Section B

Smith Lab Research, MRSA on Farms
Swine MRSA in the United States?
Swine MRSA in the United States?

- Iowa: No. 1 pork-producing state
- Twenty-five percent of hogs raised in the United States
- = $4 billion per year

Do Iowa swine carry MRSA?
Our Study

- Initial testing, December 2007
- Sites: seven farms in Eastern Iowa and Western Illinois
- All part of one closed confinement system; collectively, “Production System A”
- Approximately 60,000 animals at any one time

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Our Study

- Obtained 209 nasal swabs (30 per age group)
- From 9 to 24 weeks of age + sows
Results

- Overall prevalence: 147/209 (70%)

Conclusion:

Yep.
Molecular Epidemiology of Iowa Swine MRSA

- Found to be MLST 398 (“ST398”), previously associated with pigs
- Most isolates resistant to penicillin, methicillin, clindamycin, erythromycin, tetracycline
What about Farmers?

- Are swine farmers carrying MRSA?
Are Swine Farmers Carrying MRSA?

- First sampling, 14 workers from Production System A
- 9/14 positive (64%), ST398

Methicillin-Resistant *Staphylococcus aureus* (MRSA) Strain ST398 Is Present in Midwestern U.S. Swine and Swine Workers

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Multi-state Study

Minnesota

Iowa

Ohio

Pig in a pen
Multi-state Study

- Eighteen farms per investigator (nine confinement, nine organic/antibiotic-free)

- Twenty-four animals (6-9 weeks) tested per farm
Multi-state Study

- Nasal samples, pigs
- Nasal + pharyngeal sampling, humans
- Eighteen farms tested to date (nine confinement, nine organic/antibiotic-free)
Multi-state Study

- No MRSA found on antibiotic-free farms in Iowa (0/9)
- Four of nine confinements with positive pigs (44%)
- Overall prevalence, swine: 45/432 (10%)
- Confinement swine: 45/216 (21%)
Summary—Results to Date

- Prevalence in humans: 27/88 (31%)
- Prevalence in humans working in confinement facilities: 27/63 (44%)

Risk

- Individuals exposed to swine, especially in confinement operations, are at risk for MRSA carriage
Bidirectional Exchange of *S. aureus*