Automated Insulin Delivery (AID) Systems

What are Automated Insulin Delivery Systems?
An insulin pump that communicates with a continuous glucose monitor (CGM) and smart algorithms to automatically adjust insulin delivery.

Continuous glucose monitor (CGM) tracks glucose values throughout the day and night, providing a value every few minutes in addition to the direction the glucose is trending (up, down, or stable).

The Pod/insulin pump delivers insulin continuously through a tiny cannula in the skin. The smart algorithm contained within the Pod/insulin pump automatically adjusts insulin delivery based on CGM values.

AID application on a personal compatible smartphone, provided device, or the insulin pump itself lets you control and monitor the systems operations. For example, at lunch you can use the AID app or insulin pump to deliver a bolus for your meal.

How do AID Systems differ from standard insulin pumps?

Automated Insulin Delivery Systems – continuously delivers insulin based on CGM values

Insulin Pump Therapy – continuously delivers insulin based on user programmed rates

How can an AID system help me day-to-day?¹
It helps maintain normal blood glucose during daily activities that impact glucose values:

- **Exercise**
- **Sleep**
- **Meals**
- **Stress**
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What are the benefits of using an AID system?\(^1,2\)

- Less hypoglycemia
- Less hyperglycemia
- More time in range of 70-180 mg/dL
- Improved quality of life

How does an AID system work?

<table>
<thead>
<tr>
<th>Blood Glucose (BG) Predicted to be:</th>
<th>Automated basal insulin delivery:*</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABOVE Target BG</td>
<td>Generally increases insulin until sensor glucose trends back towards target</td>
</tr>
<tr>
<td>WITHIN Target BG</td>
<td>Insulin is maintained to help keep sensor glucose near target</td>
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<td>BELOW Target BG</td>
<td>May decrease or pause insulin to help avoid low sensor glucose</td>
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<td>LOW BG</td>
<td>Pauses insulin delivery to help prevent low sensor glucose</td>
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</table>

* General descriptions of Automated Insulin Delivery Systems currently cleared by the FDA

Glucose levels

- As your glucose goes higher above target, more insulin is delivered
- While near target glucose, insulin delivery is maintained
- As your glucose goes below target, less or no insulin is delivered

Blood Glucose (BG)

- Predicted to be:
  - Above target BG
  - Within target BG
  - Below target BG
  - Low BG

Automated basal insulin delivery:

- Generally increases insulin until sensor glucose trends back towards target
- Insulin is maintained to help keep sensor glucose near target
- May decrease or pause insulin to help avoid low sensor glucose
- Pauses insulin delivery to help prevent low sensor glucose

Do I need to do anything with an AID system?

**Users are still an important part of the AID system.**

AID systems are sometimes called hybrid closed loop systems (HCL) or sometimes “artificial pancreas” is used to describe these systems. This can be misleading since the user still plays an important part in using the system. The user still needs to:

- Program and deliver insulin for meals (Bolus)
- Change Pods/infusion sets and CGM sensors/transmitters
- Manage alerts and alarms

REFERENCE


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