



# VALVULAR HEART DISEASE- 2

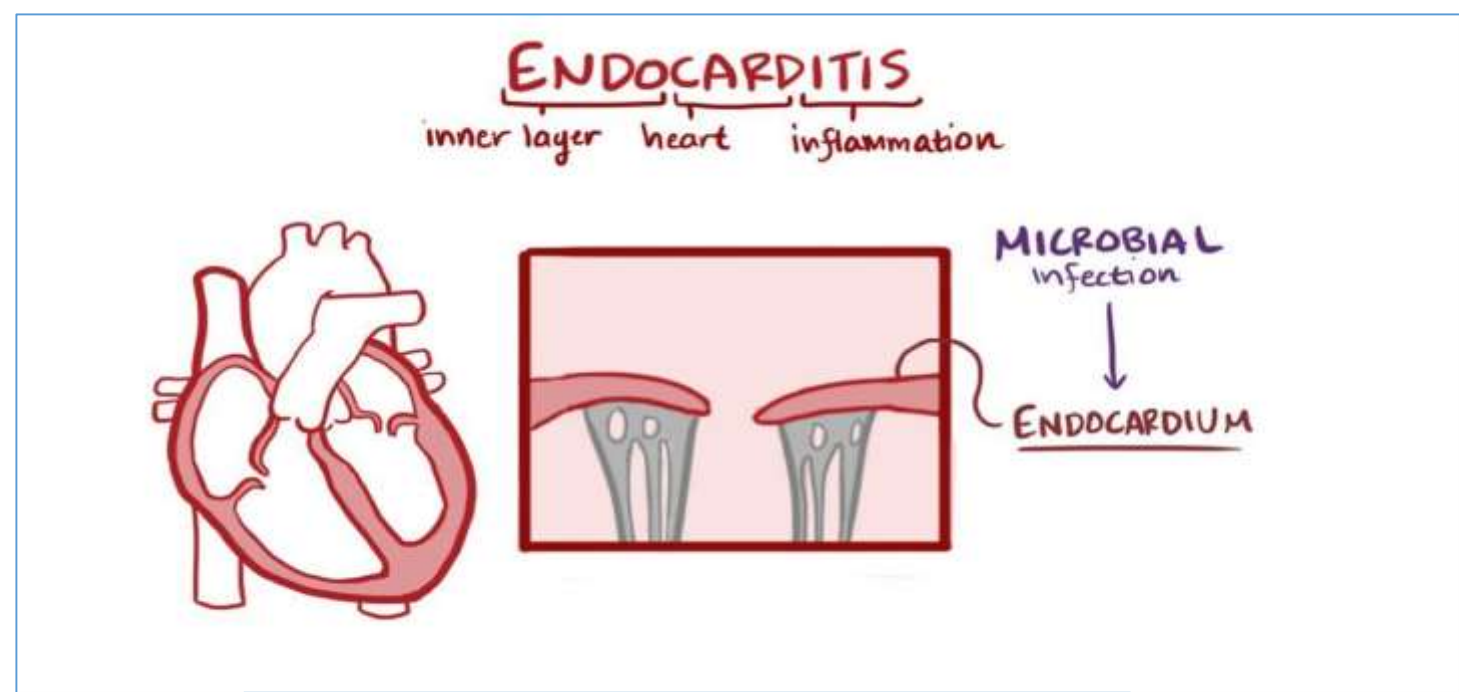
## Infective Endocarditis

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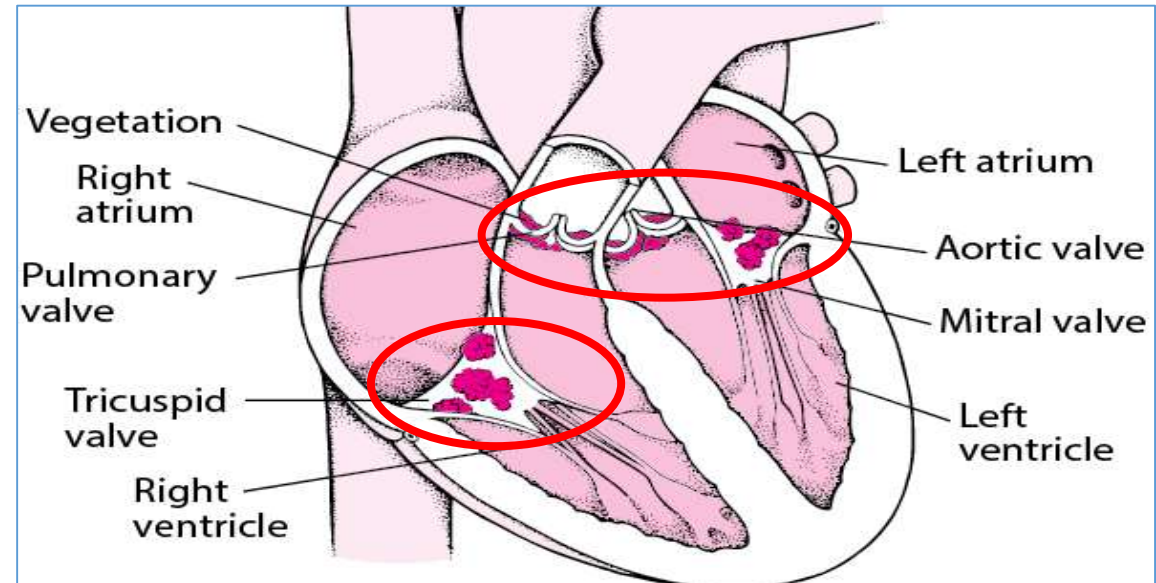
# Infective Endocarditis (IE)

- Microbial (mostly bacterial\*) invasion of heart valves and **endocardium**
- bulky, friable **vegetations** (necrotic debris+ thrombus+ organisms).

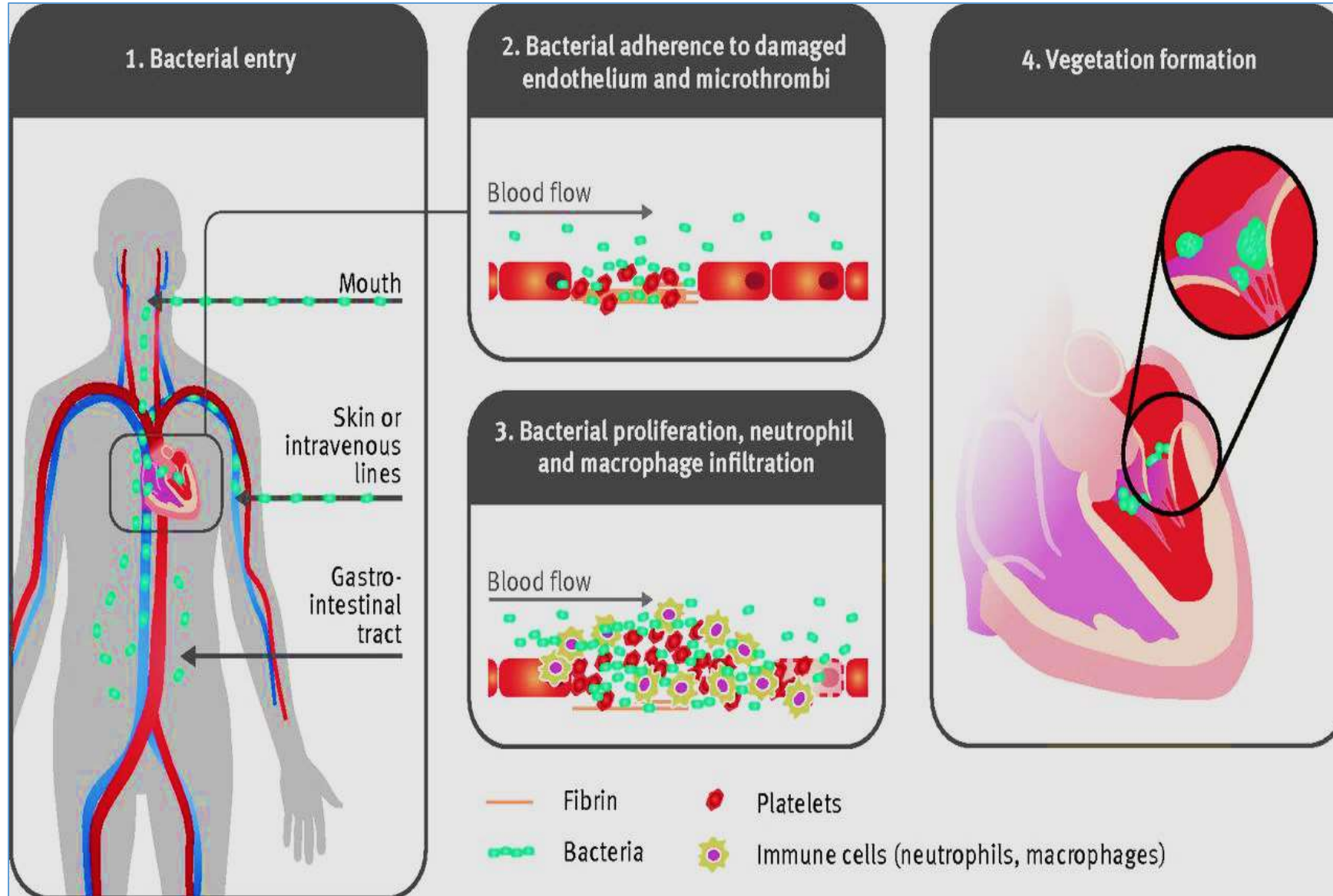
\* others include: fungi, rickettsiae; and chlamydia



Infection of heart valves and endocardium

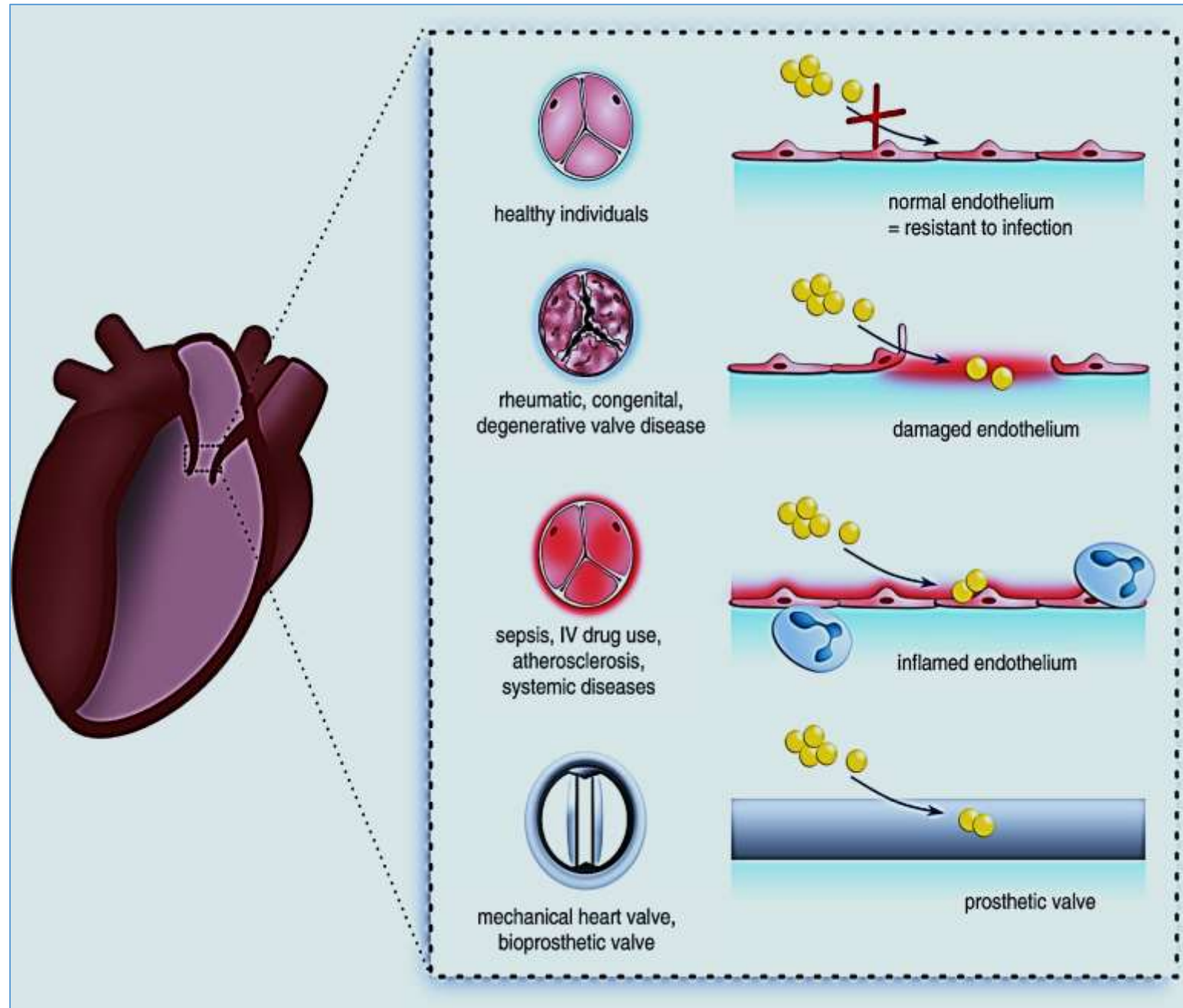


# Infective Endocarditis (Infection of heart valves and endocardium)



# Infective Endocarditis- Risk Factors

- Congenital heart disease
- Acquired heart disease (including rheumatic fever)
- Indwelling vascular catheters
- Intra-cardiac devices & prostheses
- Immunodeficiency
- I.V. drug use/ abuse
- Septicemia
- ? Dental procedures (in patients with risk factors)



# Infective Endocarditis (IE)

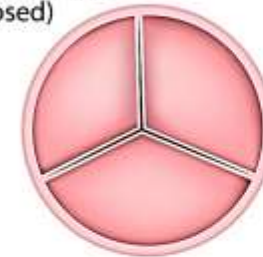
Classified into **acute** and **subacute** based on:

- 1- the **virulence** of microorganism
- 2- presence of **underlying** cardiac disease



## HEART VALVE DISEASE

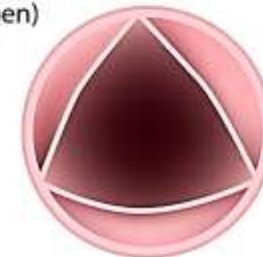
Normal valve (closed)



Valve stenosis (closed)



Normal valve (open)



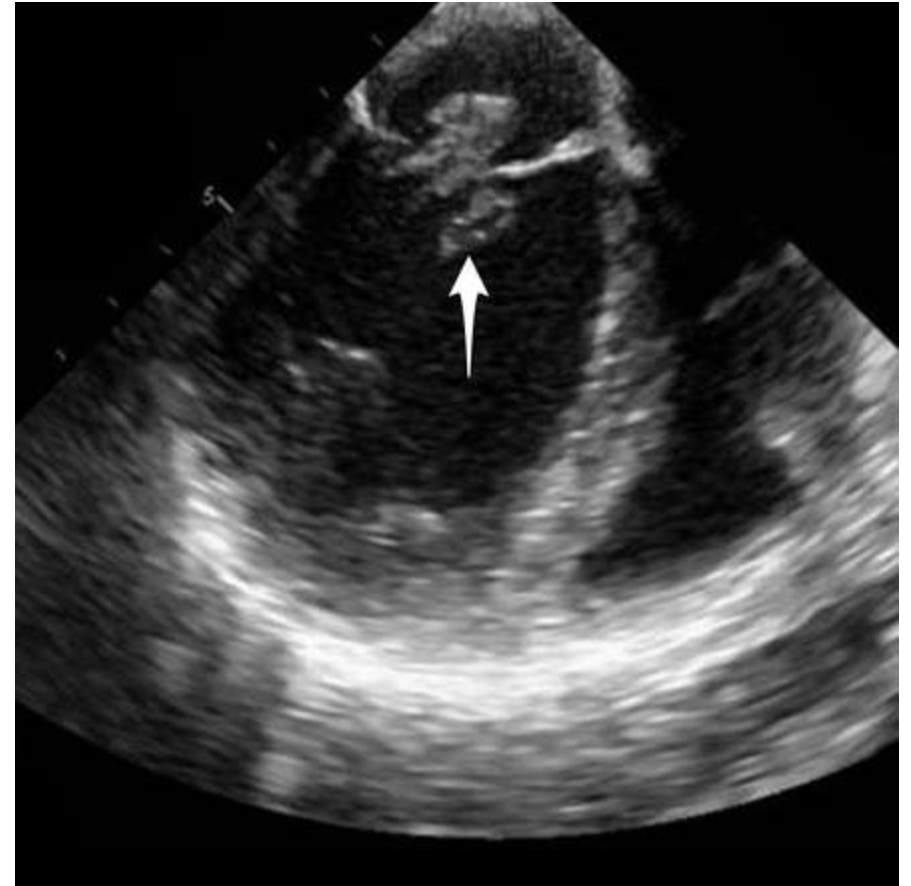
Valve stenosis (open)



| Feature                    | <b>Acute</b> endocarditis       | <b>Subacute</b> endocarditis                               |
|----------------------------|---------------------------------|--|
| Virulence                  | highly <b>virulent</b> organism | low virulent organism                                      |
| Most common organism       | Staph. aureus                   | Streptococcus viridans                                     |
| Underlying cardiac disease | previously normal valve         | previously abnormal valve (scarred or deformed)            |
| Clinical course            | rapidly developing              | Insidious disease  |
| Outcome                    | High morbidity and mortality    | most patients recover after appropriate antibiotic therapy |

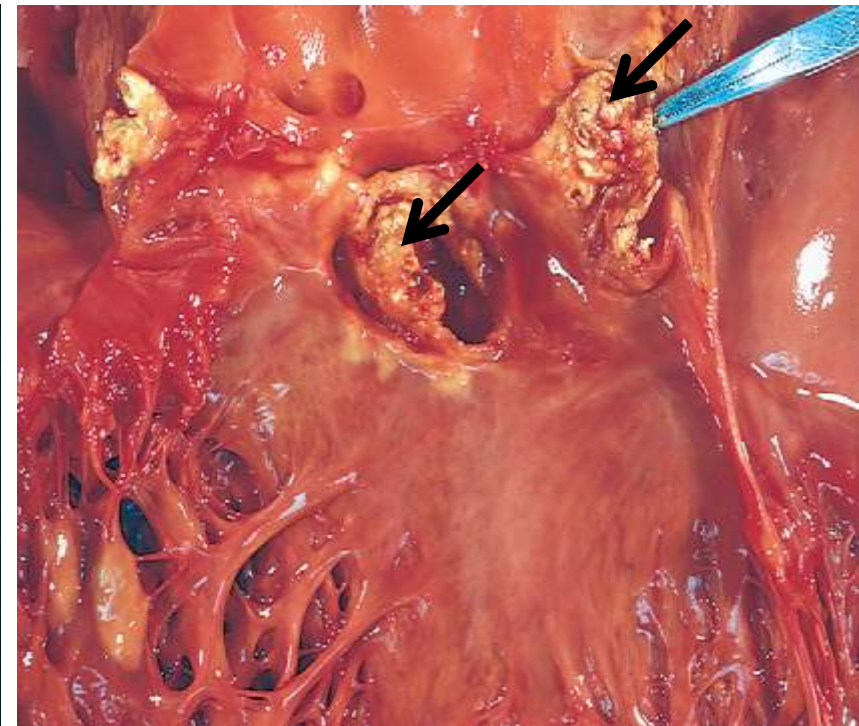
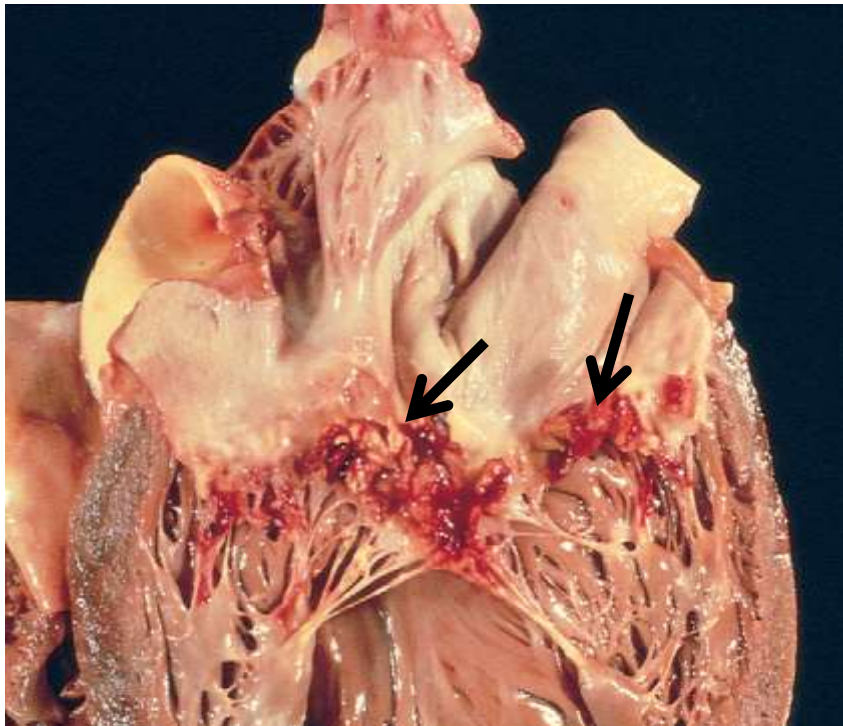
# Infective Endocarditis- Clinical Features

- Fever, chills, weakness, and murmurs
- **Valve vegetations can cause emboli** in different target tissues
- **Diagnosis\*** = (positive blood cultures + echocardiographic (echo) findings)
- \* depends on certain criteria....



# Infective Endocarditis- Morphology

- Friable, bulky, and destructive vegetations on heart valves
- Most common: aortic and mitral valves
- Tricuspid valve common in I.V. drug abusers





# Clinical Features

## • Complications of IE vegetations:

- 1- emboli
- 2- abscesses
- 3- septic infarcts
- 4- mycotic aneurysms

- **Treatment:** long-term ( $\geq 6$  weeks) I.V. antibiotic therapy and/or valve replacement



**Infective endocarditis**  
Acute: *Staphylococcus aureus*  
Subacute: *Streptococcus viridans*

Fever, heart murmur, echocardiogram,  
petechiae, splinter hemorrhages, osler nodes,  
Janeway lesions, Roth spots

# Infective Endocarditis: Diagnosis

## Duke Criteria

- 1994 a group at Duke University standardised criteria for assessing patients with suspected endocarditis
- **Definite**
  - 2 major criteria
  - 1 major and 3 minor criteria
  - 5 minor criteria
  - pathology/histology findings
- **Possible**
  - 1 major and 1 minor criteria
  - 3 minor criteria
- **Rejected**
  - firm alternate diagnosis
  - resolution of manifestations of IE with 4 days antimicrobial therapy or less



## Modified Dukes' criteria

- **Major-**
  - 2 positive blood cultures, for an organism known to cause IE  
or  
persistent bacteremia- 2 +ve 12 hours apart or 3 of 4 +ve drawn over 1 hour
  - ECHO evidence- oscillating mass on valve or supporting structures  
or abscess  
or new valvular regurgitation or partial dehiscence of prosthetic valve
- **Minor-**
  - Predisposing factor- cardiac lesion, IVDU
  - Fever >38 °C
  - Vascular phenomenon
  - Immunologic phenomenon
  - +ve blood culture
  - +ve ECHO

# Let's find out?

- Are all people with streptococcal pharyngitis exposed to risk of rheumatic fever?
- In what ways are rheumatic fever and infective endocarditis similar?
- What is different between rheumatic fever and infective endocarditis ?