

# Insulin Therapy in Diabetes Treatment

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The tables below provide estimates of insulin pharmacokinetic profiles of various preparations. Patients with type 2 diabetes may require high doses due to insulin resistance. Injection of large insulin boluses affects insulin absorption and activity.

	Administration/ Timing with Meals	Peak (hrs)	Duration (hrs)	Max Pen Dose (units)
<b>Long Acting Insulin</b>				
Detemir U-100 ( <i>Levemir</i> )	Usually at bedtime	Slow or no pronounced peak	8-24	80
<b>Glargine U-100</b> ( <i>Lantus</i> , <i>Semglee*</i> , <i>Basaglar*</i> , <i>Rezvoglar*</i> )			Up to 24	80
<b>Glargine U-300</b> ( <i>Toujeo</i> )			24-36	80 <i>Toujeo</i> / 160 <i>Toujeo Max</i>
Degludec U-100, U-200 ( <i>Tresiba</i> )			Up to 42	80 (U-100)/ 160 (U-200)
<b>Intermediate Acting Insulin</b>				
NPH U-100 ( <i>Novolin M</i> )	Usually at bedtime (onset 1-2 hrs)	2-8	14-24	60
<b>Short Acting Insulin</b>				
Regular U-100 ( <i>Novolin R</i> , <i>Humulin R</i> )	30 min before	2-4	6-12	60
<b>Rapid Acting Insulin</b>				
Aspart U-100 ( <i>Novolog</i> , <i>Kirsty+</i> )	Within 5-10 min before	~1-2	5-7	60
Aspart U-100 ( <i>Fiasp</i> )	At the start or within 20 min after start	1	3-5	80
Lispro ( <i>Humalog U-100</i> , <i>U-200</i> ; <i>Admelog*</i> U-100)	Within 15 min or immediately after	1-2	3-5	60 - <i>Humalog</i> 80 - <i>Admelog</i>
Lispro-aabc ( <i>Lyumjev U-100</i> , <i>U-200</i> )	At the start or within 20 min after start	1	2-4	60 - <i>Lyumjev</i> <i>U-100</i> , <i>U-200</i>
Glulisine U-100 ( <i>Apidra</i> )	Within 15 min before or 20 min after start	1-2	3-6	80

	Administration/ Timing with Meals	Peak (hrs)	Duration (hrs)	Max Pen Dose (units)
<b>Premixed Insulin</b>				
NPH/Regular U-100 ( <i>Novolin 70/30</i> )	Use guidance for short- acting or rapid-acting insulin component	2-4	18-24	60
NPH/Aspart U- 100( <i>Novolog Mix 70/30</i> )		1-2	12-24	60
NPH/Lispro U-100 ( <i>Humalog Mix 75/25</i> and <i>Mix 50/50</i> )		1-2	13-22	60
<b>Concentrated Regular Insulin</b>				
Regular U-500 ( <i>Humulin R</i> <i>U-500 Kwikpen</i> )	30 min before	0.5-8	13-24	300
Patients with severe insulin resistance requiring >200 units per day of insulin are candidates for Regular U-500. Total daily dosing may be started BID split 50-50 with meals or TID split 40-30-30 with breakfast, lunch, and dinner meals respectively.				
<b>Inhaled Insulin</b>				
Inhaled Regular Insulin ( <i>Affreza</i> )	At the start	0.5-0.9	1.5-3	12 unit cartridge
<b>Long-Acting Insulin/Glucagon-like Peptide-1 Receptor Agonist Combinations</b>				
Insulin degludec/ liraglutide ( <i>Xultrophy</i> <i>100/3.6</i> )	30 min before	No peak	24	50 units/ 1.8 mg
Insulin glargine/ lixisenatide ( <i>Soliqua</i> <i>100/33</i> )	Within 1 hour prior to first meal of the day	No peak	20-24	60 units/ 20 mcg

## Biosimilar and Interchangeable Insulins

\* **Semglee** (glargine-yfgn), **Rezvoglar** (glargine-aglr), and **Basaglar** are biosimilar and do not differ clinically from **Lantus** (insulin glargine).

+ **Admelog** (lispro) is biosimilar to **Humalog**, and **Kirsty** (aspart) is biosimilar to **Novolog**.

**Semglee and Rezvoglar** are also interchangeable with **Lantus**, meaning that the pharmacist can substitute without notifying the provider.

Medications on the [IHS National Core Formulary](#) are in **BOLD** above. Please consult a complete prescribing reference for more detailed information. No endorsement of specific products is implied.