Diabetes and Cystic Fibrosis (CFRD)

- What is diabetes?
  High blood sugars that occur because the pancreas does not make enough insulin in response to the body’s needs. This can be due to insulin deficiency (pancreatic cells do make enough) or insulin resistance (body’s cells do not use the insulin right away so more insulin is needed to change the food into fuel and keep blood sugars in normal ranges. Any infection increases the body’s insulin resistance.

- Are CF patients more likely to become diabetic?
  Yes, just like you can have mucus plugs in the lungs and intestines, you can have thick mucus plugs in the pancreas which result in scarring and loss of function. To assess the ability of the pancreas to produce insulin we perform an oral glucose tolerance test. This is like a “stress test for the pancreas”

- How is an oral glucose tolerance test performed?
  Usually scheduled first thing in the morning
  Do not eat or drink anything after midnight
  Blood is drawn for fasting, if high, stop
  If < 140, you will be asked to drink a sugary drink (this contains a fixed amount of glucose which is the challenge)
  Blood will be collected at 1 and 2 hours.

- How often do I need to do the OGTT? The CFF recommends that every CF patient over the age of 12 years have an OGTT once a year

Symptoms of CFRD

- Polyuria → often urination
- Polydipsia → often drinking and needing to drink
- Being very tired all the time
- Unexplained weight loss
- Not able to gain weight
- Frequent infections and increased requirement of antibiotics
- Unexplained loss of lung function

Stages of CFRD

<table>
<thead>
<tr>
<th>Type of Glucose Intolerance</th>
<th>Fasting Blood Glucose (FBG)</th>
<th>2 hours after eating</th>
<th>OGTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Glucose</td>
<td>≤ 100 mg/dL</td>
<td>≤ 180 mg/dL</td>
<td>2 hour glucose &lt;140 mg/dL</td>
</tr>
<tr>
<td>Indeterminate Glycemia (INDET)</td>
<td>Normal</td>
<td>Normal</td>
<td>Mid-OGTT reading is ≥ 200 mg/dL</td>
</tr>
<tr>
<td>Impaired Fasting Glucose (IFG)</td>
<td>100-125 mg/dL</td>
<td>&lt;140 mg/dL</td>
<td>2 hour glucose &lt;140 mg/dL</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Impaired Glucose Tolerance (IGT)</th>
<th>&gt;126 mg/dL</th>
<th>140-199 mg/dL</th>
<th>2 hour glucose 140-199 mg/dL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFRD</td>
<td>≥ 126 mg/dL</td>
<td>≥ 200 mg/dL</td>
<td>2-hour glucose ≥ 200 mg/dL</td>
</tr>
</tbody>
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