SUBCUTANEOUS INSULIN ALGORITHM (non-critical patient)

**REGULAR INSULIN REGIMEN**

- Prebreakfast, lunch, and dinner every day/hold eating

**CORRECTION BOLUS**

- Hypoglycemia protocol, half dose after eating

<table>
<thead>
<tr>
<th>GLUCOMA (mg/dl)</th>
<th>UNITS (L)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>(40U/lday)</th>
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<tr>
<td>&lt;70</td>
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<td>-1</td>
<td>-2</td>
<td>-4</td>
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**REGULAR INSULIN REGIMEN**

- Insulin glargine or detemir

- Basal bolus: LUNCH AND DINNER
  - (apart, lispro, glargine)

- 1. CORRECT BOLUS A, B, C

- 2. CORRECT BOLUS D, E, F

- 3. CORRECT BOLUS G, H, I

- **DOSE CALCULATION:** (based in previous treatment)
  - A, B, C: or no treatment: regular dose 24h, 50% basal and 50% in 3 bolus
  - Basal: A = basal and 50% of this dose in 3 bolus
  - Basal: B = basal and 50% of this dose in 3 bolus
  - Basal: C = basal and 50% of this dose in 3 bolus

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- Basal bolus: LUNCH AND DINNER

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- Basal: E = basal and 50% of this dose in 3 bolus

- Basal: F = basal and 50% of this dose in 3 bolus

- Basal: G = basal and 50% of this dose in 3 bolus

- Basal: H = basal and 50% of this dose in 3 bolus

- Basal: I = basal and 50% of this dose in 3 bolus

**DIABETIC KETOACIDOSIS/ HYPEROSMOLAR STATE**

- **FLUIDS:***
  - Start with 1000ml 0.9% saline iv in 1h.
  - After 250-500mL/h saline iv 0.9% Low Na or hypotonic iv 0.3% normal-High. Na. When glucose <200 mg/dl glucose 5% 100-150cc/h.

- **INSULIN:**
  - 0.1 U/kg regular insulin direct bolus insulin infusion iv start with pattern 2.

**SPECIAL SITUATIONS**

- HbA1c <6%: Postprandial treatment
  - DM unspecified or HbA1c >8%: Initiate or intensified treatment (Consult ENDOCRINOLOGY UNIT)

**PERFORMANCE AT HOSPITAL DISCHARGE**

- DM1, PUMP, Prognosis DM, DM, Parenteral nutrition, alms doceo insulin, DM inestable, etc. (Consult ENDOCRINOLOGY UNIT)

**SUBCUTANEOUS INSULIN TYPES**

1. **BASAL INSULINS** (fasting glycemic control)
   - ULTRALONG ACTING (every 24h):
     - Glargine (Lantus®), Abasaglar®
     - Detemir (Leverem®)

   - INTERMEDIATE ACTING (every 12h) NPH/Insulatard (40/40 U), Humulin NPH (Humalog basal®)

2. **BOLUS INSULINS** (prandial glycemic control)
   - ULTRA SHORT ACTING (2-4h, inject prior eating)
     - Aspart (NovoRapid®)
     - Lispro (Humalog®)

   - GLUTAMINE (Apidra®)

   - SHORT ACTING (6-8h, inject 30min before eating)
     - Regular (Actrapid®, Humulin Regular®)

3. **MIXTURES INSULINS** (1st cifra indica proporcion de insulina bolus)
   - Aspart + NPH (Novomix® 30,50,70)
   - Lispro + NPH (Humalog Mix® 25.50)
   - Rápidos + NPH (Mixtard®30, Humulin®30,70)

**bolus-basal regimen adjustment**

**HYPOGLYCEMIA**

- Basal and prandial before eating

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<tr>
<td>&gt;16 U/24h</td>
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**HYPOGLYCEMIA MANAGEMENT**

- **Fasting**: 24h (supplementary tests)

- Regular insulin or mixtures: half dose of basal.

- **Bolus basal regimen**: suspend bolus y maintain basal + correction.

- **Fasting 24h (sugary)**

- **Suspen subcutaneous insulin and start FLUID INSULIN REGIMEN iv, iv**

**FLUID INSULIN REGIMEN**

- Glucose 5% 500 mL iv with 10-20 mEq/kL every 6h.

- If, not first glucose dose of regular insulin according to glycemia.

- **CAPILAR GLYCEMIA**: at each change of glucose.

- **ADJUSTMENT**:
  - glycemia 121-180 or >181 and lowering =0 same dose
  - glycemia 181 or lowering <50 +2u
  - glycemia >251 or lowering <50 +4u
  - glycemia >351 or lowering >50 +10u

**INSULIN INFUSION (critical ill patient)**

- Glucose 5% 60-100 mL/h ±2 ±1 mEq/kL of CIK.

- **INSULIN REGIMEN**

- Saline 0.9% or 100 regular insulin in 100 mL (1U/ml)

- **START**
  - Pattern 1
  - Pattern 2 if >400U/día, high dose of glucocorticoid, diabetic ketoacidosis diabetic/hyperosmolar state

- **CAPILAR GLYCEMIA**

- Every hour to target 140-180 mg/dl, every hour 2.4 h.

- **ADJUSTMENT**:
  - Lower pattern: glycemia 140-180 or >180 with lowering >50.
  - Lower pattern: glycemia >180 or lowering <50.

- **TRANITION TO SUBCUTANEOUS INSULIN**

- Dose calculate: insulin last 6h x4

- **DISTRIBUTION**
  - Basal bolus regimen (50% basal - 50% bolus)

- **OVERLAP**: maintain infusion 3 h after administer basal

**MAIN REFERENCES**

4. Protocolo de manejo hospitalario de la Diabetes. Hospital de la Princesa. (Madrid)