

SCREENING

Ages 18-44 +

Screen with fasting glucose at least every three years if risk factors including:

BMI >25 (or >23 if Asian American)

AND any of these factors:

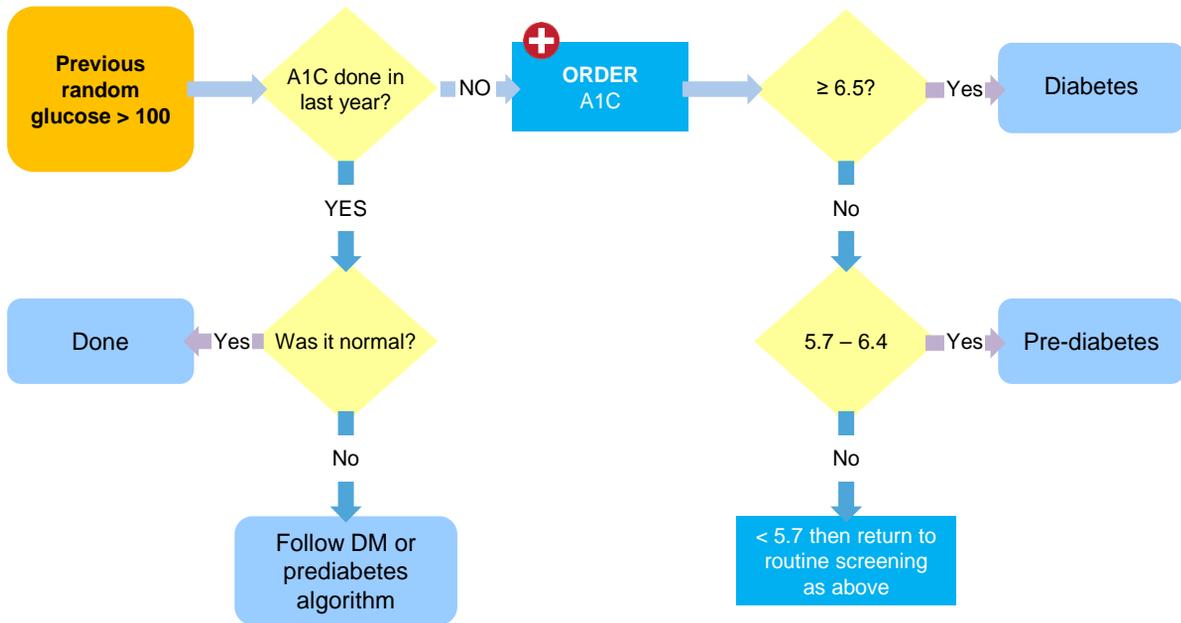
- Physical inactivity
- First-degree relatives with diabetes
- High-risk race/ethnicity (African American, Latino, Native American, Asian American, Pacific Islander)
- Women who delivered a baby >9 pounds or with Gestational Diabetes
- Hypertension ($\geq 140/90$)
- HDL <35 or TG >250
- Women with polycystic ovarian syndrome
- A1C $\geq 5.7\%$
- History of Coronary Artery Disease
- Corticosteroid use
- Atypical antipsychotic use

Age 45+ +

Fasting glucose every 3 years

+ This symbol means Nurses can place these orders per nursing protocol order.

PREVIOUS ELEVATION IN BLOOD-SUGAR



DIAGNOSIS OF PRE-DIABETES OR DIABETES

Diagnosis of **Pre-Diabetes** if ANY of these apply

- Fasting Plasma Glucose 100-125
- 2 hour Plasma Glucose after 75 g OGTT 140-199
- A1C 5.7-6.4%

Diagnosis of **Diabetes** if ANY of these apply:

- A1C $\geq 6.5\%$
- Fasting Plasma Glucose ≥ 126 (no caloric intake for 8 hours)
- 2 h Plasma Glucose ≥ 200 mg/dl with 75 g oral glucose tolerance test
- Random glucose ≥ 200 mg/dl with symptoms

PRE-DIABETES

At Diagnosis

- Health Coach to Follow
- + Refer to Diabetes Prevention Program (if available)
- + Refer to Dietician
- Evaluate and control other risk factors for heart disease (blood pressure/lipids)

Give educational handouts

Prediabetes
Exercise to Manage Your Blood Sugar
Do You Have Diabetes?
Long term complications of Diabetes
Diabetes: Understanding Carbohydrates, Fats and Proteins

Consider metformin especially if age < 60, BMI >35, or history of prior gestational diabetes

Start metformin at 500 mg twice daily. After two weeks increase to 1000 mg twice daily as tolerated.

Contraindications:

Liver Failure
 Dialysis
 Black box warning includes Cr >1.5 in males and 1.4

Other handouts to consider

Diabetes, Managing: The A1C Test
Walking For Fitness
Tips for Quitting Smoking
Coping with Smoking Withdrawal

At Each Visit

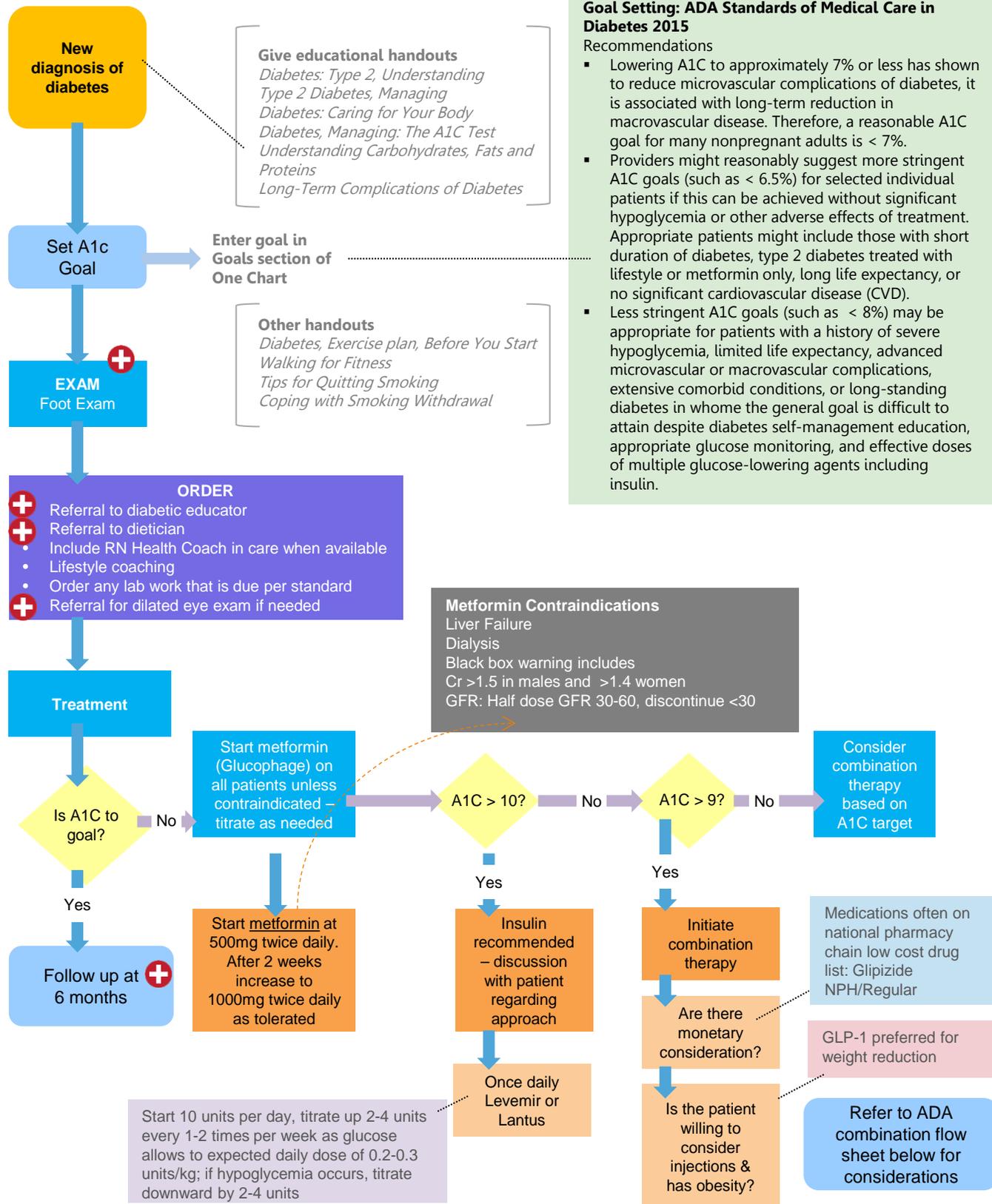
- + If A1C > 6.0 repeat every 6 months, A1C ≤ 6.0 then repeat 12 months
- Evaluate and control other risk factors for heart disease (blood pressure/lipids)

Consider metformin especially if age < 60, BMI >35, or history of prior gestational diabetes

INITIAL EVALUATION / TREATMENT OF TYPE 2 DIABETES

Recommendations for 18-75 year old patients without significant comorbidities

STANDARD TREATMENT REGIMEN



Goal Setting: ADA Standards of Medical Care in Diabetes 2015

Recommendations

- Lowering A1C to approximately 7% or less has shown to reduce microvascular complications of diabetes, it is associated with long-term reduction in macrovascular disease. Therefore, a reasonable A1C goal for many nonpregnant adults is < 7%.
- Providers might reasonably suggest more stringent A1C goals (such as < 6.5%) for selected individual patients if this can be achieved without significant hypoglycemia or other adverse effects of treatment. Appropriate patients might include those with short duration of diabetes, type 2 diabetes treated with lifestyle or metformin only, long life expectancy, or no significant cardiovascular disease (CVD).
- Less stringent A1C goals (such as < 8%) may be appropriate for patients with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, extensive comorbid conditions, or long-standing diabetes in whom the general goal is difficult to attain despite diabetes self-management education, appropriate glucose monitoring, and effective doses of multiple glucose-lowering agents including insulin.

INITIAL EVALUATION/TREATMENT OF TYPE 2 DIABETES (page 2)

Healthy eating, weight control, increased physical activity, and diabetes education

MONO THERAPY	Metformin
	-
Efficacy	High
Hypo risk	Low Risk
Weight	Neutral / Loss
Side Effects	GI / Lactic Acidosis
Costs	Low

Sulfonylurea: (use glipizide (Glucotrol) or glimepiride (Amaryl) – not glyburide (Diabeta/Micronase) as it has a higher rate of cardiac complications). Cheap, oral, causes hypoglycemia

DPP-4 inhibitor: Very little evidence that one agent is preferable to another. Use agent based on insurance coverage.
Sitagliptin (Januvia)
Saxagliptin (Onglyza)
Linagliptin (Tradjenta)
Alogliptin (Nesina)

SGLT2 inhibitor: Very little evidence that one agent is preferable to another. Use agent based on insurance coverage.
Empagliflozin (Jardiance)
Canagliflozin (Invokana)
Dapagliflozin (Farxiga)

GLP-1 Receptor Agonist: may assist with weight loss, no hypoglycemia, an injection-so serves as a nice bridge to insulin as they get used to injections, relatively expensive. Very little evidence that one agent is preferable to another. Use agent based on insurance coverage. See black box warning for contraindications.
Exenatide (Byetta/Bydureon)
Liraglutide (Victoza)
Dulaglutide (Trulicity)
Albiglutide (Tanzeum)

Thiazolidinedione (use pioglitazone (Actos); not rosiglitazone (Avandia) which has higher risk of cardiac complications): oral, doesn't cause hypoglycemia, Actos linked to bladder cancer; cardiac complications higher with either

Insulin: Supplemental scale/sliding scale insulin is not routinely recommended for patients with diabetes.

If HbA_{1c} target not achieved after ~3 months of monotherapy, proceed to 2-drug combination (order not meant to denote any specific preference – choice dependent on a variety of patient- and disease-specific factors):

DUAL THERAPY	Metformin+	Metformin+	Metformin+	Metformin+	Metformin+	Metformin+
	Sulfonylurea	Thiazolidinedione	DPP-4 inhibitor	SGLT2	GLP-1 receptor agonist	Insulin (basal)
Efficacy	High	High	Intermediate	Intermediate	High	Highest
Hypo risk	Moderate Risk	Low Risk	Low Risk	Low Risk	Low Risk	High Risk
Weight	Gain	Gain	Neutral	Loss	Loss	Gain
Side Effects	Hypoglycemia	Edema, HF, fxs	Rare	GU, Dehydration	GI	Hypoglycemia
Costs	Low	Low	High	High	High	Variable

If HbA_{1c} target not achieved after ~3 months of dual therapy, proceed to 3-drug combination (order not meant to denote any specific preference – choice dependent on a variety of patient- and disease-specific factors):

TRIPLE THERAPY	Metformin+	Metformin+	Metformin+	Metformin+	Metformin+	Metformin+
	Sulfonylurea	Thiazolidinedione	DPP-4 inhibitor	SGLT2	GLP-1 receptor agonist	Insulin (basal)
	TZD	SU	SU	SU	SU	TZD
OR	DPP-4-i	DPP-4-i	TZD	TZD	TZD	DPP-4-i
OR	SGLT2-i	SGLT2-i	SGLT2-i	DPP-4-i	Insulin	SGLT2-i
OR	GLP-1-RA	GLP-1-RA	Insulin	Insulin		GLP-1-RA
OR	Insulin	Insulin				

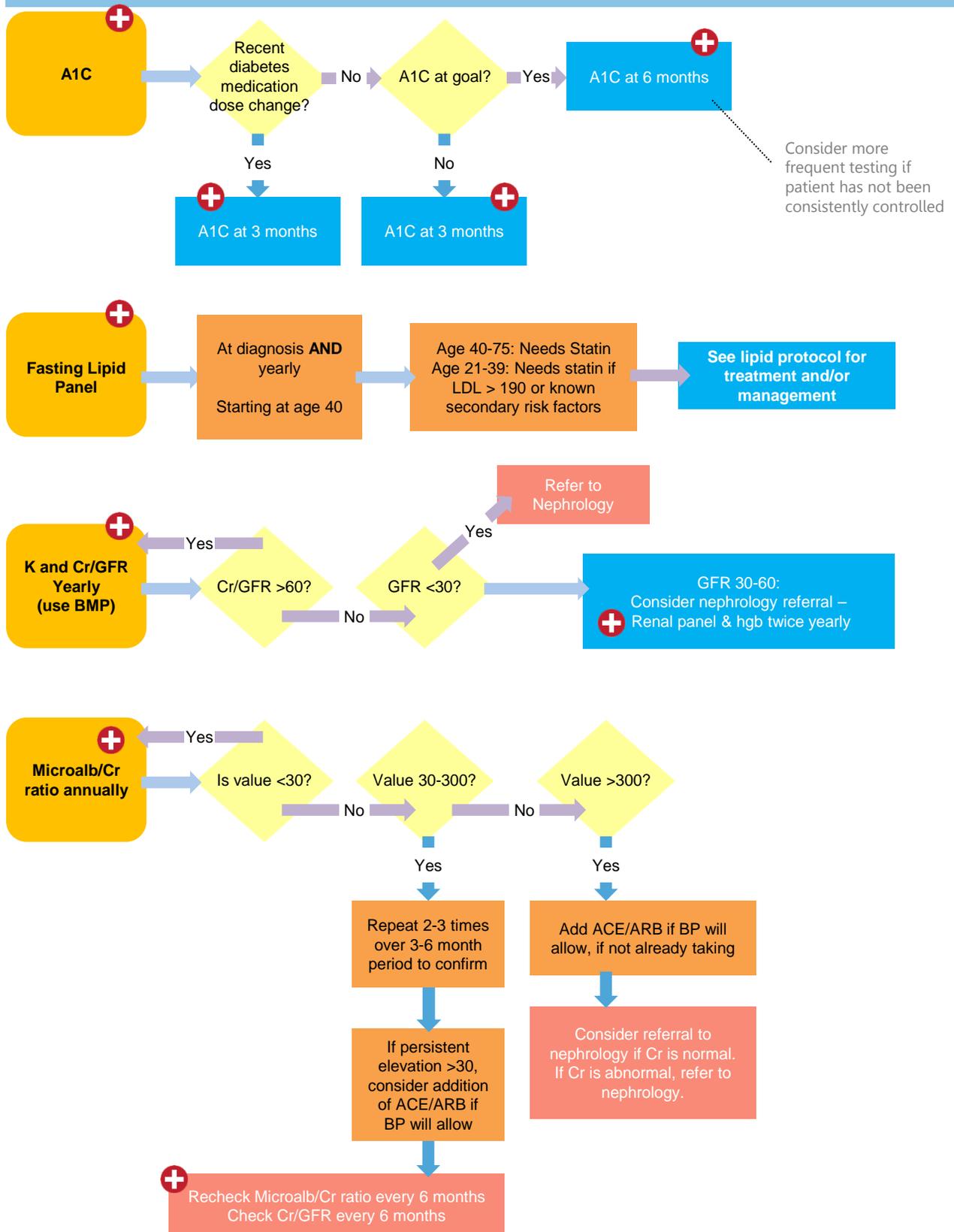
If HbA_{1c} target not achieved after ~3 months of tripe therapy and patient (1) on oral combination, move to injectables; (2) on GLP-1-RA, add basal insulin; or (3) on optimally titrated basal insulin, add GLP-1-RA or mealtime insulin. In refractory patients consider adding TZD or SGLT2-i.

Metformin +

Basal Insulin + Mealtime Insulin or GLP-1-RA

Laboratory Testing – Adult Type 1 & Type 2 Diabetes

Laboratory Testing: A1C at least every 6 months – Lipid panel yearly starting at age 40 – BMP yearly unless GFR abnormal – Microalb/Cr ratio yearly unless abnormal



EXAM / CLINIC VISIT ELEMENTS

+ DIABETIC FOOT EXAM

Visual inspection suggested at each routine diabetic visits

Simple clinical exam (monofilament or vibration sensation) and pulses at least annually

+ EYE EXAM

Dilated eye exam with eye department annually starting at diagnosis, more frequently based on findings

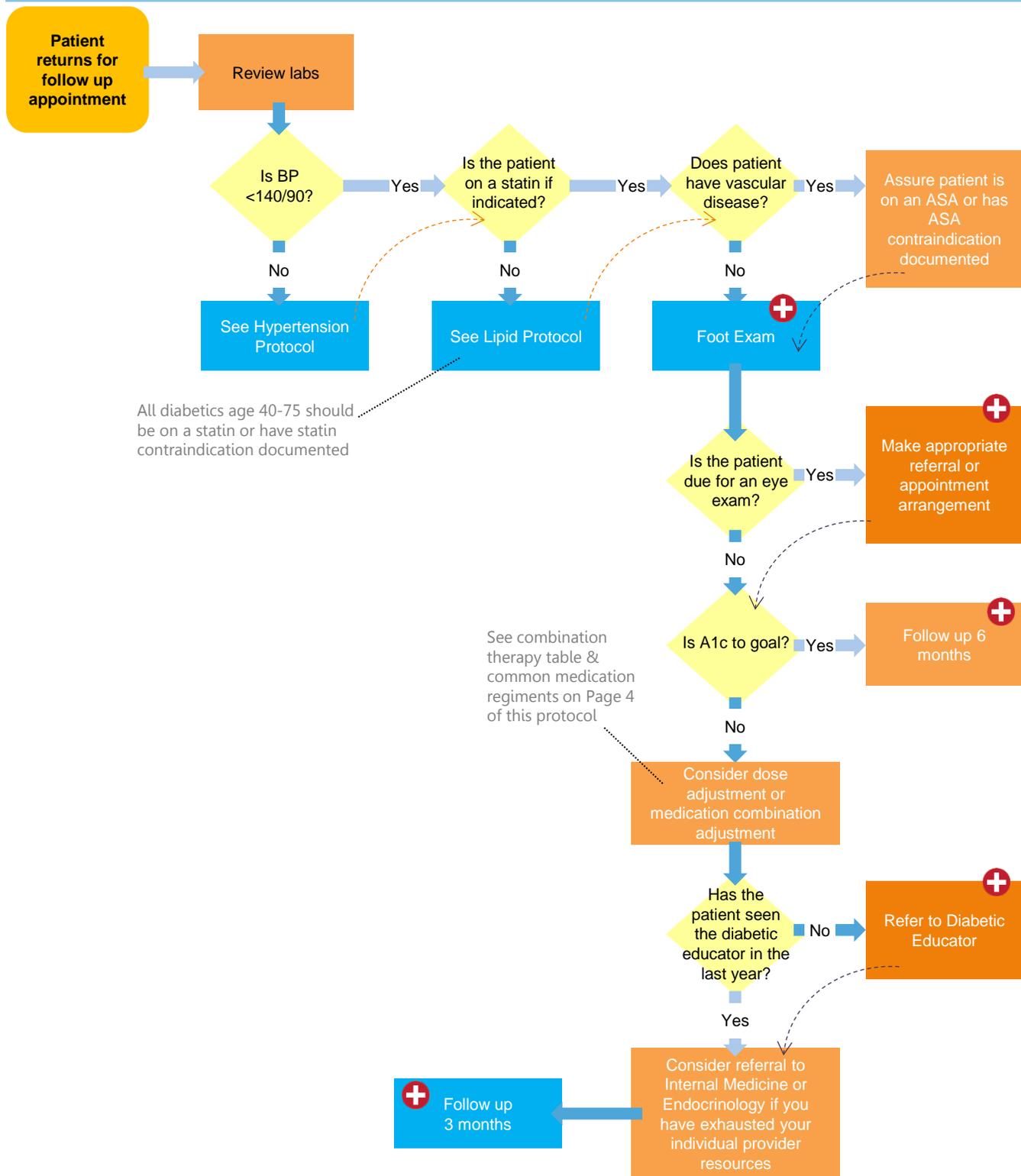
Type 1 diabetics do not need an eye exam until 5 years after diagnosis

+ PHYSICIAN/ADVANCED PRACTITIONER VISIT

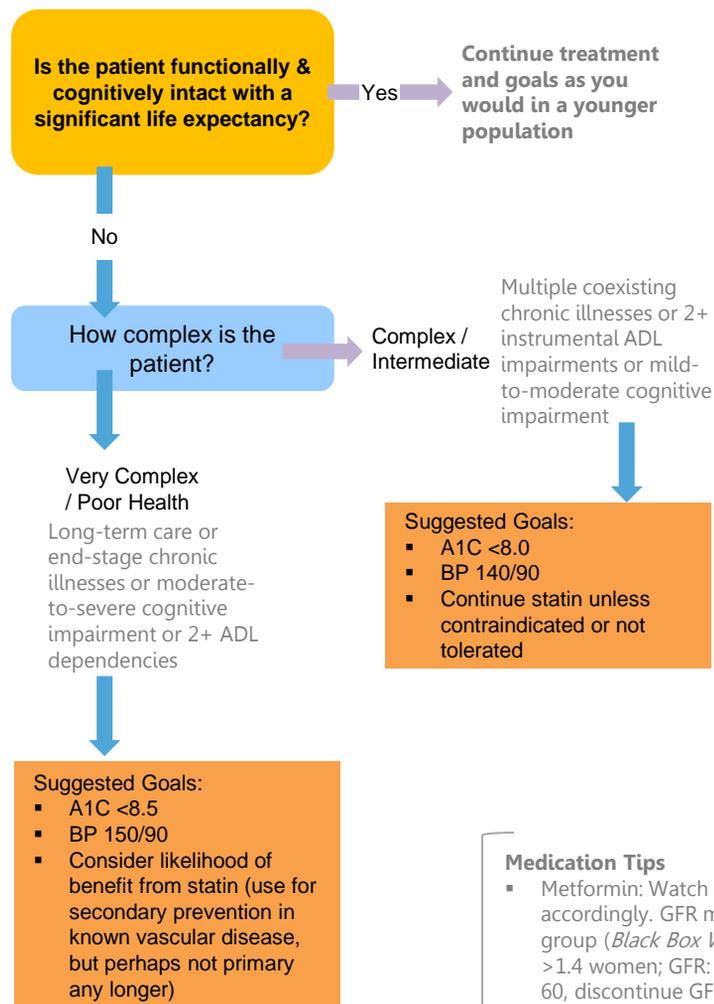
Every 3 months if not to goals. Every 6 months if to goals.

FOLLOW UP

Lab testing should be done prior to appointment so results can be discussed at the appointment



CONSIDERATIONS FOR TREATMENT IN THE ELDERLY



ADA Standards of Medical Care in Diabetes 2015 Recommendations

- Older adults who are functional and cognitively intact and have significant life expectancy should receive diabetes care with goals similar to those developed for younger adults.
- Glycemic goals for some older adults might reasonably be relaxed, using individual criteria, but hyperglycemia leading to symptoms or risk of acute hyperglycemic complications should be avoided in all patients.
- Other cardiovascular risk factors should be treated in older adults with consideration of the time frame of benefit and the individual patient. Treatment of hypertension is indicated in virtually all older adults, and lipid-lowering and aspirin therapy may benefit those with life expectancy at least equal to the time frame of primary or secondary prevention trials.
- Screening for diabetes complications should be individualized in older adults, but particular attention should be paid to complications that would lead to functional impairment.
- Older adults (≥65 years of age) with diabetes should be considered a high-priority population for depression screening and treatment.

Medication Tips

- Metformin:** Watch renal function carefully and adjust accordingly. GFR may be more telling than Cr in this age group (*Black Box Warning* includes Cr >1.5 in males & >1.4 women; GFR: Half dose (max 1000mg) for GFR 30-60, discontinue GFR <30)
- Insulin:** Consider vision, dexterity & cognition
- Sulfonylureas:** Can cause hypoglycemia
- Consider cost of new injectable medications

Vision & Dexterity

As age advances, regimen may need to be adjusted as vision and dexterity to read insulin bottles, manipulate insulin syringes/pens and manage glucose monitoring are affected. Switching to simpler regimens, alternate treatment strategy or changing timing of regimen to match caregiver schedule may be needed.

Cognition

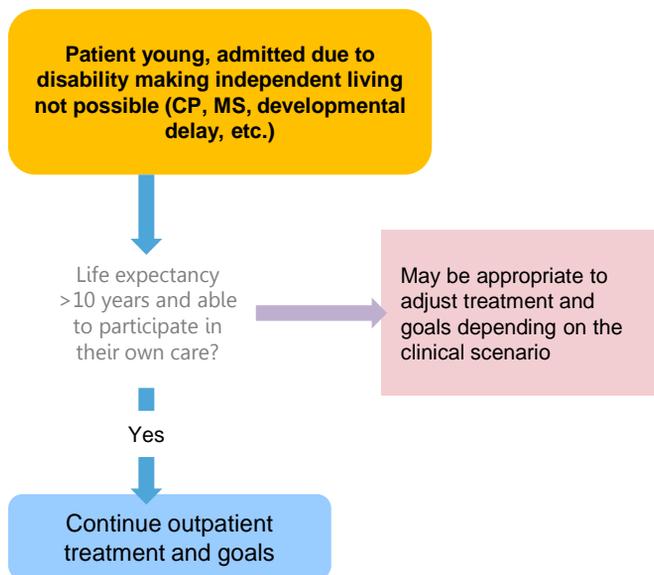
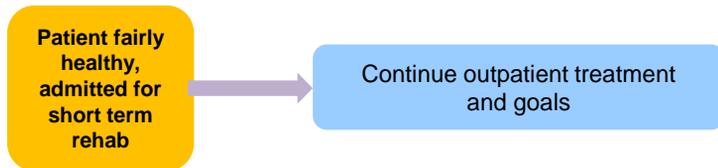
If cognition of patient and/or caregiver is declining, consider less complicated regimens and decrease number of times per day that intervention is needed.

End of Life Considerations

Hospice | Comfort Cares

- Preventing hyperglycemic symptoms and minimizing hypoglycemia should be your main focus of care
- Focus on life quality
 - Reduce intensity of glucose monitoring and insulin administration
 - Reconsider goals for blood pressure and glucose levels
 - Discontinue preventive medications (statins, aspirin)
 - Discontinue A1C, lipid testing, microalbumin testing

CONSIDERATIONS FOR DISEASE MANAGEMENT IN THE NURSING HOME PATIENT



Pearls for monitoring glucose in the Nursing Home

- Nursing home patients often come from the hospital. Continuation of intensive glucose monitoring and intensive insulin strategy of the acute setting may not be appropriate. Insulin needs drop up to 20% at hospital discharge.
- Supplemental scale/sliding scale insulin is not routinely recommended for patients with diabetes.
- Choosing Wisely SGIM recommends against daily glucose monitoring in patients not on insulin.

SCREENING

Ages 18-44

Screen with fasting glucose at least every three years if risk factors including:

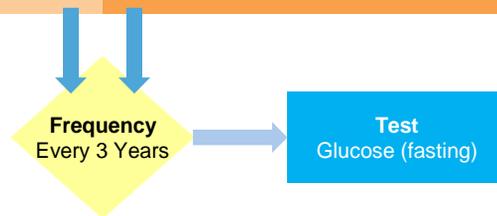
BMI >25 (or >23 if Asian American)

AND any of these factors:

- Physical inactivity
- First-degree relatives with diabetes
- High-risk race/ethnicity (African American, Latino, Native American, Asian American, Pacific Islander)
- Women who delivered a baby >9 pounds or with Gestational Diabetes
- Hypertension ($\geq 140/90$)
- HDL <35 or TG >250
- Women with polycystic ovarian syndrome
- A1C $\geq 5.7\%$
- History of Coronary Artery Disease
- Corticosteroid use
- Atypical antipsychotic use

Age 45+

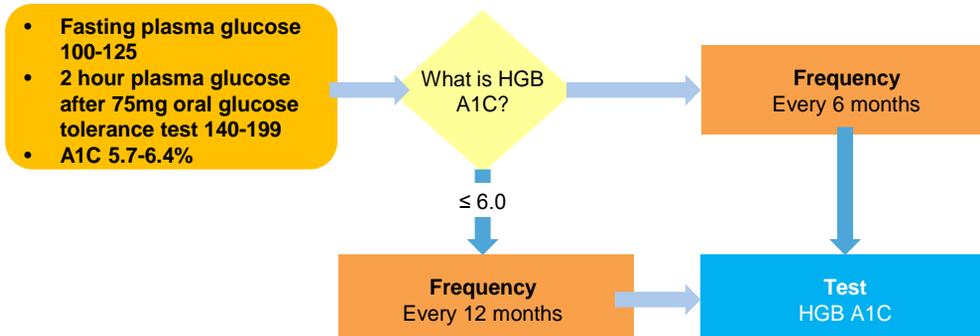
Fasting glucose every 3 years



For Evaluation of Patients with a Previously Elevated Glucose



For Patients with Pre-Diabetes (any one of these applies)



- Referral
- Dietician
 - Diabetes Prevention Program

For patients with Diabetes (any one of these apply)

- A1C \geq 6.5%
- Fasting Plasma Glucose \geq 126 (no caloric intake for 8 hours)
- 2 hour plasma glucose \geq 200mg/dl with 75g oral glucose tolerance test
- Random glucose \geq 200mg/dl with symptoms

A1C (Glycated Hemoglobin)

- Every 3 months if not to goal (goal indicated in goals activity in One Chart)
- 3 months after dose/medication change
- Every 6 months if to goal

Lipid Panel

- At diagnosis
- Annually starting at 40

BMP

- Annually unless GFR abnormal
- If GFR abnormal (30-60) Renal Panel and hgb every 6 months

Microalbumin/ Creatinine Ratio

- Annually unless abnormal
- If microalb/Cr ratio abnormal (30-300) recheck every 6 months unless ordered more frequently by provider.
- If Cr/GFR also abnormal (30-60) -Renal Panel and hgb every 6 months

Referrals

- **Diabetic Educator** - At diagnosis and every 12 mo thereafter
- **Dietician** - At diagnosis
- **Eye Exam** - Annually

Criteria for Implementation

This protocol order may be implemented by the following roles:

- Registered Nurse
- Licensed Practical Nurse
- Medical Assistant
- Medication Assistant III (ND)