

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