UC San Diego Health

PHYSICIAN NETWORK

CIN Protocol for Diabetes Management
Specialty: Primary Care

The UCSD CIN clinical guidelines and best practices are systematically developed statements to assist patients and providers in choosing appropriate health care for specific clinical conditions. They are informed by the latest evidence. Guidelines are not meant to replace the clinical judgment of the individual provider. The recommendations contained in the guidelines may not be appropriate for use in all circumstances. The inclusion of a recommendation in a guideline does not imply coverage. A decision to adopt any particular recommendation must be made by the provider in light of the circumstances presented by the individual patient.

I. Background and Value

Diabetes is a complex chronic illness effecting approximately 29 million adults in the United States with 1.7 million new diagnoses each year. If the trend continues, by 2050, nearly 1 in 3 adults will be diagnosed with diabetes. It is the 7th leading cause of death in the United States with a mortality 2 times as high as a person without diabetes. It is estimated to cost the United States 245 billion dollars in direct and indirect medical expenses. Despite 85% of patients seeing a doctor for diabetes during the year, only 68.5% have had two A1c tests, 62.8% have had a dilated eye exam, 67.5% have had a foot exam, and 57.4% have ever had diabetes education.

The goal of the CIN protocol on Diabetes Management is to optimize care of individuals diagnosed with diabetes and identify and manage at risk individuals.

II. Population of Interest

The CIN protocol will focus on 2 populations: individuals diagnosed with diabetes and individuals identified as being at risk for developing diabetes. Inclusion and exclusion criteria will be in alignment with the Integrated Health Association (IHA) criteria.

III. Key Protocol Steps

Screening
Screening is recommended for at risk individuals and include all patients >45 years of age and individuals that are overweight or obese and have at least one additional risk factor (table 1). Screening options include HbA1c, a fasting plasma glucose level, or a 2 -hour plasma glucose test (see table 2). Individuals with a normal screening test can be screened every 3 years while those with impaired glucose tolerance or impaired fasting glucose are recommended to be screened annually at a minimum with an optimal frequency of every six months.

Prevention of Diabetes
Individuals identified as being at risk for developing diabetes (impaired glucose tolerance or impaired fasting glucose) can prevent or delay progression to diabetes with lifestyle interventions consistent with the Diabetes Prevention Program which include weight loss of ≥7% and moderate intensity physical activity of at least 150 minutes/week.

Patients in this cohort will be identified using the electronic medical record dashboards/registries. Outreach to these patients will occur at least twice per year with both scheduled visits and patient education materials emphasizing lifestyle modifications.

Table 1: Criteria for Testing for Diabetes in Asymptomatic Adults
All patients starting at age 45 years.
Adults that are overweight or obese (BMI ≥ 25kg/m² or ≥ 23kg/m² in Asian Americans) and at least 1 additional risk factor: - Physical inactivity   1st degree relative with diabetes   - High risk race/ethnicity   - History of gestational diabetes   - Hypertension   - Dyslipidemia   - PCOS   - Impaired glucose tolerance   - ASCVD
Normal tests should be repeated at a minimum of every 3 years. Abnormal results indicating impaired glucose tolerance or impaired fasting glucose should be repeated at a minimum of every year with an optimal interval of 6 months.

Diagnosis of Diabetes

The diagnosis of diabetes and impaired glucose tolerance/impaired fasting glucose can be made with either an A1c test, a fasting plasma glucose test or a 2-hour plasma glucose tolerance test (value after a 75-g oral glucose tolerance test). Diabetes can also be diagnosed with a random plasma glucose test with classic hyperglycemic symptoms. A second test should be repeated for confirmation.

Table 2: Diagnosing Diabetes		
Test	**Result**	**Interpretation**
HbA1c	6.5% or higher	Diabetes
	5.7-6.4%	Impaired Glucose Tolerance
	Lower than 5.7%	Normal
Fasting Plasma Glucose (no caloric intake for 8 hours)	126mg/dl or higher	Diabetes
	100-125mg/dl	Impaired Fasting Glucose
	Lower than 100mg/dl	Normal
2 hour PG during OGTT	≥200mg/dl	Diabetes
	140-199 mg/dl	Impaired Glucose Tolerance
	Lower than 140mg/dl	Normal
Random Plasma Glucose with classic symptoms of hyperglycemia	200mg/dl or higher	Diabetes

Treatment of Diabetes

Diabetes is a complex chronic medical illness requiring a multifactorial, multidisciplinary, patient centered treatment plan to optimize care that includes optimizing lifestyle modifications, improving glycemic control, reducing the risk of atherosclerotic cardiovascular disease (ASCVD) and reducing the risk of microvascular complications.

Lifestyle Interventions

Lifestyle interventions are an important component of diabetes care and should be assessed and addressed at every visit. For patients with diabetes that are overweight a goal of 5-10% (ideally ≥ 7%) weight loss is recommended. No one type of diet is recommended but rather a patient centered intervention that assesses food insecurity and food preferences with a goal of a calorie deficit of 500-750 kcal/day. Physical activity of at least 150 minutes per week is recommended. Pharmacologic and surgical options may be appropriate for certain individuals.

Diabetes Self-Management Education (DSME)

It is recommended that all patients with diabetes be referred for diabetes education at the time of diagnosis and again if goals are not being met. A component of diabetes education should include medical nutrition therapy to assist with appropriate nutritional intake.

Glycemic Control

Glucose goals include A1c of < 8% with fasting blood glucose goals of 80-130mg/dl and PP goals of <180 mg/dl. It is recommended that A1c testing be performed at least two times per year for those meeting goals and quarterly for those not meeting goals or if therapy changes.

Metformin is the recommended first line medication for most patients with diabetes if there are no contraindications. 2nd line medications should be chosen with a patient centric approach taking into consideration co-morbidities, effectiveness, weight and cost. Lifestyle changes with diet/exercise/weight loss should be emphasized as an important component of glucose control. Self-monitoring of blood glucose (SMBG) is recommended for patients using insulin and may be useful in other patients.

Hypertension

The goal of BP control in diabetes is <140/90 mmHg. A lower goal of <130/80mmHg may be appropriate for certain individuals. Treatment should include lifestyle therapy consisting of weight loss (if overweight/obese), DASH style diet, moderation of alcohol, and physical activity. Pharmacological therapies should include an ACE inhibitor or an angiotensin receptor blocker. Blood pressure should be checked at every visit. A patient that has an elevated blood pressure will have a repeat assessment before the end of the visit. If the blood

pressure remains elevated the patient will be scheduled a follow up visit within one month (may be a nurse visit).

Dyslipidemia

Lipid lowering medications are recommended for all patients >40 years of age and in those <40 years of age with risk factors (*Table 3*).

Table 3: Indications for statin therapy		
Age	**Risk factors**	**Statin intensity**
<40	None	None
	ASCVD risk factors	Moderate or High
	ASCVD	High
40-75	None	Moderate
	ASCVD risk factors	High
	ASCVD	High
	ACS and LDL >50 unable to tolerate high	Moderate +ezetimibe
>75	None	Moderate
	ASCVD risk factors	Moderate to High
	ASCVD	High
	Acute Coronary Syndrome and LDL >50 unable to tolerate high dose	Moderate +ezetimibe
ASCVD risks: LDL >100, HTN, smoking, BMI >25, FH ASCVD		

Table 4: Statin Intensity	
High Intensity (lowers LDL by >50%)	**Moderate Intensity (lowers LDL by 30-50%)**
Atorvastatin 40-80mg	Atorvastatin 10-20mg
Rosuvastatin 20-40mg	Rosuvastatin 5-10mg
	Simvastatin 20-40mg
	Pravastatin 40-80mg
	Lovastatin 40mg
	Fluvastatin xl 80mg

Smoking

The use of tobacco products and e-cigarettes should be assessed and advised against at every visit. Smoking cessation counseling and resources should be given to all patients using tobacco products.

Diabetic Kidney Disease

Screening for kidney damage is recommended annually with a random urine albumin to creatinine ratio.

Diabetic Retinopathy
Screening for diabetic retinopathy with a dilated comprehensive eye exam is recommended at time of diagnosis and every 12 months thereafter if normal.

Diabetic Neuropathy
Screening for diabetic neuropathy is recommended at time of diagnosis and every year thereafter. Screening is performed with a visual inspection, pulse assessment, and a 10-g monofilament test.

Depression Screening
Evidence suggests that individuals with chronic medical conditions are more likely to have depression. In addition, patients with depression are less likely to be adherent to diabetes treatments. All patients with diabetes will be screened for depression with a Patient Health Questionnaire-2 (PHQ2) that will be on the intake form with a follow-up PHQ9 administered for a positive PHQ2 screen.
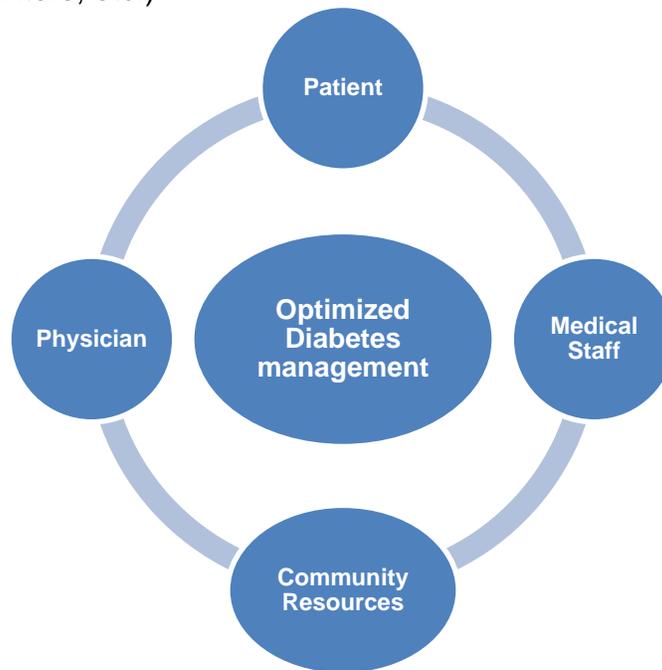
Immunizations
Immunization recommendations are as per table 5.

Table 5: Immunizations in Diabetes	
Vaccine, frequency of administration	Patient age
Routine childhood immunizations, according to standard schedule (eg, measles, mumps, rubella, varicella, polio, tetanus-diphtheria)	6 months to 18 years
Influenza, annually	≥6 months
Pneumococcal polysaccharide vaccine	≥2 years
PVC13, 1-2 injections	2-18 years
PPSV23, 1 injection	19-64 years
PVC13 plus PPSV23, 1 injection each, in series	≥65 years
Hepatitis B series	20-59 years*
Tetanus-diphtheria booster, every 10 years in adults	≥19 years
Individuals not already immunized for childhood diseases and those requiring vaccines for endemic diseases should be immunized as required by individual patient needs	Any age
*Consider for patients ≥60 based on assessment of risk and likelihood of adequate immune response.	

IV. Role of Team Members

A multidisciplinary team approach that is patient centered is important for optimization of diabetes care. The physician's role is to provide medical care consistent with the CIN protocol and coordinate care with the team. The role of the nursing staff is to utilize the electronic medical record resources to provide population health care through bulk ordering and outreach. The role of the medical staff is to meet with the physician to be prepared for diabetes care at all visit types and have appropriate orders in the queue. Health maintenance alerts will prompt ordering of appropriate tests at all visit and non-visit types (refills, telephone encounters, etc.).

V. Utilization of Electronic Medical Records

The electronic medical record will be optimized to support efforts in diabetes management. Best practice alerts will prompt orders (labs, referrals, immunizations) that are due and can be accessed at all visit and non-visit types. Patients with diabetes and patients at risk for diabetes will be included in a patient registry that is used to provide population health ordering and outreach. A diabetes order set will be available to assist in protocol orders, documentation, and patient education resources.

The electronic medical record reports will also be used to monitor goals of diabetes care.

VI. Measurement

Measurements of the intended outcomes will be on the following metrics and be compared to Integrated Healthcare Association (IHA) standards. Inclusion and exclusion criteria will be aligned with IHA criteria.

Metric 1: Diabetes Screening

Denominator: per ADA guidelines all patients > 45 years and patients of any age that are overweight with at least one additional risk factor.

Numerator: patients appropriately screened.

Metric 2: Diabetes Control

Denominator: all patients ages 18-75 with a diagnosis of diabetes.

Numerator: A1c <8.0

Metric 3: Diabetes Poor Control

Denominator: all patients ages 18-75 with a diagnosis of diabetes.

Numerator: A1c >9.0

Metric 4: Eye Exam

Denominator: all patients ages 18-75 with a diagnosis of diabetes.

Numerator: patients with a diagnosis of diabetes with a completed eye exam within the last 12 months.

Metric 5: Blood Pressure Control

Denominator: all patients ages 18-75 with a diagnosis of diabetes.

Numerator: patients with a diagnosis of diabetes with a blood pressure < 140/90mmHg.

Metric 6: Diabetic Kidney Disease screening

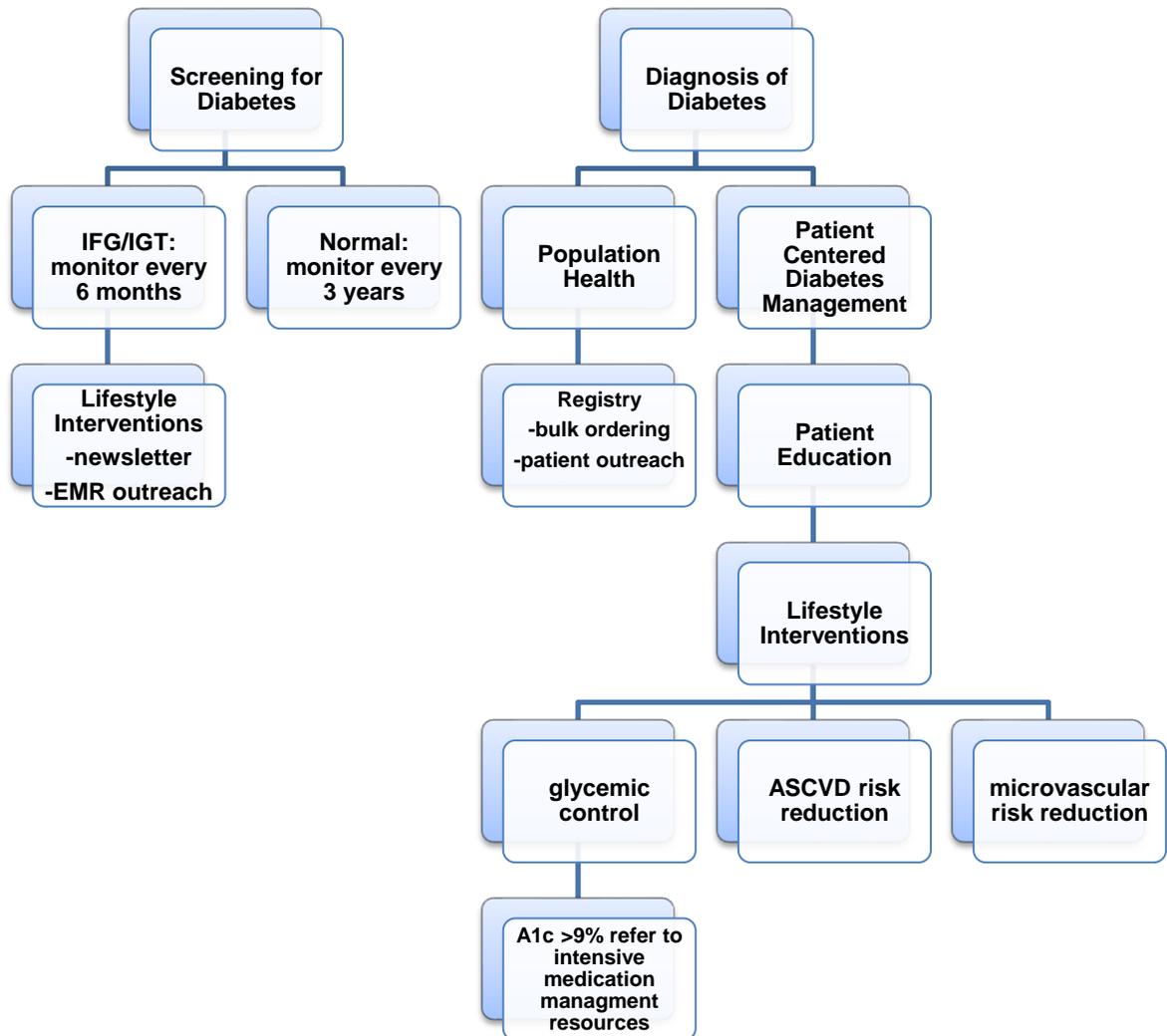Denominator: all patients ages 18-75 with a diagnosis of diabetes.

Numerator: patients with a diagnosis of diabetes with a microalbuminuria screen in the last year or a diagnosis consistent with kidney disease per IHA criteria.

Metric 7: Diabetic Neuropathy

Denominator: all patients ages 18-75 with a diagnosis of diabetes.

Numerator: patients with a diagnosis of diabetes with a foot exam within the last year.

Summary Graph

Screening for Diabetes
- **IFG/IGT: monitor every 6 months**
  - **Lifestyle Interventions**
    -newsletter
    -EMR outreach
- **Normal: monitor every 3 years**

Diagnosis of Diabetes
- **Population Health**
  - **Registry**
    -bulk ordering
    -patient outreach
- **Patient Centered Diabetes Management**
  - **Patient Education**
    - **Lifestyle Interventions**
      - **glycemic control**
        - **A1c >9% refer to intensive medication managment resources**
      - **ASCVD risk reduction**
   - **microvascular risk reduction**

VII.   Monitoring Adherence and Compliance

Performance targets will be based on the Integrated Healthcare Association (IHA) 90th percentile for diabetes care.

Performance measures will be transparent in the dashboard reports of the electronic medical record per clinic and per physician. Quarterly reports will be sent out by clinic and physician. Quarterly feedback will be given to clinics and/or physicians not meeting goals. The Quality Committee and Primary Care quality leads will monitor protocol compliance, assess and address barriers and when needed escalate significant issues to the Network leadership team.

VIII.   Moving the Needle on Patient Outcomes

The CIN protocol for Diabetes Management will be reviewed at least annually to incorporate updated recommendations in standards of care. In addition, the protocol will be updated based on performance and re-assessment of barriers and goals.
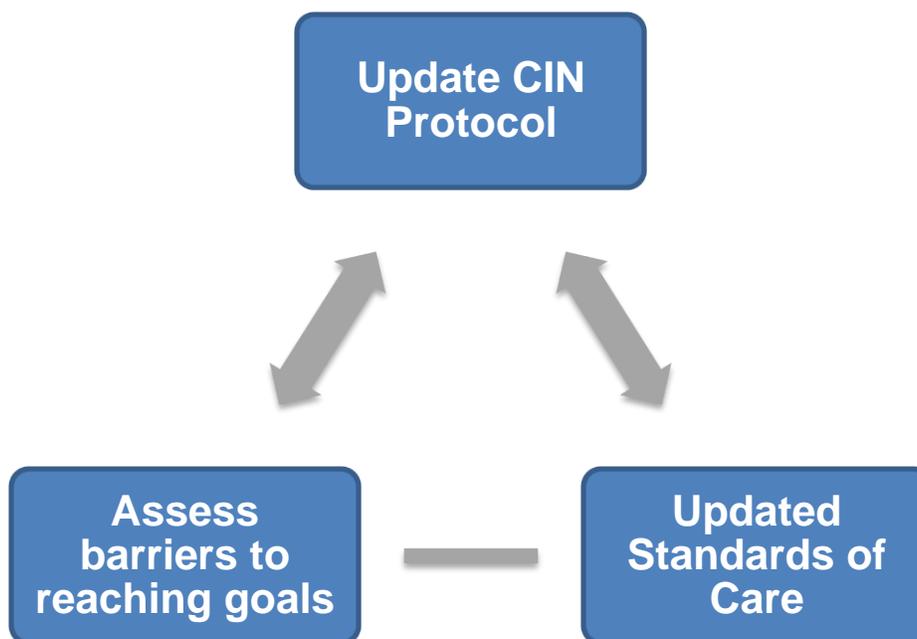
IX. Protocol Development Process and Team

The UCSDHPN CIN Primary Care Quality Champions developed this protocol using an evidence-based process, including systematic literature search, critical appraisal, and evidence synthesis. For details on the evidence, see References.

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Appendix: References

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