

The Prevalence of *Staphylococcus aureus* and Methicillin Resistant *Staphylococcus aureus* in a University Setting

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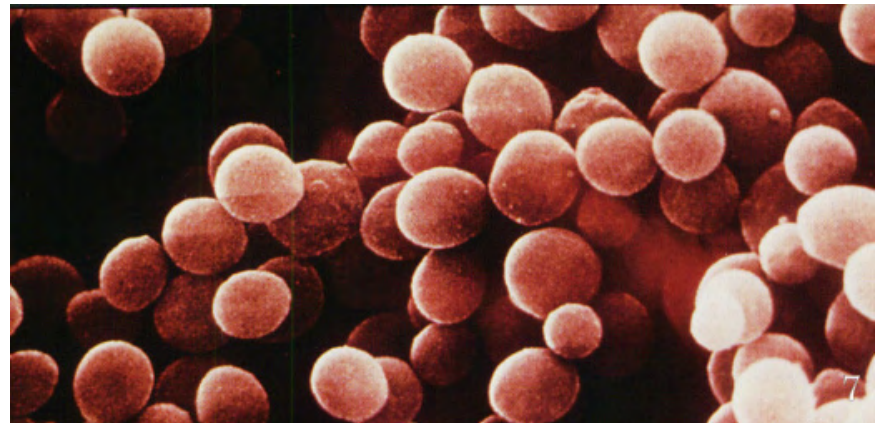
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Introduction

Staphylococcus aureus

- Gram positive
- Non-motile
- Facultatively anaerobic
- Able to persist in the environment

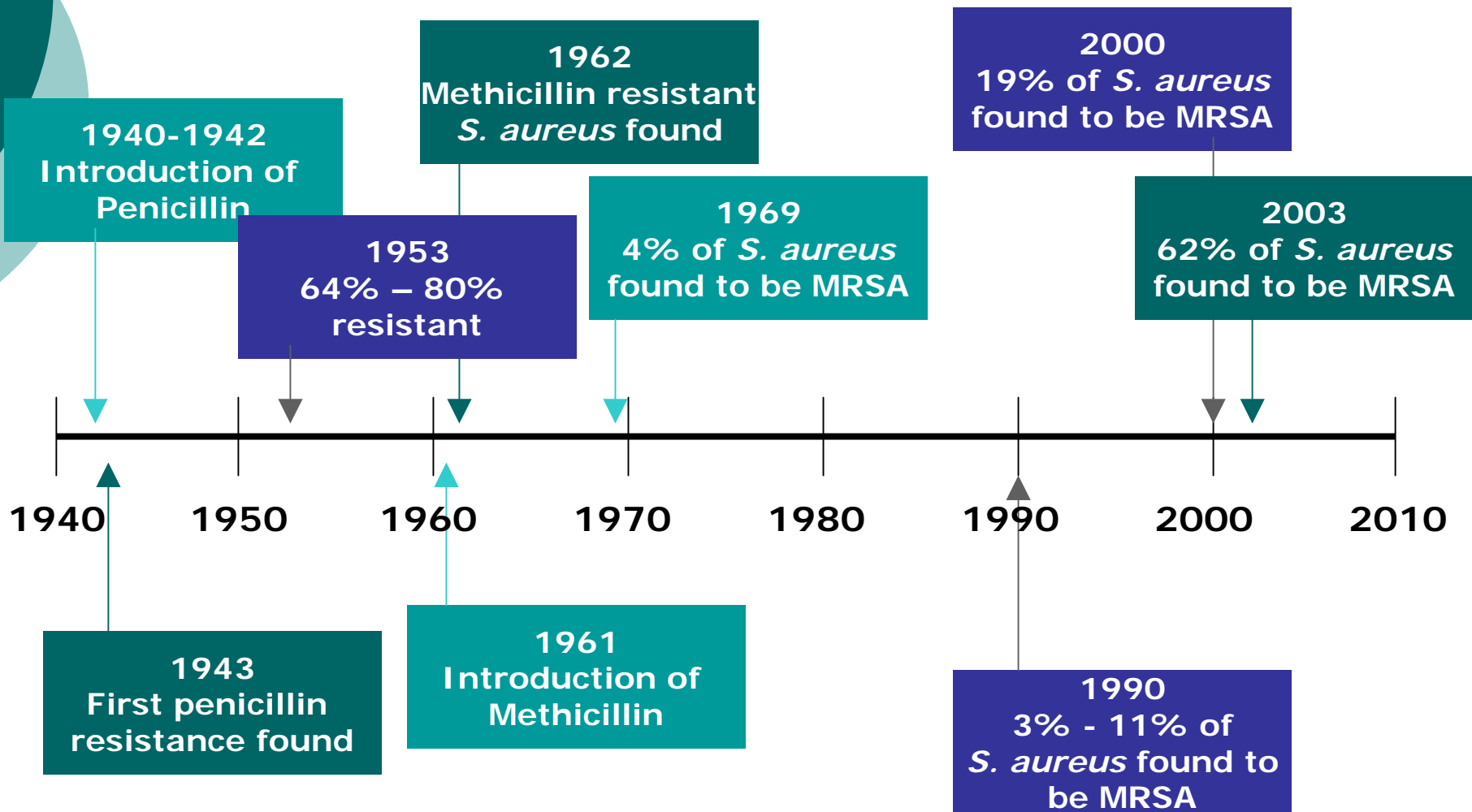


Epidemiology of *S. aureus*

- Found in nasopharynx of 30% of healthy adults
- Spread by person-to-person contact or via fomite



Antibiotic Resistance in *S. aureus*



CA-MRSA

“MRSA infections that are acquired by persons who have not been recently (within the past year) hospitalized or had a medical procedure (such as dialysis, surgery, catheters, etc).”



CA-MRSA

At Risk Populations:

- Competitive athletes
- Members of the military
- Prison or correctional facilities
- HIV-infected individuals
- Homeless people



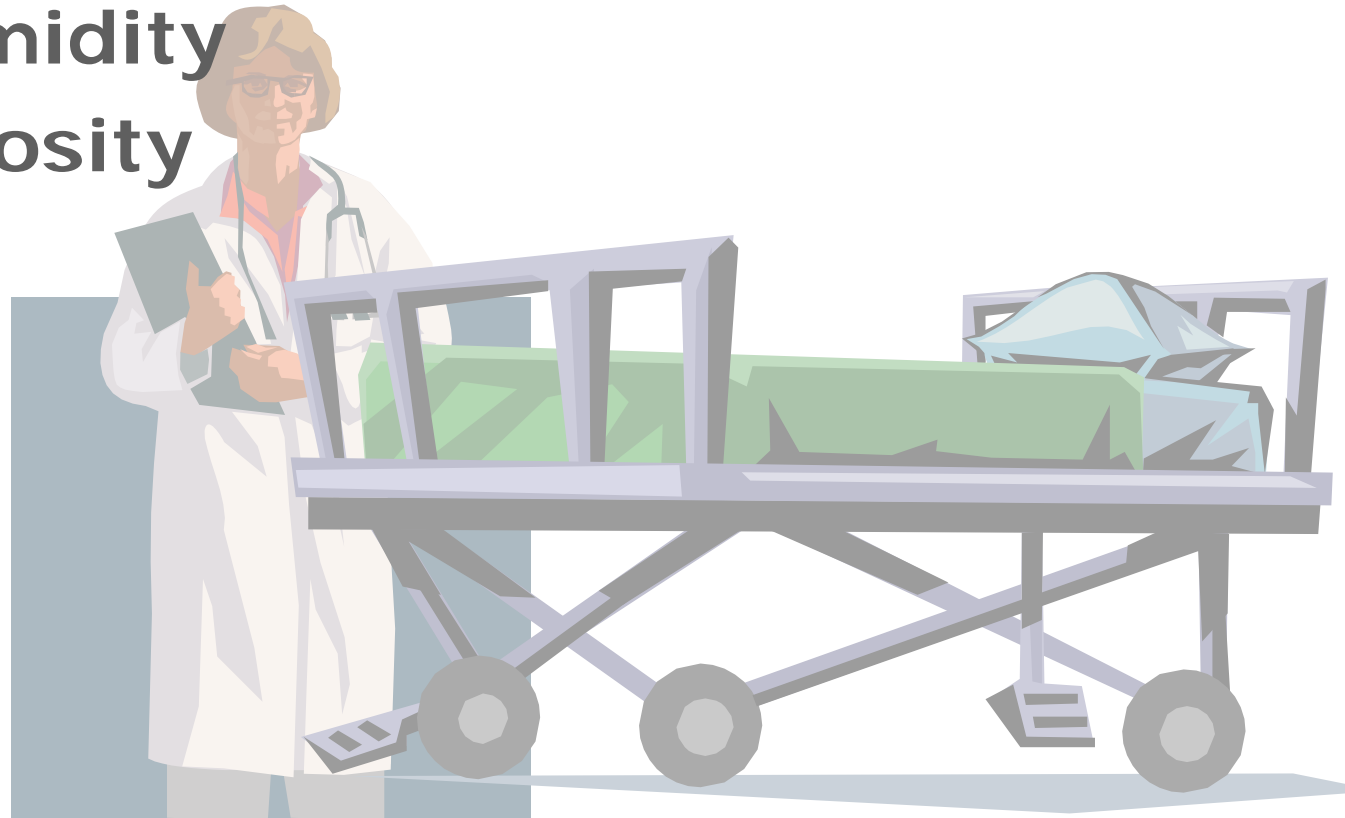
Pathogenesis:

- Skin and Soft Tissue Infections
- Necrotizing Pneumonia




Survival of *S. aureus* and MRSA on Environmental Surfaces

- Lengthy survival on surfaces
- Resistant to dehydration
- Humidity
- Porosity



Survival of *S. aureus* and MRSA on Environmental Surfaces in the Community



Survival of
S. aureus
on surfaces in the
Community???

Prevalence of *S. aureus* on surfaces at UT Austin (Fall 2004 study)

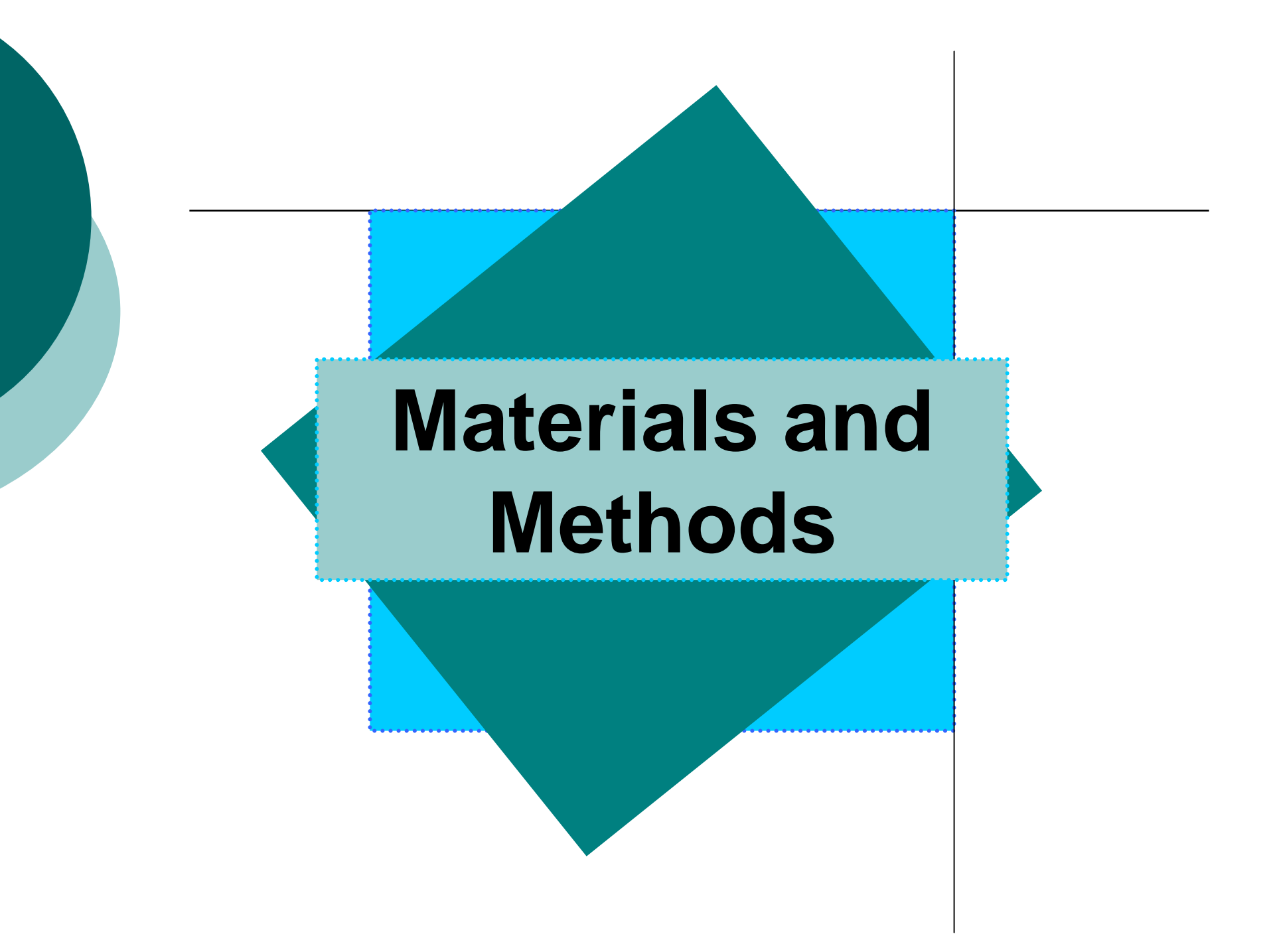
- 244 total samples taken – 46 from bathrooms
- 17/244 positive samples – 3 MRSA
- MRSA found only in bathrooms





Purpose

The purpose of our study was to isolate and identify *S. aureus* and MRSA on surfaces found in bathrooms on UT Austin's campus.



Materials and Methods

Collection Sites

Public access bathrooms in high traffic areas



**1,389
Bathrooms!**

Bathroom Selection

- 400 “high traffic” bathrooms
 - 201 mens and 199 womens
 - Open to the public
 - Used by students, faculty, and staff
- List was randomized
- 120 bathrooms chosen
 - 60 for Fall 2006 (33 mens, 27 womens)
 - 60 for Spring 2007

Study Design

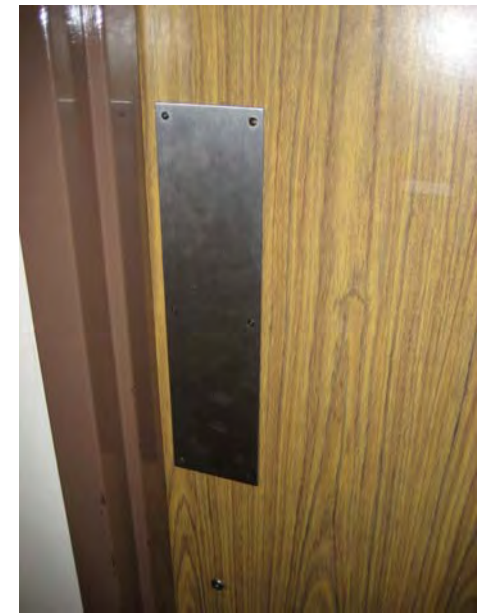
Three samples taken from each bathroom:



Stall lock



Faucet handles



Bathroom door

Sample Collection

Step 1: Pre-moisten swab



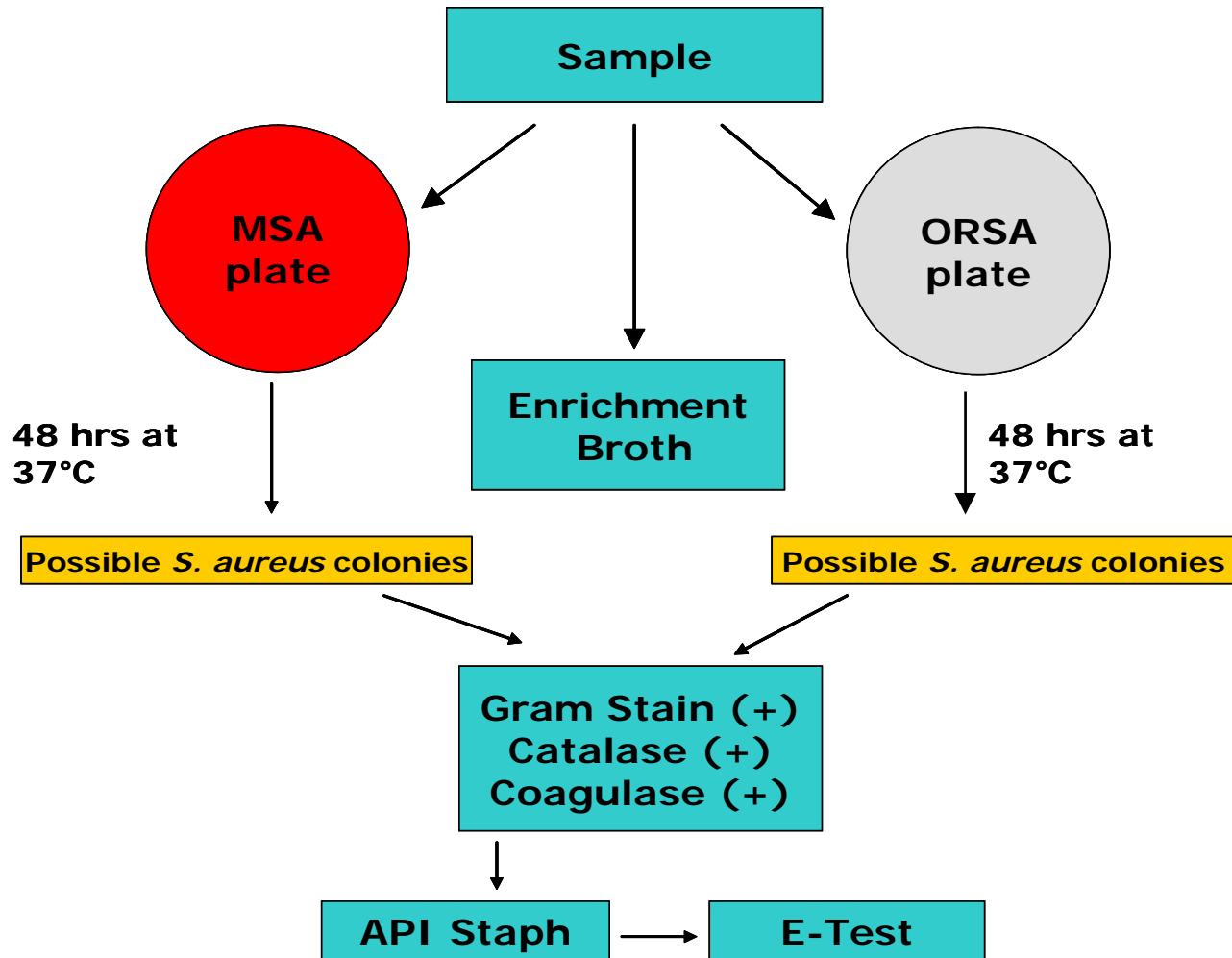
Step 2: Take 32 square centimeter sample

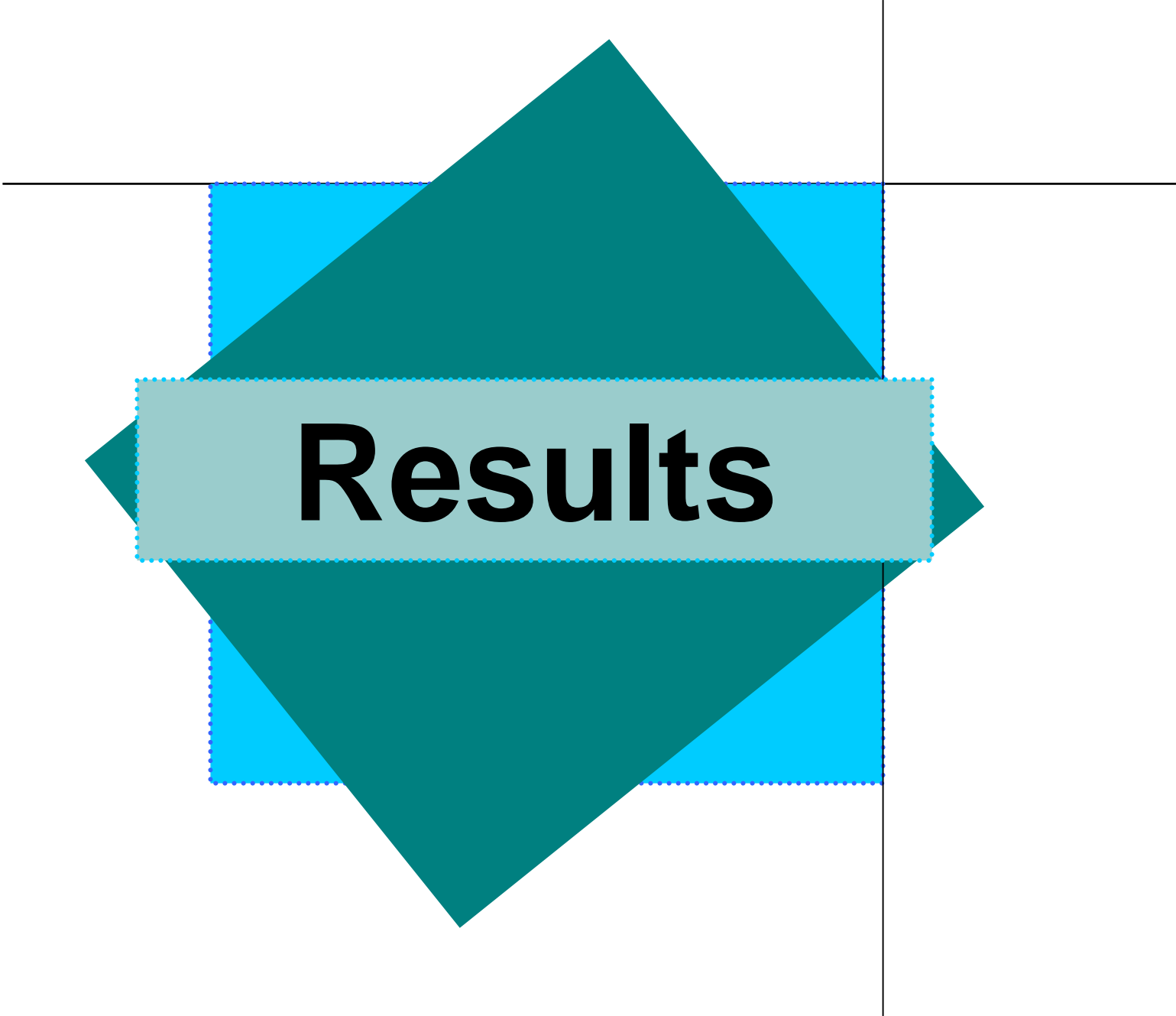


Step 3: Place swab back in transport medium



Laboratory Protocol





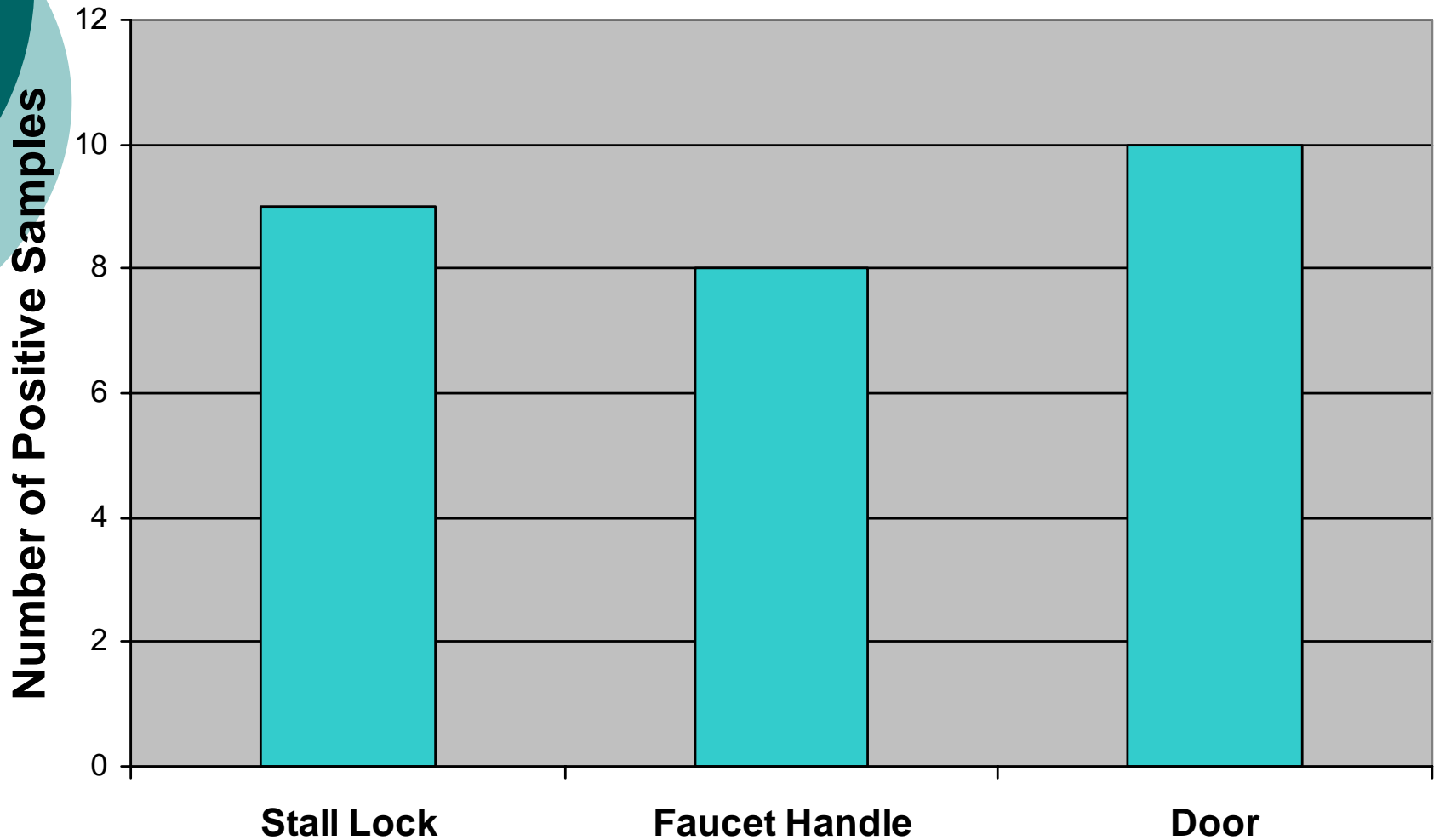
Results

Positive Bathrooms

- **20 out of 60 bathrooms – positive**
 - **19/20 MSSA (Methicillin Sensitive *S. aureus*)**
 - **1/20 MRSA**

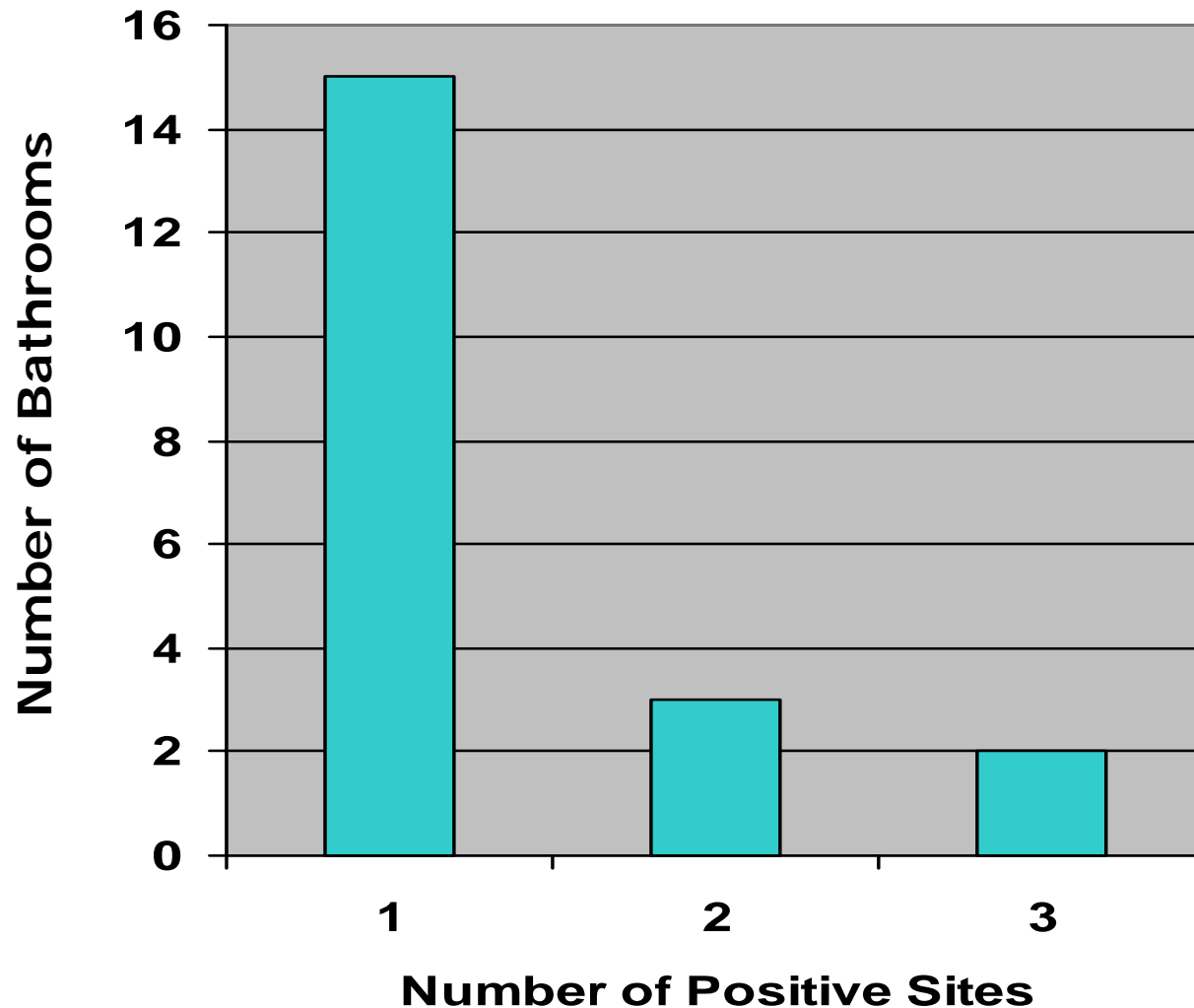
- **27/179 positive samples**
 - **26/27 MSSA**
 - **1/27 MRSA (on a door handle)**

Number of samples positive for *S. aureus* by site



$p = 0.8775$

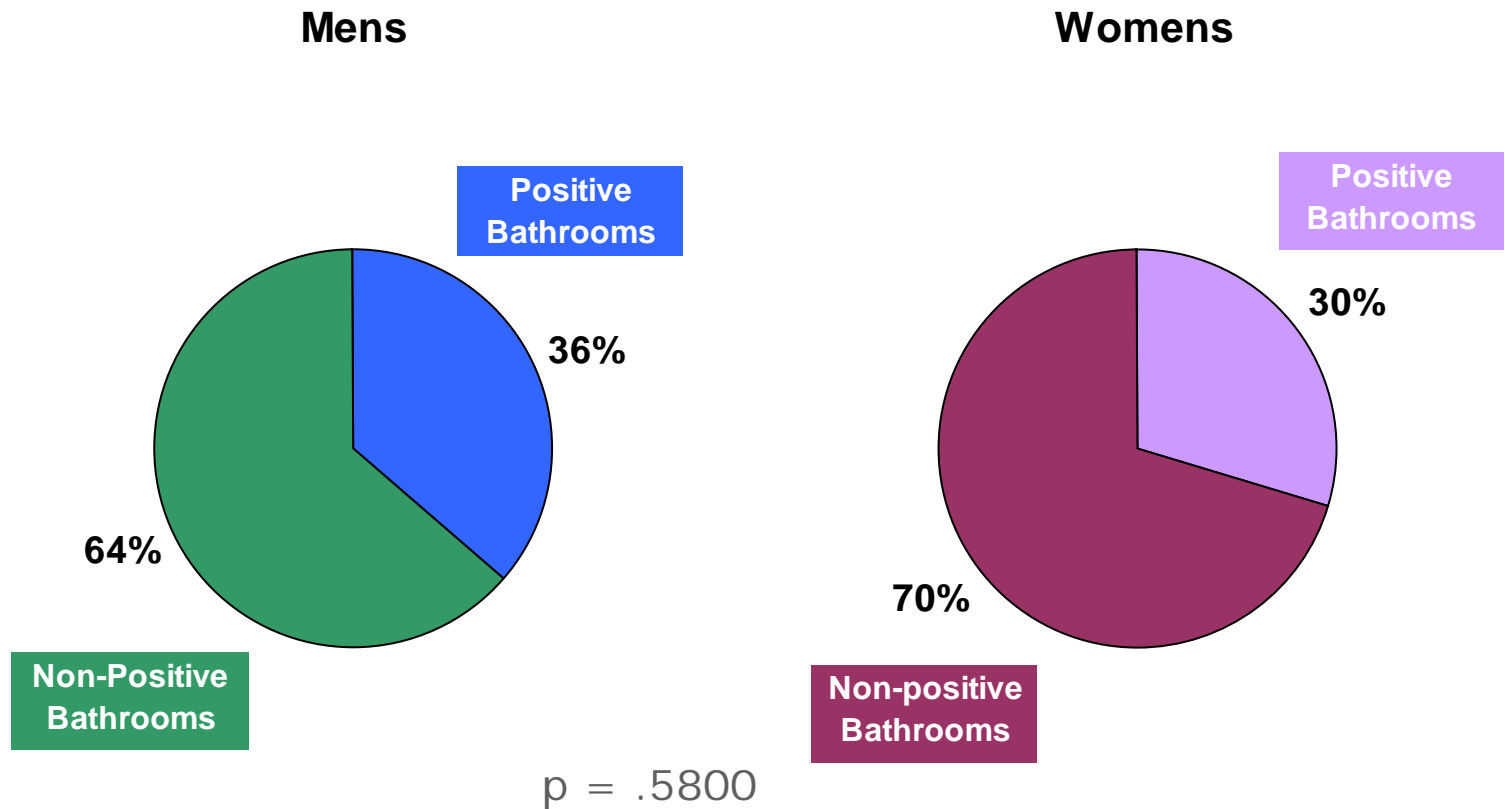
Number of Bathrooms with One or More Sites Positive for *S. aureus*



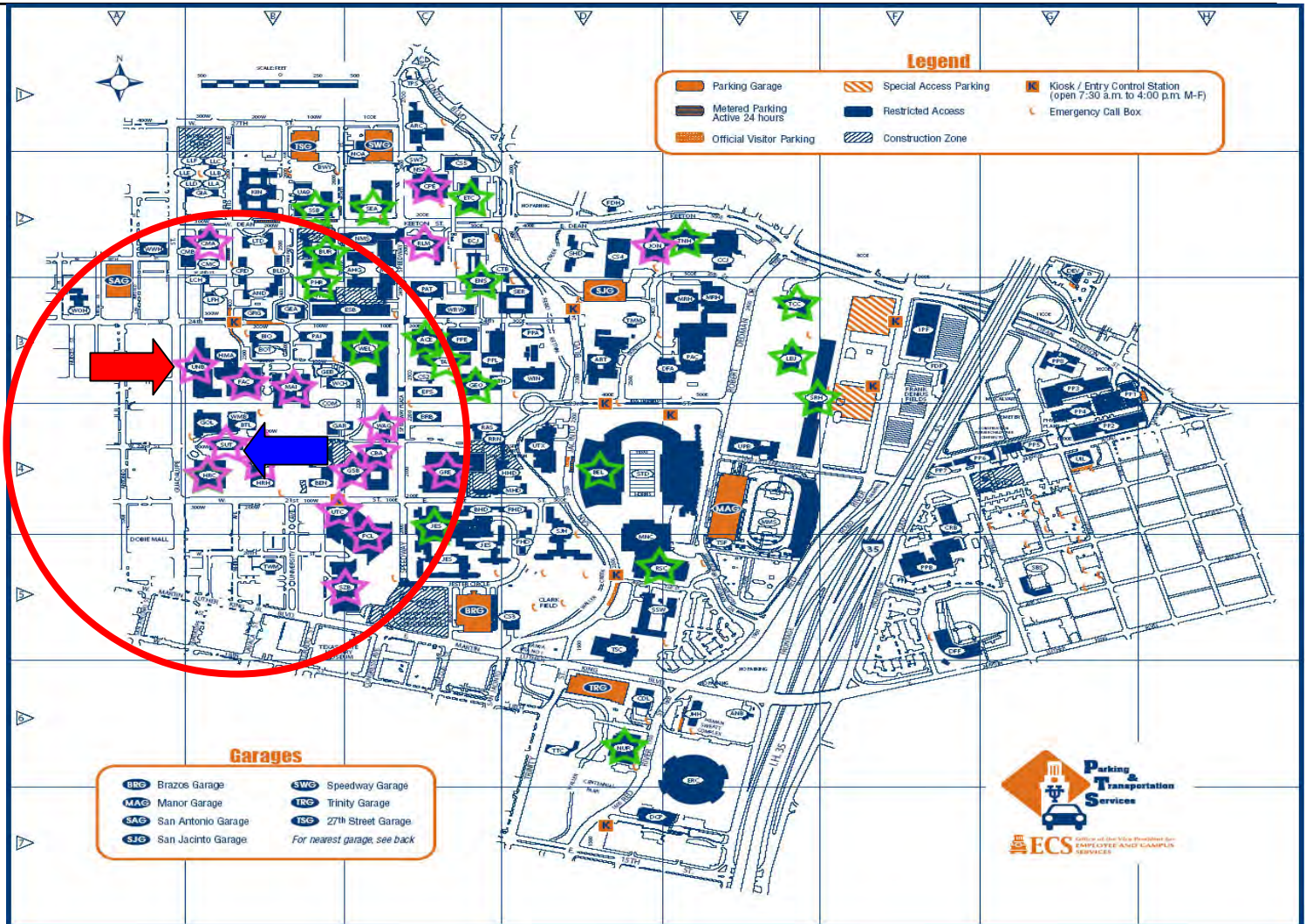
n = 20

Percentage of Mens and Womens Bathrooms Positive for *S. aureus*

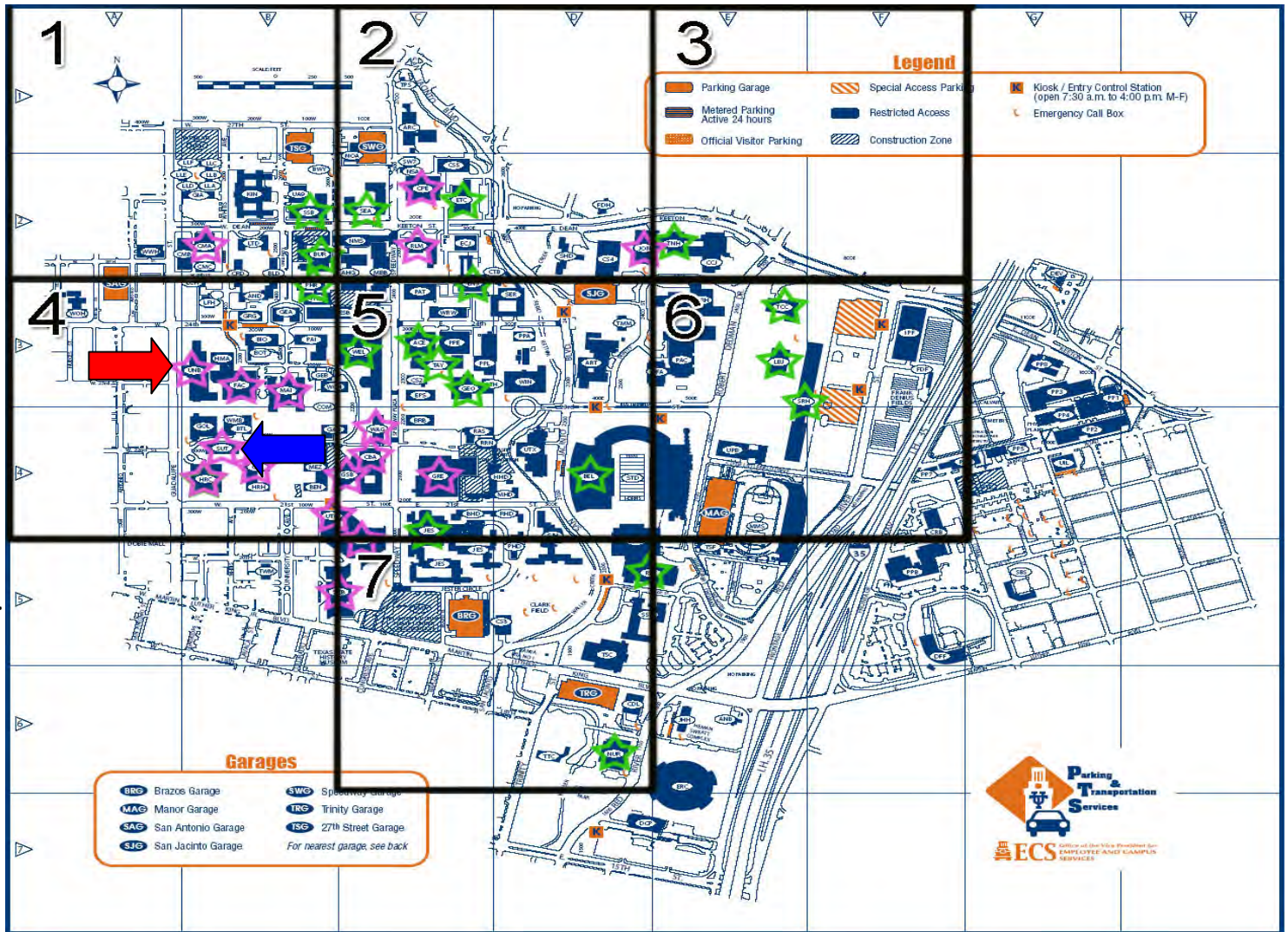
Percentage of Mens and Womens Bathrooms Positive for *S. aureus*



Buildings Positive for *S. aureus* on the UT Campus



Comparison of positive sites by geographic location



 Positive for *S. aureus*

 Negative for *S. aureus*

Garages

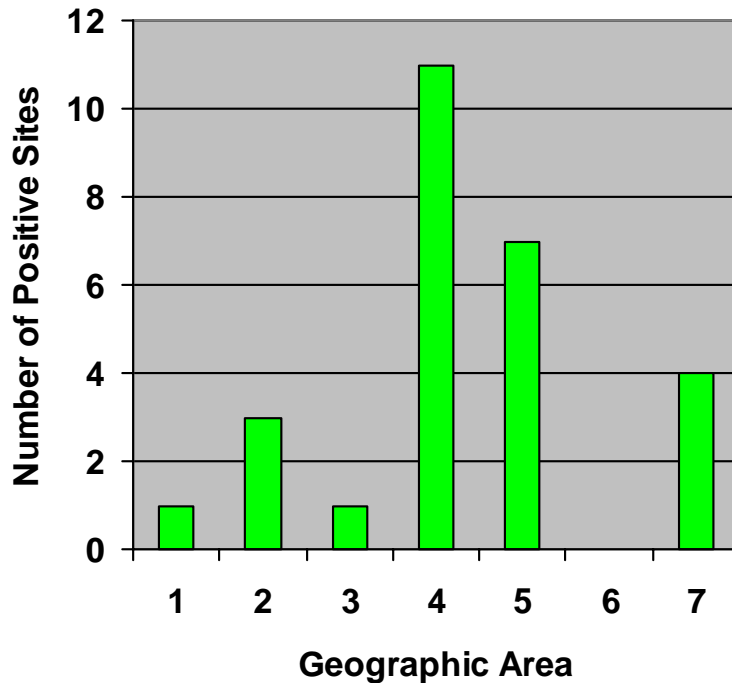
BRG	Brazos Garage	SWG	Spurway Garage
MAC	Manor Garage	TRG	Trinity Garage
SAG	San Antonio Garage	TSG	27th Street Garage
SJC	San Jacinto Garage		

For nearest garage, see back

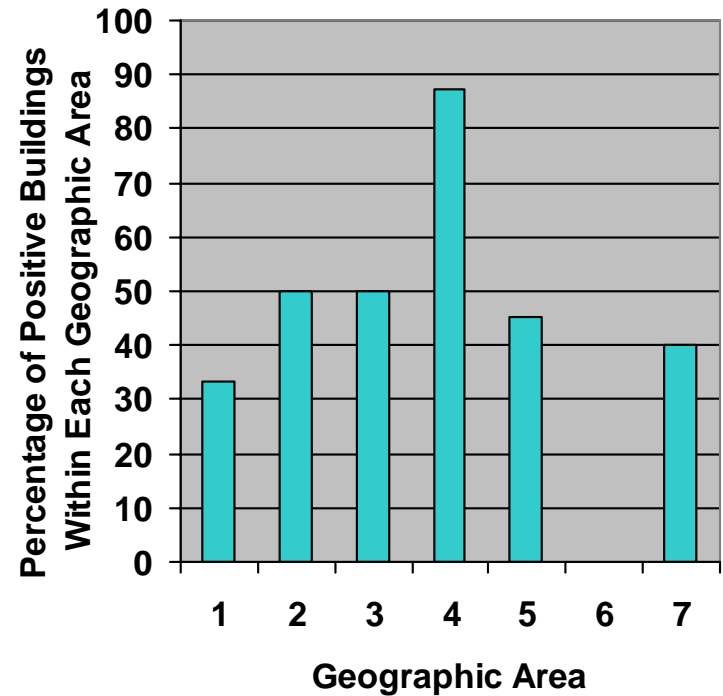


Comparison of positive sites by geographic location

Number of Positive Sites per Geographic Area



Percent of Positive Buildings by Geographic Area





Conclusion

Summary of Findings

- **33% (20 out of 60) of bathrooms positive for *S. aureus*.**
 - **1.66% (1 out of 60) positive for MRSA.**
- **179 Sample Sites (3 per bathroom): 27 positive for *S. aureus*.**
 - **9 stall locks**
 - **8 faucet handles**
 - **10 door handles (one MRSA)**



Summary of Findings

- **5 bathrooms had multiple positive sites**
 - 2: faucet handles, door
 - 1: stall lock, door
 - 2: stall lock, faucet handles, door
- **Positive buildings were clustered in one part of campus**
 - MRSA isolate found in this cluster
- **One building had three positive bathrooms**

Relationship between positive buildings and custodial crews or cleaning supplies used?



Hand washing?

- **Original hypothesis:** the majority of samples found positive for *S. aureus* would be found on the stall locks.
- **Possible reasons:**
 - **Absence of or ineffective hand washing**
 - **Insufficient disinfection of surfaces**



Recommendations

- **Clean bathrooms more than once a day**
- **Automate bathrooms**
- **Place trashcans next to exit doors**



Acknowledgements

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Thank you!!!