Johns Hopkins Hospital • Glucose Management Committee

PRESCRIBER TOOLS FOR INPATIENT DIABETES MANAGEMENT

2010

The Basal/Nutritional/Correctional Insulin Concept

- Basal insulin: 40 - 50% of Total Daily Dose (TDD) insulin
  - Long acting insulin required in all Type 1 and most Type 2 patients even when NPO (gluconeogenesis can serve as a continuous source of blood glucose)
  - Takes care of the minute to minute need for insulin throughout the day
- Nutritional Insulin: 20% of TDD at each meal
  - Rapid acting insulin given immediately after a meal or during tube feeds.
  - Takes care of the anticipated rise in blood sugar from absorbed carbohydrate
  - This dose is given even when the blood glucose is in the normal range
- Correctional Insulin:
  - Brings down blood sugar if it is too high
  - Given in addition to scheduled insulin
- Total Daily Dose (TDD): TDD includes all basal, nutritional, and correctional insulin over 24 hours

Type of Insulin	Starts	Peaks	Effective Duration
BASAL INSULIN			
Intermediate-Acting			
NPH (Novolin N, Humulin N)	2-4 hr	4-10 hr	12-18 hr
Long-Acting			
glargine (Lantus)	2-4 hr	None	20-24 hr
detemir (Levemir)	2-4 hr	None	20-24 hr*
NUTRITIONAL AND CORRECTIONAL INSULIN			
Rapid-Acting			
aspart (NovoLog)	5-15 min	30-90 min	4-6 hr
lispro (Humalog)	5-15 min	30-90 min	4-6 hr
glulisine (Apedra)	10-30 min	30-90 min	3-4 hr
Short-acting			
Regular (Novolin R, Humulin R)	30-60 min	2-3 hr	8-10 hr
MIXES			
NPH plus analog			
NovoLog Mix 70/30 (70% NPH, 30% aspart)	5-15 min	Dual	10-16 hr
Humalog Mix 75/25 (75% NPH, 25% lispro)	5-15 min	Dual	10-16 hr
Humalog Mix 50/50 (50% NPH, 50% lispro)	10-30 min	Dual	10-16 hr
NPH plus Regular			
Novolin 70/30 (70% NPH, 30% R)	30-60 min	Dual	10-16 hr
Humulin 70/30 (70% NPH, 30% R)	30-60 min	Dual	10-16 hr
Humulin 50/50 (50% NPH, 50% R)	30-60 min	Dual	10-16 hr

☐ JHH formulary items

Sources: Hirsch, I. *NEJM* 352:174-183. 2005, Hirsch et al. *Clinical Diabetes* 23:78-86. 2005

Times are approximate only. Large variations between and within persons may be noted.

Converting from non-formulary insulins to formulary insulins

- Do not use Insulin U-500 inpatient. Consult endocrinology if home meds include U-500 insulin.
- **Lispro** and **glulisine** have a 1:1 dose conversion to aspart.
- **Regular** insulin has a 1:1 dose conversion to aspart, but will have a longer dosing frequency than aspart because of longer duration of action.
- **Detemir** has a 1:1 dose conversion to glargine.

Converting from 70/30 or other premixed insulins to glargine/ aspart regimen:

- Calculate total daily dose of insulin received from 70/30 or other premixed insulin.
- Give 40% of the total daily dose as glargine.
- The remaining 60% will be split into thirds, to be dosed as nutritional aspart with each meal.