

Management of Patients on Insulin Therapy

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Learning Outcomes

- ❖ Different types of insulin and how they work
- ❖ Insulin regimens



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Insulin regimens

- ❖ Once-daily/twice-daily intermediate- or long-acting insulin
- ❖ Once-/twice-/three-times daily premixed insulin
- ❖ Basal-bolus therapy
- ❖ Mealtime rapid-acting insulin

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Insulin Game



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Type	Example	Onset, Peak and Duration	Time given	Appearance
Long Acting				

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Type	Example	Onset, Peak and Duration	Time given	Appearance
Long Acting	Lantus (Glargine)			


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Type	Example	Onset, Peak and Duration	Time given	Appearance
Long Acting	Lantus (Glargine)	60–90 mins No peak 20–24 hours		

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Type	Example	Onset, Peak and Duration	Time given	Appearance
Long Acting	Lantus (Glargine)	60–90 mins No peak 20–24 hours	Once a day Same time everyday	

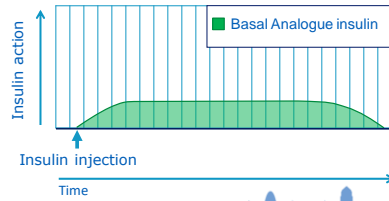
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Type	Example	Onset, Peak and Duration	Time given	Appearance
Long Acting 	Lantus (Glargine)	60–90 mins No peak 20–24 hours	Once a day Same time everyday	Clear

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Once-daily basal insulin

- ✓ Exact duration depends on the insulin type and dose
- ✓ Modern basal insulins may provide up to 24-hour cover



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Type	Example	Onset, Peak and Duration	Time given	Appearance
Long Acting	Lantus (Glargine)	60–90 mins No peak 20–24 hours	Once a day Same time everyday	Clear
Mixed				

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Mixed	Humulin M3			

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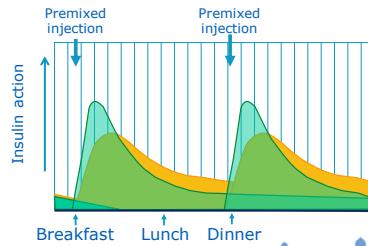
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Long Acting	Lantus (Glargine)	60 – 90 mins No peak 20 – 24 hours	Once a day Same time everyday	Clear
Mixed	Humulin M3	30 mins 2-4 hours 14-24 hours	Breakfast And Dinner	Cloudy Re-suspend BEFORE use

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Premixed insulin

■ Premixed human insulin ■ Premixed Analogue insulin



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Mixed	Humulin M3	30 mins 2-4 hours 14-24 hours	Breakfast And Dinner	Cloudy Re-suspend BEFORE use
Intermediate				

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Long Acting	Lantus (Glargine)	60 – 90 mins No peak 20 – 24 hours	Once a day Same time everyday	Clear
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Intermediate	Humulin I			

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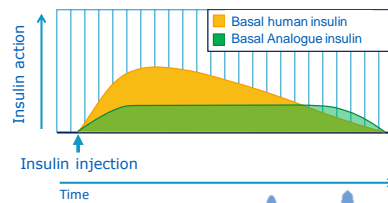
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Once-daily basal insulin

- ✓ Intermediate human insulin preparations may only be active for ~8 hours and have a more pronounced peak activity



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Rapid Acting				

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Rapid Acting	Novorapid			

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Rapid Acting	Novorapid	10-20 mins 1-3 hours 3-5 hours		

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Rapid Acting	Novorapid	10-20 mins 1-3 hours 3-5 hours	With every meal	

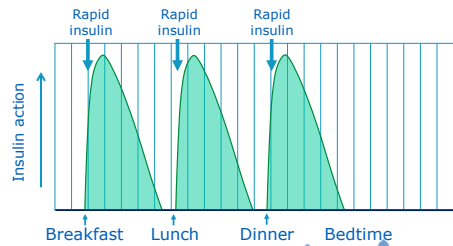
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Basal-bolus therapy

■ Rapid-acting Analogue insulin



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Rapid Acting	Novorapid	10-20 mins 1-3 hours 3-5 hours	With every meal	Clear
Short Acting				

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Rapid Acting	Novorapid	10-20 mins 1-3 hours 3-5 hours	With every meal	Clear
Short Acting	Humulin S			

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Short Acting	Humulin S	30-60 mins 1-6 hours 6-12 hours		

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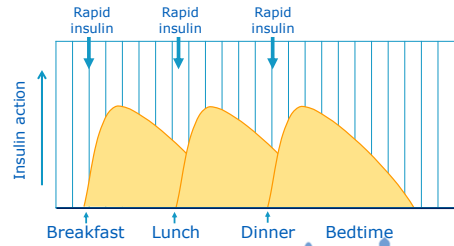
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Rapid Acting	Novorapid	10-20 mins 1-3 hours 3-5 hours	With every meal	Clear
Short Acting	Humulin S	30-60 mins 1-6 hours 6-12 hours	With every meal	Clear

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Basal-bolus therapy

Short-acting human insulin

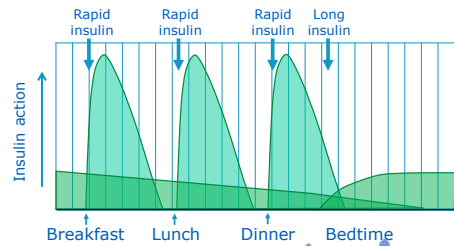


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WELL DONE!

Basal-bolus therapy

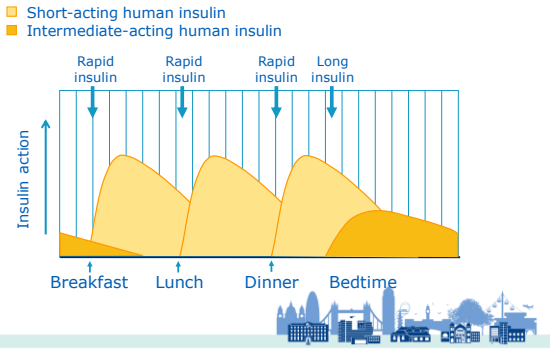
Rapid-acting Analogue insulin
Long-acting Analogue insulin



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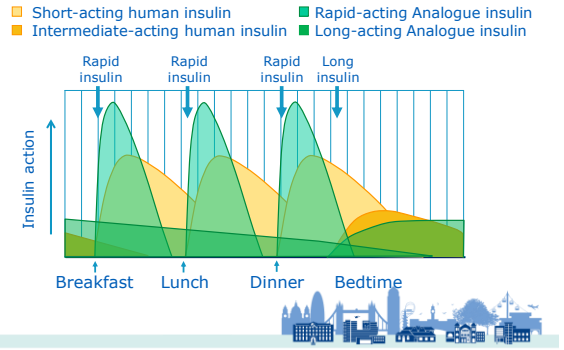
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Basal-bolus therapy



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Basal-bolus therapy



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References

Amos AF et al. 1997. *Diabetic Medicine* 1997;14 (Suppl 5):S1-S85
 Diabetes: Implications for nurses. *Journal of Diabetes Nursing* 2013. Vol. 18 (4):145-150
 Diabetes UK: Facts about Diabetes : 2021
 International Diabetes Federation: IDF Diabetes Atlas 8th ed. Brussels, Belgium: International Diabetes Federation, 2021
 Fox C, MacKinnon M. 2007 *Vital Diabetes: Your essential reference for diabetes management in primary Care* Publishing: 4th Rev Ed edition
 National Service Framework for Diabetes: 2003 Delivery Strategy. Department of Health London
 World Health Organisation (WHO) 1999. *Definition, Diagnosis and Classification of Diabetes Mellitus*. Geneva
<http://www.bio.davidson.edu>
www.Diabetes.org.uk
www.howstuffworks.com

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Any Questions....



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