EVALUATION OF GLUCOMETER TEST STRIPS FOR THE PRESENCE OF POTENTIAL PATHOGENS

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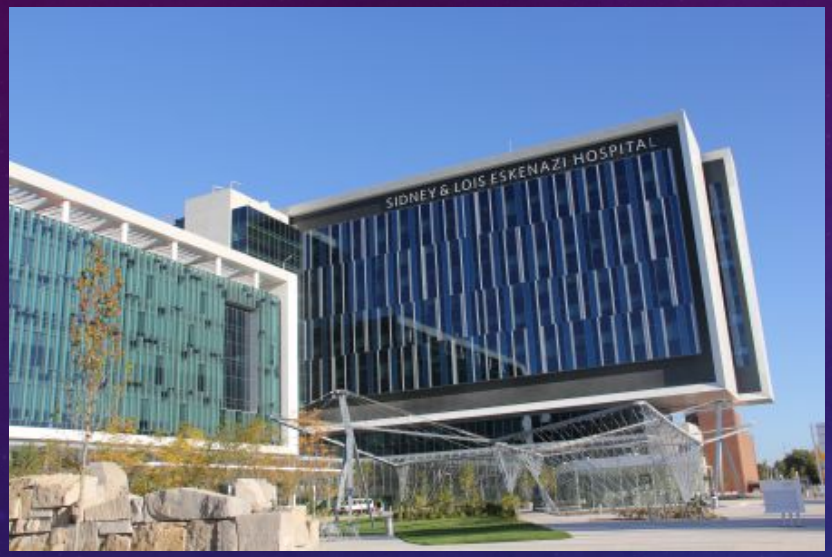
THIS STUDY WAS PARTIALLY FUNDED BY ABBOTT DIABETES CARE



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COI: DURING THE PAST 18 MONTHS OUR GROUP RECEIVED SUPPORT FROM THE FOLLOWING COMPANIES

- Abbott
- AdvanDx
- Astra Zenica
- Becton Dickinson
- BioFire
- BioMerieux
- Cepheid
- Focus
- GenMark
- Great Basin
- Hologic
- Instrumentation Labs
- Luminex
- Magna BioSciences
- MiraVista
- Nanosphere
- Roche
- Siemens

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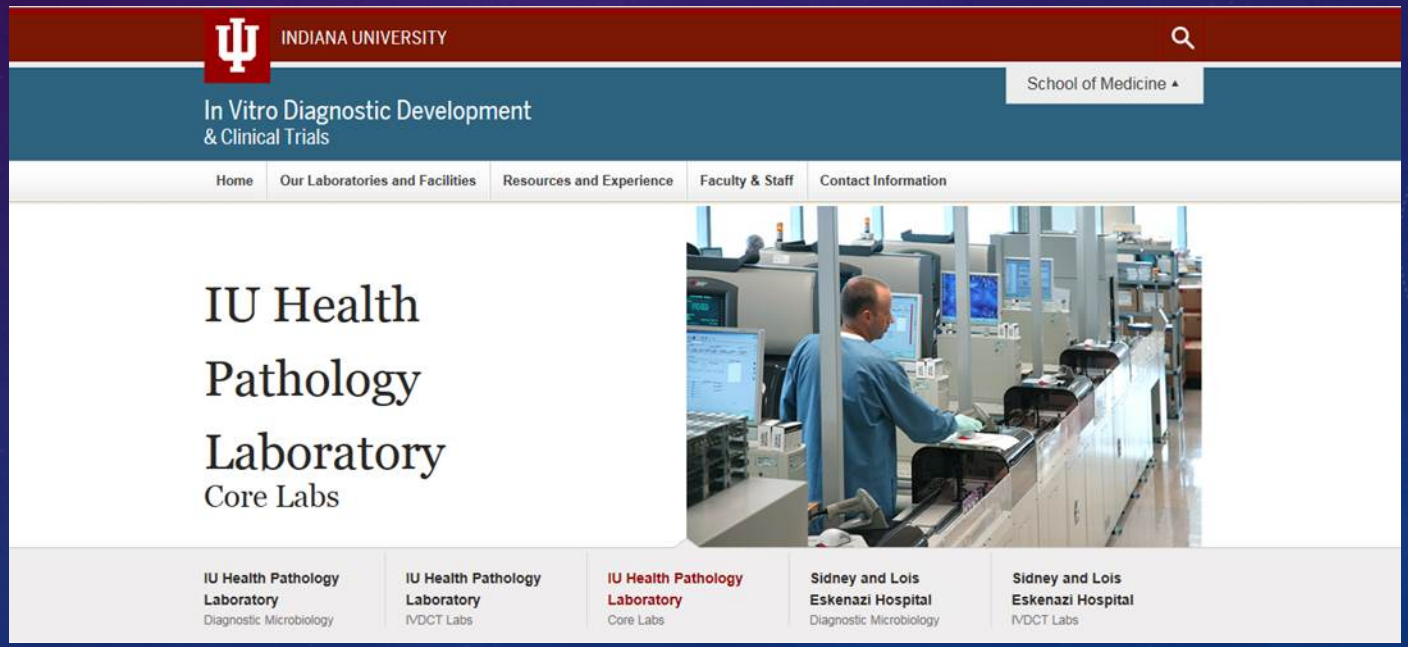


STUDY OBJECTIVES

- To determine how often glucometer strips are colonized/contaminated by microorganisms
- To identify the microorganisms present
- To determine differences in contamination rate by location in the hospital
- Outpatient vs. Inpatient vs. ED

OVERALL METHODS

- Broth Enrichment
- Routine Culture
- Real-time PCR for methicillin-resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile* (CD)
- Culture-based test for vancomycin-resistant enterococci (VRE)

PERSONNEL

Trained in the routine culture of test strips and storage containers

Trained for Real-time PCR for MRSA and CD and culture for VRE

SOURCE OF GLUCOMETER STRIPS (200)

- Outpatient Clinics (adult and pediatric)- 90 containers
- Inpatient Rooms (critical care and non-critical care)- 83 containers
- Emergency Department- 27 containers

MATERIALS TESTED

- Test strips
- Storage containers (test strip vials)

COLLECTION

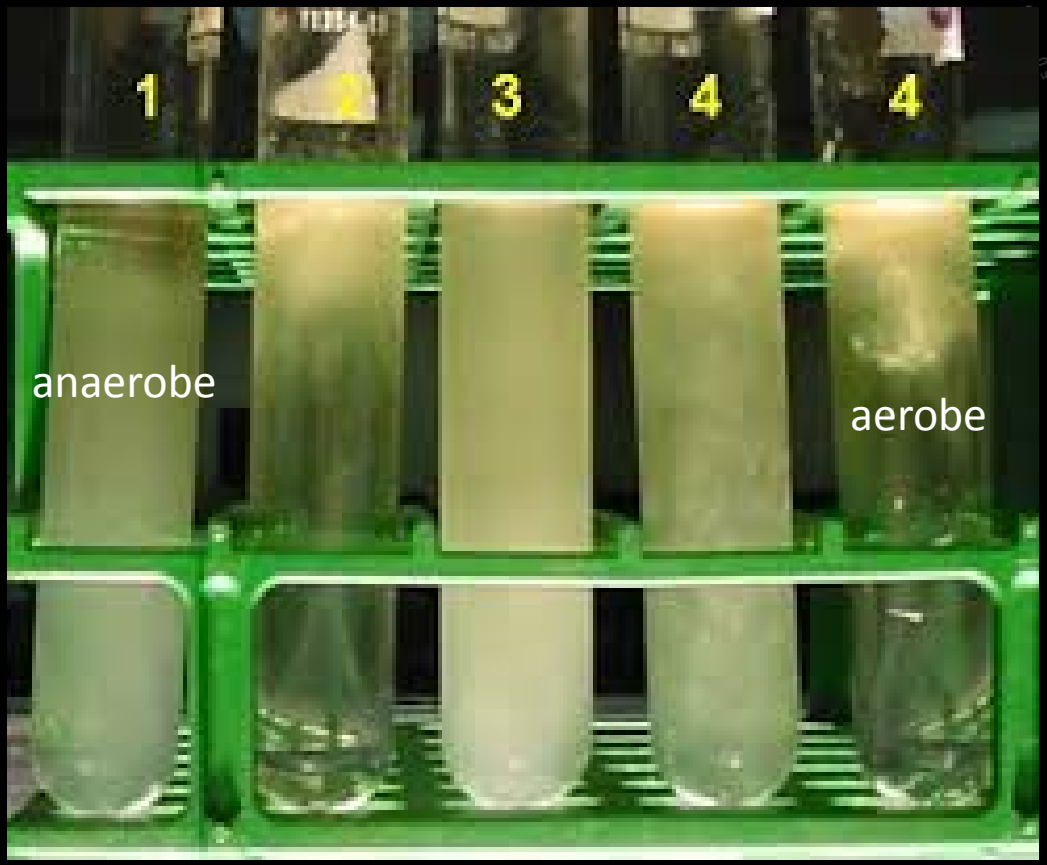
200 Containers with unused test strips were transported to the Eskenazi Health clinical microbiology laboratory

Number of remaining strips documented for each container

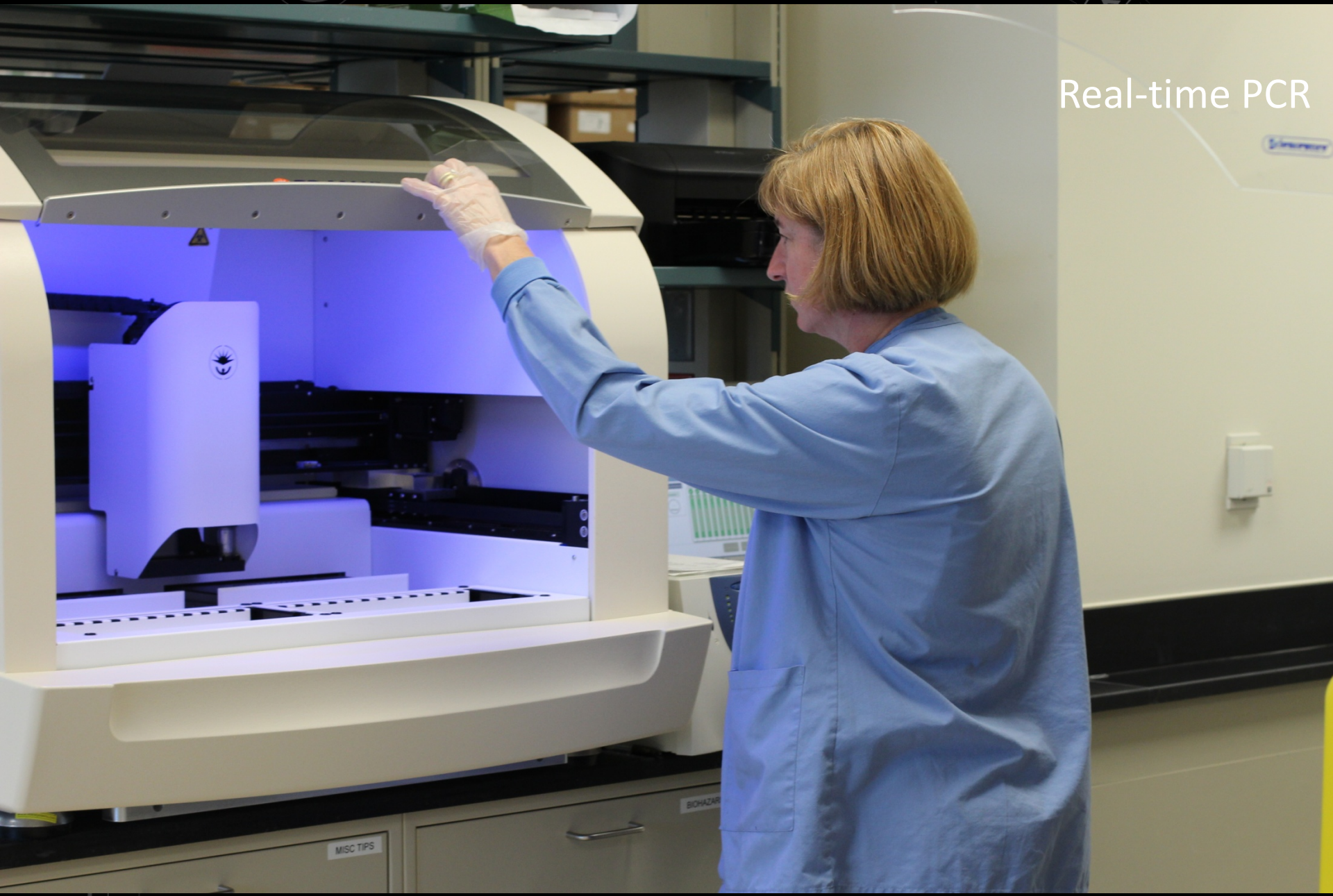
Closed containers were stored at room temperature before culturing

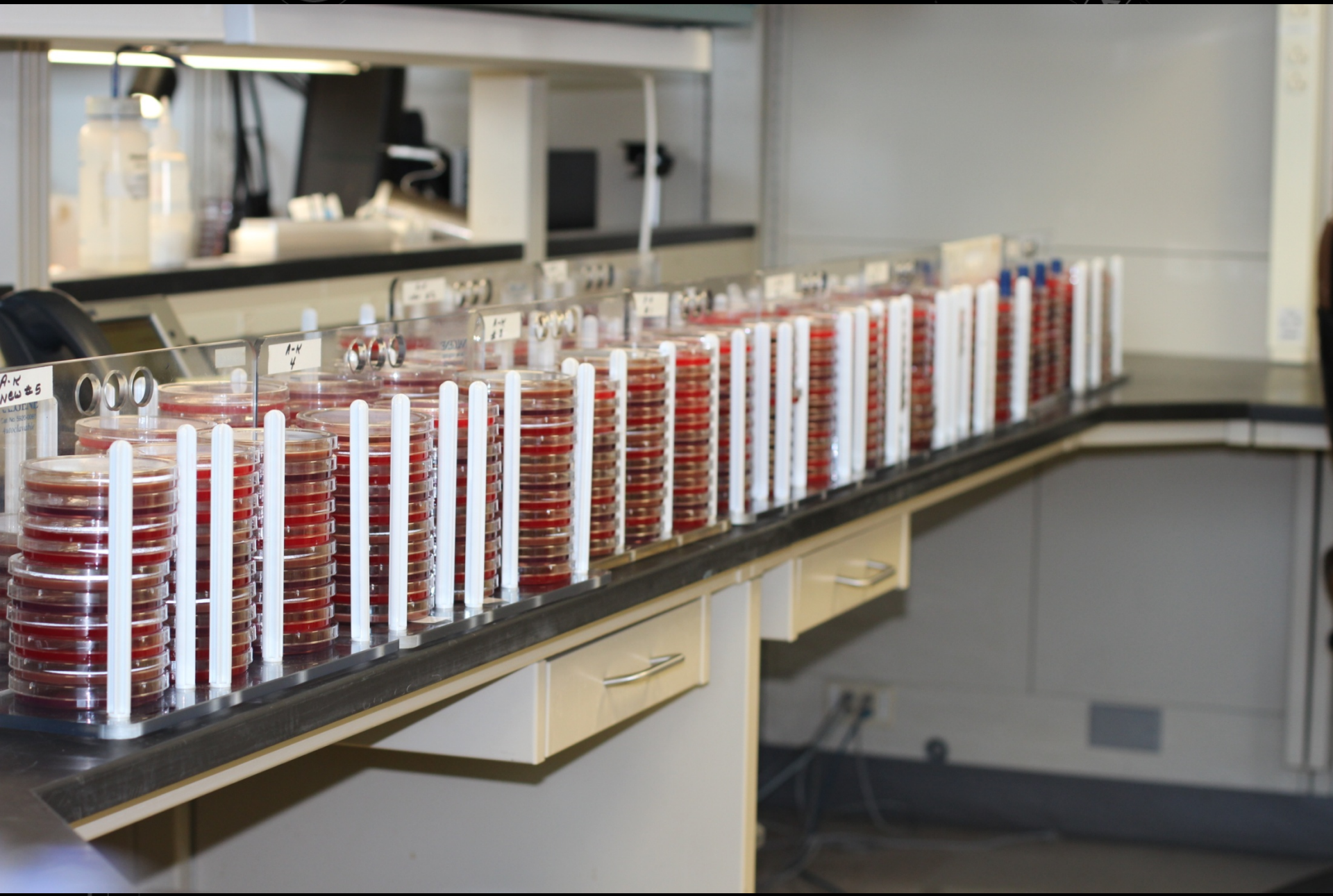
ENRICHMENT BROTH

- 5 ml of thioglycollate broth was added to each container
- Lids replaced and mixed by inversion (10X)
- Containers incubated 48 hours at 37 C
- Containers again mixed by inversion
- Real-time PCR for MRSA and CD
- Subculture to selective and differential agar plates

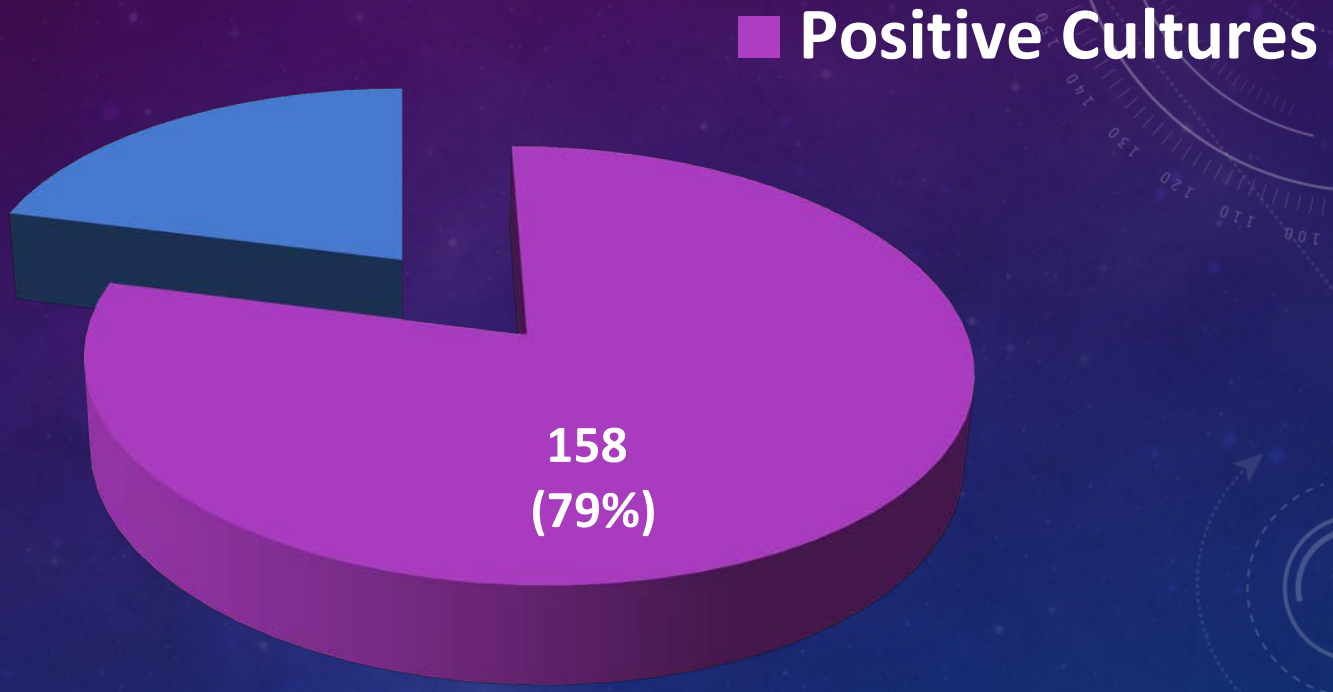


Thioglycollate broth supports growth of anaerobes, aerobes and aerotolerant microorganisms


Real-time PCR
MISC TIPS



200 CONTAINER/STRIPS TESTED



- 79% were positive by culture and/or PCR
- 21% were negative by all methods

BEST PRACTICE FOR STORING GLUCOSE TESTING SUPPLIES

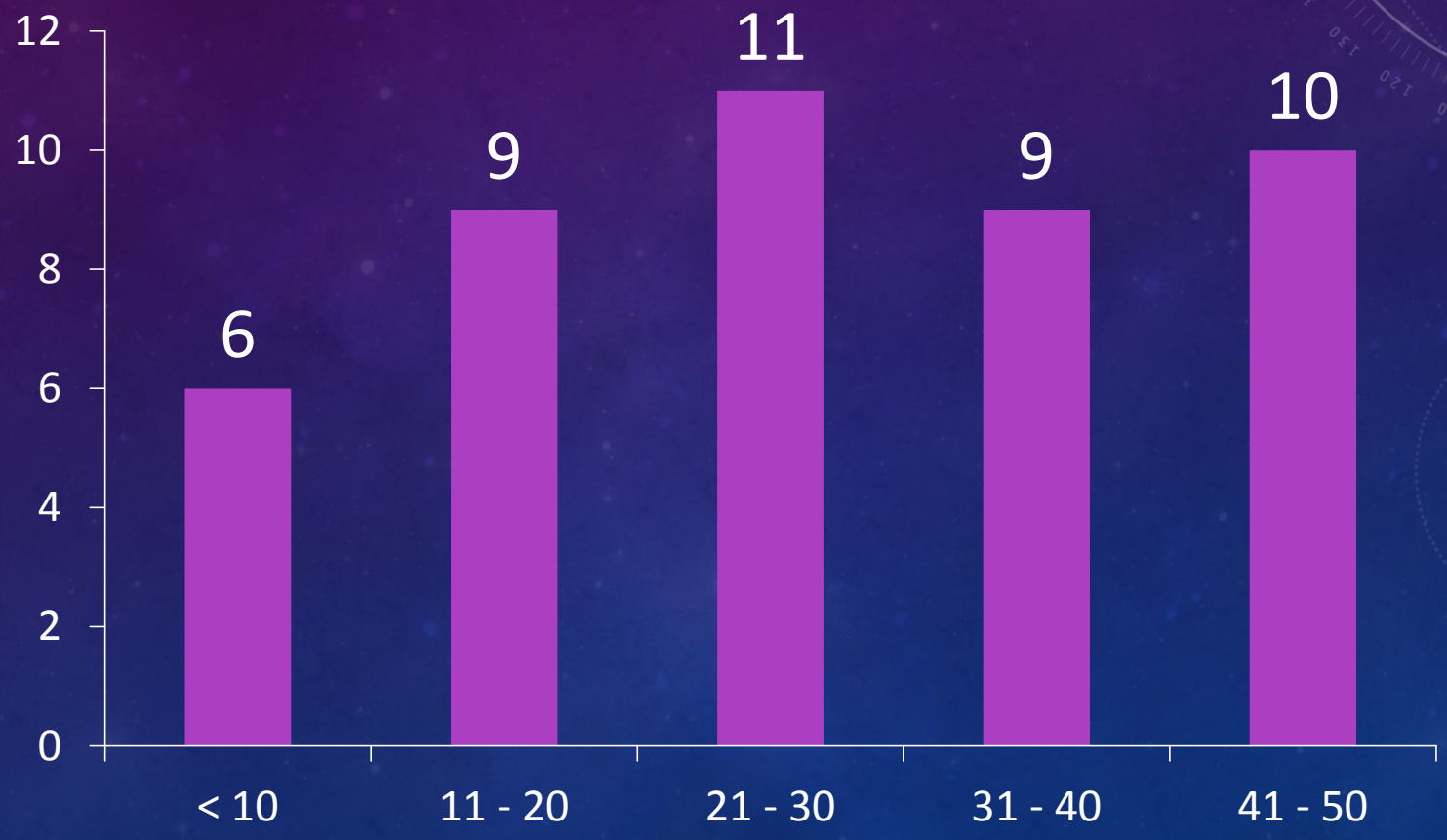
COMMON PRACTICE OF STORING GLUCOSE TESTING SUPPLIES

CLEAN AREA

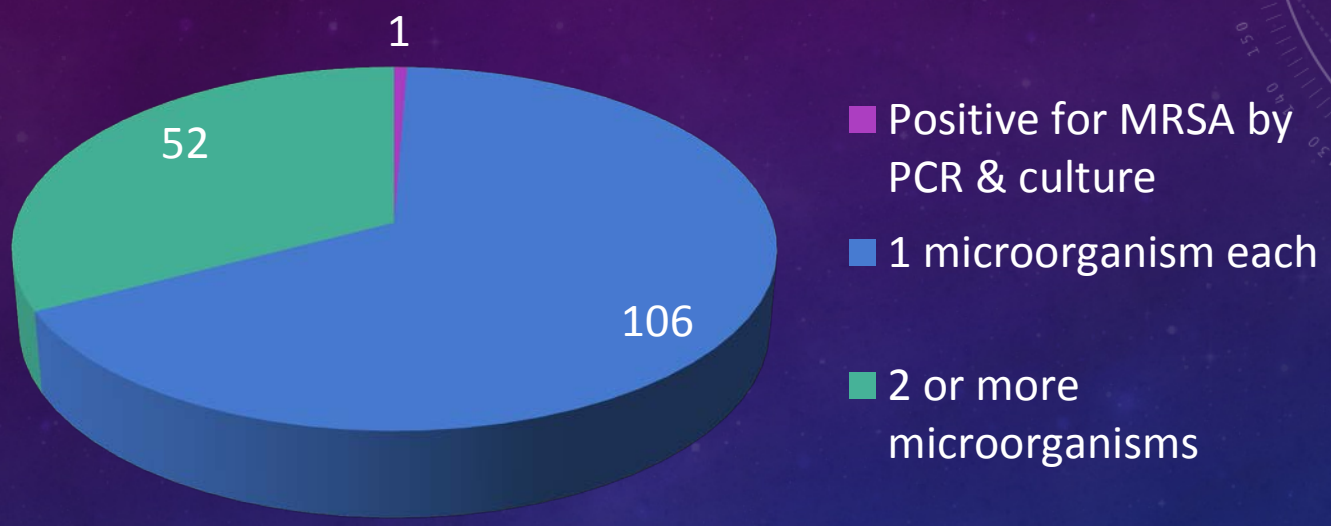
UNUSED STRIPS REMAINING IN CONTAINERS

Average: 22 Range: 1-48

REMAINING TEST STRIPS IN CONTAINERS NEGATIVE BY CULTURE (N=45)

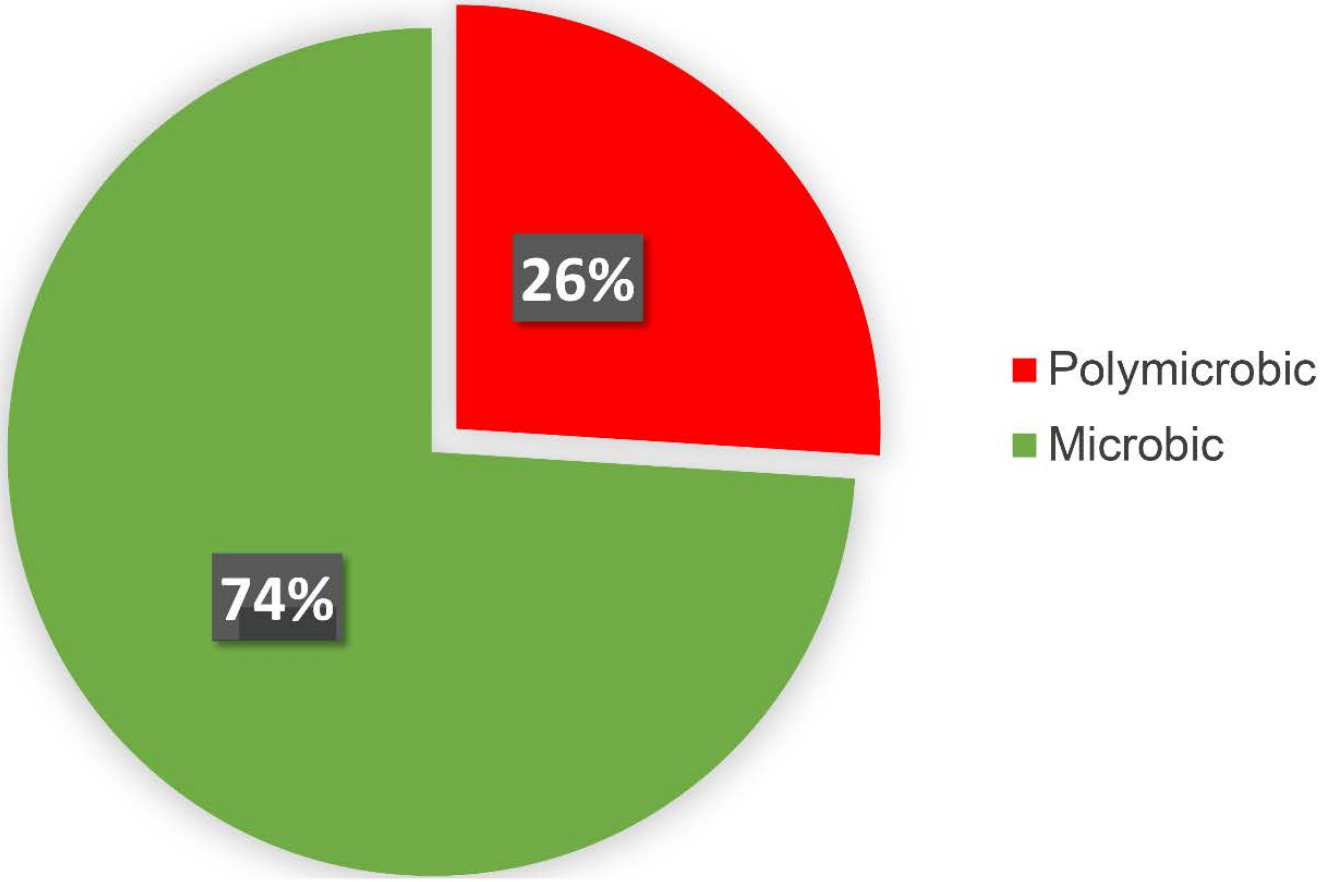


CONTAINERS WITH POSITIVE CULTURES

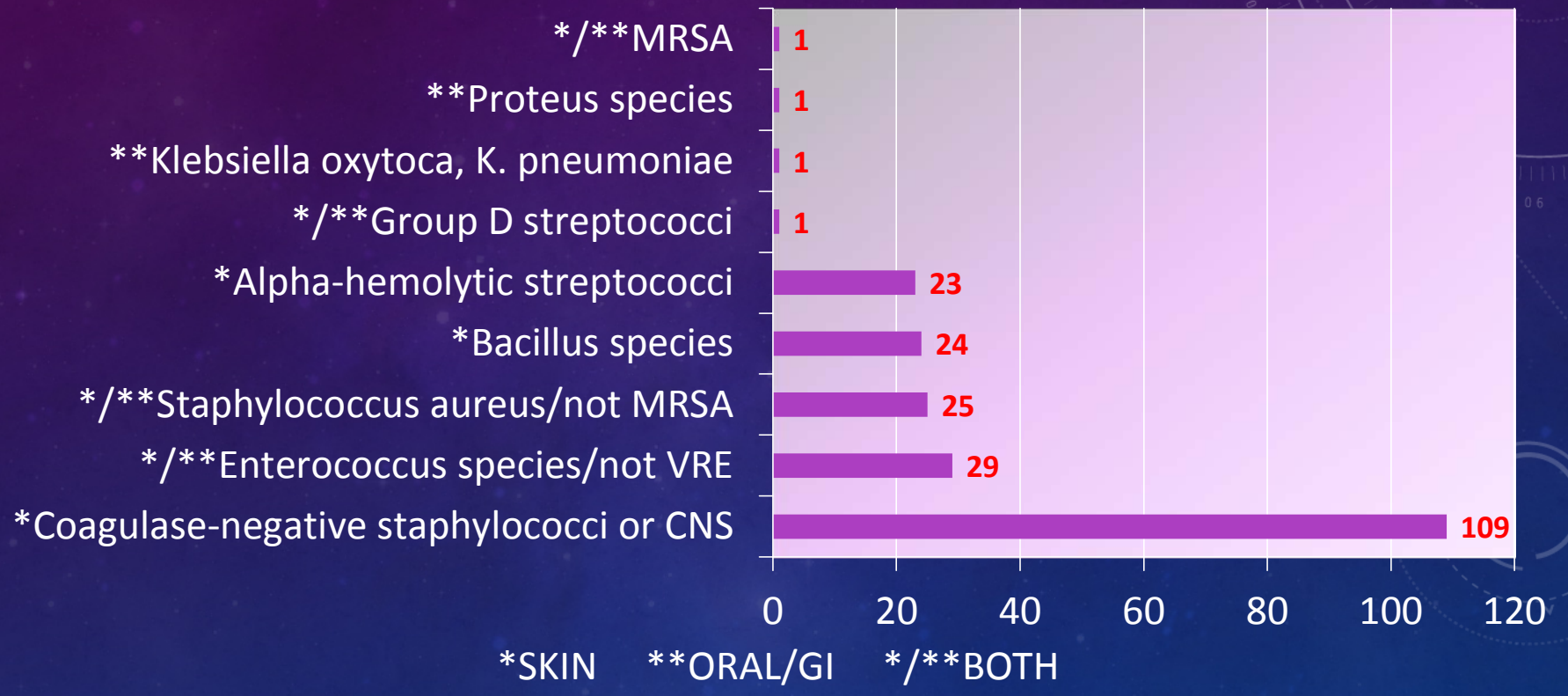


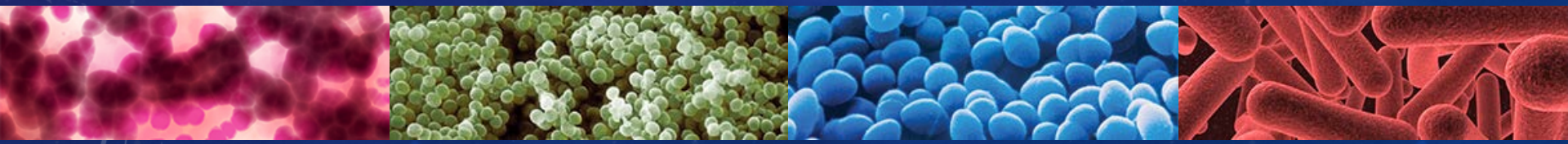
- 1 container: positive for MRSA by PCR & culture
- 106 containers: 1 microorganism each
- 52 containers: 2 or more microorganisms

% containing polymicrobic micro organisms

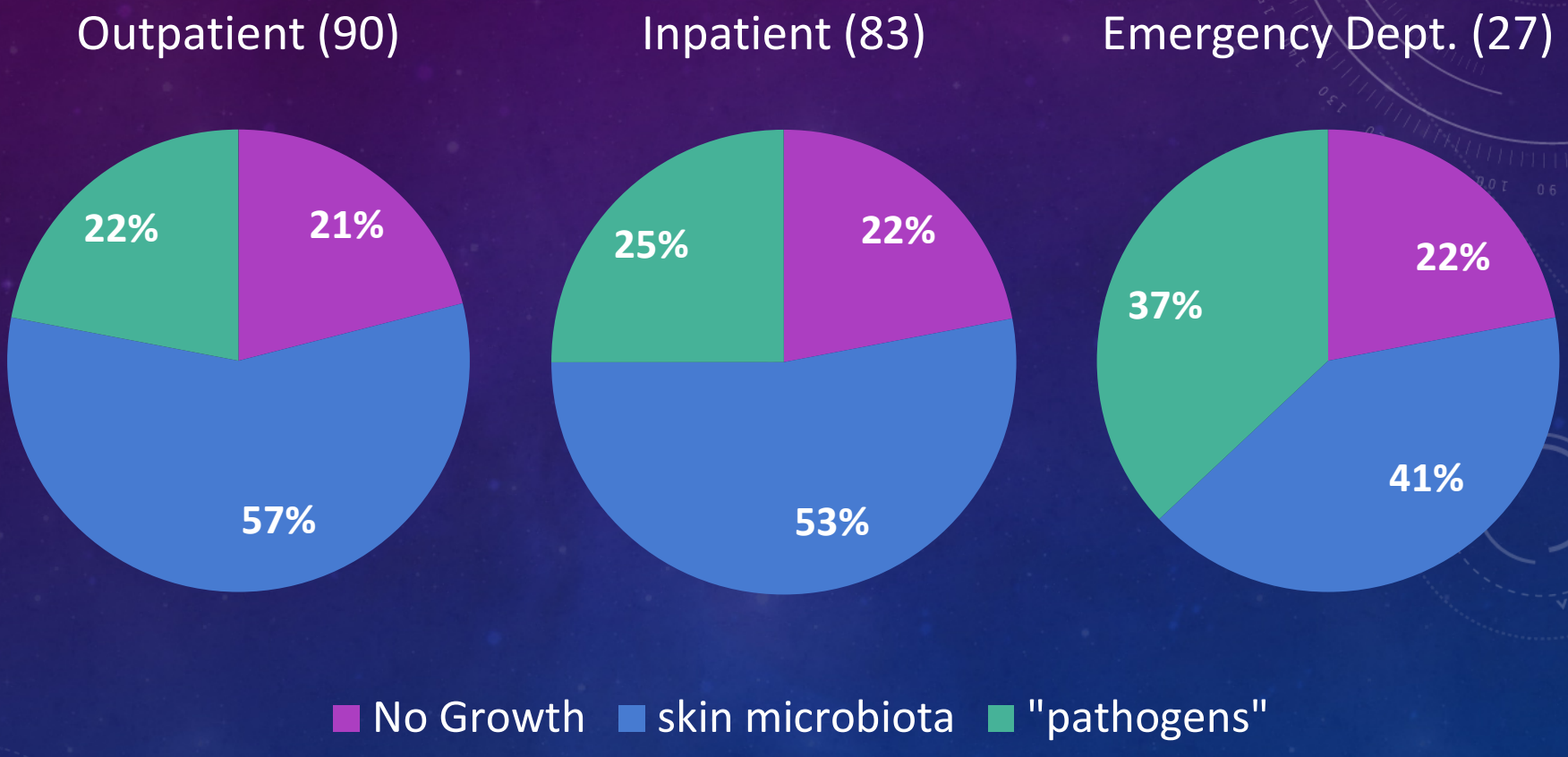


ISOLATES RECOVERED BY CONVENTIONAL CULTURE (215)





CULTURE RESULTS BY HOSPITAL LOCATION*,**



*Many polymicrobial **Skin= alpha-strep, *Bacillus*, CNS

SUMMARY

- No Adverse Events
- No protocol deviations

CONCLUSIONS

- Seventy-nine percent **(79%)** of tested containers were colonized by bacteria
- All 215 bacteria were detected by conventional culture
- One (1) container was positive for **MRSA** by real-time PCR and by culture (**inpatient room**)
- Number of strips remaining **did not correlate** with risk for positive culture
- **Many "potential pathogens" were recovered from glucometer strips and containers** at all 3 hospital locations (Outpatient, Inpatient and ED)

CDC RECOMMENDATIONS

- Whenever possible, blood glucose meters should be assigned to an individual person and not shared.
- If blood glucose meters must be shared, the device should be cleaned and disinfected after every use, per manufacturer's instructions, to prevent carryover of blood and infectious agents.
- If the manufacturer does not specify how the device should be cleaned and disinfected, it should not be shared.

CDC
Centers for Disease Control and Prevention

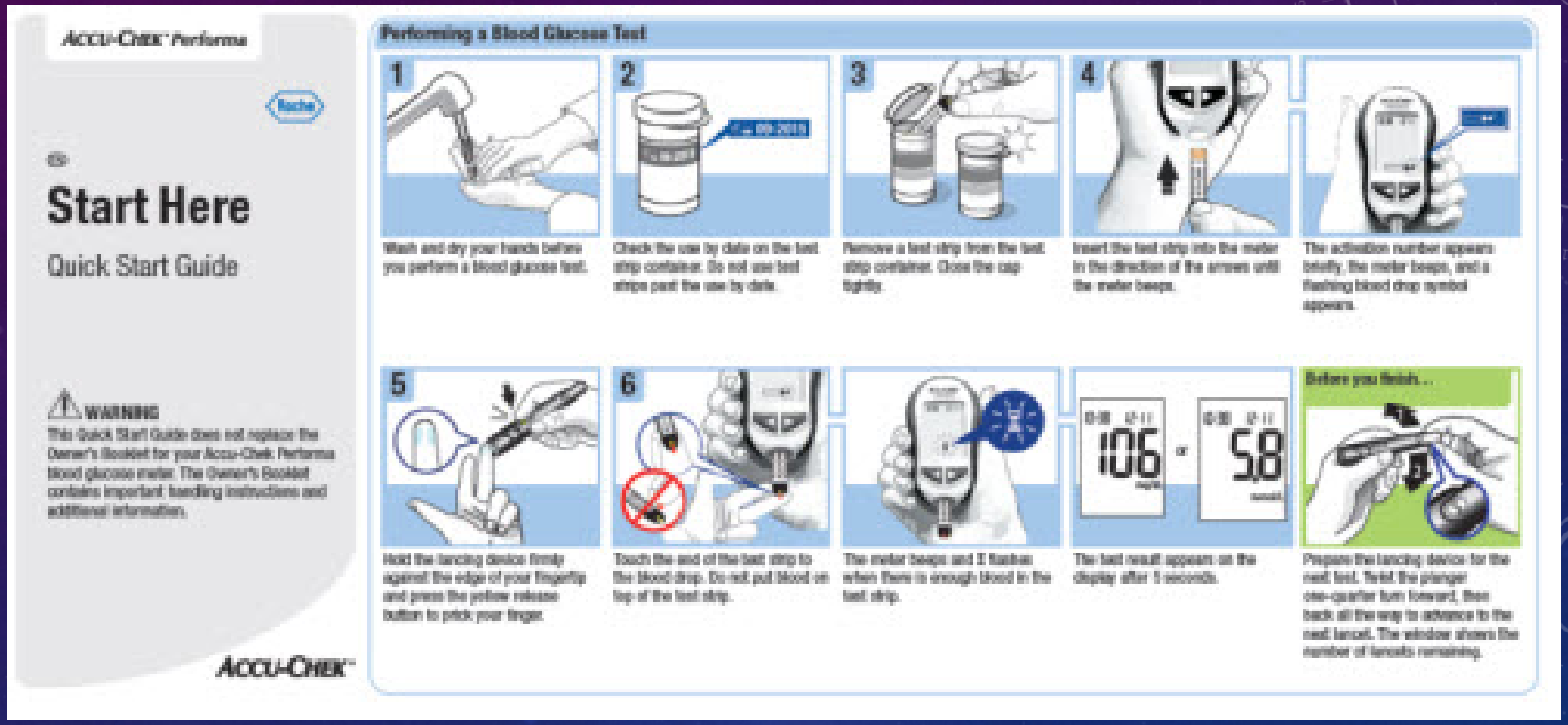
NYC HEALTH RECOMMENDATIONS

- **Never share** glucometers
- Never carry glucometry supplies in **pockets**
- **Label** glucometer and finger stick device with patient's name
- **Clean and disinfect glucometers after each use**
- **Wear gloves** if "helping" patient do glucometry
- **Wash hands and change gloves** after each patient
- ***Alcohol-based hand sanitizer** can be used instead of washing hands.

*? *C. difficile* spores are not destroyed by alcohol

NYC Health

SAMPLE SET OF INSTRUCTIONS



ACCU-CHEK Performa

Start Here

Quick Start Guide

WARNING

This Quick Start Guide does not replace the Owner's Booklet for your Accu-Chek Performa blood glucose meter. The Owner's Booklet contains important handling instructions and additional information.

ACCU-CHEK

Performing a Blood Glucose Test

1

Wash and dry your hands before you perform a blood glucose test.

2

Check the use by date on the test strip container. Do not use test strips past the use by date.

3

Remove a test strip from the test strip container. Close the cap tightly.

4

Insert the test strip into the meter in the direction of the arrows until the meter beeps.

The activation number appears briefly, the meter beeps, and a flashing blood drop symbol appears.

5

Hold the lancing device firmly against the edge of your fingertip and press the yellow release button to prick your finger.

6

Touch the end of the test strip to the blood drop. Do not put blood on top of the test strip.

The meter beeps and 2 flashes when there is enough blood in the test strip.

106

5.8

The test result appears on the display after 5 seconds.

Before you finish...

Prepare the lancing device for the next test. Twist the plunger one-quarter turn forward, then back all the way to advance to the next lancet. The window shows the number of lancets remaining.

Gloves: Who is being protected?

FINAL WORD

- **Potential Bacterial Pathogens are Frequently Present on Glucometer Strips and Containers**
- **Current Protocols for Glucometry may not Adequately Protect Patients from Potential Healthcare-Associated Infections**

THANK YOU