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Barriers to care for patients with diabetes in Durham, North Carolina, why are we withholding life-sustaining medications from the patients who need them the most?

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The diabetes epidemic and its complications disproportionately affect minorities and the poor. Medical treatments that can prevent or delay diabetes complications are widely available but poverty underlies much of why there are disparities in diabetes care and outcomes. Lack of access to care, food insecurity and inability to pay for medications prevents adherence to a medication and lifestyle regimen that can be life-sustaining. At the very least, US policies should be changed to provide life-sustaining medications that prevent costly complications to patients who cannot afford them. Adopting value-based insurance design would benefit patients with diabetes who cannot afford to pay for medications but would also reduce healthcare costs in the long run.

The economic cost of caring for the 29 million Americans with diabetes continues to rise each year. Medical expenditures due to diabetes rose 41% from 2007 to 2012 [1]. In 2012, total costs of diabetes were >US$322 billion, including $244 billion in *excess* medical costs and $78 billion in lost productivity [2]. Medication nonadherence leads to higher healthcare costs through greater complication rates and a lower success rate for treatment goals. For patients with diabetes, hypertension or hyperlipidemia, it has been estimated that medication nonadherence increases costs up to US$105 billion a year [3]. The high cost of medication and medication co-pays prevent patients from taking medication as prescribed, and this may partially explain the fact that poverty in the USA and around the world is strongly associated with increased diabetes prevalence and poor outcomes from diabetes, including amputation and albuminuria [4–9].

The diabetes epidemic and its complications disproportionately affect minorities and the poor, who account for an inordinate number of high-risk patients with complex medical conditions [10]. For example, disparities in diabetes complications include a four- to seven-fold increased risk of amputation among southern African Americans compared with white southern Americans. Such disparities are not just disturbing statistics, but reflect ethically unacceptable realities, since medical treatments that can prevent or delay diabetes complications are widely available. We know that control of glucose levels and the use of appropriate blood pressure and cholesterol medications effectively reduce diabetes complications that lead to devastating disabilities.

The Durham Diabetes Coalition (DDC) was established to reduce death, disability and disparity from diabetes in Durham County, NC, using individual

EXPERT REVIEWS

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and community approaches guided by geospatial and secondary data analysis of the epidemic [11]. As a part of the clinical services provided by the DDC, home visits are arranged for patients who are at high risk for adverse diabetes outcomes over the next year. Our experiences during these visits illuminate major barriers to care that drive the disparities seen in diabetes outcomes. The barriers that our team has witnessed include poverty, homelessness, substance abuse, mental illness and illiteracy. Poverty, in particular, has far-reaching impact, affecting access to food, transportation, medical services and medication.

Far too often, when visiting homes of high-risk patients, we have found no food in the pantry and no pills in the bottles. Food insecurity has been correlated with worse diabetes control as evidenced by HbA1c levels, higher admission rates for hypoglycemia, especially at the end of the month when money is tighter, and delay in filling prescription medications [12–15]. Many of the medications prescribed for diabetic patients are generic and can be purchased for US$4 at Walmart, but that $4 co-payment can be an insurmountable barrier when one's basic living expenses are higher than one's income. Most of our patients are on >10 medications to treat diabetes, hypertension, high cholesterol, asthma or COPD and glaucoma. The average monthly social security benefit is US$1219; this includes retirees, disabled persons and survivors. The average monthly rent for a one-bedroom apartment in Durham, NC, is US$800. That leaves a little over US$400 for utilities, food and medications. There is thus no extra money to save for a safety net, and often our patients are also the safety net for their children and grandchildren whose needs override the patient's perceived need to pay for medical treatment.

Co-payments are intended to reduce the overuse or inappropriate use of prescribed medications. However, multiple studies have shown that co-payments are associated with decreased use of all medications, including those necessary to manage chronic conditions such as diabetes [16]. In addition, certain populations, such as publicly insured, low-income or older individuals are disproportionately susceptible to medication nonadherence when required to share medication costs.

Value-based insurance design (VBID) refers to programs that reduce or eliminate co-payments to encourage the use of high-value healthcare services and medications that have been shown to have benefits that outweigh their costs. VBID is a cost-sharing model in which patients pay less for medications that prevent costly outcomes. Typically, medications that treat asthma, hypertension and diabetes are considered high-value medications. Evidence from VBID initiatives suggests that reductions in complications and comorbidities may lead to overall cost savings. Medication adherence has been shown to increase pharmacy expenditures, but these costs are more than made up by a reduction in healthcare utilization for diseases such as heart failure, diabetes and hypertension [17].

A VBID program launched by Blue Cross Blue Shield of North Carolina in 2008 eliminated co-pays for generic medications and reduced co-pays for brand-name medications. The program included >32,000 employers with >747,000 employees and assessed medication refill adherence using claims data. This program resulted in improved adherence to medications for diabetes, hypertension, hyperlipidemia and congestive heart failure, with highest gains achieved for patients with diabetes [18].

In January 2010, Walgreens adopted a zero co-pay VBID program for medications used to treat diabetes and hyperlipidemia, contingent on beneficiary enrollment in a wellness program. The company evaluated the program and released the results in early 2014. The study, which included about 4600 individuals, demonstrated significantly increased adherence to these two classes of medications for program participants compared with nonparticipants. Kermit Crawford, Walgreens president of pharmacy, health and wellness, underscored the outcomes in an interview, stating "Our experience has been that this approach to pharmacy benefit design is the best way to improve medication adherence and lower overall healthcare costs" [19].

As a final example, United Healthcare initiated a zero co-pay VBID program in 2009 for enrollees with diabetes. Their evaluation showed significantly higher compliance with six standards of care for diabetes among program participants compared with nonparticipants. The program included over 130 employers and 9795 participants with diabetes [20].

These programs do more than improve medication adherence; they also reduce death and disability from chronic illnesses. Markov models show that providing medications free after hospital admission for myocardial infarction could prolong life at reduced expense [21]. Another study showed that VBID delivered US$1.33 saved for every dollar spent [22].

VBID programs represent one piece of the puzzle in the national effort to achieve better care quality, improve healthcare outcomes and lower costs. When healthcare stakeholders (i.e., patients, providers, payors and policy makers) consider ways to improve quality and reduce costs of healthcare in the USA, many point to preventative services for healthy people, such as cancer screenings and immunizations, which are certainly important. However, the US healthcare system also needs to focus on patients at high risk for complications of chronic diseases who have major physical and financial consequences if not adequately treated.

Indeed, there are many things the USA needs to do to improve health and reduce disparities. We need more job opportunities, better mental health access, expanded Medicaid, improved customer service and effective care coordination; but the one thing we can and should do right now is provide life-sustaining medications that prevent costly complications to patients who cannot afford them. Adopting the VBID in Medicaid programs would not only benefit patients with diabetes who cannot afford to pay for their medications but also reduce healthcare costs in the long run [21].

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