

# **Insulin Treatment Regimes**

**Cedars Inn**

**20<sup>th</sup> November 2007**

# **Will discuss:**

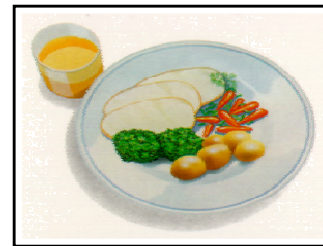
- Normal insulin production profiles
- Insulin therapy- time action profiles
- Commonly used insulin regimes

# Normal Insulin Profiles

**Basic Requirements**

**What happens  
when you eat**

**Just to function normally**

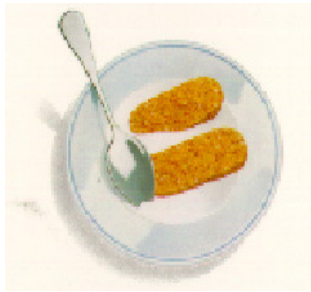


the body needs a constant level of sugar in the blood

and a background level of insulin

and extra insulin is needed

# Normal Insulin Profiles



**Breakfast**



**Lunch**



**Evening Meal**



Blood sugar



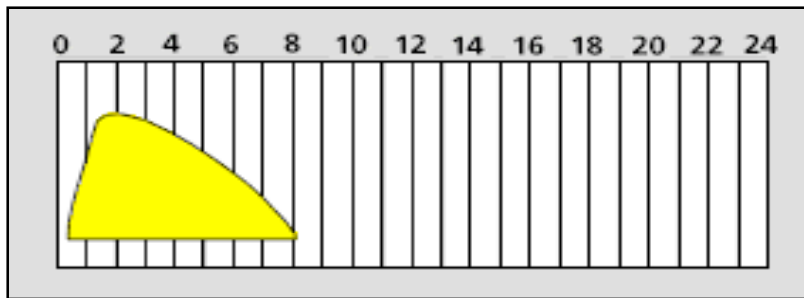
Mealtime insulin

Background/basal insulin

# **Any insulin regime needs to:**

- replace the **background (basal)** insulin
- replace the **mealtime (bolus)** insulin
- replace **both**

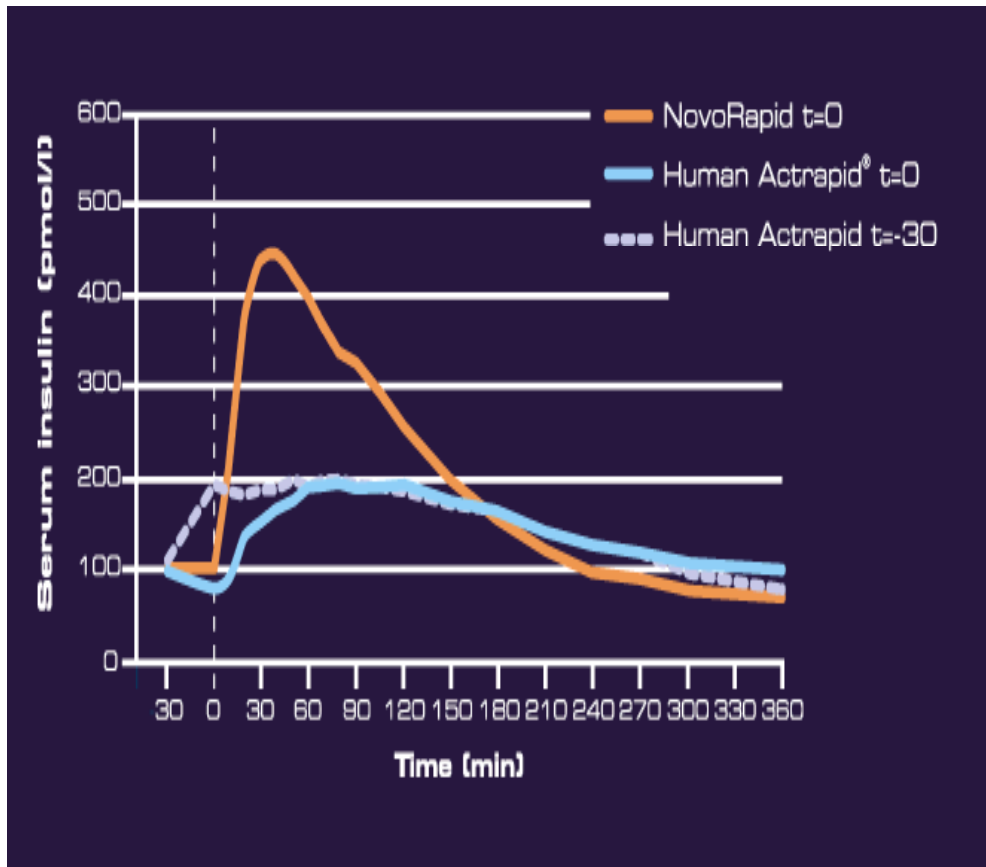
# Short Acting Insulin



- Soluble insulin
- e.g. Actrapid/Humulin S
- Clear
- Onset - 30 minutes
- Peak - 1 - 3 hours
- Duration up to 8 hours
- When given I/V half life of 3-5 minutes

# Rapid acting analogue insulin

- e.g. Lispro (Humalog)  
Aspart (Novorapid)  
Glulisine (Apidra)
- Clear
- Onset - immediate
- Peak – 1-2 hours
- Duration – 3-5 hours



# Rapid Acting Analogues

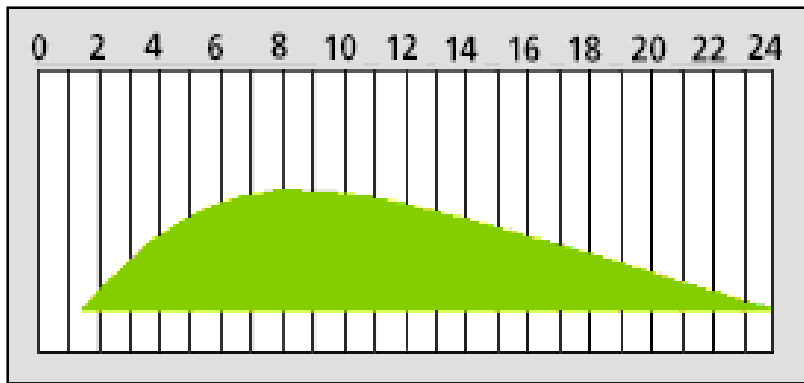
## Benefits

- Can be injected just before, during or up to 15 mins after food
- Improve postprandial glucose control

## Disadvantages

- May not cover snacks in between meals

# Intermediate acting insulin

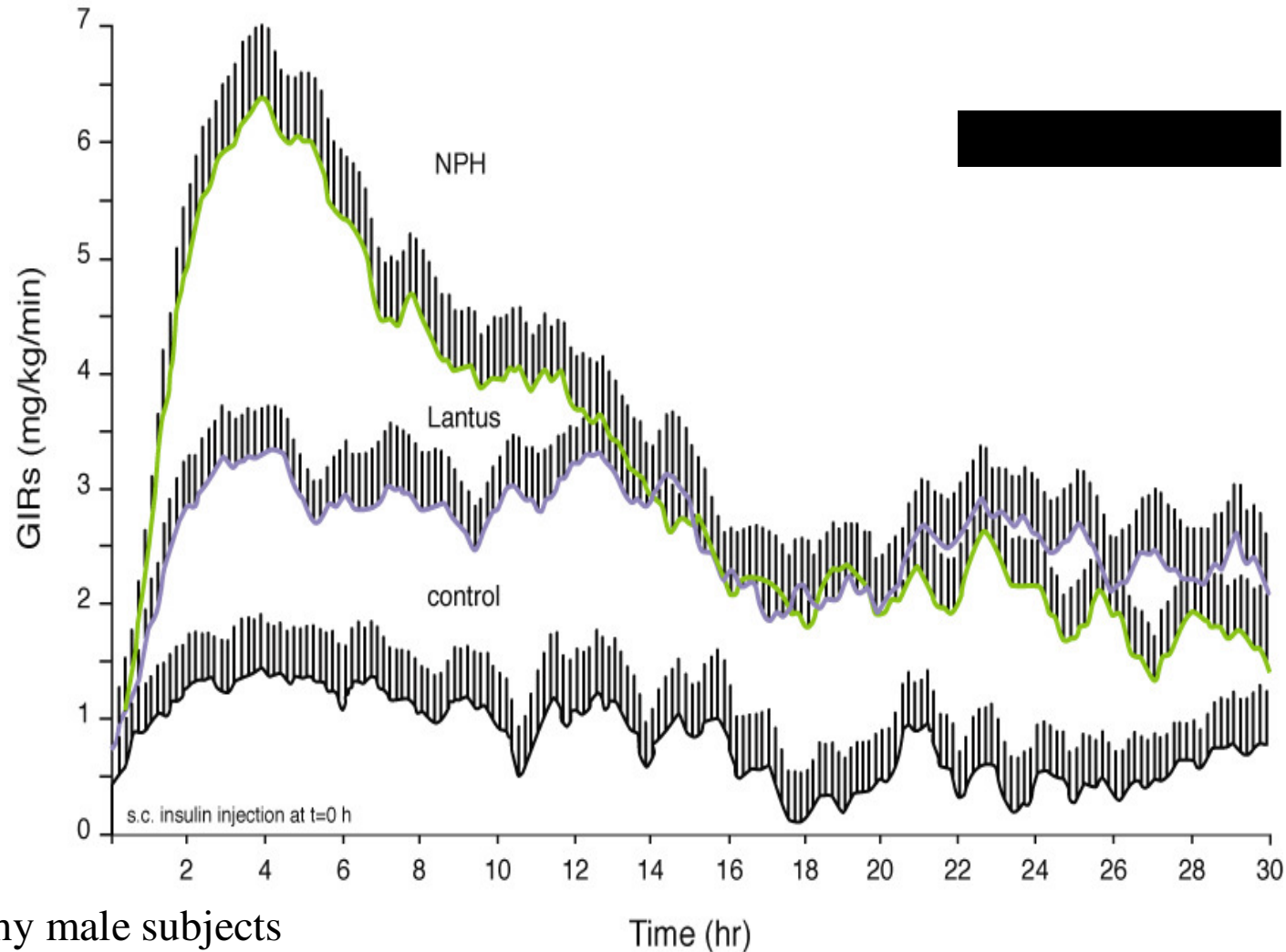


- Isophane or NPH
- eg Insulatard, Humulin I
- Cloudy
- Crystals in suspension (need re-suspending)
- Onset 1 <sup>1</sup>/<sub>2</sub> hours
- Peak 4 - 12 hours
- Duration up to 24 hours

# Long acting analogue insulin

- e.g. Glargine (Lantus) or  
Detemir (Levemir)
- Clear insulin
- Marketed as true basal insulins – smooth time action profile that has no pronounced peaks
- Reduce risk of hypoglycaemia

# Pharmacodynamics of insulin glargine (Lantus<sup>®</sup>) vs NPH insulin and placebo



Healthy male subjects

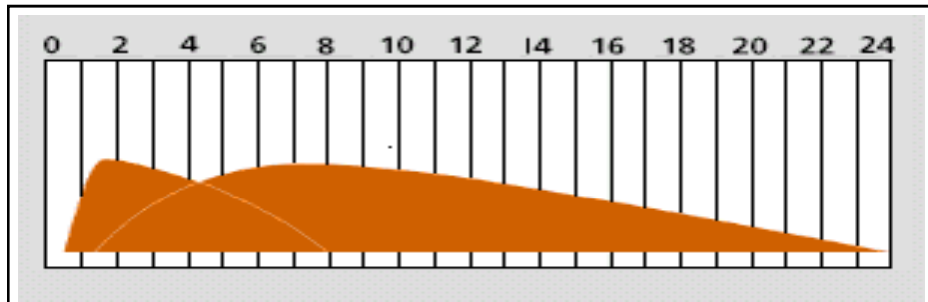
Single dose of insulin glargine (Lantus<sup>®</sup>), NPH insulin, or placebo, on 3 days

n=15

# Commonly used insulin regimes

- Twice daily premixed short and intermediate combinations
- Twice daily premixed analogue combinations
- Basal bolus using rapid and long acting analogues
- Three times a day premixed analogue combinations
- Basal bolus using short and intermediate acting
- Daily long acting analogue
- Insulin pumps

# Premixed short and intermediate insulin combinations

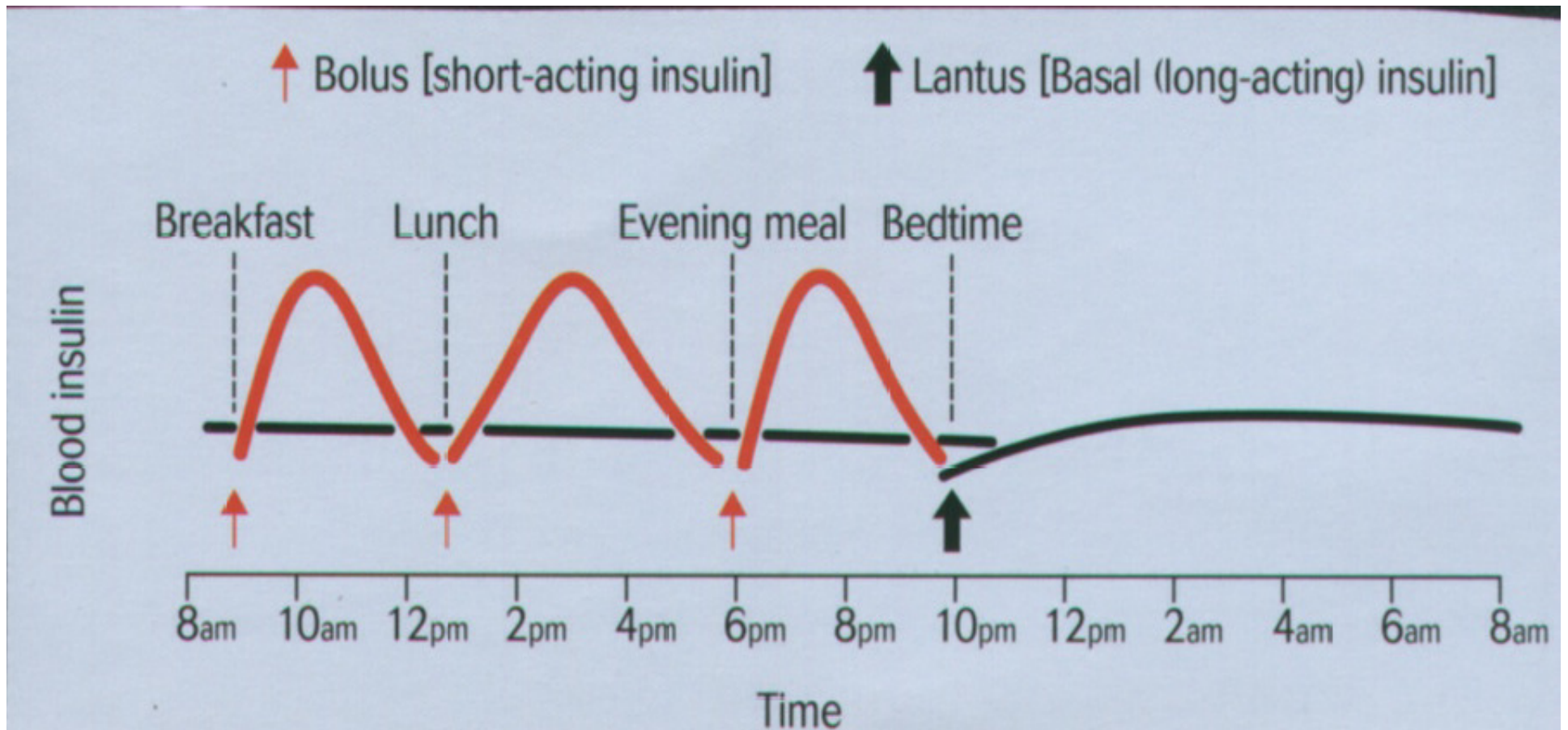


- Now limited combinations  
Mixtard 30, Humulin M3  
eg. 30% fast acting + 70%
- Cloudy
- Crystals in suspension  
(need re-suspending)
- intermediate acting
- Onset 30 minutes
- Peak 2 - 8 hours
- Duration up to 24 hours

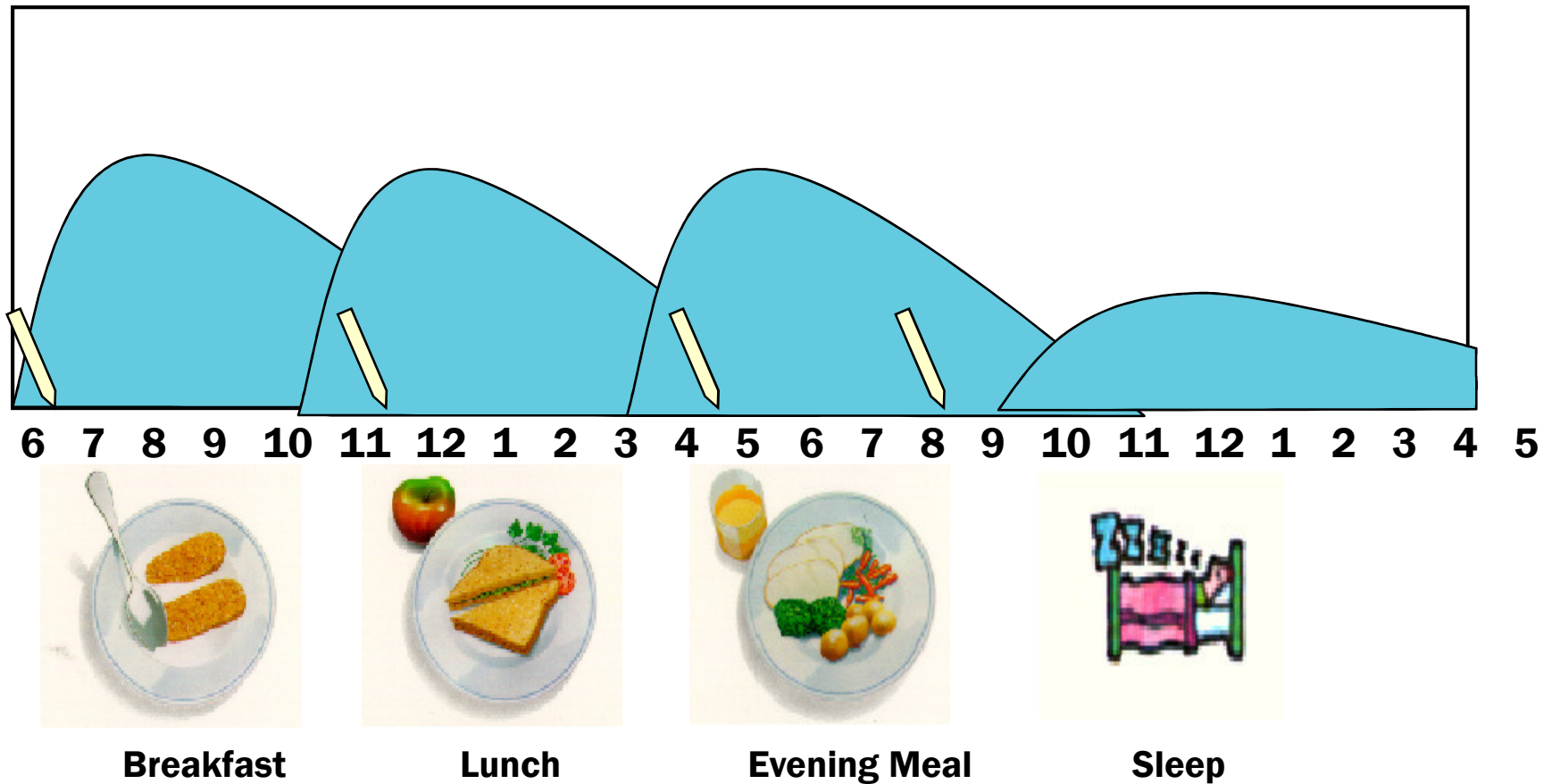
# Premixed analogue combinations

- e.g. Novomix 30, Humalog Mix 25 and Humalog Mix 50
- Can be given immediately before meals
- Faster onset of action
- Improve post prandial glucose control
- Less need for snacks between meals

# Basal bolus using rapid and long acting analogue



# Basal bolus using short and intermediate insulin





**Which insulin should be used?**

## **Answer**

- The one that best suits the needs and choice of the person with diabetes.