UW TASP tele-antimicrobial stewardship program | echo

September 12, 2017

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Agenda

- Paul Pottinger's Didactic: *Endocarditis*
- Case Discussions
- Open Discussion

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Infective Endocarditis

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September 12, 2017

Disclosures

- No financial conflicts of interest
- Everything we discuss is QI, thus protected from legal discovery under WA State Code

Question…

Have you seen a patient with endocarditis within the last year?

A. Yep
B. Nope
C. I'm not sure…

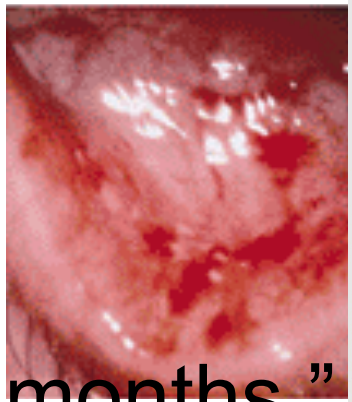
A Tragic Case… A Warning to All

HPI

- A 24 y/o medical student c/o 2 weeks of fever, malaise, lumbar pain, palpitations, HA, DOE.
- Rheumatic heart disease…little dental care.
- Febrile, tachycardic, 3/6 SEM at LUS

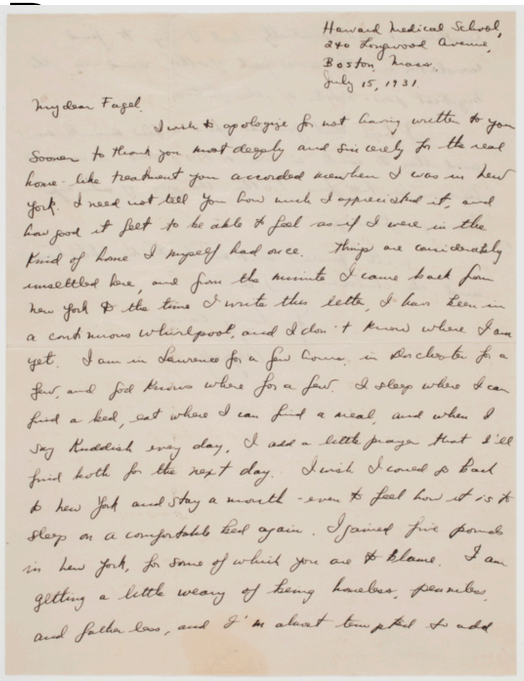
Blood Cultures

Strep viridans species



Prognosis

"I shall be deal within 6 months."



Harvard Medical School,
240 Longwood Avenue,
Boston, Mass.
July 15, 1931

My dear Fagel

I wish to apologize for not having written to you sooner to thank you most deeply and sincerely for the real home-like treatment you accorded me when I was in New York. I need not tell you how much I appreciated it, and how good it felt to be able to feel as if I were in the midst of home I myself had once. Things are considerably unsettled here, and from the minute I came back from New York to the time I write this letter, I have been in a continuous whirlpool, and I don't know where I am yet. I am in Lawrence for a few hours, in Rochester for a few, and God knows where for a few. I sleep where I can find a bed, eat where I can find a meal, and when I say Kaddish any day, I add a little prayer that I'll find both for the next day. I wish I could go back to New York and stay a month - even to feel how it is to sleep on a comfortable bed again. I gained five pounds in New York, for some of which you are to blame. I am getting a little weary of being homeless, penniless and fatherless, and I'm almost tempted to add

Unique Physiology

- Valves thin, but tough
- Turbulent flow
- Injury yields TF exposure
- Poor tissue blood supply

Infective Endocarditis

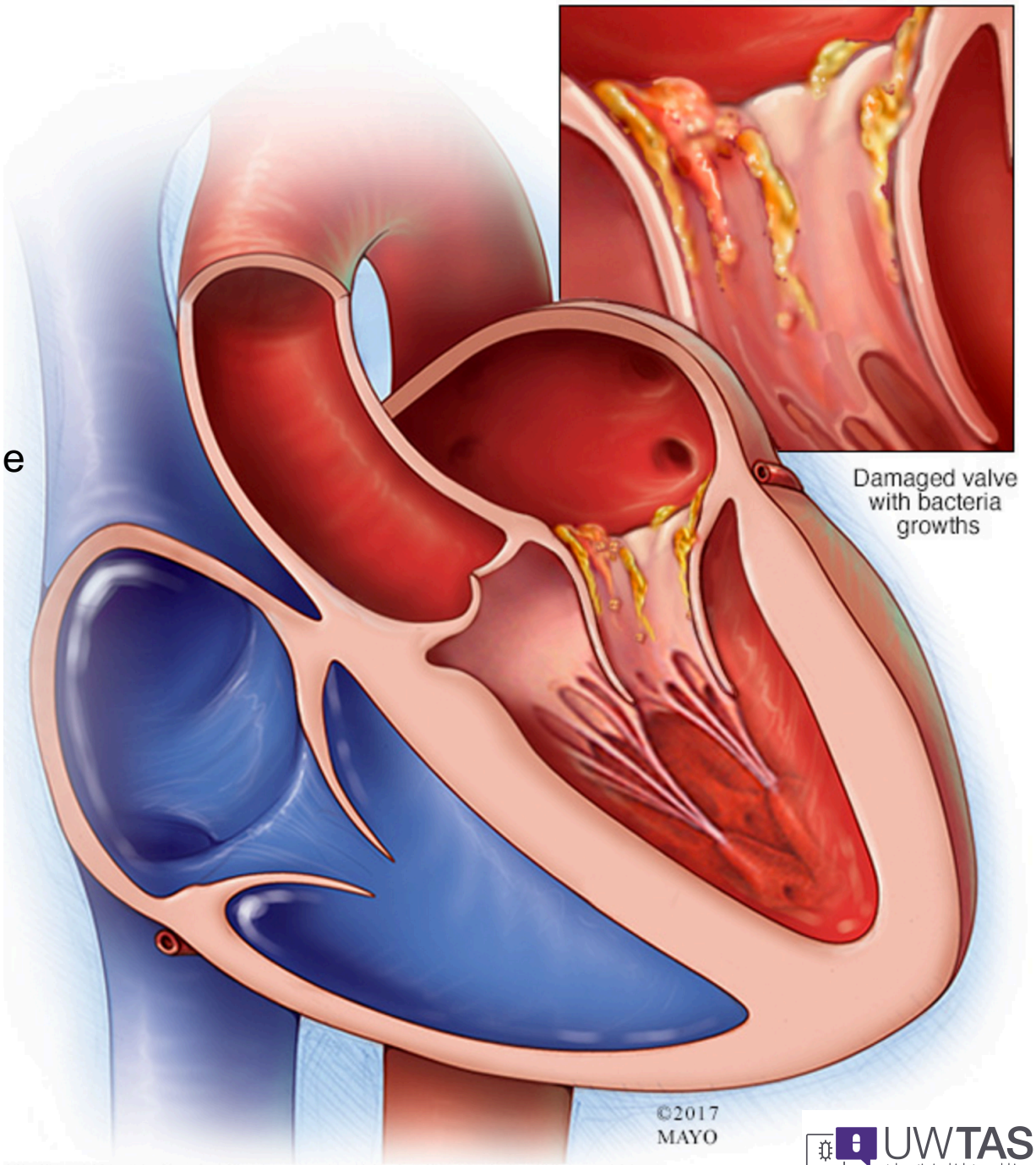
- Any / all valves susceptible
- Most any germ can do it
- Microbes live in fibrin clusters (“vegetations”)

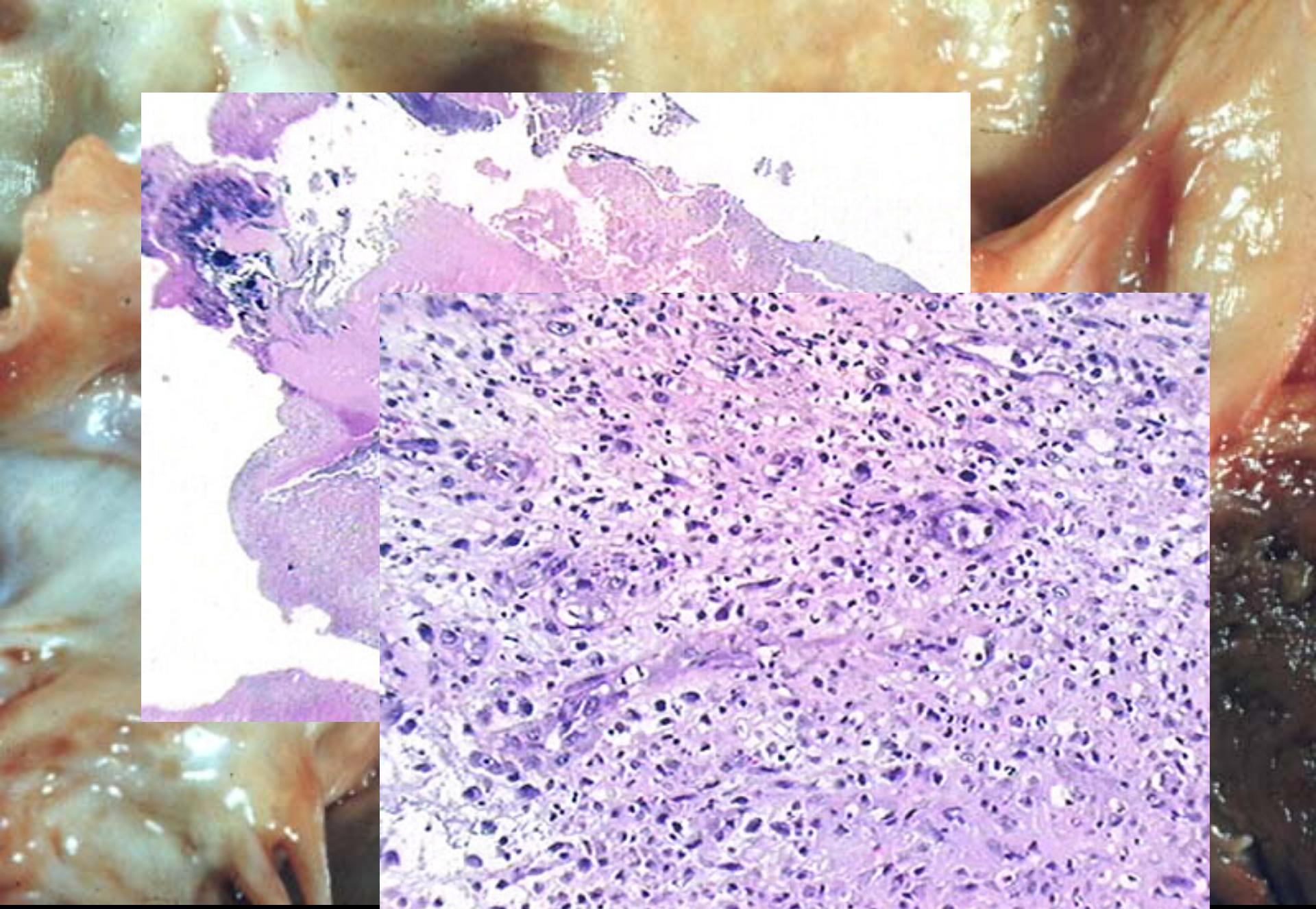
Local Consequences

- Valve destruction
- Abscess
- Heart block
- Rupture

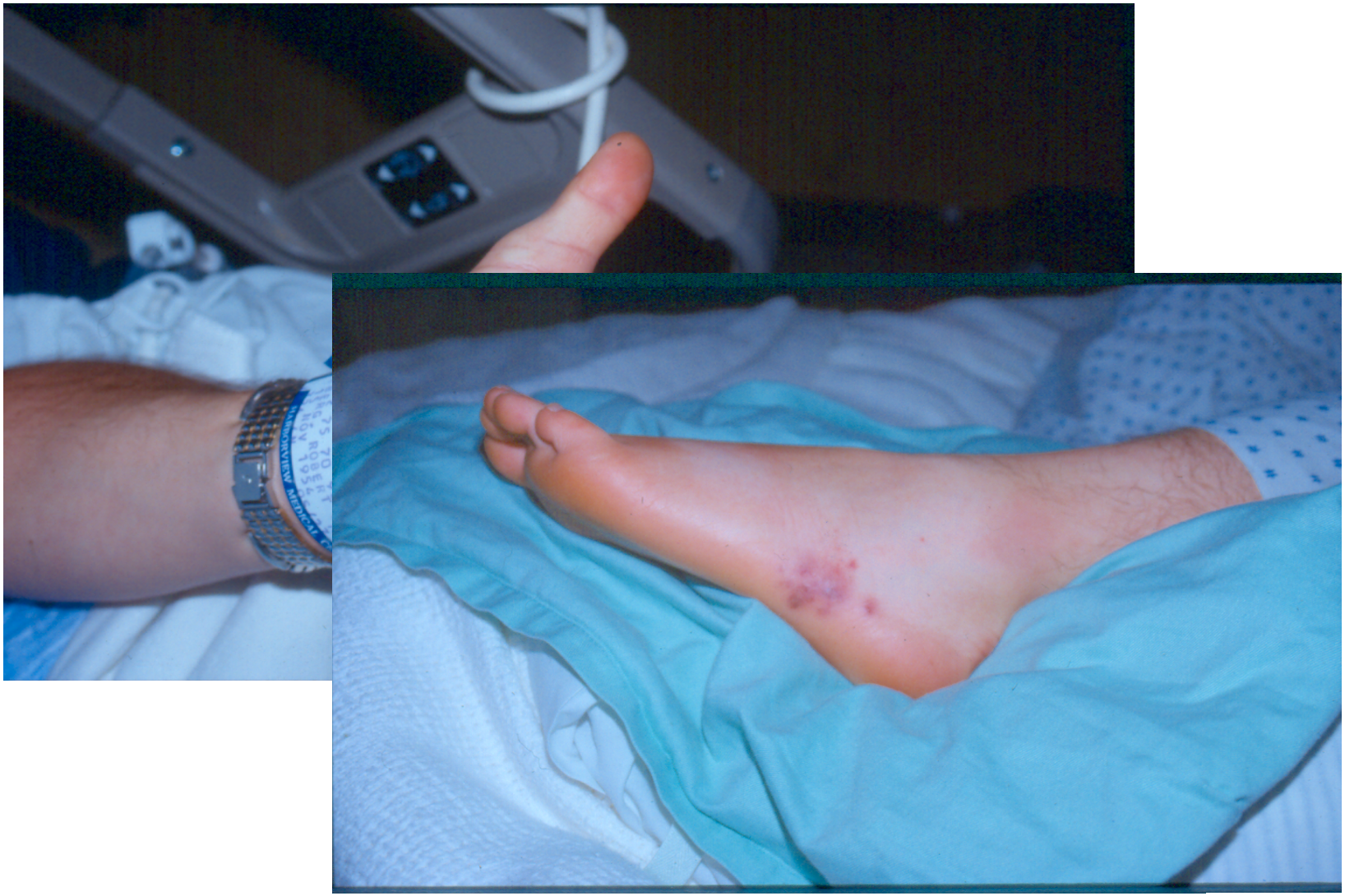
Distant Sequelae

- Embolization virtually anywhere

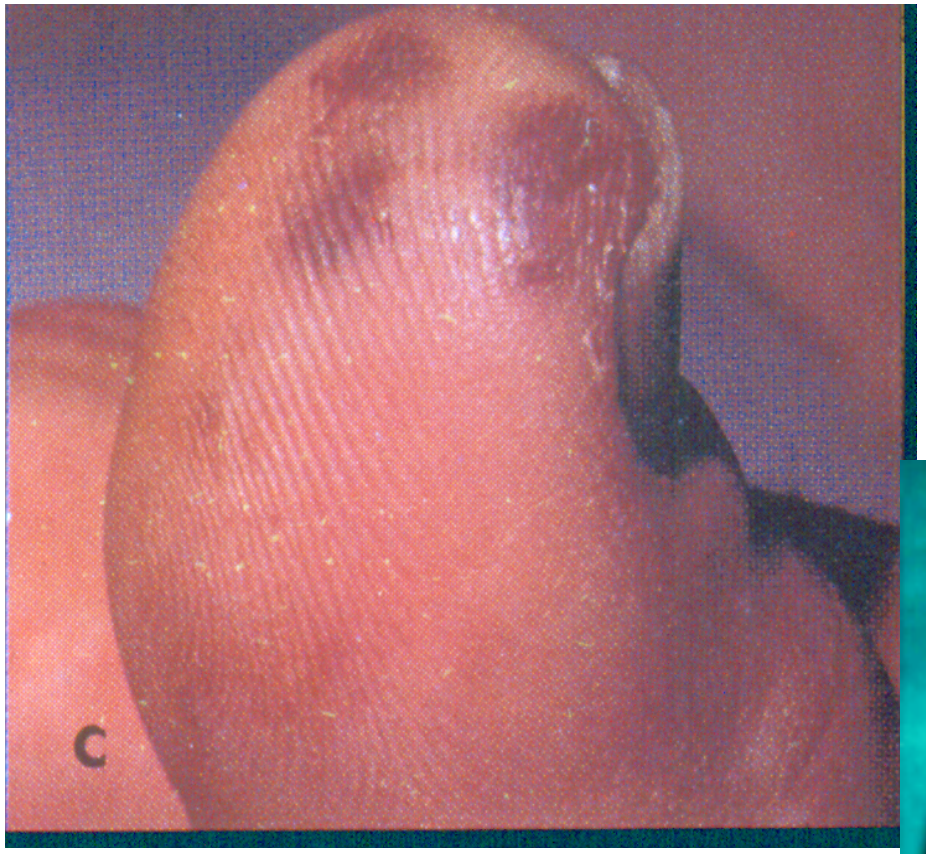


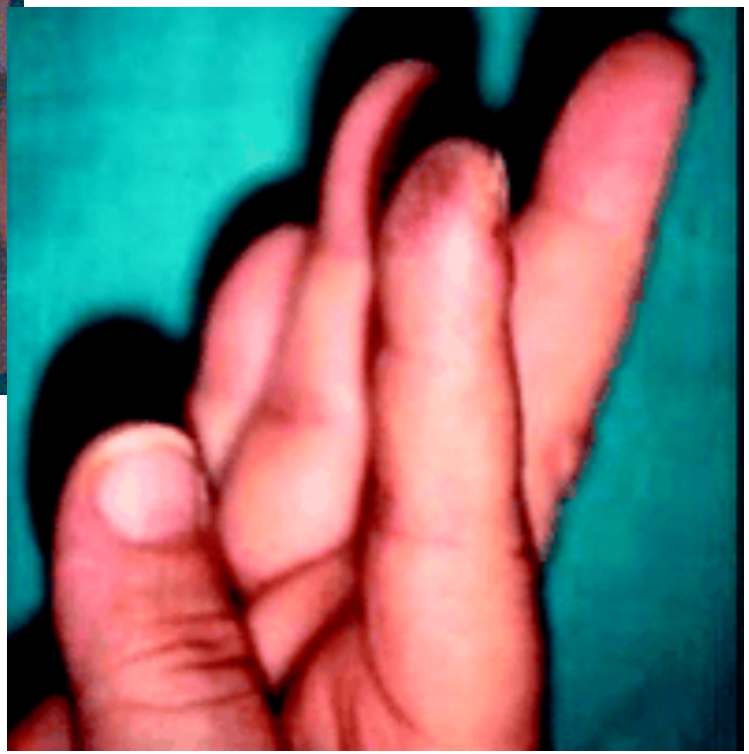


Janeway Lesions



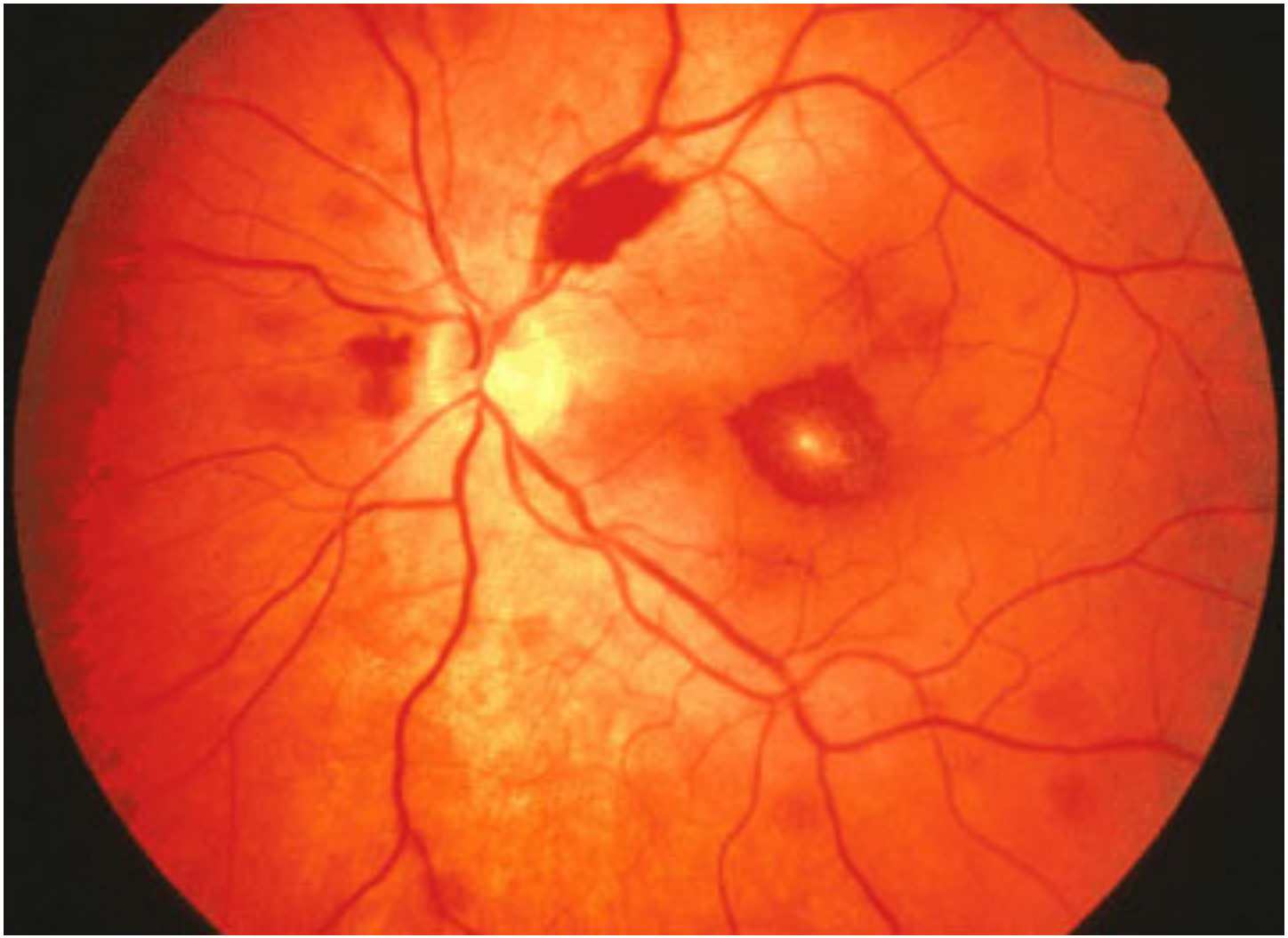
Osler's nodes





Habib G. *Heart* 2006;92: 124-30.

Roth Spot



www.kellogg.umich.edu/theeyeshaveit

Endocarditis: *Common Questions…*

- Should I culture him or hang abx STAT?
- Which empiric antibiotics should I use?
- Does he need an echo? Which kind?
- Should I call ID? Cardiology? Surgery?

Host, Bug, Drug factors…
Sanford Guide a reliable reference

- Always try to grab *at least* one set first.
- Should I culture him or hang abx STAT?
- If pt stable, prefer to culture x 3-6 sets pre-Rx.
- Super helpful for prognosis, abx planning.
- Ideal to culture with fevers.
- If valve dysfunction or emboli, *Rx immediately*.

Modified Duke Criteria

Major criteria

- **Blood culture**
  - **Typical organism from 2 separate blood cultures**
    - **E.g. Viridans streptococci, *S. gallolyticus*, HACEK, *S. aureus*, or community acquired-enterococci**
  - **Microorganisms consistent with IE from persistently positive blood cultures:**
    - **≥ 2 cultures > 12 hours apart, or all 3 or a majority of ≥ 4 cultures with first and third ≥ 1 hour apart**
  - ***Coxiella burnetii*: single culture or anti-phase 1 IgG > 1:800**
- **Echocardiographic evidence**
  - **Oscillating mass attached to valve or supporting structure**
  - **Abscess**
  - **New dehiscence of prosthetic valve**
  - **New valvular regurgitation**

Modified Duke Criteria

Minor criteria

- **Predisposing heart condition or IDU**
- **Fever** > 38º C
- **Vascular phenomena**: arterial emboli, septic pulmonary infarcts, mycotic aneurysm, intracranial hemorrhage, conjunctival hemorrhages, and Janeway lesions
- **Immunologic phenomena**: glomerulonephritis, Osler's nodes, Roth's spots, and rheumatoid factor
- **Microbiologic or serologic evidence**

Modified Duke Criteria

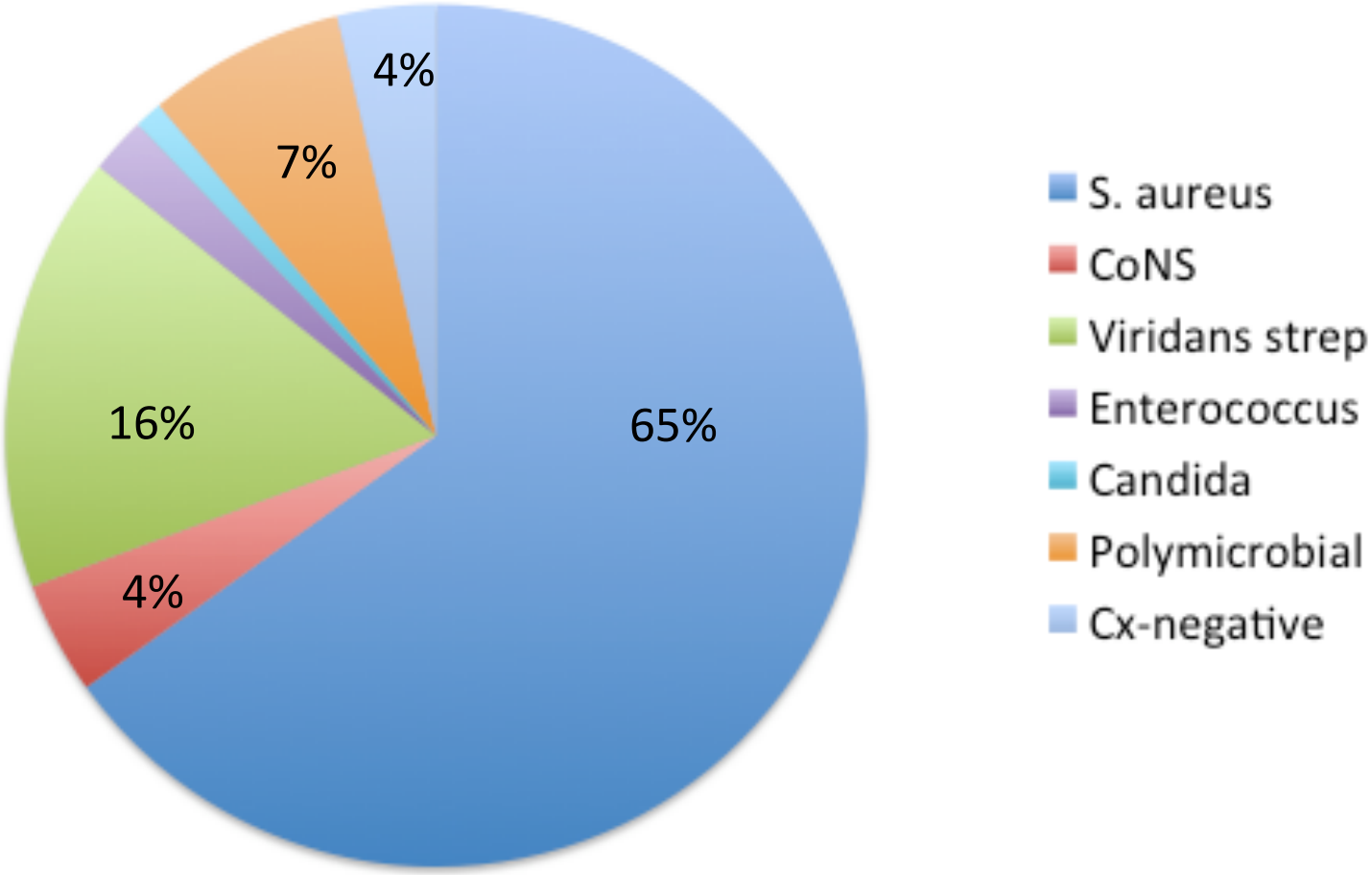
- Definitive infectious endocarditis
  - Pathologic criteria
  - Clinical criteria
    - **2 major**
    - **1 major and 3 minor**
    - **5 minor**
- Possible infectious endocarditis
    - **1 major and 1 minor**
    - **3 minor**
- Rejected infectious endocarditis
  - Alternative diagnosis
  - Resolution of symptoms < 4 days with abx

Clin Infect Dis 2000;3-:633-8 ACC/AHA Endocarditis Guidelines 2015

- Which empiric antibiotics should I use?

Native Valve	
No IVDU	IVDU
Strep (Viridans, others) *Enterococci* *Staph (Coag - or aureus)*	*Staph aureus*
PCN or AMP + Nafcillin or Oxacillin + Gentamicin	Vanco or Linezolid or Daptomycin

Endocarditis in Injection Drug Users Microbiology

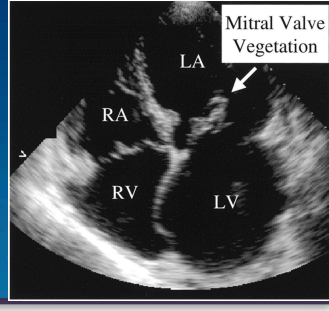


Jain V, *J Infect* Aug 2008; 57(2): 132.

- Which empiric antibiotics should I use?

Prosthetic Valve	
Early Post-Op	Late Post-Op
Staph *(Coag - or aureus)* *GNRs, Diphtheroids* *Fungi*	*Coag – staph > aureus* *Viridans strep* *Enterococci*
Vanco + Gentami + Rifampi	

- Treat IE with IV abx.
- Use PO only in salvage / harm reduction.
- Focus abx per C&S.



YES! TTE at a minimum. Roles for TEE:

1. Prosthetic valves
- Does he need an echo? Which kind?

2. Suspected complication
   (e.g. perivalvular abscess)

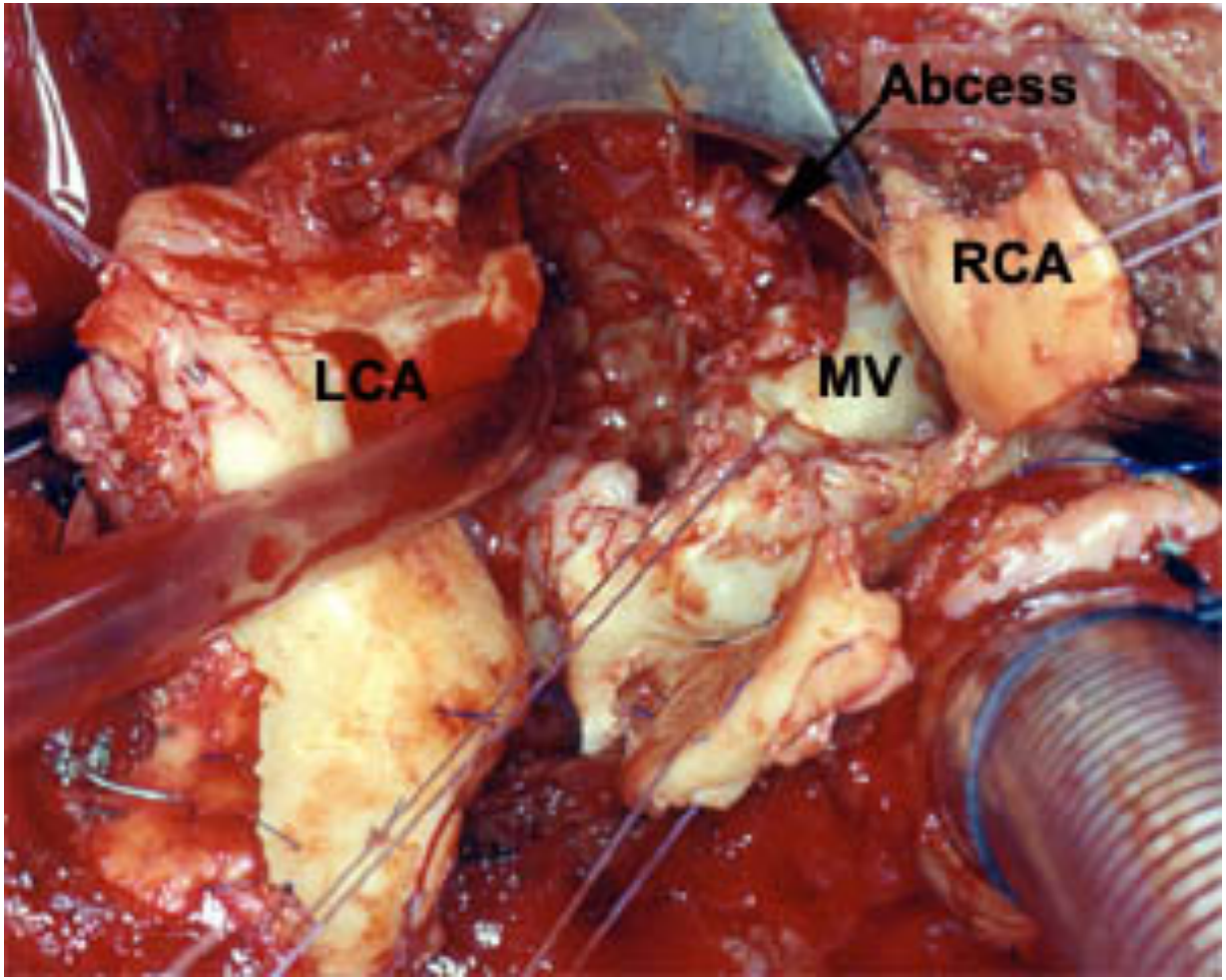
3. Those with negative or non-diagnostic TTE and "Possible Endocarditis"

4. ? Negative TTE & *S. aureus* bacteremia

- Ideally, call ID every time. Assistance with drug, dose, duration, monitoring.
- Call Cards if any hint of CHF, emboli, conduction block.

- Should I call ID? Cardiology? Surgery?
  - Indication for urgent surgery: Acute CHF.
  - Surgery “ASAP” if abscess, block, vegetation large or pedunculated, valve dysfunction.

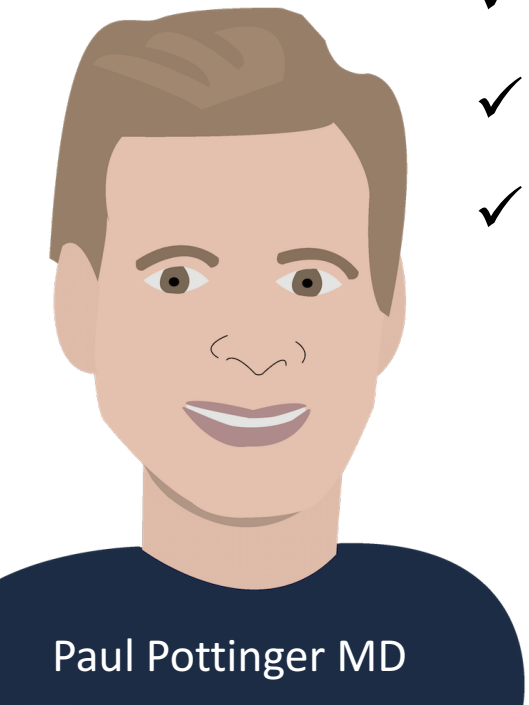
Staph aureus Perivalvular Abscess



Conclusions

Endocarditis: *Deadly Serious Business*

- ✓ Time is Tissue… make that diagnosis ASAP
- ✓ Multiple BCx's helpful
- ✓ IV therapy is the way to go
- ✓ Stewardship options for treatment limited
- ✓ Stewardship options HUGE for prevention… will discuss next time.



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