



Short-acting human vs Rapid acting analog insulin



Key differences and precautions when switching

Key points for Healthcare Professionals

	Short acting Insulin e.g. Humulin Regular	Rapid acting analog insulin e.g. Lispro (Humalog)
Onset	30–60 minutes	15–30 minutes
Peak	2–4 hours	1–2 hours
Duration	6–8 hours	≤5 hours
Injection timing	At least <u>30 minutes before</u> a meal containing carbohydrate	<u>10 - 15 min before a meal</u> , or at the start of the meal if blood glucose level is <100 mg/dL (<5.6mmol/L). In toddlers/children who are unpredictable eaters, the Humalog dose can be given straight after the meal and adjusted to the amount of carbohydrate eaten.
Meal flexibility	<u>Snacks are usually needed</u> between meals (to prevent hypoglycemia between meals)	Usually, <u>no snacks needed</u> in between meals due to its shorter action
Hypoglycemia risk	Due to its longer duration of action hypoglycaemia can occur 2-4 hours after injection	Due to its shorter duration of action hypoglycaemia may occur earlier, 1–2 hours after injection
Blood glucose monitoring	Check post-prandial blood glucose 3-4 hours after a meal to assess if dose adjustments are needed (and to refine Insulin to carbohydrate ratio – ICR)	Check post-prandial blood glucose 2-3 hours after a meal to assess if dose adjustments are needed (and to refine Insulin to carbohydrate ratio – ICR)

Principles when switching from NPH & Regular to Basaglar & Humalog - for more details see full [‘Guide for switching from NPH & R or Premixed to biosimilar glargine \(Basaglar\) & insulin lispro \(Humalog\)’](#)

1. Calculate Total Daily Dose (TDD) of NPH and Regular
 - Reduce by ~20%
 - Split: 40% basal (Basaglar), 60% bolus (Humalog) distributed per meals/carbohydrate load
2. Humalog dose usually remains the same as the existing Regular dose when switching over
3. Space Humalog injections at least 2 hours apart to avoid insulin stacking which increases the risk of hypoglycemia)
4. Adjust Insulin Sensitivity Factor (ISF) i.e. 1800 rule applies for Humalog vs 1500 for Regular (100-rule vs. 83 for mmol/L)
5. Families/youth need to be educated on the action profile of Humalog, so that they are aware of the change in hypoglycemia risk (i.e. 1-2 hours after injection vs 2-4 hours after a meal). The need for regular blood glucose monitoring, carbohydrate counting, and correction dosing should be reinforced.

Key message

Rapid-acting analog (Humalog) is preferred to short-acting human (Regular) as it better mimics the body’s natural response to insulin production after a meal. The faster onset of Humalog makes injection timing more convenient and more flexible, and its shorter duration alleviates the need to eat a snack between meals. Humalog reduces the risk of hypoglycemia between meals compared to Regular. However, switching to Humalog requires education of the families and youth to ensure it is done safely and competently.