TEXAS Department of State Health Services
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INSULIN ALGORITHM FOR TYPE 1 DIABETES MELLITUS IN CHILDREN AND ADULTS[1]

TEXAS DIABETES COUNCIL
Revised 1-27-10

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[3]
TDI: Total daily insulin dosage in units

Glycemic Goals[2,3]
Individualize goal based on patient risk factors

A1c	≤6%	<7%	<8%
FPG	≤110	120	140 mg/dL
2h PP	≤130	180	180 mg/dL

Split-Mix Insulin Therapies[4]

1. Two shots: NPH + Reg or RAI
   2:1 ratio AM; 1:1 ratio PM
2. Three shots: 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. Two shots: Premix
   2/3 AM + 1/3 PM

Total Daily Insulin[5]: 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[6,9]

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

Premeal insulin dose includes:

1. Insulin to cover carbohydrate ingested[7]; 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[8]

Total Daily Insulin[5]: 0.3-0.5 units/kg/day and titrate to glycemic targets

Pramlintide[1,9]
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

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

[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] **Intensify management if:** Absent/stable cardiovascular disease, mild-moderate microvascular complications, intact hypoglycemia awareness, infrequent hypoglycemic episodes, recently diagnosed diabetes. **Less intensive management if**: Evidence of advanced or poorly controlled cardiovascular and/or microvascular complications, hypoglycemia unawareness, vulnerable patient (ie, impaired cognition, dementia, fall history). SEE "A1c Goal" treatment strategy for further explanation. A1c is referenced to a non-diabetic range of 4-6% using a DCCT-based assay. ADA Clinical Practice Recommendations. *Diabetes Care* 2009;32(suppl 1):S19-20.
[3] Modern glucose meters give values corrected to plasma glucose.
[4] Most type 1 patients need IIT to attain glycemic targets; IIT may be by SQ multiple injection or by SQ continuous insulin pump.
[5] Dosages may differ in children and adolescents.
[6] Twice daily dosing may be required at low basal insulin doses.
[7] **Strongly recommend referral to Registered/Licensed Dietitian or Certified Diabetes Educator with experience in diabetes nutrition counseling.**
[8] Consider decreasing 1 unit for every 30 minutes of vigorous physical activity.
[9] IMPORTANT: **See package insert for dosing.**