Clinical Introduction & References

Overview

Family physicians care for patients of all ages and treat a variety of conditions, both acute and chronic, in numerous clinical settings. While there are many clinical guidelines to assist clinicians, the sheer number of them can be overwhelming. Guidelines meant to assure high-quality, evidence-based care for patients are complex and may contradict clinical recommendations. It is also important to note that family physicians, though woefully underrepresented in the healthcare system, are usually the first line of defense to screen, diagnose and treat chronic diseases such as diabetes.

Much like primary care practices, patients are often faced with contextual barriers that prevent them from seeking treatment for their serious health conditions. Patients who have prediabetes or diabetes who are not adequately screened, who go undiagnosed, or who are diagnosed but do not adequately control their disease can experience a host of complications. As a result, diabetes has become an epidemic of mass proportions, which can only be overcome through clear practice guidelines, a clinical understanding of a patient's contextual barriers to care, and a priority to maximize the practice team to implement meaningful patient interventions.

Now more than ever, family physicians and their care teams need appropriate education and training on how to screen and diagnose patients with prediabetes and diabetes, which will help to decrease the number of patients who go undiagnosed and untreated.

Explaining Risk

The Centers for Disease Control and Prevention (CDC) in the 2014 National Diabetes Statistics Report estimates that over 9% of Americans (29.1 million people) have diabetes, but more than a quarter of these people have not been diagnosed with diabetes. In 2012, there were 1.7 million new cases of diabetes diagnosed in the United States and there was an estimated 86 million Americans with prediabetes.   Diabetes is the seventh leading cause of death in the United States; however it is likely vastly underreported.[1]

The incidence of diabetes in Ohio is higher than the national average, with the Ohio Behavioral Risk Factor Surveillance System (BRFSS) 2011 estimating that more than 10% of Ohio adults have been diagnosed with diabetes. In the 2007 report *Burden of Diabetes in Ohio,* the Office of Healthy Ohio with the Ohio Department of Health estimated the total cost of diabetes in Ohio at $5.9 billion. Compared with the general population, African Americans in Ohio who have diabetes are more likely to die from diabetes than the general diabetic population.[2]

Needs Assessment

In the National Ambulatory Medicine Care Survey, the CDC found that diabetes was one of the frequent diagnoses for physician office visits and that between 1996 and 2006 there had been a forty% increase in the number of office visits related to diabetes.[3]

The Diabetes Control and Complications Trial (DCCT) was conducted from 1983 to 1993 and showed that intensive blood glucose control decreased diabetic eye disease by 76%, kidney disease by 50%,

and nerve disease by 60%. The follow-up study *Epidemiology of Diabetes Interventions and Complications* (EDIC) showed that intensive blood glucose control reduces the risk of any cardiovascular event by 42% and nonfatal heart attack, stroke, or death from cardiovascular causes by 57%.[4]

Evidence-based protocols put into practice have proven to positively impact the health of patients diagnosed with diabetes. However, a 2007 study examining baseline medical knowledge found that residents in both family medicine and internal medicine had significant deficits in their diabetes understanding. For family medicine residents, only 53% knew the correct fasting blood glucose diagnostic criteria for diabetes and 43% knew the peak time for regular insulin.[5]

A study from 2013 showed that patients only get 56% of the recommended care for their chronic conditions.[6] A paper from 2001 that looked at the reasons that many patients with diabetes do not receive the care that guidelines recommend, found that contextual factors are more important barriers to optimal care than physician attitudes or knowledge. Examples of contextual barriers to optimal diabetes management include time constraints and practice economics in the primary care practice setting, uneven distribution of clinicians, low socioeconomic status among patients, low reimbursement rates, and lack of focus on prevention within the United States health care system.[7]

To prove this point, a recent study released by the Robert Graham Center found that almost 80% of adult, clinical visits to a diabetic specialist were for a single issue related to their diagnosis. However, 55% of clinical visits to primary care physicians involved care for their diabetes and at least one additional diagnosis. The study also finds that nearly 90% of primary care appointments consist of four separate diagnoses .[8] A 2016 meta-analysis published in *the New England Journal of Medicine* (JAMA) showed that most quality improvement strategies produced small to modest improvements in glycemic control.   Interventions that showed the most robust improvements were those that involved team changes and case management.[9]

Screening Recommendations
According to the American Diabetes Associations, lowering A1c to below or around 7% has been shown to reduce microvascular and neuropathic complications of type 1 and type 2 diabetes. Therefore, for microvascular disease prevention, the A1c goal for non-pregnant adults in general is <7%. (Level of Evidence: A)

In type 1 and type 2 diabetes, randomized controlled trials of intensive versus standard glycemic control have not shown a significant reduction in CVD outcomes during the randomized portion of the trials. Long-term follow-up of the Diabetes Control and Complications Trial (DCCT) and UK Prospective Diabetes Study (UKPDS) cohorts suggests that treatment to A1c targets below or around 7% in the years soon after the diagnosis of diabetes is associated with long-term reduction in risk of macrovascular disease. Until more evidence becomes available, the general goal of <7% appears reasonable for many adults for macrovascular risk reduction. (Level of Evidence: B)

Subgroup analyses of clinical trials such as the DCCT and UKPDS and the microvascular evidence from the Action in Diabetes and Vascular Disease: Preterax and Diamicron MR Controlled Evaluation (ADVANCE) trial suggest a small but incremental benefit in microvascular outcomes with A1C values

closer to normal. Therefore, for selected individual patients, providers might reasonably suggest even lower A1C goals than the general goal of <7%, if this can be achieved without significant hypoglycemia or other adverse effects of treatment. Such patients might include those with short duration of diabetes, long life expectancy, and no significant CVD. (Level of Evidence: B)

Conversely, less stringent A1c goals than the general goal of <7% may be appropriate for patients with a history of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, and extensive comorbid conditions and those with longstanding diabetes in whom the general goal is difficult to attain despite diabetes self-management education, appropriate glucose monitoring, and effective doses of multiple glucose lowering agents including insulin. (Level of Evidence: C)

Conclusion

For the reasons outlined above, it is imperative that family physicians and their care teams understand the important role they play in screening, diagnosing, and managing patients with diabetes. Physicians and their care teams need continuing medical education that will help them to apply the most current and clinically relevant evidence-based recommendations to practice. The American Board of Family Medicine's Family Medicine Certification, Performance Improvement Activities, offers physicians the opportunity to use an online module to assist in the execution of a systematic, quality improvement initiative focused on improving the care patients receive related to diagnosis and treatment of diabetes and prediabetes. Diabetes is an ideal condition for a performance improvement project as there are recent evidence-based guidelines and research to show that many patients do not receive optimal care as outlined by these guidelines.

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