



CENTER FOR
STEWARDSHIP
IN MEDICINE

March 21, 2024

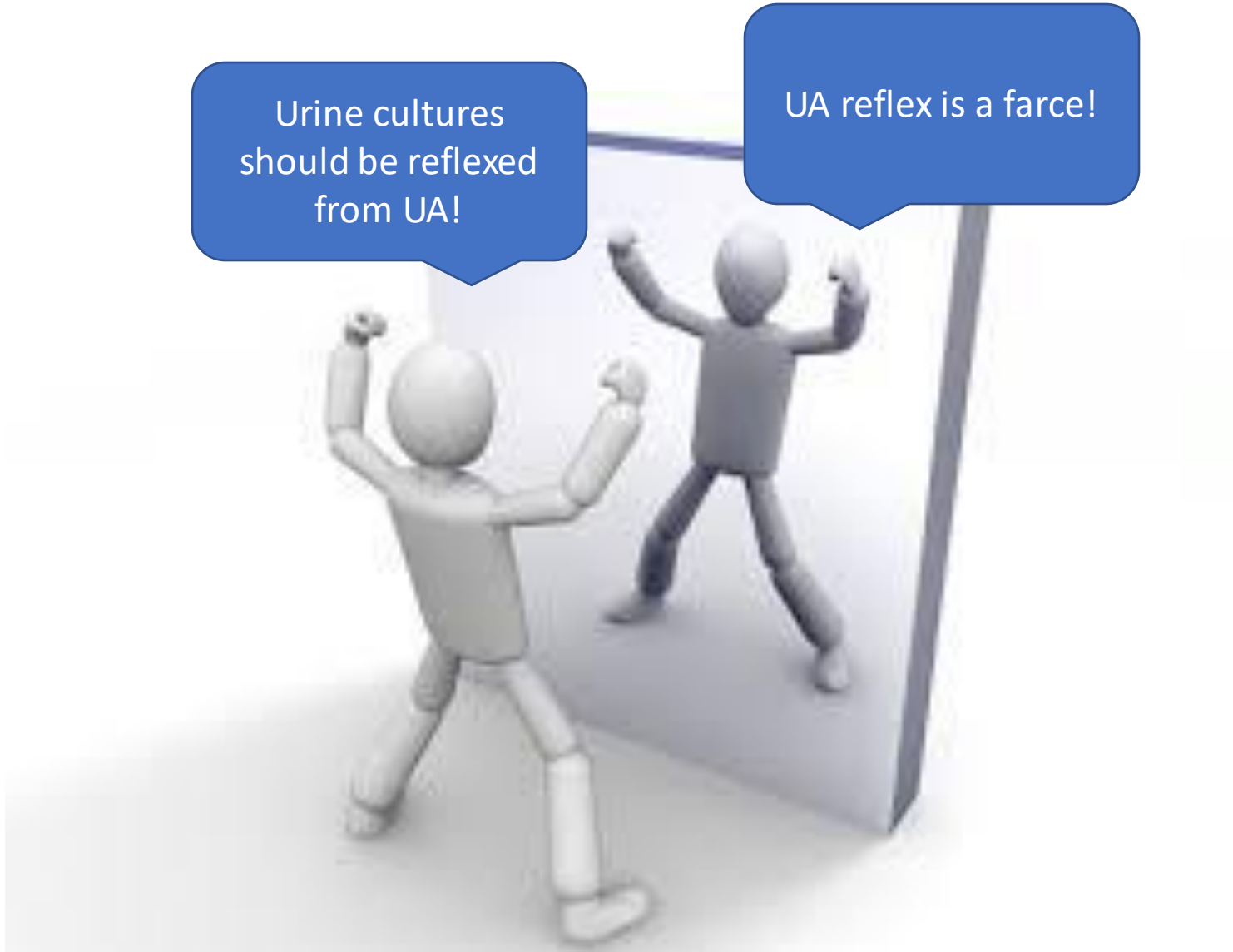
Reflecting on Reflexing: A Pro-Con Debate

- Chloe Bryson-Cahn, MD
- Alyssa Castillo, MD

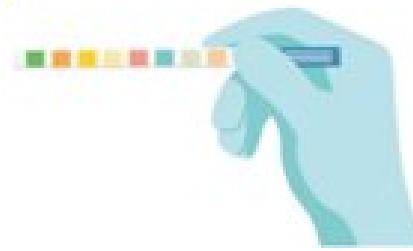
Reflecting on Reflexing

Urine cultures
should be reflexed
from UA!

UA reflex is a farce!

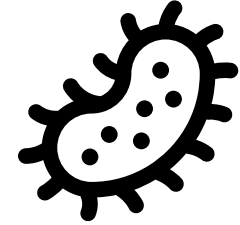


Diagnostic Tests



URINALYSIS

- Point-of-care:
 - **Leukocyte esterase, nitrite**
 - Specific gravity, pH, protein, glucose, crystals, ketones, blood
- Automated:
 - **WBC**
 - RBC, bacteria, epithelial cells





URINE CULTURE

- Quantitative measure of predominant bacteria in the urine
- Sometimes non-significant:
 - "Normal GU flora"
 - "Polymicrobial"
 - "Yeast"

What do I do with these results?

Symptoms + Positive Urinalysis = UTI!

 Symptoms + Positive Urinalysis = 

The take-away:

- The interpretation of a +UA depends on symptoms
 - *Important exceptions:* neutropenia, very classic symptoms
- A +UA cannot “rule-in” infection

Then what are these tests for?

- Neither a positive UA or culture can **RULE IN** infection

$$\text{Symptoms} + \text{Positive Urine Culture} = \text{UTI (ASB)}$$

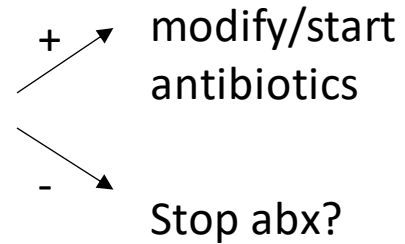
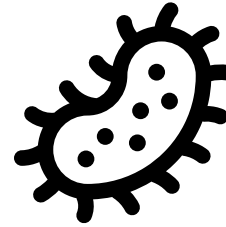
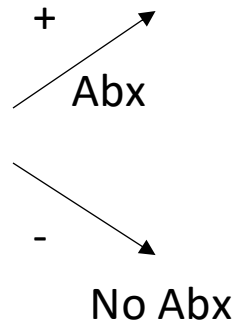
The diagram illustrates that the combination of symptoms and a positive urine culture does not definitively rule in a urinary tract infection (UTI) or asymptomatic bacteriuria (ASB). The word "Symptoms" is crossed out with a red prohibition sign, and the word "UTI" is also crossed out with a red prohibition sign, indicating that this combination is not sufficient for a definitive diagnosis.

- Both a negative UA and culture are very good at **RULING OUT** infection!

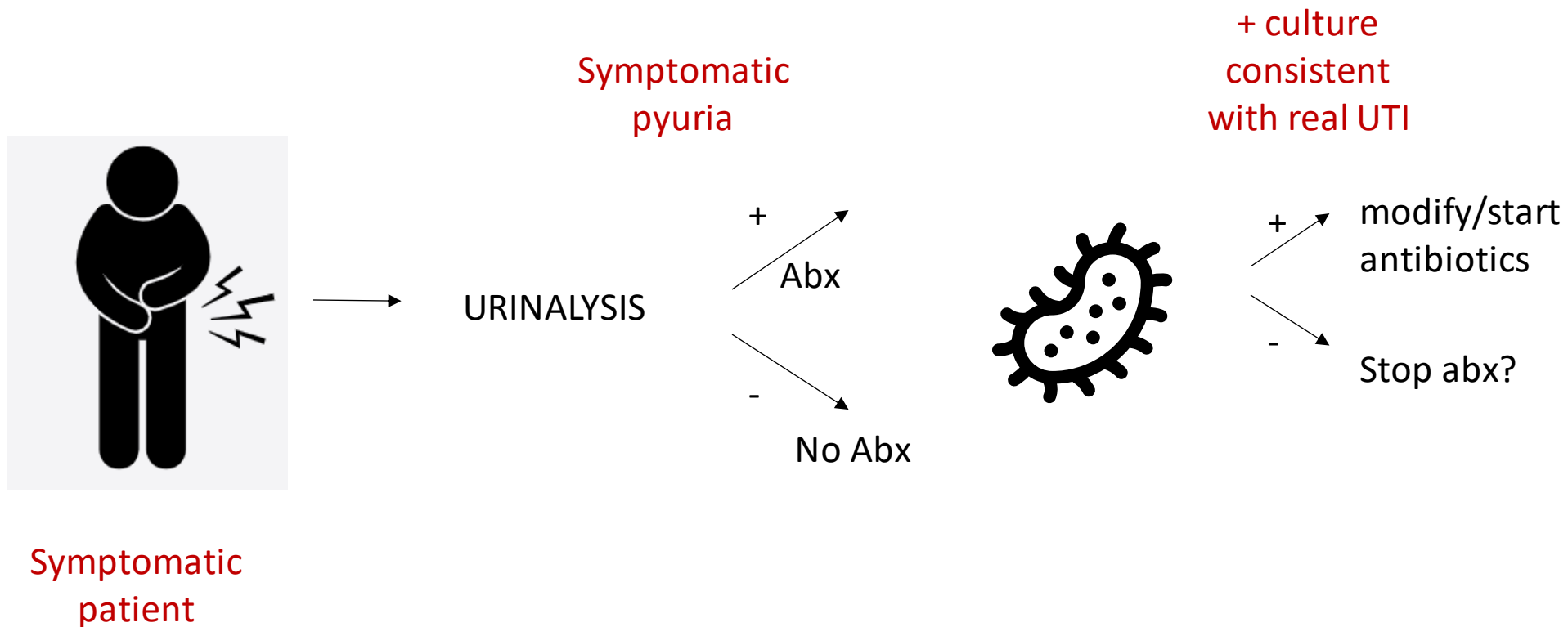
The Paradigm (non-sepsis)



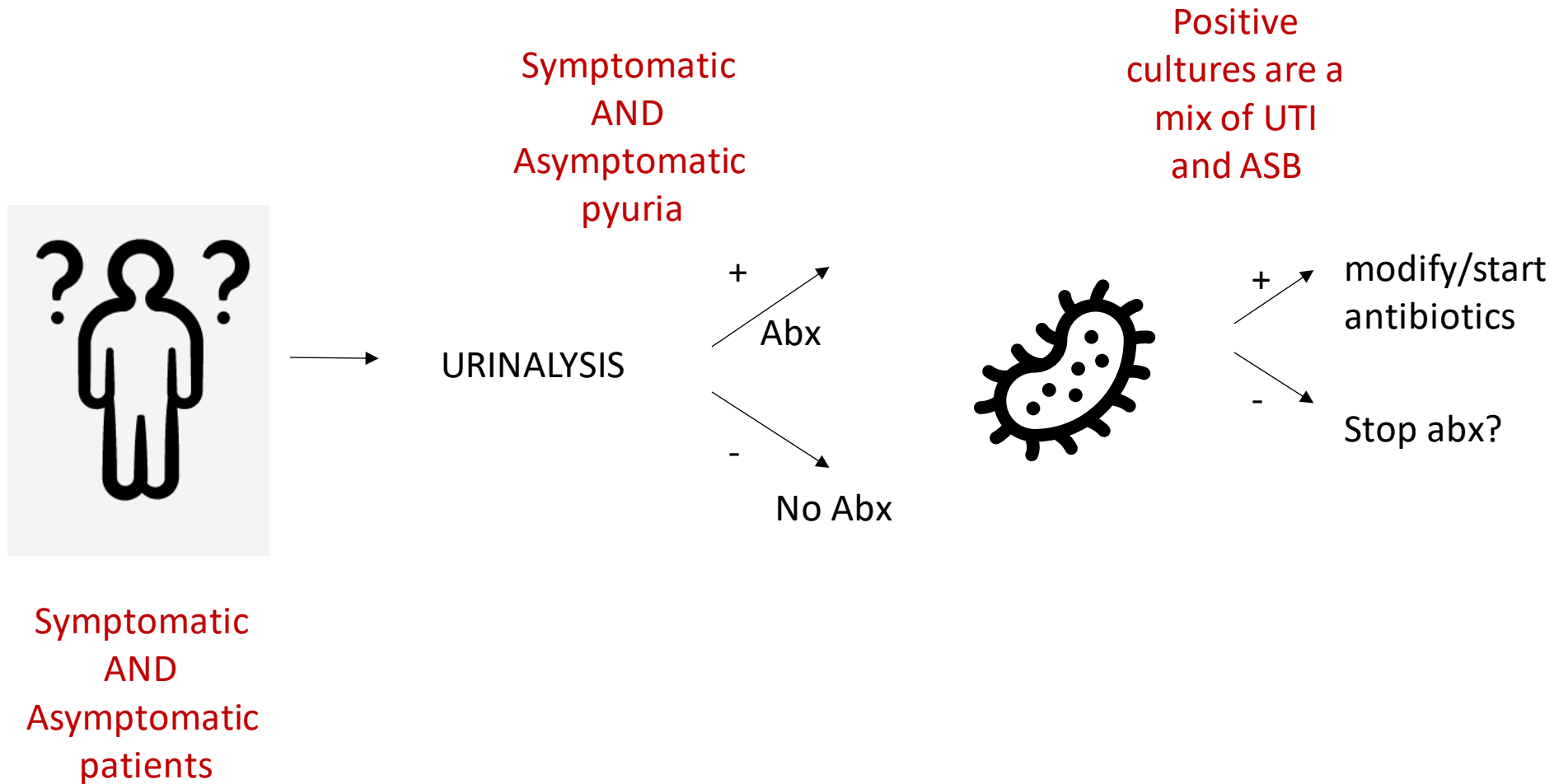
URINALYSIS



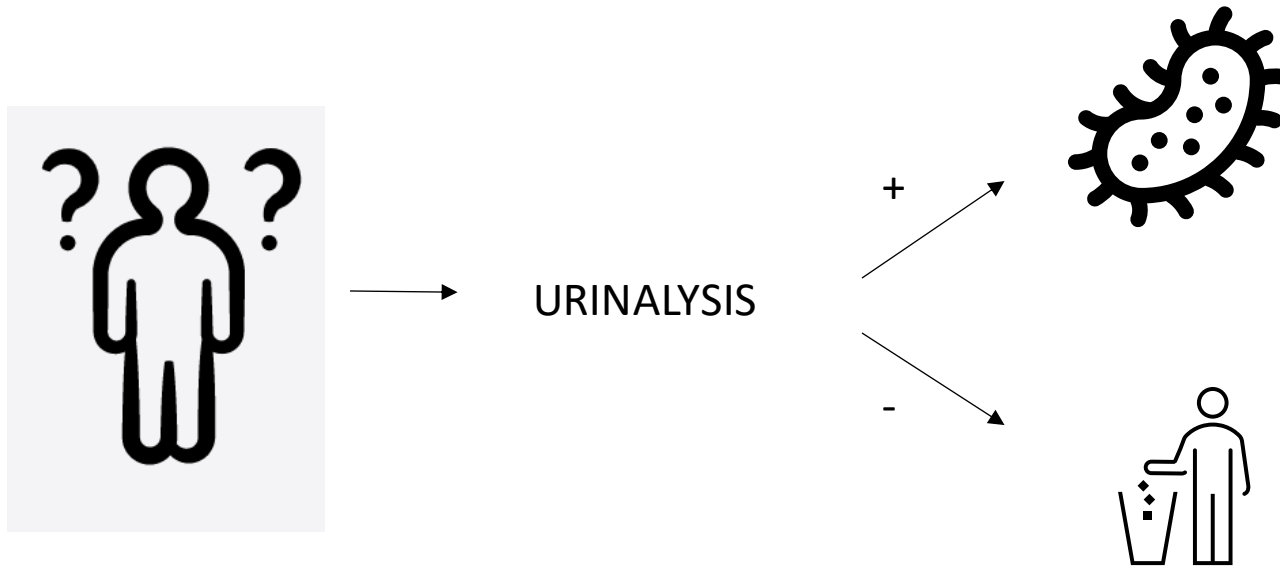
Ideal State (non-sepsis)



The Problem



Reflexing to culture



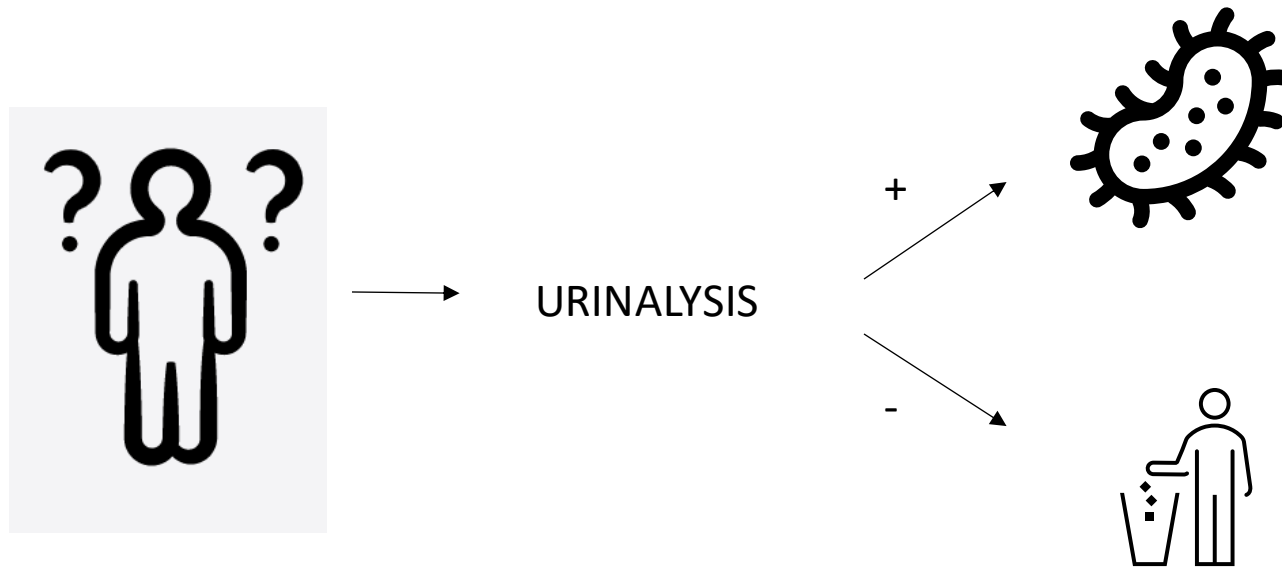
Symptomatic
AND
Asymptomatic
patients

**Premise: UA without LE,
nitrite, or WBC is unlikely UTI**

PRO: Reflex Urine Cultures are a Diagnostic Stewardship Intervention

Alyssa Castillo, MD

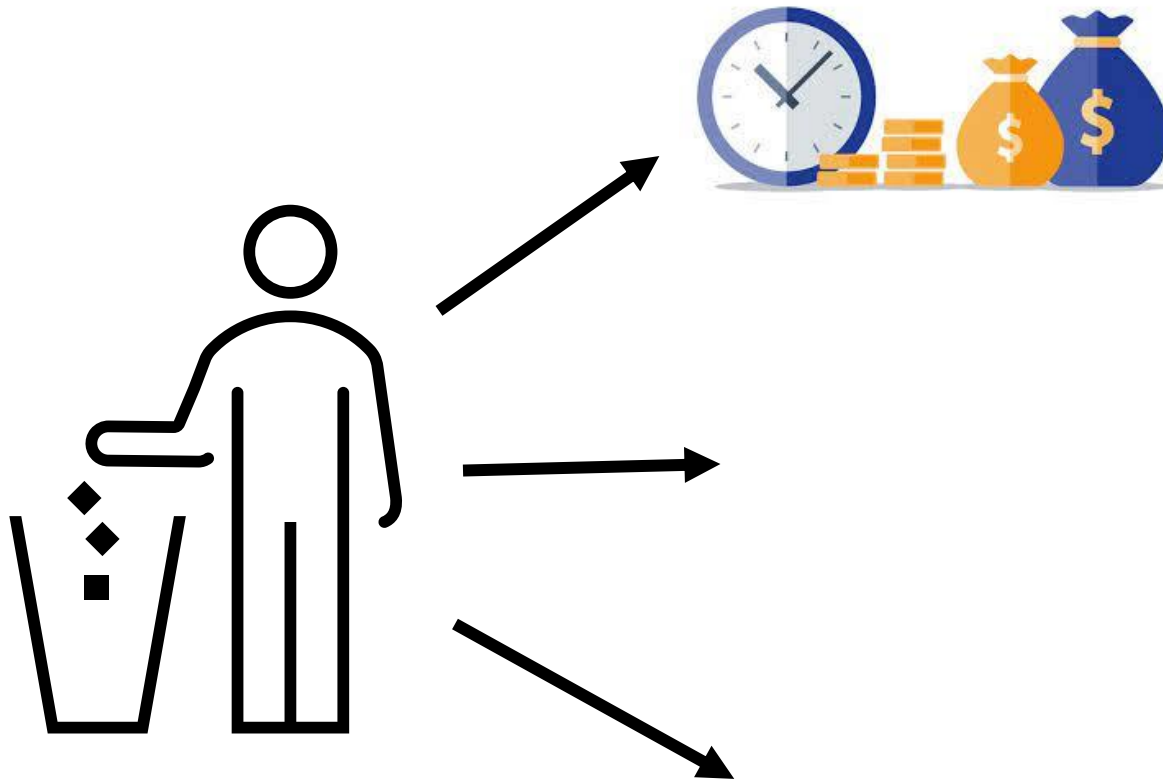
Reflexing to culture



Symptomatic
AND
asymptomatic
patients

**These cultures were unlikely to
be positive – why send them?**

Benefits of Reflexing

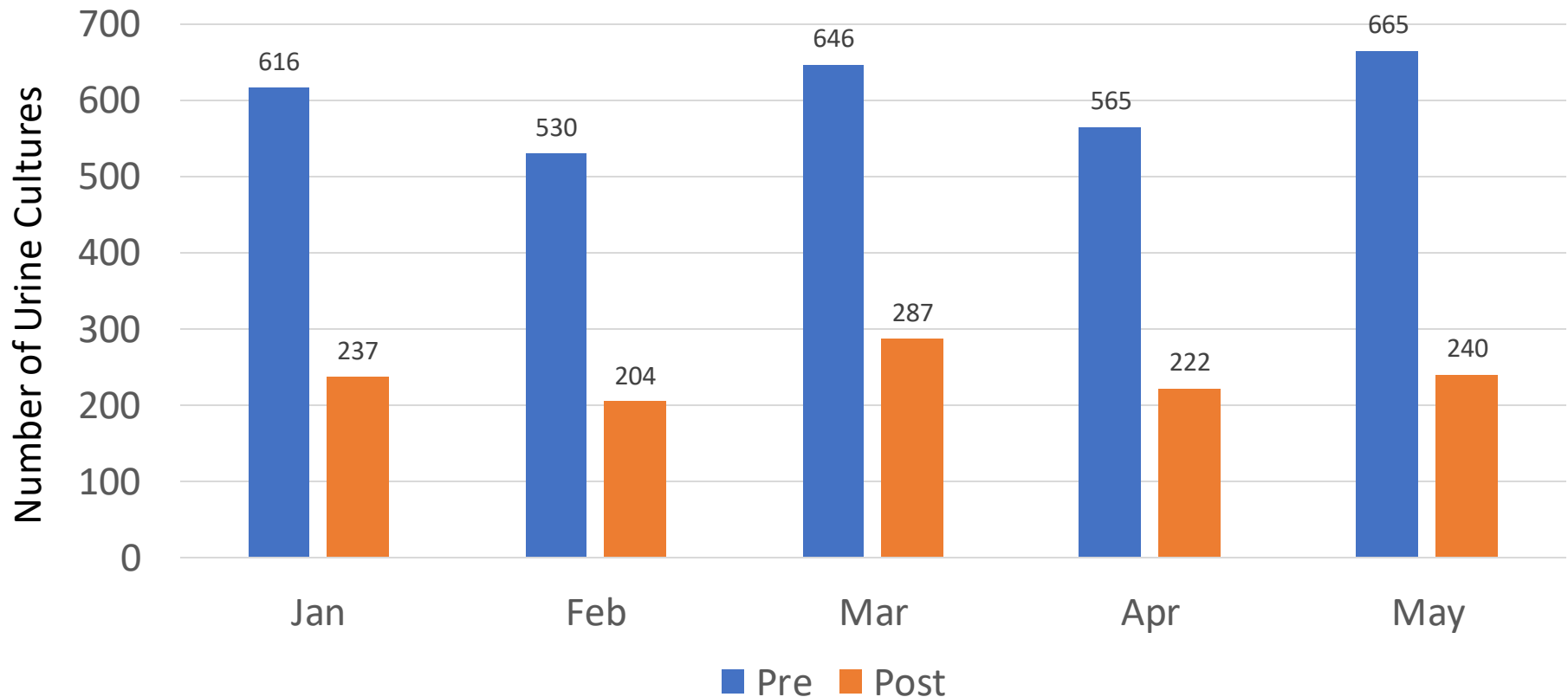


Decreased cost
and labor

Reflexing in Action!

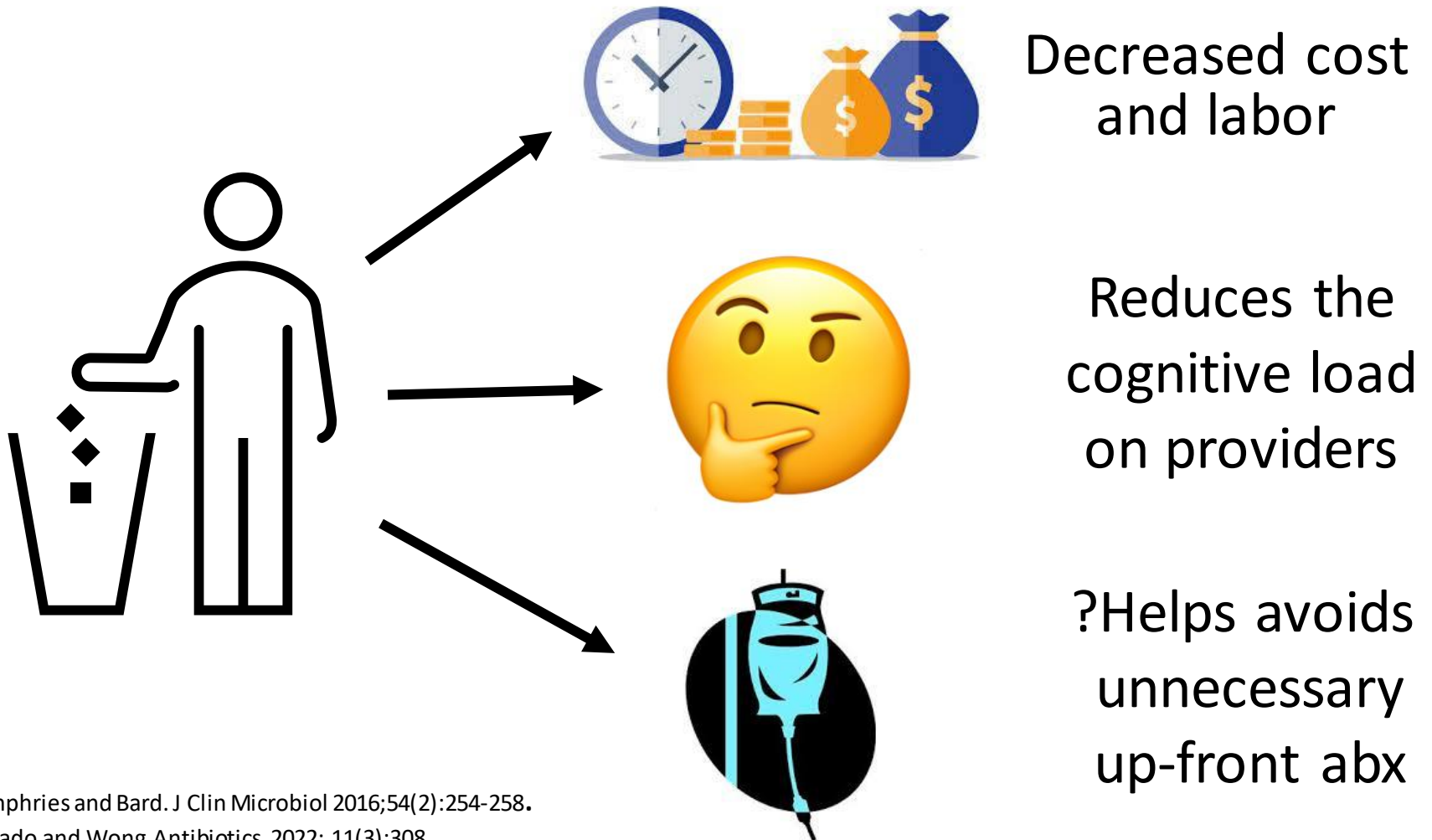


Urine cultures before & after change in UA reflex criteria



Valley Medical Center. Urine cultures reflexed from UA before and after UA criteria change. Jan-May 2021. Data complements of Zahra Kassamali-Escobar.

Benefits of Reflexing



Humphries and Bard. J Clin Microbiol 2016;54(2):254-258.

Morado and Wong. Antibiotics. 2022; 11(3):308.

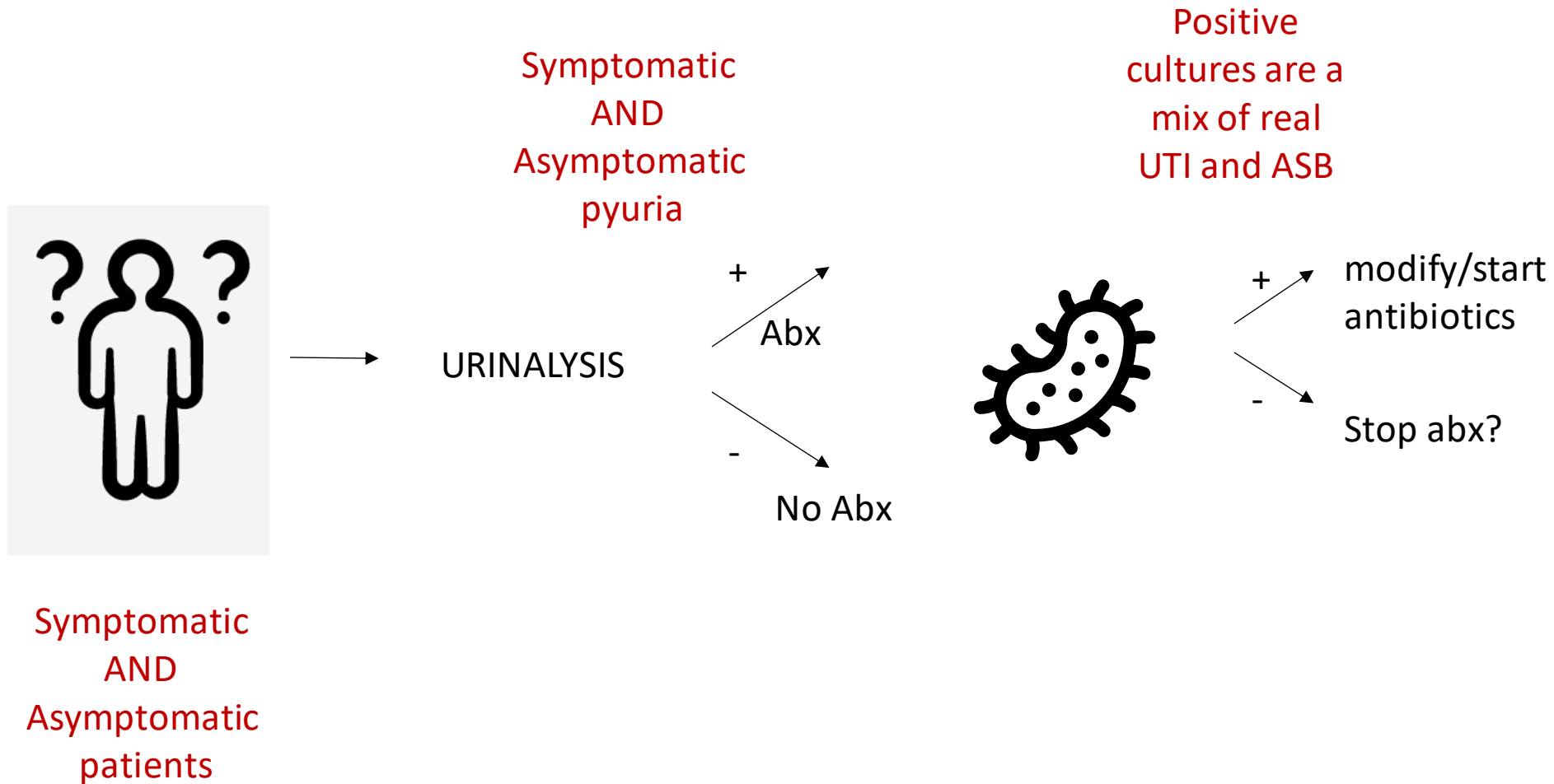
Reflex Urine Cultures are a Powerful Diagnostic Stewardship Intervention

- Sending ONLY urine samples with positive urinalysis to culture can lead to:
 1. Reduced cost + laboratory labor/time
 2. Decreased reliance on providers to correctly interpret UAs
 3. ?Provides point-of-care data to help avoid initiation of abx in patient with low risk of UTI

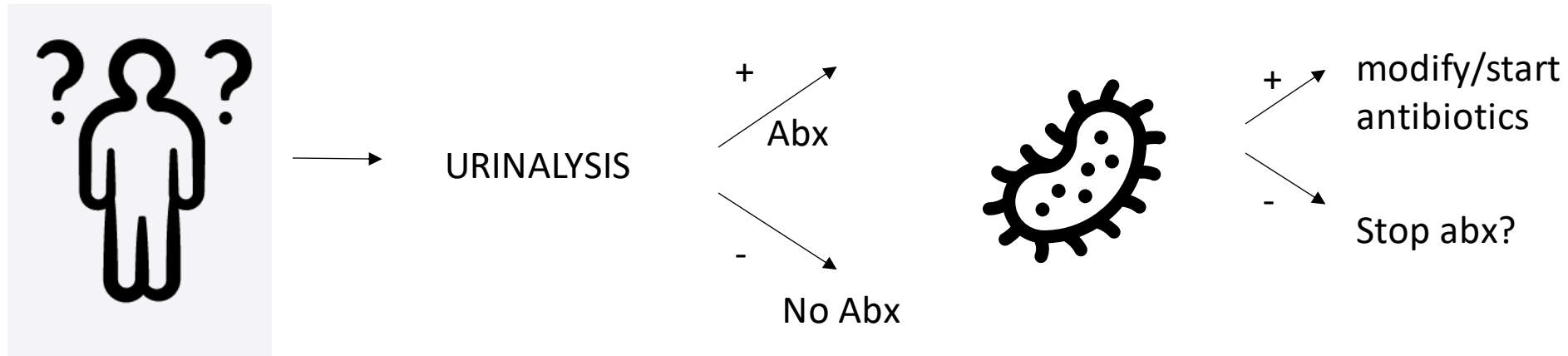
CON: Reflexing to culture is NOT an AMS intervention

Chloe Bryson-Cahn, MD

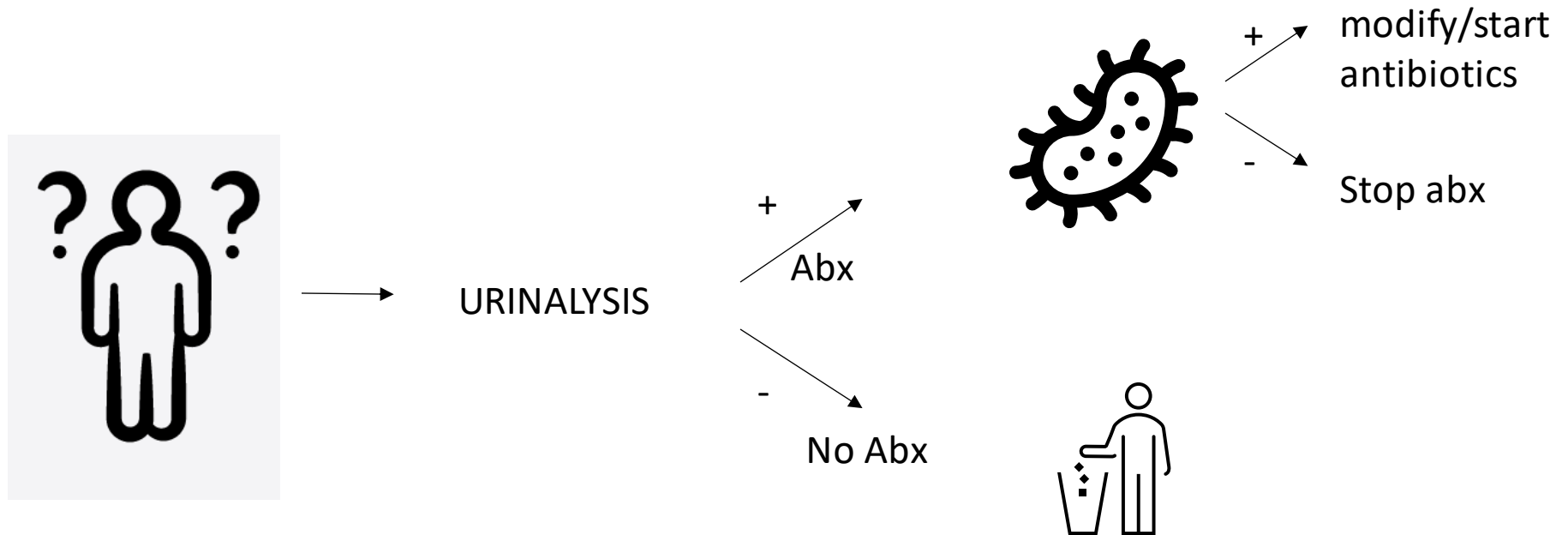
The Problem



The Problem



The Fix? Reflex the Culture



Question: Does this prevent unnecessary antibiotics?

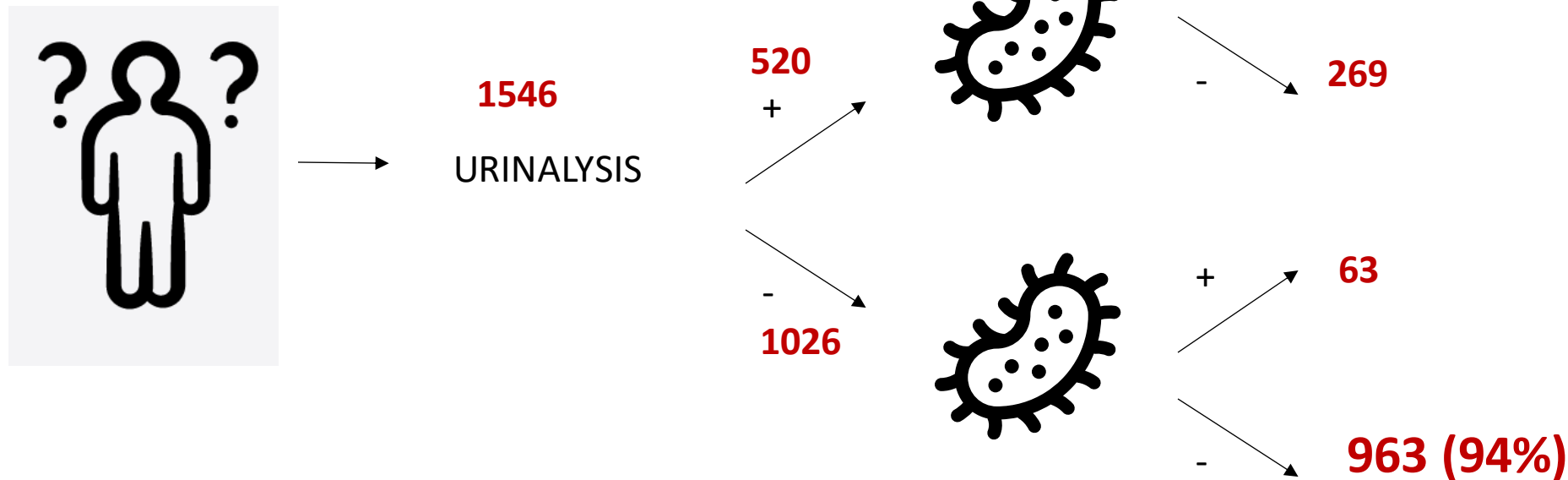
What is UA good for anyhow?

- A negative UA is very good at RULING OUT infection!
- AND very good at predicting that the culture will be negative
- That means:

Paradigm	UA	Urine Culture	Give Abx?
All pts get a UA and culture	Negative	Negative	No
All UAs get reflexed to culture only if positive	Negative	Trash Can	No

Show me the data

ED Review, 6 months
72% female, median 39 yrs
20% culture positive
Using WBC criteria >5



Show me the data

ED Review, 6 months
72% female, median 39 yrs
20% culture positive
Using WBC criteria >5

**63 Pts (4% of the total study)
had a NEGATIVE UA and a
POSITIVE culture**

**AT BEST: tossing the urine would have saved 4% of
patients from getting an antibiotic**

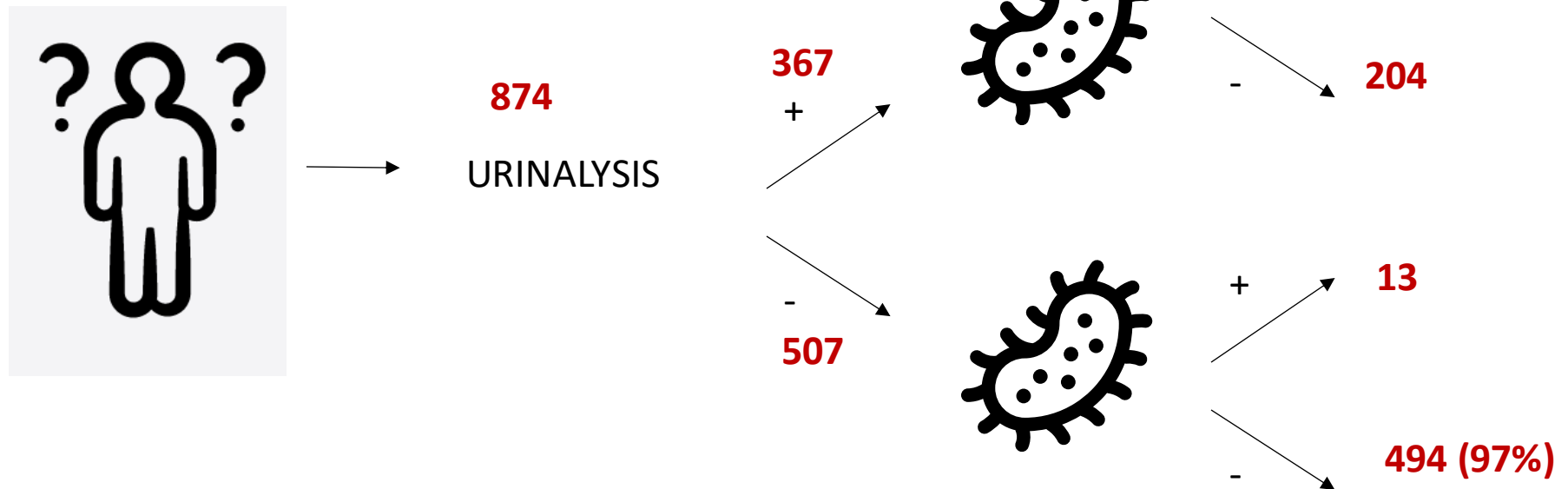
Show me the data

Urology clinic review, 2006

All male patients

20% culture positive

Using WBC criteria >5



Show me the data

Urology clinic review, 2006

All male patients

20% culture positive

Using WBC criteria >5

**13 Pts (2% of the total study)
had a NEGATIVE UA and a
POSITIVE culture**

**AT BEST: tossing the urine would have saved 2% of
patients from getting an antibiotic**

Reflex Urine Cultures are NOT an Antimicrobial Stewardship Intervention

- Trashing ONLY urine samples with negative urinalysis can lead to:
 1. Very small decreases, if any, in antibiotic prescribing
 2. Lots of your time spent creating and validating the criteria
 3. Overreliance of providers on a reflexed culture (it reflexed so it must mean it's a UTI)

What's the Verdict?

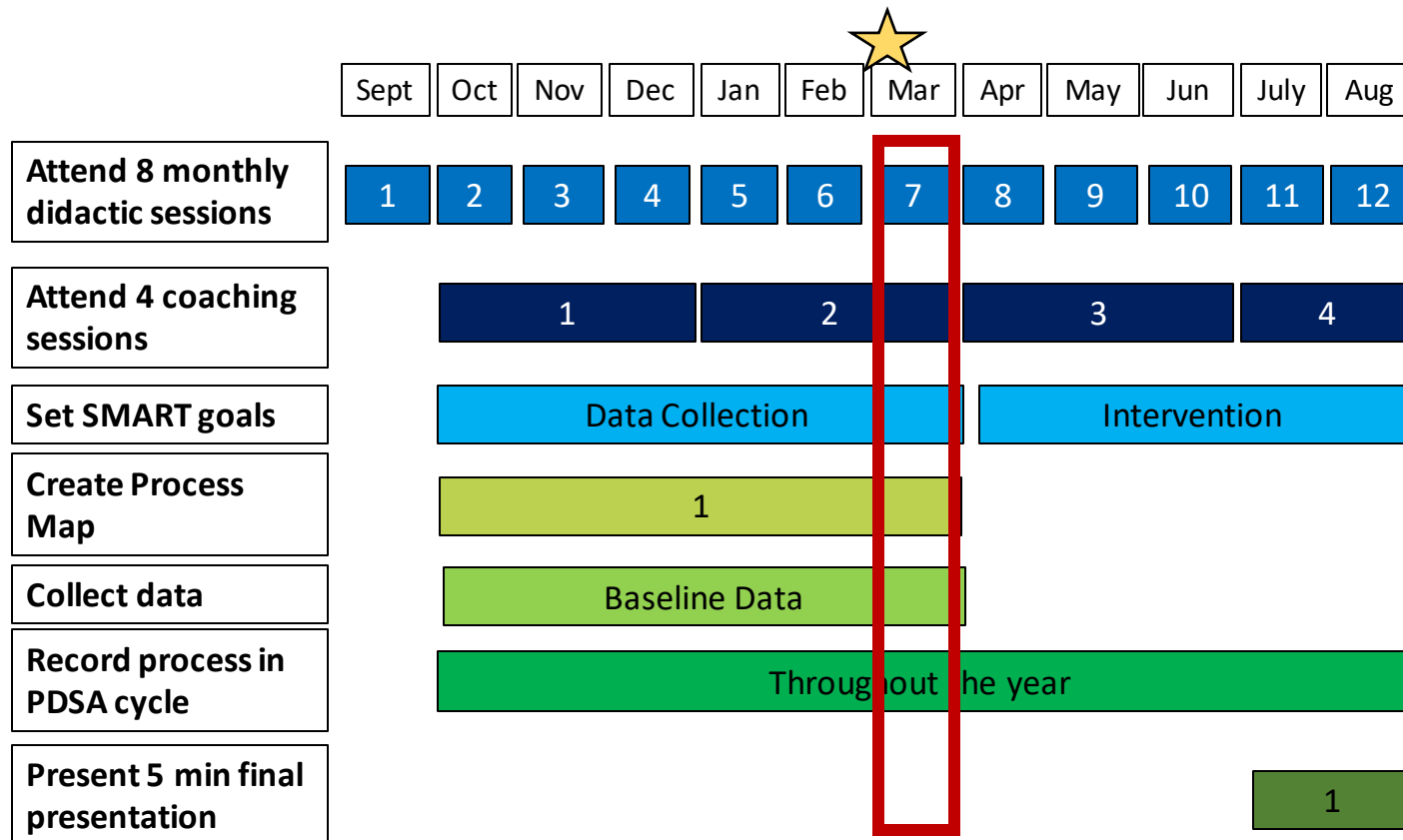
Reflexing positive UA to Urine Culture is ...

- An effective diagnostic stewardship tool
 - Decreases overall urine culturing – time and cost
- An ineffective antimicrobial stewardship tool
 - Has minimal impact on reducing antibiotic prescriptions

**WHAT IS THE GOAL OF
YOUR INTERVENTION??**

Wrap-Up

Where are we?



Homework: Plan & Do

Data Phase	Case Goal	Progress Goal	Start Date	Last Submission Date
Baseline	≥30 cases	1-2 cases/week <u>or</u> 5 cases/month	10/5/2023	3/31/2024

- ☐ Continue collecting & submitting data - *Just 10 more days to go!*
- ☐ Finalize your first SMART Goal (focus: data collection or process mapping)
- ☐ Finalize your Process Map
- ☐ Sign up for your 3rd quarter coaching session

Scott's Thoughts



**On understanding the nuances of
Reflexed Urine cultures:**

"You know what they say. Fool me once, strike one. But fool me twice...strike three."
- Michael Scott

Next Session: May 2nd, 2024

Framing the Narrative – John Lynch, MD MPH
Baseline IQIC 101 ASB Data – Alyssa Castillo, MD

Please email with any questions!

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