

Appendix H. Examples for insulin initiation and titration

H.1. Guide to starting and adjusting basal insulin^{141,284}

STEP 1. SELECT basal insulin and injecting device



STEP 2. START basal insulin **10 units** bedtime (or morning)

CONTINUE oral glucose-lowering medication

Evening insulin dosing if fasting blood glucose (FBG) is high (pre-breakfast)

Morning insulin dosing if FBG is on target but pre-dinner blood glucose level (BGL) is high



STEP 3. TITRATION

Adjust basal insulin dose to achieve target using either fasting glucose for bedtime insulin or pre-dinner glucose levels for morning dosages

Practitioner-led titration (below left) can achieve target in a shorter time period than **patient-led titration (below right)**



Practitioner-led titration

OR

Patient-led titration

Mean FBG over previous two days (mmol/L)*	Adjust insulin dose twice weekly until FBG target is achieved
10	↑ by 4 units
8–9.9	↑ by 2–4 units
7–7.9	No change or ↑ by 2 units
6–6.9	No change
4–5.9	↓ by 2 units
<4, or if severe hypoglycaemic episode	↓ by 2–4 units

↑ by 2 units every three days, until FBG target is achieved

A. If FBG ≥6 mmol/L but ≤8 mmol/L for three consecutive days, no change

B. If FBG is 4–6 mmol/L on any day, ↓ insulin dose by 2 units

C. If FBG <4 mmol/L on any day, ↓ insulin dose by 4 units

*Do not increase the insulin dose if FBG is <4 mmol/L at any time in the preceding week

H.2. Guide to starting and adjusting premixed insulin

STEP 1. SELECT premixed insulin and injecting device



INSULIN-NAÏVE patients

STEP 2. START premixed insulin **10 units** immediately before or soon after the largest meal (usually evening meal)

CONTINUE metformin if indicated, consider tapering sulphonylureas as glycaemic control improves



STEP 3. TITRATION

Adjust the evening premixed insulin dose once or twice a week according to the schedule below to a fasting blood glucose (FBG)²⁸⁵

Lowest blood glucose level (BGL) reading (mmol/L) of the previous three days – fasting or preprandial	Insulin dosage adjustment
>10	↑ by 4 units
8–10	↑ by 2 units
7–7.9	No change or ↑ by 2 units
6–6.9	No change
4–5.9	↓ by 2 units
<4.0 or severe hypoglycaemic event*	↓ by 4 units

If a morning insulin dose is given, adjust the insulin dose according to evening preprandial BGL according to the same titration recommendations

*Hypoglycaemia should prompt a review of other oral therapy. Which insulin is adjusted depends on regimen and target glucose



STEP 4. INTENSIFICATION: Once daily insulin to twice daily premixed insulin

When?

- If the FBG is at target, if evening preprandial BGL > FBG or if evening preprandial BGL is high, or
- after three months if glycated haemoglobin (HbA1c) > target despite FBG and evening preprandial BGL at target

How?

1. Halve the current once daily insulin dose and give the total dose as a twice daily injection (pre-breakfast and pre-dinner)
2. Monitor pre-dinner BGL and FBG versus targets
3. Once a week, adjust both insulin doses independently (according to protocol above in step 3); pre-breakfast insulin is adjusted according to pre-dinner BGL and pre-dinner insulin is adjusted according to FBG

H.3. Guide to basal plus insulin intensification schedules

STEP 1. SELECT rapid-acting (prandial) insulin and injecting device to be added in addition to basal insulin



STEP 2. START rapid-acting insulin (4 units) to be given before the meal with the largest carbohydrate content

CONTINUE basal insulin at the current dose

CONTINUE metformin, consider tapering sulphonylureas as glycaemic control improves

MONITOR two-hour postprandial blood glucose level (BGL)



STEP 3. TITRATION

Increase rapid acting (prandial) insulin dose by 2 units every three days to achieve target

Two-hour postprandial BGL (mmol/L)	Rapid-acting (prandial) insulin dosage adjustment
≥8 (for three consecutive days)	No change or ↑ by 2 units
6.0–7.9	No change
4.0–5.9	↓ by 2 units
<4.0 on any day	↓ by 2–4 units



4. Basal plus titration to basal bolus - intensification

When?

If HbA1c is not at target after three months, add a further prandial insulin dose to another meal (eg basal plus 2 to basal bolus)

How?

1. Keep the current prandial and basal insulin doses unchanged
2. Add a new rapid-acting (prandial) insulin to the next largest meal of the day (starting at 10% of the basal insulin dose or 4 units)
3. ↑ new prandial insulin dose by 2 units every three days until postprandial target is achieved as per step 3 above