

Hantavirus Pulmonary Syndrome (HPS) – A Colorado Perspective

Kate Lujan, RN MPH

Epidemiologist – Communicable Disease Epidemiology Program

Colorado Department of Public Health and Environment



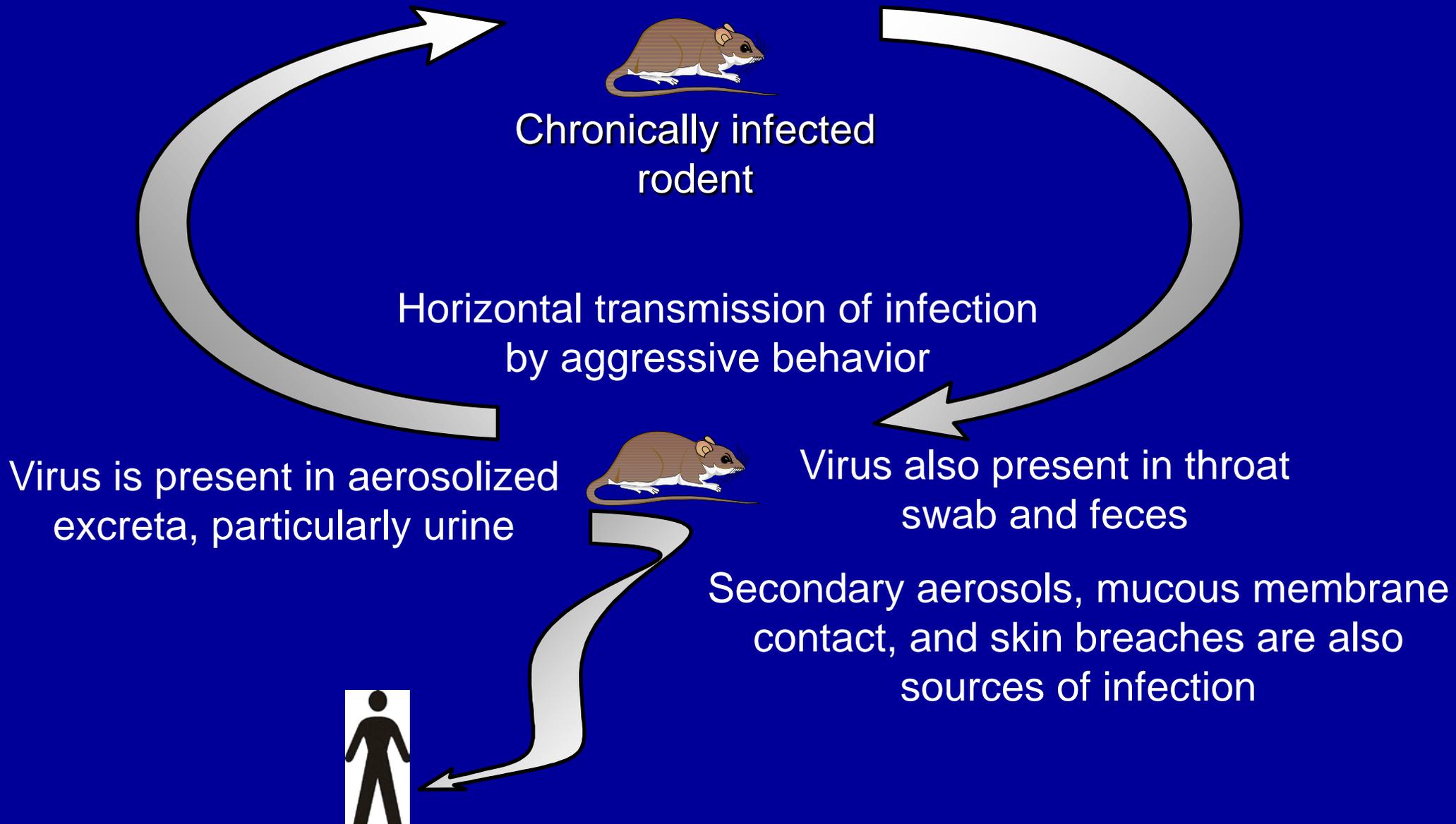
Objectives

- Brief overview of HPS
- Colorado Surveillance Data
- Geographic challenges

Hantavirus

- Belongs to the family Bunyaviridae
- Documented in North and South America
- Rodent hosts - Genus and possibly species specific
- No arthropod vector established - Unique among genera of Bunyaviridae

Transmission of Hantaviruses



Rodent Exposure

70 confirmed HPS cases

Peridomestic exposure	69% (48/70)
Peridomestic & occupational exposure	19% (13/70)
Peridomestic & recreational exposure	9% (6/70)
Occupational exposure	4% (3/70)
Entering/cleaning rodent-infested structures	9% (6/70)

Hantavirus Pulmonary Syndrome Case definition

- Febrile illness with bilateral diffuse interstitial edema or ARDS or noncardiogenic pulmonary edema in a previously health person with laboratory detection of Hanta specific IgM, PCR, or immunohistochemistry

Hantavirus Pulmonary Syndrome

Laboratory-confirmed Diagnosis



Serology

IgM specific for Sin Nombre

Immunohistochemistry

Reverse transcription
and polymerase chain
reaction (RT-PCR)

Hantavirus Pulmonary Syndrome

Clinical Presentation

Most Frequent

Fever

Myalgia

Nausea/Vomiting

Cough

Frequent

Dizziness

Arthralgia

Shortness of
Breath (*late in
the course of
disease*)

Rare

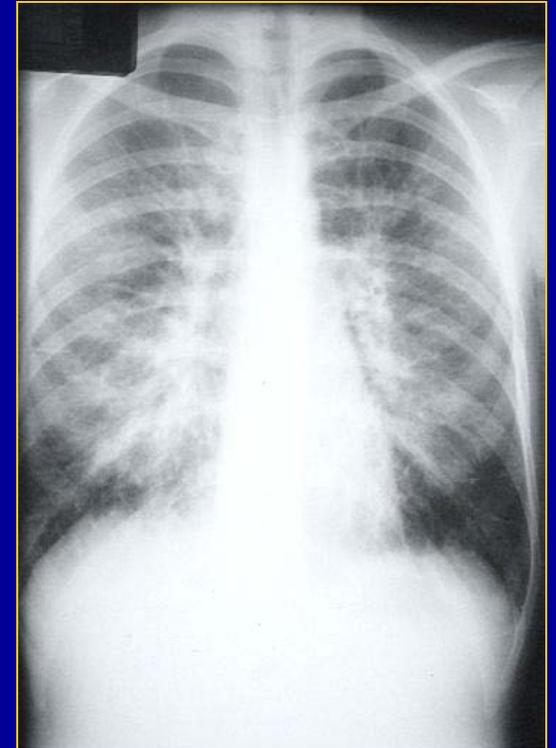
Rhinorrhea

Sore Throat

Hantavirus Pulmonary Syndrome

Radiographic Findings

- Bilateral interstitial infiltrates
 - moderate to rapid progression
- Bilateral alveolar infiltrates
- Pleural effusion



Hantavirus Pulmonary Syndrome

Common Laboratory Findings

Hematology

Thrombocytopenia

Atypical lymphocytes (immunoblasts)

Left shift on WBC differential

Elevated hematocrit

Elevated WBC

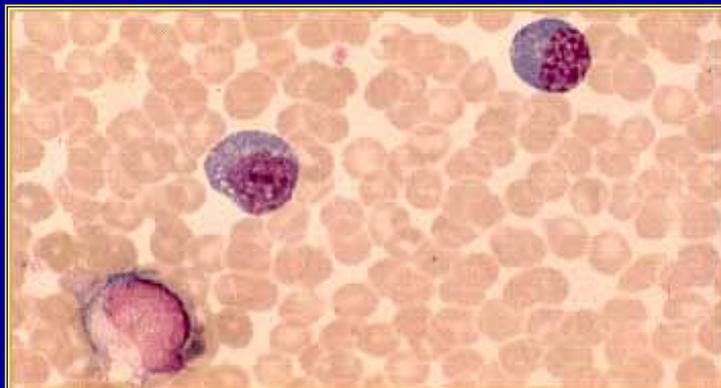
Chemistry

Low albumin

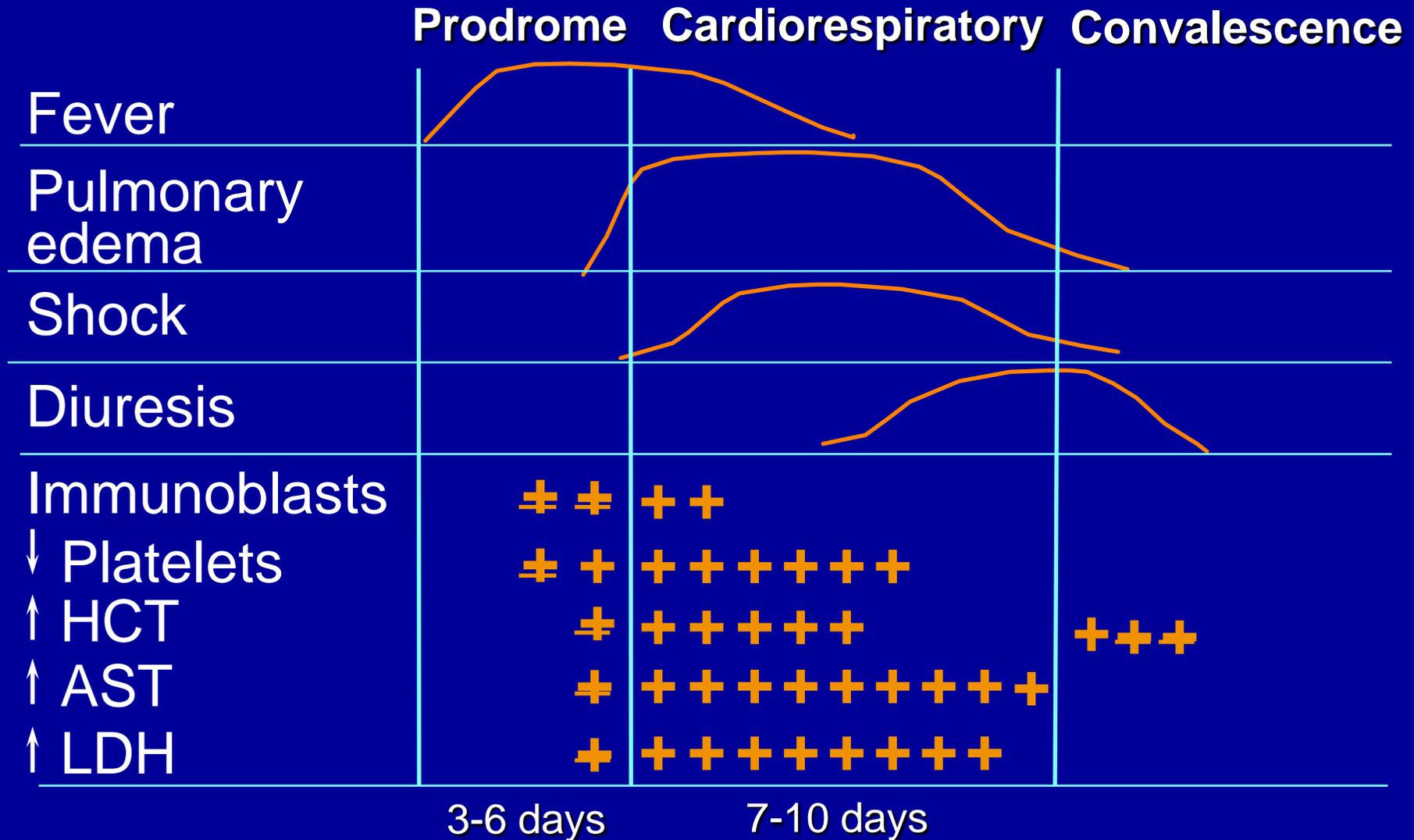
Elevated LDH

Elevated AST (SGOT)

Elevated ALT (SGPT)



Clinical Progression of HPS



Hantavirus Pulmonary Syndrome

Physical Examination

- Tachypnea
- Tachycardia
- Hypotension
- Crackles or rales on lung examination

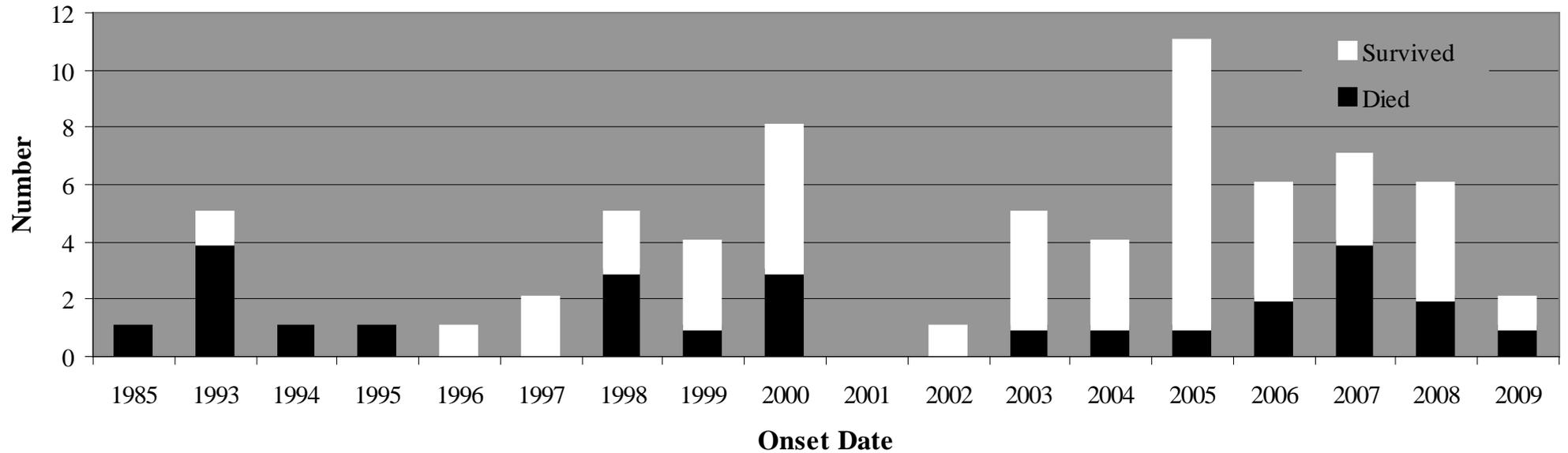
HPS Management

- Early aggressive intensive care
- Transfer suspect case as early as possible to a specialty hospital
- Early ventilation
- Careful monitoring
 - Oxygenation
 - Fluid balance
 - Blood pressure

Monitoring and Therapy

- Serial CBCs, note hematocrit and platelet count
- Early use of inotropic agents
- Mechanical ventilation
- Judicious volume resuscitation

Reported HPS Cases by Year, Colorado, 1985-2009

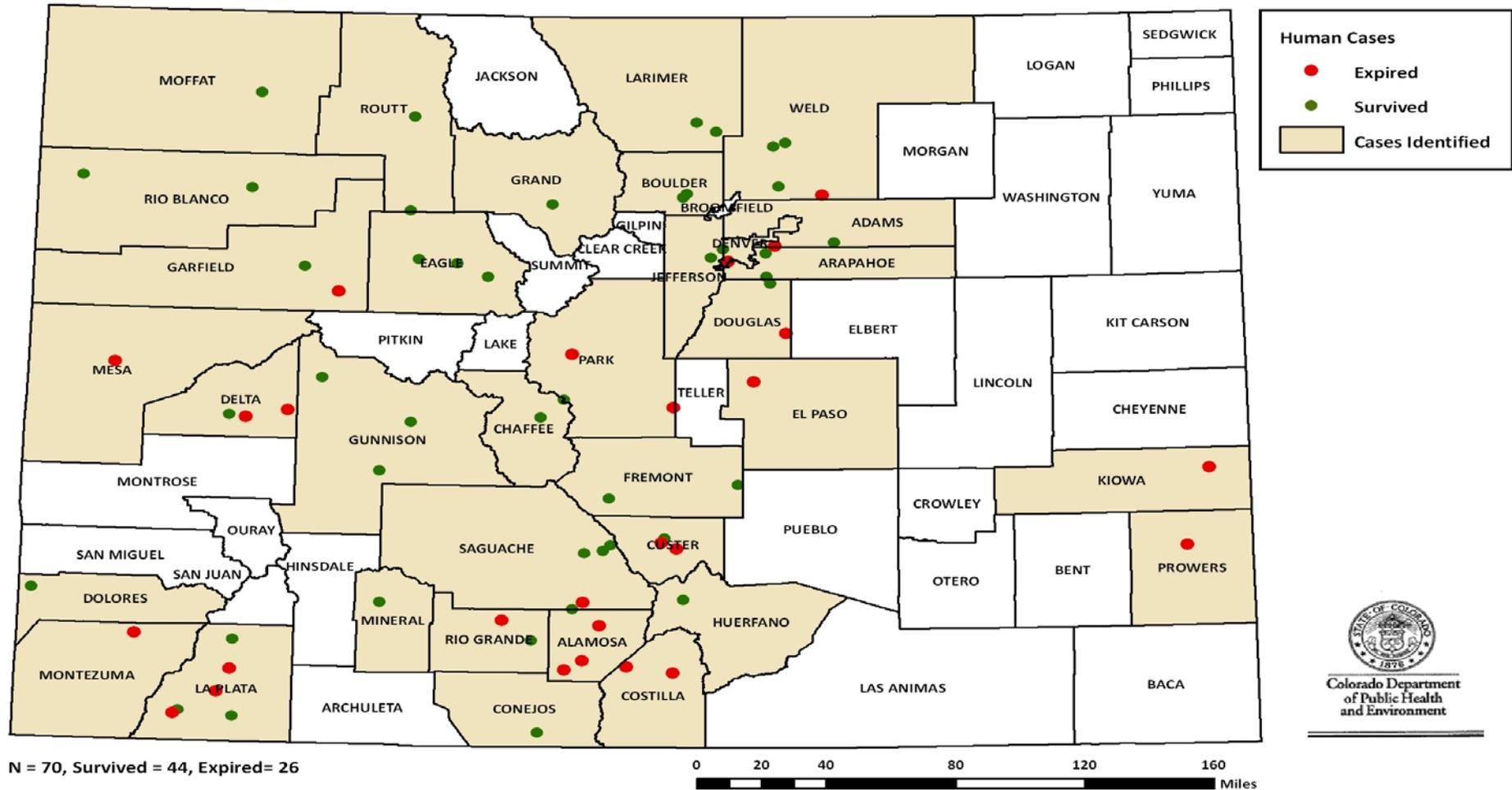


Top 5 Colorado Counties with Reported HPS Cases, 1993 – July 2012

County	Number of Cases	*Population
Weld	8	252,825
La Plata	6	51,334
Alamosa	5	15,445
Saguache	5	6,228
Delta	4	30,451

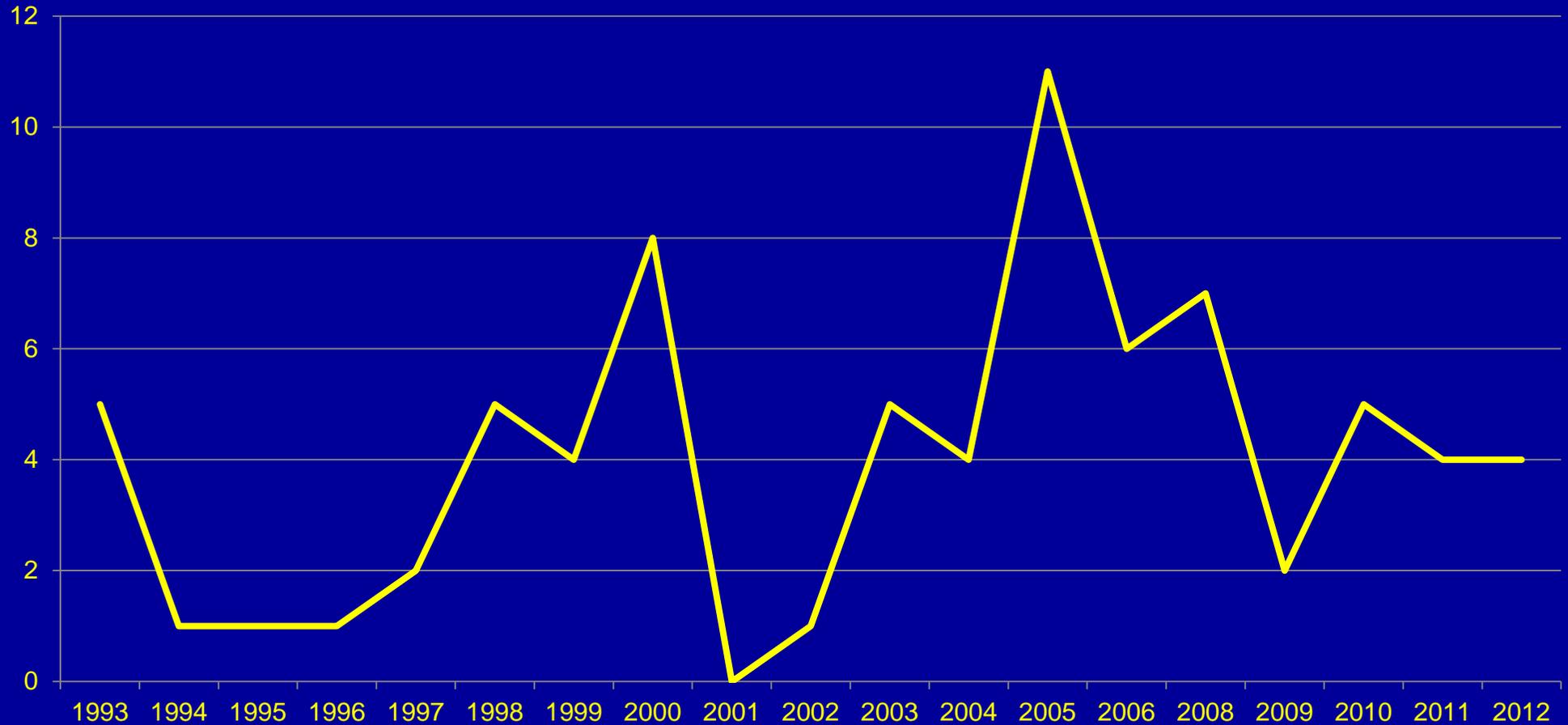
*** Population from 2010 Department of Local Affairs**

Hantavirus Pulmonary Syndrome Human Cases in Colorado by Address of Residence January 1985 - December 2009

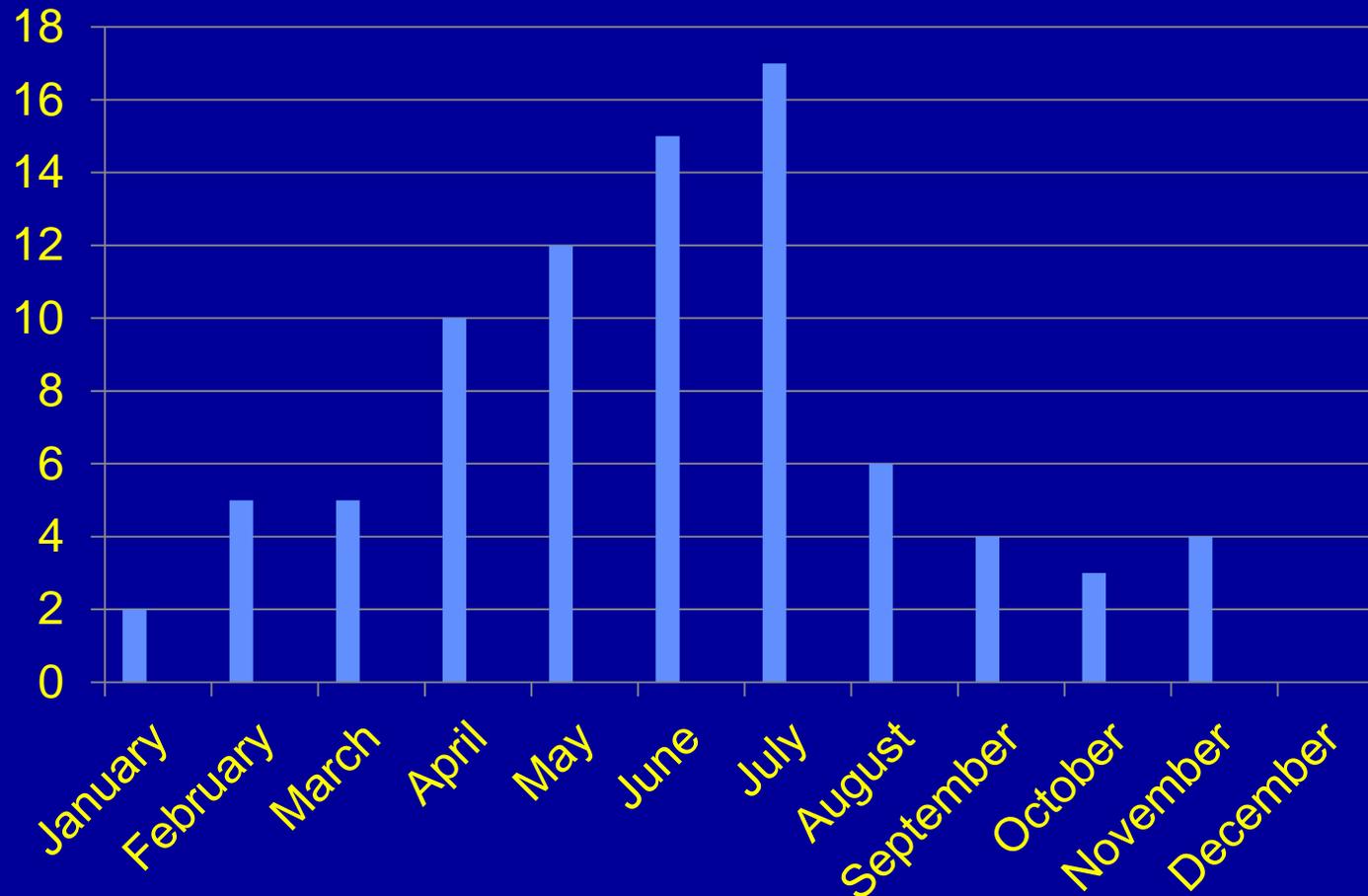


NOTE: The locations of all points on this map have been slightly altered from their true location in order to protect the identity of individuals. They do not reflect the exact location of exposure.

Reported HPS Cases by Year, Colorado, 1993 – July 2012



HPS Cases by Onset Month, Colorado, 1993 – July 2012



Colorado Case Descriptions

- Age Range 6 years -77 years
 Mean ≈ 36 years
- Gender 35 (42%)Female
 48 (58%) Male

N = 83 including cases under investigation

Colorado HPS Fatalities 2010- present

- 2010 : 3 fatalities out of 5 cases
- 2011: 1 fatality out of 4 cases
- 2012: 1 fatality out of 4 cases to date



Peromyscus maniculatus
Deer mouse

2012 HPS Case Study

- 28 yr old female
- Sudden onset of fever, cough in March
- Seen in ED diagnosed with viral illness
- Negative for influenza
- Increased SOB upon return home
- Husband insisted on testing and treating for Hanta



2012 HPS Case Study 2

- 77 year old male presented to ED with neurological symptoms
- Fever developed with cough and renal insufficiency
- Wife reported mouse bite and insisted testing for Hanta



Thank you!

- Janell Bezdek, CDPHE
- Nicole Comstock, CDPHE
- Aaron Doussett, CDPHE
- Elisabeth Lawaczeck, CDPHE
- John Pape, CDPHE (retired)
- Dale Tanda, CDPHE (retired)
- Bill Ray, CDPHE

Questions ?

Questions asked after presentation

- Resources and instructions for clean up and prevention of mice infestations can be found at including technical and clinical information at:
www.cdc.gov/hantavirus.gov

