NPH & MIXED INSULIN DOSING GUIDE

DIABETES CARE ACADEMY

NPH Dosing

Initiating NPH as Basal Insulin

Total Basal Dose: 0.1 - 0.2 units/kg/day

typically dosed BID

Divide Total Basal Dose

Administer ⅔ total basal dose before morning meal

Administer ⅓ total basal dose at supper (or at bedtime)

Example

90 kg patient

90 kg x 0.2 units/kg/day = 18 units/day

Total Basal Dose = 18 units/day

⅔ x 18 units = 12 units before breakfast

⅓ x 18 units = 6 units before supper (or at bedtime)

If mealtime (bolus) insulin is also needed and costs are a concern, consider NPH + Regular Insulin as basal/bolus regimen

NPH + Regular Insulin Dosing

Initiating NPH (Basal) + Regular (Bolus) Insulin

TDD: 0.4 - 0.6 units/kg/day

with NPH dosed QHS and Regular insulin before meals

Divide Total Daily Dose

TDD is divided 50/50 between NPH & Regular Insulin (divided with meals)

Example

90 kg patient

TDD = 90 kg x 0.5 units/kg/day = 45 units/day

50% of 45 units = 0.5 x 45 units = 22.5 ≈ 22 units

NPH	Regular Insulin
50% of TDD QHS	50% of TDD divided with meals
22 units daily at bedtime	22 units ÷ 3 meals/day = 7.3 ≈ 7 units
	7 units before each meal

Mixed Insulin Dosing

Initiating 70/30 Mixed Insulin

Basal Dose: 0.4 - 0.6 units/kg/day

typically dosed BID

Divide Total Daily Dose

Administer ⅔ TDD before morning meal

Administer ⅓ TDD before evening meal

Example

90 kg patient

TDD = 45 units/day

⅔ x 45 units = 30 units before breakfast

⅓ x 45 units = 15 units before supper

Using Blood Glucose to Adjust NPH & Mixed Inulin Regimens

HYPOGLYCEMIA	HYPERGLYCEMIA
General Principle: If blood glucose (BG) is out of range prior to meals, modify the prior dose by the amount indicated below	
BG < 80 mg/dL ↓ prior dose by 20%	**BG = 110-139 mg/dL** ↑ prior dose by 1 unit
BG < 40 mg/dL ↓ prior dose by 40%	**BG = 140-180 mg/dL** ↑ prior dose by 10%
	BG > 180 mg/dL ↑ prior dose by 20%

AVOID Therapeutic Inertia

Re-evaluate and modify regimen regularly

Notes and Pearls

Mixed Insulins (70/30, 75/25, etc.)

- **Must** be taken with meals
- Fixed-dose pre-mixed insulin formulations limit regimen customization
  - Unable to titrate individual components to optimize basal/bolus dosing needs
  - Regimen designed to cover 2 meals and 1 snack--often suboptimal for patients eating 3 meals daily

NPH + Regular Insulin

- When using one syringe for NPH + Regular insulin as a single injection:
  - Draw up regular insulin **first**
  - Then draw up NPH and administer the mixture as a single injection
  - This method will prevent NPH contamination and inactivation of the regular insulin vial

Abbreviations

TDD = total daily dose
BG = blood glucose
NPH = Neutral Protamine Hagedorn
AC = before meals
QHS = daily at bedtime
QAM = each morning
BID = two times daily
QID = four times daily

Adapted from:

American Diabetes Association. 2025 Standards of Care. Accessed [September 2025]. diabetes.org

Updated: 10/2025

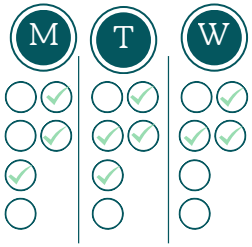
NPH AND MIXED INSULIN CONSIDERATIONS

DIABETES CARE ACADEMY

POTENTIAL CANDIDATES FOR NPH & MIXED INSULIN

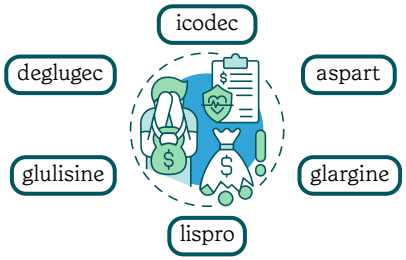
Patients with the following considerations:

1 Difficulty adhering to QID basal + bolus dosing

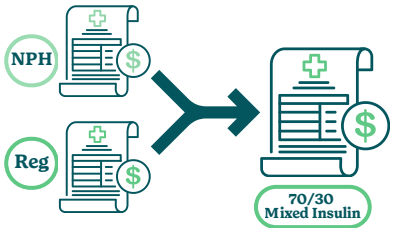


2 Only willing to take 2 injections per day, but needs mealtime coverage

3 Cannot afford insulin analogs for basal + bolus needs



4 Affordability concerns and need to minimize copays



COMMON DOSING SCENARIOS

Converting between NPH & Basal Insulin Analogs (i.e., glargine, degludec, etc.)

NPH to Basal Analog	Basal Analog to NPH
NPH to other basal insulins → 1:1 conversion	Basal insulins to NPH → 1:1 conversion
Example	Example
NPH 18 units in AM + 10 units in PM → Total basal dose = 28 units **Converted to glargine: 28 units QHS** or QAM if experiencing overnight hypoglycemia	30 units insulin glargine → Total basal dose = 30 units **⅔ of 30 units = 20 units before breakfast** **⅓ of 30 units = 10 units before supper (or at bedtime)**

Converting from Scheduled Mixed Insulin (70/30) to Basal + Bolus

Attempt to keep units of insulin within basal or bolus categories when possible, add total basal units (70%), then add total bolus units (30%) for TDD.

Example

Current regimen: Novolin 70/30: 30 units AM meal + 15 units PM meal → TDD = 45 units

	Basal (70%)	Bolus (30%)
30 units QAM:	70% of 30 = 21 units	30% of 30 = 9 units
15 units QPM:	70% of 15 = ~11 units	30% of 15 = ~4 units
	Total Basal = 32 units/day	**Total Bolus = 13 ≈ 12 units/day** *rounded for easy mealtime dosing*

Converted basal/bolus regimen: 32 units glargine daily and 4 units lispro before meals

Additional dose reductions or increases may be needed based on current glucose status

Converting from Basal + Bolus to Mixed Insulin (70/30) or NPH & Regular

NPH/Regular (70/30) Combo Pen or Other Mixed Dose Product	NPH + Regular as Separate Products
Calculate TDD and give: ⅔ of TDD before AM meal ⅓ of TDD before PM meal	• Add total basal units, then add total bolus units • Give total basal units QHS and divide total bolus units over meals
Example	Example
Current regimen: glargine 30 units QHS + lispro 10 units with three meals	**Current regimen:** glargine 30 units QHS + lispro 10 units with three meals
TDD = 60 units	TDD = 60 units
⅔ of 60 units = 40 units before breakfast ⅓ of 60 units = 20 units before supper	Total basal units: 30 units Total bolus units: 30 units *(divided with meals → 10 units per dose)*
New Regimen: Novolin (70/30) **40 units before breakfast** **20 units before supper**	**New Regimen: NPH + Regular Insulin** **NPH 30 units at bedtime** **Regular Insulin 10 units with meals**

Updated: 10/2025