Melioidosis in Graham County, Arizona 2008

Vector-borne & Zoonotic Diseases Conference & Workshop 2009

Tasha Stewart
Animal Disease Surveillance Specialist
Melioidosis

• Causative agent
  *Burkholderia pseudomallei*
• Gram negative, aerobic, intracellular bacillus
• Soil saprophyte which may also be found in water
• Endemic to southeast Asia and northern Australia
• HHS & USDA select agent- category B
Modes of acquisition:

• Inhalation- short incubation period, sporadic cases/clusters
• Ingestion- uncommon
• Inoculation- incubation period 1-21 days, most common

Risk factors:

• Diabetes
• Thalassemia
• Renal disease

Clinical syndromes

• Pneumonia
• Abscess
  – Skin/soft tissue
  – organs
• Sepsis
Presentation of illness can be:

- Reactivation of an old infection
  - Incompletely treated
  - Occurs several months to years after initial infection
- Chronic infection
  - Person is ill/has symptoms for more than 2 months at presentation
- Acute infection
  - Incubation period from a few days to one month
Melioidosis in Graham Co.

- In late Oct. 2008, the Arizona State Health Lab notified ADHS/Epi about a PCR positive and later culture positive *B. pseudomallei* blood specimen.

- Shortly thereafter, Utah State lab notified us of same findings:
  - Notified FBI and CDC Emergency Operations Center.

- ADHS contacted submitting hospital—specimen tested in lab with same results.
History of Present Illness

- Adult male
- Patient had severe knee pain and was seen in Emergency Dept. 3 times prior to admission
  - Arthrocentesis performed on knee- Knee fluid culture did not grow anything
  - Blood culture grew *E. coli* and later *B. pseudomallei*
- Multiple antibiotics used (including imipenem and ceftazidime)
- No improvement- pt in hospital A x 9 days
• Transferred to second hospital
  – Patient diagnosed with persistent E. coli sepsis

• Upon transfer to hospital B
  – required intubation/ventilation
  – was diagnosed with *B. pseudomallei*
  – Pt was hospitalized and in rehab for almost 2 months
History cont.

- Lives in a rural area of Graham Co. with extended family and pets
- Type II diabetes x 4 yrs
- Avid gardener- planted both indoor and outdoor plants
- ATV rider- commonly rode along river area, sand dunes
- ATV mechanic with many skin abrasions
The investigation

• Multiple interviews with patient and family
  – Confirmed no out-of-state or out-of-country travel
  – Does not import plants or buy plants from unknown sources
  – Has not received any gifts from endemic countries
  – Has no acquaintances from endemic countries
Lab analysis

• Specimen (DNA) forwarded to T-Gen for molecular/genetic analysis

• Isolate forwarded to CDC for analysis

• Sera from family and close contacts sent to Australia
The investigation

Possible routes of exposure

Gardening- imported plant/soil

Contaminated auto parts (ruled-out)

Contaminated medication (unable to confirm)
What now?

- Source remains unknown
- More environmental sampling/testing
Acknowledgments

Graham County-
  Darla Hansen
  Neil Karnes
  Brian Douglas

Pima County-
  Francelli Lugo

ADHS-
  Rebecca Sunenshine
  Ken Komatsu
  Sanny Chen
  Craig Levy

CDC-
  David Blaney

T-Gen-
  David Engelthaler
  Jolene Bowers

NAU-
  Apichai Tuanyok
  & everyone in the Microbial Genetics and Genomics Center lab

Leadership for a Healthy Arizona