Checking and Adjusting Basal Rates in Insulin Pump Therapy

Check your basal rates:
- within a few weeks of starting on a pump
- if rates have not been checked in over a year
- if you are correcting high readings 2–3 times a day (basal rate may be too low)
- if you have low readings 1–2 times a day (basal rate may be too high)
- if you miss a meal and blood sugars drop or rise
- if you go for fasting lab work and your blood sugars drop or rise
- if you think you need a second basal profile for menstruation, shiftwork, weekend, etc.
- if you fill in the formula below and the answer is not within 40–60 (talk with your educator)

\[
\text{Total units basal insulin per day divided by total units per day (basal and bolus doses)} \\
\times 100 = \underline{\text{_______}} \quad \text{(between 40–60 is usual)}
\]

Don’t do a basal check or STOP a basal check if:
- your glucose is less than 4 mmol or more than 14 mmol before or during the check
- you gave a correction or meal bolus less than 4 hours ago
- you have had alcohol, major stress, strenuous activity, a meal out, illness, a bad low glucose reading or a bad infusion site that needed changing that day

Check your basal rates:
- overnight: bedtime till breakfast
- daytime: breakfast to lunch / lunch to supper / supper to bedtime

Testing Overnight Basal Rates
- Start the basal check if it has been at least 4 hours since the last food or insulin bolus.
- Test and record your glucose before you go to bed.
- Do not eat a snack (You may eat lettuce, cucumber, mushrooms, black tea, black decaf coffee, broth, diet pop. No carbohydrate foods, no proteins, no fats.)
- Do not give a bolus.
- Stop the check if glucose is less than 4 mmol. Treat with glucose.
- Stop the check if glucose is more than 14 mmol. Give insulin correction.
- Test and record your glucose every 3 hours or more often until the morning (set your alarm).
- Do testing for 2–5 nights until you see a pattern (does not need to be 5 nights in a row).
## Overnight Basal Rates Check

<table>
<thead>
<tr>
<th>Glucose Readings</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before dinner result:</td>
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<tr>
<td>2 hours after dinner result:</td>
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<tr>
<td>Bedtime result:</td>
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</tr>
<tr>
<td>• Between 4 and 14 mmol:</td>
<td>do not correct with insulin. Continue with the basal test.</td>
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</tr>
<tr>
<td>• Under 4 mmol:</td>
<td>treat with glucose. Stop the basal check.</td>
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<tr>
<td>• Over 14 mmol:</td>
<td>test ketones. Correct and stop the basal check.</td>
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<tr>
<td>Midnight result:</td>
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<tr>
<td>• Follow instructions as above.</td>
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<tr>
<td>3 a.m. result:</td>
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<td>• Follow instructions as above.</td>
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<tr>
<td>Before breakfast result:</td>
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<tr>
<td>• Eat and bolus at breakfast as normal.</td>
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</tbody>
</table>

### Testing Your Daytime Basal Rates

- Check each meal period. Test only one meal period per day.
- Start the basal check if it has been at least 4 hours since the last food or insulin bolus.
- Test and record your glucose at the start of the test period. Do not give a bolus.
- Do not eat during the test period (You may eat lettuce, cucumber, mushrooms, black tea, black decaf coffee, broth, diet pop. **No carbohydrate foods, no proteins, no fats.**)
- Stop the check if glucose is less than 4 mmol. Treat with glucose.
- Stop the check if glucose is more than 14 mmol. Give insulin correction.
- Test and record your glucose at least every 2–3 hours until the next mealtime.
- Do testing for 2–5 days until you see a pattern (does not need to be 5 days in a row).
Daytime Basal Rates Check

<table>
<thead>
<tr>
<th>Start basal check only if 4 hours or more since last food or insulin bolus.</th>
<th>Glucose Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 1</td>
</tr>
</tbody>
</table>

**Record time and glucose result:**
- Between 4 and 14 mmol: do not correct with insulin and do not eat a meal. Continue with the basal test.
- Under 4 mmol: treat with glucose: stop basal check.
- Over 14 mmol: test ketones, correct and stop the basal check.

**2–3 hours later:**
- Record time and glucose result.
- Follow instructions as above.

**2–3 hours later:**
- Record time and glucose result.
- Follow instructions as above.

**2–3 hours later:**
- Eat and bolus as normal.

Adjusting Basal Rates

- Review your data from at least 2–5 days for the same test period. Look at the patterns.
- If the pattern shows a change of more than 2 mmol, you need a basal rate adjustment.
- Adjust basal rate by 0.1 units per hr (or 0.05 if sensitive) for 2–3 hrs before change.
  - e.g., if readings rise between 3 to 6 a.m., increase the basal rate by 0.1 units from 3 a.m. to 6 a.m.
  - e.g., if readings drop between 3 to 6 a.m., decrease basal rate by 0.1 units from 3 a.m. to 6 a.m.
- Record new basal rate (e.g., in journal, calendar, logbook).
- Check this same basal period again to see if the problem has been fixed.

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This material is for information purposes only. It should not be used in place of medical advice, instruction and/or treatment. If you have questions, speak with your doctor or appropriate healthcare provider.