INSULIN ALGORITHM FOR TYPE 1 DIABETES MELLITUS[1] IN CHILDREN AND ADULTS

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ABBREVIATIONS:

BASAL: Glargine or Detemir
BOLUS (Prandial):
Reg: Regular Insulin (peak action 3-4 hrs)
RAI: Rapid Acting Insulin = Aspart, Glulisine, or Lispro (peak action 1-1 ½ hrs)
PPG: Post-Prandial Glucose
SMBG: Self-monitored blood glucose[2]
TDI: Total daily insulin dosage in units

Targets

A1c ≤ 6.5%
Fasting SMBG[2] <110 mg/dL
2-hr PPG SMBG <140-180 mg/dL
Individualization is recommended for those with chronic disease or other comorbidities associated with high risk for hypoglycemic events, especially younger children† and elderly.
†American Diabetes Association Clinical Practice Recommendations 2006, Diabetes Care 2006:29(suppl 1):S27.

Split-Mix Insulin Therapies[3]

1. NPH + Reg or RAI
   2:1 ratio AM; 1:1 ratio PM
2. AM: NPH + Reg or RAI
   PM: Reg or RAI
   HS: NPH
   2/3 TDI ÷ as 2/3 AM NPH + 1/3 as Reg or RAI
   1/3 TDI ÷ as ½ PM Reg or RAI + ½ NPH at HS
3. Premix
   2/3 AM + 1/3 PM

Total Daily Insulin[4]: 0.3-0.5 units/kg/day, and titrate to glycemic targets

OR

Intensive Insulin Therapy (IIT) – Physiologic Insulin
1:1 basal:bolus ratio SQ

Basal: Glargine QD or Detemir QD-BID[5,8]

Bolus: RAI (or Reg) before each meal: If meal skipped, skip dose.

Premeal insulin dose includes:

1. Insulin to cover carbohydrate ingested[6]; 1 unit RAI covers 500/TDI grams carbohydrate from meal
2. Additional insulin to correct for high SMBG; 1 unit RAI lowers PG by approximately 1800/TDI mg/dL. (Reg lowers PG by ~1500/TDI)
3. Consider adjustment for exercise[7]

Total Daily Insulin[4]: 0.3-0.5 units/kg/day and titrate to glycemic targets

Pramlintide[1,8]
Consider as adjunct therapy to insulin in patients unable to stabilize PPG.

Follow A1c Every 3-6 months and Adjust Regimen to Maintain Glycemic Targets

[1] **Consider referring all type 1 patients to pediatric/adult endocrinologist/comprehensive diabetes specialty team, and consider continuous glucose monitoring.** If insulin pump therapy is considered-refer to Certified Pump Trainer
[2] Modern glucose meters give values corrected to plasma glucose.
[3] Most type 1 patients need IIT to attain glycemic targets; IIT may be by SQ multiple injection or by SQ continuous insulin pump.
[4] Dosages may differ in children and adolescents.
[5] Twice daily dosing may be required at low basal insulin doses.
[6] **Strongly recommend referral to Registered/Licensed Dietitian or Certified Diabetes Educator with experience in diabetes nutrition counseling.**
[7] Consider decreasing 1 unit for every 30 minutes of vigorous physical activity.
[8] IMPORTANT: **See package insert for dosing.**

See web site (http://www.texasdiabetescouncil.org) for latest version and disclaimer.