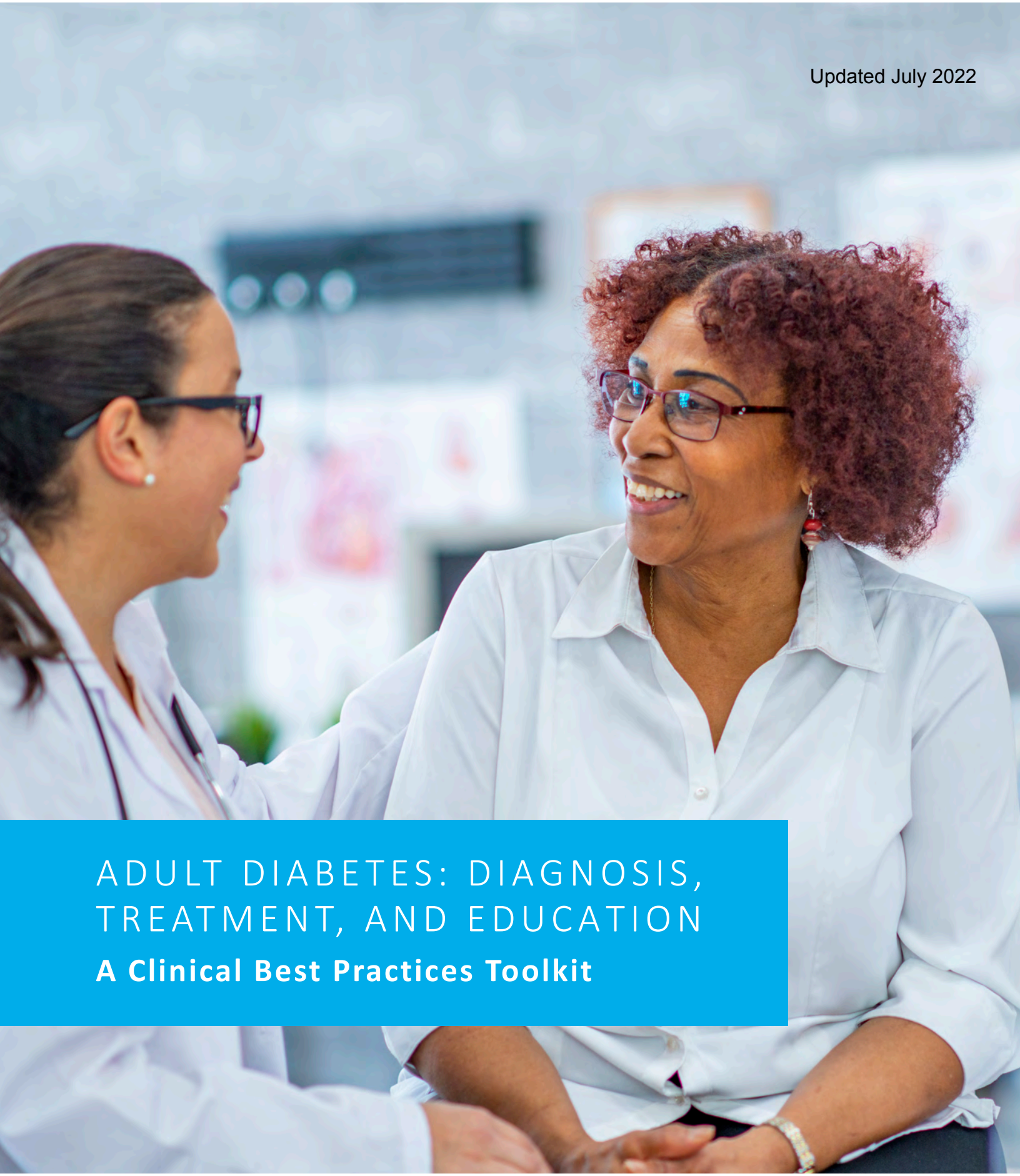
Updated July 2022



ADULT DIABETES: DIAGNOSIS, TREATMENT, AND EDUCATION

A Clinical Best Practices Toolkit

Ohio Department of Medicaid

MedTAPP

Ohio Colleges of Medicine Government Resource Center

School of Medicine Case Western Reserve University

Diabetes QIP Foreword

In this foreword, two important areas are addressed. The first describes major changes in clinical guidelines or resources mentioned in the toolkit in order to update the toolkit effective 06/01/2022. The second describes the focus areas of the participating primary care practices' quality improvement efforts over the 2-year project. This content seeks to provide guidance to others who may be undertaking a diabetes quality improvement project in primary care outpatient clinics in the future.

Area 1: Major Changes to Guidelines or Resources in the Clinical Toolkit Which Deserve Mention.
The below content focuses on major changes which might impact a primary care team implementing a diabetes quality improvement project since the initial toolkit was created in 2020.

1. On page 10 in the main toolkit and page 10 in the Appendix, individualized glycemia targets using A1c are addressed. The new 2022 American Diabetes Association (ADA) Standards of Care now allow use of time in range or glucose management indicator from continuous glucose monitors to serve as one way to determine individualized targets instead of or in addition to A1c. See Figure 6.1 and Table 6.2 in the 2022 ADA Standards of Care for these updated glycemic targets.[1]
2. In the Toolkit Appendix Page 5, the treatment algorithm starts with metformin plus lifestyle. In the new 2022 ADA Standards of Care, there is more flexibility around the first line diabetes medication based on patient preferences and comorbidities. See Figure 9.3 in the 2022 ADA Standards of Care.[1]
3. A few changes in diabetes medications have occurred which would require changes to the medication tables in the Appendix pages 24-26. We list the changes below as of 06/01/2022.
    a. The semaglutide maximum dose has increased to 2 mg weekly for type 2 diabetes and 2.4 mg weekly for weight loss indications.
    b. The dulaglutide maximum dose has increased to 4.5 mg.
    c. Glargine now comes as Lantus Basaglar and Semaglee.
    d. A new rapid lispro insulin (Lyumjev) is now available.
4. Additional Social Determinants of Health (SDOH) Resources. While the links in the toolkit for SDOH are still active, some new additional resources listed below may be useful.
    a. Screening tools for social needs: https://www.cardi-oh.org/social-determinants/social-needs-screening-tools
    b. Identifying and addressing health literacy in primary care: https://www.cardi-oh.org/best-practices/health-literacy-talking-health-with-your-team
    c. Information about Community Health Worker Ohio Community Pathways HUBs program: https://www.cardi-oh.org/best-practices/social-determinants/ohio-pathways-community-hubs-understanding-the-benefits-for-patients-with-diabetes

Area 2: Primary Care Team Interventions Within our Statewide Diabetes Quality Improvement Project Focused on Specific Areas of the Toolkit.
There are many potential interventions outlined in this toolkit that teams may select. Below describes the primary interventions the primary care practices focused on during the pilot initiative to achieve improvement.

1. Closing the gap between timely clinical data on blood sugar control and clinical decision-making using point-of-care A1c testing, pre-visit planning followed by A1c lab testing before the visit, and use of continuous glucose monitoring.
2. Increasing team communications through huddles to accomplish pre-visit planning, prioritize actions for high-risk or rising risk diabetes patients, and coordinate multi-disciplinary team-based care.
3. Increasing focus on fuller use of multi-disciplinary care teams to provide timely follow-up to patients with uncontrolled diabetes to improve medication intensification and adherence, behavioral health challenges, and lifestyle opportunities. Many teams particularly focused on an expanded role for clinical pharmacists in the care of these patients. One team coordinated visits, so a patient was able to see the doctor, nurse, dietician, and pharmacist in the same appointment span. Use of multi-disciplinary teams also included timely referral to Diabetes Self-Management Education (DSME) programs.
4. Prioritizing outreach to high-risk patients who have fallen out of care with A1C testing and/or appointments.
5. Examining creative ways to bridge disparities through coordination with food programs (like Food Farmacy), pharmacy delivery, creation of a free pharmacy, and cooking programs.

Together these changes represent a cycle of proactive outreach, pairing timely clinical data with timely decision-making, connection to the full capability of the multi-disciplinary team, frequent follow-up, and proactive attention to social determinants of health.

Reference:

1. American Diabetes Association. *Standards of Medical Care in Diabetes-2022* Abridged for Primary Care Providers. Clin Diabetes. 2022 Jan;40(1):10-38. doi: 10.2337/cd22-as01. PMID: 35221470; PMCID: PMC8865785. Available at: https://diabetesjournals.org/clinical/article/40/1/10/139035/Standards-of-Medical-Care-in-Diabetes-2022

This guide provides change principles and best practices to achieve optimal management for people with type 2 diabetes. It focuses on six core drivers of HbA1c control:

- Appropriate and Timely Treatment
- Access to High Quality Coordinated Care
- Patient Engagement, Healthy Lifestyle, and Self-Efficacy
- Screened and Well Managed Behavioral Health
- Effective Supportive Relationships
- Healthy Environment for Care

The core principles of diabetes management remain focused on the following (consistent with the American Heart Association's Life's Simple 7):

- Measure and monitor height and weight (waist circumference should be considered)
- Measure and track blood pressure accurately
- Measure and track A1c at intervals
- Measure and track lipid levels (total cholesterol, HDL) and assess ASCVD risk
- Assess tobacco use during every patient visit and counsel accordingly
- Assess physical activity level during every visit
- Assess dietary pattern during every visit

EXECUTIVE SUMMARY

The estimated prevalence of adult diabetes in Ohio is 11%, with approximately 981,195 adults having been diagnosed and about 306,462 adults not knowing about their diabetes status. Moreover, about 2 million Ohio adults have prediabetes, with approximately 700,000 adults having been diagnosed[1]. In 2017, diabetes was the 7th leading cause of death in Ohio, and Ohio's diabetes age-adjusted death rate was ranked 9 out of the 50 states, at 25.2% (3,740 deaths)[2].

Health Disparities

There are significant disparities in the prevalence of diabetes in Ohio. Older adults, Black or African Americans, those with the lowest household income and education, and those living in southern and Appalachian regions of the state have the highest diabetes prevalence. According to The Centers for Disease Control and Prevention (CDC) Diabetes Report Card in 2017 nationally, 15.1% of American Indian/Alaskan Natives, 12.7% of Hispanic or Latinos, and 12.1% of non-Hispanic Black or African Americans were diagnosed with diabetes at a rate disproportionately higher than that of non-Hispanic Whites (7.4%). In Ohio in 2014-2015, among all adults, non-Hispanic Black or African American adults had the highest prevalence of diabetes at 15.6%, compared to 10.9% among White non-Hispanic adults, 10.6% Hispanic or Latino adults, and 8.6% other non-Hispanic adults. Additionally, the mortality rate associated with diabetes is 77% higher among Black or African American Ohioans compared to White Ohioans.[1] Lastly, it is important to note that individuals who live in rural areas experience about a 17% higher diabetes rate than people living in urban areas and are more likely to experience the related factors of obesity and physical activity.[3-5] Through the collaboration of clinical leaders and state partners, the Diabetes Quality Improvement Project (QIP) addresses the system of care for diabetes to achieve equitable health outcomes for people living with poorly controlled diabetes.

About the Diabetes Quality Improvement Project

The Medicaid Technical Assistance and Policy Program (MEDTAPP) Diabetes Quality Improvement Project (QIP) is the second quality improvement project that is part of the Chronic Conditions Quality Collaborative. Sponsored by the Ohio Department of Medicaid (ODM) and in partnership with Case Western Reserve University (CWRU) and the Ohio Colleges of Medicine Government Resource Center (GRC), the Diabetes QIP aims to improve the health of persons living with poorly controlled diabetes in Ohio (HbA1c >9%). The Diabetes QIP will use quality improvement science to address diabetes control over an estimated 24-month project implementation period. Participating sites will develop rapid cycle Plan-Do-Study-Act cycles to test interventions crafted to impact the key drivers of HbA1c control. Additionally, ODM's 6 managed care plans (MCPs) will participate in testing interventions with the participating sites to address the key drivers.

DIABETES QUALITY IMPROVEMENT PROJECT KEY DRIVER DIAGRAM (KDD)

GLOBAL AIM

Reduce complications associated with poorly controlled type 2 diabetes while addressing health equity

SMART AIM

Reduce the percentage of adult patients enrolled in Medicaid with type 2 diabetes whose hemoglobin A1c (HbA1c) was poorly controlled (>9%) from X% to Y% by June 30, 2022.

From X% to Y% in the X population by June 30, 2022.

POPULATION

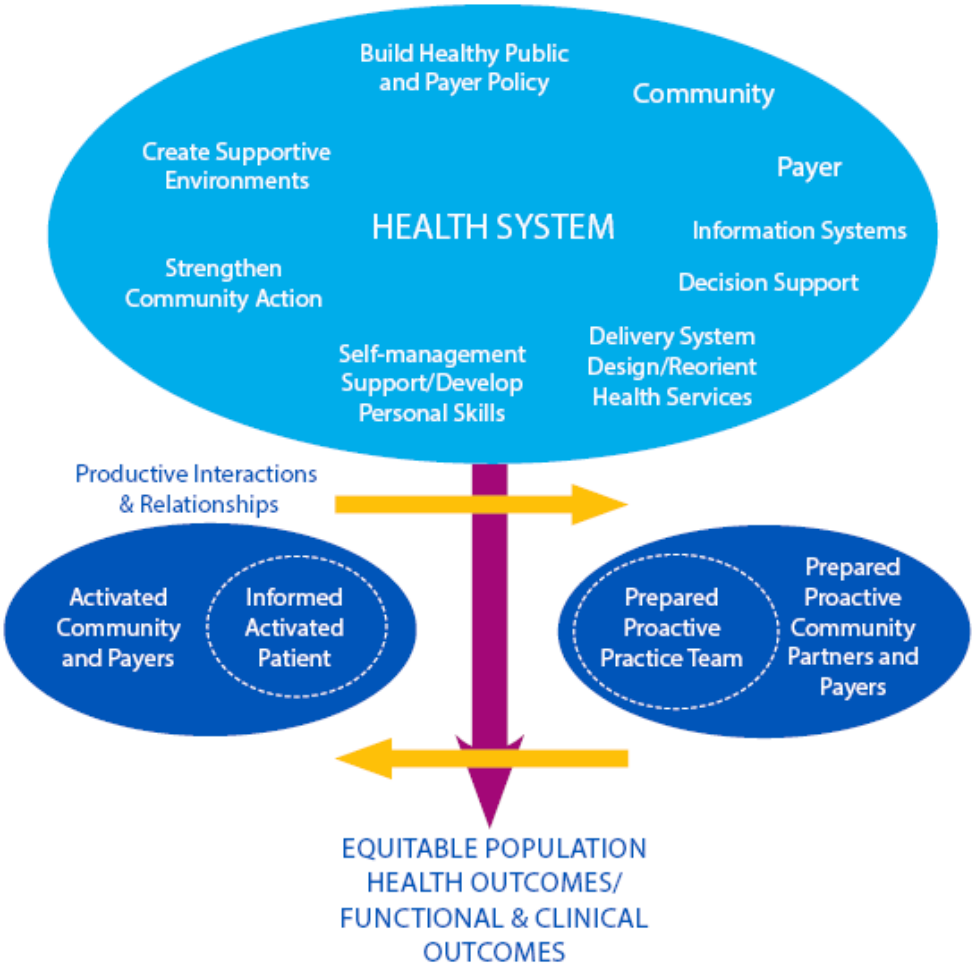
Adult (18-older) patients enrolled in Medicaid diagnosed with type 2 diabetes

KEY DRIVERS

- Appropriate and Timely Treatment
- Access to High Quality Coordinated Care
- Patient Engagement, Healthy Lifestyle and Self-Efficacy
- Screened and Well Managed Behavioral Health
- Effective Supportive Relationships
- Healthy Equitable Environment for Care

INTERVENTIONS

- **PROVIDER:** Optimize medication regimen across conditions
- **PROVIDER/PAYER:** Consistent Access to Medication/Supplies/Equipment
- **PROVIDER/PAYER/PATIENT:** Diabetes self-management education
- **PAYER:** Expand Reimbursement: Community based DSME using evidence based model
- **PROVIDER:** Coordinated comprehensive individualized medical treatment plan
- **PROVIDER:** Standardized office processes for equitable delivery of healthcare services
- **PROVIDER:** Screening and integration of behavioral health services within primary care
- **PROVIDER/PAYER:** Screening for social determinants of health and linkage to community resources and or Community Health Workers
- **PAYER:** Provision of Managed Care Plan Services



Chronic Care Model

Our Key Driver Diagram and interventions were informed by evidence from referenced studies and are based on a modified version of the expanded Chronic Care Model. The Chronic Care Model has been successfully used to improve patient outcomes for adults with diabetes and used to improve prevention.[6] Controlling diabetes effectively requires a focus on multiple layers. For instance, medications must be started and increased appropriately by providers. Patients need to become engaged in improving behaviors such as medication taking, appointment keeping, and healthy lifestyle.[7-9] In addition, payers, communities and health care systems need to systematically support healthy environments of care, peer/social support, modify policies to improve care, and support disease management made between patients and their practice team. There is growing evidence that linkages to community resources for health improvement can improve health outcomes.[10-12]

Weight Management		
Principle	**Strategy**	**Resources**
Make weight management an explicit part of the individualized clinical plan for persons with diabetes who have a BMI >25.	Focus on making healthy food and beverage choices from all five food groups including fruits, vegetables, grains, protein foods, and dairy to get the nutrients you need (Healthy Plate, My Plate, etc.)	American Diabetes Association. "5. Lifestyle Management: Standards of Medical Care in Diabetes-2019." Diabetes Care, American Diabetes Association, 1 Jan. 2019, http://care.diabetesjournals.org/content/42/Supplement_1/S46 https://health.gov/paguidelines/second-edition/pdf/Physical_Activity_Guidelines_2nd_edition.pdf Office of Disease Prevention and Health Promotion p. 83 https://www.cdc.gov/physicalactivity/downloads-/PA_Fact_Sheet_OlderAdults.pdf Academy of Nutrition and Dietetics: 'Eating Right with Diabetes' located at: https://www.eatright.org/health/diseases-and-conditions/diabetes/ https://care.diabetesjournals.org/content/early/2019/04/10/dci19-0014.full-text.pdf
	Offer Medical Nutrition Therapy to all interested patients with diabetes.	
	Discuss engaging in physical activity - moderate intensity activity for at least 150 minutes a week plus 2 days a week of muscle-strengthening activities help to substantially lower the risk of heart disease. If a person is working to reach and maintain a weight loss of >5% and maintain or improve lean mass, moving toward 300 minutes or more of moderate intensity activity a week gets even greater benefit.	
	Track food and activity: tracking increases success with weight loss and maintenance.	
	Consider weight loss medications in people with diabetes working on behavioral change with a BMI >25.	
	Consider referral for bariatric surgery for all people with diabetes less than age 65 who have a BMI kg/m2 >35	
	Consider referral for bariatric surgery for all people with diabetes less than age 65 who have a BMI between 30 and 34.9 who have A1c levels above target.	

Medication Optimization and Adherence		
Principle	**Strategy**	**Resources**
Make shared treatment decisions with patients that support lifestyle and medication adherence.	Use shared decision making and motivational interviewing as tools to encourage healthy behaviors such as lifestyle management and medication use	http://clinical.diabetesjournals.org/content/37/1/11 www.healthquality.va.gov/guidelines/CD/diabetes-/DMCPGPocketcardfinal508.pdf Seidu S, Kunutsor SK, Topsever P, Hambling CE, Cos FX, Khunti K. Deintensification in older patients with type 2 diabetes: A systematic review of approaches, rates and outcomes. Diabetes, Obesity and Metabolism. 2019 Apr 1. Older Adults: Standards of Medical Care in Diabetes 2019 Diabetes Care 2019;42 (Suppl. 1):S139–S147 Polonsky WH, et al. Structured self-monitoring of blood glucose significantly reduces A1C levels in poorly controlled, noninsulin-treated type 2 diabetes: results from the Structured Testing Program study. Diabetes Care. 2011;34(2):262-267. www.accu-chek.co.uk/tools-and-resources/blood-glucose-monitoring/accu-chek-360deg-view-tool Battelino et al. Advanced Technologies & Treatments for Diabetes Consensus Congress. Clinical Targets for Continuous Glucose Monitoring Data Interpretation: Recommendations From the International Consensus on Time in Range. Diabetes Care 2019 Jun; dci190028. https://doi.org/10.2337/dci19-0028 https://millionhearts.hhs.gov/tools-protocols/medication-adherence.html. All Medicaid Managed Care Plan Bariatric Surgery Coverage - Appendix B Ohio Medicaid Pharmacy Program - Unified Preferred Drug List
	Ask patients with diabetes consistently about how and when they take each of their medications	
	Prescribe 90-day supplies when people with diabetes are on a consistent long-term medication regimen	
	If people are not taking the medication as prescribed, assess and address their individual reason for not taking the medication	
	Reconcile medications taken with medications prescribed within 30 days of a recent inpatient admission	
	Partner with pharmacists in collaborative practice agreements or other ways to assist people with diabetes in assessing and addressing medication taking	
	Assess risk for hypoglycemia (very low blood sugar) for all diabetes patients taking medications	
	Partner with payers around reimbursement and coverage for strategies to address medication adherence such as payment for medication therapy management	
	Treatment De-intensification may be done to reduce or avoid hypoglycemia. De-intensification approaches include withdrawal, discontinuation, reducing dosage, conversion, or substitution of at least one medication. Simplification of insulin plans can also be helpful in reducing hypoglycemia	
	Encourage self-monitoring for adults on insulin, with hypoglycemia, or an elevated A1c	

Medical Nutrition Therapy

Medical Nutrition therapy (MNT) is one way to facilitate effective weight management, carbohydrate counting or meal planning. MNT interventions provided by registered dietitians is effective for improving HbA1c, with absolute decreases up to 2.0% (in type 2 diabetes) at 3 to 6 months.[1] Diabetes-focused MNT should be provided by a registered dietitian nutritionist/ registered dietitian (RDN), preferably one who has comprehensive knowledge and experience in diabetes care. Ongoing MNT support is helpful in maintaining glycemic improvements. When initiating mealtime insulin, consistent carbohydrates help reduce the risk of hypoglycemia.[2] Referral to MNT should be considered at the same intervals that one would consider referral to Diabetes Self-Management Education and Support (DSMES) (Section 3).

Self-monitoring of Blood Glucose

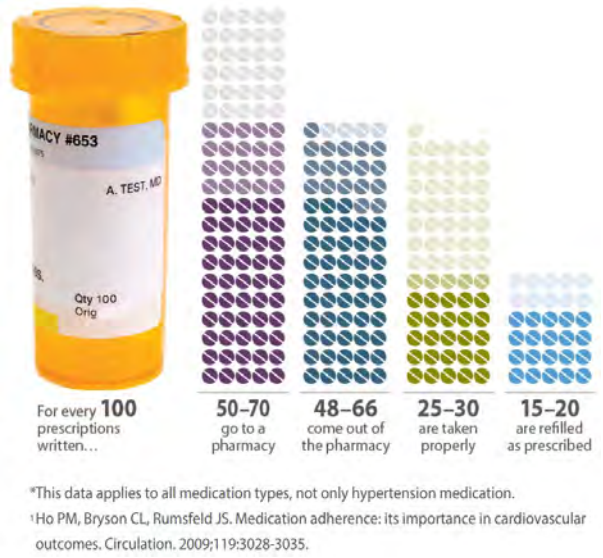
While self-monitoring of blood glucose (SMBG) in type 2 diabetes on oral diabetes medications alone has not been proven to be beneficial for all people with type 2 diabetes, a comprehensive approach that utilizes periodic structured SMBG with decision support has been shown to improve A1c levels in people who are not at target.[3] Continuous glucose monitoring (CGM) is recommended when adults with diabetes are above their glycemic

	Self-Monitored Blood Glucose	Real-Time Continuous Glucose Monitoring (RT-CGM)	Intermittently scanned /Flash Glucose Monitoring (FGM)
Oral Agents/non-insulin injectables	As needed to • inform or monitor treatment adjustments • inform lifestyle choices • during illness • monitoring hypoglycemia (sulfonylurea or linide use)		If person not meeting A1c target and cost is not a barrier
Basal Insulin	1-3+ times per day (especially fasting glucose to aid in dose titration)	Consider if cost is not a barrier	Consider if cost is not a barrier
Multiple injections of insulin	3+ times per day, prior to • meals/bedtime • exercise • driving • suspected hypoglycemia • occasionally postprandial (prandial dose titration)	If person not meeting A1c target RT-CGM preferred for people with frequent hypoglycemia or hypoglycemia unawareness.	If person not meeting A1c target

targets or have frequent hypoglycemia or hypoglycemia unawareness. CGM devices often require prior authorization or processing through a Durable Medical Equipment company. Above, we provide a table describing indications, frequency and method of glucose monitoring you may consider with people with diabetes. When prescribing SMBG or CGM, ensure that patients receive ongoing instruction and regular evaluation of technique, results, and their ability to use data to adjust behaviors and glucose lowering therapies.

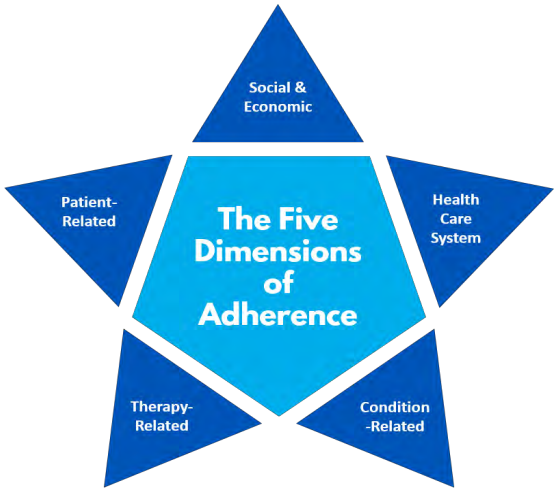
Medication Adherence[4]

If medication non-adherence were a disease, it could be termed an "epidemic." “Nationally, medication non-adherence accounts for 125,000 deaths, 11% of hospitalizations, and $100–$300 billion in annual spending.[5] This problem persists even though most of these individuals have a usual source of care (89.4%), have received medical care in the previous year (87.7%), and have health insurance (85.2%).[6-8] Reasons for non-adherence include complex interactions among people with diabetes, health care professionals, and the health care delivery system, along with complex dosing plans, ineffective person-professional communication, use of hard-copy prescriptions, the out-of-pocket cost of medication, pill appearance, and package size.[9]



*This data applies to all medication types, not only hypertension medication.

[1] Ho PM, Bryson CL, Rumsfeld JS. Medication adherence: its importance in cardiovascular outcomes. Circulation. 2009;119:3028-3035.



World Health Organization, 2003

ACCESS TO HIGH QUALITY COORDINATED CARE

2

Coordinated care is critical to making improvements in diabetes outcomes. In this model, systems, communities, and payers support the health care teams and people/families with diabetes to proactively work together to improve the individual's health. The selected resources for evidence-based practice setting interventions can assist in developing individualized treatment plans. Evidence-based approaches[1] include but are not limited to: individual diabetes visits (e.g., staff-led, pharmacist-led, and provider-led), diabetes group visits or shared medical appointments,[2-5] diabetes self-management education and support, weight management approaches and medical nutrition therapy.

Coordinated Comprehensive Individualized High Quality Care		
Principle	**Strategy**	**Resources**
Individualized A1c Targets	An A1c target range may be preferred over a cut-point • The lower limit to the A1c range serves as a reminder that hypoglycemia (very low blood sugar) must be considered • Setting higher targets for those at risk for hypoglycemia or setting targets higher initially so individuals feel they can achieve a specific goal • Setting and documenting individualized targets at each visit will assist with communication goals within the health care team	www.healthquality.va.gov/guidelines/CD/diabetes/DMCPGPocketcardfinal508.pdf Glycemic Targets: Standards of Medical Care in Diabetes—2019 American Diabetes Association Diabetes Care 2019 Jan; 42 (Supplement 1): S61-S70. Rethinking A1C targets for patients with mental illness? Falck-Ytter C, Kanuch SW, McCormick R, Purdum M, Dawson NV, Bolen SD, Sajatovic M. J Fam Pract. 2016 Oct;65(10):671.
Utilize visit templates and other standard office procedures to ensure high quality care	Consider offering regular individual visit, which can be physician, pharmacist, dietician, MA, or nurse led Offer group visits or shared medical appointments (SMA) for a group of diabetes patients	https://www.ahrq.gov/cahps/quality-improvement/improvement-guide/6-strategies-for-improving/access/strategy6m-group-visits.html

	Conduct Pre-visit planning activities with all patients	Ref: A. John Orzano, Pamela Ohman Strickland, Alfred F. Tallia, Shawna Hudson, Bijal Balasubramanian, Paul A. Nutting and Benjamin F. Crabtree The Journal of the American Board of Family Medicine May 2007, 20 (3) 245-251; DOI: https:// doi.org/10.3122/ jabfm.2007.03.060185 Encounter frequency and serum glucose level, blood pressure, and cholesterol level control in patients with diabetes mellitus. Morrison F, Shubina M, Turchin A. Arch Intern Med. 2011 Sep 26;171 (17):1542-50. Improved blood pressure control associated with a large-scale hypertension program. Jaffe MG, Lee GA, Young JD, Sidney S, Go AS. JAMA. 2013 Aug 21;310(7):699-705. doi: 10.1001/jama.2013.108769. RCT of T2D on oral agents: monthly visits resulted in improvements in A1c, FBG, PPG, and QOL compared to Q3 months: Hu M, Zhou Z, Zeng F, Sun Z. Effects of frequency of follow-up on quality of life of type 2 diabetes patients on oral hypoglycemics. Diabetes Technol Ther. 2012 Sep;14(9):777-82. doi: 10.1089/dia.2012.0037. Poorly controlled T2D: improved A1c with intensive intervention resulting in 12 vs. 5 visits over 10 months: Tourkmani, A.M., Abdelhay, O., Alkhashan, H.I. et al. Impact of an integrated care program on glycemic control and cardiovascular risk factors in patients with type 2 diabetes in Saudi Arabia: an interventional parallel-group controlled study. BMC Fam Pract 19, 1 (2018) doi:10.1186/s12875-017-0677-2
	Schedule follow-up visits within 4 weeks for those patients whose A1c is elevated to more rapidly assess and address the individual situation	
	Set health maintenance reminders in your EMR to ensure screening and monitoring occurs at regularly recommended intervals	
	Establish and maintain a registry of people with diabetes and increased atherosclerotic cardiovascular disease (ASCVD)	
	Utilize the registry to conduct outreach to schedule appointments, and identify or address care gaps such as A1c testing, eye care, vaccinations, etc.	

HbA1c Individualized Targets

Determination of average target HbA1c level over time[1,2,3,4,5,12]

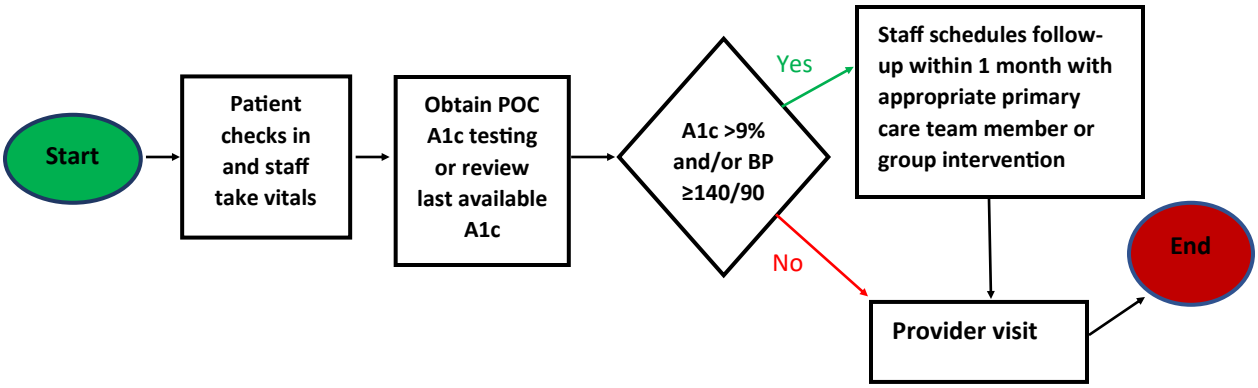
Major Comorbidity[6] or Physiologic Age	Microvascular Complications		
	Absent or Mild[7]	Moderate[8]	Advanced[9]
Absent* >10-15 years of life expectancy	6.0—7.0%†	7.0—8.0%	7.5—8.5%‡
Present[10] 5-10 years of life expectancy	7.0—8.0%†	7.5—8.5%	7.5—8.5%‡
Marked[11] <5 years of life expectancy	8.0—9.0%‡	8.0—9.0%‡	8.0—9.0%‡

*Progression to major complications of diabetes is likely to occur in individuals with longer than 15-20 years of life expectancy. Therefore, goal ranges are more beneficial early in disease in younger individuals, or healthier older adults with a longer life expectancy.
†Without significant side effects, including but not limited to hypoglycemia.
‡Further reductions may be appropriate, balancing safety and tolerability of therapy.
HbA1c laboratory considerations:
[1] Based upon the NGSP reference standard. Clinicians need to obtain information regarding the coefficient of variation (CV) from the methodology used at their site. As an example, an HbA1c of 8.0% from a laboratory with a CV of 3% would be within a 7.76-8.24% range 13 out of 20 times (1standard deviation), and would be between a 7.53-8.47% range 19 out of 20 times (2 standard deviations).
[2] The HbA1c range reflects an "HbA1c average goal" over time. Intensification or relaxation of therapy should be undertaken based upon individual clinical circumstances and treatment options.
[3] A medication change in response to a single HbA1c test that encompasses the "goal" is discouraged, especially if it is discordant with self-monitoring of blood glucose (SMBG) results.
[4] African Americans on average, have higher HbA1c levels than Whites and this difference cannot be explained by measured differences in glycemia. Caution is recommended in changing medication therapy based upon HbA1c results, especially for patients on insulin therapy, without correlation with SMBG results.
[5] For all of the above reasons, the VA/DoD DM CPG does not recommend the use of estimated average glucose.

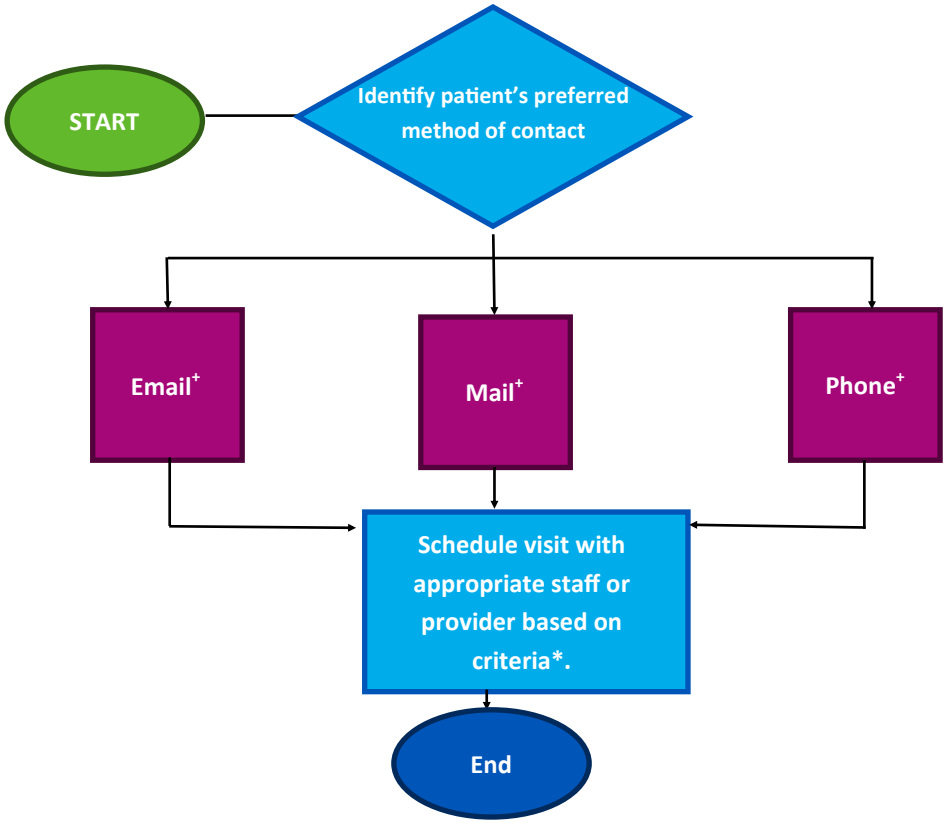
Trouble Shooting High A1c at any visit type – Common Issues

1. Person with diabetes deciding not to take insulin or diabetes medications when blood glucose is normal
2. Going out to eat several times a week and not bringing medications along
3. Falling asleep "forgetting" evening medications
4. Going to the fridge to eat during the night
5. Drinking carbohydrates throughout the day
6. Forgetting air shot (pen) priming in low doses of insulin
7. Overuse of basal insulin instead of adding mealtime insulin
8. Consider 2 week CGM (continuous glucose monitor)

Example Process Map for Timely Follow-Up



High Level Process for Outreach Using Multiple Venues



*If last HbA1c or BP was elevated in last year and no scheduled follow-up, then schedule visit with appropriate staff or provider

+ Language for outreach available in section 2 of the Appendix

Individual and Group Visit Templates

It is important to cover the following topics: self-monitoring, diet/exercise, obtaining blood glucose data and review, reviewing/setting A1c goals, medication adherence, gaps in care measures such as foot/eye exam and renal screen, social needs, cardiovascular risk reduction (e.g., weight management, hypertension, cholesterol, tobacco/nicotine, alcohol use, substance use), and mental health/diabetes distress. The following templates can be used or modified to meet your clinic and person with diabetes needs.

Name

Reason for visit/patient comments:

Last four A1c results and dates:

Last 3 BP readings with dates , including today: (_____/_____) (_____/_____) (_____/_____)

If A1c above individual's target, does individual check blood glucose levels?

Yes ○ No ○ N/A ○

Frequency blood glucose (BG) is usually checked:

_____

_____

If A1c above target, with hypoglycemia or insulin, does person have glucometer and test strips? Yes ○ No ○ **If no, order or pend order for glucometer and testing supplies*

Was glucometer brought to visit?

Yes ○ No ○

List blood glucose readings and times (consider documenting 7-day average, pre-meal, post-meal and bedtime blood glucose for several days if on insulin – can scan into EHR): _____

Has person had BG over 250? Yes ○ No ○

Has person had hypoglycemia (<70)? Yes ○ No ○

If yes assess timing, frequency & possible causes

Blood glucose parameters to notify provider urgently: If >400 mg/dl or < 60 mg/dl

Goal Setting

Individual Goal for A1c: _____

Individual target range for fasting BG level: _____ to _____

Individual goal for blood pressure (< 130/80 recommended unless unable to tolerate):_____

Blood Glucose & A1c targets *A1c targets should generally fall between 6.5-8.0 to maximize reductions in complications while minimizing harms such as hypoglycemia. Blood sugar ranges matching an A1c target of 7-8 should be 80-130 mg/dl pre-meal, <180 mg/dl max postprandial. These blood sugar ranges would need to be adjusted if A1c targets are higher.

List Current Medications:

Medication Adherence:

Yes ○ No ○

Ask person with diabetes to describe how they take their diabetes, hypertensive and cholesterol medications, including insulin. Ask if there is a blood sugar number that patient does NOT take their insulin.

If adherence is identified as an issue, discuss barriers to taking medication (timing, side effects, social situations, etc.) and establish an action plan.

Concurrent use of: (check all that apply) ○ Steroids ○ Atypical antipsychotic

Current Exercise/Activity Pattern:

_____

Current diet/meal plan (specific attention to the following: drinking carbs via milk, fruit juice or soda, alcohol use causing low sugars, meals/day and issues around food insecurity):

_____

Please check yes or no if the patient engages in any of the activities below:

Drink alcohol: Yes ○ No ○ If yes, how frequently:

Use nicotine products: Yes ○ No ○ If yes, what kind & how frequently:

Use other substances: Yes ○ No ○ If yes, what & how frequently:

Depressive symptoms: Yes ○ No ○ If yes, last PHQ score & date:

Barriers to social needs: Yes ○ No ○ If yes, what:

If yes to any of the above, develop a treatment plan.

Does the patient have a social support system? Yes ○ No ○

If yes, who:_____ ***Use response to assist in treatment plan**

History of diabetes-related complications:

○ Microvascular: eye, kidney, nerve (tingling, numbness, pain)

○ Macrovascular: cardiac (chest pain, palpitation, DOE, exertional and rest shortness of breath, lower ext. swelling), PAD (Claudication). History of Diabetic Foot Ulcer/Amputation

○ Other: sexual dysfunction, gastroparesis

Health Maintenance: (Pull from EHR)

Date of Last:		
Dental Check-Up _____	Lipids _____	Pneumococcal vaccine _____
Eye Exam _____	Microalbuminuria _____	Hepatitis B vaccine _____
Flu Shot _____	Serum creatinine and GFR _____	Shingles vaccine _____
	Liver Function Test _____	

Physical exam and labs as appropriate: Bring in vitals and labs from EHR

Height: _____	Weight: _____ lbs	BMI: _____

Other findings:

Include foot exam at least yearly – inspection, monofilament and vibration test

Any pertinent lab results with dates: comprehensive metabolic panel, microalbumin, liver function tests, lipid panel

Microalbuminuria present? Yes ○ No ○ **If yes, is patient on ACE-I/ARB or allergy to ACE-I/ARB?** Yes ○ No ○

If age 40-75 years, is patient on statin or unable to tolerate statin? yes/no/NA. For other ages, please review ASCVD risk and lipids and individualize cholesterol medication needs with patient.

Diabetes Assessment & Plan

Has the person ever had diabetes self-management education?	Was diabetes education provided?
Yes ○ No ○	Yes ○ No ○
	If yes, what?
	_____

Comprehensive Diabetes Education as needed should address meal plan, physical activity, information about hypoglycemic and hyperglycemic symptoms, sick day and review of foot care.

Other plans, (med changes, diet/exercise etc…) based on visit assessment and discussion.

_____

_____

Referrals: (as needed)

○ Ophthalmologist	○ Dietitian	○ Psychology/psychiatry
○ Podiatry	○ Weight management	○ Social service
○ Nephrologist	○ Diabetes self-management education	○ Other_____
○ Cardiologist		

Management Tips for Diabetes TeleHealth Management

Telemedicine is a subset of telehealth that specifically involves a *clinician* providing *medical services* via telehealth technology.

★ *Please refer to the Visit Template on pages 14-15 for content to address in this portion of a telehealth visit.*

Set-up

1. Establish a workflow to preserve a team-based approach.
2. Send reminder for patient to be ready for call. Consider providing a window of time (30-60 minutes) rather than an exact time. Ensure adequate cellular or Wifi connection. For video calls, provide written instructions or link to health system website for accessing the platform. For patients with limited cellular access or data plans, provide information for public hot spots, many of which are accessible from a patient's car.
3. Remind patient to turn off TV/other home distractions during call.
4. Ask how patient is doing, why we are connecting by telehealth as opposed to in person, and collaboratively set visit agenda with the patient.

Medication Review ★

Use of open-ended questions allow you to identify if the patient is not taking a medication correctly or not taking a medication at all.

a. Open-ended adherence question examples: How often do you miss a dose of medication in a week? What medications do you miss most often? Describe how you use your insulin pen to give your dose.

Glucose Monitoring ★

1. Try to engage patients to electronically transfer or write down blood glucose values for provider. Data that are directly downloaded from a device are more accurate than self-report or written logs. Depending on the method, reports can be shared by sending a screenshot, attachment, or linking with a clinic account. Electronic options include:
    A. Patient sends photo of completed glucose log
    B. Electronic Medical Record built-in patient facing glucose flowsheet
    C. Use of a diabetes app: options include
        i. Apps that require manual entry
        Ii. Apps that directly link to a connected glucose meter (often device specific).
2. If electronic data are not available, ask the patient to review home BG readings.
    A. If patient is not writing down readings, you can ask them to retrieve BG from their meter. If the patient is unsure how to do this, you can ask them the brand of glu-

cometer they have and google the manual to instruct them how to retrieve BG readings.

B. Otherwise, ask patient to recall readings by time of day and send glucose logs in future visits.

Hypoglycemia ★

A. Assess for hypoglycemia.

B. Investigate if patient knows how to appropriately treat hypoglycemia? (15-15 Rule).

Discuss lifestyle, behavioral health, social needs. ★

Review health maintenance and cardiovascular risk ★

Wrap-up

1. Utilizing all of the above information review the treatment plan with patient, (this should include lifestyle and medication changes). Ensure patient is amenable to this plan. Encourage any changes patient has made leading up to this visit.
2. Use teach-back method to clarify patient understands new treatment recommendations & preferably has written them down at home. Where possible, provide an electronic copy of instructions.
3. Review laboratory data – home BG readings, A1C and what they mean. Circle back to importance of having this information to appropriately determine if their medications are working. Review their BG and A1C goals. Establish a plan for any laboratory testing (if needed) and at least monthly follow-up until blood sugars are controlled.

RN DM Follow-up Visit Documentation Tool for Electronic Health Records

RN Diabetes Follow Up Visit	
Referring provider/PCP:* **	
Last seen by provider/PCP:* **	
Pt was referred to DSMES/MNT	Date:
Attended: _____ **Did not attend: _____**	Date:
Individual blood glucose goals: *(per referring provider, if available)*	
A1C goal:	
Blood Glucose goal:	
BP goal:	
Took Medications today:	
Any medication changes:	
Patient brought in medications:	
Any medication adherence concerns:	

Ask the patient to describe how they take their diabetes, hypertensive and cholesterol medications, including insulin. Ask if there is a blood sugar number for which the patient does NOT take their insulin

Please list medications not being taken consistently:	
Any patient concerns about medications:	
Patient brought in blood sugar logs:	___ Yes ___ No, but is checking blood glucose ___ No, not checking blood glucose. Why?:
(If due to not having a glucometer, please pend glucometer and testing supplies for referring provider, or PCP, to sign.)	

Blood Sugar Readings							
Date	FBS	ppBkft	acL	ppL	acD	ppD	HS

Any symptoms of Hypoglycemia?
☐Shaking ☐ Diaphoretic ☐ Palpitation ☐ Headaches ☐ Hunger ☐ Fatigue ☐ Blurred vision ☐ Anxious ☐ Irritable ☐ Dizzy
Frequently occurring hypoglycemia (more than 2 symptomatic hypoglycemia episodes per week): _____
Any Episodes of Severe Hypoglycemia (caused an MVC, Emergency Room visit brought in by EMS, or use of Hospital for titration): ____

Any symptoms of Hyperglycemia?
☐Nausea ☐ Drowsiness ☐ Blurred vision ☐ Dry skin ☐ Polyphagia ☐ Polydipsa ☐ Polyuria

Dietary Changes?	
24 hr Diet Recall:	
Breakfast:	
Snack:	
Lunch:	
Snack:	
Dinner:	
Evening Snack:	
Overnight Snack:	
Beverages:	

What is the patient doing for activity/exercise?	
Do you drink beer, wine, or other forms of alcohol?	
• **If yes, How many have you had in the last week?**	
Do you smoke, or use tobacco products?	
• **If yes, what form, and how much in the last week?**	
Patient had questions about:	

Vitals signs			
Temp:	HR:	BP:	SpO2:
Last 3 Weights:	Wt: BMI: Date:	Wt: BMI: Date:	Wt: BMI: Date:
Last 3 HbA1c:	A1c: Date:	A1c: Date:	A1c: Date:
Last 3 BP Readings:	BP: Date: Home/Clinic:	BP: Date: Home/Clinic:	BP: Date: Home/Clinic:

Assessment:	Yes/No
Has A1C goal been met?	
Has Blood glucose goal been met?	
Has the Blood Pressure goal been met?	
If BP above goal, do they have home BP monitor?	

If patient does not have a BP monitor, please pend a BP monitor order for provider to sign if covered by insurance or see if patient can buy at pharmacy (arm cuff) and educate on home BP measurement.

Education tailored to the patient risks and needs (*Choose all that apply*)	
☐ Taking Medications	☐ Problem Solving
☐ Healthy Eating	☐ Reducing Risk
☐ Being Active	☐ Healthy Coping
☐ Monitoring	☐ DASH diet
	☐ Other

Patient was offered additional support follow up: referred to *(Choose all that apply)*	
☐ DSME	☐ Optometry/Ophthalmology
☐ Ambulatory Nutrition	☐ Dental
☐ Weight Management	☐ Podiatry
☐ Pharmacy Disease State Management	☐ Behavioral Health
☐ Diabetes Group Clinic	☐ Social work

Guidance for Follow Up:

- If A1C at goal, follow up with PCP in 3 months
- If A1C at goal, but blood glucose above goal, follow up with RN in 1 month
- If blood glucose above goal, after 3 RN visits, then follow up with prescribing provider.
- If A1C above goal, follow up with PCP, PharmD, APP (APRN or PA), or RN in 1 month
- *If 1 severe hypoglycemia episode or 2 symptomatic hypoglycemia episodes, notify provider and follow up with PCP in 2 - 4 wks.*
- *If unexplained persistent hyperglycemia, Blood Glucose greater than 300 x 2 and/or symptoms (nausea, vomiting, fever, dehydration), notify provider and follow up with PCP.*

Follow up with MD/APRN/PA _____ in ____ weeks.
CC/Routing to *** (Referring provider / PCP)

Patient Agrees with Plan: ☐ Yes ☐ No

Medical Assistant Template

This template is designed to be used as a data gathering tool by medical assistants prior to patients being seen by the provider. For offices collecting the information on paper, the necessary information is listed followed by a colon (:). Many of these could be pulled in using your electronic health record (ex. Dot phrases).

Name:					
Last visit:					
Last monofilament exam:					
Last retinal exam:					
Last Microalbumin:					
Last 3 A1C					
Date:	A1c:	Date:	A1c:	Date:	A1c:
Last glucose:					
Last Lipid:					
Last chem panel:					
Last 3 BP					
Date:	BP:	Date:	BP:	Date:	BP:
Last 3 Weight					
Date:	Wt.:	Date:	Wt.:	Date:	Wt.:
BMI:					
PHQ9 Depression Screening:					
Tobacco use					
☐ Cigarettes	☐ Chewing/Snuff	☐ Cigars	☐ Pipe		
New medication since last visit:					
Medication stopped since last visit:					

ENGAGEMENT, HEALTHY LIFESTYLE, AND SELF-EFFICACY

3

Engaging people with diabetes in care, healthy lifestyle and improving self-efficacy are important in improving A1c levels. Two critical interventions are known to improve engagement and self-efficacy: 1) diabetes self-management education; and 2) effective communication. Interventions discussed in other sections can also improve self-efficacy and engagement such as outreach, community health worker approaches, individual and group visits.

Diabetes Self-Management Education and Support

Diabetes is a chronic disease that requires a person with diabetes to make many daily self-management decisions and perform complex care activities. Diabetes self-management education and support (DSMES) helps support informed decision-making, self-care behaviors, problem-solving and active collaboration with the health care team. DSMES has been shown to improve A1c levels (Hemoglobin A1c by about 0.5%) and quality of life while reducing hypoglycemia, hospital admissions, depressive symptoms and health care costs.[1-4] Seven specific self-care behaviors developed by the American Association of Diabetes Educators, known collectively as the AADE7™, have been defined to guide the process of DSMES and help people with diabetes achieve behavior change.[5]

When to Refer to DSMES

Four critical times to consider referral of people with diabetes to self-management include at diagnosis, annually when reassessing a person's needs, when new complicating factors arise which influence self-care, and when transitions in care occur. If your patients do not currently have access to a DSME program, teams could partner with other health systems or others in the community to create one. Information related to identifying existing programs or creating a new DSME program are located in Appendix D.

Diabetes Self-Management Education and Effective Communication		
Principle	**Strategy**	**Resources**
Beyond improving satisfaction, techniques for improving communication skills have shown promising results on outcomes (such as blood pressure and blood glucose levels) among diverse populations	**Empathy:** Defined as the ability to understand and share the feelings of another. Research has demonstrated that empathy is essential to achieving positive outcomes when interacting with people with diabetes	thinkculturalhealth.hhs.gov Communication Practices of Physicians with High Satisfaction Ratings www.ncbi.nlm.nih.gov/pmc/articles/PMC3061374/
	Nonverbal Strategies: Some of the most common and effective nonverbal strategies include sitting down, leaning in toward the person, nodding, and eye contact	
	Culturally and Linguistically Appropriate Care: Culturally and linguistically appropriate care are a set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals that enables effective work in cross-cultural situations	The EveryONE Project Tool Kit
	Strategies associated with greater patient satisfaction: • Focus on the individual • Draw out the story • Demonstrate understanding, such as responding empathetically and showing caring • Provide detailed explanations of the clinical problem • Complete the individual's agenda, including delivering what was promised or negotiating until later	
Engage in motivational interviewing with patients	Express empathy for the patient's feelings and perspective	Rollnick S, Butler CC, Kinnersley P, Gregory J, Mash B. Motivational interviewing. BMJ 2010 Apr 27;340:c1900. Additional lists of MI resources are available at the following websites: motivationalinterviewing.org/motivational-interviewing-resources www.integration.samhsa.gov/clinical-practice/motivational-interviewing
	Avoid arguing about conflicting opinions	
	Embrace resistance and address it proactively	
	Support self-efficacy and empower patients to believe they have the power to make a change	

Diabetes Self-Management Education and Effective Communication		
Principle	**Strategy**	**Resources**
Work together with your patients to make a health care decision that is best for the individual through shared decision making	Seek your patient's participation	The Agency for Health Care Research and Policy website has additional materials and modules for providers to become more familiar and adept with this approach on their website at: https://www.ahrq.gov/health-literacy/professional-training/shared-decision/index.html The Mayo clinic also provides decision aids for providers to use with people with diabetes at https://carethatfits.org/shared-decision-making/
	Help your patient explore and compare treatment options	
	Assess your patient's values and preferences	
	Reach a decision with your patient	
	Evaluate your patient's decision	
Explore health literacy with your patients	Review all materials with patients before they leave the office, use the teach back method to discover how well you explained the concept	www.cdc.gov/healthliteracy/pdf/Simply_Put.pdf You can evaluate reading level of written health education materials at: www.readabilityformulas.com/free-readability-formula-tests.php Arozullah AM, Yarnold PR, Bennett CL, et al. Development and validation of a short-form, rapid estimate of adult literacy in medicine. Med Care 2007 November;45 (11):1026–33. PMID: 18049342 Chew et al Fam Med 2004;36(8):588-94 Morris et al. BMC Family Practice 2006 7:21
	Utilize a brief screening tool to assess literacy level or consider using resources at a 3rd-4th grade reading for all patients	
	Use plain non-medical language and consider use of pictures whenever possible	
	Give explicit medication instructions such as writing "in the morning and at night" instead of twice daily on prescriptions	
	Conduct person-centered visits (e.g., listen to people more and speak less, encourage more individual questions	
	Focus on 1-3 key points per visit and repeat those key points, including having staff re-emphasize the key points	
	Use the "Two syllable rule" when creating written and spoken educational materials	

SCREENED AND WELL MANAGED BEHAVIORAL HEALTH

4

Several interventions can assist in screening and addressing behavioral health (see KDD). In this section, we provide information and resources for screening and addressing depression and diabetes distress as well as screening and addressing substance use.

Selected Mental Health Issues in Diabetes

Diabetes and Depression

One of four people with type 1 or type 2 diabetes have elevated depressive symptoms and depression.[1] Longitudinal studies have documented a bidirectional association between diabetes and depression. Depressive symptoms and depression are associated with fewer self-care behaviors, higher A1c levels, increased complications, and mortality.[2-6]

Screening for Depression

Screening and appropriate treatment of depression can improve both glucose and whole-health outcomes. Psychological and pharmacological treatments are effective in reducing depression in people with diabetes and can facilitate better management of blood glucose levels.[7] Since depression among individuals with diabetes is an intervention point that can lead to improved health, screening for and addressing depression in people with diabetes should be treated as rigorously as the physical complications of diabetes.[8]

Diabetes and Distress

Diabetes is shown to cause distress in 18-45% of people living with diabetes. Diabetes distress is associated with fewer self-care behaviors, higher A1c levels, increased morbidity, and decreased quality of life.[9-12] Addressing diabetes distress can lead to improved outcomes.[13-15]

Screening and Addressing Depression, Diabetes Distress, and Substance Use		
Principle	**Strategy**	**Resources**
Screening and appropriate treatment of depression can improve both glucose and whole-health outcomes	If the PHQ-2 is "positive" use the 9-item Patient Health Questionnaire (PHQ-9) for a more in-depth screening. The 9-item Patient health questionnaire (PHQ-9) is a standardized, validated self-report diagnostic questionnaire. Categories of depression severity based on PHQ-9 scores are none-minimal (0-4), mild (5-9), moderate (10-14), moderately severe (15-19) and severe (20-27).	The PHQ-2 instrument is available at: https://cde.drugabuse.gov/instrument/fc216f70-be8e-ac44-e040-bb89ad433387 The PHQ-9 instrument is available at: https://cde.drugabuse.gov/instrument/f226b1a0-897c-de2a-e040-bb89ad4338b9 Link to the short DDS-2: https://behavioraldiabetes.org/scales-and-measures/#1448434304099-9078f27c-4106 PAID-5 and PAID-1: McGuire BE, Morrison TG, Hermanns N, Skovlund S, Eldrup E, Gagliardino J, Kokoszka A, Matthews D, Pibernik-Okanović M, Rodríguez-Saldaña J, de Wit M, Snoek FJ. Short-form measures of diabetes-related emotional distress: the Problem Areas in Diabetes Scale (PAID)-5 and PAID-1. Diabetologia. 2010 Jan;53(1):66-9. doi: 10.1007/s00125-009-1559-5.
	Supplement the PHQ-2 and PHQ-9 screenings with a full clinical assessment to conclusively diagnose depression.	
	Refer and link patient for treatment of their depression through medication and/or counseling.	
Addressing diabetes distress leads to improved outcomes	To assess diabetes distress, use a validated screening tool such as The Diabetes Distress Scale (DDS) and Problem Areas in Diabetes (PAID) Scales	Polonsky WH, Anderson BJ, Lohrer PA, et al. Assessment of diabetes-related distress. Diabetes care. 1995;18(6):754-760. McGuire BE, Morrison TG, Hermanns N, et al. Short-form measures of diabetes-related emotional distress: the Problem Areas in Diabetes Scale (PAID)-5 and PAID-1. Diabetologia. 2010;53(1):66-69
	If moderate or high diabetes distress is identified, consider referral to diabetes self-management education.	

Screening and Addressing Depression, Diabetes Distress, and Substance Use		
Principle	**Strategy**	**Resources**
		Polonsky WH, Fisher L, Earles J, et al. Assessing psychosocial distress in diabetes: development of the diabetes distress scale. Diabetes care. 2005;28(3):626-631. Fisher L, Glasgow RE, Mullan JT, Skaff MM, Polonsky WH. Development of a brief diabetes distress screening instrument. Annals of family medicine. 2008;6 (3):246-252. Fisher L, Polonsky WH, Hessler DM, et al. Understanding the sources of diabetes distress in adults with type 1 diabetes. Journal of diabetes and its complications. 2015;29(4):572-577
The Primary Care Provider (PCP) is in a unique position to screen people with diabetes for alcohol, tobacco and drug abuse. The current opioid crisis in Ohio highlights the need to incorporate screening into our practices	Periodically and routinely screen all patients for substance use disorders	https://store.samhsa.gov/product/A-Guide-to-Substance-Abuse-Services-for-Primary-Care-Clinicians/SMA12-3581 Additional programs and resources can be found at the Substance Abuse and Mental Health Services Administration (SAMHSA) website: https://www.samhsa.gov/sbirt/resources
	Ask questions about substance abuse in the context of other lifestyle questions	
	Utilize a brief substance use screening tool. If patient assesses positive, patient may require further assessment and support	
	Ask high-risk patients about alcohol and drug use combination	
	Be aware of warning signs of alcohol and illicit drug use	

HEALTHY ENVIRONMENTS FOR CARE

5

Healthy environments include a broad array of social, cultural and physical factors within neighborhoods and the conditions of individuals' lives. In this section, we focus on providing resources on screening and addressing social needs of the people with diabetes. Other sections cover effective communication and team-based care which can influence a healthy environment for care. We invite you to consider additional ways in which your clinic can influence a healthy environment for care such as establishing a welcoming clinic environment, mobilizing community health workers as part of your team, and/or partnering with community organizations to meet social needs and work toward building healthier communities.

Screening and Addressing Social Needs of People Living with Diabetes		
Principle	**Strategy**	**Resources**
Social needs intersect to create multiple challenges faced by people with diabetes and care teams, including but not limited to: access to appointments, housing, transportation, food insecurity, social support, racial/ethnic and cultural differences, literacy and language.	Use resources to become more confident in your practice's ability to address social determinants of health. • Screen patients for social needs	American Academy of Family Physicians Social Needs Screening Tool - **AAFP EveryONE Project** THRIVE Assessment Tool – tool for sites to assess how focused they currently are on social need http://implementingthrive.org/implemented/toolkit/toolkit-phase-1/thrive-assessment/ 60 Second Survey to Identify Patients' Unmet Social Needs - Reves SR, O'Neal JP, Gonzalez MM, McHenry C, Favour M, Etz RS. A 60-Second Survey to Identify Patients' Unmet Social Needs. The Annals of Family Medicine. 2019 May 1;17(3):274-. http://www.annfammed.org/content/17/3/274.long The SIREN Network at UCSF maintains an additional collection of many useful resources: https://sirenetwork.ucsf.edu/tools-resources/implementation-resources

Screening and Addressing Social Needs of People Living with Diabetes

Principle	Strategy	Resources
Primary care practices across the United States and here in Ohio are implementing new approaches to integrating social care programs. Some programs are specifically focused on a particular social need (e.g. food insecurity, transportation, digital literacy) and others might be focused on a broad range of social factors.	Community Health Worker/Lay Leader	Pérez-Escamilla R, Damio G, Chhabra J, Fernandez ML, Segura-Pérez S, Vega-López S, Kollannor-Samuel G, Calle M, Shebl FM, D'Agostino D. Impact of a community health workers–led structured program on blood glucose control among Latinos with type 2 diabetes: the DIALBEST trial. Diabetes Care. 2015 Feb 1;38(2):197-205. Zeigler BP, Redding SA, Leath BA, Carter EL. Pathways community HUB: A model for coordination of community health care. Population health management. 2014 Aug 1;17(4):199-201. Berkowitz SA, Delahanty LM, Terranova J, Steiner B, Ruazol MP, Singh R, Shahid NN, Wexler DJ. Medically tailored meal delivery for diabetes patients with food insecurity: a randomized cross-over trial. Journal of general internal medicine. 2019 Mar 15;34(3):396-404. Oostra R. A case to end US hunger using collaboration to improve population health. 2019. Promedica. https://www.promedica.org/Public%20Documents/our-communities/hunger/a-case-to-end-hunger.pdf Keene DE, Guo M, Murillo S. "That wasn't really a place to worry about diabetes": Housing access and diabetes self-management among low-income adults. Social Science & Medicine. 2018 Jan 1;197:71-7. Berkowitz SA, Kalkhoran S, Edwards ST, Essien UR, Baggett TP. Unstable housing and diabetes-related emergency department visits and hospitalization: a nationally representative study of safety-net clinic patients. Diabetes care. 2018 May 1;41(5):933-9. Perzynski AT, Roach MJ, Shick S, Callahan B, Gunzler D, Cebul R, Kaelber DC, Huml A, Thornton JD, Einstadter D. Patient portals and broadband internet inequality. Journal of the American Medical Informatics Association. 2017 Sep 1;24(5):927-32. Sheon AR, Bolen SD, Callahan B, Shick S, Perzynski AT. Addressing disparities in diabetes management through novel approaches to encourage technology adoption and use. JMIR diabetes. 2017;2(2):e16. Sheon AR. Digital Skills: A hidden super social determinant of health. https://iaphs.org/conference-report-digital-skills-hidden-super-social-determinant-health/
	Pathways Community Hub	
	Programs to address food insecurity	
	Resources for transportation	
	Resources for patients with unstable housing	
	Improving digital literacy for patients	

EFFECTIVE SUPPORTIVE RELATIONSHIPS 6

Effective supportive relationships which can influence health includes relationships between, for example: 1) health care team members and people with diabetes; 2) health care team members; 3) people with diabetes and families/friends; and 4) clinics and community organizations and payers. People manage their disease better when they have supportive relationships with family, friends, and peers (others with T2DM). Family and friends can be helpful or not. The advantages of peers are the ability to share collective knowledge and emotional support from those who empathize. In this section, we provide resources for peer/social support and resources to enhance team-based care and joy in work. Professionally, burnout adversely affects productivity, quality, safety, patient satisfaction and turnover.[2-5] Personally, burnout increases the risk of broken relationships, depression, substance abuse and suicide.[6-8] We encourage you to consider using these resources within your practice.

Peer/Social Support		
Principle	**Strategy**	**Resources**
The advantages of peers are the ability to share collective knowledge and emotional support from those who empathize. Primary care teams can assist in linking patients with resources for peer and social support.	Offer behavioral health therapy and therapy groups for patients with diabetes to those who exhibit diabetes distress	Fisher, E.B., Boothroyd, R.I., Elstad, E.A. et al. Peer support of complex health behaviors in prevention and disease management with special reference to diabetes: systematic reviews. Clin Diabetes Endocrinol 3, 4 (2017) doi:10.1186/s40842-017-0042-3 Knox L, Brach C. Module 19. Implementing Care Teams. Content last reviewed May 2013. Agency for Healthcare Research and Quality, Rockville, MD. Arndt BG, Beasley JW, Watkinson MD, et al. Tethered to the EHR: Primary care physician workload assessment using EHR event log data and time-motion observations. Ann Fam Med. 2017;15(5):419-426. Levine DM, Linder JA, Landon BE. The quality of outpatient care delivered to adults in the United States, 2002 to 2013. JAMA Intern Med. 2016;176(12):1778-1790.
	Lifestyle support programs to interested patients	
	Fitness programs or clubs with group classes to interested patients	

Resources to Enhance Team-Based Care and Joy in Work		
Principle	**Strategy**	**Resources**
Traditional provider-focused care models have limited capacity, resulting in gaps in care quality.	Create a change team that will guide the design of the team-based care model that will meet the needs of your patients and workers	Care for the Chronically Ill in Ambulatory Settings. In: Philadelphia, PA; 2010. Sinsky C, Rajcevich E. Steps Forward: Team-Based Care.; 2018. Improving Primary Care Team Guide | A practical guide for enhancing quality through team building. Improving Primary Care. http://www.improvingprimarycare.org/ Knox L, Brach C. The Practice Facilitation Handbook: Training Modules for New Facilitators and Their Trainers.; 2013. Sinsky CA, Sinsky TA, Rajcevich E. Putting pre-visit planning: Into practice. Fam Pract Manag. 2015;2015-NOVEM:34-38. Mayo Clinic Shared Decision Making National Resource Center. https://shareddecisions.mayoclinic.org. Accessed October 17, 2019. MedStopper. https://medstopper.com. Accessed October 17, 2019. Minimally Disruptive Medicine https://minimallydisruptivemedicine.org/. Accessed October 17, 2019.
	Develop and refine team-based care workflows: pre-visit, visit, post-visit, team documentation, etc.	
	Put together a multidisciplinary team to pilot the team-based care approach	
	Track outcomes and refine processes	
Joy in work (or engagement), which is more than the absence of burnout, allows the care team to provide better care in a sustainable way.13,14 Joy is usually grounded in the relationships that providers form with people with diabetes, with colleagues, and with family and friends.	Focus on the meaning of our work	Shanafelt TD, Noseworthy JH. Executive Leadership and Physician Well-being: Nine Organizational Strategies to Promote Engagement and Reduce Burnout. Mayo Clinic Proc. 2017;92(1):129-146. Sinsky C, Shanafelt T. Creating the Organizational Foundation for Joy in MedicineTM Organizational changes lead to physician satisfaction. Am Med Assoc Steps Forw. 2018:28. Perlo J, Balik B, Swensen S, Kabcenell A, Landsman J, Feeley D. IHI framework for improving joy in work. IHI White Pap. 2017:42. Mayo Clinic. Well-Being Index. https://www.mededwebs.com/well-being-index. Accessed October 17,2019

Resources to Enhance Team-Based Care and Joy in Work		
Principle	**Strategy**	**Resources**
	Appreciative Inquiry	
	Limit work hours	
	Offer flexible work arrangements	
	Provide leadership training	
	Provide communication skills training	
	Prioritize teamwork and relationships with patients, peers, and colleagues	
	Remove sources of frustration and inefficiency	
	Reduce preventable person harm and support second victims	
	Reduce the stigma of mental illness among providers	
	Assess wellness annually within the practice	

Appendix Outline

Appendix A – Executive Summary

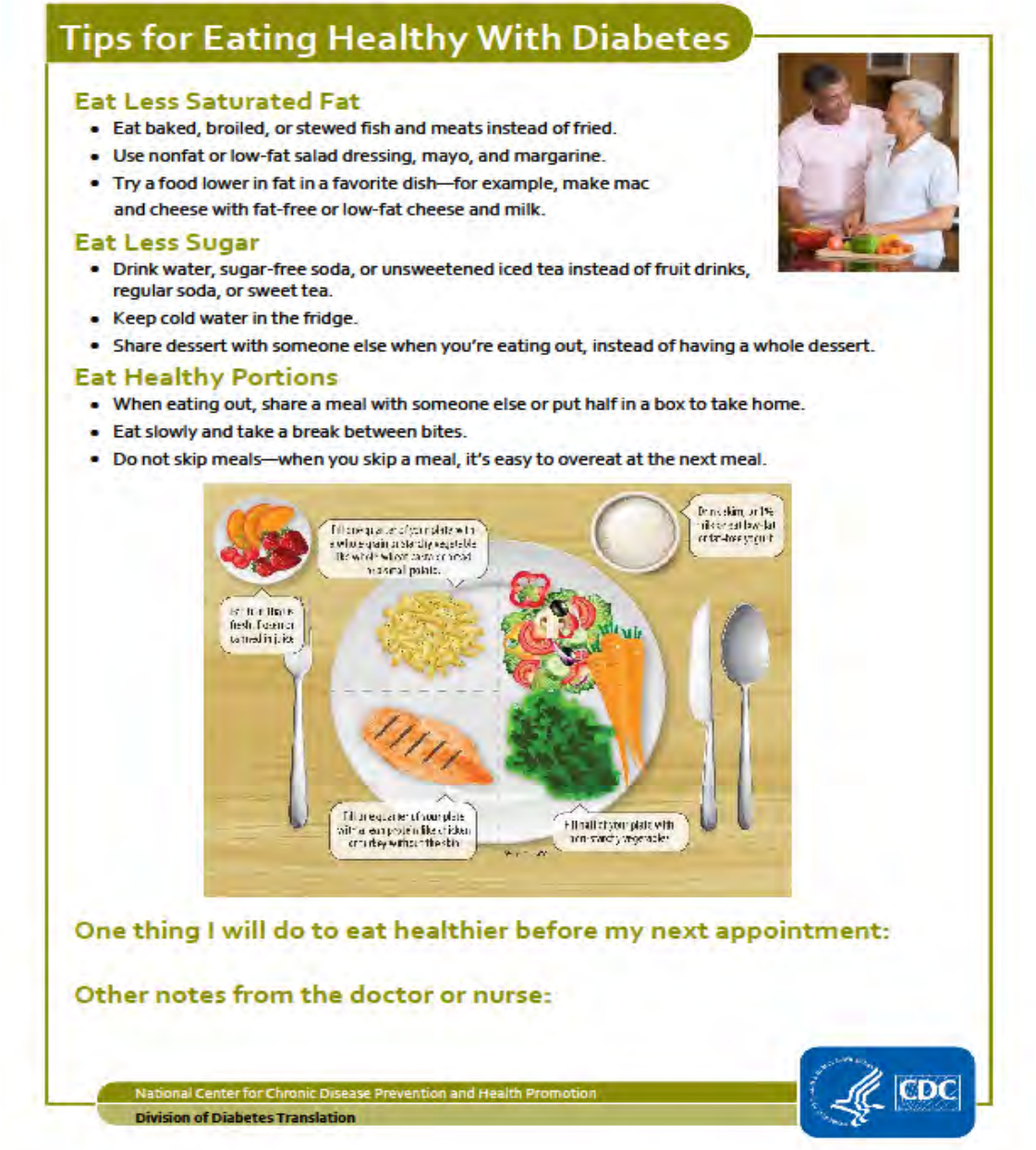
References

1. Retrieved February 21, 2019, from https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/chronic-disease/data-publications/ohio-diabetes-action-plan-2018
2. The Centers for Disease Control and Prevention (2017). Diabetes Mortality by State. Retrieved January 22, 2019 from https://www.cdc.gov/nchs/pressroom/sosmap/diabetes_mortality/diabetes.htm
3. The Centers for Disease Control and Prevention (2017). Addressing Health Disparities in Diabetes. Retrieved January 17, 2019 from https://www.cdc.gov/diabetes/disparities.html
4. Chronic Disease in Rural America. Rural Health Information Hub. 2013
5. Appel, Su, Buchanan, Ky, Cherrington, An, Massey, Cyn. Improving Diabetes Care in Rural Communities: An Overview of Current Initiatives and a Call for Renewed Efforts. American Diabetes Association. Clinical Diabetes 2010 Jan; 28(1): 20-27
6. Piatt GA, Orchard TJ, Emerson S, Simmons D, Songer TJ, Brooks MM et al. Translating the chronic care model into the community: results from a randomized controlled trial of a multifaceted diabetes care intervention. Diabetes Care 2006; 29(4):811-817.
7. Ogedegbe G. Barriers to optimal hypertension control. J Clin Hypertens (Greenwich) 2008; 10(8):644-646.
8. Bolen SD, Samuels TA, Yeh HC, Marinopoulos SS, McGuire M, Abuid M et al. Failure to intensify antihypertensive treatment by primary care providers: a cohort study in adults with diabetes mellitus and hypertension. J Gen Intern Med 2008; 23(5):543-550.
9. Rose AJ, Shimada SL, Rothendler JA, Reisman JI, Glassman PA, Berlowitz DR et al. The accuracy of clinician perceptions of "usual" blood pressure control. J Gen Intern Med 2008; 23(2):180-183
10. Damon K, Allen LaPointe NM et al. Check it, change it: a community-based, multifaceted intervention to improve blood pressure control. Circ Cardiovasc Qual Outcomes 2014; 7(6):828-834.
11. Porterfield DS, Hinnant LW, Kane H, Horne J, McAleer K, Roussel A. Linkages between clinical practices and community organizations for prevention: a literature review and environmental scan. Am J Public Health 2012; 102 Suppl 3:S375-S382.
12. Sequist TD, Taveras EM. Clinic-community linkages for high-value care. N Engl J Med 2014; 371(23):2148-2150.

Appendix B - Section 1 Appropriate and Timely Treatment

Resources: Tools and Tables

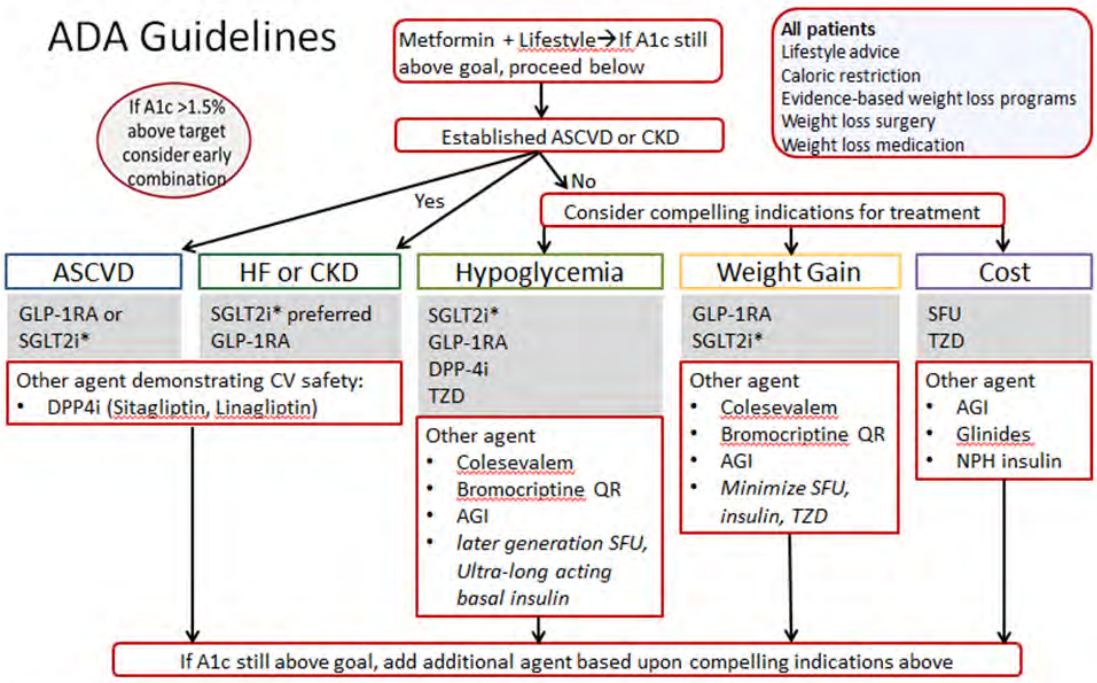
- Polonsky WH, et al. Structured self-monitoring of blood glucose significantly reduces A1C levels in poorly controlled, noninsulin-treated type 2 diabetes: results from the Structured Testing Program study. Diabetes Care. 2011;34(2):262-267. https://www.accu-chek.co.uk/tools-and-resources/blood-glucose-monitoring/accu-chek-360deg-view-tool



All Medicaid Managed Care Plan Bariatric Surgery Coverage Information

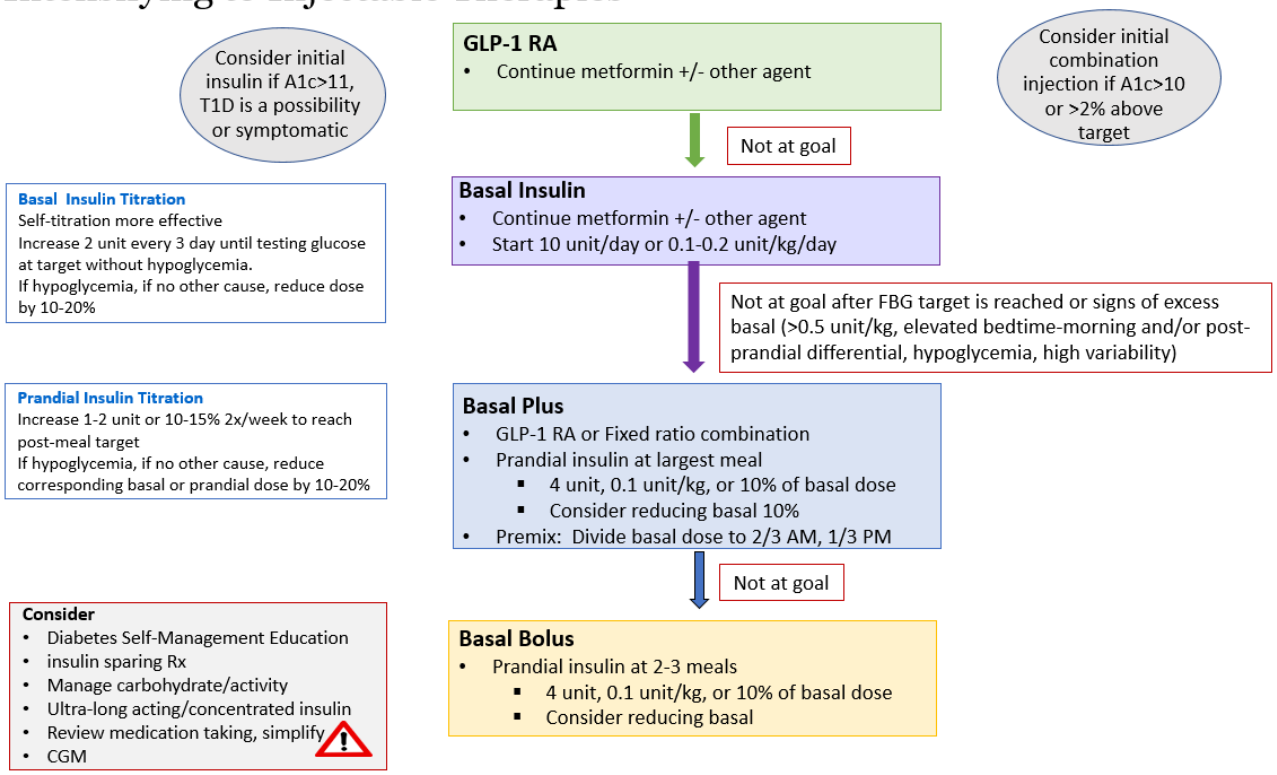
Plan	Bariatric Surgery Coverage Information
Aetna	Ohio Provider Manual 02282020.pc *MMP Plan. Page 82-83 of manual. Surgery requires Pre-surgery Counseling and prior authorization.
Buckeye	CP.MP.37 Bariatric Surgery.docx
Caresource	Medical policy for age 20 and older: https://www.caresource.com/documents/medicaid-oh-policy-medical-mm-0791-20190625/ Medical policy for adolescents:: https://www.caresource.com/documents/medicaid-oh-policy-medical-mm-0027-20190528/
Molina	Information about bariatric surgery coverage can be found under the following sections of Appendix A: • Gastroplasty – page 170 • Obesity Treatment – Page 173 • Weight Loss – Page 177 https://www.molinahealthcare.com/providers/oh/medicaid/manual/PDF/oh-combined-provider-manual.pdf
Paramount	https://www.paramounthealthcare.com/assets/documents/medicalpolicy/PG0163_Bariatric_Services.pdf
United	Bariatric Surgery – Ccommunity Plan Medical Policy https://www.uhcprovider.com/content/dam/provider/docs/public/policies/medicaid-comm-plan/bariatric-surgery-cs.pdf

Type 2 Diabetes Treatment Algorithms



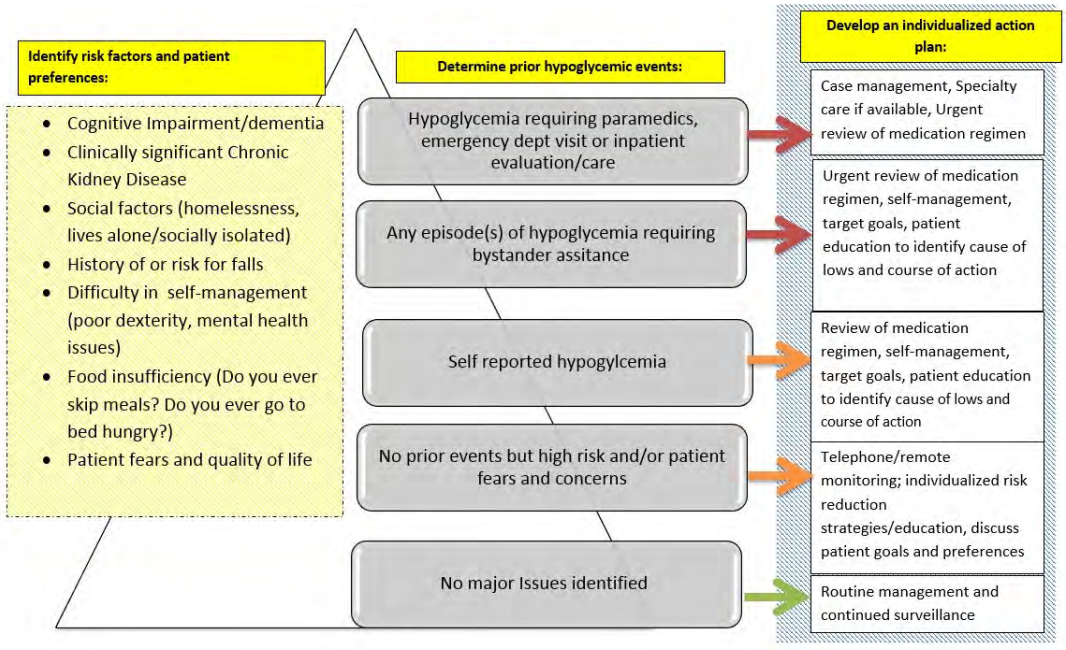
*if adequate eGFR
ASCVD=atherosclerotic cardiovascular disease, CKD=chronic kidney disease, GLP-1RA=glucagon-like peptide-1 receptor agonist, SGLT28i=sodium-glucose cotransporter-2 inhibitor, AGI=alpha-glucosidase inhibitor, SFU=sulfonylurea, TZD=thiazolidinedione

Intensifying to Injectable Therapies



American Diabetes Association Dia Care 2021;44:S111-S124

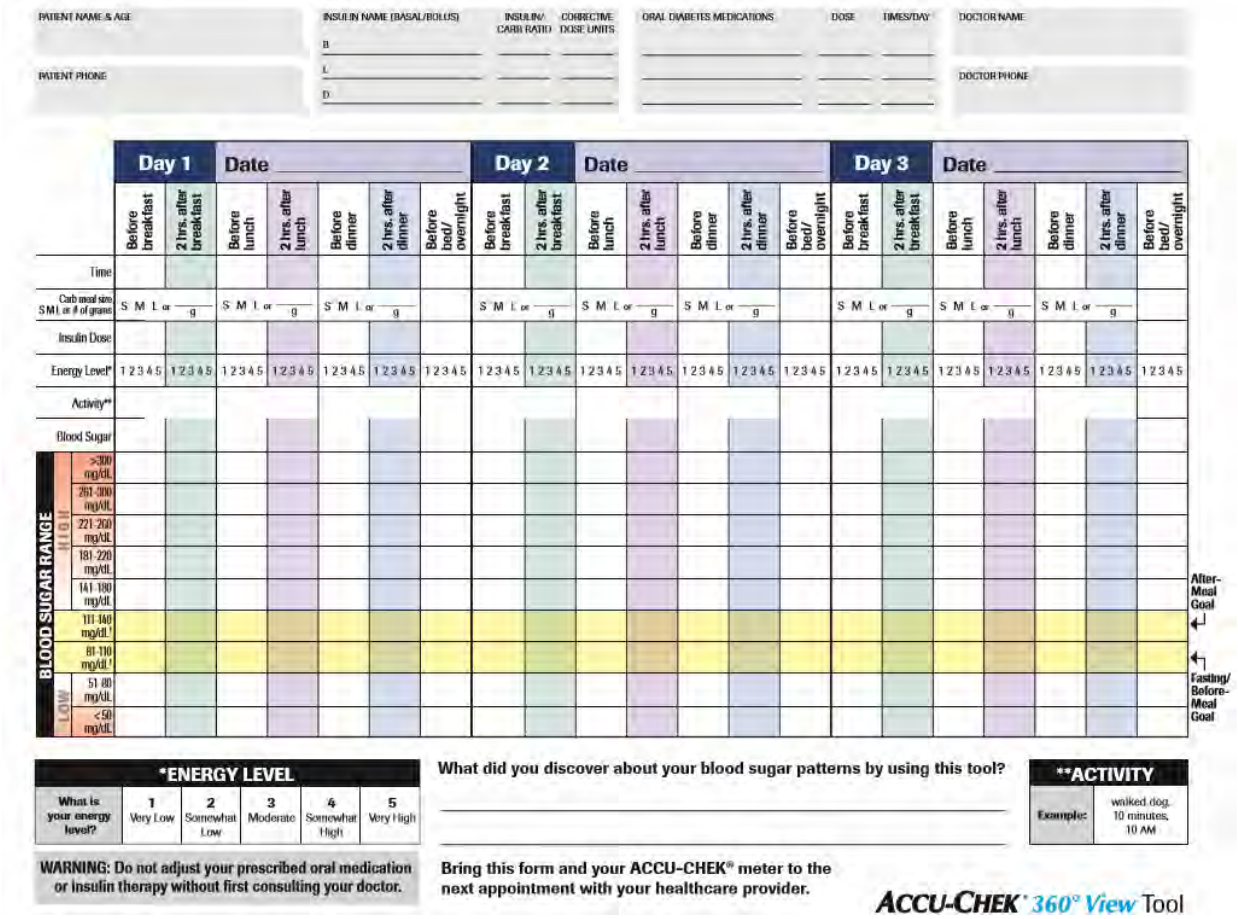
Assessing and Addressing Hypoglycemia



Ways to reduce hypoglycemia risk

- *Ask patients at risk about hypoglycemia frequency, timing, severity and associated symptoms at every visit*
- *Set glucose & A1c targets using a shared decision making approach*
- *Identify opportunities for substituting therapies with lower hypoglycemia risk with acceptable burden (tolerability, cost, complexity)*
- *If substitution is not possible or does not minimize hypoglycemia risk in an acceptable manner, develop a tapering plan for high risk medications.*
- *Set thresholds (SMBG level +/- symptoms) for back-titration of a drug*
- *For patients at high hypoglycemia risk consider real-time CGM*

Glucose self-monitoring



Polonsky WH, et al. Structured self-monitoring of blood glucose significantly reduces A1C levels in poorly controlled, noninsulin-treated type 2 diabetes: results from the Structured Testing Program study. Diabetes Care. *2011;34(2):262-267.* *https://www.accu-chek.co.uk/tools-and-resources/blood-glucose-monitoring/accu-chek-360deg-view-tool*

Resources: Additional Links

- The American Association of Diabetes Educators: https://www.diabeteseducator.org/practice/educator-tools/diabetes-management-tools/self-monitoring-of-blood-glucose
- The American Diabetes Association website has an education library (See worksheets, including All About Blood Glucose, Blood Glucose Log, Tracking Blood Glucose, Checking Blood Glucose, Low Blood Glucose). https://professional.diabetes.org/search/site?f%5B0%5D=im_field_dbp_ct%3A32&retain-filters=1

- General Medication Adherence STEPS forward, CME Module, Downloadable Tools and Implementation Support (professional education) https://www.stepsforward.org/modules/medication-adherence
- General Medication Adherence Action Kit (professional and patient with Hispanic options). Among other resources, this kit includes wall posters and goal setting sheets for people with diabetes.
- https://millionhearts.hhs.gov/files/MH_MedicationActionGuide.pdf
- https://www1.nyc.gov/site/doh/providers/resources/public-health-action-kits-medication-adherence.page
- Promoting Medication Adherence in Diabetes (professional and patient) https://www.niddk.nih.gov/health-information/health-communication-programs/ndep/health-care-professionals/medication-adherence/Pages/default.aspx
- Tip sheets for people with diabetes on medication taking can also be found at https://www.diabeteseducator.org/practice/educator-tools/diabetes-management-tools/medication-taking-resources

References

1. Franz MJ, MacLeod J, Evert A, et al. Academy of Nutrition and Dietetics Nutrition practice guidelinefortype1andtype2diabetesinadults: systematic review of evidence for medical nutrition therapy effectiveness and recommendations for integration into the nutrition care process. J Acad Nutr Diet 2017; 117:1659–1679
2. https://care.diabetesjournals.org/content/early/2019/04/10/dci19-0014.full-text.pdf
3. IMS Health Incorporated. Avoidable costs in U.S. healthcare: The $200 billion opportunity from using medicines more responsibly. http://www.imshealth.com/en/thought-leadership/ims-institute/reports/avoidable-costs#ims-video. Accessed July 29, 2016.
4. Bosworth HB, Granger BB, Mendys P, Burkholder R, Czajkowski SM, Daniel JG, et al. Medication adherence: A call for action. Am Heart J. 2011;162(3):412–24. 8.
5. Farrell B, Black C, Thompson W, McCarthy L, Rojas-Fernandez C, Lochnan H, Shamji S, Upshur R, Bouchard M, Welch V. Deprescribing antihyperglycemic agents in older persons: Evidence-based clinical practice guideline. Canadian Family Physician. 2017 Nov 1;63(11):832-43.
6. Shrank WH, Choudhry NK, Fischer MA, Avorn J, Powell M, Schneeweiss S, et al. The epidemiology of prescriptions abandoned at the pharmacy. Ann Intern Med. 2010;153(10):633–40.
7. Choudhry NK, Avorn J, Glynn RJ, Antman EM, Schneeweiss S, Toscano M, et al. Full coverage for preventative medications after myocardial infarction. N Engl J Med. 2011;365(22):2088–97.
8. World Health Organization. Adherence to long-term therapies: evidence for action. Geneva: World Health Organization; 2003.

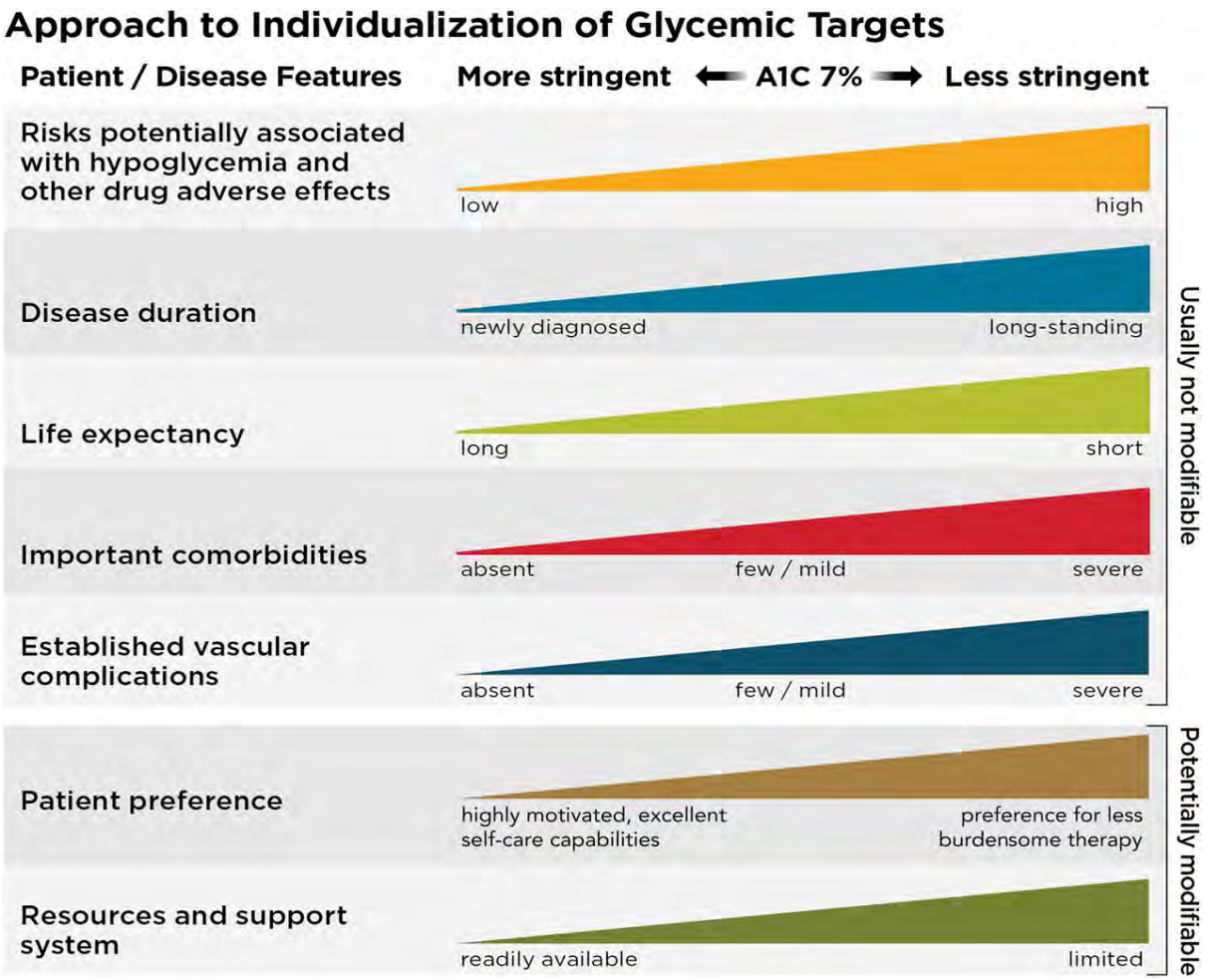
Appendix C – Section 2 Access to High Quality Coordinated Care

Resources: Tools and Tables

Summary of glycemic recommendations for many nonpregnant adults with diabetes

A1c	<7.0% (53 mmol/mol)*
Preprandial capillary plasma glucose	80–130 mg/dL* (4.4–7.2 mmol/L)
Peak postprandial capillary plasma glucose†	<180 mg/dL* (10.0 mmol/L)

- * More or less stringent glycemic goals may be appropriate for individuals with diabetes. Goals should be individualized based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual considerations.
- † Postprandial glucose may be targeted if A1c goals are not met despite reaching preprandial glucose goals. Postprandial glucose measurements should be made 1–2 h after the beginning of the meal, generally peak levels in people with diabetes.



Blood Glucose and A1c targets

Example summary of glycemic targets for many non-pregnant adults with diabetes

**More/Less stringent targets must be considered based on multiple complex individual factors

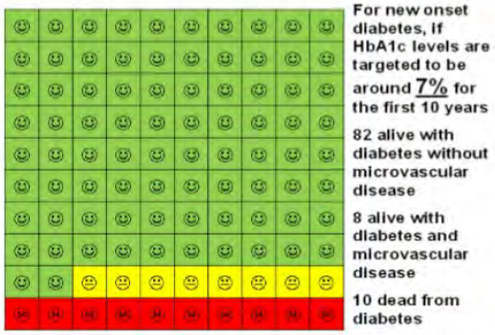
Example table for determination of average target HbA1c and glucose levels over time

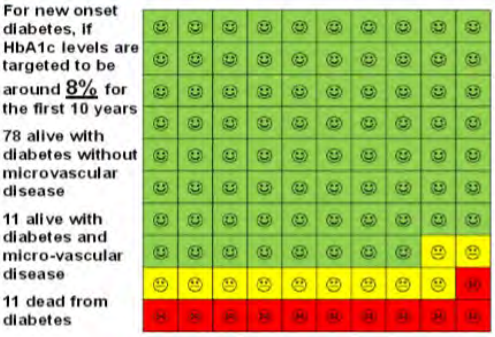
Major Comorbidity or Physiologic Age	Microvascular Complications		
	Absent or Mild	Moderate	Advanced
Absent > 10-15 years of life expectancy	6.0-7.0%	7.0-8.0%	7.5-8.5%
Present 5-10 years of life expectancy	7.0-8.0%	7.5-8.5%	7.5-8.5%
Marked <5 years of life expectancy	8.0-9.0%	8.0-9.0%	8.0-9.0%

Self-monitored blood glucose targets stratified by A1c target

Target glucose (mg/dl)	A1c Target (%)			
	<7.0	<7.5	<8.0	<8.5
Fasting/Pre-meal glucose	80-130	90-130	90-150	100-180
Post meal glucose 1 hour after start of meal 2 hours after start of meal	<180 mg/dl <140 mg/dl	-	-	-
Bedtime glucose	-	90-150	100-180	110-200

Figure 3: Cates Plot: Pictorial example of the concept of absolute risk reduction from glycemic control [3]





The United Kingdom Prospective Diabetes Study (UKPDS), conducted from the mid-1980s to late 1990s with patients whose average HbA1c was 9% at time of diagnosis, **provides the primary evidence base for tight control of type 2 diabetes from onset of disease for individuals with a life expectancy of around 10 years** - UKPDS 33 (sulfonylurea/insulin therapy compared to conventional therapy - Lancet 1998); Use of metformin may confer additional benefit; UKPDS 34 (metformin versus conventional therapy - Lancet 1988).

☺	Person alive with diabetes and no microvascular complications
😐	Person alive with diabetes and with microvascular complications
☹	Person dead from diabetes
	Microvascular complications include retinopathy, nephropathy, and neuropathy

Telehealth Workflow Example

Pre-visit:

- Scheduler or medical assistant (MA) provides advance instructions to patient by phone and e-message or mail with emphasis on glucose monitoring data. Provide contact information for the Diabetes educator if the patient is having difficulty.
- Nurse or MA is designated to each provider who will call each patient in advance to perform medication reconciliation, pend med refills, assist with getting glucose data, follow-up communication or other needs.

Within visit:

- Use "chat" function in electronic medical record to communicate back and forth during the "clinic".
- Dot functions to assist with the workflow:
    - White dot: nurse attempting to contact patient
    - Green dot: patient checked in, med rec complete.
    - Red dot: provider completed visit, ready for checkout and establishing follow-up
    - Black dot: follow up scheduled/ checkout complete

Post-visit: Scheduler to contact patient for follow-up/referrals, send any written materials, orders, prescriptions.

The Person with Diabetes' Narrative: An SMA Experience:

Ms. Smith is a 67-year-old female with a history of coronary artery disease, hypertension, hyperlipidemia and type 2 diabetes mellitus. She presents accompanied by her spouse for diabetes follow-up in the Diabetes Shared Medical Appointment setting. She is currently taking metformin 500 mg twice a day, alogliptin 25 mg daily along with glargine insulin 54 units every evening subcutaneously in addition to her hypertension, blood thinners and statin medications.

She checks in with the SMA and has her vital signs taken.

Ms. Smith and her husband take their seats in the common area. This is the first time they've attended a Shared Medical Appointment. Initially they were skeptical, but their healthcare team enthusiastically encouraged them to attend since they would receive much more information in this setting than they would during a traditional one-on-one clinic appointment.

The Facilitator is a registered dietitian who begins the session on time. She introduces herself then reminds everyone that this is a group medical appointment. Further, she states should anyone have any concerns that they do not wish to share in the group setting then they can request one-on-one time with the Provider at the conclusion of the SMA. Following announcements and introductions the Facilitator leads an interactive discussion describing carb consistent meal planning and low carb snacks for approximately 15 minutes. Ms. Smith is pleased with this information and asks for additional literature as well as cookbook recommendations.

The Provider is an experienced clinician who started doing Diabetes Shared Medical Appointments in the last 6 months. He introduces himself, says hello to the group and thanks everyone for coming and supporting one another. He also shares how much he has come to appreciate delivering diabetes care in the group setting. He encourages all of persons to give feedback on the comment cards provided near the exit.

The Provider discusses the care of several people with diabetes in succession who had checked in prior to Ms. Smith. Ms. Smith is surprised by the ease with which these individuals discuss their health concerns with the Provider in the Group Setting. The Provider treats each person's concerns with respect and is empathetic to the challenges they face. This clearly puts everyone at ease. Ms. Smith notices that the Provider asks each person to participate in their treatment plan especially when setting blood glucose goals or changing medications. He calls this Shared Decision Making in the Shared Medical Appointment. She also notices he seems to be thinking out loud and vocalizing his reasoning for certain treatment recommendations. When one of the individuals requires a physical exam, the Provider asks the person to be seen in the adjacent exam room. While the two are out of the common room the Facilitator once again addresses the group in a brief interactive session about the 15:15 Rule to treat low blood glucose. The next person agrees to begin basal insulin to help her achieve her blood glucose goals. The MA and another individual take her aside for instructions on how to use and dispose of insulin syringes.

By the time it's Ms. Smith's turn, she is reassured by both the healthcare team's professionalism and the support shown by the other people with diabetes for one another. She feels safe sharing her health concerns. She tells the Provider that she is experiencing morning headaches and on at least one occasion woke up in a cold sweat since starting a new exercise routine. The provider shared his concern that these could be symptoms of low blood glucose related to her change in activity and that it was more than likely her insulin that is contributing. Ms. Smith shared that she did not want to give up her new exercise routine since overall, she is feeling better. The Provider and she came up with a plan that, together with her spouse, will confirm if she is having nocturnal low blood glucose. The Provider suggested several treatment changes that are available to her including another long-acting insulin that may reduce her risk of low blood glucose, having a bedtime carbohydrate snack, or switching her current glargine insulin schedule to morning and/or reducing its dose. Ms. Smith shared that she and her husband are on limited income and can't afford a higher co-pay insulin nor does she wish to start eating more. In fact, she is very interested in modifying all the carbohydrates in her meal based on what she learned earlier from the Facilitator. As a result, the provider asks if it is possible for her to move her glargine insulin to morning and reduce the dose by 10%. Mrs. Smith agrees. The Facilitator provides her written instructions on all of the agreed upon recommendations and treatment changes. Ms. Smith confirms her understanding of these recommendations by repeating them verbally back to the facilitator.

One and a half hours passes very quickly as the Provider works his way through the remaining 12 people with diabetes. By the end of the SMA, Ms. Smith has learned lots of additional information including why it is so important to rotate her insulin injections and identifying symptoms of low blood glucose. She shares what it's like to undergo a cardiac catheterization with another person who is scheduled to do so later in the week. She realizes that while her Provider spent 10 minutes with her, she spent 90 minutes with her Provider and the healthcare team. But most of all she discovers that diabetes is a chronic illness that can be successfully self-managed and co-managed with her healthcare team and that she was not alone.

Common SMA Errors

- Not building a census of people agreeable to participating in an SMA well in advance of the first clinic.

- Spending too much time “teaching a class” and not managing people. SMAs are not diabetes classes they are medical appointments in a group setting.
- Including disruptive people or people who “steal the show” and dominate the conversation.
- Allowing for too much “dead space” where there are protracted periods of silence while the provider completes some menial task.
- Not having the full endorsement of all members of the healthcare team in particular the individual scheduling their appointments.
- Using humor in the clinic that appears to be at a person’s expense.

Resources: Additional Links

- For providers:
    - Informative video on A1c test (4 minutes): https://www.youtube.com/watch?v=IIyMmg5e2qI
    - NIIDDK educational materials: https://www.niddk.nih.gov/health-information/diabetes/overview/tests-diagnosis/a1c-test
    - Annals commentary on A1c accuracy: https://annals.org/aim/fullarticle/2697746/brief-commentary-laboratory-accuracy-hemoglobin-1c-ranges-treatment-targets-patients
- Conducting Group Visits
    - VA SMA Manual: https://www.queri.research.va.gov/tools/diabetes/shared-med-appt.pdf
- Telehealth
    - Universal platforms can be used to download a variety of meters and diabetes devices. Tidepool is a nonprofit free platform.
    - Link for public hot spots.

Additional Resources for Cardiovascular Risk Reduction in Adults with Diabetes (HTN, Cholesterol, Smoking)

- Hypertension
    - Hypertension Change Package: http://grc.osu.edu/sites/default/files/inline-files/Hypertension_Change_Package_Final_V1.2.pdf
    - Million Hearts: Hypertension Control Package for Clinicians https://millionhearts.hhs.gov/tools-protocols/action-guides/htn-change-package/index.html

  - American Heart Association Target BP Tools and Downloads: https://targetbp.org/tools-downloads/?sort=topic

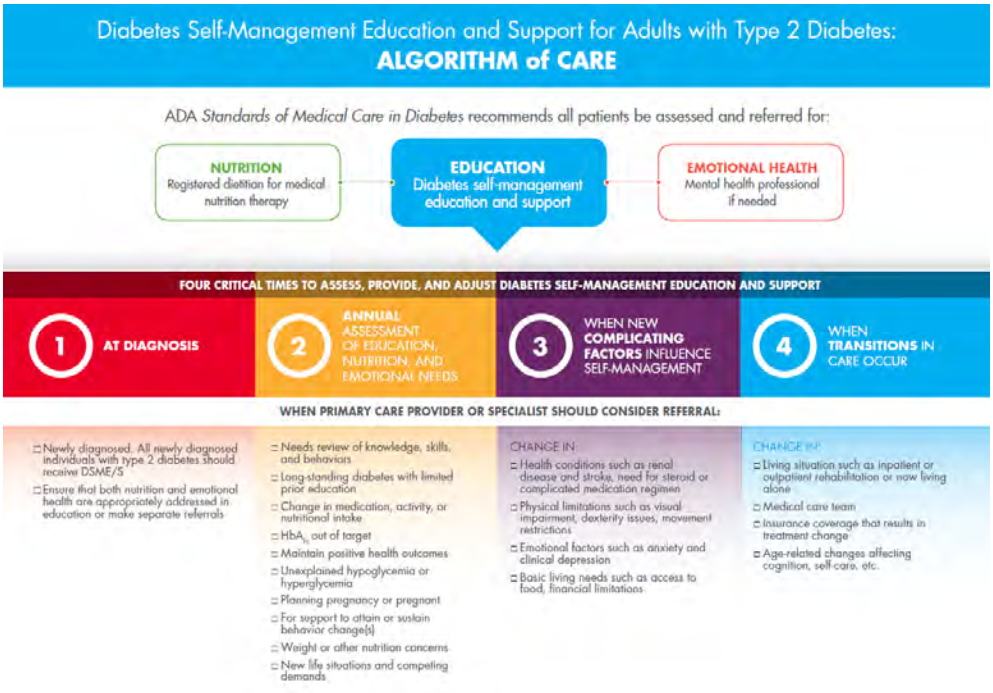
- Cholesterol
  - Million Hearts: https://millionhearts.hhs.gov/tools-protocols/protocols.html
  - Kaiser Permanente Dyslipidemia Guide: http://kpcmi.org/files/dyslipidemia_clinguide.pdf
- Smoking cessation
  - Million Hearts Tobacco Cessation Change Package: https://millionhearts.hhs.gov/tools-protocols/action-guides/tobacco-change-package/index.html

References

1. Effectiveness and safety of patient activation interventions for adults with type 2 diabetes: systematic review, meta-analysis, and meta-regression. Bolen SD, Chandar A, Falck-Ytter C, Tyler C, Perzynski AT, Gertz AM, Sage P, Lewis S, Cobabe M, Ye Y, Menegay M, Windish DM. J Gen Intern Med. 2014 Aug;29(8):1166-76. doi: 10.1007/s11606-014-2855-4. Epub 2014 Apr 15. Review.PMID:24733301
2. Effectiveness of group medical visits for improving diabetes care: a systematic review and meta-analysis, L Housden, S Wong, M Dawes. CMAJ, Sep 17, 2013, 185(13)
3. Using Group Medical Visits with those who have Diabetes, L Housden, S Wong. Curr Diab Rep (2016) 16:134 DOI 10.1007/s11892-016-0817-4.
4. Group Medical Visits in Primary Care for Patients with Diabetes and Low Socioeconomic Status: Users' Perspectives and Lessions for Practitioners. C Thompson, I Meeuwisse, et al. Can J Diabetes 38 (2014) 198-204.
5. Group Medical Visits (GMVs) in primary Care: An RCT of group-based versus individual appointments to reduce HbA1c in older people. K Khan, et al. BMJ Open 2015;5:e007441. Doi:10.1136/bmjopen-2014-007441.
6. CDC https://www.cdc.gov/diabetes/pdfs/programs/E_Telehealth_translation_product_508.pdf
7. California Telehealth Resource Center. (2014). The CTRC telehealth program developer kit: A roadmap for successful telehealth program development [PDF file]. Retrieved from https://www.telehealthresourcecenter.org/wp-content/uploads/2018/09/Complete-Program-Developer-Kit-2014.pdf
8. https://innovateohio.gov/wps/portal/gov/innovate/news/news-and-events/04042020
9. http://www.openwifispots.com/

Appendix D – Section 3 Engagement, Healthy Lifestyle, and Self-Efficacy

Resources: Tools and Tables



https://www.diabeteseducator.org/docs/default-source/practice/algorithm-of-care.pdf?sfvrsn=2

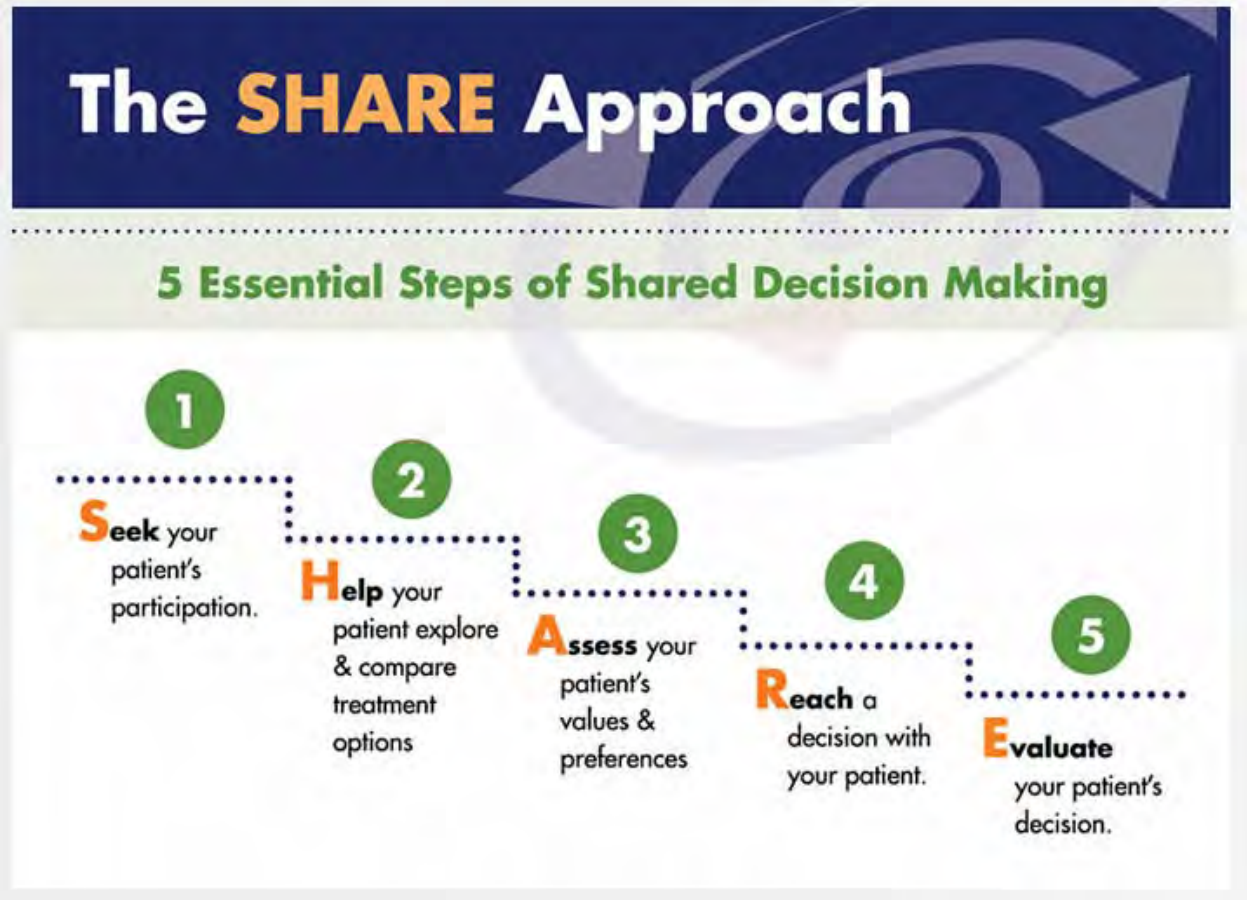
How do we start or find a DSMES Program?

Several evidence-based effective programs exist to provide DSMES both within and outside of the health system. Some programs are led by health professionals and others are by lay leaders. Below, we provide several resources for clinics who may be considering starting DSMES or partnering with others in the community around DSMES programs.

To start your own DSMES program, we recommend using this website as an initial guide (https://www.chronicdisease.org/mpage/domain4_selfm_diabet). The website describes the national standards for diabetes education and support, provides examples on DSMES curricula you can use or modify, provides information on the certification process for a new DSMES program, and links for training to become a leader for DSME within your organization or community.

A DSMES program may also apply for accreditation (see below for links on how to become an accredited program). In order for a DSMES program to be reimbursed for services by insurance companies, the program must be accredited. Accreditation ensures that the program offers comprehensive quality diabetes education, that the program's curriculum is evidence based, up to date, and that it meets the needs of individuals and the population served via annual review and input from stakeholders.

Shared Decision Making



Resources: Additional Links

- The CDC has a DSMES toolkit to help organizations start a program (https://www.cdc.gov/diabetes/dsmes-toolkit/index.html).
- The American Association of Diabetes Educators DEAP program guides interested professionals in how to start an accredited DSMES program https://www.diabeteseducator.org/practice/diabetes-education-accreditation-program-(deap)
- National certification board for diabetes educators gives guidance on how to become a certified diabetes educator. https://www.ncbde.org/
- How to get training to deliver the Stanford diabetes self-management program - https://www.selfmanagementresource.com/programs/small-group/diabetes-self-management/
- How to find a DSME program in your area: https://www.diabeteseducator.org/living-with-diabetes/find-an-education-program
- The National Diabetes Education Program has resources for health professionals who want to get a community organization trained to provide Diabetes support. https://www.cdc.gov/diabetes/ndep/communities/management.html
- The Agency for Health Care Research and Policy website has additional materials and modules for providers to become more familiar and adept with this approach on their website at: https://www.ahrq.gov/health-literacy/curriculum-tools/shareddecisionmaking/index.html

- The Mayo clinic also provides decision aids for providers to use with people with diabetes at https://carethatfits.org/shared-decision-making/

References

1. Diabetes Self-management Education and Support in Type 2 Diabetes: A Joint Position Statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics 2015 https://www.diabeteseducator.org/docs/default-source/practice/practice-resources/position-statements/aade7-self-care-behaviors-position-statement.pdf?sfvrsn=6

2. Diabetes self-management education for adults with type 2 diabetes mellitus: A systematic review of the effect on glycemic control. Chrvala CA, Sherr D, Lipman RD. Patient Educ Couns. 2016 Jun;99(6):926-43.

3. Diabetes Education Impact on Hypoglycemia Outcomes: A Systematic Review of Evidence and Gaps in the Literature. (English) By: LaManna J; Litchman ML; Dickinson JK; Todd A; Julius MM; Whitehouse CR; Hyer S; Kavookjian J, The Diabetes Educator [Diabetes Educ], ISSN: 1554-6063, 2019 Aug; Vol. 45 (4), pp. 349-369; Publisher: Sage Publications. PMID: 31210091.

Appendix E – Section 4 Screened and Well Managed Behavioral Health

Resources: Additional Links

- National Alliance on Mental Illness (NAMI): https://www.nami.org
- Depression and Support Alliance (DBSA): https://www.dbsalliance.org

References

1. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: a meta-analysis. Diabetes care. 2001;24(6):1069-1078.
2. Ciechanowski PS, Katon WJ, Russo JE. Depression and diabetes: impact of depressive symptoms on adherence, function, and costs. Archives of internal medicine. 2000;160(21):3278-3285.
3. Ciechanowski PS, Katon WJ, Russo JE, Hirsch IB. The relationship of depressive symptoms to symptom reporting, self-care and glucose control in diabetes. General hospital psychiatry. 2003;25(4):246-252.
4. Lin EH, Katon W, Von Korff M, et al. Relationship of depression and diabetes self-care, medication adherence, and preventive care. Diabetes care. 2004;27(9):2154-2160.
5. de Groot M, Anderson R, Freedland KE, Clouse RE, Lustman PJ. Association of depression and diabetes complications: a meta-analysis. Psychosomatic medicine. 2001;63(4):619-630.
6. van Dooren FE, Nefs G, Schram MT, Verhey FR, Denollet J, Pouwer F. Depression and risk of mortality in people with diabetes mellitus: a systematic review and meta-analysis. PloS one. 2013;8(3):e57058.
7. Baumeister H, Hutter N, Benger J (2014) Psychological and pharmacological interventions for depression in patients with diabetes mellitus: an abridged Cochrane review. Diabetic Med 31: 773-786.
8. Diabetes Distress or Major Depressive Disorder? A Practical Approach to Diagnosing and Treating Psychological Comorbidities of Diabetes (2017) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5306125/
9. Li C, Barker L, Ford ES, Zhang X, Strine TW, Mokdad AH. Diabetes and anxiety in US adults: findings from the 2006 Behavioral Risk Factor Surveillance System. Diabetic medicine: a journal of the British Diabetic Association. 2008;25(7):878-881.
10. Trief PM, Ouimette P, Wade M, Shanahan P, Weinstock RS. Post-traumatic stress disorder and diabetes: co-morbidity and outcomes in a male veterans sample. Journal of behavioral medicine. 2006;29(5):411-418.
11. Egede LE, Dismuke CE. Serious psychological distress and diabetes: a review of the literature. Curr Psychiatry Rep. 2012;14(1):15-22.
12. Fisher L, Mullan JT, Skaff MM, Glasgow RE, Arean P, Hessler D. Predicting diabetes distress in patients with Type 2 diabetes: a longitudinal study. Diabetic medicine: a journal of the British Diabetic Association. 2009;26(6):622-627.

13. Lerman I, López-Ponce A, Villa AR, Escobedo M, Caballero EA, Velasco ML, et al. Pilot study of two different strategies to reinforce self care behaviors and treatment compliance among type 2 diabetes patients from low income strata. Gaceta Medica de Mexico 2009;145(1):15-9.

14. Quinn CC, Gruber-Baldini AL, Shardell M, Weed K, Clough SS, Peeples M, et al. Mobile diabetes intervention study: testing a personalized treatment/behavioral communication intervention for blood glucose control. Contemp Clin Trials 2009;30(4):334-46.

15. Sperl-Hillen J, Beaton S, Fernandes O, Worley A, Vazquez-Benitez G, Hanson A, et al. Are benefits from diabetes self-management education sustained? American Journal of Managed Care 2013;19(2):104-12.

16. The Lancet Diabetes Endocrinology (2015) Poor mental health in diabetes: Still a neglected comorbidity. Lancet Diabetes Endocrinol 3: 393.

17. Roy T, Lloyd C (2012) Epidemiology of depression and diabetes: A systematic review. J Affec Disord 142: S8-S21.

18. Baumeister H, Hutter N, Benger J (2014) Psychological and pharmacological interventions for depression in patients with diabetes mellitus: an abridged Cochrane review. Diabetic Med 31: 773-786.

19. Kroenke K, Spitzer R, Williams J (2001) The PHQ-9: Validity of a brief depression severity measure. J Gen Inter Med 16: 606-613

20. Kroenke K, Spitzer RL, Williams JB. The Patient Health Questionnaire-2: Validity of a two-item depression screener. Med Care 2003; 41:1284–92.

21. Spitzer RL, Kroenke K, Williams JBW, Löwe B (2006) A brief measure for assessing generalized anxiety disorder: The GAD-7. ArchIntern Med 166: 1092-1097.

Appendix F - Section 5 Healthy Environments for Care

Resources: Tools and Tables

Locations of Pathways Community HUBs in Ohio.

Current OCMH funded HUBs:

1. Central Ohio (Richland)
2. Toledo (Lucas)
3. Cincinnati (Hamilton)
4. Youngstown (Mahoning)
5. Akron (Summit)
6. Canton (Stark)

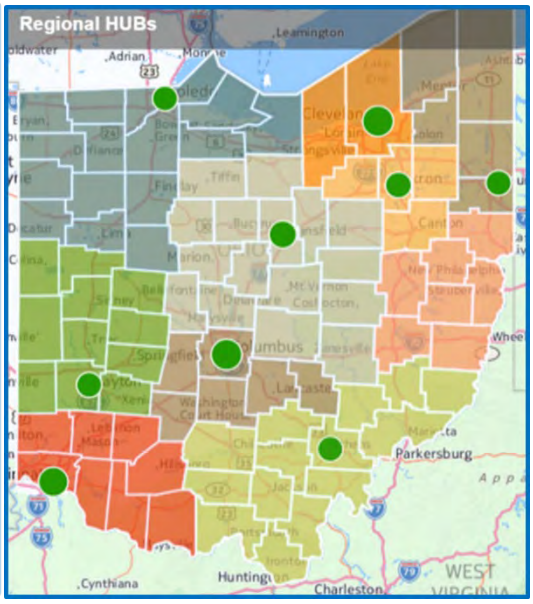
Previous funded HUBS:

1. Columbus (Franklin)

Proposed Opportunities:

1. Cleveland
2. Columbus
3. Dayton
4. Lorain
5. Southeast Ohio
6. Warren

***20/21 Funding will allow for the start-up of 3 additional HUBS**



References

1. Zhu Y, Arterburn D, Daley MF, Desai JR, Fitzpatrick SL, Horberg MA, Koebnick C, Mccormick EV, Oshiro C, Young DR, Ferrara A. Racial/Ethnic Disparities in the Prevalence of Diabetes and Prediabetes among Four Million Overweight and Obese Adults in the US.

2. Valero-Elizondo J, Hong JC, Spatz ES, Salami JA, Desai NR, Rana JS, Khera R, Virani SS, Blankstein R, Blaha MJ, Nasir K. Persistent socioeconomic disparities in cardiovascular risk factors and health in the United States: Medical Expenditure Panel Survey 2002–2013. Atherosclerosis. 2018 Feb 1;269:301-5.

3. Thomas LV, Wedel KR, Christopher JE. Access to transportation and health care visits for Medicaid enrollees with diabetes. The Journal of Rural Health. 2018 Mar;34(2):162-72. Bourgois P, Holmes SM, Sue K, Quesada J. Structural vulnerability: operationalizing the concept to address health disparities in clinical care. Academic medicine: Journal of the Association of American Medical Colleges. 2017 Mar;92(3):299.

4. Bourgois P, Holmes SM, Sue K, Quesada J. Structural vulnerability: operationalizing the concept to address health disparities in clinical care. Academic medicine: journal of the Association of American Medical Colleges. 2017 Mar;92(3):299.

Appendix G – Section 6 Effective Supportive Relationships

References

1. Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry. World psychiatry: official journal of the World Psychiatric Association. 2016;15(2):103-111.
2. Halbesleben JR, Rathert C. Linking physician burnout and patient outcomes: exploring the dyadic relationship between physicians and patients. Health Care Manage Rev. 2008;33:29–39.
3. Prins JT, van der Heijden FM, Hoekstra-Weebers JE, et al. Burnout, engagement and resident physicians' self-reported errors. Psychol Health Med. 2009;14:654–66.
4. Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. Ann Surg. 2010;251:995–1000.
5. Shanafelt T, Sloan J, Satele D, et al. Why do surgeons consider leaving practice? J Am Coll Surg. 2011;212:421–2.
6. Shanafelt TD, Balch CM, Dyrbye L, et al. Special report: suicidal ideation among American surgeons. Arch Surg. 2011;146:54–62.
7. Oreskovich MR, Kaups KL, Balch CM, et al. Prevalence of alcohol use disorders among American surgeons. Arch Surg. 2012;147:168–74.
8. Toker S, Shirom A, Shapira I, et al. The association between burnout, depression, anxiety, and inflammation biomarkers: C-reactive protein and fibrinogen in men and women. J Occup Health Psychol. 2005;10:344–62.
9. McGlynn EA, Adams JL, Kerr EA. The quest to improve quality: Measurement is necessary but not sufficient. JAMA Intern Med. 2016

Appendix H: ADA Standards of Care Medication Tables

TABLE 5. Drug-Specific and Patient Factors to Consider When Selecting Antihyperglycemic Treatment in Adults With Type 2 Diabetes

	Efficacy	Hypoglycemia	Weight change	CV effects		Cost	Oral/SQ	Renal effects		Additional considerations
				ASCVD	CHF			Progression of DKD	Dosing/use considerations*	
Metformin	High	No	Neutral (potential for modest loss)	Potential benefit	Neutral	Low	Oral	Neutral	• Contraindicated with eGFR <30	• Gastrointestinal side effects common (diarrhea, nausea) • Potential for B12 deficiency
SGLT-2 inhibitors	Intermediate	No	Loss	Benefit: empagliflozin†, canagliflozin	Benefit: empagliflozin†, canagliflozin	High	Oral	Benefit: canagliflozin, empagliflozin	• Renal dose adjustment required (canagliflozin, dapagliflozin, empagliflozin, ertugliflozin)	• **FDA Black Box:** Risk of amputation (**canagliflozin**) • Risk of bone fractures (canagliflozin) • DKA risk (all agents, rare in T2DM) • Genitourinary infections • Risk of volume depletion, hypotension • ↑LDL cholesterol • Risk of Fournier's gangrene
GLP-1 RAs	High	No	Loss	Neutral: lixisenatide Benefit: liraglutide† > semaglutide > exenatide extended release	Neutral	High	SQ	Benefit: liraglutide	• Renal dose adjustment required (exenatide, lixisenatide) • Caution when initiating or increasing dose due to potential risk of acute kidney injury	• **FDA Black Box:** Risk of thyroid C-cell tumors (**liraglutide, albiglutide, dulaglutide, exenatide extended release**) • Gastrointestinal side effects common (nausea, vomiting, diarrhea) • Injection site reactions • ?Acute pancreatitis risk
DPP-4 inhibitors	Intermediate	No	Neutral	Neutral	Potential risk: saxagliptin, alogliptin	High	Oral	Neutral	• Renal dose adjustment required (sitagliptin, saxagliptin, alogliptin); can be used in renal impairment • No dose adjustment required for linagliptin	• Potential risk of acute pancreatitis • Joint pain
Thiazolidinediones	High	No	Gain	Potential benefit: pioglitazone	Increased risk	Low	Oral	Neutral	• No dose adjustment required • Generally not recommended in renal impairment due to potential for fluid retention	• **FDA Black Box:** Congestive heart failure (**pioglitazone, rosiglitazone**) • Fluid retention (edema; heart failure) • Benefit in NASH • Risk of bone fractures • Bladder cancer (pioglitazone) • ↑LDL cholesterol (rosiglitazone)
Sulfonylureas (2nd generation)	High	Yes	Gain	Neutral	Neutral	Low	Oral	Neutral	• Glyburide: not recommended • Glipizide and glimepiride: initiate conservatively to avoid hypoglycemia	• FDA Special Warning on increased risk of cardiovascular mortality based on studies of an older sulfonylurea (tolbutamide)
Insulin: Human insulin	Highest	Yes	Gain	Neutral	Neutral	Low	SQ	Neutral	• Lower insulin doses required with a decrease in eGFR; titrate per clinical response	• Injection site reactions • Higher risk of hypoglycemia with human insulin (NPH or premixed formulations) vs. analogs
Insulin: Analogs						High	SQ			

*For agentspecific dosing recommendations, please refer to the manufacturers' prescribing information. †FDA approved for CVD benefit. CHF, congestive heart failure; CV, cardiovascular; DPP4, dipeptidyl peptidase 4; DKA, diabetic ketoacidosis; GLP1 RAs, GLP1 receptor agonists; NASH, nonalcoholic steatohepatitis; SQ, subcutaneous; T2DM, type 2 diabetes.

Non-Insulin Therapies				
Generic Name	**Starting Dose**	**Max Dose**	**Primary Effect**	**Cautions**
Metformin (Glucophage®)	250 mg PO bid	1000 mg p.o. bid (XR/ER: once daily)	Reduce hepatic glucose production	Risk of lactic acidosis: advanced renal, liver disease, EtOH, heart failure, contrast
Sulfonylureas				
Glipizide (Glucotrol®)	5 mg/day	40 mg/day	Insulin secretagogue	Advanced renal, liver disease
Glyburide (DiaBeta®, Micronase®)	2.5-5 mg/day in single/ divided doses	20 mg/day		
Glyburide (Gynase®, PresTab®)	1.5-3 mg/day in single/ divided doses	12 mg/day		
Glimepiride (Amaryl®)	1-2 mg/day	8 mg/day		
Thiazolidinediones				
Pioglitazone (Actos®)	15 mg/day	45 mg/day	Sensitizer	Liver disease, CHF, osteoporosis, edema
Rosiglitazone (Avandia®)	4 mg/day	8 mg/day		
α-Glucosidase Inhibitors				
Acarbose (Precose®)	25 tid	50-100 mg tid	Block glucose absorption	Mmalabsorption syndromes
Miglitol (Glyset®)	25 tid	100 mg tid		
Meglitinides				
Repaglinide (Prandin®)	0.5-2 mg PO q.a.c.	16 mg/day	Insulin secretagogue	Advanced renal, liver disease
Nateglinide (Starlix®)	60 mg PO q.a.c.	120 mg q.a.c.		
DPP-4 Inhibitors/combinations				
Sitagliptin (Januvia®)	100 mg PO daily		Increase incretin activity	Pancreatitis c-cell tumors Heart failure (Saxagliptin, Alogliptin)
Saxagliptin (Onglyza®)	2.5 mg daily	5 mg daily		
Linagliptin (Tradjenta®)	5 mg daily	5 mg daily		
Alogliptin (Nesina®)	25 mg daily	25 mg daily		
GLP-1 Receptor Agonists				
Lixisenatide (Lyxumia®)	20 mcg SQ daily	30 mcg SQ daily	Incretin Replacement Short-acting: Exenatide BID, Lixisenatide Long-acting: Liraglutide, Exenatide QW,	Advanced renal disease, c-cell tumors, pancreatitis, gastroparesis
Exenatide (Byetta®)	5 mcg SQ bid	10 mcg SQ bid		
Exenatide once weekly (Bydureon®)	2 mg SQ weekly	2 mg SQ once weekly		
Liraglutide (Victoza®)	0.6 mg SQ daily	1.8 mg/day		

Semaglutide(Ozempic®)	0.25 mg SQ weekly	1 mg once weekly	Semaglutide, Dulatlutide	
Semaglutide(Rybelsus®)	7 mg PO once daily on an empty stomach	14 mg PO once daily empty stomach		
Dulaglutide (Trulicity®)	0.75 mg SQ weekly	1.5 mg once weekly		
SGLT-2 Inhibitors				
Canagliflozin (Invokana®)	100 mg daily	300 mg daily	Block renal glucose reabsorption	Renal disease, candidiasis, urogenital infection, euglycemic diabetic ketoacidosis (DKA)
Empagliflozin (Jardiance®)	10 mg daily	25 mg daily		
Dapagliflozin (Farxiga®)	5 mg daily	10 mg daily		
Ertugliflozin (Steglatro®)	5 mg daily	15 mg daily		
Miscellaneous				
Colesevalem (Welchol®)	3750 mg daily or in divided doses	3750 mg daily or in divided doses		hypertriglyceridemia, bowel obstruction. Drug interactions
Bromocriptine QR (Cycloset®)	0.8 mg daily within 2 hr of awakening	4.8 mg daily within 2 hr of awakening	Central sympatho-lytic	GI, orthostasis, syncopal migraine, dopaminergic agonist/ antagonist

Basal Insulins							
					Disposable Pens		
Preparation	Concentration	Action Duration	Frequency	Vial	Dosing Range per injection (Unit)	Dosing Increment per Injection (Unit)	Dispensing Amount
NPH (Humullin N®, Novolin N®)	U100	10-20 hr	Daily or BID	10 mL, 1000 unit	Kwikpen: 1-60	1	Pen: 3 ml, 300 unit
Detemir (Levemir®)	U100	Up to 24 hr	Daily or BID	10 mL, 1000 unit	Flextouch: 1-80	1	Pen: 3 ml, 300 unit
Glargine (Lantus®, Basaglar®)	U100	Approx 24 hr	Daily or BID	10 mL, 1000 unit	Solostar: 1-80 Kwikpen: 1-80	1	Pen: 3 ml, 300 unit
Glargine (Toujeo®)	U200	30 hr	Daily	N/A	Solostar: 1-80 Max Solostar: 2-160	1 2	Pen: 1.5 ml, 450 unit Pen: 3 ml, 900 unit
Degludec (Tresiba®)	U100	30 hr	Daily	10 mL, 1000 unit	Flextouch: 1-80	1	Pen: 3 ml, 300 unit
Degludec (Tresiba®)	U200	30 hr	Daily	N/A	Flextouch: 2-160	2	Pen: 3 ml, 600 unit

Premixed Insulin							
					Disposable Pens and Pen with Cartridges		
Preparation	Onset (min)	Peak (hr)	Duration (hr)	Vial	Dosing Range per injection (Unit)	Dosing Increment per Injection (Unit)	Dispensing Amount
70/30 regular	30	2-4	10-20	10 mL, 1000 unit	N/A	N/A	N/A
70/30 Aspart	5-15	1-2	10-20	10 mL, 1000 unit	Flextouch: 1-60	1	Pen: 3 ml, 300 unit
75/25 Lispro	5-15	1-2	10-20	10 mL, 1000 unit	Kwikpen: 1-80	1	Pen: 3 ml, 300 unit

Insulin/GLP-1RA Mixtures				
Product	**Insulin to GLP-1 RA Ratio**	**How Supplied**	**Starting dose**	**Maximum dose**
Insulin glargine/ lixisenatide 100/33 (Soliqua)	1 Units/0.33 mcg	3 mL prefilled pen	If basal dose • <30 Units/day: start 15 Units • ≥30 Units/day: start 30 Units	60 Units/20 mcg
Insulin degludec/ liraglutide 100/3.6 (Xultophy)	1 Units/0.036 mg	3 mL prefilled pen	16 unit/day	50 Units/1.8 mg

Bolus Insulins								
						Disposable Pens and Cartridges		
Preparation	**Concen-tration**	**Action Onset (Min)**	**Peak (hr)**	**Duration (hr)**	**Vial**	**Dosing Range per injection (Unit)**	**Dosing Increment per Injection (Unit)**	**Dispensing Amount**
Regular (Humullin R®, Novolin R®)	U100	30	2-4	6-10	10 mL, 1000 unit	Kwikpen: 1-60 NovoPen3 PenMate: 1-60	1	Pen: 3 ml, 300 unit Cartridge: 3 ml, 300 unit
Regular (Humulin R®)	U500	30	4-8	18-23	20 mL, 10,000 unit	Kwikpen: 5-300	5	Pen: 3 ml, 1500 unit
Rapid aspart (Fiasp®)	U100	5-10	1-2	3-5	10 mL, 1000 unit	FlexTouch: 1-60	1	Pen: 3 ml, 300 unit
Aspart (Novolog®)	U100	5-15	1-2	4-6	10 mL, 1000 unit	Echo pen and cartridge: 0.5-30	0.5	Cartridge: 3 ml, 300 unit
					N/A	Flextouch: 1-60	1	Pen: 3 ml, 300 unit
Glulisine (Apidra®)	U100	5-15	1-2	4-6	10 mL, 1000 unit	Solostar pen: 1-80	1	Pen: 3 ml, 300 unit
Lispro (Humalog, Admelog)	U100	5-15	1-2	4-6	10 mL, 1000 unit	Junior: 0.5-30	0.5	Cartridge: 3 ml, 300 unit
					N/A	Kwikpen/Solostar: 1-60	1	Pen: 3 ml, 300 unit
Lispro (Humalog)	U200	5-15	1-2	4-6	N/A	Kwikpen: 1-60	1	Pen: 3 ml, 600 unit