By the end of this session you should be able to:

- Understand how and when to use primaquine to treat liver-stage uncomplicated *P. vivax* malaria
Vivax has a dormant liver stage which causes relapses.

NB: Some infections may not lead to hypnozoites; some hypnozoites may not relapses.

Primaquine (14-days)

Chloroquine (3-days)
Overview of *P. vivax* malaria treatment

Current National Treatment Guideline & WHO recommendation for treatment of *P vivax* malaria

**To treat the acute malaria infection**

- Chloroquine (x 3 days) /
  - Artemisinin Combination Treatment (ACT)

**To prevent the relapse of malaria**

- Primaquine (14 days)
Primaquine (PQ) is the WHO-recommended anti-relapse treatment

- PQ clears the parasites that are dormant in the liver and prevents relapses.

- PQ when given at certain doses and intervals can cause haemolysis (destroy red blood cells) in patients with low and medium levels of G6PD enzyme activity.

- AHA can be a life-threatening condition, potentially requiring blood transfusion and dialysis.

- Knowing the G6PD status of a patient prior to PQ treatment and choosing the appropriate treatment algorithm can minimize the risk of haemolysis.

- A G6PD test helps to determine the G6PD status and can provide results within a few minutes.

G6PD: glucose-6-phosphate dehydrogenase
When primaquine SHOULD NOT be prescribed

- Pregnant women*
- Women breastfeeding* infants under 6 months
- Babies under 6 months
- Women breastfeeding* older children with low G6PD enzyme activity

[*Consider weekly chemoprophylaxis with chloroquine until delivery and breastfeeding are completed, then, on the basis of G6PD status, treat with primaquine to prevent future relapse.]
## Dosage and administration

<table>
<thead>
<tr>
<th></th>
<th><strong>Daily Primaquine (PQ)</strong>*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>G6PD test</strong></td>
<td>Test all patients for G6PD activity before PQ use</td>
</tr>
<tr>
<td><strong>G6PD enzyme activity</strong></td>
<td>Equal to or more than 4.1 U/g Hb#</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>6 months and older</td>
</tr>
<tr>
<td><strong>Dose</strong></td>
<td>[0.25 mg/kg] X 14 days</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>[With chloroquine] or with an ACT</td>
</tr>
<tr>
<td></td>
<td>Can be broken</td>
</tr>
<tr>
<td></td>
<td>Give with food to avoid stomach discomfort</td>
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<tr>
<td><strong>Patient counselling</strong></td>
<td>STOP PQ and go immediately to nearest health facility if they have any of the following signs: Pallor, fatigue, shortness of breath, rapid heart rate, yellowing of the skin and whites of the eyes (jaundice) or dark urine</td>
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</tbody>
</table>

*Not for use in pregnant women or women breastfeeding infants younger than 6 months;  
#U/g Hb: Units of G6PD activity per gram of haemoglobin
How do you normally prescribe Primaquine?
A reminder of G6PD activity by gender

**G6PD enzyme activity**

- **Normal** (equal to or more than 6.1 U/g Hb)
- **Deficient** (equal or less than 4.0 U/g Hb)

**U/g Hb**: Units of G6PD activity per gram of haemoglobin
G6PD testing guides the choice of primaquine (PQ)

- **G6PD testing minimizes the risk of haemolysis due to the drug**
- **Patients with low and medium levels of G6PD activity should be educated to recognise warning signs of haemolysis that require medical review**
Do you have any questions or concerns about treating patients based on their G6PD activity?
The importance of knowing your patient’s G6PD activity

- Primaquine is essential to protect patients from relapses / repeated attacks of vivax malaria which can cause anaemia, severe disease and death
- Primaquine can cause red blood cells to rupture / burst (haemolysis or AHA*) in patients with less than normal G6PD activity
- Knowing the G6PD activity of your patient gives you important information that must be considered when prescribing treatment

*Acute haemolytic anaemia
What information do you provide to patients about primaquine treatment normally?
Good patient counselling is important to ensure patients complete their course of treatment:

- Provide information about *P. vivax* and G6PD deficiency
- Ask if they understand what you have explained, and what they think about the guidance you have given
- Advise patients about the potential signs and symptoms of AHA
- Advise patients that if they notice **ANY** of the signs and symptoms of AHA they should immediately **stop primaquine and report to their health facility**
What are the signs and symptoms you should discuss with patients?

- The most common sign or symptom of Acute Haemolytic Anaemia is dark urine – with a red or black colour

- Other signs and symptoms of Acute Haemolytic Anemia are:
  - Fatigue
  - Breathlessness, or shortness of breathe
  - Back pain
  - Yellowing of the skin or whites of eyes
  - Pallor – an unhealthy pale appearance
  - Rapid heart rate
  - Fever
  - Nausea and/or vomiting
Good patient counselling is important to ensure patients complete their course of treatment:

• Ask the patient if they have any concerns or worries about taking their treatment

• For patients taking primaquine - request patients to tell you about their plan to take primaquine over the coming two weeks at home

• Ensure that patients know to take the medicines with food to reduce gastro-intestinal adverse events (or adverse events).
Frequently Asked Questions activity
Treatment practical: Mini-scenarios

You are going to be given three scenarios to read and consider how you would respond

• For each scenario write down how you would treat the patient described

• Provide a rationale for your answer

• Be prepared to discuss your answers and rationale with the group
A patient presents at your health facility and is confirmed to have *P. vivax* malaria. She is 15 years old and does not know her G6PD status. She attended your health facility 5 months ago, also with vivax malaria. What is your next step?

- **Answer:** Do a G6PD test to determine treatment

- **Rationale:** We cannot treat a patient without understanding their G6PD status
The goal of *P. vivax* malaria treatment is to clear both blood and liver stage parasites (radical cure).

Primaquine (PQ) can cause severe haemolysis in patients with low levels of G6PD activity – this can be prevented by correctly identifying patients who should receive daily PQ.

PQ can be administered to children 6 months or older who are G6PD normal or intermediate (with careful follow-up).

All patients should be informed about signs of AHA – even those who are G6PD normal.

Patients with ANY sign of AHA should go to the nearest health facility.

You need to take extra time counselling patients with low / medium G6PD activity.

Any questions?