



1. Improving Care and Promoting Health in Populations: *Standards of Care in Diabetes—2024*

American Diabetes Association
Professional Practice Committee*

Diabetes Care 2024;47(Suppl. 1):S11–S19 | <https://doi.org/10.2337/dc24-S001>

The American Diabetes Association (ADA) “Standards of Care in Diabetes” includes the ADA’s current clinical practice recommendations and is intended to provide the components of diabetes care, general treatment goals and guidelines, and tools to evaluate quality of care. Members of the ADA Professional Practice Committee, a interprofessional expert committee, are responsible for updating the Standards of Care annually, or more frequently as warranted. For a detailed description of ADA standards, statements, and reports, as well as the evidence-grading system for ADA’s clinical practice recommendations and a full list of Professional Practice Committee members, please refer to Introduction and Methodology. Readers who wish to comment on the Standards of Care are invited to do so at <https://professional.diabetes.org/SOC>.

DIABETES AND POPULATION HEALTH

Recommendations

- 1.1** Ensure treatment decisions are timely, rely on evidence-based guidelines, capture key elements within the social determinants of health, and are made collaboratively with people with diabetes and care partners based on individual preferences, prognoses, comorbidities, and informed financial considerations. **B**
- 1.2** Align approaches to diabetes management with the Chronic Care Model. This model emphasizes person-centered team care, integrated long-term treatment approaches to diabetes and comorbidities, and ongoing collaborative communication and goal setting between all team members. **A**
- 1.3** Care systems should facilitate in-person and virtual team-based care, include those knowledgeable and experienced in diabetes management as part of the team, and utilize patient registries, decision support tools, and community involvement to meet needs of individuals with diabetes. **B**
- 1.4** Assess diabetes health care maintenance (**Table 4.1**) using reliable and relevant data metrics to improve processes of care and health outcomes, with attention to care costs, individual preferences and goals for care, and treatment burden. **B**

Population health is defined as “the health outcomes of a group of individuals, including the distribution of health outcomes within the group”; these outcomes can be measured in terms of health outcomes (mortality, morbidity, and functional status), disease burden (incidence and prevalence), and behavioral and metabolic factors (physical activity, nutrition, A1C, etc.) (1). Clinical practice recommendations for health care professionals are tools that can ultimately improve health across populations; however, for optimal outcomes, diabetes care must also be individualized for each person with diabetes and across their life span. Thus, efforts to improve population health will require a combination of policy-level, system-level, and

*A complete list of members of the American Diabetes Association Professional Practice Committee can be found at <https://doi.org/10.2337/dc24-S10T>.

Duality of interest information for each author is available at <https://doi.org/10.2337/dc24-SDIS>.

Suggested citation: American Diabetes Association Professional Practice Committee. 1. Improving care and promoting health in populations: Standards of Care in Diabetes—2024. *Diabetes Care* 2024; 47(Suppl. 1):S11–S19

© 2023 by the American Diabetes Association. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. More information is available at <https://www.diabetesjournals.org/journals/pages/license>.

person-level approaches. With such an integrated approach in mind, the American Diabetes Association (ADA) highlights the importance of person-centered care, defined as care that considers an individual's comorbidities and prognoses; is respectful of and responsive to individual preferences, needs, and values; and ensures that the individual's values guide all clinical decisions (2). Furthermore, wider social determinants of health (SDOH)—often out of direct control of the individual and potentially representing lifelong risk—contribute to health care and psychosocial outcomes and must be addressed to improve all health outcomes (3). Clinical practice recommendations, whether based on evidence or expert opinion, are intended to guide an overall approach to care. The science and art of health care come together when the clinician makes treatment decisions for a person who may not meet the eligibility criteria used in the studies on which guidelines are based. Recognizing that one size does not fit all, the standards presented here provide guidance for when and how to adapt recommendations for an individual. This section provides guidance for health care professionals as well as health systems, payers, and policymakers.

Status and Demographics of Diabetes Care

The proportion of people with diabetes who achieve recommended A1C, blood pressure, and LDL cholesterol levels has fluctuated over the years, with some improvement over time (4). Glycemic management and management of cholesterol through dietary intake remain challenging. In 2015–2018, just 50.5% of U.S. community-dwelling adults with diabetes achieved A1C <7% and 75.4% achieved A1C <8%. The goal blood pressure of <130/80 mmHg was achieved by just 47.7% adults with diabetes, while 70.4% achieved blood pressure <140/90 mmHg. Lipid control, then defined as non-HDL cholesterol <130 mg/dL, was achieved by 55.7% adults with diabetes, and all three risk factors were controlled by just 22.2%. Importantly, many people who did not attain A1C, blood pressure, and lipid goals are not receiving any or adequate pharmacotherapy for glycemic, hypertension, and dyslipidemia management, respectively, which underscores the vital and urgent need for care delivery systems to engage and support people

living with diabetes. Certain segments of the population, such as young adults and individuals with complex comorbidities, financial or other social hardships, and/or limited English proficiency, as well as individuals in ethnic minority populations, face particular challenges to goal-based care (5–7). A U.S. population-based study based on the National Health and Nutrition Examination Survey (NHANES) showed that younger people with diabetes, individuals who are Mexican American or non-Hispanic Black, those with lower level of educational attainment, and those who are underinsured are most likely to be undertreated, particularly for glycemic control (4). The persistent variability in the quality of diabetes care across health care professionals and practice settings indicates that substantial system-level improvements are still needed.

Diabetes and its associated health complications pose a significant financial burden to individuals and society. It is estimated that the annual cost of diagnosed diabetes in the U.S. in 2022 was \$413 billion, including \$307 billion in direct health care costs and \$106 billion in reduced productivity. After adjusting for inflation, the economic costs of diabetes increased by 7% between 2017 and 2022 and by 35% from 2012 to 2022 (8). This is attributed to the increased prevalence of diabetes and the increased cost per person with diabetes. People living with diabetes also face financial hardship, which is correlated with higher A1C, diabetes distress, and depressive symptoms (9). Therefore, ongoing population health strategies like the Chronic Care Model (CCM) are needed to reduce costs to the health care system and to people with diabetes and to provide optimized care.

Chronic Care Model

Numerous interventions to promote the recommended standards have been implemented. However, a major barrier to optimal care is a delivery system that is often fragmented, lacks clinical information capabilities, duplicates services, and is poorly designed for the coordinated delivery of chronic care. The CCM is a commonly used framework for describing diabetes care programs (10).

Six Core Elements. The CCM includes six core elements to optimize the care of people with chronic disease:

1. Delivery system design (moving from a reactive to a proactive care delivery system where planned visits are coordinated through a team-based approach)
2. Self-management support
3. Decision support, particularly at the point of care during a clinical encounter (basing care on evidence-based, effective care guidelines)
4. Clinical information systems (using registries that can provide person-specific and population-based support to the care team)
5. Community resources and policies (identifying or developing resources to support healthy lifestyles)
6. Health systems (to create a quality-oriented culture)

A 5-year effectiveness study of the CCM in 53,436 people with type 2 diabetes in the primary care setting suggested that the use of this model of care delivery reduced the cumulative incidence of diabetes-related complications and all-cause mortality (11). Individuals who were enrolled in the CCM experienced a reduction in cardiovascular disease risk by 56.6%, microvascular complications by 11.9%, and mortality by 66.1% (11). In addition, another study suggested that health care utilization was lower in the CCM group, which resulted in health care savings of \$7,294 per individual over the study period (12).

Redefining the roles of the health care delivery team and empowering self-management of people with diabetes are fundamental to the successful implementation of the CCM (13). Collaborative, interprofessional teams are best suited to provide care for people with chronic conditions such as diabetes and to facilitate individuals' self-management (14–16). There are references to guide the implementation of the CCM into diabetes care delivery, including opportunities and challenges (17).

Strategies for System-Level Improvement

Optimal diabetes management requires an organized, systematic approach and the involvement of a coordinated team of dedicated health care professionals working in an environment where person-centered, high-quality care is a priority (7,17–19). While many diabetes care processes have improved nationally in the past decade, the overall

quality of care for people with diabetes remains suboptimal (4). Efforts to increase the quality of diabetes care include providing care that is concordant with evidence-based guidelines (20); expanding the role of teams to implement more intensive disease management strategies (7,16,21,22); tracking medication-taking behavior at a systems level (23); redesigning the organization of the care process (24); implementing electronic health record (EHR) tools (25,26); empowering and educating people with diabetes (27,28); removing financial barriers and reducing patient out-of-pocket costs for diabetes education, eye exams, diabetes technology, and essential medications (7,29); leveraging telehealth capabilities to improve access to care (30); assessing and addressing psychosocial issues (31,32); and identifying, developing, and engaging community resources and public policies that support healthy lifestyles (33). The National Diabetes Education Program maintains an online resource (cdc.gov/diabetes/professional-info/training.html) to help health care professionals design and implement more effective health care delivery systems for those with diabetes. Given the pluralistic needs of people with diabetes and that the constant challenges they experience vary over the course of disease management (complex insulin treatment plans, new technology, etc.), a diverse team with complementary expertise is consistently recommended (34).

Care Teams

The care team, which centers around the person with diabetes, should avoid therapeutic inertia and prioritize timely and appropriate intensification of behavior change (nutrition and physical activity) and/or pharmacologic therapy for individuals who have not achieved the recommended metabolic goals (35–37). Strategies shown to improve care team behavior and thereby catalyze reductions in A1C, blood pressure, and/or LDL cholesterol include engaging in explicit and collaborative goal setting with people with diabetes (38,39); integrating evidence-based guidelines and clinical information tools into the process of care (20,40,41); identifying and addressing language, numeracy, or cultural barriers to care (41–43); soliciting performance feedback, setting reminders, and providing structured care (e.g., guidelines, formal

case management, and patient education resources) (7); and incorporating care management teams including nurses, dietitians, pharmacists, and other health care professionals (21,42). In addition, initiatives such as the Patient-Centered Medical Home can improve health outcomes by fostering comprehensive primary care and offering new opportunities for team-based chronic disease management (43,44).

Telehealth

Telehealth is a growing field that may increase access to care for people with diabetes. The American Telemedicine Association defines telemedicine as the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status. Telehealth includes a growing variety of applications and services using two-way video, smartphones, wireless tools, and other forms of telecommunications technology (45). Often used interchangeably with telemedicine, telehealth describes a broader range of digital health services in health care delivery (46). This includes synchronous, asynchronous, and remote patient monitoring.

Telehealth should be used complementary to in-person visits to optimize glycemic management in people with unmanaged diabetes (47). Increasingly, evidence suggests that various telehealth modalities may facilitate reducing A1C in people with type 2 diabetes compared with usual care or in addition to usual care (48), and findings suggest that telemedicine is a safe method of delivering care for people with type 1 diabetes in rural areas (49). For rural populations or those with limited physical access to health care, telemedicine has a growing body of evidence for its effectiveness, particularly with regard to glycemic management as measured by A1C (30,50–52). In addition, evidence supports the effectiveness of telehealth in diabetes, hypertension, and dyslipidemia interventions (53) as well as the telehealth delivery of motivational interviewing (54). Interactive strategies that facilitate communication between health care professionals and people with diabetes, including the use of web-based portals or text messaging and those that incorporate medication adjustment, appear more effective. Telehealth and other virtual environments can also be used to offer diabetes self-management

education and clinical support and remove geographic and transportation barriers for individuals living in under-resourced areas or with disabilities (55). Telehealth resources can also have a role in addressing the SDOH in young adults with diabetes (56). However, limited data are available on the effectiveness across different populations (57).

Behaviors and Well-being

Successful diabetes care also requires a systematic approach to supporting the behavior-change efforts of people with diabetes. High-quality diabetes self-management education and support (DSMES) has been shown to improve patient self-management, satisfaction, and glucose outcomes. National DSMES standards call for an integrated approach that includes clinical content and skills, behavioral strategies (goal setting, problem-solving), and engagement with psychosocial concerns. Increasingly, such support is being adapted for online platforms that have the potential to promote patient access to this important resource. These curriculums need to be tailored to the needs of the intended populations, including addressing the “digital divide,” i.e., access to the technology required for implementation (58–61).

For more information on DSMES, see Section 5, “Facilitating Positive Health Behaviors and Well-being to Improve Health Outcomes.”

Cost Considerations for Medication-Taking Behaviors

The cost of diabetes medications and devices is an ongoing barrier to achieving glycemic goals. Up to 25% of people with diabetes who are prescribed insulin report cost-related insulin underuse (62). Insulin underuse due to cost has also been termed “cost-related medication non-adherence” (here referred to as cost-related barriers to medication use). There are recommendations from the ADA Insulin Access and Affordability Working Group for approaches to this issue from a systems level (63). Recommendations including concepts such as cost-sharing for insured people with diabetes should be based on the lowest price available, the list price for insulins that closely reflects the net price, and health plans that ensure people with diabetes can access insulin without undue administrative burden or excessive cost (63). In 2023, three major insulin manufacturers lowered the prices

of insulin, which may help reduce the financial burden of diabetes management, although costs for insulin delivery and glucose monitoring remain high. People with diabetes should be screened for financial burden of treatment, cost-related barriers to medication use, and rationing of other essential services due to medical costs (64).

The cost of medications (not only insulin) influences prescribing patterns and medication use because of burden on the person with diabetes and lack of secondary payer support (public and private insurance) for effective approved glucose-lowering, cardiovascular disease risk-reducing, and weight management therapeutics. Financial barriers remain a major source of health disparities, and costs should be a focus of treatment goals (65). (See *TAILORING TREATMENT FOR SOCIAL CONTEXT* and *TREATMENT CONSIDERATIONS*.) Reduction in cost-related barriers to medication use is associated with better biologic and psychologic outcomes, including quality of life (66).

Access to Care and Quality Improvement

The Affordable Care Act and Medicaid expansion have increased access to care for many individuals with diabetes, emphasizing the protection of people with pre-existing conditions, health promotion, and disease prevention (67). In fact, health insurance coverage increased from 84.7% in 2009 to 90.1% in 2016 for adults with diabetes aged 18–64 years. As of early 2022, more than 35 million people in the U.S. were enrolled in some form of Affordable Care Act–related health insurance (68). Coverage for those aged ≥ 65 years remained nearly universal (69). People with diabetes who have either private or public insurance coverage are more likely to meet quality indicators for diabetes care (70). As mandated by the Affordable Care Act, the Agency for Healthcare Research and Quality developed a National Quality Strategy based on triple aims that include improving the health of a population, overall quality and patient experience of care, and per capita cost (71,72). As health care systems and practices adapt to the changing landscape of health care, it will be important to integrate traditional disease-specific metrics with measures of patient experience, as well as cost, in assessing the quality of diabetes care (73,74). Information and guidance specific to quality improvement and practice

transformation for diabetes care are available from the National Institute of Diabetes and Digestive and Kidney Diseases guidance on diabetes care and quality (75). Using patient registries and EHRs, health systems can evaluate the quality of diabetes care being delivered and perform intervention cycles as part of quality improvement strategies (76). Improvement of health literacy and numeracy is also a necessary component to improve care (77,78). Critical to these efforts is health professional adherence to clinical practice recommendations (**Table 4.1**) and the use of accurate, reliable data metrics that include sociodemographic variables to examine health equity within and across populations (79).

In addition to quality improvement efforts, other strategies that simultaneously improve the quality of care and potentially reduce costs are gaining momentum and include reimbursement structures that, in contrast to visit-based billing, reward the provision of appropriate and high-quality care to achieve metabolic goals (80), value-based payments, and incentives that accommodate personalized care goals (7,81). (Also see *COST CONSIDERATIONS FOR MEDICATION-TAKING BEHAVIORS*, above, regarding cost-related barriers to medication use.)

TAILORING TREATMENT FOR SOCIAL CONTEXT

Recommendations

1.5 Assess food insecurity, housing insecurity/homelessness, financial barriers, and social capital/social community support to inform treatment decisions, with referral to appropriate local community resources. **A**

1.6 Provide people with diabetes with additional self-management support from lay health coaches, navigators, or community health workers when available. **A**

1.7 Consider the involvement of community health workers to support the management of diabetes and cardiovascular risk factors, especially in underserved communities and health care systems. **B**

Health inequities related to diabetes and its complications are well documented, are heavily influenced by SDOH, and have

been associated with greater risk for diabetes, higher population prevalence, and poorer diabetes outcomes (82–86). SDOH are defined as the economic, environmental, political, and social conditions in which people live and are responsible for a major part of health inequality worldwide (87). Greater exposure to adverse SDOH over the life course results in poor health (88). The ADA recognizes the association between social and environmental factors and the prevention and treatment of diabetes and has issued a call for research that seeks to better understand how social determinants influence behaviors and how the relationships between these variables might be modified for the prevention and management of diabetes (89,90). While a comprehensive strategy to reduce diabetes-related health inequities in populations has not been formally studied, general recommendations from other chronic disease management and prevention models can be drawn upon to inform systems-level strategies in diabetes (91). For example, the National Academy of Medicine has published a framework for educating health care professionals on the importance of SDOH (92). Furthermore, there are resources available for the inclusion of standardized sociodemographic variables in EHRs to facilitate the measurement of health inequities and the impact of interventions designed to reduce those inequities (74,92,93).

SDOH are not consistently recognized and often go undiscussed in the clinical encounter (85). Among people with chronic illnesses, two-thirds of those who reported not taking medications as prescribed due to cost-related barriers to medication use never shared this with their physician (94). A study using data from the National Health Interview Survey (NHIS) (85) found that one-half of adults with diabetes reported financial stress and one-fifth reported food insecurity. A Canadian study noted an association of one or more adverse SDOH and health care utilization and poor diabetes outcomes in high-risk children with type 1 diabetes (94). It is therefore important for people with diabetes to be screened for SDOH during clinical encounters and be referred to appropriate clinical and community resources to address these needs. Health systems may benefit from compiling an inventory of such resources to facilitate referrals at the point of care. Policies and payment models that support

addressing SDOH, both within and outside the health care setting, are needed to ensure that these efforts are both feasible and sustainable. One example of a statewide payment model that incentivizes value-based care, addressing SDOH and funding community-based health care professionals, is the Maryland Total Cost of Care Model, although it is currently limited by a narrow focus such as preventing diabetes rather than overall diabetes care quality (95,96).

Another population in which such issues must be considered is older adults, for whom social difficulties may impair quality of life and increase the risk of functional dependency (97) (see Section 13, “Older Adults,” for a detailed discussion of social considerations in older adults). Creating systems-level mechanisms to screen for SDOH may help overcome structural barriers and communication gaps between people with diabetes and health care professionals (85,98). Pilot studies have proven the effectiveness of identifying SDOH by using validated screening tools (99). In addition, brief, validated screening tools for some SDOH exist and could facilitate discussion around factors that significantly impact treatment during the clinical encounter. Below is a discussion of assessment and treatment considerations in the context of food insecurity, homelessness, limited English proficiency, limited health literacy, and low literacy.

Food Insecurity

Food insecurity is the unreliable availability of nutritious food and the inability to consistently obtain food without resorting to socially unacceptable practices. Over 18% of the U.S. population reported food insecurity between 2005 and 2014 (100). The rate is higher in some racial and ethnic minority groups, including African American and Latino populations, low-income households, and homes headed by single mothers. The food insecurity rate in individuals with diabetes may be up to 20% (101). Additionally, the risk for type 2 diabetes is increased twofold in those with food insecurity (89) and has been associated with lower engagement in self-care behaviors and medication use, depression, diabetes distress, and worse glycemic management when compared with individuals who are food secure (102–104). Older adults with food insecurity are more likely

to have emergency department visits and hospitalizations compared with older adults who do not report food insecurity (105). Risk for food insecurity can be assessed with a validated two-item screening tool (106) that includes the following statements: 1) “Within the past 12 months, we worried whether our food would run out before we got money to buy more” and 2) “Within the past 12 months the food we bought just didn’t last, and we didn’t have money to get more.” An affirmative response to either statement had a sensitivity of 97% and specificity of 83%. Interventions such as food prescription programs are considered promising to address food insecurity by integrating community resources into primary care settings and directly dealing with food deserts in underserved communities (107,108).

Treatment Considerations

In those with diabetes and food insecurity, the priority is mitigating the increased risk for uncontrolled hyperglycemia and severe hypoglycemia. The reasons for the increased risk of hyperglycemia include the steady consumption of inexpensive carbohydrate-rich processed foods, binge eating, financial constraints to filling diabetes medication prescriptions, and anxiety and depression leading to poor diabetes self-care behaviors. Hypoglycemia can occur due to inadequate or erratic carbohydrate consumption following the administration of sulfonylureas or insulin. See **Tables 9.2–9.4** for drug-specific and patient factors, including cost and risk of hypoglycemia, which may be important considerations for adults with food insecurity and type 2 diabetes. Health care professionals should consider these factors when making treatment decisions for people with food insecurity and seek local resources to help people with diabetes and their family members obtain nutritious food more regularly (109).

Homelessness and Housing Insecurity

Homelessness and housing insecurity often accompany other barriers that limit diabetes self-management. Food insecurity, lack of insurance, cognitive impairment, behavioral health deficiencies, and low literacy and numeracy skills are also factors (110). The prevalence of diabetes in the homeless population is estimated to be around 8% (111). Additionally, people

with diabetes who are homeless need secure places to keep their diabetes supplies and refrigerator access to properly store their insulin and take it on a regular schedule. The risk for homelessness can be ascertained using a brief risk assessment tool developed and validated for use among veterans (112). Housing insecurity has also been shown to be directly associated with a person’s ability to maintain their diabetes self-management (113). Given the potential challenges, health care professionals who care for either homeless or housing-insecure individuals should be familiar with resources or have access to social workers who can facilitate stable housing for these individuals as a way to improve diabetes care (114).

Migrant and Seasonal Agricultural Workers

Migrant and seasonal agricultural workers may have a higher risk of type 2 diabetes than the overall population. While migrant farmworker-specific data are lacking, most agricultural workers in the U.S. are Latino, a population with a high rate of type 2 diabetes. In addition, living in severe poverty brings with it food insecurity, high chronic stress, and an increased risk of diabetes; there is also an association between the use of certain pesticides and the incidence of diabetes (115).

Data from the Department of Labor indicate that there are 2.5–3 million agricultural workers in the U.S. These agricultural workers travel throughout the country, serving as the backbone for a multibillion-dollar agricultural industry. According to 2021 health center data, 175 health centers across the U.S. reported that they provided health care services to 893,260 adult agricultural patients, and 91,124 had encounters for diabetes (10.2%) (116).

Migrant farmworkers encounter numerous and overlapping barriers to receiving care. Migration, which may occur as frequently as every few weeks for farmworkers, disrupts care. In addition, cultural and linguistic barriers, lack of transportation and money, lack of available work hours, unfamiliarity with new communities, lack of access to resources, and other barriers prevent migrant farmworkers from accessing health care. Without regular care, those with diabetes may suffer severe and often expensive complications that affect quality of life. Nontraditional care delivery models, including mobile integrated health and telehealth, can be

leveraged to improve access to high quality care.

Health care professionals should be attuned to all patients' working and living conditions. For example, if a migrant farmworker with diabetes presents for care, appropriate referrals should be initiated to social workers and community resources, as available, to assist with removing barriers to care.

Language Barriers

Health care professionals who care for non-English speakers should develop or offer educational programs and materials in culturally adaptive languages specific to these individuals with the specific goals of preventing diabetes and building diabetes awareness in people who cannot easily read or write in English. The National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care (National CLAS Standards) provide guidance on how health care professionals can reduce language barriers by improving their cultural competency, addressing health literacy, and ensuring communication with language assistance (117). In addition, the National CLAS Standards website offers several resources and materials that can be used to improve the quality of care delivery to non-English-speaking individuals (117).

Health Literacy and Numeracy

Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate decisions (77). Health literacy is strongly associated with patients engaging in complex disease management and self-care (118). Approximately 80 million adults in the U.S. are estimated to have limited or low health literacy (78). Clinicians and diabetes care and education specialists should ensure they provide easy-to-understand information and reduce unnecessary complexity when developing care plans with people with diabetes. Interventions addressing low health literacy in populations with diabetes seem effective in improving diabetes outcomes, including ones focusing primarily on patient education, self-care training, or disease management. Combining easily adapted materials with formal diabetes education demonstrates effectiveness on clinical and behavioral outcomes in

populations with low literacy (119). However, evidence supporting these strategies is largely limited to observational studies. More research is needed to investigate the most effective strategies for enhancing both acquisition and retention of diabetes knowledge and examine different media and strategies for delivering interventions to people with diabetes (120).

Health numeracy is also essential in diabetes prevention and management. Health numeracy requires primary numeric skills, applied health numeracy, and interpretive health numeracy. An emotional component also affects a person's ability to understand concepts of risk, probability, and communication of scientific evidence (121). People with prediabetes or diabetes often need to perform numeric tasks such as interpreting food labels and blood glucose levels to make treatment decisions such as medication dosing. Thus, both health literacy and numeracy are necessary for enabling effective communication between people with diabetes and health professionals, arriving at a treatment plan, and making diabetes self-management task decisions. If people with diabetes appear not to understand concepts associated with treatment decisions, both can be assessed using standardized screening measures (122). Adjunctive education and support may be indicated if limited health literacy and numeracy are barriers to optimal care decisions (31).

Social Capital and Community Support

Social capital, which comprises community and personal network instrumental support, promotes better health, whereas lack of social support is associated with poorer health outcomes in individuals with diabetes (90). Of particular concern are the SDOH, including racism and discrimination, which are likely to be lifelong (123). These factors are rarely addressed in routine treatment or disease management but may be underlying reasons for lower engagement in self-care behaviors and medication use. Community resources are recognized by the CCM as a core component of chronic care management (10), with a particular need to incorporate relevant social support networks. There is currently a paucity of evidence regarding enhancing these resources for those most

likely to benefit from such intervention strategies.

Health care community linkages are receiving increasing attention from the American Medical Association, the Agency for Healthcare Research and Quality, and others to promote the translation of clinical recommendations for nutrition and physical activity in real-world settings (124). Community health workers (CHWs) (125), community paramedics (126), peer supporters (127–129), and lay leaders (130) may assist in the delivery of DSMES services (92,131), particularly in underserved communities. The American Public Health Association defines a CHW as a "frontline public health worker who is a trusted member of and/or has an unusually close understanding of the community served" (132). CHWs can be part of a cost-effective, evidence-based strategy to improve the management of diabetes and cardiovascular risk factors in underserved communities and health care systems (133). The CHW scope of practice in areas such as outreach and communication, advocacy, social support, basic health education, referrals to community clinics, and other services has successfully provided social and primary preventive services to underserved populations in rural and hard-to-reach communities. Even though CHWs' core competencies are not clinical in nature, in some circumstances, clinicians may delegate limited clinical tasks to CHWs. If such is the case, these tasks must always be performed under the direction and supervision of the delegating health professional and following state health care laws and statutes (134,135). Community paramedics are advanced paramedics with training in chronic disease monitoring and education, medication management, care coordination, and SDOH in addition to their emergency medical services expertise. While their scope of practice varies across states, community paramedics can engage and support people living with diabetes under the direction of a medical director by delivering diabetes education, assisting with medication management, performing health assessments and wound care, and connecting people with diabetes and care partners with clinical and community resources (126).

References

1. Kindig D, Stoddart G. What is population health? *Am J Public Health* 2003;93:380–383

2. Institute of Medicine (US) Committee on Quality of Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century*. Washington, DC, National Academies Press, 2001
3. Haire-Joshu D, Hill-Briggs F. The next generation of diabetes translation: a path to health equity. *Annu Rev Public Health* 2019;40:391–410
4. Fang M, Wang D, Coresh J, Selvin E. Trends in diabetes treatment and control in U.S. adults, 1999–2018. *N Engl J Med* 2021;384:2219–2228
5. Kerr EA, Heisler M, Krein SL, et al. Beyond comorbidity counts: how do comorbidity type and severity influence diabetes patients' treatment priorities and self-management? *J Gen Intern Med* 2007;22:1635–1640
6. Fernandez A, Schillinger D, Warton EM, et al. Language barriers, physician-patient language concordance, and glycemic control among insured Latinos with diabetes: the Diabetes Study of Northern California (DISTANCE). *J Gen Intern Med* 2011;26:170–176
7. TRIAD Study Group. Health systems, patients factors, and quality of care for diabetes: a synthesis of findings from the TRIAD study. *Diabetes Care* 2010;33:940–947
8. Parker ED, Lin J, Mahoney T, et al. Economic costs of diabetes in the U.S. in 2022. *Diabetes Care* 1 November 2023 [Epub ahead of print]. DOI: 10.2337/dci23-0085
9. Patel MR, Zhang G, Heisler M, et al. Measurement and validation of the comprehensive score for financial toxicity (COST) in a population with diabetes. *Diabetes Care* 2022;45:2535–2543
10. Stellefson M, Dipnarine K, Stopka C. The chronic care model and diabetes management in US primary care settings: a systematic review. *Prev Chronic Dis* 2013;10:E26
11. Wan EYF, Fung CSC, Jiao FF, et al. Five-year effectiveness of the multidisciplinary Risk Assessment and Management Programme-Diabetes Mellitus (RAMP-DM) on diabetes-related complications and health service uses—a population-based and propensity-matched cohort study. *Diabetes Care* 2018;41:49–59
12. Jiao FF, Fung CSC, Wan EYF, et al. Five-year cost-effectiveness of the multidisciplinary Risk Assessment and Management Programme-Diabetes Mellitus (RAMP-DM). *Diabetes Care* 2018;41:250–257
13. Coleman K, Austin BT, Brach C, Wagner EH. Evidence on the Chronic Care Model in the new millennium. *Health Aff (Millwood)* 2009;28:75–85
14. Piatt GA, Anderson RM, Brooks MM, et al. 3-Year follow-up of clinical and behavioral improvements following a multifaceted diabetes care intervention: results of a randomized controlled trial. *Diabetes Educ* 2010;36:301–309
15. Katon WJ, Lin EH, Von Korff M, et al. Collaborative care for patients with depression and chronic illnesses. *N Engl J Med* 2010;363:2611–2620
16. Herges JR, Matulis JC 3rd, Kessler ME, Ruehmann LL, Mara KC, McCoy RG. Evaluation of an enhanced primary care team model to improve diabetes care. *Ann Fam Med* 2022;20:505–511
17. Tricco AC, Ivers NM, Grimshaw JM, et al. Effectiveness of quality improvement strategies on the management of diabetes: a systematic review and meta-analysis. *Lancet* 2012;379:2252–2261
18. Schmittiel JA, Gopalan A, Lin MW, Banerjee S, Chau CV, Adams AS. Population health management for diabetes: health care system-level approaches for improving quality and addressing disparities. *Curr Diab Rep* 2017;17:31
19. Peterson KA, Carlin CS, Solberg LI, Normington J, Lock EF. Care management processes important for high-quality diabetes care. *Diabetes Care* 2023;46:1762–1769
20. O'Connor PJ, Bodkin NL, Fradkin J, et al. Diabetes performance measures: current status and future directions. *Diabetes Care* 2011;34:1651–1659
21. Jaffe MG, Lee GA, Young JD, Sidney S, Go AS. Improved blood pressure control associated with a large-scale hypertension program. *JAMA* 2013;310:699–705
22. Peikes D, Chen A, Schore J, Brown R. Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries: 15 randomized trials. *JAMA* 2009;301:603–618
23. Raebel MA, Schmittiel J, Karter AJ, Konieczny JL, Steiner JF. Standardizing terminology and definitions of medication adherence and persistence in research employing electronic databases. *Med Care* 2013;51(Suppl. 3):S11–S21
24. Feifer C, Nemeth L, Nietert PJ, et al. Different paths to high-quality care: three archetypes of top-performing practice sites. *Ann Fam Med* 2007;5:233–241
25. Reed M, Huang J, Graetz I, et al. Outpatient electronic health records and the clinical care and outcomes of patients with diabetes mellitus. *Ann Intern Med* 2012;157:482–489
26. Cebul RD, Love TE, Jain AK, Hebert CJ. Electronic health records and quality of diabetes care. *N Engl J Med* 2011;365:825–833
27. Battersby M, Von Korff M, Schaefer J, et al. Twelve evidence-based principles for implementing self-management support in primary care. *Jt Comm J Qual Patient Saf* 2010;36:561–570
28. Grant RW, Wald JS, Schnipper JL, et al. Practice-linked online personal health records for type 2 diabetes mellitus: a randomized controlled trial. *Arch Intern Med* 2008;168:1776–1782
29. Herges JR, Neumiller JJ, McCoy RG. Easing the financial burden of diabetes management: a guide for patients and primary care clinicians. *Clin Diabetes* 2021;39:427–436
30. Kobe EA, Lewinski AA, Jeffreys AS, et al. Implementation of an intensive telehealth intervention for rural patients with clinic-refractory diabetes. *J Gen Intern Med* 2022;37:3080–3088
31. Young-Hyman D, de Groot M, Hill-Briggs F, Gonzalez JS, Hood K, Peyrot M. Psychosocial care for people with diabetes: a position statement of the American Diabetes Association. *Diabetes Care* 2016;39:2126–2140
32. Davis J, Fischl AH, Beck J, et al. 2022 National standards for diabetes self-management education and support. *Sci Diabetes Self Manag Care* 2022;48:44–59
33. Pullen-Smith B, Carter-Edwards L, Leathers KH. Community health ambassadors: a model for engaging community leaders to promote better health in North Carolina. *J Public Health Manag Pract* 2008;14(Suppl.):S73–S81
34. Levensgood TW, Peng Y, Xiong KZ, et al; Community Preventive Services Task Force. Team-based care to improve diabetes management: a community guide meta-analysis. *Am J Prev Med* 2019;57:e17–e26
35. Davidson MB. How our current medical care system fails people with diabetes: lack of timely, appropriate clinical decisions. *Diabetes Care* 2009;32:370–372
36. Selby JV, Uratsu CS, Fireman B, et al. Treatment intensification and risk factor control: toward more clinically relevant quality measures. *Med Care* 2009;47:395–402
37. Raebel MA, Ellis JL, Schroeder EB, et al. Intensification of antihyperglycemic therapy among patients with incident diabetes: a Surveillance Prevention and Management of Diabetes Mellitus (SUPREME-DM) study. *Pharmacoepidemiol Drug Saf* 2014;23:699–710
38. Grant RW, Pabon-Nau L, Ross KM, Youatt EJ, Pandiscio JC, Park ER. Diabetes oral medication initiation and intensification: patient views compared with current treatment guidelines. *Diabetes Educ* 2011;37:78–84
39. Tamhane S, Rodriguez-Gutierrez R, Hargraves I, Montori VM. Shared decision-making in diabetes care. *Curr Diab Rep* 2015;15:112
40. Garg AX, Adhikari NK, McDonald H, et al. Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: a systematic review. *JAMA* 2005;293:1223–1238
41. Smith SA, Shah ND, Bryant SC, et al.; Evidens Research Group. Chronic care model and shared care in diabetes: randomized trial of an electronic decision support system. *Mayo Clin Proc* 2008;83:747–757
42. Stone RA, Rao RH, Sevick MA, et al. Active care management supported by home telemonitoring in veterans with type 2 diabetes: the DiTel randomized controlled trial. *Diabetes Care* 2010;33:478–484
43. Bojadziewski T, Gabbay RA. Patient-centered medical home and diabetes. *Diabetes Care* 2011;34:1047–1053
44. McManus LS, Dominguez-Cancino KA, Stanek MK, et al. The patient-centered medical home as an intervention strategy for diabetes mellitus: a systematic review of the literature. *Curr Diabetes Rev* 2021;17:317–331
45. Telligen and gpTRAC (Great Plains Telehealth Resource & Assistance Center). *Telehealth Start-Up and Resource Guide Version 1.1*, October 2014. Accessed 24 September 2023. Available from https://www.healthit.gov/sites/default/files/telehealthguide_final_0.pdf
46. American Medical Association. AMA telehealth quick guide. Accessed 24 September 2023. Available from <https://www.ama-assn.org/practice-management/digital/ama-telehealth-quick-guide>
47. Mullur RS, Hsiao JS, Mueller K. Telemedicine in diabetes care. *Am Fam Physician* 2022;105:281–288
48. Lee SWH, Chan CKY, Chua SS, Chaiyakunapruk N. Comparative effectiveness of telemedicine strategies on type 2 diabetes management: a systematic review and network meta-analysis. *Sci Rep* 2017;7:12680
49. Xu T, Pujara S, Sutton S, Rhee M. Telemedicine in the management of type 1 diabetes. *Prev Chronic Dis* 2018;15:E13
50. Faruque LI, Wiebe N, Ehteshami-Afshar A, et al.; Alberta Kidney Disease Network. Effect of telemedicine on glycosylated hemoglobin in diabetes: a systematic review and meta-analysis of randomized trials. *CMAJ* 2017;189:E341–E364

51. Marcolino MS, Maia JX, Alkmim MB, Boersma E, Ribeiro AL. Telemedicine application in the care of diabetes patients: systematic review and meta-analysis. *PLoS One* 2013;8:e79246
52. Heitkemper EM, Mamykina L, Travers J, Smaldone A. Do health information technology self-management interventions improve glycemic control in medically underserved adults with diabetes? A systematic review and meta-analysis. *J Am Med Inform Assoc* 2017;24:1024–1035
53. Timpel P, Oswald S, Schwarz PEH, Harst L. Mapping the evidence on the effectiveness of telemedicine interventions in diabetes, dyslipidemia, and hypertension: an umbrella review of systematic reviews and meta-analyses. *J Med Internet Res* 2020;22:e16791
54. McDaniel CC, Kavookjian J, Whitley HP. Telehealth delivery of motivational interviewing for diabetes management: a systematic review of randomized controlled trials. *Patient Educ Couns* 2022;105:805–820
55. Reagan L, Pereira K, Jefferson V, et al. Diabetes self-management training in a virtual environment. *Diabetes Educ* 2017;43:413–421
56. Garcia JF, Fogel J, Reid M, Bisno DI, Raymond JK. Telehealth for young adults with diabetes: addressing social determinants of health. *Diabetes Spectr* 2021;34:357–362
57. Haynes SC, Kompala T, Neinstein A, Rosenthal J, Crossen S. Disparities in telemedicine use for subspecialty diabetes care during COVID-19 shelter-in-place orders. *J Diabetes Sci Technol* 2021;15:986–992
58. Dack C, Ross J, Stevenson F, et al. A digital self-management intervention for adults with type 2 diabetes: combining theory, data and participatory design to develop HeLP-Diabetes. *Internet Interv* 2019;17:100241
59. Lee MK, Lee DY, Ahn HY, Park CY. A novel user utility score for diabetes management using tailored mobile coaching: secondary analysis of a randomized controlled trial. *JMIR Mhealth Uhealth* 2021;9:e17573
60. Dening J, Islam SMS, George E, Maddison R. Web-based interventions for dietary behavior in adults with type 2 diabetes: systematic review of randomized controlled trials. *J Med Internet Res* 2020;22:e16437
61. Omar MA, Hasan S, Palaian S, Mahameed S. The impact of a self-management educational program coordinated through WhatsApp on diabetes control. *Pharm Pract (Granada)* 2020;18:1841
62. Herkert D, Vijayakumar P, Luo J, et al. Cost-related insulin underuse among patients with diabetes. *JAMA Intern Med* 2019;179:112–114
63. Cefalu WT, Dawes DE, Gavlak G, et al.; Insulin Access and Affordability Working Group. Insulin Access and Affordability Working Group: conclusions and recommendations. *Diabetes Care* 2018;41:1299–1311
64. American Diabetes Association. Insulin cost and affordability: leading the fight for insulin affordability. Accessed 10 April 2023. Available from <https://diabetes.org/tools-support/insulin-affordability>
65. Taylor SI. The high cost of diabetes drugs: disparate impact on the most vulnerable patients. *Diabetes Care* 2020;43:2330–2332
66. Taha MB, Valero-Elizondo J, Yahya T, et al. Cost-related medication nonadherence in adults with diabetes in the United States: the National Health Interview Survey 2013–2018. *Diabetes Care* 2022;45:594–603
67. Myerson R, Laiteerapong N. The Affordable Care Act and diabetes diagnosis and care: exploring the potential impacts. *Curr Diab Rep* 2016;16:27
68. Office of the Assistant Secretary for Planning and Evaluation. Health coverage changes under the Affordable Care Act. End of 2021 update. 2022. Accessed 11 August 2023. Available from <https://aspe.hhs.gov/reports/health-coverage-changes-2021-update>
69. Casagrande SS, McEwen LN, Herman WH. Changes in health insurance coverage under the Affordable Care Act: a national sample of U.S. adults with diabetes, 2009 and 2016. *Diabetes Care* 2018;41:956–962
70. Doucette ED, Salas J, Scherrer JF. Insurance coverage and diabetes quality indicators among patients in NHANES. *Am J Manag Care* 2016;22:484–490
71. Stiefel M, Nolan K. Measuring the triple aim: a call for action. *Popul Health Manag* 2013;16:219–220
72. Agency for Healthcare Research & Quality. About the National Quality Strategy. Accessed 24 September 2023. Available from <https://www.ahrq.gov/workingforquality/about/index.html>
73. Burstin H, Johnson K. Getting to better care and outcomes for diabetes through measurement. *Am J Manag Care* 2016;22:SP145–SP146
74. National Quality Forum. National voluntary consensus standards for ambulatory care—measuring healthcare disparities. 2008. Accessed 24 September 2023. Available from https://www.qualityforum.org/Publications/2008/03/National_Voluntary_Consensus_Standards_for_Ambulatory_Care%2E%80%94Measuring_Healthcare_Disparities.aspx
75. National Institute of Diabetes and Digestive and Kidney Diseases. Diabetes for health professionals. Accessed 24 September 2023. Available from <https://www.niddk.nih.gov/health-information/professionals/clinical-tools-patient-management/diabetes>
76. O'Connor PJ, Sperl-Hillen JM, Fazio CJ, Averbeck BM, Rank BH, Margolis KL. Outpatient diabetes clinical decision support: current status and future directions. *Diabet Med* 2016;33:734–741
77. Institute of Medicine Committee on Health Literacy. *Health Literacy: A Prescription to End Confusion*. Nielsen-Bohlman L, Panzer AM, Kindig DA, Eds. Washington, DC, National Academies Press, 2004
78. Schaffler J, Leung K, Tremblay S, et al. The effectiveness of self-management interventions for individuals with low health literacy and/or low income: a descriptive systematic review. *J Gen Intern Med* 2018;33:510–523
79. Centers for Medicare & Medicaid Services. CMS framework for health equity. Accessed 24 September 2023. Available from <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/framework-for-health-equity>
80. Rosenthal MB, Cutler DM, Feder J. The ACO rules—striking the balance between participation and transformative potential. *N Engl J Med* 2011;365:e6
81. Washington AE, Lipstein SH. The Patient-Centered Outcomes Research Institute—promoting better information, decisions, and health. *N Engl J Med* 2011;365:e31
82. Hutchinson RN, Shin S. Systematic review of health disparities for cardiovascular diseases and associated factors among American Indian and Alaska Native populations. *PLoS One* 2014;9:e80973
83. Borschuk AP, Everhart RS. Health disparities among youth with type 1 diabetes: a systematic review of the current literature. *Fam Syst Health* 2015;33:297–313
84. Walker RJ, Strom Williams J, Egede LE. Influence of race, ethnicity and social determinants of health on diabetes outcomes. *Am J Med Sci* 2016;351:366–373
85. Patel MR, Piette JD, Resnicow K, Kowalski-Dobson T, Heisler M. Social determinants of health, cost-related nonadherence, and cost-reducing behaviors among adults with diabetes: findings from the National Health Interview Survey. *Med Care* 2016;54:796–803
86. Steve SL, Tung EL, Schlichtman JJ, Peek ME. Social disorder in adults with type 2 diabetes: building on race, place, and poverty. *Curr Diab Rep* 2016;16:72
87. Commission on Social Determinants of Health. *Closing the gap in a generation: health equity through action on the social determinants of health*. Geneva, World Health Organization, 2008. Accessed 24 September 2023. Available from <https://www.who.int/publications/i/item/WHO-IER-CSDH-08.1>
88. Dixon B, Peña MM, Taveras EM. Lifecourse approach to racial/ethnic disparities in childhood obesity. *Adv Nutr* 2012;3:73–82
89. Hill JO, Galloway JM, Goley A, et al. Scientific statement: socioecological determinants of pre-diabetes and type 2 diabetes. *Diabetes Care* 2013;36:2430–2439
90. Hill-Briggs F, Adler NE, Berkowitz SA, et al. Social determinants of health and diabetes: a scientific review. *Diabetes Care* 2020;44:258–279
91. U.S. Department of Health and Human Services. Secretary's Advisory Committee on National Health Promotion and Disease Prevention Objectives for 2020. Accessed 11 August 2023. Available from <https://health.gov/our-work/national-health-initiatives/healthy-people/healthy-people-2020/secretarys-advisory-committee-2020>
92. National Academy of Sciences. *A Framework for Educating Health Professionals to Address the Social Determinants of Health*. 2016. Accessed 24 September 2023. Available from <https://www.ncbi.nlm.nih.gov/pubmed/27854400>
93. Chin MH, Clarke AR, Nocon RS, et al. A roadmap and best practices for organizations to reduce racial and ethnic disparities in health care. *J Gen Intern Med* 2012;27:992–1000
94. Hershey JA, Morone J, Lipman TH, Hawkes CP. Social determinants of health, goals and outcomes in high-risk children with type 1 diabetes. *Can J Diabetes* 2021;45:444–450.e1
95. Jiang DH, O'Connor PJ, Huguet N, Golden SH, McCoy RG. Modernizing diabetes care quality measures. *Health Aff (Millwood)* 2022;41:955–962
96. Centers for Medicare & Medicaid Services. Maryland Total Cost of Care Model. Accessed 15 September 2023. Available from <https://www.cms.gov/priorities/innovation/innovation-models/md-tccm>

97. Laiteerapong N, Karter AJ, Liu JY, et al. Correlates of quality of life in older adults with diabetes: the diabetes & aging study. *Diabetes Care* 2011;34:1749–1753
98. O’Gurek DT, Henke C. A practical approach to screening for social determinants of health. *Fam Pract Manag* 2018;25:7–12
99. Page-Reeves J, Kaufman W, Bleecker M, et al. Addressing social determinants of health in a clinic setting: the WellRx pilot in Albuquerque, New Mexico. *J Am Board Fam Med* 2016;29:414–418
100. Walker RJ, Grusnick J, Garacci E, Mendez C, Egede LE. Trends in food insecurity in the USA for individuals with prediabetes, undiagnosed diabetes, and diagnosed diabetes. *J Gen Intern Med* 2019;34:33–35
101. Berkowitz SA, Karter AJ, Corbie-Smith G, et al. Food insecurity, food “deserts,” and glycemic control in patients with diabetes: a longitudinal analysis. *Diabetes Care* 2018;41:1188–1195
102. Heerman WJ, Wallston KA, Osborn CY, et al. Food insecurity is associated with diabetes self-care behaviours and glycaemic control. *Diabet Med* 2016;33:844–850
103. Silverman J, Krieger J, Kiefer M, Hebert P, Robinson J, Nelson K. The relationship between food insecurity and depression, diabetes distress and medication adherence among low-income patients with poorly-controlled diabetes. *J Gen Intern Med* 2015;30:1476–1480
104. Walker RJ, Garacci E, Ozieh M, Egede LE. Food insecurity and glycemic control in individuals with diagnosed and undiagnosed diabetes in the United States. *Prim Care Diabetes* 2021;15:813–818
105. Schroeder EB, Zeng C, Sterrett AT, Kimpo TK, Paolino AR, Steiner JF. The longitudinal relationship between food insecurity in older adults with diabetes and emergency department visits, hospitalizations, hemoglobin A1c, and medication adherence. *J Diabetes Complications* 2019;33:289–295
106. Hager ER, Quigg AM, Black MM, et al. Development and validity of a 2-item screen to identify families at risk for food insecurity. *Pediatrics* 2010;126:e26–e32
107. Goddu AP, Roberson TS, Raffel KE, Chin MH, Peek ME. Food Rx: a community-university partnership to prescribe healthy eating on the South Side of Chicago. *J Prev Interv Community* 2015;43:148–162
108. Feinberg AT, Hess A, Passaretti M, Coolbaugh S, Lee TH. Prescribing food as a specialty drug. *NEJM Catalyst*. 10 April 2018. Accessed 24 September 2023. Available from <https://catalyst.nejm.org/doi/abs/10.1056/CAT.18.0212>
109. Seligman HK, Schillinger D. Hunger and socioeconomic disparities in chronic disease. *N Engl J Med* 2010;363:6–9
110. White BM, Logan A, Magwood GS. Access to diabetes care for populations experiencing homelessness: an integrated review. *Curr Diab Rep* 2016;16:112
111. Bernstein RS, Meurer LN, Plumb EJ, Jackson JL. Diabetes and hypertension prevalence in homeless adults in the United States: a systematic review and meta-analysis. *Am J Public Health* 2015;105:e46–e60
112. Montgomery AE, Fargo JD, Kane V, Culhane DP. Development and validation of an instrument to assess imminent risk of homelessness among veterans. *Public Health Rep* 2014;129:428–436
113. Stahre M, VanEenwyk J, Siegel P, Njai R. Housing insecurity and the association with health outcomes and unhealthy behaviors, Washington State, 2011. *Prev Chronic Dis* 2015;12:E109
114. Baxter AJ, Tweed EJ, Katikireddi SV, Thomson H. Effects of Housing First approaches on health and well-being of adults who are homeless or at risk of homelessness: systematic review and meta-analysis of randomised controlled trials. *J Epidemiol Community Health* 2019;73:379–387
115. Evangelou E, Ntritsos G, Chondrogiorgi M, et al. Exposure to pesticides and diabetes: a systematic review and meta-analysis. *Environ Int* 2016;91:60–68
116. Health Resources & Services Administration. 2022 Special populations funded programs. Accessed 17 May 2023. Available from <https://data.hrsa.gov/tools/data-reporting/special-populations>
117. U.S. Department of Health & Human Services. *National Standards for Culturally and Linguistically Appropriate Services (CLAS) in Health and Health Care*. Accessed 24 September 2023. Available from <https://thinkculturalhealth.hhs.gov/assets/pdfs/EnhancedNationalCLASStandards.pdf>
118. Aaby A, Friis K, Christensen B, Rowlands G, Maimal HT. Health literacy is associated with health behaviour and self-reported health: a large population-based study in individuals with cardiovascular disease. *Eur J Prev Cardiol* 2017;24:1880–1888
119. White RO, Eden S, Wallston KA, et al. Health communication, self-care, and treatment satisfaction among low-income diabetes patients in a public health setting. *Patient Educ Couns* 2015;98:144–149
120. Schillinger D, Piette J, Grumbach K, et al. Closing the loop: physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 2003;163:83–90
121. Schapira MM, Fletcher KE, Gilligan MA, et al. A framework for health numeracy: how patients use quantitative skills in health care. *J Health Commun* 2008;13:501–517
122. Carpenter CR, Kaphingst KA, Goodman MS, Lin MJ, Melson AT, Griffey RT. Feasibility and diagnostic accuracy of brief health literacy and numeracy screening instruments in an urban emergency department. *Acad Emerg Med* 2014;21:137–146
123. Williams DR, Lawrence JA, Davis BA. Racism and health: evidence and needed research. *Annu Rev Public Health* 2019;40:105–125
124. Agency for Healthcare Research and Quality. Clinical-community linkages. Accessed 24 September 2023. Available from <https://www.ahrq.gov/professionals/prevention-chronic-care/improve-community/index.html>
125. Egbujie BA, Delobelle PA, Levitt N, Puoane T, Sanders D, van Wyk B. Role of community health workers in type 2 diabetes mellitus self-management: a scoping review. *PLoS One* 2018;13:e0198424
126. Kasper AL, Myers LA, Carlson PN, et al. Diabetes management for community paramedics: development and implementation of a novel curriculum. *Diabetes Spectr* 2022;35:367–376
127. Heisler M, Vijan S, Makki F, Piette JD. Diabetes control with reciprocal peer support versus nurse care management: a randomized trial. *Ann Intern Med* 2010;153:507–515
128. Long JA, Jahnle EC, Richardson DM, Loewenstein G, Volpp KG. Peer mentoring and financial incentives to improve glucose control in African American veterans: a randomized trial. *Ann Intern Med* 2012;156:416–424
129. Fisher EB, Boothroyd RI, Elstad EA, et al. Peer support of complex health behaviors in prevention and disease management with special reference to diabetes: systematic reviews. *Clin Diabetes Endocrinol* 2017;3:4
130. Foster G, Taylor SJ, Eldridge SE, Ramsay J, Griffiths CJ. Self-management education programmes by lay leaders for people with chronic conditions. *Cochrane Database Syst Rev* 2007;4:CD005108
131. Piatt GA, Rodgers EA, Xue L, Zgibor JC. Integration and utilization of peer leaders for diabetes self-management support: results from Project SEED (Support, Education, and Evaluation in Diabetes). *Diabetes Educ* 2018;44:373–382
132. Rosenthal EL, Rush CH, Allen CG. *Understanding Scope and Competencies: A Contemporary Look at the United States Community Health Worker Field: Progress Report of the Community Health Worker (CHW) Core Consensus (C3) Project: Building National Consensus on CHW Core Roles, Skills, and Qualities*. CHW Central, 2016. Accessed 24 September 2023. Available from <https://files.ctctcdn.com/a907c850501/1c-1289f0-88cc-49c3-a238-66def942c147.pdf>
133. Guide to Community Preventive Services. Community health workers help patients manage diabetes. Updated 25 October 2022. Accessed 24 September 2023. Available from <https://www.thecommunityguide.org/content/community-health-workers-help-patients-manage-diabetes>
134. Cuellar AE, Calonge BN. The Community Preventive Services Task Force: 25 years of effectiveness, economics, and equity. *Am J Prev Med* 2022;62:e371–e373
135. The Network for Public Health Law. Legal considerations for community health workers and their employers. Accessed 21 September 2023. Available from <https://www.networkforphl.org/resources/legal-considerations-for-community-health-workers-and-their-employers/>