

This is a sample standardized procedure for Diabetes Mellitus Type 2 Management from the Kaiser Permanente Los Angeles Medical Center (dated from 9/2020).

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KAISER PERMANENTE

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Location: AMBULATORY	Old Policy Number: 3005	On-Line Policy Number:
Section: COMPLETE CARE	Effective Date:	Page 1 of 66
Title: STANDARDIZED PROCEDURE: DIABETES MELLITUS TYPE 2 MANAGEMENT	Review / Revise Date: 09/20	
Approved by: MEDICAL REVIEWER: DR. CHARLES THOMAS – 06/21 COMPLETE CARE DEPARTMENT ADMINISTRATOR – 06/21 PHARMACY & THERAPEUTICS – 09/21 AMBULATORY POLICY COMMITTEE – 10/21 INTERDISCIPLINARY PRACTICE COMMITTEE – 01/22	☐ Medical Center Wide ☐ Department Specific ☒ Ambulatory ☐ Hospital	☐ Non-Clinical ☒ Clinical
Owner/Responsible Party: AMBULATORY PRACTICE COMMITTEE		

Workplace Safety Key Points (WSKP) are included in this document for your protection.

1. Always use Standard Precautions including Personal Protective Equipment (PPE) when handling any blood/body fluid, liquids, and chemicals (e.g. disinfectant) or when handling spills.
2. Handwashing is the single most effective means of controlling the spread of infection; remember to always **WASH YOUR HANDS**.
3. Use proper body mechanics and equipment during patient transfer and/or repositioning. When lifting, bend at the hips and/or knees and keep your back straight. Ensure your work area is ergonomically correct.
4. Dispose of Sharps according to policy and procedure. **NO NEEDLE RECAPPING**

REFERENCE:

- Adult Diabetes Clinical Practice Guidelines- Kaiser Permanente National Clinical Practice Guidelines
 - “Initial Drug Therapy for Glucose Lowering in Type 2 Diabetes”
 - “Step Therapy for Glucose Control”
 - “Treat to Target (TTT)”
- Title 22, Section 70706
- Nursing Practice Act, Business and Professions Code Section 2725
- LAMC P&P # 1026: Chronic Condition Treatment Monitoring Standing Order
- LAMC P&P # 1016: Standing Orders for Proactive Care Support
- LAMC P&P # 1021: Criteria for Development, Approval, and Implementation of Standardized Procedures

PURPOSE:

1. To standardize the active management of patients with Diabetes Mellitus (DM) Type 2.
2. To define the clinical situation and treatment of DM Type 2 by the Registered Nurse (RN) in an expanded role.

SCOPE:

LAMC-SCPMG Registered nurse (RN) working in Complete Care, Primary Care, Internal Medicine, or Family Medicine caring for patients with Diabetes Mellitus (DM) Type 2 who has demonstrated competency in using this protocol.

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POLICY:

1. Patients referred for management under SP must have an established diagnosis specific to the disease or condition being managed documented in the chart by the provider.
2. The RN shall act in accordance to written standardized procedures in the management of DM type 2.
3. Circumstances under which a RN may perform in accordance with procedure:
 - A. Patient specific, medication specific order (ATTACHMENT A) to follow this standardized procedure and protocol for diabetes mellitus Type 2 management from a medical doctor (MD), Doctor of Osteopathic Medicine (DO), nurse practitioner (NP) or physician assistant (PA).
 - B. Setting:
 - 1) RNs shall activate this protocol under the provision of care for Kaiser Permanente (KP) Health Plan members.
 - 2) RNs shall provide patient care to these patients, in-person, virtually, and/or telephonically and ongoing management in accordance with approved protocols.
 - C. Supervision
 - 1) Physicians are responsible for supervising registered nurses utilizing the SP.
 - 2) The physician shall see the patient or review the care at least once a year and renew the patient specific, medication specific order on an annual basis if the patient continues to be managed under this protocol.
 - 3) Physicians shall be available for consultation and collaboration with RNs.
 - a) When the patient is receiving care in the Medical Office Building (MOB), a physician must be on-site and readily available to provide assistance and direction.
 - b) RN shall consult with mentor physicians and/or primary care physicians in emergent conditions that require prompt medical attention, conditions not resolving as expected, issues that which falls beyond the scope of practice addressed in this protocol, and upon request of patient and/or physician.
 - 4) The mentoring physician is responsible for assuring there is a physician available when:
 - a) The RN requests the physician to see the patient, e.g. the patient is not responding to therapy.
 - b) The patient requests to see the physician.
 - c) There is an onsite urgent or emergency situation.
 - d) The RN needs to consult with a physician.
 - 5) Mentor/consulting physicians shall be available to the RN in person during designated rounds, by phone, or by computer-based communication.
 - D. Patient Conditions
 - 1) Inclusion Criteria:
 - a) Diagnosis of Diabetes Mellitus Type 2
 - b) Referral/Authorization by PCP
 - c) Adults ages 18 years through 74 years old
 - d) Kaiser Permanente members with PCP in the Los Angeles Medical Center
 - 2) Exclusions Criteria:
 - a) Diabetes Mellitus Type 1

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- b) Pregnant
- c) Hospice/Palliative Care/Skilled Nursing Facility patients
- d) Pediatric patient (< 18 years old)
- e) Unstable psychiatric illness
- f) Non-Kaiser Permanente members
- g) Special circumstances as discussed and agreed upon by RN and mentor physicians/PCP where provision of care by RN considered unlikely to improve and/or may be detrimental to patient care.

E. Discontinuation of selected medication for the treatment of DM Type 2 shall be the responsibility of the physician mentor.

PROCEDURE:

Patient Assessment:

1. Subjective Data

- A. Symptoms of hyperglycemia (polyuria, polydipsia, blurred vision, weight loss)
- B. Symptoms of hypoglycemia (sweaty, dizzy, shaky, headache, hungry, weak, lightheadedness, irritable, confused, seizure, blurred vision)
- C. Reported adverse effects to medication regimen
- D. General medical history which may include:
 - 1) Medical/Disease history
 - 2) Diet
 - 3) Social history
 - 4) Family history
 - 5) Smoking status
 - 6) Allergies

2. Objective Data

- A. Self-monitoring blood glucose (SMBG)
- B. Laboratory – hemoglobin A1c, serum creatinine, lipid panel, microalbuminuria, liver function tests, blood glucose levels
- C. Physical assessments may include (most inapplicable if telephone encounter)
 - 1) General appearance, BMI
 - 2) Mental and emotional status: assess for signs of denial, anxiety, readiness for change, and depression (PHQ-9)
 - 3) Skin: examine for lesions, rashes, and injection sites when appropriate
 - 4) Eyes: assess for completion of retinal screening
 - 5) Cardiovascular: measure blood pressure for hypertension or orthostatic hypotension
 - 6) Feet and extremities: examine for lesions, calluses, and ulcers. Evaluate for altered sensation: vibratory and/or nylon filament 5.07/10gram. Palpate for decreased or absent peripheral pulses.
 - 7) Blood glucose by capillary fingerstick

3. Assessment of current disease state (see ATTACHMENT B: Treatment Goals)

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- A. Achievement of treatment, monitoring, lifestyle modifications

Treatment Plan:

1. Patient Education (may include the following):

- A. Review disease process and treatment goals
- B. Stress the importance of lifestyle modification (diet, exercise and weight management) in achieving optimum blood glucose control.
- C. Stress importance of following a consistent meal plan and avoidance of skipping meals.
- D. Advise patient to keep a record of SMBG
- E. Review signs and symptoms of hypoglycemia and instruct patient appropriate interventions
 - 1) Signs and symptoms: sweaty, dizzy, shaky, headache, hungry, weak, lightheadedness, irritable, confused, seizure, blurred vision
 - 2) Emphasize importance of carrying 30 grams of simple carbohydrates (CHO) on their person when out of the house.
 - 3) If symptoms of hypoglycemia occur, they should take 15 grams of CHO, wait 15 minutes, and if symptoms persist, take 15 more grams of CHO. Glucose tabs are convenient, portable, and don't tend to lead to over treatment. Follow up with a snack (i.e. cheese and crackers, or ½ sandwich containing protein)
 - 4) Examples of 15 grams of CHO:

Glucose Tablets	3
Dextro 4 Tablets	4
Gum drops	15
Small Life Savers	8
Granulated Sugar	4 teaspoons
Orange Juice	1/2 cup
Grape Juice	1/3 cup
Non-diet soda	1/2 cup
 - 5) Minimize risk of hypoglycemic event: maintain consistent balanced meal patterns, avoid skipping meals, keep carbohydrate source on hand at all times.

2. Medication Management

- A. Review of medications: directions for use, adverse effects, mechanism of action
- B. Reinforce adherence to medication therapy as prescribed by authorized prescribing provider.

3. Medication Adjustment – Patient-specific Medication-specific authorization granted by physician. **(See ATTACHMENT C through K: Medication Adjustment)**

- A. Increase medication per algorithm to the next step when the following criteria have been met:
 - 1) Reported adherence to current therapy (> 80% of doses) with at least 7 SMBG readings in the past 14 days
 - a) Pre-meal blood glucose: 50% or more of pre-meal SMBG reported above 120 mg/dL
 - b) Post-prandial blood glucose: 50% or more of post-prandial SMBG reported are above 160 mg/dL

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- 2) No more than 1 blood sugar below 80 or reported hypoglycemic symptoms not associated with delayed or missed meals.
- 3) No severe hypoglycemic events (BS less than 40)
- B. Decrease medication per protocol algorithm to the lower step when the following criteria has been met:
 - 1) On glipizide or combination glipizide/metformin and ≥ 2 Fasting blood sugars < 70 in the past 14 days OR Frequent reports of hypoglycemic events that are not associated with delayed or missed meals.
- C. Monitoring and Follow up Post-Medication Adjustment
 - 1) Order A1c to be completed 6 weeks post-medication adjustment
 - 2) SMBG at least 2 times per day (prefer fasting blood sugar daily) or more as instructed per algorithms
4. Medication Education (ATTACHMENT M: Medication Education)

PHYSICIAN CONSULTATION:

1. Communicate with the physician immediately for the following conditions/situations:
 - A. Patient complains of chest pain, severe shortness of breath, severe headache, or symptoms of renal failure.
 - B. Panic lab values
 - C. Symptomatic hypotension
 - D. Signs/Symptoms of ketoacidosis: Elevated BS (> 240 mg/dL or any blood sugar if patient taking SGLT-2 inhibitor), nausea/vomiting, headache, dizziness, troubled breathing, excessive thirst, bad taste in mouth – salty, alcoholic, metallic, fruity breath, stomach pain, positive ketones in urine.
 - E. Severe adverse reactions: allergic reactions, severe GI disturbance
 - F. Severe hypoglycemic events (loss of consciousness, seizure, blood sugars < 40)
2. Notify the patient's primary care physician verbally or electronically regarding:
 - A. Worsening symptoms unresponsive to treatment per protocol.
 - B. New medication orders
 - C. Any contraindications and/or worsening GFR < 30 resulting in the need to reassess the treatment plan
 - D. Continued inability of patient to adhere to the treatment plan
 - E. For authorization to add medication to regimen when patient reaches maximum dose of medication and blood glucose has not reached the target range.
 - F. Persistent, intolerable medication side effects.
 - G. Persistent co-morbid conditions not adequately controlled.
 - H. Issues beyond scope of this SP.

DOCUMENTATION:

1. Document all patient encounters and interventions in KP Health Connect (KPHC). All records shall be kept in secured computerized databases.

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- A. Obtain all patient specific, medication specific authorization which includes medication dosage from the physician/provider responsible for the patient's care prior to medication protocol implementation. (Attachment A: Patient Specific, Medication Specific Authorization / Order)
- B. Physician or mentor to co-sign all orders for medications ordered by RN within 72 hours
- C. Document all patient encounters including telephonic care and advice, the plan of care and advice given to the patient shall be documented. Forward a copy of the telephonic chart notes to the primary care physician, mentor, referring physician or designee when required per local workflow
- D. Include the following information when documenting the activation of the SP:
 - a) When patients are seen by the provider
 - b) When telephonic physician consultation is received verbally
 - c) When the physician re-examines the patient, and the intervention involved.
 - d) If there is a treatment outside the protocol, document the verbal order from the physician in the order entry and nurses note sections of the medical record.

REQUIREMENTS FOR REGISTERED NURSE:

- 1. Education: Must have current license to practice in California as a Registered Nurse.
- 2. Training:
 - A. Successful completion of the one-hour mentoring session focusing on diabetes mellitus with a physician.
 - B. Complete Care Diabetes Online education module prior to use of SP.
- 3. Experience: Successfully proctored using the SP by a physician mentor on at least six patient cases.
- 4. Initial Evaluation
 - A. Successful demonstration of clinical knowledge and skills required for appropriate execution of the SP as demonstrated by 6 cases followed and signed off by physician mentor as successfully completed per SP.
 - B. Evidence of successful Training completion shall be documented and included in each individual nurse's personnel file. (See Attachment N)
- 5. Ongoing Evaluation
 - A. Validate annual competency documenting the RN's ability to function appropriately under SP
 - B. Validate the RN's clinical knowledge, skills/procedures, appropriate consultation and documentation by reviewing at least six (6) cases during the year.
 - C. File the completed annual competency in each individual RN's personnel file. (See Attachment O)

DEVELOPMENT AND APPROVAL OF THE STANDARDIZED PROCEDURE

- 1. Internal Medicine RNs, along with the appropriate mentor physician shall review clinical protocols every one (1) year and obtain approval from the local SCPMG Ambulatory Policy Committee and the Interdisciplinary Practice Committee. The PCM Physician Leader or mentor physician presents revisions to the Pharmacy & Therapeutics Committee for approval.
- 2. Review Schedule: This standardized procedure is reviewed and approved annually
- 3. Signature of authorized personnel approving the standardized procedure, and dates:
 - A. Ambulatory Practice Leader

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- B. Medical Staff Leader/Medical Executive Committee Chair
- C. Administration/Department Administrator
- D. Interdisciplinary Practice Committee Chair
- E. Physician Champion/Chief of Service

IMPLEMENTATION

1. All RNs working under SP shall be provided with a copy and operational policies. Each RN shall complete a Statement of Acceptance acknowledging receipt of, with date of receipt, and agreement to use the SP and Protocols. **(ATTACHMENT P)**
2. Department Administrator (DA) shall maintain records of all RNs authorized and using this SP Annually **(ATTACHMENT N)**. Department Administrator is responsible for maintaining documentation for each RN working under SP in the RNs personnel file **(ATTACHMENT O and/or O ATTACHMENT N)**.
3. DA shall send SP to AR&L Policy & Procedure Project Manager for upload to the Policy & Procedure website.
4. DA shall send written communication to the affected ambulatory care personnel of new and/or revisions to SP.

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ATTACHMENT A: Patient Specific, Medication Specific Authorization/Order

The following medication(s), doses and ranges are being ordered for the patient @name@ @mrn@ for medication management associated with the Standardized Procedure for Chronic Disease of Diabetes RN/CM check appropriate boxes below:

Initial Order:

- ☐ Metformin 250 mg PO twice a day
- ☐ Metformin 500 mg PO twice a day
- ☐ Metformin 1000mg PO twice a day
- ☐ Metformin SR 500 mg PO daily with evening meal
- ☐ Metformin SR 1000 mg PO daily with evening meal
- ☐ Metformin SR 1500 mg PO daily with evening meal
- ☐ Metformin SR 2000 mg PO daily with evening meal
- ☐ Glipizide 2.5 mg PO twice a day
- ☐ Glipizide 5 mg PO twice a day
- ☐ Glipizide 10 mg PO twice a day
- ☐ Glipizide TR24 SR 2.5 mg PO daily
- ☐ Glipizide TR24 SR 5 mg PO daily
- ☐ Glipizide TR24 SR 10 mg PO daily
- ☐ Glipizide TR24 SR 20 mg PO daily
- ☐ Glimepiride 1 mg PO daily
- ☐ Glimepiride 2 mg PO daily
- ☐ Glimepiride 4 mg PO daily
- ☐ Glimepiride 8 mg PO daily
- ☐ Glipizide/Metformin 2.5/250 mg PO twice a day
- ☐ Glipizide/Metformin 5/500 mg PO twice a day
- ☐ Glipizide/Metformin 10/1000 mg PO twice a day
- ☐ Pioglitazone 15 mg PO daily
- ☐ Pioglitazone 30 mg PO daily
- ☐ Empagliflozin 12.5 mg PO daily
- ☐ Liraglutide 0.6 mg SC daily
- ☐ Liraglutide 1.2 mg SC daily
- ☐ Linagliptin 5 mg PO daily
- ☐ NPH insulin 5 units SQ at bedtime
- ☐ NPH insulin 10 units SQ at bedtime
- ☐ NPH insulin up to 100 units at bedtime
- ☐ Regular insulin 5 units before breakfast
- ☐ Regular insulin 5 units before dinner
- ☐ 70/30 insulin 5 units at bedtime
- ☐ 70/30 insulin 10 units at bedtime
- ☐ 70/30 insulin up to 100 units at bedtime
- ☐ 70/30 insulin 5 units before breakfast
- ☐ 70/30 insulin 10 units before breakfast
- ☐ 70/30 up to 100 units before breakfast
- ☐ Glargine 5 units at bedtime
- ☐ Glargine 10 units at bedtime
- ☐ Glargine up to 100 units at bedtime
- ☐ Lispro 5 units before breakfast
- ☐ Lispro 5 units before lunch
- ☐ Lispro 5 units before dinner
- ☐ U-500 60% of U-500 TDD based on algorithm before breakfast
- ☒ U-500 40% of U-500 TDD based on algorithm before dinner

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The following medications may be advanced per SP to the following daily dose:

****Note to Provider: Please delete medications that you DO NOT wish to have on this protocol****

Metformin 2000mg per day
Glipizide 20mg per day
Metformin SR 2000 mg PO per day
Glipizide TR24 SR 20 mg PO per day
Glipizide/Metformin 20/2000 mg per day
Empagliflozin 12.5 mg per day
Liraglutide 1.8 mg per day
Linagliptin 5 mg per day
Pioglitazone 30 mg per day
NPH insulin 300 units per day
Regular insulin 300 units per day
70/30 insulin 300 units per day
U-500 insulin 900 units per day

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ATTACHMENT B: Treatment Goals

Assessment:	Goal	Treatment Plan if Goal not achieved
Hemoglobin A1c*	< 7% (18 to 64 years old) < 8% (65 through 74 years old)	See Medication Adjustment Per Protocol
SMBG Fasting Blood Glucose	80 – 120 mg/dL (A1c goal < 7) 120 – 160 mg/dL (A1c goal < 8)	See Medication Adjustment Per Protocol
SMBG 2 hours postprandial Blood Glucose*	120 – 160 mg/dL (A1c goal < 7) 160-200 mg/dL (A1c goal < 8)	See Medication Adjustment Per Protocol
Blood Pressure	< 140/90	Reinforce medication adherence to blood pressure medication Advise member to have BP rechecked
Low Density Lipoprotein (LDL) ASCVD Risk (age 40-75)	A-risk >+ 7.5% on rosuvastatin 20-40 mg or atorvastatin 40-80 mg daily A-risk< 7.5% on rosuvastatin 5-10 mg or atorvastatin 10-20 mg daily	Reinforce medication adherence to cholesterol medication Consider ordering baseline or follow up lipid panel to assess for treatment response and/or adherence
Hypoglycemic Events (blood sugar less than 70)	No hypoglycemic events Recognition of hypoglycemia symptoms, knowledge of treatment of hypoglycemic event, minimizing risk of hypoglycemic event	Provide education regarding hypoglycemic signs and symptoms, treatment and minimizing risk. (see section) See medication adjustment per protocol
Severe Hypoglycemic Event (blood sugars less than 40 and/or unconsciousness due to hypoglycemia)	No severe hypoglycemic events Recognition of hypoglycemia symptoms, knowledge of treatment of hypoglycemic event, minimizing risk of hypoglycemic event	Discuss treatment options with primary care/mentor physician
Weight Management	BMI 18 to 25	Weight loss recommended for individuals with BMI >= 25. Encourage physical activity, dietary and behavioral modification, and participation in weight management health education program
Physical Activity	150 minutes/week of moderate-intensity aerobic physical activity, spread over 3 or more days per week	Encourage 150 minutes/week of moderate-intensity aerobic physical activity, spread over 3 or more days per week
Self-Management / Health Education	Attendance to health education/self-management program every 2 years	Encourage participation in health education diabetes, diabetes diet, meter class
Tobacco/smoking	Smoking cessation/avoidance	Encourage/reinforce smoking cessation/avoidance and advise smoker to call the Wellness Coaching by phone 1-866-862-4295 (if patient is a smoker)
Hemoglobin A1c Testing	At least every 6 months (6 weeks post-medication adjustment** or if A1c > or = 8%)	Order A1c test if due
Urine Albumin/Microalbuminuria (MAU)	At least annually**	Order MAU if due
Retinal Screening (photo / exam)	If background retinopathy, at least annually. If no retinopathy (previous exam), at least every 2 years**	Recommend retinal photo or exam
Foot Exam (monofilament)	At least annually	Recommend appointment with appropriate provider for completion of foot exam
Serum Potassium and creatinine (hemoglobin/hematocrit if CKD stage 3 - 4)	At least annually**	Order serum potassium and/or creatinine if due

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Vitamin B12	At least annually if taking metformin	PEND Vitamin B12 level if due. If Vitamin B12 low, discuss starting vitamin B12 supplementation with primary care provider or mentor
Influenza vaccine	Annually	Encourage member to obtain influenza vaccination

*unless medically contraindicated (elderly > 75, comorbid disease states, history of severe hypoglycemia, special circumstances)

**Refer to LAMC P&P 1016 and 1026

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ATTACHMENT C: Single Drug Algorithm Using Metformin IR

Medication Adjustment – Metformin IR-Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin- Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients)

Metformin IR-Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin- Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients) Current Medication Regimen: No metformin or metformin IR < 2000 mg per day No contraindications or reported/prior history of intolerance to dose increase		
Current Medication Dose	GFR Considerations	Medication Adjustment
No Metformin	$GFR \geq 45$	Step 1 – 2: PEND order for physician for metformin (IR) 500 mg tablets [1324], SIG: 0.5 TAB PO BID WITH MEALS. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 1 TAB PO BID. CALL MD IF FBS FALLS BELOW 80 OR STAYS ABOVE 120. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 1: Metformin 250 mg BID	If not at goal	Step 2: SIGN an order to increase metformin (IR): Reorder/edit Metformin for Metformin 500 mg tablet [1324], SIG: 1 TAB PO BID WITH MEALS. # 200 SIGN a lab order for A1c to be completed in 6 weeks
Step 2: Metformin 500 mg BID	$GFR \geq 60$	Step 3: SIGN an order to increase metformin (IR): Reorder/edit Metformin for Metformin 500 mg tablets [1324], sig: 2 tablets PO BID with meals #200 OR Metformin (IR) 1000mg tablets, sig: 1 tablet PO BID with meals #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 3: Metformin 1000 mg BID	$GFR \geq 30$	Step 4: Does patient have ASCVD? If no, skip to Step 5 PEND order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6 If patient seeks or requires alternative therapy to empagliflozin, PEND order for physician for liraglutide 0.6mg/0.1mL SQ pen injector [O685529], SIG: INJECT 0.6 MG SUBQ DAILY FOR 1 WEEK, THEN INCREASE TO 1.2 MG DAILY. #18 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6
Step 4 (patient does not have ASCVD): Metformin 1000 mg BID	$GFR \geq 30$	Step 5: Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to Step 6 PEND order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks

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Step 5: Metformin 1000 mg BID or If currently on Empagliflozin 12.5 mg daily or Liraglutide 1.2 mg daily ()		Step 6-7: PEND glipizide (IR) 5 mg tablet [32278], SIG: 0.5 TAB PO BID BEFORE MEALS. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 1 TAB PO BID. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 6: Glipizide 2.5mg BID		Step 7: SIGN the order to increase glipizide (IR): Reorder/edit glipizide (IR) 5 mg tablet [32278], SIG: 1 TAB PO BID BEFORE MEALS. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 7: Glipizide 5 mg BID		Step 8: SIGN the order to increase glipizide (IR): Reorder/edit glipizide (IR) 5 mg tablet [32278], SIG: 2 TAB PO BID BEFORE MEALS. #400 SIGN a lab order for A1c to be completed in 6 weeks
Step 8: Glipizide 10 mg BID		Step 9: Does patient continue to refuse insulin? If yes, skip to Step 10 If BMI < 28, FBS < 180, or GFR <30: PEND NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 5 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) If BMI >= 28 and FBS >= 180 AND GFR >= 30: PEND NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 10 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) SIGN a lab order for A1c to be completed in 6 weeks Go to "Insulin Algorithm – NPH and regular insulin" for titration instructions and further addition of insulin doses
Step 9: Glipizide 10 mg BID		Step 10: Does patient have heart failure? If yes, skip to Step 12 PEND order for physician for pioglitazone 15 mg tablet [1110], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 10: Pioglitazone 15 mg daily		Step 11: SIGN an order to increase pioglitazone: Reorder/edit pioglitazone 15 mg [1110], SIG: 2 TABS PO DAILY. #200 SIGN a lab order for A1c to be completed in 6 weeks

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Step 11: Pioglitazone 30 mg PO DAILY		Step 12: Is last A1c $\geq$ 1% above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to Step 9 and involve PCP to assist with insulin start. PEND order for physician for linagliptin 5 mg tablet [130467], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks If A1c not at goal on follow-up after completing Step 12, return to Step 9
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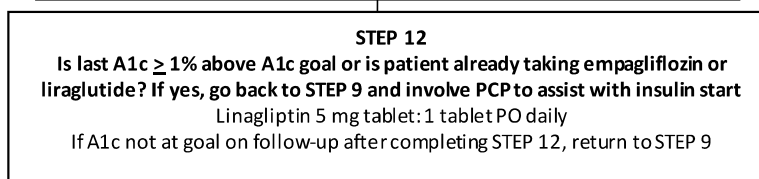
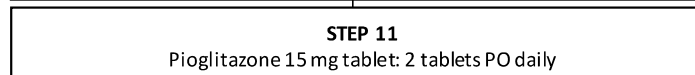
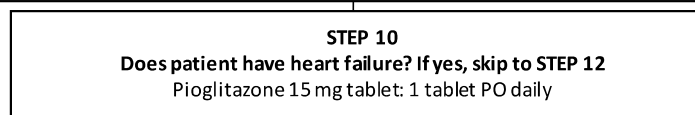
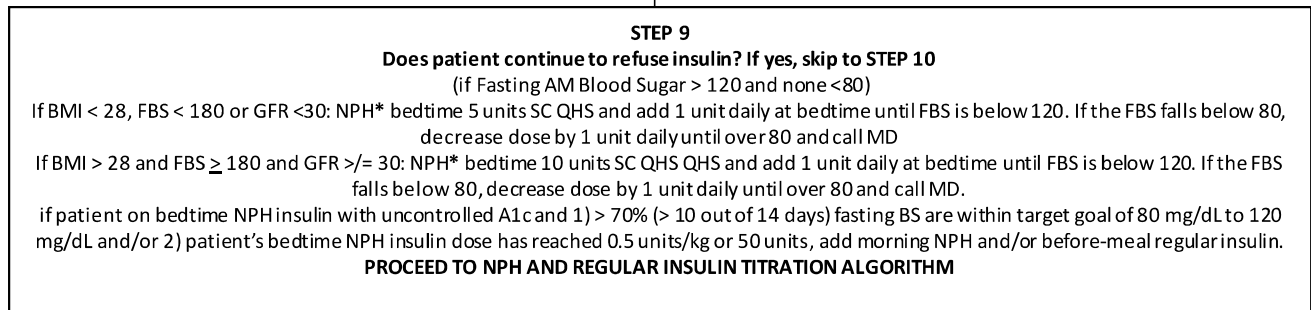
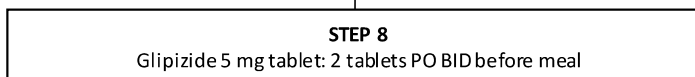
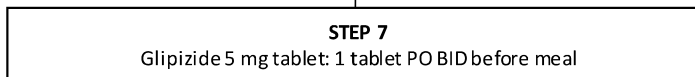
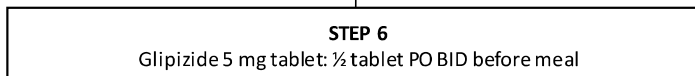
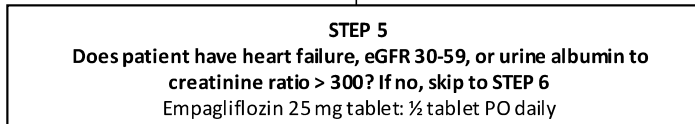
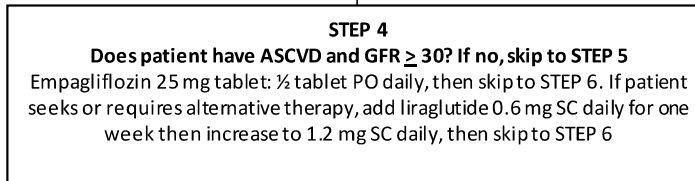
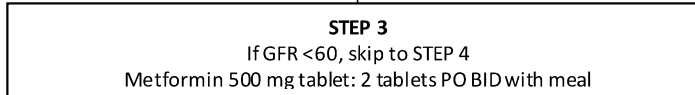
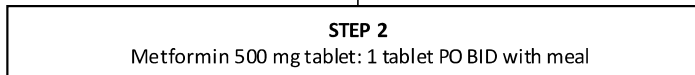
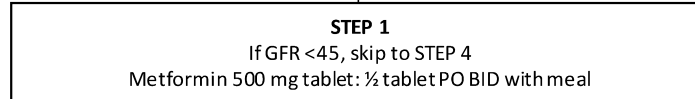
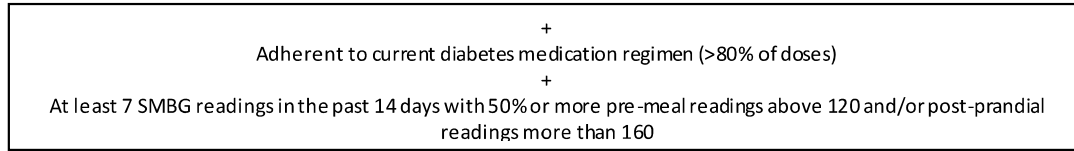
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Single Drug Algorithm Using Metformin IR

A1c $\geq$ 7% (18 to 64 years old)

A1c $\geq$ 8% (65 through 74 years old)



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ATTACHMENT D: Single Drug Algorithm Using Metformin SR

Medication Adjustment – Metformin SR-Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin-Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients)

Metformin SR-Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin-Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients) Current Medication Regimen: No metformin or metformin SR < 2000 mg per day No contraindications or reported/prior history of intolerance to dose increase Use metformin SR in patients who cannot tolerate metformin IR due to GI upset (eg, bloating, flatulence, diarrhea, nausea)		
Current Medication Dose	GFR Considerations	Medication Adjustment
No Metformin	$GFR \geq 45$	Step 1 – 2: PEND order from physician for metformin SR 500mg tablets [31080], SIG: 1 TAB PO DAILY. CHECK FBS DAILY. IF ABOVE 120 AFTER 14 DAYS, INC TO 2 TABS DAILY. IF STILL ABOVE 120 AFTER ANOTHER 14 DAYS, INC TO 3 TABS DAILY. IF STILL ABOVE 120 AFTER ANOTHER 14 DAYS, INC TO 4 TABS DAILY. CALL MD IF FBS FALLS BELOW 80 OR STAYS ABOVE 120. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 1: Metformin SR 500 mg daily		Step 2: SIGN an order to increase metformin SR: Reorder/edit Metformin for Metformin 500mg tablet [31080], SIG: 2 TABS PO DAILY. # 200 SIGN a lab order for A1c to be completed in 6 weeks
Step 2: Metformin SR 1000 mg daily	$GFR \geq 60$	Step 3: SIGN an order to increase metformin SR: Reorder/edit Metformin for Metformin 500mg tablet [31080], SIG: 3 TABS PO DAILY. # 200 SIGN a lab order for A1c to be completed in 6 weeks
Step 3: Metformin SR 1500 mg daily	$GFR \geq 60$	Step 4: SIGN an order to increase metformin SR: Reorder/edit Metformin for Metformin 500mg tablet [31080], SIG: 4 TABS PO DAILY. # 200 SIGN a lab order for A1c to be completed in 6 weeks
Step 4: Metformin SR 2000 mg daily	$GFR \geq 30$	Step 5: Does patient have atherosclerotic cardiovascular disease (ASCVD)? If no, skip to Step 6. PEND order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 7 If patient seeks or requires alternative therapy to empagliflozin, PEND order for physician for liraglutide 0.6mg/0.1mL SubQ pen injector [O685529], SIG: INJECT 0.6 MG SUBQ DAILY FOR 1 WEEK, THEN INCREASE TO 1.2 MG DAILY. #18 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 7
Step 5: (patient does not have	$GFR \geq 30$	Step 6: Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to Step 7

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ASCVD): Metformin SR 2000 mg daily		SIGN order for physician for empagliflozin 25 mg tablet [147612], SIG: 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks
Step 6: Metformin SR 2000 mg daily Or if currently on Empagliflozin 12.5 mg daily or Liraglutide 1.2 mg daily		Step 7-8: PEND order to add glipizide (IR) 5 mg tablet [32278], SIG: 0.5 TAB PO BID BEFORE MEALS. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 1 TAB PO BID. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 7: Glipizide 2.5mg BID		Step 8: SIGN order to increase glipizide (IR): Reorder/edit glipizide (IR) 5 mg tablet [32278], SIG: 1 TAB PO BID BEFORE MEALS. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 8: Glipizide 5 mg BID		Step 9: SIGN order to increase glipizide (IR): Reorder/edit glipizide (IR) 5 mg tablet [32278], SIG: 2 TAB PO BID BEFORE MEALS. #400 SIGN a lab order for A1c to be completed in 6 weeks
Step 9: Glipizide 10 mg BID		Step 10: Does patient continue to refuse insulin? If yes, skip to Step 11 If BMI < 28, FBS < 180, or GFR < 30: PEND NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 5 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) If BMI >= 28 and FBS >= 180 AND GFR >= 30: PEND NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 10 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) SIGN a lab order for A1c to be completed in 6 weeks; cc to mentor/physician Go to "NPH and Regular Insulin Titration Algorithm" for titration instructions and further addition of insulin doses
Step 10: Glipizide 10 mg BID		Step 11: Does patient have heart failure? If yes, skip to Step 12 SIGN order for physician for pioglitazone 15 mg tablet [1110], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 11: Pioglitazone 15 mg daily		Step 12: PEND order to increase pioglitazone: Reorder/edit pioglitazone 15 mg [1110], SIG: 2 TABS PO DAILY. #200 SIGN a lab order for A1c to be completed in 6 weeks

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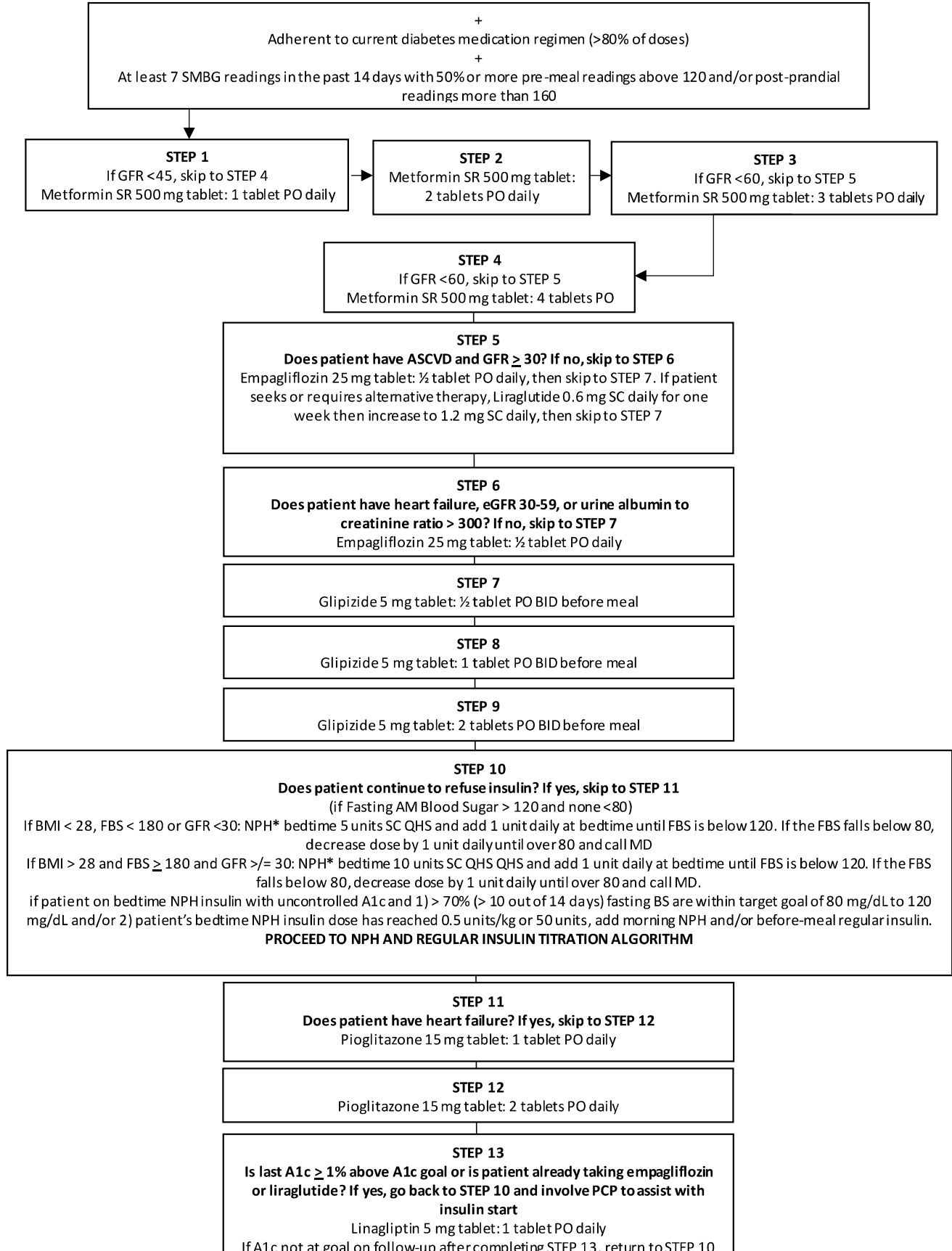
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Step 12: Pioglitazone 30 mg PO DAILY		Step 13: Is last A1c $\geq$ 1% above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to Step 8 and involve PCP to assist with insulin start. PEND order for physician for linagliptin 5 mg tablet [130467], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks If A1c not at goal on follow-up after completing Step 13, return to Step 10
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Single Drug Algorithm Using Metformin SR A1c > 7% (18 to 64 years old) A1c ≥ 8% (65 through 74 years old)



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ATTACHMENT E:

Single Drug Algorithm Using Glipizide TR24 SR

Do Not Use Glipizide TR24 SR in Patients ≥ 65 years old or if GFR < 30

Medication Adjustment – Metformin-Glipizide TR24 SR-Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin- Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients)

- Metformin-Glipizide TR24 SR- Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin- Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients) - Current Medication Regimen: No metformin or metformin IR < 2000 mg per day - No contraindications or reported/prior history of intolerance to dose increase - Use glipizide TR24 SR in patients with adherence issues or in select cases of frequent hypoglycemia as a complication of taking glipizide IR		
Current Medication Dose	GFR	Medication Adjustment
No Metformin	$GFR \geq 45$	Step 1 – 2: PEND order for physician for metformin (IR) 500mg tablets [1324], SIG: 0.5 TAB PO BID WITH MEALS. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 1 TAB PO BID. CALL MD IF FBS FALLS BELOW 80 OR STAYS ABOVE 120. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 1: Metformin 250 mg BID		Step 2: Increase metformin (IR): Reorder/edit Metformin for Metformin 500mg tablet [1324], SIG: 1 TAB PO BID WITH MEALS. # 200 SIGN a lab order for A1c to be completed in 6 weeks
Step 2: Metformin 500 mg BID	$GFR \geq 60$	Step 3: Increase metformin (IR): Reorder/edit Metformin for Metformin 500mg tablets [1324], sig: 2 tablets PO BID with meals #200 OR metformin (IR) 1000mg tablets, sig: 1 tablet PO BID with meals #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 3: Metformin 1000 mg BID	$GFR \geq 30$	Step 4: Does patient have ASCVD? If no, skip to Step 5 Pend order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6 If patient seeks or requires alternative therapy to empagliflozin, PEND order for physician for liraglutide 0.6mg/0.1mL SubQ pen injector [O685529], SIG: INJECT 0.6 MG SUBQ DAILY FOR 1 WEEK, THEN INCREASE TO 1.2 MG DAILY. #18 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6

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Step 4: (patient does not have ASCVD): Metformin 1000 mg BID	GFR $\geq$ 30	Step 5: Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to Step 6 PEND order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks
Step 5: Metformin 1000 mg BID Or if currently on Empagliflozin 12.5 mg daily or Liraglutide 1.2 mg daily		Step 6-7: PEND glipizide TR24 SR 2.5mg tablet [19441], SIG: 1 TAB PO DAILY. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 2 TABS PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 6: Glipizide TR24 SR 2.5 mg daily		Step 7: SIGN order to increase glipizide TR24 SR: Order glipizide TR24 SR 5mg tablet [9349], SIG: 1 TAB PO DAILY. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 2 TABS PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 7: Glipizide TR24 SR 5 mg daily		Step 8: SIGN order to increase glipizide TR24 SR: Order glipizide TR24 SR 10mg tablet [7231], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 8: Glipizide TR24 SR 10 mg daily		Step 9: SIGN order to increase glipizide TR24 SR: Order glipizide TR24 SR 10mg tablet [7231], SIG: 2 TABS PO DAILY. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 9: Glipizide TR24 SR 20 mg daily		Step 10: Does patient continue to refuse insulin? If yes, skip to Step 11 If BMI < 28, FBS < 180, or GFR < 30: <u>PEND</u> NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 5 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) If BMI $\geq$ 28 and FBS $\geq$ 180 AND GFR $\geq$ 30: <u>PEND</u> NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 10 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) SIGN a lab order for A1c to be completed in 6 weeks; cc to mentor/physician Go to "NPH and Regular Insulin Titration Algorithm" for titration instructions and further addition of insulin doses

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Step 10: Glipizide TR24 SR 20 mg daily		Step 11: Does patient have heart failure? If yes, skip to Step 13 PEND order for physician for pioglitazone 15 mg tablet [1110], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 11: Pioglitazone 15 mg daily		Step 12: SIGN an order to increase pioglitazone: Reorder/edit pioglitazone 15 mg [1110], SIG: 2 TABS PO DAILY. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 12: Pioglitazone 30 mg daily		Step 13: Is last A1c $\geq 1\%$ above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to Step 10 and involve PCP to assist with insulin start. PEND order for physician for linagliptin 5 mg tablet [130467], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks If A1c not at goal on follow-up after completing Step 13, return to Step 10

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Single Drug Algorithm Using Glipizide TR24 SR A1c $\geq$ 7% (18 to 64 years old) Do Not Use Glipizide TR24 SR in Patients $\geq$ 65 years old or if GFR < 30

+
Adherent to current diabetes medication regimen (>80% of doses)
+
At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160

STEP 1
If GFR < 45, skip to STEP 4
Metformin 500 mg tablet: ½ tablet PO BID with meal

STEP 2
Metformin 500 mg tablet: 1 tablet PO BID with meal

STEP 3
If GFR < 60, skip to STEP 4
Metformin 500 mg tablet: 2 tablets PO BID with meal

STEP 4
Does patient have ASCVD and GFR $\geq$ 30? If no, skip to STEP 5
Empagliflozin 25 mg tablet: ½ tablet PO daily, then skip to STEP 6. If patient seeks or requires alternative therapy, add Liraglutide 0.6 mg SC daily for one week then increase to 1.2 mg SC daily, then skip to STEP 6

STEP 5
Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to STEP 6
Empagliflozin 25 mg tablet: ½ tablet PO daily

STEP 6
Glipizide TR24 SR 2.5 mg tablet: 1 tablet PO daily

STEP 7
Glipizide TR24 SR 2.5 mg tablet: 2 tablets PO daily

STEP 8
Glipizide TR24 SR 2.5 mg tablet: 4 tablets PO daily

STEP 9
Glipizide TR24 SR 2.5 mg tablet: 8 tablets PO daily

STEP 10
Does patient continue to refuse insulin? If yes, skip to STEP 11
(if Fasting AM Blood Sugar > 120 and none < 80)
If BMI < 28, FBS < 180 or GFR < 30: NPH* bedtime 5 units SC QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD.
If BMI > 28 and FBS $\geq$ 180 and GFR $\geq$ 30: NPH* bedtime 10 units SC QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD.
if patient on bedtime NPH insulin with uncontrolled A1c and 1) > 70% (> 10 out of 14 days) fasting BS are within target goal of 80 mg/dL to 120 mg/dL and/or 2) patient's bedtime NPH insulin dose has reached 0.5 units/kg or 50 units, add morning NPH and/or before-meal regular insulin.
PROCEED TO NPH AND REGULAR INSULIN TITRATION ALGORITHM

STEP 11
Does patient have heart failure? If yes, skip to STEP 12
Pioglitazone 15 mg tablet: 1 tablet PO daily

STEP 12
Pioglitazone 15 mg tablet: 2 tablets PO daily

STEP 13
Is last A1c $\geq$ 1% above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to STEP 10 and involve PCP to assist with insulin start
Linagliptin 5 mg tablet: 1 tablet PO daily
If A1c not at goal on follow-up after completing STEP 12, return to STEP 9

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ATTACHMENT F

Single Drug Algorithm Using Glimepiride

Do Not Use Glimepiride in Patients ≥ 65 years old or if $GFR < 30$

Medication Adjustment – Metformin-Glimepiride-Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin-Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients)

Metformin-Glimepiride- Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin- Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients) Current Medication Regimen: No metformin or metformin IR < 2000 mg per day No contraindications or reported/prior history of intolerance to dose increase		
Current Medication Dose	GFR	Medication Adjustment
No Metformin	$GFR \geq 45$	Step 1 – 2: PEND order for physician for metformin (IR) 500mg tablets [1324], SIG: 0.5 TAB PO BID WITH MEALS. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 1 TAB PO BID. CALL MD IF FBS FALLS BELOW 80 OR STAYS ABOVE 120. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 1: Metformin 250 mg BID		Step 2: SIGN order to increase metformin (IR): Reorder/edit Metformin for Metformin 500mg tablet [1324], SIG: 1 TAB PO BID WITH MEALS. # 200 SIGN a lab order for A1c to be completed in 6 weeks
Step 2: Metformin 500 mg BID	$GFR \geq 60$	Step 3: SIGN order to increase metformin (IR): Reorder/edit Metformin for Metformin 500mg tablets [1324], sig: 2 tablets PO BID with meals #200 OR PEND metformin (IR) 1000mg tablets, sig: 1 tablet PO BID with meals #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 3: Metformin 1000 mg BID	$GFR \geq 30$	Step 4: Does patient have ASCVD? If no, skip to Step 5 PEND order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6 If patient seeks or requires alternative therapy to empagliflozin, PEND order for physician for liraglutide 0.6mg/0.1mL SubQ pen injector [O685529], SIG: INJECT 0.6 MG SUBQ DAILY FOR 1 WEEK, THEN INCREASE TO 1.2 MG DAILY. #18 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6
Step 4: (patient does not have ASCVD): Metformin 1000 mg BID	$GFR \geq 30$	Step 5: Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to Step 6 PEND order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks

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Step 5: Metformin 1000 mg BID Or if currently on Empagliflozin 12.5 mg daily or Liraglutide 1.2 mg daily	GFR $\geq$ 30	Step 6-7: PEND order to add glimepiride 1mg tablet[13873], SIG: 1 TAB PO DAILY. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 2 TABS PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 6: Glimepiride 1 mg daily		Step 7-8: SIGN order to increase glimepiride: Order glimepiride 2mg tablet[13445], SIG: 1 TAB PO DAILY. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 2 TABS PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 7: Glimepiride 2 mg daily		Step 8: SIGN order to increase glimepiride: Order glimepiride 2mg tablet[21379], SIG: 2 TABS PO DAILY. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 8: Glimepiride 6 mg daily		Step 9: SIGN order to increase glimepiride: Order glimepiride 2 mg tablet [21379], SIG: 4 TABS PO DAILY. #400 SIGN a lab order for A1c to be completed in 6 weeks
Step 9: Glimepiride 8 mg daily		Step 10: Does patient continue to refuse insulin? If yes, skip to Step 12 If BMI < 28, FBS < 180, or GFR < 30: <u>PEND</u> NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 5 UNITS SUBQ ANTEPRANDIAL AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) If BMI $\geq$ 28 and FBS $\geq$ 180 AND GFR $\geq$ 30: <u>PEND</u> NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 10 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) SIGN a lab order for A1c to be completed in 6 weeks Go to "Insulin Algorithm – NPH and regular insulin" for titration instructions and further addition of insulin doses
Step 10: Glimepiride 8 mg daily		Step 11: Does patient have heart failure? If yes, skip to Step 13 PEND order for physician for pioglitazone 15 mg tablet [1110], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks

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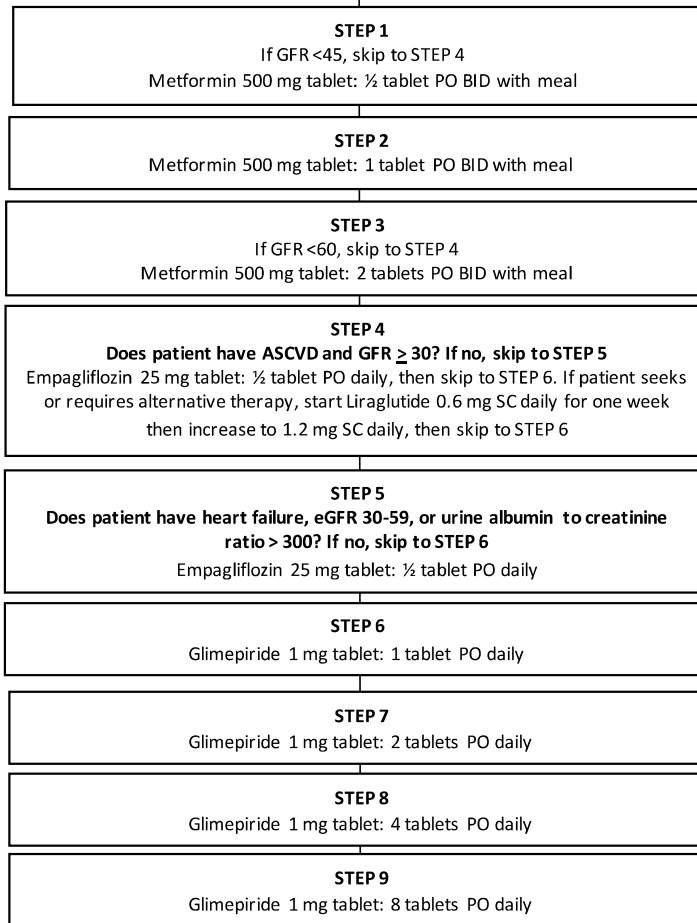
Step 11: Pioglitazone 15 mg daily		Step 12: SIGN order to increase pioglitazone: Reorder/edit pioglitazone 15 mg [1110], SIG: 2 TABS PO DAILY, #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 12: Pioglitazone 30 mg daily		Step 13: Is last A1c $\geq$ 1% above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to Step 10 and involve PCP to assist with insulin start. PEND order for physician for linagliptin 5 mg tablet [130467], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks If A1c not at goal on follow-up after completing Step 14, return to Step 10

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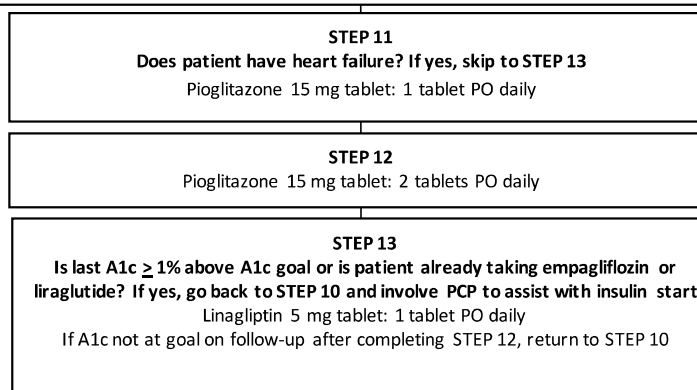
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Single Drug Algorithm Using Glimepiride A1c $\geq 7\%$ (18 to 64 years old) Do Not Use Glimepiride in Patients ≥ 65 years old or if GFR < 30

+
Adherent to current diabetes medication regimen ($>80\%$ of doses)
+
At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160



STEP 10
Does patient continue to refuse insulin? If yes, skip to STEP 11
(if Fasting AM Blood Sugar > 120 and none < 80)
If BMI < 28 , FBS < 180 or GFR < 30 : NPH* bedtime 5 units SC QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD
If BMI > 28 and FBS ≥ 180 and GFR ≥ 30 : NPH* bedtime 10 units SC QHS QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD.
if patient on bedtime NPH insulin with uncontrolled A1c and 1) $> 70\%$ (> 10 out of 14 days) fasting BS are within target goal of 80 mg/dL to 120 mg/dL and/or 2) patient's bedtime NPH insulin dose has reached 0.5 units/kg or 50 units, add morning NPH and/or before-meal regular insulin.
PROCEED TO NPH AND REGULAR INSULIN TITRATION ALGORITHM



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ATTACHMENT G:

Glipizide-Metformin Combination Algorithm

Medication Adjustment – Glipizide/Metformin-Empagliflozin or Liraglutide -Glipizide-NPH insulin- Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients)

- Glipizide-Metformin combination-Empagliflozin or Liraglutide (in appropriate patients)-Glipizide-NPH insulin- Pioglitazone (in appropriate patients)-Linagliptin (in appropriate patients) - Current Medication Regimen: If on glipizide/metformin combination tablet and/or not on glipizide/metformin and A1c $\geq 8.5\%$ - No contraindications or reported/prior history of intolerance to dose increase		
Current Glipizide/Metformin daily dose	GFR	Medication Adjustment
No glipizide-Metformin	$GFR < 45$	Go to Step 4 of Single Drug Algorithm as initiation of metformin contraindicated in patients with $GFR < 45$
No glipizide-Metformin	$GFR \geq 45$	Step 1 – 2: PENDING order for physician for glipizide/metformin 5/500 tablet [52792], SIG: 0.5 TAB PO BID WITH MEALS. CHECK FBS BEFORE BREAKFAST DAILY. IF FBS ABOVE 120 AFTER 14 DAYS, INCREASE TO 1 TAB PO BID. CALL MD IF FBS FALLS BELOW 80 OR STAYS ABOVE 120. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 1: Glipizide/metformin combination tablet 2.5/250mg PO BID	$GFR \geq 45$	Step 2: SIGN order to increase glipizide/metformin: 5/500 tablet [52792], SIG: 1 tab PO BID with meal, #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 2: Glipizide/metformin combination tablet 5/500 mg PO BID	$GFR \geq 60$	Step 3: SIGN order to increase glipizide/metformin 5/500 tablet [52792], SIG: 2 tab PO BID with meal, #400 SIGN a lab order for A1c to be completed in 6 weeks
Step 3: Glipizide/metformin combination tablet 10/1000mg PO BID	$GFR \geq 30$	Step 4: Does patient have ASCVD? If no, skip to Step 5 PENDING order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6 If patient seeks or requires alternative therapy to empagliflozin, PENDING order for physician for liraglutide 0.6mg/0.1mL SubQ pen injector [0685529], SIG: INJECT 0.6 MG SUBQ DAILY FOR 1 WEEK, THEN INCREASE TO 1.2 MG DAILY. #18 SIGN a lab order for A1c to be completed in 6 weeks Skip to Step 6

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Step 4: (patient does not have ASCVD): Glipizide/metformin combination tablet 10/1000mg PO BID	GFR $\geq$ 30	Step 5: Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to Step 6 PEND order for physician for empagliflozin 25 mg tablet [147612], SIG 0.5 TAB PO DAILY. #50 SIGN a lab order for A1c to be completed in 6 weeks
Step 5: Glipizide/metformin combination tablet 10/1000mg BID Or if currently on Empagliflozin 12.5 mg daily or Liraglutide 1.2 mg daily		Step 6: Does patient continue to refuse insulin? If yes, skip to Step 7 If BMI < 28, FBS < 180, or GFR < 30: PEND NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 5 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) If BMI $\geq$ 28 and FBS $\geq$ 180 AND GFR $\geq$ 30: PEND NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 10 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) SIGN a lab order for A1c to be completed in 6 weeks Go to "Insulin Algorithm— NPH and regular insulin" for titration instructions and further addition of insulin doses
Step 6: Glipizide/metformin combination tablet 10/1000mg BID		Step 7: Does patient have heart failure? If yes, skip to Step 10 PEND order for physician for pioglitazone 15 mg tablet [1110], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks
Step 7: Pioglitazone 15 mg daily		Step 8: SIGN order to increase pioglitazone: Reorder/edit pioglitazone 15 mg [1110], SIG: 2 TABS PO DAILY. #200 SIGN a lab order for A1c to be completed in 6 weeks
Step 8: Pioglitazone 30 mg daily (if criteria met)		Step 9: Is last A1c $\geq$ 1% above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to Step 5 and involve PCP to assist with insulin start. PEND order for physician for linagliptin 5 mg tablet [130467], SIG: 1 TAB PO DAILY. #100 SIGN a lab order for A1c to be completed in 6 weeks If A1c not at goal on follow-up after completing Step 9, return to Step 6

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Glipizide-Metformin Combination Algorithm

A1c $\geq$ 7% (18 to 64 years old)

A1c $\geq$ 8% (65 through 74 years old)

+
Adherent to current diabetes medication regimen (>80% of doses)
+
At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160
If GFR < 45, go to Step 4 of Single Drug Algorithm as initiation of metformin contraindicated in patients with GFR < 45

STEP 1
Glipizide-Metformin 5/500 tablets
½ tablet PO BID with meal

STEP 2
Glipizide-Metformin 5/500 tablets

STEP 3
If GFR < 60, skip to STEP 4
Glipizide-Metformin 5/500 tablets

STEP 4
Does patient have ASCVD and GFR $\geq$ 30? If no, skip to STEP 5
Empagliflozin 25 mg tablet: ½ tablet PO daily, then skip to STEP 6. If patient seeks or requires alternative therapy, add Liraglutide 0.6 mg SC daily for one week then increase to 1.2 mg SC daily, then skip to STEP 6

STEP 5
Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to STEP 6
Empagliflozin 25 mg tablet: ½ tablet PO daily

STEP 6
Does patient continue to refuse insulin? If yes, skip to STEP 10
(if Fasting AM Blood Sugar > 120 and none < 80)
If BMI < 28, FBS < 180 or GFR < 30: NPH* bedtime 5 units SC QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD
If BMI > 28 and FBS $\geq$ 180 and GFR $\geq$ 30: NPH* bedtime 10 units SC QHS QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD.
if patient on bedtime NPH insulin with uncontrolled A1c and 1) > 70% (> 10 out of 14 days) fasting BS are within target goal of 80 mg/dL to 120 mg/dL and/or 2) patient's bedtime NPH insulin dose has reached 0.5 units/kg or 50 units, add morning NPH and/or before-meal regular insulin.
PROCEED TO NPH AND REGULAR INSULIN TITRATION ALGORITHM

STEP 7
Does patient have heart failure? If yes, skip to STEP 9
Pioglitazone 15 mg tablet: 1 tablet PO daily

STEP 8
Pioglitazone 15 mg tablet: 2 tablets PO daily

STEP 9
Is last A1c $\geq$ 1% above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to STEP 6 and involve PCP to assist with insulin start
Linagliptin 5 mg tablet: 1 tablet PO daily
If A1c not at goal on follow-up after completing STEP 9, return to STEP 6

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ATTACHMENT H:

NPH and Regular Insulin Titration Algorithm

Medication Adjustment – Maximum tolerated and/or indicated non-insulin medications + bedtime NPH – before-breakfast NPH and/or before-breakfast regular insulin and/or before-dinner regular insulin

- Maximum tolerated and/or indicated non-insulin medications + bedtime NPH – before-breakfast NPH and/or before-breakfast regular insulin and/or before-dinner regular insulin - Current Medication Regimen: Maximum tolerated and/or indicated non-insulin medications + bedtime NPH - No contraindications or reported/prior history of intolerance to dose increase		
Current Medication Dose	Glycemic Management Evaluation	Medication Adjustment
No before-breakfast NPH and/or no before-breakfast regular insulin and/or no before-dinner regular insulin or current doses have not led to adequate blood glucose management	$\geq 50\%$ of the before-dinner SMBG readings ≥ 120 and goal A1c $< 7\%$ (18 to 64 years old) OR $\geq 50\%$ of the before-dinner SMBG readings ≥ 160 and goal A1c $< 8\%$ (65 through 74 years old)	Step 1: If BMI < 28, before-dinner SMBG < 180, or GFR < 30: <u>PEND</u> NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 5 UNITS SUBQ BEFORE BREAKFAST, AND ADD 1 UNIT DAILY BEFORE BREAKFAST UNTIL BEFORE-DINNER SMBG IS BELOW 120. IF THE BEFORE-DINNER SMBG FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD. #15 (1 box of 5 pens). If BMI ≥ 28 and FBS ≥ 180 AND GFR ≥ 30: <u>PEND</u> NPH Kwikpen [O2426702], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 10 UNITS SUBQ BEFORE BREAKFAST, AND ADD 1 UNIT DAILY BEFORE BREAKFAST UNTIL BEFORE-DINNER SMBG IS BELOW 120. IF THE BEFORE-DINNER SMBG FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD. #15 (1 box of 5 pens). See “Insulin Algorithm using NPH and Regular Insulin” for ongoing titration instructions SIGN a lab order for A1c to be completed in 6 weeks; cc to mentor/physician
Step 1: NPH before breakfast and NPH at bedtime	If $\geq 50\%$ of the before-dinner SMBG ≤ 120 or 2) before breakfast NPH dose is 0.5 units/kg or 50 units: If before-lunch readings > 120 (A1c goal $< 7\%$) or > 160 (A1c goal $< 8\%$) add regular insulin 5 units SC before breakfast. Move bedtime NPH to before dinner.	Step 2: A1c goal < 7: If before-lunch SMBG > 120: <u>PEND</u> REGULAR INSULIN [21373], SIG: INJECT 5 UNITS SUBQ BEFORE BREAKFAST. #30 (3 vials). A1c goal < 8: If before-lunch SMBG > 120: <u>PEND</u> REGULAR INSULIN [21373], SIG: INJECT 5 UNITS SUBQ BEFORE BREAKFAST. #30 (3 vials).

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	If bedtime readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%), add regular insulin 5 units SC before dinner. Move bedtime NPH to before dinner.	A1c goal < 7: If bedtime SMBG > 120: <u>PEND</u> REGULAR INSULIN [21373], SIG: INJECT 5 UNITS SUBQ BEFORE DINNER. #30 (3 vials). A1c goal < 8: If bedtime SMBG > 160: <u>PEND</u> REGULAR INSULIN [21373], SIG: INJECT 5 UNITS SUBQ BEFORE DINNER. #30 (3 vials). SIGN order for Ultra-Fine insulin syringe ½ ml 31 x 15/64" (135399), SIG: Use as directed #200 (for insulin doses > 50 units, order Ultra-Fine insulin syringe 1 ml 31 x 15/63" (135400), SIG: Use as directed #200) See "Insulin Algorithm using NPH and Regular Insulin" for ongoing titration instructions SIGN a lab order for A1c to be completed in 6 weeks
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Insulin Algorithm using NPH and Regular Insulin

On maximum non-insulin medications and FBS at goal or maximum HS NPH (0.5 units/kg or 50 units) and/or before-lunch, before-dinner, or bedtime SMBG readings above goal

A1c ≥ 7% (18 to 64 years old)

A1c ≥ 8% (65 through 74 years old)

+ Adherent to current diabetes medication regimen (>80% of doses) + At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160
STEP 1 Check SMBG TID-QID: AC meals & HS If ≥ 50% of the before-dinner SMBG readings < 120 (A1c goal < 7%) or < 160 (A1c goal < 8%), go to STEP 2 If BMI < 28 or before-dinner SMBG < 180, or GFR < 30: NPH 5 units SC before breakfast. Patient home instructions: Add 1 unit daily before breakfast until before-dinner SMBG is below 120. If the before-dinner SMBG falls below 80, decrease dose by 1 unit daily until over 80 and call MD If BMI ≥ 28 and before-dinner SMBG ≥ 180: NPH 10 units (5 units if GFR < 30) SC before breakfast. Patient home instructions: Add 1 unit daily before breakfast until before-dinner SMBG is below 120. If the before-dinner SMBG falls below 80, decrease dose by 1 unit daily until over 80 and call MD
STEP 2 If 1) before-dinner SMBG 80 – 120 or 2) before breakfast NPH dose is 0.5 units/kg or 50 units: Before-lunch readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%), add regular insulin 5 units SC before breakfast Bedtime readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%), add regular insulin 5 units SC before dinner

STEP 3											
Using ≥ 50% of SMBG readings at the same time of day, adjust the insulin dose(s) as follows:											
Fasting SMBG →	Evening NPH		Before lunch SMBG→	Morning regular insulin		Before dinner SMBG→	Morning NPH		Bedtime SMBG→	Evening regular insulin	
	A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)		A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)		A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)		A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)
< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units
80 – 120	No change	No change	80 - 120	No change	No change	80 - 120	No change	No change	80 - 120	No change	No change
121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change
161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units
201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units
241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units
>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units

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ATTACHMENT I: 70/30 Insulin Titration Algorithm

Medication Adjustment – Maximum tolerated and/or indicated non-insulin medications + NPH bid – 70/30 before dinner – 70/30 before breakfast

- Maximum tolerated and/or indicated non-insulin medications + bedtime NPH – before-breakfast NPH – 70/30 before dinner – 70/30 before breakfast - Current Medication Regimen: Maximum tolerated and/or indicated non-insulin medications + NPH bid - No contraindications or reported/prior history of intolerance to dose increase - Use 70/30 if patient prefers using insulin pen and/or does not wish to mix NPH and regular insulin - Given fixed ratio of individual components of 70/30, using separate NPH and regular insulin may be more appropriate in some patients for whom a 70% NPH and 30% regular insulin ratio is not ideal		
Current Medication Dose	Glycemic Management Evaluation	Medication Adjustment
NPH bid and no before-breakfast regular insulin and/or no before-dinner regular insulin	>= 50% of the bedtime SMBG readings > 120 and goal A1c <7% (18 to 64 years old) OR >= 50% of the bedtime SMBG readings > 160 and goal A1c <8% (65 through 74 years old)	Step 1: Convert bedtime NPH dose to 70/30 before dinner using a 1:1 conversion: <u>PEND</u> 70/30 Kwikpen [9906], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT [dose as calculated from above] UNITS SUBQ BEFORE DINNER AND ADD 1 UNIT DAILY BEFORE DINNER UNTIL FBS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) See “Insulin Algorithm using 70/30 Insulin” for ongoing titration instructions SIGN Order A1c to be completed in 6 weeks; cc to mentor/physician
Step 1: NPH before breakfast and 70/30 before dinner	>= 50% of the before-lunch SMBG > 120 and goal A1c <7% (18 to 64 years old) OR >= 50% of the before-lunch SMBG readings > 160 and goal A1c <8% (65 through 74 years old)	Step 2: Convert before-breakfast NPH dose to 70/30 before breakfast using a 1:1 conversion: <u>PEND</u> 70/30 Kwikpen [9906], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT [dose as calculated from above] UNITS SUBQ BEFORE BREAKFAST AND ADD 1 UNIT DAILY BEFORE BREAKFAST UNTIL BEFORE DINNER SMBG BELOW 120. IF THE BEFORE DINNER SMBG FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #15 (1 box of 5 pens) See “Insulin Algorithm using NPH and Regular Insulin” for ongoing titration instructions Order lab: Order A1c to be completed in 6 weeks

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		Cosign to mentor/physician
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Insulin Algorithm Using 70/30 Insulin

On maximum non-insulin medications and NPH bid and FBS at goal or bedtime and/or before-lunch SMBG readings above goal

A1c $\geq$ 7% (18 to 64 years old)

A1c $\geq$ 8% (65 through 74 years old)

+ Adherent to current diabetes medication regimen (>80% of doses) + At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-
STEP 1 Check SMBG TID-QID: AC meals & HS If $\geq$ 50% of the bedtime SMBG readings $\leq$ 120 (A1c goal < 7%) or $\leq$ 160 (A1c goal < 8%), go to STEP 2 If $\geq$ 50% of the bedtime SMBG readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%): Convert bedtime NPH dose to 70/30 before dinner using a 1:1 conversion: Start 70/30 [use dose as calculated from above] SC before dinner. Patient home instructions: Add 1 unit daily before dinner until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD
STEP 2 If $\geq$ 50% of the lunchtime SMBG readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%): Convert before-breakfast NPH dose to 70/30 before breakfast using a 1:1 conversion: Start 70/30 [use dose as calculated from above] SC before breakfast. Patient home instructions: Add 1 unit daily before breakfast until before-dinner SMBG is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD

STEP 3									
Using $\geq$ 50% of SMBG readings at the same time of day, adjust the insulin dose(s) as follows:									
Fasting SMBG →	Evening 70/30		Before lunch SMBG→	Morning 70/30	Before dinner SMBG→	Morning 70/30		Bedtime SMBG→	Evening 70/30
	A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)				A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)		
< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units
80 – 120	No change	No change			80 - 120	No change	No change		
121 - 160	Increase 1 unit	No change			121 - 160	Increase 1 unit	No change		
161 - 200	Increase 2 units	Increase 2 units			161 - 200	Increase 2 units	Increase 2 units		
201 - 240	Increase 4 units	Increase 4 units			201 - 240	Increase 4 units	Increase 4 units		
241 - 280	Increase 6 units	Increase 6 units			241 - 280	Increase 6 units	Increase 6 units		

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>280	Increase 8 units	Increase 8 units			>280	Increase 8 units	Increase 8 units		
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ATTACHMENT J:

Glargine and Lispro Titration Algorithm

Medication Adjustment – Maximum tolerated and/or indicated non-insulin medications + bedtime glargine – before meal lispro

- Maximum tolerated and/or indicated non-insulin medications – bedtime glargine – before meal lispro - Current Medication Regimen: Maximum tolerated and/or indicated non-insulin medications + glargine - No contraindications or reported/prior history of intolerance to dose increase - Non-preferred regimen. Change to NPH-regular regimen or 70/30 regimen unless patient refuses.		
Current Medication Dose	Glycemic Management Evaluation	Medication Adjustment
Maximum tolerated and/or indicated non-insulin medications		Step 1: If BMI < 28, FBS < 180, or GFR <30: <u>PEND</u> GLARGINE [3335], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 5 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #30 If BMI >= 28 and FBS >= 180 AND GFR >= 30: <u>PEND</u> 3335 [3335], SIG: CHECK SMBG DAILY BEFORE BREAKFAST AND DINNER. INJECT 10 UNITS SUBQ AT BEDTIME, AND ADD 1 UNIT DAILY AT BEDTIME UNTIL FBS IS BELOW 120. IF THE FBS FALLS BELOW 80, DECREASE DOSAGE BY 1 UNIT DAILY UNTIL OVER 80 AND CALL MD #30 SIGN a lab order for A1c to be completed in 6 weeks; cc to mentor/physician SIGN order for Ultra-Fine insulin syringe ½ ml 31 x 15/64" (135399), SIG: Use as directed #100 (for insulin doses > 50 units, order Ultra-Fine insulin syringe 1 ml 31 x 15/63" (135400), SIG: Use as directed #100). Go to "Insulin Algorithm using Glargine (Lantus) and lispro (Humalog)" for ongoing titration instructions
Step 1: Glargine at bedtime	If 1) fasting SMBG 80 – 120 or 2) bedtime glargine dose is 0.5 units/kg or 50 units:	Step 2:

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	If before-lunch readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%) add lispro 5 units SC before breakfast. If before-dinner readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%) add lispro 5 units SC before lunch. If bedtime readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%), add lispro 5 units SC before dinner.	A1c goal < 7: If before-lunch SMBG > 120: PEND LISPRO [28166], SIG: INJECT 5 UNITS SUBQ BEFORE BREAKFAST. #30 (3 vials). A1c goal < 8: If before-lunch SMBG > 120: PEND LISPRO [28166], SIG: INJECT 5 UNITS SUBQ BEFORE BREAKFAST. #30 (3 vials). A1c goal < 7: If before-dinner SMBG > 120: PEND LISPRO [28166], SIG: INJECT 5 UNITS SUBQ BEFORE LUNCH. #30 (3 vials). A1c goal < 8: If before-dinner SMBG > 160: PEND LISPRO [28166], SIG: INJECT 5 UNITS SUBQ BEFORE LUNCH. #30 (3 vials). A1c goal < 7: If bedtime SMBG > 120: PEND LISPRO [28166], SIG: INJECT 5 UNITS SUBQ BEFORE DINNER. #30 (3 vials). A1c goal < 8: If bedtime SMBG > 120: PEND LISPRO [28166], SIG: INJECT 5 UNITS SUBQ BEFORE DINNER. #30 (3 vials). SIGN order for Ultra-Fine insulin syringe ½ ml 31 x 15/64" (135399), SIG: Use as directed #400 (for insulin doses > 50 units, order Ultra-Fine insulin syringe 1 ml 31 x 15/63" (135400), SIG: Use as directed #200) See "Insulin Algorithm using Glargine (Lantus) and lispro (Humalog)" for ongoing titration instructions SIGN a lab order for A1c to be completed in 6 weeks
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Insulin Algorithm using Glargine (Lantus) and lispro (Humalog)

On maximum non-insulin medications

A1c $\geq$ 7% (18 to 64 years old)

A1c $\geq$ 8% (65 through 74 years old)

+ Adherent to current diabetes medication regimen (>80% of doses) + At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160
STEP 1 (if Fasting AM Blood Sugar > 120 and none <80) If BMI < 28 or FBS < 180: glargine bedtime 5 units SC QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD If BMI $\geq$ 28 and FBS > 180: glargine bedtime 10 units SC QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD
STEP 2 If 1) fasting SMBG 80 – 120 or 2) bedtime glargine dose is 0.5 units/kg or 50 units: Before-lunch readings > 150, add lispro insulin 5 units SC before breakfast. Stop glipizide before breakfast Before-dinner readings > 150, add lispro insulin 5 units SC before lunch Bedtime readings > 150, add lispro insulin 5 units SC before dinner. Stop glipizide before dinner

STEP 3

Using $\geq$ 50% of SMBG readings at the same time of day, adjust the insulin dose(s) as follows:

Fasting SMBG →	Evening glargine (Lantus)		Before lunch SMBG→	Before-breakfast lispro (Humalog)	
	A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)		A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)
< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units
80 – 120	No change	No change	80 - 120	No change	No change
121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change
161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units
201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units
241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units
>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units

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STEP 3 continued

Using $\geq 50\%$ of SMBG readings at the same time of day, adjust the insulin dose(s) as follows:

Before dinner SMBG→	Before-lunch lispro (Humalog)		Bedtime SMBG→	Before-dinner lispro (Humalog)	
	A1c $\geq 7\%$ (18 to 64 years old)	A1c $\geq 8\%$ (65 through 74 years old)		A1c $\geq 7\%$ (18 to 64 years old)	A1c $\geq 8\%$ (65 through 74 years old)
< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units
80 - 120	No change	No change	80 - 120	No change	No change
121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change
161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units
201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units
241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units
>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units

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ATTACHMENT K: Humulin R U-500 Titration Algorithm

Medication Adjustment – Maximum tolerated and/or indicated non-insulin medications + multiple daily injection insulin regimen with total daily dose of insulin (TDD) > 200 units or > 2 units/kg; or insulin doses that exceed 100 units – U-500 before breakfast and before dinner

Maximum tolerated and/or indicated non-insulin medications + multiple daily injection insulin regimen with U-100 total daily dose of insulin (TDD) > 200 units or > 2 units/kg; or U-100 insulin doses that exceed 100 units – U-500 before breakfast and before dinner Current Medication Regimen: Maximum tolerated and/or indicated non-insulin medications + multiple daily injection insulin regimen with total daily dose of insulin (TDD) > 200 units or > 2 units/kg; or insulin doses that exceed 100 units No contraindications or reported/prior history of intolerance to dose increase		
Current Medication Dose	Glycemic Management Evaluation	Medication Adjustment
Multiple daily injection insulin regimen with U-100 total daily dose of insulin (TDD) > 200 units or > 2 units/kg; or U-100 insulin doses that exceed 100 units – U-500 before breakfast and before dinner	If last A1c $\leq$ 8 or mean SMBG $\leq$ 180,	Step 1 (last A1c $\leq$ 8 or mean SMBG $\leq$ 180): Start with total daily dose of U-500 at 80% of U-100 TDD: <u>PEND</u> U-500 Kwikpen [O327274], SIG: CHECK SMBG DAILY BEFORE MEALS AND AT BEDTIME. INJECT [60% of total daily dose of U-500; round down to the nearest increment of 5] UNITS SUBQ BEFORE BREAKFAST, AND [40% of total daily dose of U-500; round down to the nearest increment of 5] UNITS BEFORE DINNER. #54 (18 pens or 9 two-pen packs) See “Insulin Algorithm using Humulin R U-500” for ongoing titration instructions SIGN a lab order for A1c to be completed in 6 weeks; cc to mentor/physician
	If last A1c > 8 or mean SMBG > 180, proceed to next row	
Multiple daily injection insulin regimen with U-100 total daily dose of insulin (TDD) > 200 units or > 2 units/kg; or U-100 insulin doses that exceed 100 units – U-500 before breakfast and before dinner	If last A1c > 8 or mean SMBG > 180	Step 1 (last A1c > 8 or mean SMBG > 180): Start with total daily dose of U-500 at 100% of U-100 TDD: <u>PEND</u> U-500 Kwikpen [O327274], SIG: CHECK SMBG DAILY BEFORE MEALS AND AT BEDTIME. INJECT [60% of total daily dose of U-500; round down to the nearest increment of 55] UNITS SUBQ BEFORE BREAKFAST, AND [40% of total daily dose of U-500; round down to the nearest increment of 5] UNITS BEFORE DINNER. #54 (18 pens or 9 two-pen packs) See “Insulin Algorithm using Humulin R U-500” for ongoing titration instructions SIGN a lab order for A1c to be completed in 6 weeks; cc to mentor/physician

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Insulin Algorithm using Humulin R U-500

On maximum non-insulin medications

A1c $\geq$ 7% (18 to 64 years old)

A1c $\geq$ 8% (65 through 74 years old)

+
Adherent to current diabetes medication regimen (>80% of doses)
+
At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160
Evaluate if the patient may benefit from changing from the current insulin regimen to U-500:
Patient's total daily dose of insulin (TDD) > 200 units or > 2 units/kg; or insulin doses that exceed 100 units
Check SMBG TID-QID: AC meals & HS
STEP 1
If last A1c $\leq$ 8 or mean SMBG $\leq$ 180: Start with total daily dose of U- 500 at 80% of final U-100 TDD: U-500 [60% of total daily dose of U- 500 ; round down to the nearest increment of 5] units SC before breakfast, and [40% of total daily dose of U- 500 ; round down to the nearest increment of 5] units SC before dinner
If last A1c > 8 or mean SMBG > 180: Start with total daily dose of U- 500 at 100% of final U-100 TDD: U-500 [60% of total daily dose of U- 500 ; round down to the nearest increment of 5] units SC before breakfast, and [40% of total daily dose of U- 500 ; round down to the nearest increment of 5] units SC before dinner

STEP 2

Using $\geq$ 50% of SMBG readings at the same time of day, adjust the insulin dose(s) as follows (always round down to nearest increment of 5):

Fasting SMBG →	Before-dinner U-500		Before lunch SMBG →	Before- breakfast U-500	Before dinner SMBG →	Before-breakfast U-500		Bedtime SMBG →	Before- dinner U-500
	A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)				A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)		
< 70	-10%	-10%	< 70	-10%	< 70	-10%	-10%	< 70	-10%
71 – 130	No change	No change			71 – 130	No change	No change		
131 – 180	+5%	No change			131 – 180	+5%	No change		
181 - 220	+10%	+10%			181 - 220	+10%	+10%		
> 220	+15%	+15%			> 220	+15%	+15%		

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ATTACHMENT L Insulin Regimen Conversions

Converting NPH Insulin to 70/30

Morning NPH dose can be converted to morning 70/30 dose at a ratio of 1:1
Evening NPH dose can be converted to evening 70/30 dose at a ratio of 1:1

Example:

NPH before-breakfast 10 units

NPH before-dinner 30 units

Morning 70/30 dose = 10 units

Evening 70/30 dose = 30 units

Morning 70/30 dose 10 units before breakfast

Evening 70/30 dose 30 units before dinner

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Converting Multiple Daily Insulin Injection Regimen with NPH, Regular Insulin, Glargine, and/or Lispro to 70/30

If A1c $\leq$ 8% or fasting blood sugar $\leq$ 180

Multiply total daily dose of insulin (TDD) * 0.8 = 80% of TDD
Multiply 80% of TDD by 2/3 to calculate the before-breakfast 70/30 dose
Multiply 80% of TDD by 1/3 to calculate the before-dinner 70/30 dose

Example:

NPH before-breakfast 10 units
Regular insulin before-breakfast 8 units
NPH before-dinner 30 units
Regular insulin before-dinner 12 units

Total daily dose of insulin (TDD) = 10 + 8 + 30 + 12 = 60 units
80% of TDD = 0.8 * 60 = 48 units
Morning 70/30 dose = 2/3 * 48 = 32
Evening 70/30 dose = 1/3 * 48 = 16

Morning 70/30 dose 32 units before breakfast
Evening 70/30 dose 16 units before dinner

If A1c > 8% or fasting blood sugar > 180

Multiply TDD by 2/3 to calculate the before-breakfast 70/30 dose
Multiply TDD by 1/3 to calculate the before-dinner 70/30 dose

Example:

Lispro before-breakfast 8 units
Lispro before-lunch 10 units
Lispro before-dinner 12 units
Glargine at bedtime 30 units

Total daily dose of insulin (TDD) = 8 + 10 + 12 + 30 = 60 units
Morning 70/30 dose = 2/3 * 60 = 40
Evening 70/30 dose = 1/3 * 60 = 20

Morning 70/30 dose 40 units before breakfast
Evening 70/30 dose 20 units before dinner

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Converting 70/30 to NPH and Regular Insulin

Convert when desired glycemic control is difficult to achieve due to fixed ratio of 70/30 individual insulin components

70/30 to before-meal NPH and regular insulin

Multiply the 70/30 dose by 0.7 to calculate the before-meal NPH dose

Multiply the 70/30 dose by 0.3 to calculate the before-meal regular insulin dose

Example:

70/30 before-breakfast 20 units

70/30 before-dinner 40 units

$0.7 * 20 = 14$ units NPH before-breakfast

$0.3 * 20 = 6$ units regular insulin before-breakfast

$0.7 * 40 = 28$ units NPH before-dinner

$0.3 * 40 = 12$ units regular insulin before-dinner

Morning NPH dose 14 units before breakfast

Morning regular insulin dose 6 units before breakfast

Evening NPH dose 28 units before dinner

Evening regular insulin dose 12 units before dinner

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Converting Glargine to NPH

**Once daily (or at bedtime) glargine can be converted to NPH at a ratio of 1:1
For bedtime glargine doses of 50 units or higher, convert to NPH at a ratio of 1:1 and then split
into twice-a-day dosing**

Example:

Glargine 30 units at bedtime
Convert to 30 units of NPH at bedtime

Example:

Glargine 50 units at bedtime
Convert to 50 units of NPH per day → NPH 25 units bid

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Converting High-Dose Insulin Regimen to U-500 Regimen

Convert to U-500 when total daily dose of insulin (TDD) $\geq$ 200 units per day

*** U-500 is dosed in increments of 5 units***

If A1c $\leq$ 8% or fasting blood sugar $\leq$ 180

Multiply total daily dose of insulin (TDD) * 0.8 = 80% of TDD

Multiply 80% of TDD by 60% to calculate the morning U-500 dose

Multiply 80% of TDD by 40% to calculate the evening U-500 dose

Example:

70/30 before-breakfast 130 units

70/30 before-dinner 180 units

Total daily dose of insulin (TDD) = 130 + 180 = 310 units

80% of TDD = 0.8 * 310 = 248 units

Morning U-500 dose = 60% of 248 = 0.6 * 248 = about 150 units

Evening U-500 dose = 40% of 248 = 0.4 * 248 = about 100 units

Morning U-500 dose 150 units before breakfast

Evening U-500 dose 100 units before dinner

If A1c $>$ 8% or fasting blood sugar $>$ 180

Use 100% of current total daily dose of insulin (TDD) to determine U-500 TDD

Multiply 100% of TDD by 60% to calculate the morning U-500 dose

Multiply 100% of TDD by 40% to calculate the evening U-500 dose

Example:

NPH before-breakfast 100 units

Regular insulin before-breakfast 80 units

NPH before-dinner 130 units

Regular insulin before-dinner 120 units

Total daily dose of insulin (TDD) = 100 + 80 + 130 + 120 = 430 units

100% of TDD = 430 units

Morning U-500 dose = 60% of 430 = 0.6 * 430 = about 260 units

Evening U-500 dose = 40% of 430 = 0.4 * 430 = about 170 units

Morning U-500 dose 260 units before breakfast

Evening U-500 dose 170 units before dinner

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ATTACHMENT M: Medication Education

Biguanide: Metformin/metformin ER (Glucophage®)

Drug Class	Biguanide
Mechanism of Action	Improves insulin sensitivity in the peripheral tissues, decreases hepatic glucose output
Efficacy	Mean reduction of A1c: 1.5 – 2%
Indications	Recommended as first-line treatment for Type 2 diabetic patients
Contraindications	- Renal disease (GFR < 30 ml/min or 30 – 60 ml/min with high risk for progression) - Hypoxemia or dehydration - DM Type 1 - Known or suspected alcoholism - Hypersensitivity to metformin - Pregnant or breast-feeding women - Acute or chronic metabolic acidosis, including diabetic acidosis, with or without coma. - Unstable congestive heart failure (CHF) - Severe hepatic disease
Adverse Reactions	Jaundice, anemia, lactic acidosis, gastrointestinal (GI) upset, diarrhea, allergic reaction
Drug Interactions to consider (not limited to)	- Increased plasma concentration of metformin with diuretics, nifedipine, cimetidine. - Potentiate hypoglycemic effects with sulfonylureas and ACE-inhibitors. - Reduced elimination of metformin with amiloride, digoxin, morphine, procainamide, quinidine, quinine, triamterene, trimethoprim, and vancomycin.
Considerations	- Give with meal and titrate dose up slowly to reduce incidence/severity of GI upset - Max dose for GFR 30 – 59 ml/min is 1000 mg/day (metformin/metformin ER)
Maximum Dose	Metformin = 2000 mg/day ; metformin ER = 2000 mg/day
Decrease in Dosage	2 or more SMBG readings within the last 2 weeks are below 80 mg/dL for pre-meal or below 100mg/dL at bedtime. - Patient has hypoglycemic symptoms and patient is compliant with meal pattern. - Patient complains of gastrointestinal symptoms (metallic taste, diarrhea, nausea, vomiting, abdominal bloating, flatulence, and anorexia). Reevaluate at next follow up. If no gastrointestinal side effects present, advance metformin if indicated by SMBG. If continued side effects, discontinue metformin IR and use metformin SR.
Discontinue medication	- GFR < 30 ml/min - ALT becomes 3 times above upper limit of normal - Discontinue metformin/metformin ER for any surgical procedure (except minor procedures not associated with restricted intake of food and fluids) and should not be restarted until the patient's oral intake has resumed and serum creatinine has been evaluated as normal. - Temporarily discontinue metformin/metformin ER at time of or prior to any procedure involving intravenous, iodinated contrast materials. It should be withheld for the day of procedure and be reinstituted only after normal kidney function returns.

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Consult with PCP and/or mentor physician	- Severe side effects: jaundice, anemia, lactic acidosis, GI upset, severe diarrhea, allergic reaction. - Dose decreased x 2 for side effects and patient still reporting GI symptoms. - Worsening symptoms unresponsive to treatment per protocol. - Discontinuing metformin/metformin ER due to abnormal lab values: GFR < 30 ml/min, ALT 3 times above upper normal limit
Patient Education	- Drinking alcohol may cause very low blood glucose - Take with meals

Sulfonylureas (Glipizide/Glipizide TR24 SR/Glimepiride)

Drug Class	Sulfonylurea
Mechanism of Action	Stimulates insulin secretion from pancreatic beta cells
Efficacy	Mean reduction of A1c: 0.8 – 1.7%
Indications	- Recommended as second-line treatment for Type 2 diabetic patients - Glipizide is the preferred first line sulfonylurea treatment due to its short half-life, especially for the elderly patients (>65 years old) and patients with GFR < 30 ml/min. - Caution in renal or hepatic impairment
Contraindications	- Do not use glipizide TR24 SR or glimepiride in patients with GFR < 30 - Hypersensitivity to sulfonylureas or sulfonamides - Diabetes complicated by pregnancy (Pregnancy Category C) - DM type 1
Adverse Reactions	- Hypoglycemia - GI symptoms - Allergic reactions - Weight gain - Disulfiram-like reactions
Maximum Dose	Glipizide = 40 mg/day; Glipizide TR24 SR = 20 mg/day, Glimepiride = 8 mg/day
Decrease in Dosage	2 or more SMBG readings within the last 2 weeks are below 80 mg/dL for pre-meal or below 100mg/dL at bedtime. - Patient has hypoglycemic symptoms and patient is compliant with meal pattern.
Discontinue Medication	- Continued hypoglycemia despite accounting for dosing, carbohydrate intake, medication timing, and other factors contributing to hypoglycemia - Sulfonylureas are having minimal antihyperglycemic effect and should be discontinued when the total daily dose of insulin is equal to 1 unit/kg in an obese patient using a multiple daily injection insulin regimen.
Consult with PCP and/or mentor physician	Severe adverse reactions: allergic reactions, nausea, hypoglycemia
Patient Education	- Take glipizide 30 minutes before meal - Take glipizide TR24 SR/glimepiride with morning meal - Avoid alcohol: concomitant use of alcohol may produce a disulfiram-like reaction consisting of nausea, vomiting, abdominal cramps and headaches

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Glipizide/Metformin 5/500mg

Drug Class	Combination sulfonylurea and biguanide
Mechanism of Action	Improves insulin sensitivity in the peripheral tissues, decreases hepatic glucose output (metformin) and stimulates insulin secretion from pancreatic beta cell (glipizide)
Indications	- A1c $\geq$ 8.5% and/or random blood glucose $\geq$ 300 mg/dL - Adherence issues on stable doses of metformin and sulfonylurea
Contraindications	- Renal disease (GFR < 30 ml/min or 30 – 60 ml/min with high risk for progression – uncontrolled nephritic syndrome, uncontrolled hypertension, decrease in GFR > 5 – 10 ml/min/year) - Hypoxemia or dehydration - DM Type 1 - Known or suspected alcoholism - Hypersensitivity to metformin, sulfonylureas, or sulfonamides. - Pregnant or breast-feeding women - Acute or chronic metabolic acidosis, including diabetic acidosis, with or without coma. - Unstable congestive heart failure (CHF) - Severe hepatic disease
Adverse Reactions	Jaundice, anemia, lactic acidosis, gastrointestinal (GI) upset, diarrhea, allergic reaction, disulfiram-like reactions, weight gain
Drug Interactions to consider (not limited to)	- Increased plasma concentration of metformin with diuretics, nifedipine, cimetidine. - Reduced elimination of metformin with amiloride, digoxin, morphine, procainamide, quinidine, quinine, triamterene, trimethoprim, and vancomycin.
Considerations	- Give with meal and titrate dose up slowly to reduce incidence/severity of GI upset - Max dose for GFR 30 – 60 ml/min is 1000mg/day (metformin/metformin ER)
Maximum Dose	Glipizide/metformin = 20/2000 mg/day
Decrease in Dosage	2 or more SMBG readings within the last 2 weeks are below 80 mg/dL for pre-meal or below 100mg/dL at bedtime. - Patient has hypoglycemic symptoms and patient is compliant with meal pattern. - Patient complains of gastrointestinal symptoms (metallic taste, diarrhea, nausea, vomiting, abdominal bloating, flatulence, and anorexia). Reevaluate at next follow up. If no gastrointestinal side effects present, advance metformin if indicated by SMBG. If continued side effects, discontinue metformin IR and use metformin SR.
Discontinue medication	- GFR < 30 ml/min - ALT becomes 3 times above upper limit of normal - Discontinue metformin/metformin ER for any surgical procedure (except minor procedures not associated with restricted intake of food and fluids) and should not be restarted until the patient's oral intake has resumed and serum creatinine has been evaluated as normal. - Discontinue metformin/metformin ER at time of or prior to any procedure involving intravenous, iodinated contrast materials. It should be withheld for the day of procedure and be reinstituted only after normal kidney function returns.

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Consult with PCP and/or mentor physician	- Severe side effects: jaundice, anemia, lactic acidosis, GI upset, severe diarrhea, allergic reaction. - Dose decreased x 2 for side effects and patient still reporting GI symptoms. - Discontinuing metformin/metformin ER due to abnormal lab values: GFR < 30 ml/min, ALT 3 times above upper normal limit
Patient Education	- Drinking alcohol may cause very low blood glucose; concomitant use of alcohol may produce a disulfiram-like reaction consisting of nausea, vomiting, abdominal cramps and headaches - Take with meals

Thiazolidinedione: Pioglitazone (Actos)

Drug Class	Thiazolidinedione
Mechanism of Action	Increases insulin sensitivity
Efficacy	Mean reduction of A1c: 1.5 – 2%. May take weeks to months for full effect
Indications	- Can be used as add-on treatment to metformin and sulfonylurea (if no contraindications to either) for patients with Type 2 diabetes who refuse insulin - Use for patients who hold a commercial driver's license and cannot retain their job if starting insulin
Contraindications	- Symptomatic heart failure - Active liver disease or ALT > 3 x upper limit of normal - History of bladder cancer or unexplained hematuria
Adverse Reactions	- Weight gain and fluid retention - Increased bone fracture risk
Maximum Dose	Pioglitazone = 30 mg/day
Decrease in Dosage	2 or more SMBG readings within the last 2 weeks are below 80 mg/dL for pre-meal or below 100mg/dL at bedtime. - Patient has hypoglycemic symptoms and patient is compliant with meal pattern. - Fluid retention
Discontinue medication	- Symptomatic heart failure - Development of bladder cancer - Hematuria of unknown cause - ALT > 3 times above upper limit of normal
Consult with PCP and/or mentor physician	- Fluid retention - Symptomatic heart failure - Development of bladder cancer - Hematuria of unknown cause - ALT > 3 times above upper limit of normal

Sodium Glucose Cotransporter-2 Inhibitors (SGLT2) Inhibitor: Empagliflozin (Jardiance)

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Drug Class	Sodium Glucose Cotransporter 2 Inhibitors (SGLT2) Inhibitor
Mechanism of Action	Inhibits renal reabsorption of glucose, promoting renal glucose excretion
Efficacy	Mean reduction of A1c: 0.5 – 0.7%
Indications	Use in patients with Type 2 diabetes treated with metformin (if no contraindications) and one or more of the following: - Established atherosclerotic cardiovascular disease (ASCVD). ASCVD includes coronary artery disease, cerebrovascular disease, and or peripheral arterial disease. Does not include aortic atherosclerosis discovered on planar imaging. - Established heart failure - Chronic kidney disease (CKD) with a GFR of 30-59 mL/min - Albuminuria with a urine albumin/creatinine ratio > 300 mcg/mg - Use in patients who hold a commercial driver's license and cannot retain their job if starting insulin and A1c is not controlled on metformin, sulfonylurea, and pioglitazone
Contraindications	- GFR < 30 mL/min. Loses much of antihyperglycemic effect when GFR < 45 mL/min - History of amputation
Adverse Reactions	- Genitourinary fungal infections - Symptomatic hypotension - Euglycemic diabetic ketoacidosis - Fournier's gangrene - Acute kidney injury - Possible increased fracture risk - Possible increased lower extremity amputation risk
Maximum Dose	Empagliflozin = 12.5 mg/day
Discontinue medication	- GFR < 30 mL/min - If nausea, vomiting, or malaise: evaluate for evidence of DKA and stop empagliflozin if DKA is confirmed - Temporarily discontinue at least three days before surgical procedures. Reinstitute after surgery once oral intake is back to baseline and any other risk factors for ketoacidosis are resolved
Consult with PCP and/or mentor physician	- Possible side effects such as DKA, genitourinary infections, light-headedness, acute kidney injury, Fournier's gangrene - Patient at increased risk for lower-limb amputation (loss of protective sensation, foot deformity, vascular disease, history of amputation)
Patient Education	Seek medical care immediately for pain in the genital area especially if accompanied by fever or for symptoms of diabetic ketoacidosis such as lethargy, nausea, vomiting, abdominal pain

Glucagon-Like Peptide-1 (GLP-1) Receptor Agonist: Liraglutide (Victoza)

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Drug Class	Glucagon-Like Peptide 1 (GLP-1) Receptor Agonist
Mechanism of Action	- Stimulates insulin secretion in a glucose-dependent fashion - Inhibits inappropriate hyperglucagonemia - Increases satiety - Slows gastric emptying
Efficacy	Mean reduction of A1c: 0.5 – 1%
Indications	Use in patients with Type 2 diabetes treated with metformin (if no contraindications), who seek or require therapy other than an SGLT-2 inhibitor, and who have one or more of the following: - Established atherosclerotic cardiovascular disease (ASCVD). ASCVD includes coronary artery disease, cerebrovascular disease, and or peripheral arterial disease. Does not include aortic atherosclerosis discovered on planar imaging. - Use in patients who hold a commercial driver's license and cannot retain their job if starting insulin
Contraindications	- Severe gastrointestinal disease, eg, gastroparesis - Personal or family history of medullary thyroid cancer or multiple endocrine neoplasia 2A or 2B - Use with caution in patients with a history of pancreatitis
Adverse Reactions	- Nausea/vomiting - Diarrhea - Possible association with pancreatitis
Maximum Dose	Liraglutide
Decrease in Dosage	2 or more SMBG readings within the last 2 weeks are below 80 mg/dL for pre-meal or below 100mg/dL at bedtime. - Patient has hypoglycemic symptoms and patient is compliant with meal pattern.
Discontinue medication	Pancreatitis
Consult with PCP and/or mentor physician	Severe adverse reactions: allergic reactions, intractable nausea, hypoglycemia, pancreatitis
Patient Education	Nausea is common after starting the medication and will typically improve with time

Dipeptidyl Peptidase-4 (DPP-4) Inhibitor: Linagliptin (Tradjenta)

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Drug Class	Dipeptidyl Peptidase-4 (DPP-4) Inhibitor
Mechanism of Action	- Stimulates insulin secretion in a glucose-dependent fashion - Inhibits inappropriate hyperglucagonemia
Efficacy	Mean reduction of A1c: 0.5%
Indications	- Use in patients who hold a commercial driver's license and cannot retain their job if starting insulin - Use in patients who refuse insulin therapy and are within 1% of A1c goal while on maximally-tolerated doses of metformin and sulfonylurea
Contraindications	Use with caution in patients with a history of pancreatitis
Adverse Reactions	- Headaches, nasopharyngitis, URIs - Arthralgias - Skin reactions - Possible association with pancreatitis
Maximum Dose	Linagliptin = 5 mg/day
Consider Decrease in Dosage	2 or more SMBG readings within the last 2 weeks are below 80 mg/dL for pre-meal or below 100mg/dL at bedtime. - Patient has hypoglycemic symptoms and patient is compliant with meal pattern.
Discontinue medication	- A1c goal not achieved within 6 months of initiation - Pancreatitis - GFR < 30 mL/min
Consult with PCP and/or mentor physician	Severe adverse reactions: allergic reactions, hypoglycemia, arthralgias, skin reactions, pancreatitis
Patient Education	Nausea is common after starting the medication and will typically improve with time

Insulin

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	Short-acting		Intermediate-acting	Combined short- and intermediate-acting	Long-acting	Concentrated
Type of insulin	Regular	Lispro	NPH	70/30	Glargine	U-500
Start of action	15-30 min	10-20 min	1-2 hr	½ hr	3 to 4 hrs	~30 min
Peak action	2-5 hr	1-3 hr	4-12 hr	2-12 hr based on individual components	No pronounced peak	4-8 hr
Duration	4-12 hr	3-5 hr	14-24 hr	18-24 hr	24 hr	13-24 hr

Drug Class	Insulin
Indications	- Uncontrolled DM on maximum oral hypoglycemic agents - Known sensitivity to or contraindications with other glucose-lowering agents
Contraindications	Hypersensitivity to insulin
Adverse Reactions	- Hypoglycemia - Weight gain - Injection site reactions
Precautions	- Frequent causes of hypoglycemia include the following: - excessive insulin dosage - delayed, missed, or insufficient food intake - excessive (unplanned) exercise or physical activity
Additional Considerations	- Before adjusting insulin be sure patient - Has been taking the correct insulin dose at the correct time - Ate the usual meals and drinks (including alcohol), at the usual times, in the usual portions - Has maintained usual activity level
Consult with PCP and/or mentor physician	- If BS > 400 mg/dL and/or ketones in urine - If patient is taking > 300 units of insulin per day without normalization

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ATTACHMENT N:
Evidence of Successful TRAINING Completion
Standardized Procedure For Diabetes Mellitus Type 2

DEPARTMENT: _____

RN Name

Employee Number

The above named Registered Nurse has successfully completed training in the Standardized Procedure for Diabetes Mellitus Type 2 Management. The following cases have been reviewed and the RN has demonstrated appropriate assessment, medication adjustment, patient education and follow up protocol.

MRN	Date of Intervention
1.	
2.	
3.	
4	
5	
6	

Approved: _____

Local Diabetes Physician Champion

Date: _____

☐ **Treat-To-Target**

☐ **Diabetes Mellitus Type 2 playbook**

Completed Date: _____ Initial: _____

DIABETES MELLITUS ORIENTATION COMPLETED per Standardized Procedure:

Physician mentoring: Date(s): _____

Approved by: _____

Diabetes Physician Champion/Mentor

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ATTACHMENT O: Completion and Documentation of ANNUAL Competency Standardized Procedure For Diabetes Mellitus Type 2

DEPARTMENT _____ Location: _____

RN Name Employee Number

The above named Registered Nurse has successfully met the annual competency requirements to continue practicing under the Standardized Procedure for Diabetes Mellitus Type 2 Management. The following cases have been reviewed by a DM Physician Champion. RN has constantly demonstrated appropriate assessment, medication adjustment, patient education and follow up protocol.

MRN	Date of Intervention
1.	
2.	
3.	
4	
5	
6	

This RN is approved to provide care in accordance with the Standardized Procedure for Diabetes Mellitus Type 2 Management as indicated below:

Department Administrator: _____
(Signature) Date)

Approving Physician: _____
(Signature) (Date)

By signing this statement of approval, I agree to continue utilizing the *Standardized Procedures for Diabetes Type 2 Management* in theory and in practice.

_____, RN
RN Signature (Date)

I have received an updated copy of the following Protocol(s):

☐ **Standardized Procedure for Diabetes Mellitus Type 2 Management**

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By signing this statement of approval, I agree to utilize *Standardized Procedures for Diabetes Type 2 Management* in theory and in practice.

Department: _____

☐ **Standardized Procedure for Diabetes Mellitus Type 2 Management**

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ATTACHMENT Q:
Record of Annual Competency Verification
Standardized Procedure For Diabetes Mellitus Type 2

Department: _____

Location: _____

The following are staff authorized to perform the Standardized Procedure and have completed annual competency verification within the past twelve (12) months.

1.	_____	Date: _____
2.	_____	Date: _____
3.	_____	Date: _____
4.	_____	Date: _____
5.	_____	Date: _____
6.	_____	Date: _____

Department Administrator

Date

Assistant Department Administrator

Date

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ATTACHMENT R:
Kaiser Permanente Medical Care Program
Los Angeles Medical Center & Medical Office Buildings
Standardized Procedure Approval Signatures

Diabetes Mellitus Type 2

Standardized Procedure Name

Complete Care, Primary Care, Internal Medicine, Family Medicine

Department

Chief of Service

Date

Department Administrator

Date

Diabetes Physician Champion

Date

Ambulatory Care Practice Leader

Date

Interdisciplinary Practice Committee Chair

Date

Medical Executive Committee Chair

Date

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ATTACHMENT S: QUICK REFERENCE FOR MOST COMMONLY USED TREATMENT ALGORITHMS

Single Drug Algorithm Using Metformin IR

A1c $\geq$ 7% (18 to 64 years old)

A1c $\geq$ 8% (65 through 74 years old)

+
Adherent to current diabetes medication regimen (>80% of doses)
+
At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160

STEP 1

If GFR <45, skip to STEP 4
Metformin 500 mg tablet: ½ tablet PO BID with meal

STEP 2

Metformin 500 mg tablet: 1 tablet PO BID with meal

STEP 3

If GFR <60, skip to STEP 4
Metformin 500 mg tablet: 2 tablets PO BID with meal

STEP 4

Does patient have ASCVD and GFR $\geq$ 30? If no, skip to STEP 5
Empagliflozin 25 mg tablet: ½ tablet PO daily, then skip to STEP 6. If patient seeks or requires alternative therapy, add Liraglutide 0.6 mg SC daily for one week then increase to 1.2 mg SC daily, then skip to STEP 6

STEP 5

Does patient have heart failure, eGFR 30-59, or urine albumin to creatinine ratio > 300? If no, skip to STEP 6
Empagliflozin 25 mg tablet: ½ tablet PO daily

STEP 6

Glipizide 5 mg tablet: ½ tablet PO BID before meal

STEP 7

Glipizide 5 mg tablet: 1 tablet PO BID before meal

STEP 8

Glipizide 5 mg tablet: 2 tablets PO BID before meal

STEP 9

Does patient continue to refuse insulin? If yes, skip to STEP 10
(if Fasting AM Blood Sugar > 120 and none <80)
If BMI < 28, FBS < 180 or GFR <30: NPH* bedtime 5 units SC QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD
If BMI > 28 and FBS $\geq$ 180 and GFR $\geq$ 30: NPH* bedtime 10 units SC QHS QHS and add 1 unit daily at bedtime until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD.
if patient on bedtime NPH insulin with uncontrolled A1c and 1) > 70% (> 10 out of 14 days) fasting BS are within target goal of 80 mg/dL to 120 mg/dL and/or 2) patient's bedtime NPH insulin dose has reached 0.5 units/kg or 50 units, add morning NPH and/or before-meal regular insulin.
PROCEED TO NPH AND REGULAR INSULIN TITRATION ALGORITHM

STEP 10

Does patient have heart failure? If yes, skip to STEP 12
Pioglitazone 15 mg tablet: 1 tablet PO daily

STEP 11

Pioglitazone 15 mg tablet: 2 tablets PO daily

STEP 12

Is last A1c $\geq$ 1% above A1c goal or is patient already taking empagliflozin or liraglutide? If yes, go back to STEP 9 and involve PCP to assist with insulin start
Linagliptin 5 mg tablet: 1 tablet PO daily
If A1c not at goal on follow-up after completing STEP 12, return to STEP 9

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Insulin Algorithm Using NPH and Regular Insulin

On maximum non-insulin medications and FBS at goal or maximum HS NPH (0.5 units/kg or 50 units) and/or before-lunch, before-dinner, or bedtime SMBG readings above goal

A1c ≥ 7% (18 to 64 years old)

A1c ≥ 8% (65 through 74 years old)

+ Adherent to current diabetes medication regimen (>80% of doses) + At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-prandial readings more than 160
STEP 1 Check SMBG TID-QID: AC meals & HS If ≥ 50% of the before-dinner SMBG readings < 120 (A1c goal < 7%) or < 160 (A1c goal < 8%), go to STEP 2 If BMI < 28 or before-dinner SMBG < 180, or GFR < 30: NPH 5 units SC before breakfast. Patient home instructions: Add 1 unit daily before breakfast until before-dinner SMBG is below 120. If the before-dinner SMBG falls below 80, decrease dose by 1 unit daily until over 80 and call MD If BMI ≥ 28 and before-dinner SMBG ≥ 180: NPH 10 units (5 units if GFR < 30) SC before breakfast. Patient home instructions: Add 1 unit daily before breakfast until before-dinner SMBG is below 120. If the before-dinner SMBG falls below 80, decrease dose by 1 unit daily until over 80 and call MD
STEP 2 If 1) before-dinner SMBG 80 – 120 or 2) before breakfast NPH dose is 0.5 units/kg or 50 units: Before-lunch readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%), add regular insulin 5 units SC before breakfast Bedtime readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%), add regular insulin 5 units SC before dinner

STEP 3											
Using ≥ 50% of SMBG readings at the same time of day, adjust the insulin dose(s) as follows:											
Fasting SMBG →	Evening NPH		Before lunch SMBG→	Morning regular insulin		Before dinner SMBG→	Morning NPH		Bedtime SMBG→	Evening regular insulin	
	A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)		A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)		A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)		A1c ≥ 7% (18 to 64 years old)	A1c ≥ 8% (65 through 74 years old)
< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units
80 – 120	No change	No change	80 - 120	No change	No change	80 - 120	No change	No change	80 - 120	No change	No change
121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change	121 - 160	Increase 1 unit	No change
161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units	161 - 200	Increase 2 units	Increase 2 units
201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units	201 - 240	Increase 4 units	Increase 4 units
241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units	241 - 280	Increase 6 units	Increase 6 units
>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units	>280	Increase 8 units	Increase 8 units

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Insulin Algorithm Using 70/30 Insulin

On maximum non-insulin medications and NPH bid and FBS at goal or bedtime and/or before-lunch SMBG readings above goal

A1c $\geq$ 7% (18 to 64 years old)

A1c $\geq$ 8% (65 through 74 years old)

+ Adherent to current diabetes medication regimen (>80% of doses) + At least 7 SMBG readings in the past 14 days with 50% or more pre-meal readings above 120 and/or post-
STEP 1 Check SMBG TID-QID: AC meals & HS If $\geq$ 50% of the bedtime SMBG readings $\leq$ 120 (A1c goal < 7%) or $\leq$ 160 (A1c goal < 8%), go to STEP 2 If $\geq$ 50% of the bedtime SMBG readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%): Convert bedtime NPH dose to 70/30 before dinner using a 1:1 conversion: Start 70/30 [use dose as calculated from above] SC before dinner. Patient home instructions: Add 1 unit daily before dinner until FBS is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD
STEP 2 If $\geq$ 50% of the lunchtime SMBG readings > 120 (A1c goal < 7%) or > 160 (A1c goal < 8%): Convert before-breakfast NPH dose to 70/30 before breakfast using a 1:1 conversion: Start 70/30 [use dose as calculated from above] SC before breakfast. Patient home instructions: Add 1 unit daily before breakfast until before-dinner SMBG is below 120. If the FBS falls below 80, decrease dose by 1 unit daily until over 80 and call MD

STEP 3

Using $\geq$ 50% of SMBG readings at the same time of day, adjust the insulin dose(s) as follows:

Fasting SMBG →	Evening 70/30		Before lunch SMBG→	Morning 70/30	Before dinner SMBG→	Morning 70/30		Bedtime SMBG→	Evening 70/30
	A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)				A1c $\geq$ 7% (18 to 64 years old)	A1c $\geq$ 8% (65 through 74 years old)		
< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units	< 80	Decrease 2 units	Decrease 2 units	< 80	Decrease 2 units
80 – 120	No change	No change			80 - 120	No change	No change		
121 - 160	Increase 1 unit	No change			121 - 160	Increase 1 unit	No change		
161 - 200	Increase 2 units	Increase 2 units			161 - 200	Increase 2 units	Increase 2 units		
201 - 240	Increase 4 units	Increase 4 units			201 - 240	Increase 4 units	Increase 4 units		
241 - 280	Increase 6 units	Increase 6 units			241 - 280	Increase 6 units	Increase 6 units		
>280	Increase 8 units	Increase 8 units			>280	Increase 8 units	Increase 8 units		

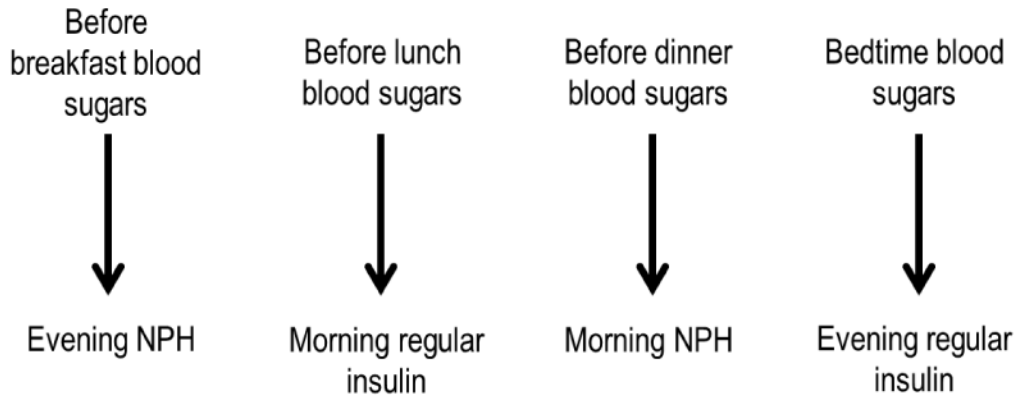
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ATTACHMENT T:

Understanding How to Target Blood Sugars at Different Times of Day Based on Insulin Type and Timing

NPH and Regular Insulin



Lantus (glargine) and Humalog

