

## RESEARCH ARTICLE

# The Patient-Centered Model and Diabetes

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## Abstract

The patient-centered model has significant potential for improving patient outcomes and improving the quality of care. Despite the needed investments of time and money in training and facilities, the patient-centered model can reduce costs for patients with chronic conditions such as diabetes as well as providers who work with them. The patient-centered model helps to prevent complications, builds a better therapeutic alliance, and can prevent complications and hospital readmissions. Additionally, the technology currently developing is improving organizations' ability to comply with the patient-centered model.

**Keywords:** Patient-Centered Model; Diabetes

## Introduction

In the administration of any healthcare organization, one of the primary considerations is how to best utilize resources. The organization must consider how it can deliver the best quality care to as many people as possible. The best 'balance' depends quite heavily on the individual situation. There is no 'perfect' answer for all healthcare organizations. However, it is important for administrators to consistently consider how they can improve in both the volume of service at their organization as well as provide quality, doing their best to avoid sacrificing one for the other. At present in the United States, the healthcare industry struggles to meet the needs of the population. There are many individuals who are under insured or un-insured entirely. In addition, the population needing medical services is growing, at present. Healthcare organizations, while applying the new and somewhat popular patient-centered care model, must find a way to address the needs of a growing volume of consumers while still ensuring the highest level of quality for their care. The healthcare organizations must find an adequate balance between this volume and the quality of care provided to individuals with Diabetes Mellitus.

The costs for caring for patients who have Diabetes Mellitus and its possible complications are significant and impact both the healthcare industry and society. Saydah, Fradkin, and Cowie (2004) find that these costs are also rising rapidly and that, as of 2002, they were already at or over \$132 billion per year. This represents a significant portion of the overall economic expenditure/product for the nation. Also, this expenditure includes money paid for services for complications and conditions which may, in some cases, be entirely preventable. Researchers Clement, Braithwaite, Magee, Ahmann, Smith, Schafer, and Hirsch (2004) conducted a study to categorize the expenditures and derive a per capita figure. They found that, of the total amount spent per year on caring for diabetic patients, the largest portion (~43.9%) is for inpatient care. The researchers adjusted for confounders to arrive a per capita hospital care cost of \$6,309 for individuals with Diabetes Mellitus. This figure, for reference, sits at more than double an individual's cost if they do not have diabetes (\$2,971; ratio: 2.1). The researchers cite the source of additional costs as greater frequency of admittance, long-term stays in the facility, and need for more intensive care [1,2].

For this project, a diabetic patient may be defined as an individual identified as having Type-2 Diabetes Mellitus along with any number of associated potential complications. The term 'healthcare' refers to the dispensation of services or products to address the health and wellness needs of an individual (identified as patient). The patient is an individual seeking services from a healthcare provider for one or more ailments. The term volume of patients is the number of individual patients served on a set ratio (per day, per year, etc.). Administrators are particularly interested in factors which contribute to the quality of care and organizational financial costs of care. The quality of care may be considered as the "ability to access effective care with the aim of maximizing health benefits? In relation to need" (Campbell, Roland, & Buetow, 2000, p. 1621). The organizational costs are the financial resources required for the compensation of employees and the maintenance and operation of the healthcare facility. Patients, in turn, may be quite concerned about the patient financial costs of care, which is a term that refers to the volume of monetary compensation required for dispensation of healthcare services/products (whether out of pocket or paid by insurance). Of interest

in the developing healthcare industry, the patient-centered care model is becoming very popular and is primarily about considering the entire person and having respect for that person's integrity and individual perceptions (Epstein & Street, 2011) [3,4].

The patient-centered care model is the way care is organized and approached. It strongly emphasizes patient dignity and privacy. The provisions of HIPAA mandate that confidentiality of patient records be maintained, and this is also an important part of a patient's perception of the healthcare industry. While the provisions of HIPAA and a basic respect for privacy may increase general operating costs (secure software, facilities, etc.), the net benefit in perceived quality of care is significant (Sofaer & Firminger, 2005). Thus, it becomes an important task of healthcare administrators and providers (including support teams of nurses, mental health professionals, physical therapists and others) to ensure good patient confidentiality. The arrival of electronic health records has created some resistance in the healthcare industry, as there is a great deal to consider in terms of confidentiality. Nevertheless, demonstrating respect for confidentiality and implementing electronic health records both improve the quality care (both real and perceived) (Zwaanswijk, Verheij, Wiesman, & Friele, 2011) [5,6].

The population of individuals needing care is growing larger, year-by-year, as the Baby Boomer generation ages. The healthcare industry struggles to meet the needs of this growing volume while still maintaining an adequate level of quality in care. Applying the patient-centered model, as many organizations currently are, makes this even more of a challenge. The healthcare organizations must find an adequate balance between this volume and the quality of care provided to individuals with Diabetes Mellitus. Aligning with the patient-centered care model comes with additional costs which must be accounted for.

The patient-centered care model requires providers to spend more time with individual patients and understand them in a deeper way: the many dimensions of their needs. Thus, employment expenses can be higher, as more staff may be necessary to meet the demands of the patient population under the model. Also, additional team members and connections with community resources may be necessary. For example, the patient-centered care model asks providers to consider the patient's spiritual needs in addition to their other needs. It may be necessary for a facility to employ members of religious communities, and providers in private offices may need to spend some of their time cultivating referral connections with such members as well. This sort of community outreach and whole-person approach to well-being is costlier. In addition, the patient-centered model of care provides several opportunities to make use of employees' already existing strengths and experiences, saving on training costs.

## Research Questions

1. To what degree and in what way does the patient-centered care model tend to affect quality and cost?
2. What factors related to the patient-centered model of care contribute to positive outcomes in care for Diabetes Mellitus and which populations could most benefit from them?

## Patient-Centered Care Model

The patient-centered care model has its fundamentals in ancient Greece. The model itself is a current mixing of several theoretical notions and approaches, some of which come from medicine, others from psychology, and still others from different associated disciplines. The patient-centered care model has six primary components, each of which is interactive. To begin, the initial component is the interaction between the physician and the patient as they talk about the patient's experience. This experience will include how they emotionally process being unwell, what their notions are regarding the cause(s) of their illness, how significant the impact is on their everyday living, and any ideas they have about how to address the problems. The next portion is related to the physician's holistic understanding of the person. The physician treats the person, not just the illness. The next component is the development of rapport: a common ground between patient and doctor about how to treat the illness. The fourth portion is further development of the relationship between the physician and the patient. They need to seek a strong, functioning communication pattern and work relationship. And, the final component of the patient-centered model is pragmatism or 'realism'. The model emphasizes the importance of being realistic about treatment, outcomes, experiences, etc. The model generally treats patient and doctor as partners in the process rather than the patient as an object and the doctor as the operator (Stewart, *et al.*, 2000).

To comply with the patient-centered model, practitioners must engage the patient in more direct communication. Education is a crucial element of the model, and the practitioners in the patient-centered model behave more like assistants or sources of information than direct operators. Practitioners must also become more familiar with adjuncts to treatment, such as complementary and alternative medicine. More so than in the managed care model, practitioners in the patient-centered model must demonstrate greater cultural sensitivity and cultural humility. In devising courses of treatment, the clinician must also consider the patient's experience of the disease. This should guide suggestions for treatment, and the ultimate decisions regarding treatment should be made in conjunction with the patient.

## Cost Reduction Aligned with Patient-Centered Model

Beyond basic costs for Diabetes Mellitus in general, the complications result in higher costs. As an example, Fleming, Greenfield, and Engelgau, *et al.*, (2001) found that care for complications common to individuals with diabetes results in costs of approximately \$100 billion per year. This represents a significant portion of the overall costs of care for diabetes. The conditions which are examined by the researchers in that study include "blindness, kidney failure, amputation, and cardiovascular disease" (p. 1815). Additional research

conducted more recently by McBrien, Manns, and Chui, *et al.*, (2012) finds similarly that five-year costs for caring for individuals with diabetes increase with progression of nephropathy, the presence of proteinuria, and poor glycemic control. Some factors which were not controlled for in the study were identified as impacting the cost. Aging, the duration of diabetes, additional comorbid conditions, and socioeconomic status all increased the costs for individuals with Diabetes Mellitus [7,8].

One of the more crucial aspects of costs of Diabetes Mellitus for healthcare providers, facilities, and administrators is that many of the more significant complications are preventable. Ryskina, Meah, and Thomas (2009) identify many of potential preventative measures which can reduce costs by preventing some of the complications commonly associated with the disease. For example, eye exams which provide an opportunity for education and for treatment interventions can help to reduce the risk of retinopathy in patients. Blindness is identified by Fleming, *et al.*, (2001) as one of several costly complications. Prescriptions for aspirin, lipid testing, A1c testing, and other preventive measures can reduce the incidence of these complications and provide better outcomes and reduced costs for all involved (Ryskina, *et al.*, 2009). Many interventions for preventing or managing complications of diabetes can be implemented with little physician involvement. The individual can, for example, take small amounts of aspirin each day for general health, and this medication does not require a prescription. In these instances (diet, exercise, over-the-counter medications, etc.), simple patient education (which is a central tenet of the patient-centered model) can help patients to institute these measures themselves, reducing overall costs. In addition, there are several adjuncts to treatment which practitioners can suggest (such as yoga, massage, certain ethnic foods, etc.), and many practitioners are already familiar with these. The patient-centered model adds further encouragement for practitioners to learn about, consider, and suggest these interventions in their work with patients. Doing so enhances the relationship and can help to build the dialogue which is so central to patient-centered care [9].

Regarding the current value of care for individuals with Diabetes, there are some significant problems. First, the model of care is generally, currently not as cost-effective as it could be. Current treatment methods are not ensuring adequate glycemic control for many patients (Ryskina, *et al.*, 2009). The resulting value of care is substantially lower, because many resources must be expended to address preventable complications and other associated problems. Ryskina, *et al.*, (2009) estimate that the number of preventable deaths associated with Diabetes per year may be approximately 7,000 to 8,000. In addition, the avoidable costs associated with treating uncontrolled Diabetes and associated complications are approximately \$1.3 to \$1.7 billion per year. These expenditures of resources, fatalities, and complications may be prevented by a more effective care model with a higher cost-to-value ratio. The patient-centered care model educates patients and encourages active involvement (compliance and 'buy-in') from the patient, who is treated more like a care team member and has their individual experiences validated and considered. In turn, better compliance and more information can result in fewer complications, less usage of health services, and thus lower costs. In addition, with good control of diabetes (because of the patient-centered approach), individuals can avoid some of the more serious and costly procedures, such as amputation [9].

Research shows that the value of care can be enhanced in many of potential ways. Prospective interventions and assessments are currently being evaluated to determine their efficacy. Innovative platforms which integrate technology have been found to improve patient outcomes. Due to the technological component, this has the potential to reduce staffing and equipment costs in some cases. Computer-based assessment (such as assessment of dietary barriers and barrier to physical activity) together with computer-based interventions has shown some degree of statistically significant improvement in outcomes for patients with Diabetes (Pal, Eastwood, & Michie, *et al.*, 2013). Findings continue to suggest that technology may be a key part of developing a more cost-effective and 'effective' model. There are additional media which can be used to support cost reductions and increased value of care for patients. These materials include videos, literature, and presentations which are designed to improve independent patient decision-making. The 'decision aids' can help to reduce the amount of provider time spent with the patient while also empowering the patient (in line with the patient-centered care model). The need for follow-up is also reduced, and these factors contribute to an overall reduction in resource expenditure (Oshima Lee & Emanuel, 2013). Healthcare provider offices and facilities can use these materials to improve the value of care while also including the patient more fully in important decision processes. The patient-centered care model actively involves patients in crucial decision-making. In addition, computer-based interventions tend to be quite accessible and easy to reproduce, making some provider appointments unnecessary. The individual need not to seek an appointment (which is significantly costlier) and, for some patients, additional aid would then not be required (medical transport, etc.) are cost advantages. With less usage of health services, there is a reduced overhead cost for providers. Fewer facilities are needed (offices, etc.) and the ones which are can be smaller. These computer-based materials help to support that model while reducing cost [10,11].

In line with the previous notion, other methods may also contribute to a more effective care model. Telemedicine is one such method, and it is on the rise in the developed world. Much of the concern surrounding telemedicine regards not its effectiveness but rather associated issues (particularly privacy). Telemedicine may help to reduce complications associated with Diabetes. These complications include hypertension, which is a significant predictor of decreased quality of life and potential fatality. Thus, improving a patient's condition about hypertension should be a primary focus of the treatment plan. Patients who engage in a regimen of telehealth may decrease their HbA1c, which in turn is associated with decreased severity and number of complications (Wakefield, Holman, & Ray, *et al.*, 2011). It is important to bear in mind, though, that the compliance and consistency of the telehealth sessions is crucial, as once telehealth is discontinued, patients tend to return to their original conditions. Even so, telehealth, being more convenient and less resource-demanding than office/facility visits, may be an effective method for reducing costs and improving the ratio of care value. It also increases the availability of providers to patients, especially patients who may

be unable to visit the facility or may find it difficult to do so (due to disability, transportation, etc.). This increased availability empowers the patient to seek and obtain access to care. Under the patient-centered model, the patient is more easily able to speak with providers, obtain information, and be involved in treatment decisions. This is especially important for individuals living with chronic conditions like diabetes, as they require ongoing care: prescription renewals, check-ups, regular labs, etc. By saving the patient and provider time, the patient-centered model helps to reduce the costs associated with these routine procedures [12].

Beyond the direct impact of a care model, there are many of procedural and logistical changes which can impact the care value (cost-effectiveness and resultant care quotient). One of these is the electronic medical/health record (EMR). Implementation of EMR in provider offices and care facilities reduces expenditure of resources, including time and materials, involved in generating, maintaining, and dispensing of care records. This, in turn, also reduces direct costs associated with care, in some instances, over \$80,000 during a five-year period (Holroyd-Leduc, Lorenzetti, Straus, Sykes, & Quan, 2012). Facilities which serve a population significantly larger than a typical provider's office may see even greater returns on their investment in EMR establishment and maintenance systems. Facilities and providers can also more easily provide patients with access to their records. This allows patients to be aware of their medical conditions and make informed decisions. Diabetes patients must be somewhat independent. Providers cannot monitor these individuals in their day-to-day lives. Instead, these patients must monitor their glucose levels, make corrections, and adjust their basal insulin levels in accordance with changes in bodyweight and overall health. Thus, making their medical records more easily available to them (in other words, creating an informed patient population in line with the patient-centered care model) helps to reduce the time and resources spent on office visits and potential complications [13].

Managed care has been the most common model of care for quite some time now. However, this model can have a negative impact on perceived quality of care and perhaps even true quality of care. Under the managed care model, some services were not covered or payment for services was denied to the patient. The managed care model in general resulted in patients seeing the providers as refusing necessary care for their illness (Magnan, Fisher, & Kindig, *et al.*, 2012). While the managed care model originally was designed to abate some of the skyrocketing costs of healthcare (and was to some degree effective in this regard), it did create this negative perception of the quality of care. This perception, in turn, results in poorer compliance and poorer health decisions while only partially reducing the costs of care for individuals with diabetes. It is partly this problem which the patient-centered model of care seeks to remedy; the model works to integrate the patient in the decision-making process so that they feel ownership in the healthcare choices that are being made. This is also why it is crucial for healthcare administrators and providers to work to reduce the costs of care provided to compensate for reduced oversight which would normally be present in the managed care model [14].

Healthcare administrators, along with their providers, can also have an impact on the overall quality of care (and perceived value). The emotional component of every human being is constant. It is a variable which must be addressed in the care process. Therefore, having a strong emotional intelligence can improve the quality of care perceived by the patient and the overall value of care provided. Emotional intelligence allows decision-makers, such as healthcare providers and administrators, to predict the potential responses of individuals and groups to outcomes (Hess & Bacigalupo, 2011). By employing emotional sensitivity by way of emotional intelligence, administrators and providers can ensure the best possible outcomes in each scenario, considering the human being patient. Chronic conditions can be associated with depression and receiving a diagnosis of a chronic condition like diabetes can potentially be traumatic. Thus, it becomes important, in treating the whole patient, to anticipate those needs and try to address them. Beyond the direct implications for patient perceptions of decisions, healthcare providers can improve their performance by improving their emotional intelligence skills. As an example, there is a statistically significant correlation between emotional intelligence and the performance of nursing staff (Beauvais, Brady, O'Shea, & Quinn Griffin, 2011). Still, the presence of emotional intelligence could be considered a necessary component of the patient-centered care model due to the need for empathy and the provider's consideration of the patient's perceptions and emotions [15,16].

There are many regulations governing ethical and high-quality healthcare provision, not the least of which is the all-important informed consent. Consent is a necessary part of initiating the care process. However, it also provides an opportunity at low cost to enhance the quality (true and perceived) of care. Typical informed consent documents are difficult for the patient to understand and are often ignored (and simply signed by the individual) (Krumholz, 2010). A more personalized and user-friendly document can help the patient to understand what is occurring and what rights they have in the process. In turn, the patients can make more appropriate decisions which can help to reduce the costs of their care while the more readable informed consent provides an immediate boost to their perceived quality of the care (Krumholz, 2010). Consent, in turn, is a crucial component of patient empowerment, which is a cornerstone of the patient-centered care model [17].

Administratively, it may seem a natural conclusion to improve quality by increasing investment in key areas. The pay for performance model has been quite popular in industries, but the healthcare industry is unique. Research finds that, in general, paying providers based on performance tends not to improve patient outcomes (Petersen, Woodard, Urech, Daw, & Sookanan, 2006; Mullen, Frank, & Rosenthal, 2010). In fact, pay for performance may even reduce quality of care in some cases (Boyd, *et al.*, 2005). It can be tempting to incentivize care to ensure the best possible quality. Healthcare administrators, though, must exercise extreme caution with this model. Reductions in costs may ultimately be negated by reductions in quality. Under the patient-centered care model, the incentivization may not work. Incentivization may, by extension, cause providers to spend less time with each patient to achieve a greater ratio of discharges. When patients receive less time, are inadequately informed, or perceive a poorer quality of care, they may become less compliant with care, resulting in more costly complications [18-20].

The patient-centered care model instead asks providers to be engaged and informative, spending the necessary time to educate the patient and work together on decisions. Reduced workload can have positive benefits in terms of quality. However, this notion cannot be taken to the extreme. Rather, there is a balance that must be struck by the administrator to optimize any given process. Reducing working hours and/or patient to physician ratio may improve the quality of care. The administrator, though, must be cautious to maintain some degree of stress and pressure within tasks that require mental effort and focus. Without such mild strain, there can be negative impacts on the resulting quality of care. Administrators should avoid implementing technologies and automation within such tasks and restrict those accommodations to tasks for which such concentration is not necessary (Holden, et al., 2011). Thus, while reduced workload can have beneficial impacts on real and perceived quality of care, this can only occur when a careful balance is maintained. Maintaining a high degree of performance while reducing the technological barriers between patient and provider is aligned with the patient-centered care model and emphasizes the humanity involved [21].

Increasing the number of physicians available to treat patients can have a clear positive impact on the perceived quality of care. However, this is not the only method for achieving the improvement. Research suggests that changes can be made on the patient side to improve real and perceived quality of care. Modification of expectations can be important, as the healthcare process can be a bit mysterious for a given patient. The patient may develop extraordinary expectations of the care process: a process which then is inevitably going to disappoint. This can be especially true in the early phases of a chronic condition like diabetes, as the individual relies upon the healthcare system to provide information and relief of symptoms. Ensuring that the public is well-educated regarding primary care processes and that community-based care services are emphasized over complex and highly technical procedures will, in turn, improve the general perception of the quality of care and the reputation of the industry (Friedberg, Hussey, & Schneider, 2010). In addition, properly equipping providers with the tools they need to streamline their practices and effectively treat patients will also enhance the public perception of care. Proper use of telemedicine can be one such method for streamlining while continuing to ensure good quality care. The patient-centered care model reinforces these ideas, particularly about informed decisions regarding healthcare and procedures [22].

## Discussion

The patient-centered model requires some significant up-front investments. There are three categories of up-front investment. The first is time. The patient-centered model requires implementation of new policies, efficiency procedures, technology (security for electronic health records), and renovations. Also, employees, staff, and providers must be trained in methods related to the patient-centered model and must work to coordinate services across a wider variety of community members and organizations. These take time to complete and lead to a period of transition.

The second category of investment is finance. The improvements to facilities, for example, will require expenditures for materials, decorations, and labor to comply with the patient-centered model being applied in that organization (such as the Planetree model). In addition, employee hours may also be dedicated to training during which time services are not being offered by that employee directly to the patient. The expenditure for paid hours thus does not result in direct revenue. Consultants and specialized equipment may also be necessary to modernize the technology and ensure efficient and secure maintenance of health records.

Accountability is also an important part of ensuring a high quality to cost ratio in healthcare. While there are several regulations and internal checks to ensure accountability, another possible avenue of improved accountability is community engagement. A recent study suggests that the community in general can be employed to oversee some elements of a healthcare organization's operations, being involved in decision-making which can ultimately result in better management of resources (financial and otherwise). This program has been proposed under the name of 'Accountable Care Organizations' (Magan, *et al.*, 2012), and such organizations have been shown to reduce costs and help to better meet the needs of the community it should be noted that patient-centered care and accountable care organizations are not mutually exclusive. The patient-centered model is focused on good primary care, while the accountable care organization system attempts to improve incentives and accountability for providers (Rittenhouse, Shortell, & Fisher, 2009). Any attempt to devise an accountable care organization requires effective primary care. Rittenhouse, *et al.*, (2009) suggest that the patient-centered model can help to advance the development of strong accountable care organizations [14, 23].

## Patient-centered care providers

There are many providers and facilities which currently work under the patient-centered care model. Sharp HealthCare of San Diego has widely implemented this model (Sharp HealthCare, 2014). They have dedicated three of their facilities entirely to the model. The Sharp system uses the Planetree version, and offers many of patient-centered services, including recreational activities and spiritual support. Scripps Health has also implemented the patient-centered care model, devoting a task force comprised of front-line providers to the process of making changes to their organization aligned with the principles of patient-centered care (Scripps HealthCare, 2014). One of the primary changes that Scripps has made is the care team meeting, where the three primary providers (nurse, pharmacist, and physician) meet regularly with the patient in a joint appointment. This is the sort of conversation which empowers the patient and provides them information. Finally, Sutter Health System recently received funding for a study to improve communication between providers and patients and is currently implementing that program to improve their compliance with a patient-centered model [24, 25].

## Cost of patient-centered care

While the patient-centered care model has potential advantages in reducing costs, it also comes with several potential costs which must be managed. First, transitioning to the model requires time and effort (Nutting, Miller, Crabtree, *et al.*, 2009). Retraining employees, revising the facility and its equipment to become more patient-centered, and implementing new policies and procedures are all additional costs in time and resources to the typical operating expenses. The transition requires extreme flexibility, as the model's factors are much more highly interrelated than the traditional clinical model. Each of these, when implemented, will have follow-on impacts on the others, meaning that each step will require readjustment [26].

To begin, the model often requires additional training for employees: providers and staff. Developing the skills necessary to address the person in a complete way will require constant development in awareness and knowledgeability (Levinson, Lesser, & Epstein, 2010). Accountability is necessary here, as well. Healthcare administrators must regularly review staff performance and recommend and facilitate training to help with personal development. As new cases arise which require specialized knowledge, the employee must be prepared to seek out that knowledge, consult with others, and/or make a referral to a more qualified individual [27].

Facilities must also be updated in some cases to conform to the model. The Planetree model is one of the most popular patient-centered models in the United States. One of the central tenets of the Planetree model is to implement a home-like setting to improve patient outcomes. The perceived quality of care is enhanced by this sort of décor (Devlin & Arneill, 2003), but many facilities require updating and improvement to achieve this level of comfortability and patient-friendly atmosphere. In the transition from other models to the patient-centered care model, there is an initial investment required to complete these renovations [28].

Diabetes patients tend to make more use of healthcare services and facilities than come of the more acute patients. It is important to help reduce the presence of complications and other factors in diabetes patients using chronic care support. One such method for reducing costs of complication and such factors is the patient-centered empowerment. It is cost-effective to educate diabetes patients and help them to engage with the care team in informed decision-making (Williams, Freedman, & Deci, 1998). In addition, overall implementation of the patient-centered model (models such as Planetree) result in better patient outcomes, which reduces chronic care needs. Thus, the initial investment in items like training and facility renovation may be significant but may yield much larger returns over time [29].

While the model requires some substantial investments on the part of the organizations, there are several benefits available, particularly for individuals with chronic conditions like diabetes. Primary care is crucial for the management of chronic conditions, and research suggests that the implementation of the patient-centered care model can significantly improve chronic care outcomes (Rothman & Wagner, 2003). In the patient-centered care model, the patient becomes an active team member, and patient perspectives are much more highly valued. These two factors contribute to the successful management of chronic conditions: more than the traditional primary care/managed care model [30-37].

## Conclusion

As the patient-centered care model becomes more and more popular, it will be necessary for healthcare administrators to gauge the costs associated and weigh them against the benefits. It is possible that individuals with chronic conditions such as diabetes (especially those conditions prone to additional complications) may obtain significant benefit from the patient-centered care model. While there are, some sizable up-front investments required, the benefits of the model are likely to outweigh those costs and help to return on the investment in the long term. In addition, as the population becomes more diverse, it is necessary for the industry to evolve to meet the needs of future generations.

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