Facilitator instructions for Practical: Plan C, calculation of fluid rates

Learning objectives:

- Know how to use plan C for severely dehydrated children who are well nourished
- Be able to determine type and amount of fluid that children should receive initially (over 30 min or 1 hour, depending on age) and subsequently (2 ½ hours or 5 hours, depending on age)

1. Review plan C slide from the lecture for Module 5 (slide 28).
2. Do Plan C: Drip rate drill for fluid volumes and fluid rates (see below).

Plan C Instructions:

As you review the plan C slide (28), follow the “yes” branch points first, then go back and follow the “nos”.

1. Make sure that the students understand the following:
   a. The amount of IV fluids that well-nourished patients should receive for rehydration with severe dehydration is 100 mL/kg, regardless of age.
   b. For severe dehydration, fluid is delivered in two aliquots: initial amount is 30 mL/kg. Subsequent aliquot is 70 mL/kg.
   c. The time over which the fluid should be delivered is different depending on age.
      i. For children ≤12 months, the initial 30 mL/kg is delivered push-pull over 1 hour. The subsequent 70 mL/kg should be given over 5 hours.
      ii. For children >12 months, the initial 30 mL/kg is delivered push-pull over ½ hour. The subsequent 70 mL/kg should be given over 2 ½ hours.
2. Review briefly the option of nasogastric tube or oral rehydration (20mL/kg/hour for 6 hours) if IV access is not an option.
3. Remind students that children with severe malnutrition and severe dehydration should NOT receive IV fluid (unless they are in shock). They should receive Resomal orally or NG (See Module 5 skill station).
   a. For the first 2 hours, give 5mL/kg every 30 minutes (total of 20mL/kg over 2 hours).
   b. For the next 4 to 10 hours, give 5 to 10mL/kg/hour.

Plan C and drip rate drill instructions:

1. Facilitator should have chart with Plan C fluid rate drill. Students should be working with pencil and paper.
2. There are 7 patients described in the chart. Each one is an exercise.
   a. Begin each exercise by stating that the child is well-nourished and severely dehydrated. You can ask participants to describe the likely physical findings.
   b. State the patient’s age and weight.
c. Ask the participants to calculate the amount of fluid that the child should receive as a bolus initially.

d. Then ask them to determine time over which the bolus should be delivered. For children ≤12 months, 30mL/kg should be delivered over 1 hour. For children >12 months, 30 mL/kg is delivered over ½ hour. The bolus should be delivered push-pull.

e. Then ask them to calculate the amount of fluid that the child should receive subsequently. They should then determine the hourly rate and drip rate.

3. Remind students that in order to calculate drip rates, you need to know what kind of IV infusion set you are using.

   a. For most pediatric infusion sets, there are 60 drops/mL. Therefore, drops/minute is the same number as mL/hour.

   b. For most adult infusion sets, there are 20 drops/mL. Therefore, drops/minute is equal to mL/hour divided by 3.

4. Repeat this exercise for each of the seven patients in the chart.

**ETAT Module 5 Plan C and drip rate drill**

<table>
<thead>
<tr>
<th>Age/weight</th>
<th>Initial bolus (30 mL/kg)</th>
<th>Deliver push-pull over</th>
<th>Maintenance (70 mL/kg)</th>
<th>Deliver over</th>
<th>Rate/hour</th>
<th>Total fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>14mo/9kg</td>
<td>270 mL</td>
<td>30 min</td>
<td>630 mL</td>
<td>2 1/2 hr</td>
<td>252 mL/hr</td>
<td>900 mL</td>
</tr>
<tr>
<td>8 mo/7kg</td>
<td>210 mL</td>
<td>1 hour</td>
<td>490 mL</td>
<td>5 hr</td>
<td>98 mL/hr</td>
<td>700 mL</td>
</tr>
<tr>
<td>3 yr/13 kg</td>
<td>390 mL</td>
<td>30 min</td>
<td>910 mL</td>
<td>2 1/2 hr</td>
<td>364 mL/hr</td>
<td>1300 mL</td>
</tr>
<tr>
<td>3 mo/5 kg</td>
<td>150 mL</td>
<td>1 hour</td>
<td>350 mL</td>
<td>5 hr</td>
<td>70 mL/hr</td>
<td>500 mL</td>
</tr>
<tr>
<td>2 yr/12 kg</td>
<td>360 mL</td>
<td>30 min</td>
<td>840 mL</td>
<td>2 1/2 hr</td>
<td>336 mL/hr</td>
<td>1200 mL</td>
</tr>
<tr>
<td>6 mo/6 kg</td>
<td>180 mL</td>
<td>1 hour</td>
<td>420 mL</td>
<td>5 hrs</td>
<td>84 mL/hr</td>
<td>600 mL</td>
</tr>
<tr>
<td>12 mo/8 kg</td>
<td>240 mL</td>
<td>30 min</td>
<td>560 mL</td>
<td>2 1/2 hr</td>
<td>224 mL/hr</td>
<td>800 mL</td>
</tr>
</tbody>
</table>