

How to Switch Between Insulin Products

Switching insulins should always be done with prescriber approval and close monitoring. Advise patients to closely monitor blood glucose levels after switching insulins. If switching between human insulin brands (e.g., *Humulin R* to *Novolin R*, *Humulin N* to *Novolin N*, or *Humulin R/N* or *Novolin R/N* to “store brand” *R/N*), keep the number of units each day the same. However, because these brands are not AB rated you may need to contact the prescriber for approval to switch between brands. See our *Comparison of Insulins* chart for meal timing, onset, peak, duration of action, and other information. Also see our algorithm *Initiation and Adjustment of Insulin Regimens for Type 2 Diabetes*.

Clinical Scenario	Recommendation/Comments
NPH to Long-acting	
NPH to insulin detemir (<i>Levemir</i>)	Convert unit-per-unit. ¹ Some patients on basal-bolus insulin may require more <i>Levemir</i> than NPH. ¹ Give <i>Levemir</i> once daily, or divided twice daily if necessary for control. ¹ Do not mix <i>Levemir</i> with other insulins ¹
NPH to insulin glargine (<i>Lantus</i>)	NPH once daily: convert unit-per-unit and give once daily. ² NPH twice daily: reduce daily dose by 20% and give once daily ² Do not mix <i>Lantus</i> with other insulins. ²
Long-acting to NPH	
Insulin detemir (<i>Levemir</i>) to NPH	Convert unit-per-unit. ³ NPH at bedtime (for type 2 patients when combined with oral antidiabetes meds). ¹⁶ OR NPH twice daily (e.g., 50:50 or 2/3 in AM and 1/3 before dinner or at bedtime). ³⁻⁵
Insulin glargine (<i>Lantus</i>) to NPH	Convert unit-per-unit. ³ NPH at bedtime (for type 2 patients when combined with oral antidiabetes meds). ¹⁶ OR NPH twice daily (e.g., 50:50 or 2/3 in AM and 1/3 before dinner or at bedtime). ³⁻⁵

More . . .

Clinical Scenario	Recommendation/Comments
Long-acting to long-acting	
Insulin detemir (<i>Levemir</i>) to insulin glargine (<i>Lantus</i>)	Convert unit-per-unit. ^{6,17} Give once daily, or divided twice daily if necessary for control. ¹⁵ A lower daily dose may be needed. ¹⁴ Do not mix <i>Lantus</i> with other insulins. ²
Insulin glargine (<i>Lantus</i>) to insulin detemir (<i>Levemir</i>)	Convert unit-per-unit. ^{1,6,17} Give once daily, or divided twice daily if necessary for control. ¹ A higher daily dose may be needed, especially if divided twice daily. ¹⁴ Do not mix <i>Levemir</i> with other insulins. ¹
Regular to rapid-acting	
Regular human insulin (<i>Humulin</i> , <i>Novolin</i>) to rapid-acting insulin analog (insulin aspart [<i>Novolog</i>], insulin glulisine [<i>Apidra</i>], insulin lispro [<i>Humalog</i>])	Convert unit-per-unit. ^{3,7,8,9} Rapid-acting insulin analogs have a faster onset of action and a shorter duration of action than human regular insulin. Give rapid acting insulin analogs about 10 minutes before meals or with meals. See <i>Comparison of Insulins</i> for specifics of meal timing. ¹⁰
Rapid-acting to regular	
Insulin aspart (<i>Novolog</i>), insulin glulisine (<i>Apidra</i>), or insulin lispro (<i>Humalog</i>) to regular human insulin (<i>Humulin</i> , <i>Novolin</i>)	Convert unit-per-unit. ^{3,7,8,9} Rapid-acting insulin analogs have a faster onset of action and a shorter duration of action than human regular insulin. Give regular insulin about 30 minutes before meals. See <i>Comparison of Insulins</i> for specifics of meal timing. ¹⁰
Rapid-acting to rapid-acting	
Insulin aspart (<i>Novolog</i>), insulin glulisine (<i>Apidra</i>) or insulin lispro (<i>Humalog</i>) to Insulin aspart (<i>Novolog</i>), insulin glulisine (<i>Apidra</i>) or insulin lispro (<i>Humalog</i>)	Convert unit-per-unit. ^{3,7,8,9,11} Give rapid-acting insulin analogs about 10 minutes before meals or with meals. See <i>Comparison of Insulins</i> for specifics of meal timing. ¹⁰

Clinical Scenario	Recommendation/Comments
Premixed to premixed	
Premixed NPH/regular insulin (<i>Humulin 70/30</i> , <i>Novolin 70/30</i>) to Premixed protamine/rapid-acting analog (insulin lispro protamine/insulin lispro [<i>Humalog Mix 75/25</i>], insulin aspart protamine/insulin aspart [<i>Novolog Mix70/30</i>])	Convert unit-per-unit. ^{3,12,13} Premixed insulin analogs have a faster onset of action but similar duration of action compared to human premixed insulin. Give insulin analogs about 10 minutes before meals or with meals. See <i>Comparison of Insulins</i> for specifics of meal timing. ¹⁰
Premixed protamine/rapid-acting analog (insulin lispro protamine/insulin lispro [<i>Humalog Mix 75/25</i>], insulin aspart protamine/insulin aspart [<i>Novolog Mix70/30</i>]) to premixed NPH/regular insulin (<i>Humulin 70/30</i> , <i>Novolin 70/30</i>)	Convert unit-per-unit. ^{3,12,13} Premixed insulin analogs have a faster onset of action but similar duration of action compared to human premixed insulin. Give human premixed insulins (<i>Humulin 70/30</i> , <i>Novolin 70/30</i>) about 30 minutes before meals. See <i>Comparison of Insulins</i> for specifics of meal timing. ¹⁰
Premixed NPH/regular insulin (<i>Humulin 50/50</i>) to insulin lispro/insulin lispro protamine (<i>Humalog Mix 50/50</i>)	Convert unit-per-unit. ¹ Give <i>Humalog 50/50</i> about 10 minutes before meals or with meals. See <i>Comparison of Insulins</i> for specifics of meal timing. ¹⁰ <i>Humulin 50/50</i> insulin is being discontinued due to declining usage. <i>Humulin 50/50</i> insulin is expected to be unavailable as of April 2010 (see http://www.humalog.com/pdf/humulin-discontinued.pdf).

Users of this document are cautioned to use their own professional judgment and consult any other necessary or appropriate sources prior to making clinical judgments based on the content of this document. Our editors have researched the information with input from experts, government agencies, and national organizations. Information and Internet links in this article were current as of the date of publication.

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