Rheumatic Heart Disease
Prevention Module
For Health Personnel
Pre – Training Test
Chose the best answer

1. The type of sore throat that leads to acute rheumatic fever is:
   a. Viral                             b. Bacterial

2. How do we diagnose bacterial pharyngitis:
   a. High leucocyte count
   b. Take throat culture
   c. Sore throat with no runny nose or cough
3. The best treatment for bacterial pharyngitis is:
   a. Intravenous penicillin
   b. Oral penicillin for 5 days
   c. One injection of benzathine pencillin

4. Primary prevention of rheumatic heart disease is:
   a. Use of 3 weekly benzathine pencillin
   b. Accurate diagnosis and treatment of bacterial pharyngitis.
5. Rheumatic fever causes:
a. Perminant joint disease
b. Perminant heart disease

6. After an episode of acute rheumatic fever: the patient needs:
a. Benzyle penicillin every day
b. Benzathine penicillin every 3 weeks

7. When we inject benzathine penicillin:
a. We need to have adrenaline injection ready
b. We need to do skin test using dilute benzathine pencillin
Introduction
RHD

Rheumatic heart disease (RHD) is the most important cause of heart disease in children and young adults in low and middle income countries
RHD

• Affects 35 million people around the world with high rates in Africa
• Most patients in Africa present with severe heart lesions needing surgery which is not affordable
• Surgical operation costs about 4000 USD

RHD can easily be prevented

RHD is difficult to treat
Rheumatic Heart Disease

RHD passes through 3 stages:
Bacterial Pharyngitis

Acute Rheumatic Fever

Can be treated if discovered early

Difficult to treat

Rheumatic Heart Disease
Rheumatic Heart Disease

• Leads to permanent damage to heart valves, heart failure, cerebrovascular accidents and death.
• Surgery is costly and is only palliative as the disease continues after operations.
• Post surgery, the patient still needs expensive treatment and follow up.
Valve Surgery Doesn’t Cure the Patient
Summary

• RHD is the most important cause of heart disease in the young
• It can be prevented but difficult to treat
• It passes through 3 stages: bacterial pharyngitis, acute rheumatic fever then RHD
• When fully established cannot be cured
Questions?

Sore Throat

Penicillin Injection

Saves the Heart

Sore Joints

Destroys the Heart

Sudan RHD Control Program
Designed by: Alaa Ahmed Musa
Strep Pharyngitis
Sore Throat

• Mostly viral
• Bacterial (about 30%) pharyngitis is caused by Group A streptococcus (GAS)
• Diagnosis of Bacterial Pharynges is by finding Sore throat with absent cough and runny nose in patients 3 to 18 years
Bacterial Pharyngitis
- Pharyngeal Membrane
- Cervical lymph nodes
- Fever >38
- Absent runny nose and cough

Viral Pharyngitis
- Runny nose
- Cough
- Hoarseness
How do I recognize bacterial pharyngitis?

• 3- 18 year old patient
• Complaining of sore throat
• No cough or runny nose
• May have enlarge tonsils, tonsillar membrane or lymph node on the neck
Important

• Bacterial pharyngitis includes tonsillitis and pharyngitis so tonsils may not be involved
• Removal of tonsils may not protect
How do I treat Bacterial Pharyngitis?

One injection of benzathine pencilllin  
(Preferred)

OR

10 day course of oral penicillin
Dose of Benzatine Penicillin for Strep Pharyngitis

- For patients weighing 30 or more = 1,2 million International units
- Less than 30 kg = 600 000 IU

One injection IM

(See section on how to administer BPG)
Primary Prevention

Accurate diagnosis and treatment of bacterial pharyngitis
Strep Pharyngitis

Acute Rheumatic Fever

RHD
Summary

1. Strep throat leads to acute rheumatic fever and rheumatic heart disease
2. Strep throat includes tonsils and throat
3. We recognize strep throat in those 3-18 years with sore throat and no runny nose or cough
4. We treat strep throat with one injection of benzathine penicillin
5. Primary prevention is quick identification and treatment of strep throat.
Questions??
Rheumatic Fever
Strep Pharyngitis

Acute Rheumatic Fever

RHD
What is Acute Rheumatic Fever (ARF)?

• It’s a reaction to strep infection that occurs few weeks after.
• Affects the Heart, joints and brain.
The heart is the only organ that suffers permanent damage.
Rheumatic Carditis

• The patients will feel:
  ❖ Fast heart beat (palpitations)
  ❖ Difficult and fast breathing especially when mobilizing
  ❖ Body swelling

• Heart damage is identified by ultrasound (Echo): the mitral and aortic valves will be affected.
Rheumatic Joint Affection

- Severe pain in large joins with inability to move
- Jumps from one joint to the other
- Improves, even with no treatment within 3-4 days
- No permanent damage
Rheumatic Brain Affection (Chorea)

• Purposeless movements
• Difficult to keep balance, too emotional
• Poor hand writing
• Can be easily treated, no permanent damage
Treatment of ARF

1. Refer the patient to the doctor
2. Doctor will do investigations and start 3 weekly penicillin injections
3. This regular penicillin is called: Secondary Prevention
IMPORTANT

You need to instruct the patient not to miss 3 weekly penicillin injection.
ARF will recur if penicillin is missed.
Secondary Prevention is:

Use of 3 weekly penicillin injection
Summary

• ARF is caused by strep throat
• It affects the heart, the joints and the brain, the heart damage is permanent.
• Heart valve affection causes palpitations, difficulty in breathing and edema
• Patients with any sign of ARF should be referred to the doctor immediately
• The patient should use 3 weekly Benzathine penicillin regularly
Questions?
Safe Administration of Benzathine Penicillin
Benzathine Penicillin G (BPG)

• It is the most important medicine for treatment and prevention of RHD
• It’s cheap and effective.
• Serious BPG allergy is very rare
• We need to know more about how to administer BPG
## Problems of BPG can be solved

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
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<tbody>
<tr>
<td>The drug is “heavy”</td>
<td>Use appropriate amount of diluents at room temp</td>
</tr>
<tr>
<td>The drug can block the needle</td>
<td>Use a large bore needle</td>
</tr>
<tr>
<td>The drug is painful</td>
<td>Dilute the powder in lidocaine 2% and inject slowly</td>
</tr>
<tr>
<td>Patients fear allergy</td>
<td>Serious allergy is very rare-reassure patients</td>
</tr>
<tr>
<td>Health workers fear allergy</td>
<td>Training of health workers on allergy management help them to be confident</td>
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Important

• Skin testing using diluted BPG has **NO ROLE** in prediction of allergic patients
• Don’t perform this Skin testing
• Go by the 5 Steps Protocol

Aiden Long (Associate Professor of Immunology, Harvard Medical School, USA)
Do we need to do skin testing with dilute BPG?. PASCAR RHD Committee Meeting, Cairo, 2017
Five Steps for BPG Administration

Step 1: Ask about BPG allergy

Step 2: Prepare the items

Step 3: Prepare the injection

Step 4: Prepare the patient and give injection

Step 5: Observe for 15 minutes
Step 1: Ask about the H/O Allergy

- Patient gave history of Severe allergy (collapse or needed emergency medicine):
  - DON’T GIVE BPG
  - Give Erythromycin

- No H/O allergy:
  - Give BPG by 5 step protocol
Step 2: Prepare the following

1. One 10 ml syringe
2. One 5 ml syringe (Lure Lock)
3. One BPG ampoule 1.2 million units
4. One vial of local anesthetic lidocaine (Lignocaine) 2% (or water for injection)
5. One adrenaline vial 1:1000
6. One antihistamine vial
Lure Lock 5 ml Syringe
Lidocaine 2%
Adrenaline 1:1000
BPG 1,2 Million
10 ml syringe
Antihistamine
Step 3: Prepare the injection:

- Draw appropriate amount of local anesthetic as diluent for the BPG powder (make sure it’s not cold)

- Inject the diluent into the BPG vial
Mix gently till dissolved

Draw in a 5 ml syringe
Change the small needle with the large bore needle of the 10ml syringe
Step 4: Prepare the patient and give the injection:

- Ask the patient to lie on the abdomen
- Mark the site of the injection (Figure)
- To minimize pain: press with your thumb over the site for 10 seconds
- Aspirate first to avoid veins then give slowly
Dose:

• For patients weighing 30 kg or more: 1.2 million units

• For patients less than 30 kg: 600 000 units
IMPORTANT

NEVER EVER GIVE BPG INTRAVENOUS
THIS LEADS TO IMMEDIATE MORTALITY
Step 5: Observe and treat reaction

- Observe for 15 minutes
- If an allergic reaction develops:
  - Local Reaction: Itching, hives:
    - Antihistamine injection
    - Call the doctor
Collapse, feeling dizzy?

1. Put the patient on the floor with legs up
2. Give adrenaline
3. Call for help and start CPR if needed.

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<tr>
<th>Age</th>
<th>Adrenalin Dose</th>
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<tbody>
<tr>
<td>Less than 7 years</td>
<td>0.3 ml</td>
</tr>
<tr>
<td>7 Years or more</td>
<td>0.5 ml</td>
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Summary

• BPG is the main drug for treatment and prevention of RHD
• Serious BPG allergy is very rare
• We can safely administer BPG if we follow the 5 step protocol
Penicillin Protects the Heart
Can you beat RHD?

Surveilliance
Integration
Collaboration
Advocacy
Awareness
TraiNing

SUR I CAAN
SURE YOU CAN
Sudan Heart Society
http://www.sudanheart sociedad.org
Working Group on Rheumatic Heart Disease