Cryptosporidiosis

C. Gregory Smith, MD, MPH
Medical Epidemiologist
North Carolina Division of Public Health

Learning Objectives

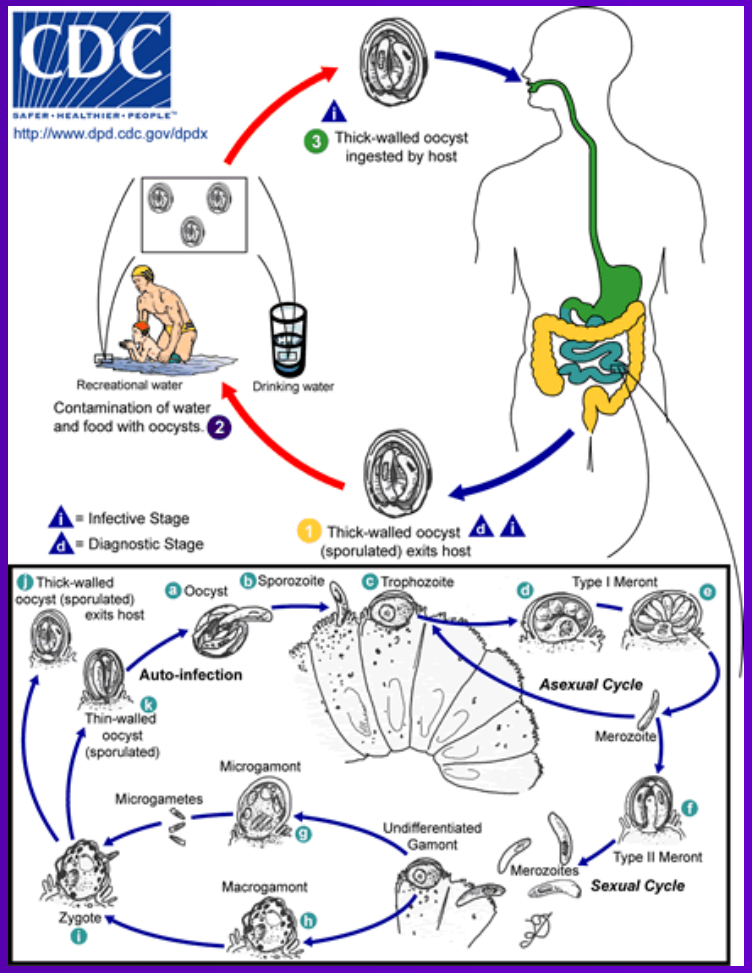
1. Recognize cryptosporidiosis as a common waterborne infection in the United States
2. Describe the transmission and potential sources of exposure to *Cryptosporidium spp*
3. Identify high risk groups
4. List appropriate prevention and control measures

Cryptosporidiosis

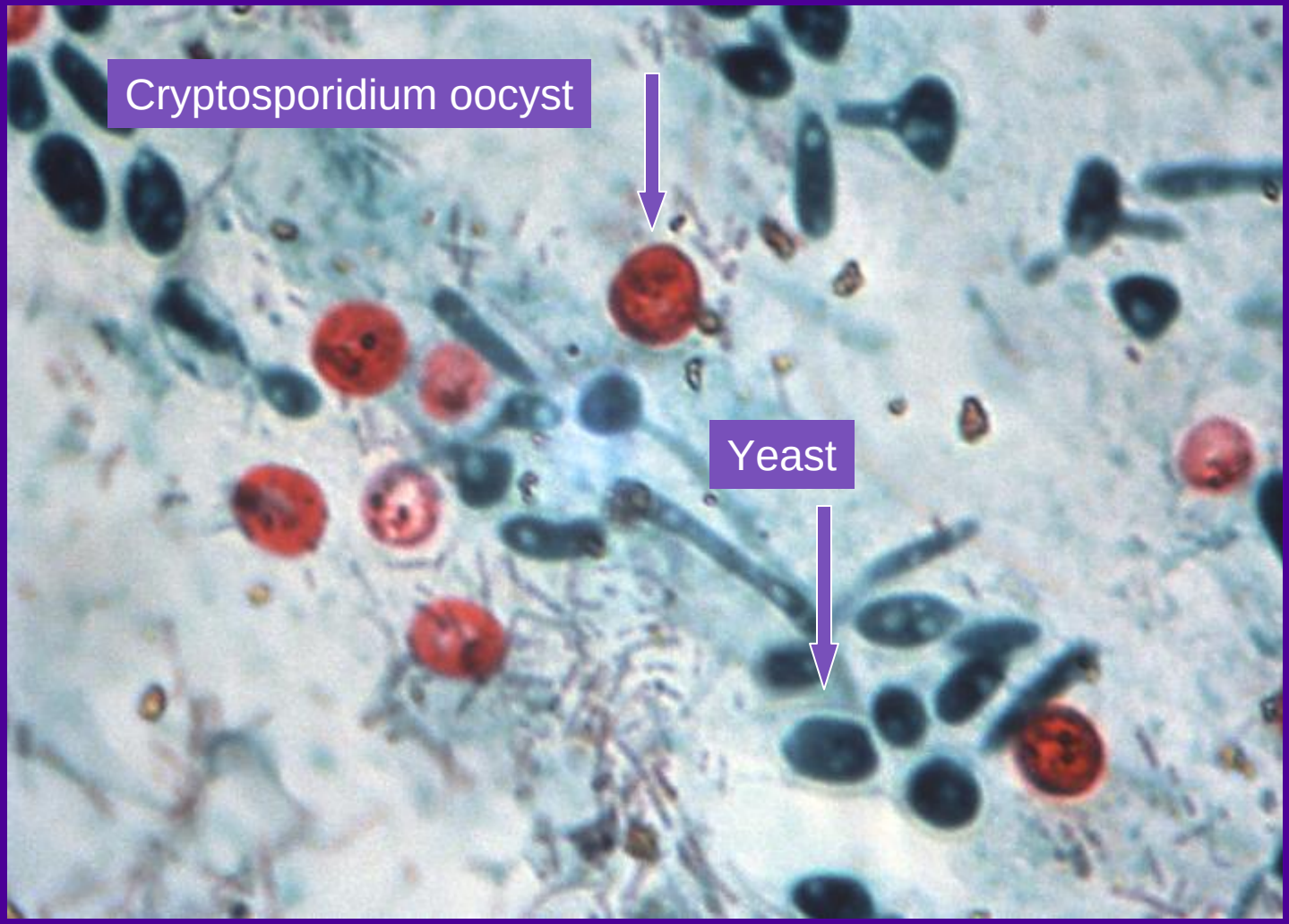
- Enteric infection of epithelial tissue of small intestine
- Caused by *Cryptosporidium spp*
  - *C. parvum* –most cases in Europe esp UK
  - *C. hominis* – most cases in US, sub-Saharan Africa and Asia
  - *C felis, C meleagridis, C canis, C muris*

Life Cycle

- Protozoa which form oocysts
  - Resistant to chlorination/dis-infectants
  - Low infectious dose : 10-100 oocysts



OOCYSTS



Cryptosporidiosis

- Global distribution
- Human reservoir
- Many animal reservoirs
  - Wild and domestic mammals
  - Wild and domestic birds

Cryptosporidiosis Transmission

- Fecal oral
  - Person to person
  - Animal to person
- Waterborne
- Foodborne
- Sexual

Milwaukee -1993

- Heavy rainfall events-WTP limitations
- Municipal water supply contaminated with *Cryptosporidium*
- Largest recognized outbreak in US
- More than 400,000 infected
- 4,400 hospitalized, 54 deaths
- Cost $96.2 Million

Cryptosporidiosis

- Incubation period
  - Range 1-12 days
  - Average 7 days
- Infection
  - Asymptomatic – common
  - Self-limited in the immunocompetent
  - Can be life threatening in those immunocompromised

Cryptosporidiosis Symptoms

- Profuse watery diarrhea
  - Intermittent, may last for weeks
  - Generally resolves in less than 30 days in the immunocompetent
  - May have dehydration and weight loss
- Cramping abdominal pain
- Malaise , nausea, vomiting, fever less common except in immunocompromised
- Chronic and severe when CD4<200/ul

Cryptosporidiosis High Risk Groups

- Immunocompromised
  - HIV/AIDS
    - Opportunistic infection
    - Can be prolonged and fulminant
    - CD4 <200/ul
    - HAART has helped
  - Others immunodeficient
- Pregnant women and children < 2 years old
  - Volume depletion

Cryptosporidiosis Surveillance and Epi

- Nationally notifiable
- Estimated 300,000 cases/yr in US (CDC)
- Seasonal – Mid-June-November
  - Increased recreational water exposures
- Males 53% to Females 47%
- Children 1-9 yrs peak age range

Cryptosporidiosis Case definition

- Clinical description
  - Illness characterized by watery diarrhea, abdominal cramps, loss of appetite, low grade fever, nausea, and vomiting
  - May be prolonged and life-threatening in persons who are immunocompromised

Cryptosporidiosis Laboratory criteria for Dx

- Detection of *Cryptosporidium spp* by;
  - Organisms in stool, intestinal fluid, tissue samples, or biopsy specimens
  - Nucleic acid by PCR in stool, intestinal fluid, tissue samples, or biopsy specimens, or
  - Antigens in stool or intestinal fluid
- Note: *Cryptosporidium* is not detected by stool culture

Cryptosporidiosis Case Classification

- Confirmed
  - A case that meets the clinical description and at least one of the laboratory criteria. (Report *Cryptosporidium* species and molecular characterization if available)
- Probable
  - A case that meets the clinical description and that is epidemiologically linked to a confirmed case

Cryptosporidiosis Risk Factors

- Recreational exposure
- Travel
- Ingestion
- Source of drinking water
- Exposure to wild or domestic animals (farm)
- Child Care or Adult Day Care
- Immunocompromised

TRAVEL

Tokyo Water Park
Take a look at this picture of Tokyo Water Park where their slogan reads:

"Welcome to breathtaking Tokyo Water Park where you can wash away the pressure and stress of the overcrowded city and relax with your friends in the soothing enjoyment of sun, fun and splashing."

Where did you swim on your exotic vacation?

Natural Waters

Man-Made Recreational Waters

Drinking water from open or poorly sealed wells, springs, streams, rivers or other surface waters ...

usually is a bad idea.

Unpasteurized Milk and Juices

Shellfish

Farm Animals

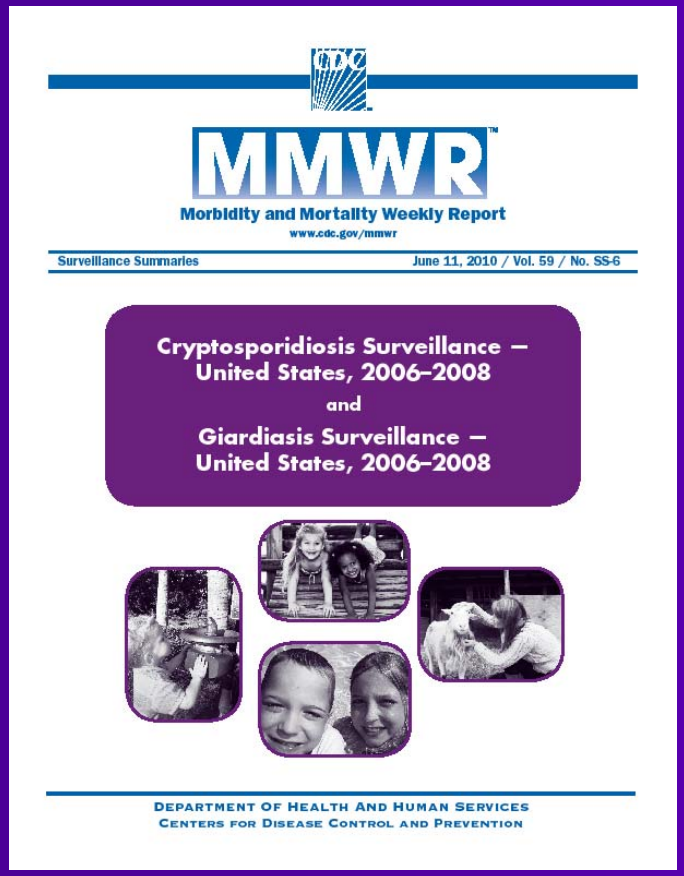
Petting Zoos

Waterfowl

Pets

Diapered Children or Adults

Selected Readings



MMWR

Morbidity and Mortality Weekly Report

www.cdc.gov/mmwr

Surveillance Summaries June 11, 2010 / Vol. 59 / No. SS-6

Cryptosporidiosis Surveillance – United States, 2006–2008

and

Giardiasis Surveillance – United States, 2006–2008

Department of Health and Human Services

Centers for Disease Control and Prevention

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