

MRSA Screening: Overrated?

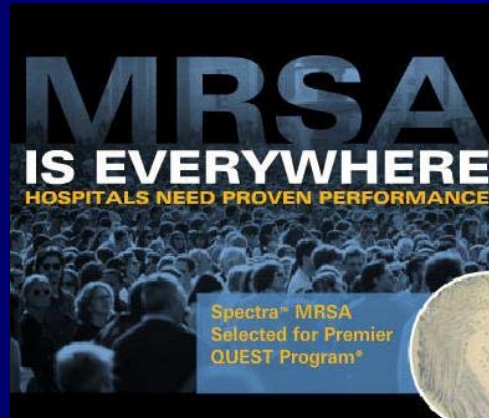
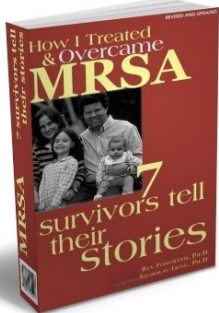
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PGY-2

MRSA Infections Are Costly

- MRSA Infections:
 - 0.8% of all U.S. hospital admissions
- Nosocomial MRSA Infections
 - 2.7 million additional hospital days
 - \$9.5 billion
 - 12,000 in-patient deaths

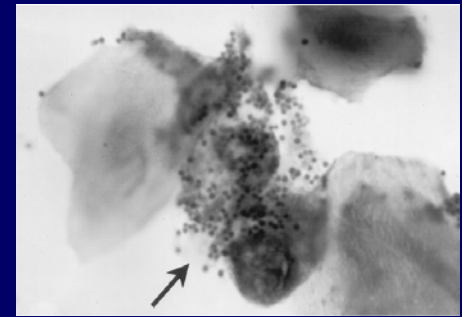
MRSA Generates Attention



MRSA Generates Government Intervention

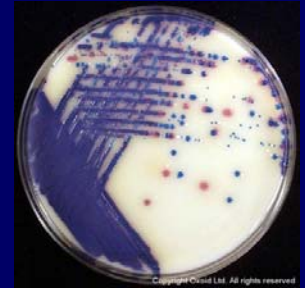
- Illinois SB2771 - Passed May 25, 2007
- Maryland HB966 - Failed To Pass

Background



- Anterior nares are reservoirs for *S. aureus*.
- Why?
 - Mucin provides the ideal surface for *S. aureus*.
 - High affinity b/t mucin carbohydrate & staphylococcal protein

How To Screen



- Chromogenic Agar
 - Sensitivity increases with incubation period
 - 95.6% sensitive
- qPCR
 - 96% sensitive
- PCR preferred b/c its timely

S. aureus Carriers



■ Who?

- ~**20%** almost always harbour a strain.
 - ~**60%** intermittently harbour a strain, and that strain will change
 - ~**20%** almost never carry a strain
- Persistent carriage much more common in children

S. aureus Carriers



- Colonization vs Infection
 - Opportunistic organisms that need a breakdown of physical or immunological defenses
- **10-30%** incidence of infection after + screen²⁻⁴
- Risk factor for infection in certain sub-groups⁵⁻⁷:
 - Dialysis, Cirrhosis, Certain Surgery, ICU, Catheters

Rationale To Screen

- MRSA is **costly** to our system
- Screening is relatively **easy & reliable**
- Infection control protocols are **successful** in preventing transmission of pathogens:
 - Hand hygiene, contact, isolation
- **Treating** carriers is relatively easy

Rationale To NOT Screen

- Poor data
- Costs
- Negative consequences
- Resistance

Problems With The Data

- *Association for Professionals in Infection Control and Epidemiology (APIC) and Society for Healthcare Epidemiology of America (SHEA)*
- *American Journal of Infection Control, 2007*
- Joint position statement on mandates for use of active surveillance cultures for MRSA and VRE

Problems With The Data

- Data is from experience with hospital outbreaks.
 - *Little data supporting active surveillance without an outbreak*
- Data is from surveillance in high-risk populations
 - *Can this be extrapolated to all patients?*

Problems With The Data

- Mathematical models to predict success or cost savings:
 - *Models require un-validated epidemiological assumptions*
- There are no well-designed, high-powered comparator trials which are the “*gold standard*” of active surveillance culture performance.

"The Experts" Conclude...

- "...do not support a mandate of active surveillance cultures to screen for MRSA, VRE, or other antimicrobial-resistant pathogens."

Rationale To NOT Screen

- No robust data
- Costs
- Negative consequences
- Resistance

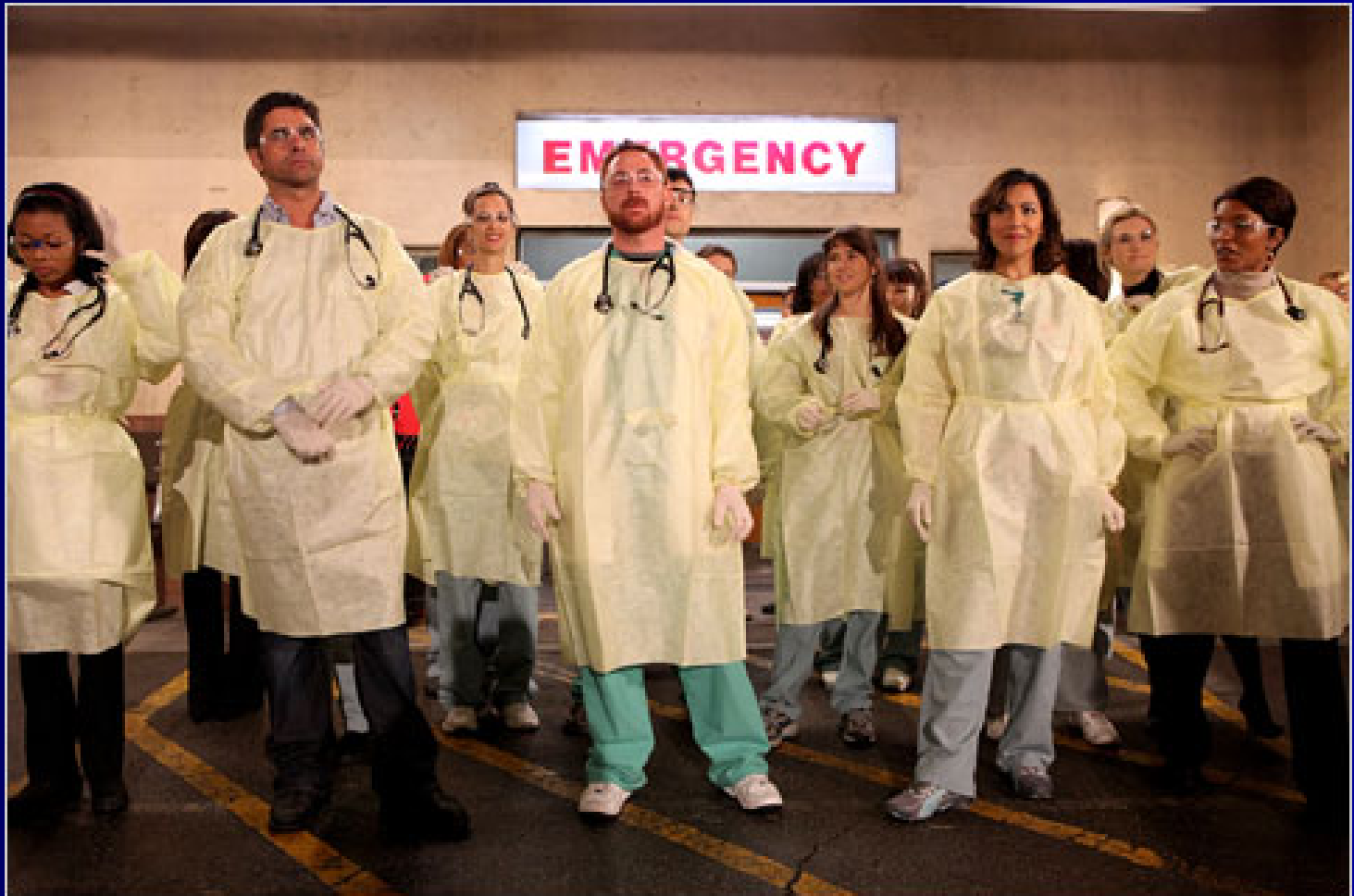
Costs

- Logistical Issues
 - Private rooms
- Costs
 - Isolation gowns, gloves, +/- masks: \$30/day*
 - U of Colorado Hospital MRSA PCR: \$90
 - Mupirocin: \$46

Rationale To NOT Screen

- No robust data
- Costs
- Negative consequences
- Resistance

Screening Consequences



Adverse Consequences

- Systematic review (1989–2008) of all adverse outcomes related to contact precautions (CP).
- 9 articles included in analysis

Adverse Consequences

- Adverse outcomes of CP:
 - Less patient-healthcare worker contact
 - More noninfectious adverse events
 - Increased symptoms of depression & anxiety
 - Decreased satisfaction of care
 - Adherence is always an issue

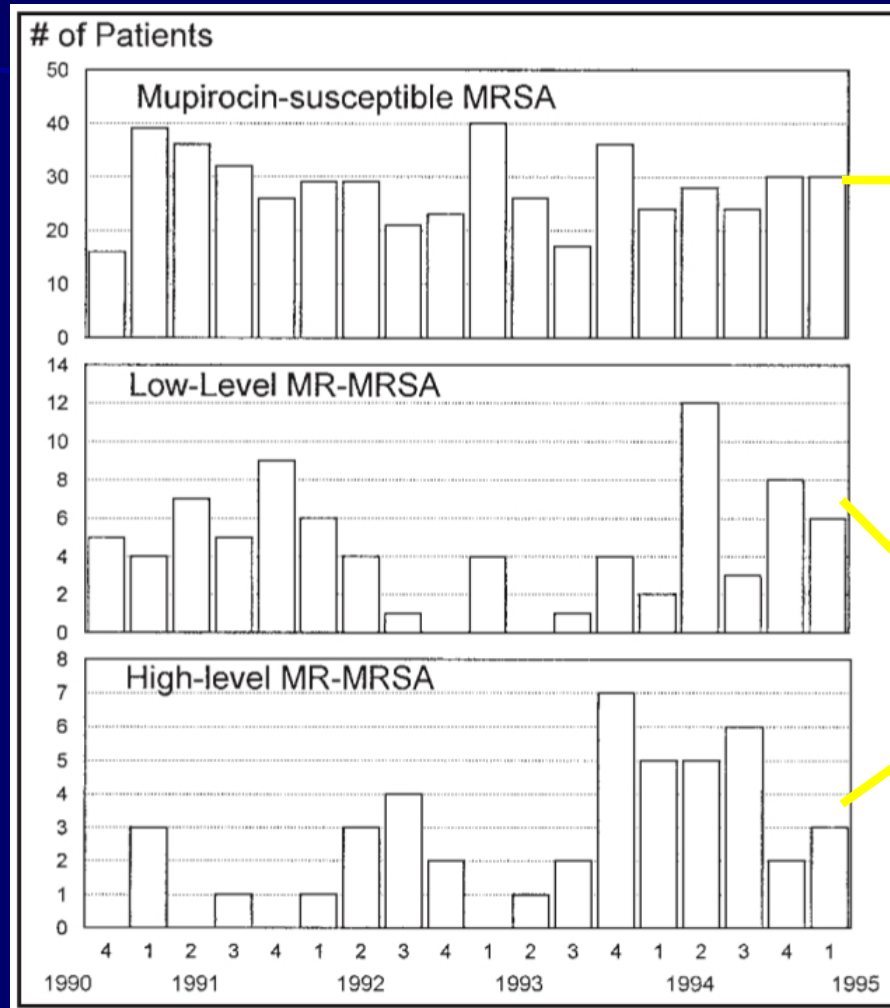
Rationale To NOT Screen

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Resistance

- Retrospective case-control study, 1990-1995
- VA in Mountain Home, TN
 - Persistent nosocomial MRSA infections
 - Aim: reduce the population of carriers
- 632 patients with positive screen
- All treated with Mupirocin 1/2 gm BID x 5 days
- Follow-up screen performed at 4 wks

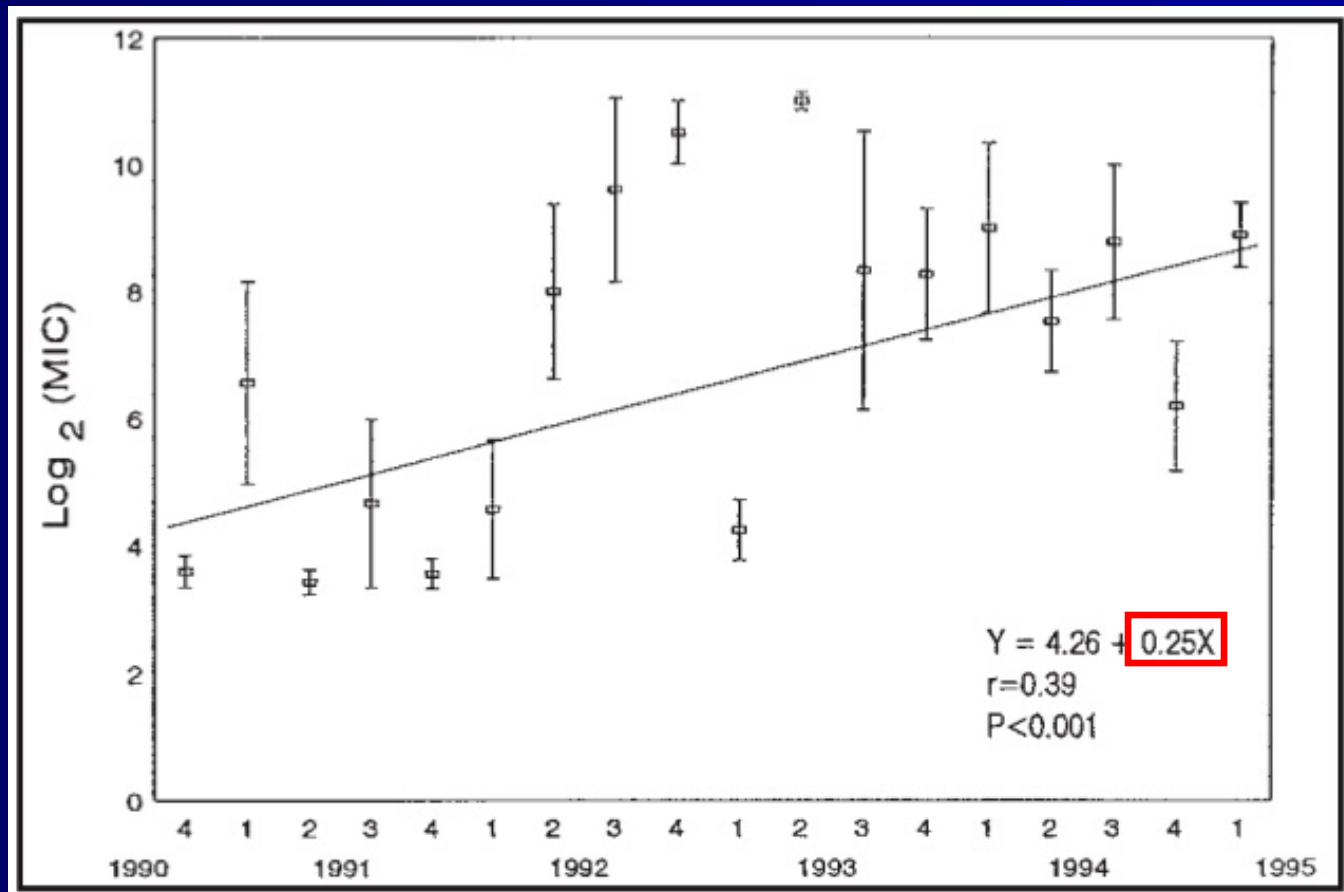
Resistance



80% of all patients

20% of all patients

Resistance



Is It Time To Stop Searching For MRSA?

- APIC and SHEA do not advocate mandatory screening
- Despite the ease and benign nature of screening, there are consequences, costs, & unclear benefits associated with screening
- Resistance is a reality in the treatment of asymptomatic carriers