MORE
COMMON ILLNESSES AMONG CHILDREN IN CHILDCARE FACILITIES

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More Common Childhood Infections

- Webinar I review
  - Themes
  - Organisms and antibiotics
  - Fever
More Common Childhood Infections

- Additional infections
  - Bacterial diarrhea
  - Pertussis
  - Influenza
  - Parvovirus
  - Hepatitis
  - Urinary tract infection
  - Herpangina
  - Roseola
Themes

- Symptoms
- Causes
  - Organism
- Transmission
  - Infectiousness
  - Modes of spread
- Prevention
- Treatments
- Exclusion/return
Themes

- Symptoms
- Causes
  - Organism
- Transmission
  - Infectiousness
  - Modes of spread
- Prevention
- Treatments
- Exclusion/return
Symptoms

- What are the child’s symptoms?
- What is the risk for serious illness?

Causes/Organism/s

- What organisms usually cause this illness?
Transmission

- Infectiousness
  - Does it spread easily?
- Timing
- Modes of transmission
  1. Contact
  2. Droplet
  3. Airborne
  4. Bloodborne
Modes of transmission

1. Contact
   - Hands!, toys, doorknobs
   - Colds, Rotavirus, hepatitis A, Salmonella, Tinea

2. Droplet
   - Cough, sneeze $\Rightarrow$ eyes, nose, mouth
   - Influenza, RSV, pertussis, strep throat
Modes of transmission

3. Airborne
   - Chicken pox, measles, tuberculosis

4. Bloodborne
   - HIV, hepatitis B, C
Prevention/Control

How can the illness be prevented?
- Immunizations
  - Best protection against preventable illness
  - Especially important in childcare

How can we keep the illness from spreading?
- Handwashing/alcohol-based hand sanitizer!!!
- Diaper/toileting hygiene
- Cleaning surfaces
- Universal/Standard precautions
- Immunizations
# Recommended Immunization Schedule

## 0-6 years, U.S.-2011

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**Influenza (Yearly)**

- HepA (2 doses)  
- Varicella  
- MMR

**Range of recommended ages for all children**

**Range of recommended ages for certain high-risk groups**

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[http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm](http://www.cdc.gov/vaccines/recs/schedules/child-schedule.htm)

[http://www.cdc.gov/vaccines/default.htm](http://www.cdc.gov/vaccines/default.htm)
Exclusion/Return

- Contagious
- Unable to participate in activities
- Care for other children would be compromised
- Fever with behavior change
- Looks or acts very ill

When can the child return?

The Pennsylvania Code: Chapter 27. Communicable and Noncommunicable Diseases
Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs
Model Child Care Health Policies, Healthy Child Care Pennsylvania, The Early Childhood Education Linkage System (ECELS)
Types of infectious organisms

- Bacteria:
  - Virus
  - Fungus
  - Parasites
Treatments

Virus treatments
- Nonspecific: supportive care, time
- Antibiotics don’t work
- Specific treatments
  - Anti-retrovirals
  - Interferon

Bacteria sometimes respond to antibiotics
- Amoxicillin, Azithromycin

Side effects
- Mild/moderate: rash, diarrhea
- Severe: allergy/shock
- Antibiotic resistance**
Antibiotic-resistant Bacteria

- Induced by antibiotic exposure:
  - More severe illness
  - Longer illness
  - Limited treatment options

Resistant bacteria in future:
- Child
- Societal

- Lagging antibiotic development

- Judicious use prolongs antibiotic usefulness
Common illnesses

- **Bacteria: Antibiotics sometimes helpful**
  - Middle ear infections
  - Sinus infections
  - Skin infections
    - Impetigo, cellulitis, abscess, (MRSA)
  - Streptococcal pharyngitis

- **Virus: Antibiotics not helpful**
  - Usually self-limited
    - Improvement within 7-10 days
  - Colds, coughs, runny nose
  - Bronchiolitis
  - Vomiting, diarrhea
  - Simple conjunctivitis
More illnesses

Bacteria
- Bacterial diarrhea
- Salmonella
- Shigella
- Pertussis
- Urinary Tract Infection

Virus
- Influenza
- Parvovirus b19
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Herpes
- Enterovirus
Fever

- **Definition**
  - 100° F (37.8 ° C) axillary
  - 101 ° F (38.3 ° C) oral, ear
  - 102 ° F (38.9 ° C) rectal
- **Prompt medical evaluation** ≤4-6 mo (<2 mo. urgent)
  - 100° F (37.8 ° C) axillary
  - 101 ° F (38.3 ° C) rectal
Fever

- Usually self-limited virus
  - Immunized child without local symptoms
- Not harmful by itself
  - Some children prone to febrile seizures, kidney/bladder infections
  - Medical care if persistent or severe symptoms
- Care of underlying illness
- Fluids
- Analgesics (not aspirin)
  - Acetaminophen
  - Ibuprofen ≥6 months

Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, 3rd Edition (CFOC3); National Resource Center for Health and Safety in Child Care and Early Education. [http://nrckids.org/providers.htm](http://nrckids.org/providers.htm)
More Common Childhood Infections

- Additional infections
  - Bacterial diarrhea
  - Pertussis
  - Influenza
  - Parvovirus
  - Hepatitis
  - Urinary tract infection
  - Herpangina
  - Roseola
Bacterial diarrhea: Salmonella

- Much rarer than viral gastroenteritis
- Highest attack rate 1-4 years of age
- Reportable, health department involvement
- Fever, blood and/or mucous in stool
- Salmonella Typhi most severe
- Can be chronic carrier
- Blood, bone infections more rare
- Infected animal product or human
  - Poultry, beef, eggs
  - Pet reptiles
- Hand/mouth/food/fecal contamination
- Fluids, hydration
Bacterial diarrhea: Salmonella

Antibiotic treatment
- Does not usually shorten illness
- Can prolong shedding
- Not indicated unless <3 month or high risk of invasive disease

Exclude until general exclusions not met
- Frequency, severity of diarrhea

Prevention/Control
- Reportable
- Meticulous food prep, diapering, handwashing
- Typhoid vaccine for travel >2 years, sometimes
Bacterial diarrhea: Salmonella

- Salmonella serotype Typhi
- Antibiotics
- Culture everyone
- Return:
  - Young children: 3 negative stool cultures, 24 hours apart
  - >=5 years: no diarrhea >=24 hours
- Special rules for staff and food handlers
Bacterial diarrhea: Shigella

- Fecal contamination (direct, indirect), houseflies
- Contaminated food or water
- +/- Fever, watery or blood and/or mucous in stool

Treatment:
- Hydration
- +/- Antibiotics
- Shed organism up to one week, usually
Bacterial diarrhea: Shigella

Control
- Reportable, health department involvement
- Meticulous hand hygiene

Exclude until
- No diarrhea >24 hours
- 2 negative stool cultures
  - 24 hours apart

Special rules for food handlers

Prevention
- Meticulous food prep, diapering, handwashing
Bacterial diarrhea
Toxin-producing E coli

- Milder strains
  - Travelers’ Diarrhea
    - Usually self-limited
- More invasive strains
  - Reportable
  - Shigella-like illness
  - Hemolytic-uremic syndrome
  - Similar treatment, control to Shigella

- Hand/mouth/food/fecal contamination

Prevention

- Meticulous diapering and hand washing
Audience question #1

A 2 year old child has been out with salmonella diarrhea (not S. Typhi). She’s afebrile, her diarrhea has resolved and she’s ready to play. Which 1 of the following is true?

A. She needs 3 negative stool cultures before returning to childcare
B. All childcare staff need to be tested
C. She needs antibiotic treatment before returning
D. She can return to childcare
E. Other
F. Not sure
A 2 year old child who has been out with salmonella diarrhea (not S. Typhi). She’s afebrile, her diarrhea has resolved and she is ready to play. Which 1 of the following is true:

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More Common Childhood Infections

Additional infections
- Bacterial diarrhea
- Pertussis
- Influenza
- Parvovirus
- Hepatitis
- Urinary tract infection
- Herpangina
- Roseola
Pertussis
whooping cough

- Bacteria
- Catarrhal phase (cold symptoms)
- Severe persistent cough
  - Paroxysms: inspiratory whoop
- Improves over weeks to months
- Infants under 6 months
  - Gagging, gasping, apnea
- Complications
  - Pneumonia, seizures, death
Pertussis
whoooping cough

- Antibiotics prevent spread
- Exclude until 5 days of antibiotics
- Control
  - Reportable
  - Prophylactic antibiotics to family, children, staff
- Prevention
  - Immunize adults and children
More Common Childhood Infections

Additional infections

- Bacterial diarrhea
- Pertussis
- Influenza
- Parvovirus
- Hepatitis
- Urinary tract infection
- Herpangina
Influenza

- Virus: Influenza A (includes H1N1), B
- High fever, chills, headache, malaise, cough, congestion
- Can be severe complications
  - Hospitalization, wheezing, pneumonia, encephalitis, myocarditis, death
- Droplet spread (cough, sneeze)
- Infectious before symptoms, highly contagious, especially during fever
- Seasonal epidemics with new strains
Influenza

Treatment

- Supportive
- Antivirals sometimes used >1 year
  - Limited effectiveness, side effects

Control

- Stay home during flu season with respiratory illness
  - Until no fever for 24 hours
- Cough, sneeze into a tissue or your arm
- Handwashing

Prevention

- Immunization: new each year, booster 1st year < age 9
  - >6 months of age
  - Contraindication: severe egg allergy, shock, diffuse hives
Audience question #2

A 1 year old child comes for a check-up in January. He throws up when he eats eggs, he has a history of asthma, and his grandmother got sick when she received the flu vaccine last year. This child should not receive the influenza vaccine

A. True, no influenza vaccine for him
B. False, he should be immunized
C. We need more information on the grandmother’s history
D. Not sure
Audience question #2

A 1 year old child comes for a check-up in January. He throws up when he eats eggs, he has a history of asthma, and his grandmother got sick when she received the flu vaccine last year. This child should not receive the influenza vaccine

A. True, no influenza vaccine for him
B. False, he should be immunized
C. We need more information on the grandmother’s history
D. Not sure
Additional infections
- Bacterial diarrhea
- Pertussis
- Influenza
- Parvovirus
- Hepatitis
- Urinary tract infection
- Herpangina
Parvovirus b19
Fifth disease

Virus:
- Child looks well
- Slapped cheek rash
- Lacy reticular rash
- +/- fever
- +/- joint pain
Parvovirus b19
Fifth disease

- Not contagious once rash appears
- Rash can last months
- +/- more severe in
  - Congenital anemias
  - Pregnancy, early
- 50-90% adults immune
- Handwashing
More Common Childhood Infections

- Additional infections
  - Bacterial diarrhea
  - Pertussis
  - Influenza
  - Parvovirus
  - Hepatitis
  - Urinary tract infection
  - Herpangina
Hepatitis
Hepatitis A virus
• Fever, malaise, nausea, jaundice
• Younger children with milder illness or no symptoms
• Fecal-orl transmission
• Most contagious 1-2 weeks before jaundice
• Treatment: supportive
• Prevention/control
  - Exclude for 1 week after onset of illness
  - Immunization
**Hepatitis**

**Hepatitis B virus**

- Spectrum of symptoms:
  - Malaise, nausea
  - Jaundice, joint pain, rash
  - Fulminant hepatitis

- Younger children with milder illness or no symptoms

- Chronic infection:
  - Younger children: more risk
    - 90% infected newborns
    - 25-50% infected 1 - 5 yrs
  - 2-6% infected when older; 8% in some countries

- Cirrhosis, cancer
Hepatitis
Hepatitis B virus

Transmission:
- Blood and body fluid
  - Blood exposure
  - Sexual contact
  - Needles
  - Perinatally
  - Prolonged household contact

Treatment: supportive

Control
- Universal/standard precautions
- Bleach

Immunization: childcare exposure rare
Hepatitis C virus

- Symptoms like mild Hep B
- Chronic infection
  - 50-60% infected children
  - 70-80% infected adults
  - 1.3% of U.S. population
    - Perinatal transmission 5-6%
  - Risk of cirrhosis, cancer

Treatment

- Antivirals for chronic infection
  - Difficult
  - Effective in ~50%

Control

- Universal/standard precautions
Audience question #3

Should a 3 year old child with chronic Hepatitis C be excluded from childcare because of risk of contagion to the other children?

A. Yes, exclude
B. No, do not exclude
C. We need more information on the birth history
D. Not sure
Audience question #3

Should a 3 year old child with chronic Hepatitis C be excluded from childcare because of risk of contagion to the other children?

A. Yes, exclude
B. No, do not exclude
C. We need more information on the birth history
D. Not sure
More Common Childhood Infections

- Bacterial diarrhea
- Pertussis
- Influenza
- Parvovirus
- Hepatitis
- Urinary tract infection
- Herpangina
- Roseola
Urinary tract infection

- Bladder or kidney infection
  - Fever, abdominal pain
  - Pain with urination, urinary frequency, accidents
  - Usually bacterial
- Most frequent occult pediatric bacterial infection
  - Up to 5% of infants with unexplained fever
  - More common in girls and uncircumcised boys
- Diagnosed with catheterized urinanalysis and culture in non-toilet trained children

- Treatment
  - Antibiotics
- Contagious: no
- Standard exclusions apply
More Common Childhood Infections

Additional infections

- Bacterial diarrhea
- Pertussis
- Influenza
- Parvovirus
- Hepatitis
- Urinary tract infection
- Herpangina
- Roseola
Herpangina

Herpes simplex virus Type 1

- Newborn infection can be severe
- Usually no symptoms in older children
- Gingivostomatitis
- Fever, irritability
- Contagious for ~1 week
- Persists in latent form: cold sores
- Contact with secretions
- Antivirals not usually used for uncomplicated cases

Herpangina

Enterovirus
- Coxsackie virus: Hand Foot Mouth
- Seasonal epidemics
- Respiratory and fecal/oral spread

Treatment: supportive, hydration

Exclusions
- Mouth sores with drooling

Prevention
- Hand hygiene
- No sharing utensils
- Surface disinfection

More Common Childhood Infections

Additional infections

- Bacterial diarrhea
- Pertussis
- Influenza
- Parvovirus
- Hepatitis
- Urinary tract infection
- Herpangina
- Roseola
Roseola
Human Herpesvirus 6

- Peak between 6-24 mo.
  - Virtually all children have it by age 4
- Contagious before symptoms
- High fever (39.5° C, 103° F)
- Respiratory congestion, red eardrums
- Irritability, febrile seizures, rare encephalitis
- Diffuse pink blanching rash once fever resolves

Roseola
Human Herpesvirus 6
- Supportive treatment
- Feel better once rash appears
- Transmission: secretions
- Standard exclusions

Red Book Online Visual Library, 2009. Image 063_03. Available at:
http://aapredbook.aappublications.org/visual.
Summary

- Most childhood infections
  - Mild, self-limiting
  - With supportive care, most children can participate in childcare
    - Exclusion policies for contagion, severe illness, conditions precluding participation

- Bacteria can be antibiotic-responsive

- Viruses don’t respond to antibiotics
  - Antibiotics don’t reduce symptoms, or shorten illness/contagion

- Judicious antibiotic use
  - Minimize future resistance

- Control
  - Immunizations
  - Handwashing
  - Meticulous hygiene with diaper changing

- Model policies, PA Code, guidelines: resources
General Exclusions

- Contagious
- Unable to participate in activities
- Care for other children compromised
- Fever and behavior change
- Looks or acts very ill
Specific Exclusions

- Rash with fever and behavior change
- Mouth sores with drooling
- Abdominal pain severe, persistent, or with fever
- Vomiting >2ce in previous 24 hours
- Diarrhea not contained in diaper, accidents, >2 above normal for that child
- Blood or mucous in stool, unexplained
  - Salmonella, shigella, toxin-producing E coli, Hep A
- Active tuberculosis
- Chicken pox until rash dry/crusted
- Until treated:
  - Impetigo, strep throat, pertussis, lice, scabies
Resources

- The Pennsylvania Code: Chapter 27. Communicable and Noncommunicable Diseases


- CDC Get Smart About Antibiotics.
  http://www.cdc.gov/Features/GetSmart/

- Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs, 3rd Edition (CFOC3); National Resource Center for Health and Safety in Child Care and Early Education. http://nrckids.org/providers.htm

- Model Child Care Health Policies, Healthy Child Care Pennsylvania, The Early Childhood Education Linkage System (ECELS)
  http://www.ecels-healthychildcarepa.org/content/MHP4thEd%20Total.pdf
Resources


Questions and Discussion