DOWNSTATE HEALTH SCIENCES UNIVERSITY

(June 2024)

# Inpatient Insulin Guidelines (Adult, Non-Pregnant Patients)

## GLYCEMIC TARGETS

- Blood glucose (BG): 140 - 180 mg/dL
- Acceptable range: 100 - 220 mg/dL
- Individualize per patient. Consider less restrictive goals for patients at risk for hypoglycemia.

⚠ **AVOID** Severe Hypoglycemia (BG < 40 mg/dL) and Severe Hyperglycemia (BG > 300 mg/dL)

### HYPOGLYCEMIA Risk Factors

Prior hypoglycemia*
Older age
Poor oral intake
Renal disease
Liver disease
Adrenal disease
Pancreatic disease

### HYPERGLYCEMIA Risk Factors

Diabetes progression*
High-dose steroids*
Infection
Severe illness
Surgery
Diet nonadherence
Medication nonadherence

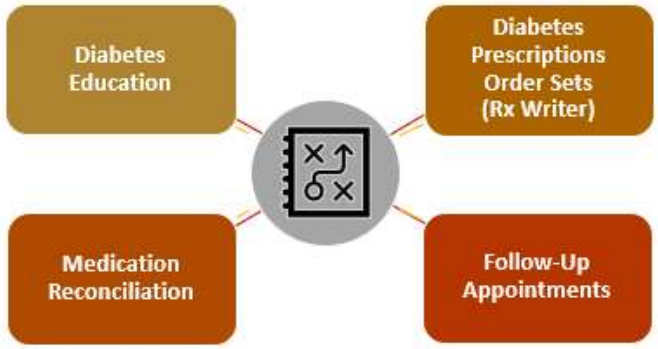
*Endocrinology Consult Recommended

## ENDOCRINOLOGY CONSULT CRITERIA

Page MD via AMION desktop app

- **REQUIRED:** BG < 50 mg/dL, insulin infusion pump
- **RECOMMENDED:**
  - Newly diagnosed DM
  - BG > 300 mg/dL (≥ 2 consecutive days)
  - BG > 250 mg/dL after insulin adjustment
  - DKA/HHS ready to bridge with SC insulin
  - Enteral/tube feeds
  - Parenteral nutrition
  - High-dose steroids

## DISCHARGE PLANNING CHECKLIST

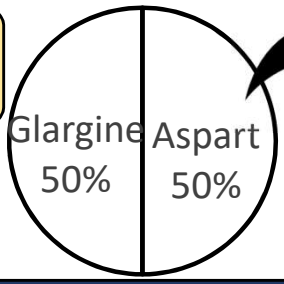



## INSULIN GUIDELINES – Patients EATING MEALS

### Insulin Initiation

**STEP 1.** Total daily dose (TDD) of insulin 0.2-0.4 unit/kg/day

**STEP 2.** Divide TDD:




**STEP 3.** Divide prandial (Aspart) over 3 meals/day

**Optional:** Correction-dose insulin (LOW or MODERATE regimen)

## CORRECTION-DOSE INSULIN (CDI) Regimens – *See Full Details in Med Orders*

| MEALTIMES | LOW DOSE | MODERATE DOSE | HIGH DOSE |
|---|---|---|---|
| **Recommended Patients** | < 30 Units TDD Insulin/ Hypoglycemia Risk | 30 – 80 Units TDD Insulin/ Most Patients | > 80 Units TDD Insulin/ Refractory to MOD CDI |
| **Starting BG value (and lowest correction dose)** | 201 (Add 1 unit Aspart) | 151 (Add 1 unit Aspart) | 151 (Add 2 units Aspart) |

| BEDTIME | LOW DOSE | USUAL DOSE |
|---|---|---|
| **Recommended Patients** | Prior Hypoglycemia, Type 1 DM, ESRD, Other Hypoglycemia Risk | Most Patients |
| **Starting BG value (and lowest correction dose)** ***In addition to Glargine HS*** | 301 (1 unit Aspart) | 301 (2 units Aspart) |

# Patients EATING MEALS Continued … INSULIN ADJUSTMENT GUIDELINES

**ASSESS DAILY**

- ❑ BG trends
- ❑ Missed insulin doses
- ❑ Additional/ Correction insulin doses
- ❑ Oral intake
- ❑ Hyperglycemia risk factors
- ❑ Hypoglycemia risk factors

*If fasting and other BG > 180 (same day), prioritize reducing fasting BG with GLARGINE.

See Endocrinology Consult criteria.

## HYPERGLYCEMIA Management – Considerations Based on POC FS Result*

| BG | ≥ 2 Fasting BG | ≥ 2 Pre-LUNCH/Pre-DINNER | ≥ 2 BEDTIME BG |
|---|---|---|---|
| > 180 | ↑ GLARGINE 1 - 2 units | ↑ prandial ASPART 1 - 2 units | ↑ prandial ASPART 1 - 2 units |
| > 250 | ↑ GLARGINE 2 - 3 units | ↑ prandial ASPART 1 - 2 units | ↑ prandial ASPART 1 - 2 units |
| > 300 | ↑ GLARGINE 2 - 4 units | ↑ prandial ASPART 1 - 2 units | ↑ prandial ASPART 1 - 2 units<br>Consider adding Bedtime CDI |

## HYPOGLYCEMIA Prevention and Insulin Management Guidelines

| | |
|---|---|
| 70 - 99 | ▪ Assess hypoglycemia risk factors.<br>▪ Consider 1-2 unit reduction of CURRENT insulin dose.<br>▪ If fasting BG, consider 1-2 unit reduction of GLARGINE dose.<br>▪ If pre-lunch/dinner/bedtime BG, consider 1-2 unit reduction of prandial ASPART dose.<br>▪ Reduce correction-dose insulin to LOW intensity regimen. |
| < 70 | ▪ Assess patient. Verify insulin was held and hypoglycemia treated.<br>▪ If ASPART is due, omit current dose.<br>▪ If GLARGINE is due, reduce current dose by 2-4 units (Do NOT OMIT).<br>▪ Reduce bedtime GLARGINE or prandial ASPART dose for the next preceding meal. |
| < 50 | Same actions as for BG < 70, PLUS Consult Endocrinology. |

# More INSULIN MANAGEMENT GUIDELINES (CDI = Correction Dose Insulin)

| STATUS | TDD Insulin | BASAL | PRANDIAL | Meal CDI | POC FS |
|---|---|---|---|---|---|
| **NPO** | For Type 1 DM, DO NOT omit Glargine. May need to adjust/reduce dose.<br>Day BEFORE Surgery (T1 or T2 DM): If Glargine given in AM, give usual dose. If given in PM, reduce dose by 30-50%.<br>Day OF Surgery: If Glargine given in AM, reduce dose by 20-30% for Type 1 or 50% for Type 2 DM. | | Discontinue | Insulin Aspart CDI at meal-time schedule (TID) | TID pre-meal times + HS<br>Check FS 2-hr pre-op. |
| **TPN**<br>If TPN abruptly stopped, give D10W at same rate. | TPN team orders in TPN bag if needed | Discontinue SC Glargine | Discontinue | Moderate CDI Insulin Regular QID | QID. Check FS if TPN stopped. |
| **ENTERAL FEEDS - *BOLUS*** | Reduce TDD (Glargine + Prandial) by 20% | **50%** TDD as Glargine | **50%** TDD as Insulin Regular, divided over 4 boluses/day | | QID prior to each bolus |
| **ENTERAL FEEDS - *CONTINUOUS***<br>If feeds stopped ≥ 2 hr, give D5W at same rate. | Reduce TDD (Glargine + Prandial) by 20% | **40%** TDD as Glargine | **60%** TDD as Insulin Regular, divided over 4 boluses/day | | QID. Check FS if feeds held > 2 hrs. |
| **CLEAR LIQUIDS** | | Give 50-70% of usual Glargine daily dose | Discontinue | CDI - Insulin Regular TID | TID pre-meals + HS |

# Special Situations

**DKA/HHS**

- Follow hospital protocol (View on Pharmacy intranet)
- Protocol for ED/Critical Care use (Form available in ICU/ED)
- Consult Endocrinology when ready to bridge with SC insulin

**INSULIN INFUSION PUMP (Patient's Own Pump)**

- Endocrinology Consult and patient consent REQUIRED
- Will require insulin pump-specific orders
- Patient must supply own SC infusion pump supplies

**References:** (1) *Society of Hospital Medicine.* 2015;84:124-36. (2) *The Journal of Clinical Endocrinology & Metabolism.* 2022, 107, 2101–2128. (3) *Diabetes Care.* 2023;46(Suppl.1):S267–S278. (4) *Diabetes Care.* 2023;46(Suppl.1):S97–S110.