UWTASP

tele-antimicrobial stewardship program

October 8, 2019

Agenda

- Coag Negative Staph
- Case Discussions
- Open Discussion

UWTASP

tele-antimicrobial stewardship program

Coagulase Negative Staph
Always a contaminant…
until it's not

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Case

50 yo with no significant past medical history is found down at home & brought to the ED by ambulance. In the ED: T 95.5, HR 90, BP 90/50
Cultures done and started on vanco + pip/tazo

The next day:

Blood cultures 1/4 – Coagulase-negative staph

Case

50 yo with no significant past medical history is found down at home & brought to the ED by ambulance. In the ED: T 95.5, HR 90, BP 90/50
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The next day:

Blood cultures 2/4 – Coagulase-negative staph

Case

50 yo with **history prosthetic AVR** is found down at home & brought to the ED by ambulance. In the ED: T 95.5, HR 90, BP 90/50 Cultures done and started on vanco + pip/tazo

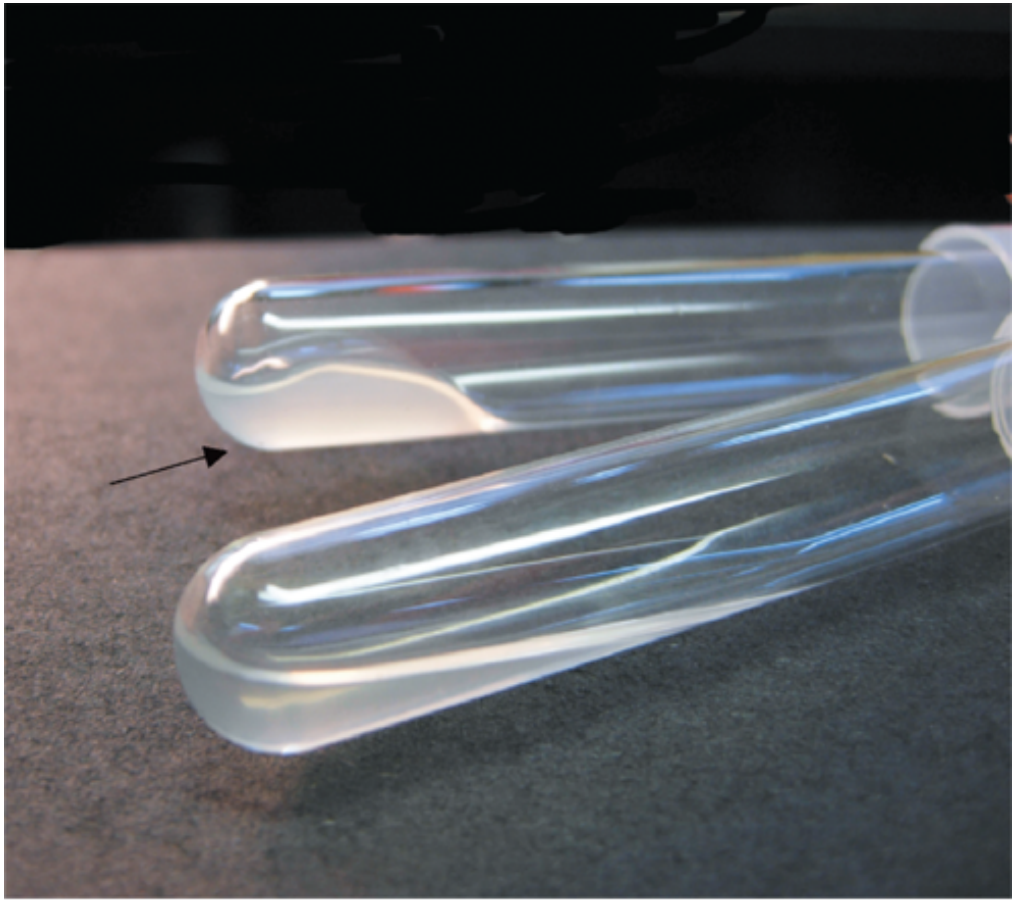
The next day:

Blood cultures 2/4 – Coagulase-negative staph

Coagulase-negative staphylococci

- Aka CoNS
- Generally considered low virulence organisms
- Common skin commensals
- Most frequent blood culture isolate
- Distinguished from *Staph aureus:*
  - coagulase test
- Propensity to form **biofilm**
- Can cause infections - specifically in foreign devices (catheters, valves, hardware), immunocompromised

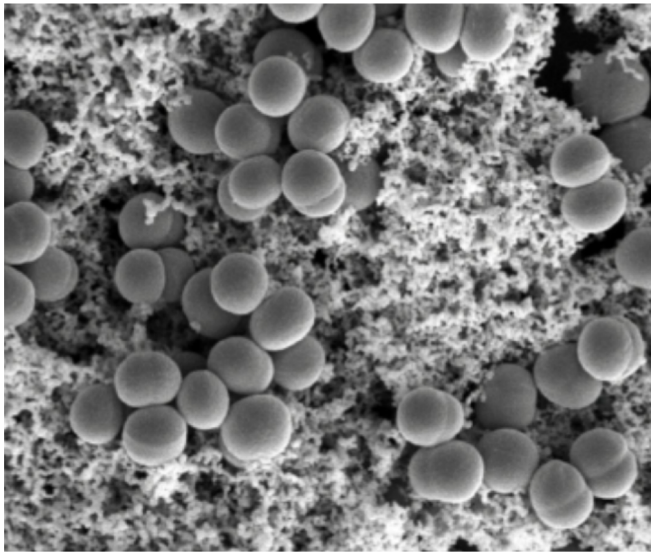
https://microbenotes.com/normal-human-microbiota/



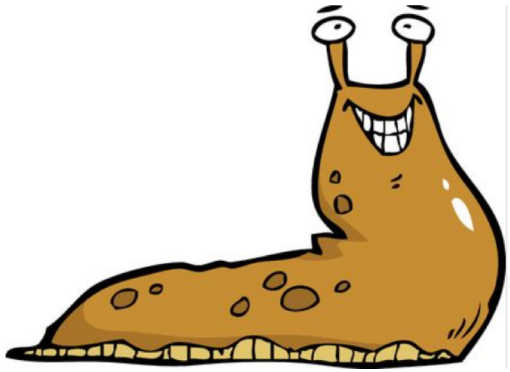
Coagulase test—Upper tube inoculated with Staphylococcus aureus; lower tube inoculated with Staphylococcus epidermidis. Arrow points to clotted plasma formed by coagulase produced by S. aureus. (Used with permission from Professor Shirley Lowe, University of California, San Francisco School of Medicine.)

CoNS causing Human Disease

- *Staphylococcus epidermidis* (75% of clinical isolates)
- *S. saphrophyticus* (UTI in women)
- *S. hominis*
- *S. haemolyticus*
- *S. capitis*
- *S. warneri*
- *S. simulans*
- *S. lugdunensis*



Staphylococcus lugdunensis

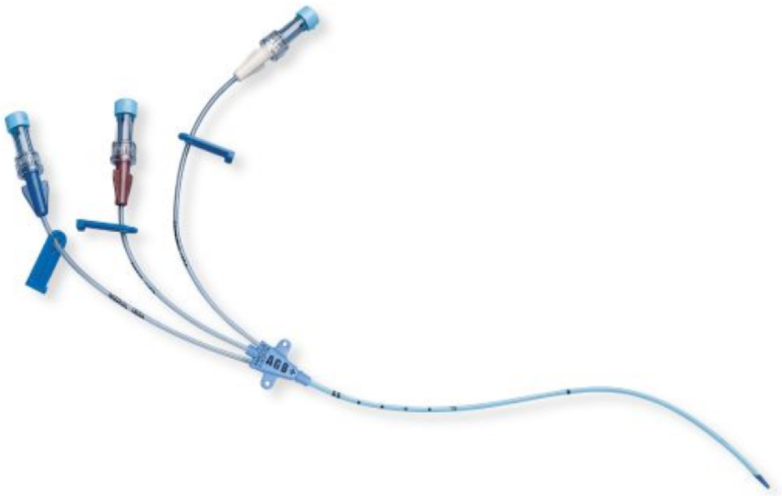


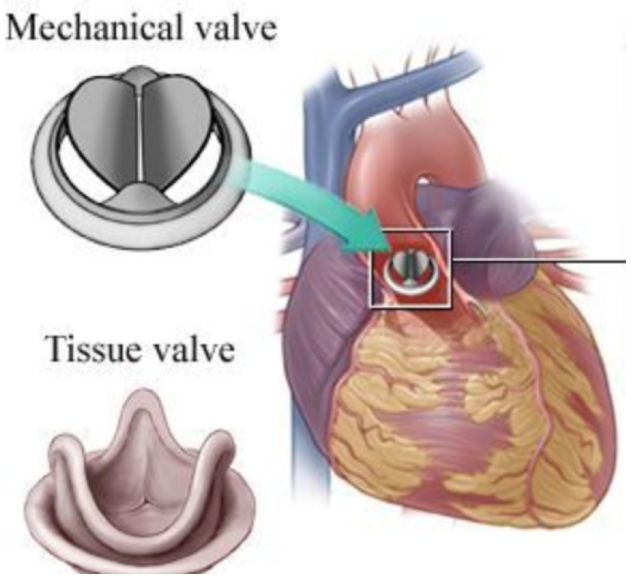
- Aka Slug
- Aka the real deal
- Often a skin colonizer
- But…can causes disease similar to *Staph aureus*
  - serious bloodstream infections
  - infective endocarditis
  - osteomyelitis
- Remains very susceptible to abx (including oxacillin)

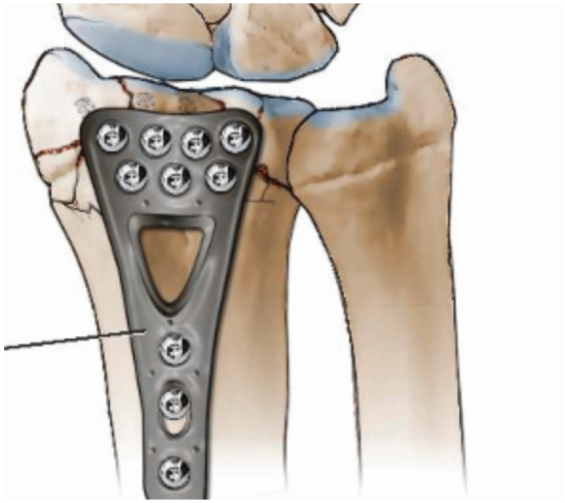
Resistance in CoNS

- Reliably sensitive to vancomycin, often the treatment of choice
- Can carry the mecA gene
  - Encodes resistance to beta-lactams (same as *S. aureus*)
  - Can be heterogeneously expressed
  - *Bottom line*: if methicillin susceptible and serious infection, do mecA testing

When Biofilm Matters







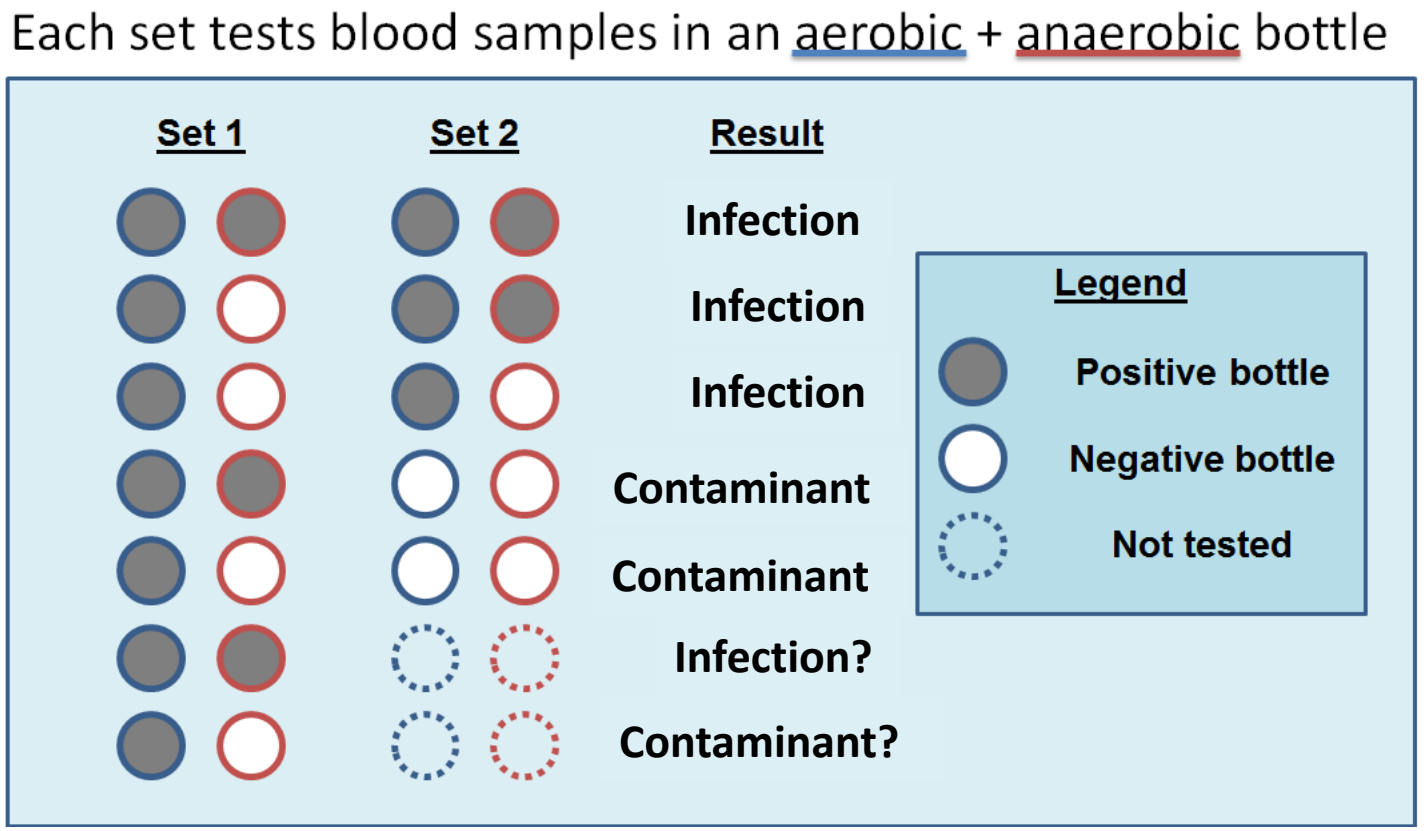
So how can we tell if it is real?

Bloodstream infections

- **STEP 1**: Which bottles are positive?

Contamination vs infection?

Common skin flora: *Staphylococcus* spp (CoNS), *Streptococcus* spp, *Corynebacterium* spp and *Propionibacterium* spp, *Bacillus* spp



So how can we tell if it is real?

Bloodstream infections

- **STEP 1**: Which bottles are positive?
- **STEP 2**: Species level identification
  - *Staph epi* from 1st set, *Staph hominis* 2nd set OR
  - *Staph epi* from 1st set, *Staph epi* from 2nd set
- **STEP 3**: Patient characteristics
  - Symptoms of infection?
  - Indwelling catheter, other devices
- **STEP 4**: Compare susceptibility patterns?[1]

[1]Camerer, JCM, 2011

Case

50 yo, no PMH, found down, cold and hypotensive. Started on vanco + pip/tazo

The next day:

Blood cultures 1/4 – Coagulase-negative staph

What do you think?

1) Contaminant

2) Not worried, but want more info

3) Worried, want more info

Case

50 yo, no PMH, found down, cold and hypotensive. Started on vanco + pip/tazo

The next day:

Blood cultures 2/4 – Coagulase-negative staph

What do you think?

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Case

50 yo, **prosthetic AVR**, found down, cold and hypotensive. Started on vanco + pip/tazo

The next day:

Blood cultures 2/4 – Coagulase-negative staph

What do you think?

1) Contaminant

2) Not worried, but want more info

3) Worried, want more info

Summary

- Coagulase-negative staph are super common
- Even the ones just colonizing the skin can harbor mechanisms of resistance
- Contamination of cultures occurs frequently
- Figure out which bottles are positive, patient characteristics, and if needed, species identification
- Don’t forget about *Staph lugdunensis*