GUIDELINES FOR INPATIENT DIABETES MANAGEMENT

These recommendations do not take into account individual patient situations, and do not substitute for clinical judgment.

Changes in diet, activity, medications (i.e.: steroids), and acuity of illness (i.e.: infection, renal insufficiency) may quickly change treatment requirements

Inpatient Blood Glucose Targets: 80-180mg/dL (In the ICU setting: 80-150 mg/dL)

Initiate Hypoglycemia Treatment Protocol (HTP) for capillary blood glucoses <70mg/dL

Suggested timing of Capillary Blood Glucose (CBG) Monitoring:

QAC & HS (before meals and at bedtime): patients with consistent oral intake at mealtimes

BID (before breakfast and supper): stable patients receiving oral agents or one insulin injection daily

Q 6 hours: patients who are NPO or receiving continuous nutrition over 24 hours

Q 4 hours: patients who are NPO or receiving continuous nutrition with fluctuating blood glucoses requiring close monitoring

Q 3 AM: added to QID or BID regimens for patients at risk for nocturnal hypoglycemia

Initiating Subcutaneous Insulin: Usual starting dose is 0.2-0.4 units/kg/day

- 50%-70% of total daily dose is given as intermediate or long acting insulin
  - If NPH used as the basal insulin, give 1/2 to 2/3 of total daily dose in AM and 1/3 to 1/2 in PM
  - If insulin glargine (Lantus®) is used as the basal insulin, start once daily in AM or PM
- 30-50% of total daily dose is given as short or rapid acting insulin as Nutritional/Prandial in 2-3 divided doses with meals

Managing Subcutaneous Insulin Therapy: General Guidelines for the prescriber (all insulin **MUST** be ordered in number of units to be given)

Adjusting subcutaneous insulin

- If 2 or more CBG were < 80 mg/dL – use 80% of previous day's total daily dose
- If 2 or more CBG were > 180 mg/dL and none were < 80 mg/dL, increase total daily dose by 10%

If patient is made NPO

- NPH insulin: Give ½ usual dose plus correction insulin
- Insulin glargine (Lantus®): Give 50-80% of usual dose plus correction insulin
- Pre-mixed insulin: Give 1/3 of the usual dose as NPH (for example: for 30 units 70/30, give 10 units NPH)—this approximates ½ the usual NPH component of the pre-mixed insulin dose
- When full doses of basal insulin are given, and patient is made NPO
  - For patients previously eating: begin IV of D5 at 75-100 ml/hour (if able to tolerate IV fluids)
  - For patients previously on enteral feedings: begin D10W at the same rate of enteral feeding,
  - Continue IV fluid for 12 hours following last NPH dose or 24 hours following last glargine (Lantus®) dose

Subcutaneous Insulin: Scheduled insulin		***Correction Insulin***
Basal insulin: Intermediate or long acting insulin required to sustain basic metabolic functions. **Reduce the dose if NPO**	**Nutritional/Prandial Insulin:** Short or rapid acting insulin used to prevent a rise in blood glucose following meals. **Hold if NPO**	**Sliding scale:** Short or rapid acting insulin used to treat hyperglycemia. **Do NOT hold if NPO**
• Basal insulin is required for all patients with type 1 diabetes and most patients with insulin-requiring type 2 diabetes	• Regular insulin: onset of action is 30-60 minutes (best given 30-60 minutes before meals)	• Supplement to scheduled insulin or oral agents
• Basal insulin should be used for patients who have received 24-48 hours of correctional (sliding scale) insulin monotherapy and still have 2 or more blood glucose readings >180mg/dl per day	• Rapid acting analogues (insulin lispro and aspart): onset of action is 15-30 minutes. In the hospital, it is best to give when meal tray is in front of patient or immediately after eating (if it is unclear whether the patient will eat).	• Use without basal insulin is contraindicated in patients with type 1 diabetes
• Usually accounts for about 50-70% of total daily dose of insulin	• Usually accounts for about 30-50% of total daily dose of insulin, divided by 3 meals	• Can be used short term (less than 24-48 hours) as monotherapy to help determine
Insulin glargine (Lantus®) NPH insulin (HumuLIN® N)* * may provide some nutritional coverage	Regular insulin (HumuLIN® R) Insulin aspart (NovoLOG®) Insulin lispro (HumaLOG®) Insulin glulisine (Apidra™)	Regular insulin (HumuLIN® R) Insulin aspart (NovoLOG®) Insulin lispro (HumaLOG®) Insulin glulisine (Apidra™)

Pre-mixed Insulin: HumuLIN® 70/30; NovoLOG® Mix 70/30; HumaLOG® Mix 75/25; HumuLIN® 50/50

- Pre-mixed combination of intermediate acting and short or rapid acting insulin (basal and nutritional/prandial)
- Pre-mixed formulations do not allow for precise dose adjustments

Suggested Correction Scale based on clinical presentation

- Very Low Dose Scale: Suggested starting point for thin and elderly and those on nutritional insulin with each meal
- Low Dose Scale: Usual suggested starting point for most patients, including those being initiated on TPN
- Moderate Dose Scale: Suggested for insulin-resistant patients and those receiving high dose corticosteroids
- High Dose Scale: Used rarely except for patients with severe insulin resistance

Oral Diabetes Medications:

- May be continued during hospitalization unless contraindicated
- To avoid hypoglycemia, hold sulfonylureas and nonsulfonylurea insulin secretagogues (repaglinide [Prandin®] or nateglinide [Starlix®]) if patient is NPO or has significantly lower nutritional intake or renal function from baseline
- Discontinue metformin and thiazolidinediones (pioglitazone [Avandia®] or rosiglitazone [Actos®]) for acute exacerbations of CHF
- Discontinue metformin for renal insufficiency and hold at the time of and for at least 48 hours after iodinated contrast dye; restart when serum creatinine <1.5 in men and <1.4 in women