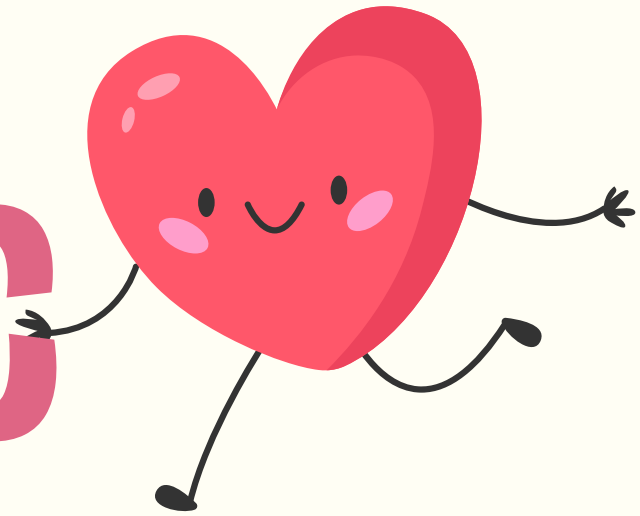
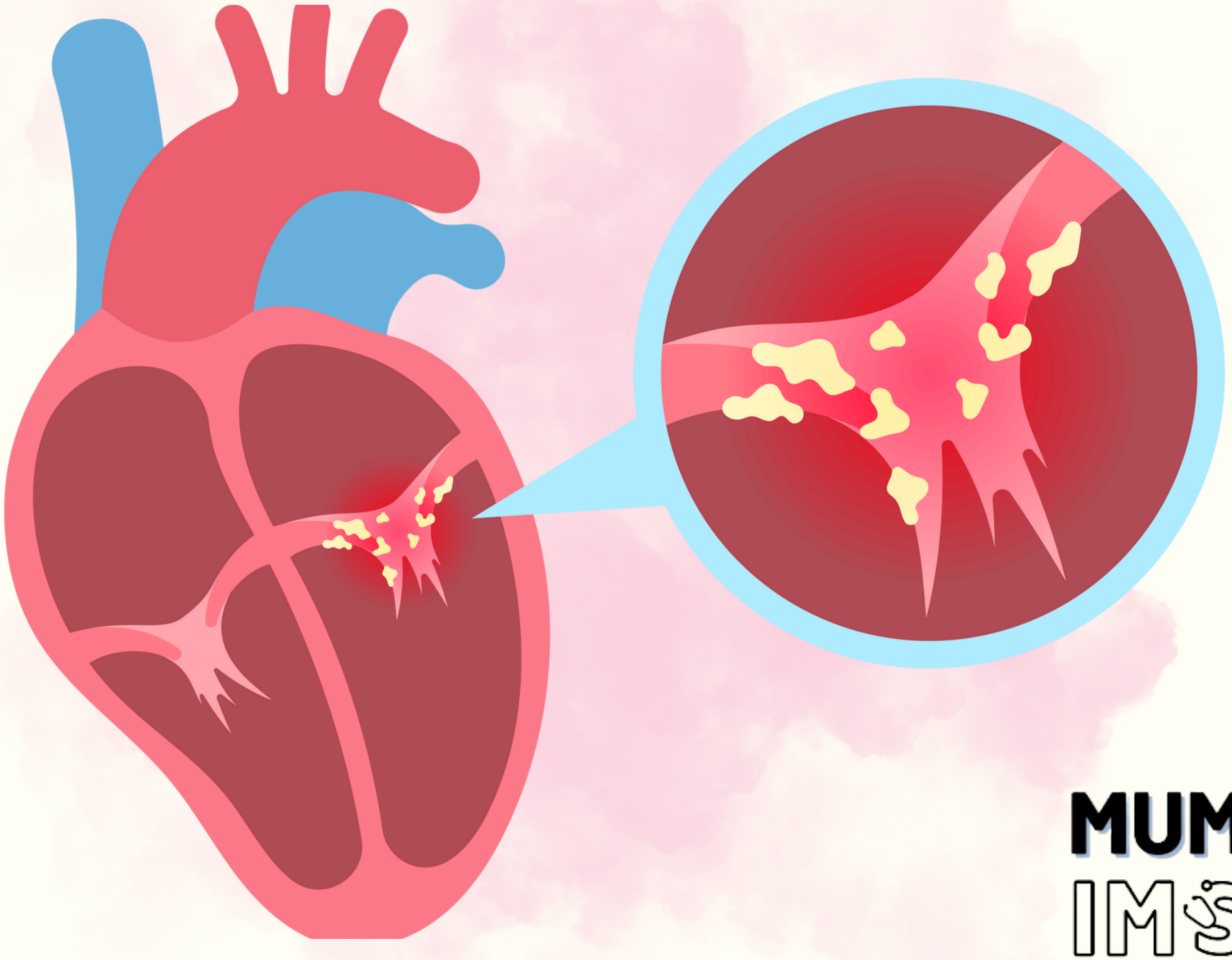
*Matrix unlocked*

# RHEUMATIC HEART DISEASE





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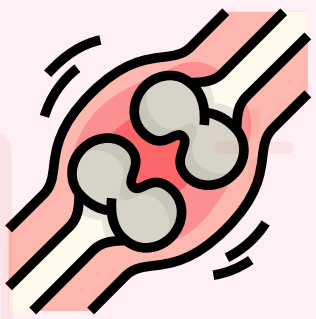
# RHEUMATIC FEVER

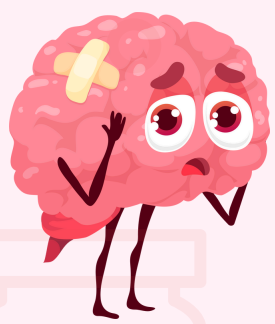
An acute, immunologically mediated, multisystem inflammatory disease

- After infection with Group A β-hemolytic Streptococcus (often after 2-4 weeks)
- Most often in children
- Affects:

Joint



CNS



Heart


# RHEUMATIC HEART DISEASE

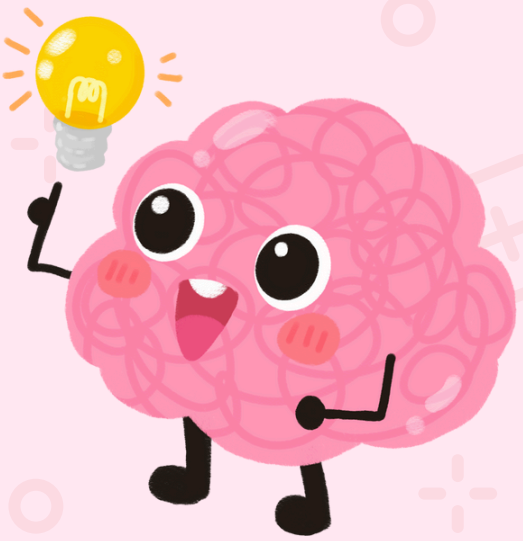
- Chronic consequence of rheumatic fever
- Inflammation --> valve scarring and progressive fibrosis
- Leading to:
  - Mitral stenosis (#1 cause)
  - Heart failure & arrhythmias

Who's at risk?

- Living in an ARF-endemic setting
- Aboriginal and/or Torres Strait Islander people
- Personal history of ARF/RHD and aged <40 years

# DIAGNOSTIC CRITERIA

| Major Criteria (JONES) | Minor Criteria (CAFELP) | Evidence of preceding streptococcal infection |
|---|---|---|
| Joint (Migratory polyarthritis) | ↑ CRP | Recent scarlet fever |
| Carditis | Arthralgia | Positive throat culture |
| Nodules in the skin | Fever | Raised antistreptolysin O or other streptococcal antibody titre |
| Erythema marginatum | ↑ ESR | |
| Sydenham chorea | Leukocytosis | |
| | Prolonged PR interval (1°AV block) | |



**How do you define an initial episode of Acute Rheumatic Fever (ARF)?**

2 major + Evidence of preceding Strep A infection

OR

1 major + 2 minor + Evidence of preceding Strep A infection

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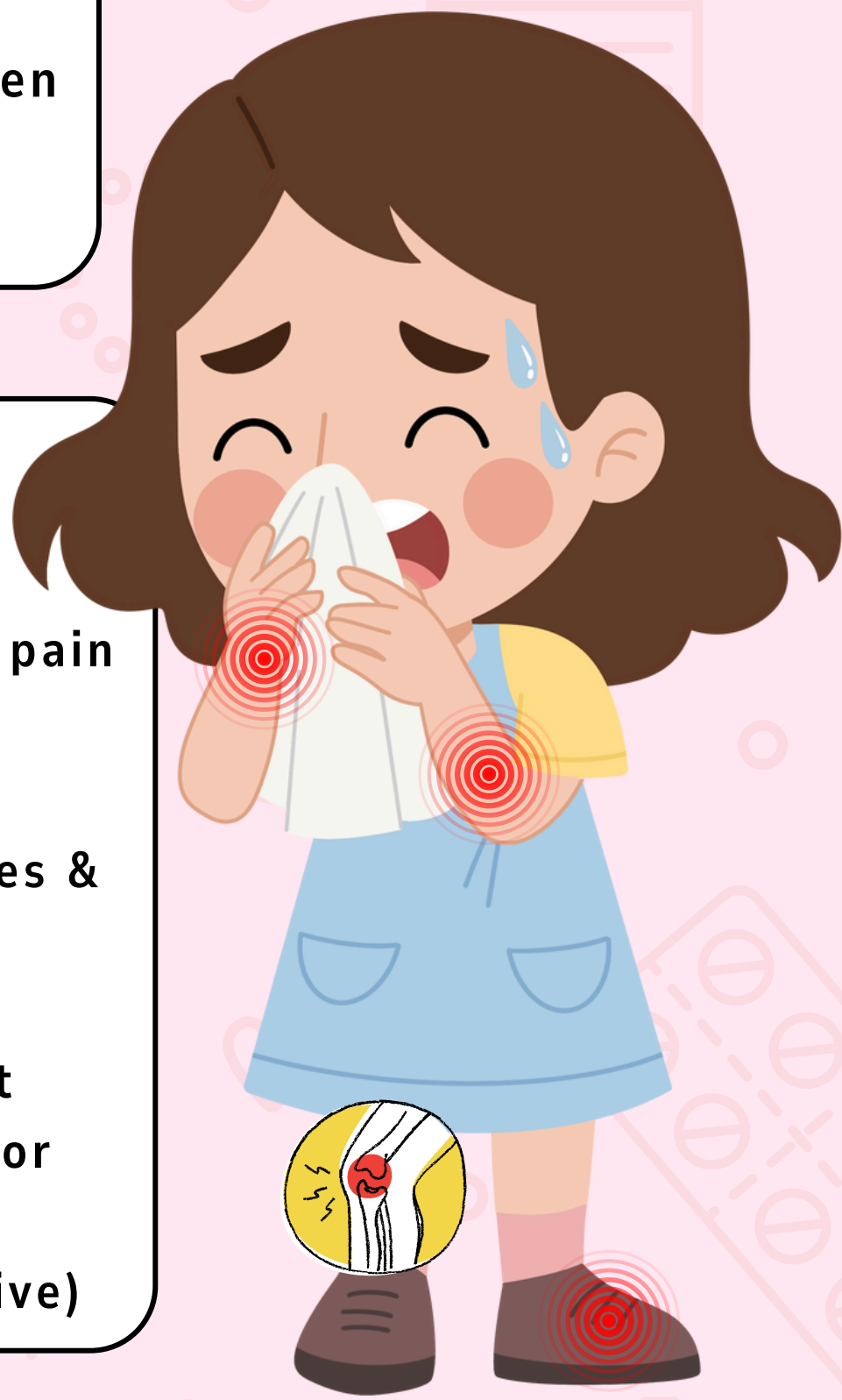
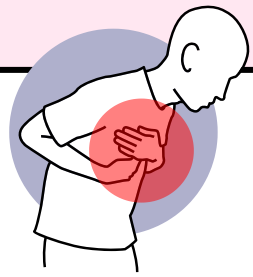
# CLINICAL FEATURES

## Joints

- Most common manifestations
- Affecting large joints (eg knees, ankles)
- Migratory inflammation, quick succession (inflammation in one joint improves as another joint becomes involved)
- Asymmetrical, painful, red, swollen
- Responsive to NSAIDs (improves within 3 days)



## Carditis

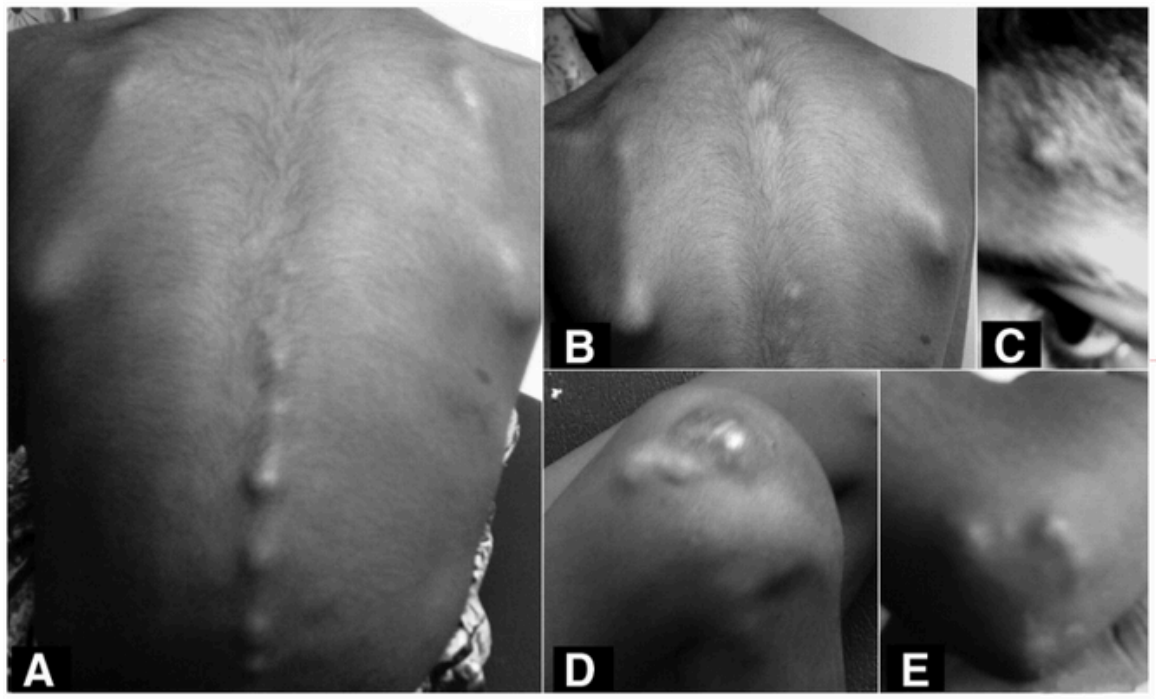


- Pancarditis
- Symptoms: SOB, palpitations, chest pain
- Mitral > Aortic >> Tricuspid (RheuMATic)
- Histology: Presence of Aschoff bodies & Anitschkow cells
- Murmurs:
  - Mitral regurgitation (may coexist with Carey-Coombs murmur and/or aortic regurgitation)
  - Mitral stenosis (slowly progressive)

Note: Carey Coombs murmur = soft, mid-diastolic murmur; due to vasculitis, with nodules forming on the mitral valve leaflets

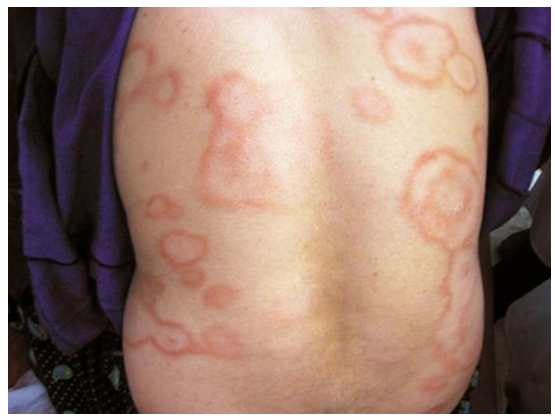
## Nodules in the skin (subcutaneous)

- Small (0.5-2.0cm), round, firm, painless
- Best felt over extensor surfaces of bones & tendons




## Erythema marginatum

- Red macules that fade in the centre but remain red at edges
- Mainly on trunk & proximal extremities



## Sydenham chorea

- Purposeless, involuntary, choreiform movements of hands, feet, tongue or face

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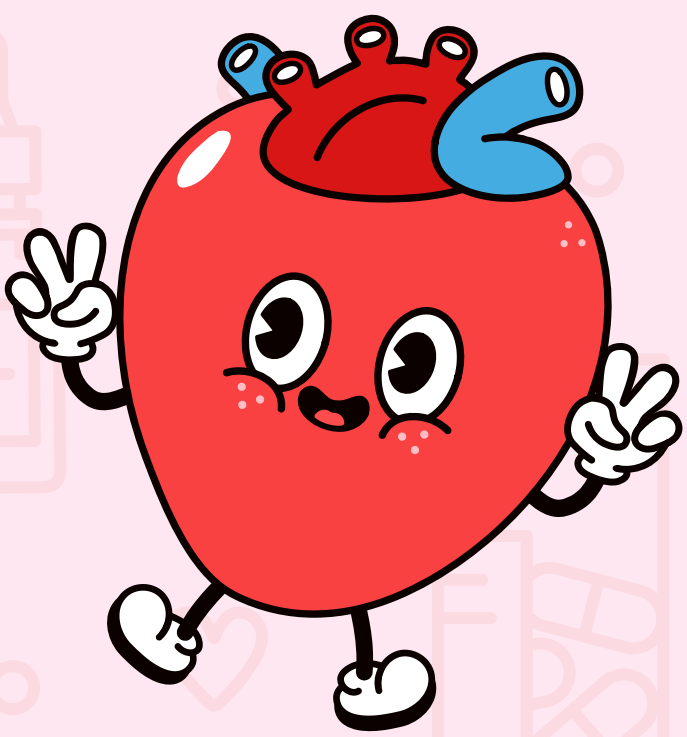
# INVESTIGATIONS

## BLOOD TEST

- FBC: Leukocytosis
- ESR and CRP: ↑



## IMAGING

- CXR's findings:
  - Cardiomegaly
  - Pulmonary congestion
- ECG: 1st-degree AV block (rarely 2nd degree)
  - Features of pericarditis
  - T-wave inversion
  - Reduction in QRS voltage
- Echocardiography: Cardiac dilatation & valve abnormalities

## OTHERS

- Throat swab
- Skin sore swab
- Blood cultures
- Synovial fluid aspirate
- Pregnancy test
- Urea, electrolytes, creatinine

## SEROLOGY

- Antistreptolysin O antibodies (ASO titres)
- Anti-DNase B

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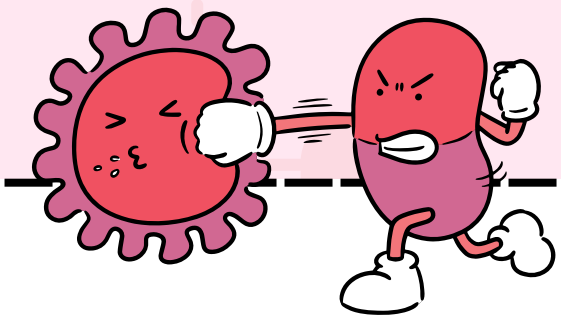
# TREATMENT

## IN ALL CASES :



### Antibiotics

| | |
|---|---|
| 1st line | • Benzathine Benzylpenicillin G (BPG) IM<br>OR<br>• Oral Phenoxymethylpenicillin |
| Penicillin allergy | • Oral Cefalexin<br>• Oral Azithromycin |

## ARTHRITIS AND FEVER :

| | |
|---|---|
| Mild | PCM |
| Severe | NSAIDS<br>• Example:<br>◦ Naproxen<br>◦ Ibuprofen<br>◦ Aspirin |

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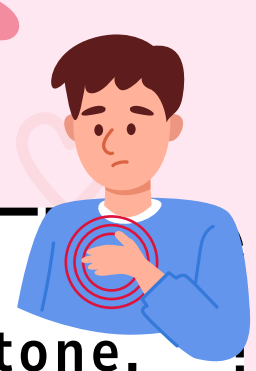
# TREATMENT

## CARDITIS/ HEART FAILURE :



- Bed rest, with mobilisation as symptoms permit
- Anti-failure medication (e.g. furosemide, spironolactone, enalapril)

## SYDENHAM CHOREA :

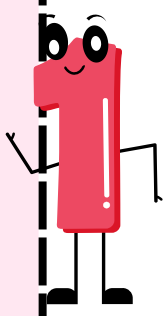
| | |
|---|---|
| Mild | No pharmacological treatment |
| Moderate to severe | • Carbamazepine<br>OR<br>• Sodium valproate |
| Very severe (chorea paralytica) | Anticonvulsant + corticosteroids (eg prednisolone) |

## SECONDARY PROPHYLAXIS :

| | |
|---|---|
| First line | Benzathine benzylpenicillin G (BPG) IM |
| Second line | Oral Phenoxymethylpenicillin (penicillin V) |
| Penicillin allergy | Oral Erythromycin |

# MANAGEMENT

## ANTIBIOTICS DOSAGE:



| | | |
|---|---|---|
| Benzathine Benzylpenicillin G (BPG) IM | • Child <20kg: 600,000 units<br>• Child ≥ 20kg: 1,200,000 units | Single dose |

OR

| | | |
|---|---|---|
| Oral Phenoxymethyl-penicillin | • 500mg<br>• Child: 15 mg/kg up to 500mg | 12-hourly for 10 days |

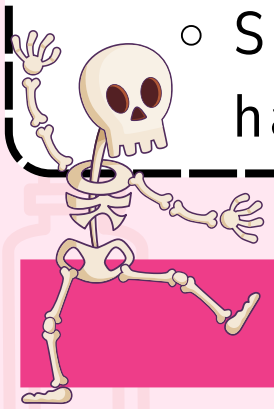
| | | |
|---|---|---|
| Oral Cefalexin (Non-severe Penicillin hypersensitivity) | • 1g<br>• Child: 25 mg/kg up to 1g | 12-hourly for 10 days |

| | | |
|---|---|---|
| Oral Azithromycin (Immediate penicillin hypersensitivity) | • 500mg<br>• Child: 12mg/kg up to 500mg | Daily for 5 days |

# MANAGEMENT

## SECONDARY PROPHYLAXIS: ANTIBIOTIC DOSAGE

- Duration depends on the presence/absence of RHD.
- Before ceasing prophylaxis, it must be confirmed that:
  - There is no symptomatic deterioration
  - Any existing valve lesions are stable
  - Specialist consultation and echocardiographic assessment have been performed



| | Antibiotic | Dose | Frequency |
|---|---|---|---|
| First Line | Benzathine benzylpenicillin G (BPG) | • Child <20kg: 600,000 units<br>• Child ≥ 20kg: 1,200,000 units | • Every 28 days<br>• Every 21 days for:<br>  ◦ Patients with breakthrough ARF despite full adherence to 28-day treatment<br>  ◦ High risk of severe complications |
| Second line (if IM route declined/not possible) | Oral Phenoxymethyl-penicillin | 250mg | Twice a day |
| Penicillin Allergy | Oral Erythromycin | 250mg | Twice a day |

# REFERENCES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