“Treat to Target” NPH Algorithm for Mgt of Type 2 Diabetes”*

Targets: A1c < 7%, fasting or pre-meal SMBG 80-120 mg/dL, 2 hours postprandial 120-160mg/dL

1. **Start bedtime NPH first to correct pre-breakfast hyperglycemia.** Increase by 2 units every 2 days until pre-breakfast SMBG is 80-120 mg/dL.
2. **Add morning NPH to correct pre-dinner hyperglycemia.** Increase morning dose 2 units every 2 days to achieve pre-dinner SMBG 80-120 mg/dL &/or post-dinner SMBG below 160 mg/dL.

**Insulin Titration Directions**

- **Either Method 1**
  - Start 0.1 - 0.2 units per kg
- **OR Method 2**
  - BMI ≥ 28 Start 10 units
  - BMI < 28 Start 5 units

- **Lantus**
  - 80% of NPH dose OR
  - BMI ≥ 28 Start 10 units
  - BMI < 28 Start 5 units

If SMBG drops below 70 mg/dL, reduce by 2 units the dose of insulin: hs NPH or Lantus for ac b'fast SMBG or AM NPH for ac dinner SMBG

*See the disclaimer on page 5 of 2005/2006 Clinical Practice Guidelines Handbook, KPSC

**Alternative: combination bid NPH and/or rapid or short-acting insulin. This may require more frequent SMBG.

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- **On maximally tolerated oral meds and A1c > 7%**.
  - Start & titrate bedtime NPH*

- **Repeat nocturnal hypoglycemic episodes?**

- **No**
  - Continue HS NPH

- **Yes**
  - Switch to HS Lantus and titrate to pre-b'fast SMBG 80-120

- **Pre-dinner SMBG >120 ?**

- **No**
  - Continue bedtime NPH

- **Yes**
  - Add ac b’fast NPH and titrate to pre-dinner SMBG 80-120**

- **Pre-dinner SMBG >120 ?**

- **No**
  - Continue bedtime Lantus

- **Yes**
  - Add Regular or Novolog ** before meals

- **Order repeat A1c for 6 weeks**

- **A1c < 7%?**

- **No**
  - Consult diabetes specialist

- **Yes**
  - Continue current therapy and reorder A1c for 6 months
“Treat to Target” Algorithm for Management of Type 2 Diabetes*

Targets: A1c < 7%, pre-meal SMBG 80 - 120 mg/dL, 2 hours post-prandial 120 - 160 mg/dL

**Poor A1c Control; New or Established Dx**

- **Assess for excessive calorie or carb intake, serum creatinine, ALT, UA**
  - **A1c ≥ 8.5 and/or pre-meal BS ≥ 250**
    - **Start &/or titrate NPH Insulin FIRST and consider oral hypoglycemic agent(s) combination**
    - **SMBG at Target?**
      - **No**
      - **Preferred**
        - Add NPH Insulin. See TTT Insulin Algorithm. Earlier use of Insulin will accelerate A1c optimization
      - **Alternate**
        - **Order 6 wk repeat A1c**
    - **Yes**
    - **Start &/or titrate glip/met combo**

- **Assess A1c and pre-meal SMBG**
  - **A1c < 8.5 and/or pre-meal BS < 250**
    - **Start &/or titrate metformin (or titrate existing glipizide or glyburide)**
    - **SMBG at Target?**
      - **No**
      - **Add &/or titrate 2nd Rx: glipizide or metformin**
      - **SMBG at Target?**
        - **No**
        - **Start &/or titrate pioglitazone if patient declines NPH (or if metformin can’t be used)**
        - **Order 6 wk repeat A1c**
      - **Yes**
      - **Preferred**
        - **Order 6 wk repeat A1c**

- **Ketonuric and pre-meal BS > 250**

**Medication**

- **1 Glipizide 5mg**
  - 1/2 bid → 1 bid → 2 bid

- **1 Glipizide 5mg ER**
  - 1 daily → 2 daily → 4 daily

- **1 Metformin 500mg**
  - ½ bid → 1 bid → 2 bid

- **1 Metformin ER 500mg**
  - 1 daily → 2 daily → 4 daily

- **2 Glipizide/Metformin 5/500 Combo**
  - ½ bid → 1 bid → 2 bid

- **3 Glyburide 5mg**
  - ½ bid → 1 bid → 2 bid

- **4 Pioglitazone**
  - 15mg 1 daily → 2 daily → 3 daily

**Cautions**

- Each medication should be titrated individually to the maximum dose. e.g., titrate glipizide ER to 20mg/day or glipizide to 40 mg/day before titrating metformin to 2000mg/day.
- Patients with diabetes should do SMBG before and two hours after at least one meal daily.
- Glipizide: Caution patients on the increased risk of hypoglycemia when adding glipizide.
- Metformin: Caution if creatinine >1.5 males & >1.4 females, liver disease, alcoholicism, and decompensated hypoxic conditions: HF, COPD, CKD, etc.
- Hold metformin during volume-depleting illnesses, acute renal failure (GFR fall > 25-50%), and planned iodinated intravenous contrast use. Glipizide, not metformin, is preferred agent to titrate for GFR < 60ml/min.
- Glyburide: Glipizide is the preferred drug over glyburide. Do not start or continue gluburide Rx’s if > 60 years old. May titrate existing glyburide Rx if under 60 years old.
- Pioglitazone is contraindicated in moderate or severe CHF. Check baseline ALT. Hold >3x normal, recheck in 6 weeks and periodically thereafter. Consider pioglitazone if patient is not a candidate for metformin.