	Cummings High School	0	0	5	0	5	0
K-12 School	Alamance	Audrey Garrett Elementary School	0	0	5	0	5	0
K-12 School	Ashe	Ashe County High School	0	0	5	0	5	0
K-12 School	Avery	Crossnore Elementary School	2	0	10	0	12	0
K-12 School	Avery	Avery County High School	0	0	25	0	25	0
K-12 School	Avery	Freedom Trail Elementary School	2	0	11	0	13	0
K-12 School	Avery	Avery Middle School	0	0	7	0	7	0

Modified Play Activities

Water play in individual buckets, and sensory play (such as rice, beans, or playdough activities) using individually labelled supplies, and outdoor sand play is acceptable if social distancing measures can be maintained.

Outdoor water play using sprinklers is considered similar to playground usage and is allowed. However, water for outdoor play cannot be collected or recirculated and must drain quickly to avoid puddling.

hand hygiene stations

Set up at the entrance of the facility, so that people can clean their hands before they enter. If a sink with soap and water is not available, provide hand sanitizer with at least 60 percent alcohol. Keep hand sanitizer out of children's reach and supervise use.

DHHS Hand Hygiene Stations

Wall-mounted hand sanitizer dispensers located in corridors, maximum volume of 41 oz


Serving Those Who Serve North Carolina
Office of State Human Resources

Alcohol-Based Hand Rub and Fire Safety

Information provided by the OSHR Safety, Health and Workers' Compensation Division

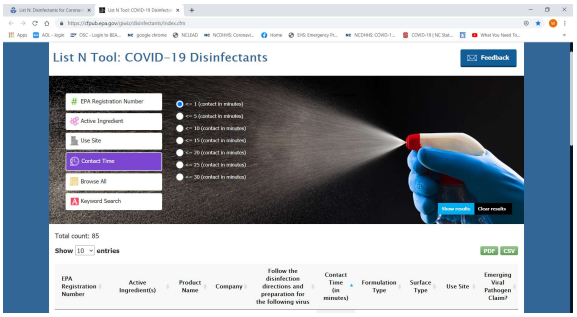
Cleaning following a positive screening or developed symptoms

- Consult local health department
- Close off areas used by the individual
- Wait at least 24 hours before cleaning and disinfecting (includes vehicles)
- Consult your HVAC technician to increase fresh air circulation
- When possible, move educational activities outdoors
- Notify Veronica Bryant, Emergency Preparedness and Outbreak Coordinator (919-218-9643)
  - veronica.bryant@dhhs.nc.gov
- Use an EPA registered disinfectant that is active against Covid-19 to clean all areas

Know Your Chemicals

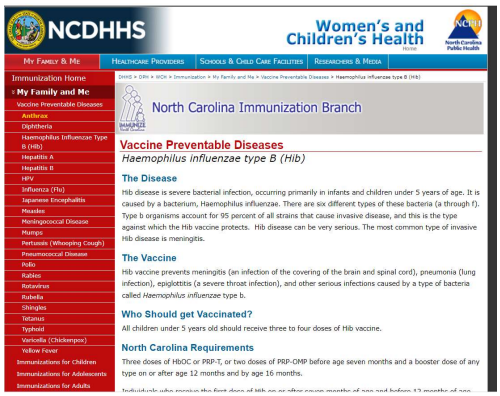
List N: Disinfectants for Coronavirus (COVID-19)

Click here to find a product to kill COVID-19



Highlighted Recommended Actions

- Social distancing
- Restrict teachers to one classroom
- Waiting areas 6' space markings
- Keep children together in their assigned room
- Limit mixing of children
- Nap time space increase spacing and place children head to toe
- Increase outdoor learning



Required vs. Recommended in North Carolina

- All children in North Carolina are required to be vaccinated against:
1. Diphtheria
2. Hepatitis B
3. Hib Disease
4. Measles
5. Meningococcal
6. Mumps
7. Pertussis (whooping cough)
8. Pneumococcal
9. Polio
10. Rubella
11. Tetanus
12. Varicella (chickenpox)

- The CDC also recommends children be vaccinated against the following diseases, although immunization against these diseases is not required for children in North Carolina:
1. Hepatitis A
2. Influenza
3. Rotavirus
4. Human Papillomavirus

Proof of required immunizations and health assessments are required within 30 days of the first date of attendance at school. After 30 days, children are generally excluded from school until documentation is provided.

What are the first symptoms of rotavirus?
The most common symptoms of rotavirus are severe watery diarrhea, vomiting, fever, and/or abdominal pain.

How do you catch rotavirus?
You can get infected with rotavirus if you get rotavirus particles in your mouth.
1. touch contaminated objects or surfaces and then put your fingers in your mouth.
2. eat contaminated food.
3. put your unwashed hands that are contaminated with poop into your mouth.

www.cdc.gov/rotavirus/about/symptoms.html

Symptoms and Diagnosis of Hand, Foot, and Mouth Disease
*Hand, foot, and mouth disease is **very contagious***

Hand, foot, and mouth disease is common in infants and children younger than 5 years old. Most children have mild symptoms for 7 to 10 days.

Symptoms of hand, foot, and mouth disease usually include **fever, mouth sores**, and **skin rash** commonly found on the hands, mouth, and/or feet.

PREVENTION
Wash your hands
Wash your hands often with soap and water for at least 20 seconds. If soap and water are not available, use an alcohol-based hand sanitizer.
Always wash your hands:
•After changing diapers
•After using the toilet
•After blowing your nose, coughing, or sneezing
•Before and after caring for someone who is sick
Help children wash their hands. Teach them how to wash their hands and make sure they wash them often,

Animals and Pets

PETS

Scientists estimate that **more than 6 out of every 10 known infectious diseases in people can be spread from animals**, and 3 out of every 4 new or emerging infectious diseases in people come from animals.


Hope Valley Preschool – Pet Education Program

2004 State Fair

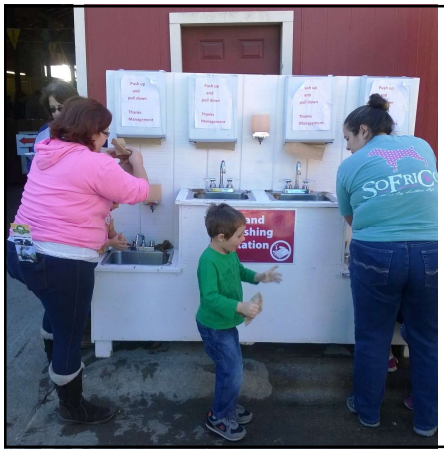
State faces E. coli lawsuit

Posted on Tuesday, Aug. 02, 2011 - By JANE STANCILL

North Carolina failed to properly warn the public and reduce the health risks associated with a petting zoo at the 2004 State Fair, say attorneys representing 14 children who became ill after exposure to E. coli bacteria from animal feces.

Opening arguments began Monday in a case brought by families who say they were unaware of the risks of allowing their children into a petting zoo with farm animals…An outbreak of E. coli illnesses was traced to the Crossroads Petting Zoo at the fair in 2004. In all, **108 children reportedly suffered serious diarrhea**, and 15 of those came down with kidney failure a life-threatening complication that occurs in about 10 percent of those infected with E. coli O157:H7, a strain of the bacteria that was apparently transmitted from feces of goats and sheep at the petting zoo. Young children are especially at risk of developing the illness.

2017



2018 NC State Fair

2021
NC State Fair

Lavatories
- is hand washing easy?
- conveniently located?

"Electric Eye" Handsink

Wegman's 3 in 1 Lavatory

Hand Washing

- Tempered water (80 – 110 F), soap, and disposable towels
- Demonstrate proper hand washing
- Don't assume staff know how.

CDC COVID – Take steps to protect yourself

- **Wash your hands** often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.
- If soap and water are not readily available, **use a hand sanitizer that contains at least 60% alcohol**. Cover all surfaces of your hands and rub them together until they feel dry.
- **Avoid touching your eyes, nose, and mouth** with unwashed hands.
- https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention

Diapering Procedures – *.2819*

- Diapering procedures posted/followed?
  - Is the caregiver washing their hands and the child's hands?
  - Are gloves being used properly?
  - Cloth diapers
  - Are diapers being placed in a plastic-lined, covered container?

Diapering Procedures

- Is the diapering surface smooth, nonabsorbent, & easily cleanable?
- Is a solution of soap and water used prior to disinfecting?

Diapering and Toileting

- Is the disinfectant concentration adequate? – *500 – 800 ppm Cl or EPA registered – .2801 (7)*
- Proper contact time – *bleach solution 2 minutes other products are longer*
- Are toilets cleaned and disinfected?
- Adequate amounts of toilet paper?
- Are the children properly supervised?

Mouth Contact Surfaces

- Are sanitizing procedures being followed? – *.2822*
- Are toys easily cleanable?
- Discourage sharing of personal articles or toys
- *Floor surfaces – what about your shoes?*

Fecal Contamination

- Most important sources of contamination:
  - Hands, toys, sinks, and faucets
- High levels of fecal coliforms are more likely to occur on sinks and faucets than on other classroom surfaces *(that is why a separate hand sink is required for food preparation).*

Laborde et al., 1995

Fecal Contamination

- Infant classrooms are more often contaminated than classrooms for toddlers.
- Greater levels of contamination on staff member's hands in classrooms for infants.

Laborde et al., 1995

Reducing fecal contamination

- Wear disposable gloves
- Hand sanitizers in addition to proper hand washing
- Frequent *disinfection* of sinks and *sanitizing* of toys throughout the day.
- Knee- or foot pedal-controlled sinks
- All diapering activities conducted by one individual per room (best practice).

Laborde et al., 1995

Food Protection

- The odds of children getting diarrhea in a center where the food preparer changed diapers is 18 times greater compared to centers where the food preparer did not change diapers
- Best Practice, staff who prepare or serve food should not change diapers and staff who change diapers should not prepare food.
- Wash raw fruits and vegetables
- Temperatures maintained
- *Mohle-Boetani et al., 1995).*

If an Outbreak Occurs – what do you do?

- Contacting, Visiting, Inspecting
- Monitoring
- Testing, Exclusion, and Cohorting
- Informing and Educating
- Child Care facility directors and school principals must report communicable diseases (*G.S. 130A-136)*

Problems with Controlling Outbreaks in Child Care Centers

- When do communicable disease outbreaks occur?
- Ease of person-to-person transmission among young children
- High secondary attack rates
  - as high as 40 percent for shigellosis
- Extended duration of outbreaks

Who to Contact

- EPI team leader
- Environmental Health Supervisor
- Regional Environmental Health Specialist
- Division of Child Development
- Communicable Disease Control Nurse
- Laboratory Personnel
- Other State Personnel (e.g., Communicable Disease Control Section)
- Local pediatricians and hospital

Containing Cases

- EPI Team
- Visit the center and
  - conduct interviews
  - gather information – standard questionnaires
  - keep your PIO informed
- In addition, visit and/or inform child care centers and child care homes in the immediate outbreak area

Containing Cases

- Exclude new admissions
- Prevent transfers to other centers
- Call area child care centers to inform them of the outbreak and instruct them not to accept children from the infected center
- Contact area pediatric practices, ERs, clinics, and other health care providers for prompt reporting of additional cases

Banning Activities

- No water table play activities
- No family-style food service .2808(G)

Line Listing

- A "line listing" is a useful tool to help organize your data. For example, case names and numbers are listed down the left hand column, and the heading row at the top of the table has more detailed information on each case such as the person's age, sex, time of onset of symptoms etc.... This type of organization provides a simple means for comparison of many characteristics, at one time. You would then look for patterns, associates or other similarities in the data.

Example of a Line Listing Table

#	Name	Age	Sex	Onset	Time	Symptoms
1	Ed	2	M	10/1/11	10:00 AM	Diarrhea, abd. cramps
2	Tena	5	F	10/1/11	12:30 PM	Diarrhea
3	Kimly	2	F	10/1/11	10:15 AM	Diarrhea, nausea
4	Alan	1	M	9/30/11	10:30 PM	Diarrhea, abd. cramps

Exclusion Criteria

- Exclude cases from child care until past the infectious period and the child is asymptomatic.

15A NCAC 18A .2836 MILDLY ILL CHILDREN

- (a) Centers may provide care for mildly sick children over three months of age who meet the following inclusion criteria and staff qualifications described in Rule .2408 of this Section: (1) Centers may provide care for children with Level One symptoms as follows: (A) children who meet the guidelines for attendance in 10A NCAC 09 .0804, except that they are unable to participate in group activities and are in need of increased rest time or less vigorous activities; or (B) children with fever controlled with medication of 101° or less axillary or 102° or less orally

Online Resources

- CDC OutbreakNet Team – national surveillance on foodborne infections http://www.cdc.gov/foodborneoutbreaks/
- FOCUS on Field Epidemiology, UNC-SPH www.sph.unc.edu/nccphp

Helpful Resources

- Infection control: http://www.theific.org/oldsite/Manual/res.htm
- Control of Communicable Diseases Manual, Chin, J. (2000)
- American Academy of Pediatrics Red Book