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Infectious Disease: Recognize and Report!

September 15, 2016
Featured Speakers

- Roger G. Ellis, DVM, Field Veterinarian II, NYS Department of Agriculture and Markets, Animal Industry
- Jennifer Ryan, MSN, RN, CIC, CEN, Manager, Infection Prevention and Control Program, Patient Safety & Quality Improvement, St. Peter’s Hospital

Objectives

After watching this webcast participants will be able to:

- Identify infectious disease threats in New York State;
- Define the role of the health care provider in responding to emerging and re-emerging infectious diseases; and
- Summarize NYS infectious disease reporting protocols to local health departments.

Consider Emerging Pathogens

Increased in the past 2 decades or threatens to increase in the near future, including:

- New infections resulting from changes/evolution of existing organisms
- Known infections spreading to new geographic areas or populations
- Previously unrecognized infections appearing in areas undergoing ecologic transformation
- Old infections reemerging as a result of antimicrobial resistance in known agents or breakdowns in public health measures

(Centers for Disease Control & Prevention, 2014)

Existing Infectious Disease

- Existing - Increases in well-known infections:
  - Hepatitis C
  - Chlamydia
  - Influenza
  - Syphilis
  - Campylobacter
  - Anaplasmosis

Emerging Pathogens

- Emerging Pathogens and their spread to new geographical areas:
  - Zika Virus
  - Ebola Virus

- Breakdowns in Public Health Measures:
  - Legionella

Ebola: Local Response

- Local response to Ebola outbreak in West Africa, 2014
- Public health measures and containment strategies
- Lessons learned and implications for future outbreaks
Zika Virus

- Single-stranded RNA Flavivirus, first identified in 1947-Uganda
- Transmission:
  - Bite from infected Aedes mosquito
  - In utero
  - Sexual contact (may persist in semen for up to 10 weeks)
  - Blood exposure (workplace, donor)
- Reservoirs:
  - Non-human and human primates
- Human-to-vector-to-human transmission occurs during outbreaks

Zika Transmission Routes

- Screen partners
- Prolonged risk for transmission
- Pregnancy at risk across all trimesters
- Prevention education

The Aedes Mosquitos

- Primary vector: *Aedes aegypti*
- Secondary vector: *Aedes albopictus*
- Breed in domestic water-holding containers
- Aggressive daytime biters
- Feed both indoors and outdoors near dwellings

The CDC: Estimated Aedes Incidence

- Estimated range of *Aedes albopictus* and *Aedes aegypti* in the United States, 2016

Zika’s Clinical Manifestations

- Only 20% infected are symptomatic
  - Fever
  - Arthralgia
  - Maculopapular rash
  - Conjunctivitis
  - Headache
  - Myalgia
- Illness rarely associated with hospitalization, lasting up to a week
- Some association with Guillain Barre
- Microcephaly, blindness, neuro deficits, stillbirth
- Treatment: Only symptomatic support

Zika Virus: Local Impact

- New York State, as of September 3, 2016
  - 726 travel-related cases
  - 37 in pregnant woman
  - No local transmission

- OB GYN
- ED
- PMD
- Public Health
Zika National Impact
Per CDC, August 31, 2016

Continental United States
- Total cases reported to ArboNET = 2,722
- Pregnant women with lab evidence = 624
- Liveborn infants with birth defects = 16
- Pregnancy losses with birth defects = 5
U.S. Territories
- Total cases reported to ArboNET = 14,110
- Pregnant women with lab evidence = 971
- Liveborn infants with birth defects = 1
- Pregnancy losses with birth defects = 1

Zoonotic Diseases

Diseases that affect multiple species ...
Create need for “One Health” approach - all health professions working together

Viral Diseases

Rabies
- Wildlife - Bats, Skunk, Raccoons, etc.
  - Reservoir & Spread
- Domestic Animals - Dogs, Cats, Horses etc.
  - Vaccination
- Human Exposure
  - Prophylactic treatment
- Wildlife
  - Vaccination & Control

Influenza
- Wildlife - Ducks, Geese etc.
  - Reservoir & Spread
- Domestic & Production Animals
  - Poultry & Swine
- Human Exposure
  - Vaccination
- Wildlife & Production Animals
  - Separation

Bacteria

Tuberculosis & Brucellosis
- Reservoir
  - Wild Animals (e.g., Deer)
  - Production Animals - Cattle, sheep
  - Humans - Airplanes, Prisons, HIV
- Prevention
  - Cooking & pasteurization
  - Early detection
- Eradication - animal depopulation

Intestinal Bacteria

E. coli & Salmonella
- Reservoir
  - Wild life
  - Domestic Animals - cattle, sheep, pigs etc.
- Treatment
  - Animals - Not necessary to difficult
  - Humans - routine to life threatening
- Prevention
  - Animal - vaccination & decontamination
  - Humans - cooking and pasteurization
Epidemiology

- Early detection
- Timely reporting
- Sharing with different health care groups
- Distribution of the disease
- Treatment
- Preventative measures
- Eradication

Types of Public Health Surveillance

- Passive
  - Collection of disease data from all potential reporting providers
  - Relies on the providers to report the information to local health department
  - Most common type of surveillance for infectious diseases
- Active
  - Health department follows up with local providers
  - Often used in outbreak response
  - Resource intensive

Uses of Public Health Surveillance

- Estimate magnitude of the problem
- Detect epidemics/define a problem
- Evaluate control measures
- Monitor changes in infectious agents
- Detect changes in health practices
- Facilitate planning and policy responses

The Role of the Provider

- Educate
- Prevent
- Diagnosis
- Communicate
- Control

Reporting Partners

Partnering for resources:
- Infection Preventionists
- Infectious Disease Specialists
- Healthcare Systems
- Public Health
- Centers for Disease Control & Prevention
- Patients

Outbreak Investigations

- Roles of providers in outbreak investigations
  - GI illness
  - Hepatitis C secondary to drug diversion activities
  - Antibiotic-resistant Gonorrhea
  - Zika: Miami-Dade County
Reporting Barriers & Facilitators

- Producers are reluctant to share problems
- Veterinarians encourage producers to report
- The Department of Agriculture is ready 24/7 to assist confidentially and to alert DEC, etc.
- Human impact brings Public Health partners!

Education & Resources

- New York State Department of Health
  - Communicable Disease Reporting
  - Prevention Agenda Priority Infectious Diseases
  - Wadsworth Center Infectious Disease Laboratories

- New York State Department of Agriculture & Markets
  - Animal Disease Reporting
  - Division of Animal Industry Field Employees

Centers for Disease Control & Prevention

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