

# Delivery Options for Insulin Boluses using an Insulin Pump

Different meals digest differently. Generally meals with more fat and/ or protein than usual digest more slowly and can later cause a rise in blood sugar.

Changing the way your bolus is delivered can help control blood glucose as your insulin is matched to how your meal digests.

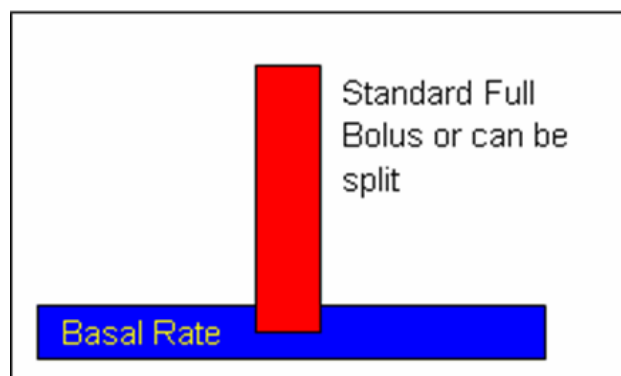
The pump settings which allow different types of boluses to be given have to be switched on. Your diabetes nurse can help you with this.

## Standard or Normal Bolus

This is a single bolus, useful for 'normal', moderate carbohydrate meals or foods with a high Glycaemic Index. Ideally this would generally be given 15 minutes before eating if your insulin is Novorapid, Humalog or Apidra.

Separate boluses can be given with separate courses i.e. if eating over a couple of hours a separate bolus could be given for a starter, a main course and a pudding.

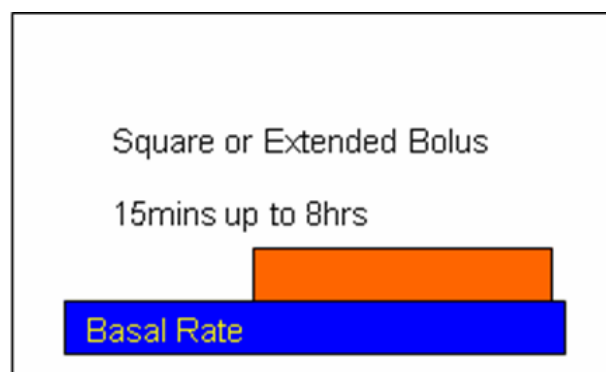
Standard boluses should also routinely be used for snacks, for meals before exercise and for correction dose



## Square Wave or Extended Bolus

Bolus insulin is delivered evenly over a period of time which you can choose, for example from 15 minutes to 8 hours. It can be stopped at any time, e.g. if you don't finish a meal.

This type of bolus isn't routinely recommended.

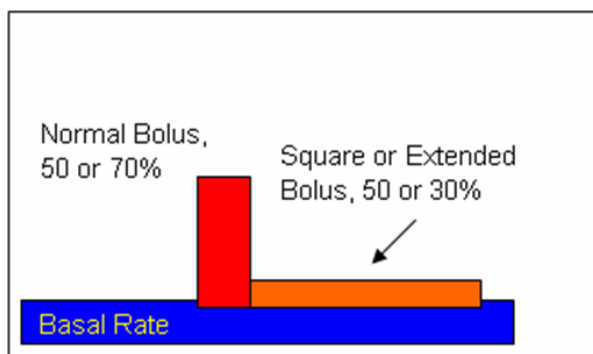


## Dual Wave/ Multiwave bolus

The name of this bolus will depend on your pump. This is a combination of the two types of bolus doses described above.

This combination of a 'Standard Bolus' and an 'Extended/Square Wave Bolus' means a proportion of insulin is given quickly at the beginning of the meal and the rest is delivered evenly over a longer period of time.

For example, 70% of the total bolus dose may be given as a standard bolus and 30% as a square or extended bolus, given over 1-6 hours. This can be adjusted in units or % on different pumps. It can provide a better insulin match for slower digesting meals.



Another standard bolus can be given on top of this bolus. So if you decide to have pudding after eating pizza, you can give another bolus for your pudding!

### Example boluses to try

| Example food/meal   | Suggested bolus to try*  |
|---|--|
| High Glycaemic Index breakfast foods e.g. cornflakes or white toast                         | Standard bolus, consider giving 15 minutes before eating             |
| Snacks e.g. fruit/ biscuits/ yogurt/ cereal bar   | Standard bolus   |
| Packed lunch/ potato-based meals  | Standard bolus or 50-70% as an immediate bolus, the rest over 1 hour |
| Low fat pasta meals or low Glycaemic Index meals e.g. pulse-based meals                     | 50-70% as an immediate bolus, the rest over 1-2 hours                |
| High fat meals e.g. pizza/ fish and chips/ pasta with creamy sauce/ high fat takeaway meals | 50-70% as an immediate bolus, the rest over 4-6 hours                |

\*This is just a guide to help get you started as different people respond differently, see what works best for you.

You can check if your chosen bolus works well by checking blood glucose levels. If blood glucose drops significantly soon after a combination bolus starts, give less insulin upfront next time.

If blood glucose level increases significantly after the extended period, you could try adding a higher proportion of insulin to the extended part of the bolus and/or extend for longer.

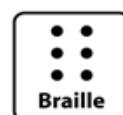
### High fat, high protein meals

High fat, high protein meals (more than 40g fat and more than 25g protein) may need **extra** insulin.

If you notice high fat, high protein meals cause a problem try giving 25-30% extra insulin on top of the calculated bolus for your carbs and give your bolus as a Dual Wave/ Multiwave bolus with 50-70% of the bolus given initially, with the remainder delivered over 2-6 hours.

You should routinely use your pump bolus calculator. If you feel your settings need adjusting please contact your diabetes team.

**You can get further information from your diabetes nurse, dietitian and user manuals for your insulin pump.**



### If you require a special edition of this leaflet

This leaflet is available in large print, Braille, on audio tape or disk and in other languages on request. Please contact:

**Tel No: 0151 529 2906**

**Email: [interpretationandtranslation@liverpoolft.nhs.uk](mailto:interpretationandtranslation@liverpoolft.nhs.uk)**