What can quality improvement add to diabetes care?

Almoutaz Alkhier Ahmed

Correspondence:

Dr. Almoutaz Alkhier Ahmed Diabetologist , Senior Family Medicine Specialist MSc in Diabetes , MRCGP[INT] , FESC, FAcadMEs Dubai Health Authority - Nad Alhammar Health Center Dubai - UAE Cardiff University - Wales/UK - Honorary Lecturer **Email:** khier2@yahoo.com

Abstract

The concepts of quality should be extended to expand over all medical specialties putting the goal of patients' safety as the first goal in practice.

The growing prevalence of diabetes should be grounds for the question; Why are the figures not going down although huge budgets have been directed to decrease these figures? One of the answers is the lack of investment on a quality improvement system integrated with clinical diabetes care.

In my review, I will discuss how the integration between quality improvement and clinical diabetes care could improve the outcome of diabetes care.

Key words: Diabetes, Quality improvement, Primary care

Why has diabetes mellitus prevalence increased worldwide?

Although, there were huge efforts to control the spread of diabetes, incidence is going up?

What have we missed in our current view on providing diabetes care?

What do we need to know more about?

Whywhatwhere When ?????????

All these questions and more came to our mind when we read the current situation of diabetes care.

Introduction

Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels (1).

Therefore, diabetes mellitus is a dynamic disorder running avicious circle between hyperglycemia and complications (Figure 1).

Figure 1: Dynamic state of diabetes



Long-term complications of diabetes include retinopathy with potential loss of vision; nephropathy leading to renal failure; peripheral neuropathy with risk of foot ulcers, amputations, and Charcot joints; and autonomic neuropathy causing gastrointestinal, genitourinary, and cardiovascular symptoms and sexual dysfunction. Patients with diabetes have an increased incidence of atherosclerotic cardiovascular, peripheral arterial and cerebrovascular disease. Hypertension and abnormalities of lipoprotein metabolism are often found in people with diabetes.

Quality improvement (QI) consists of systematic and continuous actions that lead to measurable improvement in health care services and the health status of targeted patient groups. The Institute of Medicine (IOM) defines quality in health care as a direct correlation between the level of improved health services and the desired health outcomes of individuals and populations (2).

Benefits of running quality improvement program:Improved patient health (clinical) outcomes that involve both process outcomes (e.g., provide recommended

screenings) and health outcomes (e.g., decreased morbidity and mortality).

• Improved efficiency of managerial and clinical processes. By improving processes and outcomes relevant to highpriority health needs, the services reduce waste and costs associated with system failures and redundancy.

• Support proactive processes that recognize and solve problems before they occur to ensure that systems of care are reliable and predictable. A culture of improvement frequently develops in service that is committed to quality, because errors were reported and addressed.

• Improved communication with resources that are internal and external to service, such as, funders, civic and community organizations. A commitment to quality shines a positive light on the service, which may result in an increase of partnership and funding opportunities. When successfully implemented, a QI infrastructure often enhances communication and resolves critical issues.

Rationale





5.0 million deaths in 2015



12% of global health expenditure is spent on diabetes



In 2015, IDF estimates that (1):



Objective

To postulate a model of care merging between practical and quality improvement concepts.

Methodology

The concept of quality should be inspired through diabetes care services at their different levels. The domains of quality should encircle diabetes care (Figure 2).

Figure 2: Domains of quality



Diabetes care services need to be measurable services. Diabetes care affected by multiple factors. These factors can be classified as resources, process and outcome factors (Figure 3) (3).





To make improvements, the service needs to understand its own delivery system and key processes. The concepts behind the QI approaches recognize that both resources (inputs) and activities carried out (processes) are addressed together to ensure or improve quality of care (outputs/outcomes) (4).

A health service delivery system can be small and simple, such as, diabetic clinic, or large and complex, like diabetes care center. QI can assume many forms and is most effective if it was individualized to meet the needs of a specific organization's health service delivery system. A Quality Management System is "The organizational structure, processes, procedures and resources needed to implement, maintain and continually improve the management of quality ". This is accomplished by creating an integrated "system" that is process centered, has total employee involvement and is completely customer focused. Creating a culture that is customer focused and collecting and studying data that supports efforts for the customer are critical components to the system.

Steps to Creating quality improvement system at diabetes care services (Moutaz's Model):

1) Clarify Vision, Mission and Values : All staff of diabetes care services with their different positions in the service need to understand where the service is headed (its vision), what it hopes to accomplish (mission) and the operational principles (values) that will steer its priorities and decision making.

2) Identify Critical Success Factors (CSF): Critical success factors help diabetes care service focus on those things that help it meet objectives and move a little closer to achieving its mission.

3) Develop Measures and Metrics to Track CSF Data: Once critical success factors identified, there needs to be measurements put in place to monitor and track progress (Figure 6).

4) Identify Key Customer Group: Every diabetes care service has customers and understanding who the key customer groups are is important so that services can be developed based on customer requirements. The mistake a lot of diabetes care services make is not acknowledging their own staff as a key customer group.

5) Solicit Customer Feedback: The only way for an organization to know how well they are meeting customer requirements is by simply asking the question. There should be a structured process to solicit feedback from each customer group in an effort to identify what is important to them. Diabetes care services often make the mistake of thinking they know what is important to customers and ask the wrong survey questions

6) Develop Survey Tool: Next develop a customer satisfaction survey tool that is based on finding out what is important to customers. For example, customers might care more about quality than cost but if you are developing a service, trying to keep the cost down, and skimping on the quality, you are creating a service that might not meet the needs of the customer.

7) Survey Each Customer Group: Each customer group should have a survey customized to their particular requirements and they should be surveyed to establish baseline data on the customers' perception of current practice. This provides a starting point for improvements and demonstrates progress as improvement plans are implemented

8) Develop Improvement Plan: Once the baseline is established, you should develop an improvement plan based on customer feedback from each group. Improvement plans should be written in SMART goals format.

9) Resurvey: After a period, resurvey key customers to see if scores have improved. Customer needs and expectations change over time so being in-tune to changing needs and expectations is critical to long-term success.

10) Monitor CSF: It is important to monitor CSF to ensure there is consistent progress toward goals. This also allows for course correction should priorities and objectives change during the review period.

11) Share Satisfaction Data with service customers: Once you have achieved some positive results with the satisfaction data, use it as an empowering tool! Many successful diabetes care services miss the boat by not letting others know what they do well. Customers want to know how the diabetes care service's internal processes work especially if those processes help to deliver an outstanding product or service!

12) Technology: Make sure technology is user-friendly and supports targeted improvements. For example, a website should be easy to navigate and the content should be easy to understand.

Practical Diabetes care and continuous quality improvement need to run together to produce an effective system of diabetes care (Figure 5)

Figure 5: Proper Diabetes care system



Measurements of diabetes care services:

Quality measure sets generally include 2 types of measures; Process measures captures the rate of use of specific, evidence-based processes of care for example, A1C screening, eye exams and Outcome measures which report a change in patient condition. For example, percentage of patients achieving A1C goals (5 - 6).

Discussion

Implementation of a quality improvement system affects positively the outcome of diabetes care services. WU Wy and his colleagues (7) conducted a retrospective comparison study in eastern New York state to assess the effect of quality improvement organization activities on outpatient diabetes care. They concluded that quality improvement organization activities could improve outpatients' care. P value significantly differed (P < 0.001) between participating and non-participating providers on their performance in 3 guality measures. Equality is one of the quality domains. In a study done by Thomas D Sequist et al (8) assessing the effect of quality improvement on racial disparities in diabetes care, the researchers concluded that racial disparities were diminished in some aspects of diabetes care following variably successful quality improvement.

Another study done in India recruited 1150 patients with diabetes and poor cardio-metabolic profiles who were randomly assigned to a multicomponent QI strategy or usual care for two and a half years (9). Results suggested that patient in the QI strategy group were twice as likely to

achieve combined diabetes care goals and larger reductions for each risk factor compared with usual care. Rachel Wilf-Miron et al (10) studied the association between improved quality diabetes indicators, health outcomes and costs. They concluded that their study demonstrates the effect of continuous improvement in quality care indicators, on health outcomes and resource utilization, among patients with diabetes. These findings support the business case for quality improvement, especially in healthcare systems with relatively low enrollee turnover, where providers, in the long term, could "harvest" their investments in improving quality.

Interesting systematic review and meta analysis by Tricco AC et al (11) showed that many trials of quality improvement strategies showed improvements in diabetes care. Interventions targeting the system of chronic disease management along with patient-mediated quality improvement strategies should be an important component of interventions aimed at improving diabetes management. Interventions solely targeting health-care professionals seem to be beneficial only if baseline HbA1c control is poor.

On the other hand, Shojania KG et al (12) in their systematic review and meta-analysis concluded that most quality improvement strategies produced small to modest improvements in glycemic control. Team changes and case management showed more robust improvements, especially for interventions in which case managers could adjust medications without awaiting physician approval. Estimates of the effectiveness of other specific QI strategies may have been limited by difficulty in classifying complex interventions, insufficient numbers of studies, and publication bias.

In general, integration of quality improvement systems and programs into diabetes care add to the outcomes of the service.

Conclusion

Running a quality improvement system through practical diabetes care will change the process of care from static service into dynamic, changeable service. Isolated practical diabetes care without continuous quality improvement could be one of the reasons for failure of controlling diabetes spread.

Pract 1:2-4, 1998

Figure 6: Measurements for diabetes care service

Туре	KPI
0	% of DM patients with HbA1c <7%
-	
0	% of DM patients with HbA1c >9%
Р	Patient who performed 2 HbA1c in last year (at least 3 months apart)
Р	% of DM patients who had BP checked at each visit
0	% of DM patients with BP < 140/90mmHg (mean of two visits)
Ρ	% of DM patients who performed total lipid profile once/year
0	% of DM patients with LDL<100mg/dl
0	% of DM patients with LDL-C <130 mg/dL
Ρ	% of DM patients who had WC measured
0	% of DM patients who had WC>=102cm in male patients
0	% of DM patients who had WC>=88 on female patients
Ρ	% of DM patients who had BMI recorded each visit
0	% of DM patients who have normal weight (NMI 18.5 – 24.9)
0	% of DM patients who are overweight (BMI 25 – 29.9)
0	% of DM patients who are obese (BMI> 30)
Ρ	% of DM patients who have had smoking status documented
Ρ	% of DM patients who are current smoker
Ρ	% of DM patients who were referred to smoking cessation services
Ρ	% of DM patient whose CV risk has been calculated and documented
Р	% of DM patients who are on metformin
Ρ	% of DM patients who are > 40 years on statin
Р	% of DM patients who are on aspirin for high and very high CVD risk assessment
Ρ	% of DM patients who have had Microalbuminuria screening test in the last 12 months
Ρ	% of DM patients who have had eGFR in the last 12 months
Ρ	% of DM patients who had retinal camera screening in last 12 month
Р	% of positive retinal image referred to retinal team for feedback
Ρ	% of DM patients who have ophthalmology clinic referral for dilated eye exam in the last 2 year
0	% of DM patients develop blindness per year
Ρ	% of DM patients who were referred for a dental exam in the last 12 months
Ρ	% of DM patients who had comprehensive foot examination documented in the last 12 month
Ρ	% of DM patients files with documented Self – management goals
0	% of DM patients who have had one pneumococcal / Prevnar vaccine
0	% of DM patients who had influenza vaccine in the last 12 months
Р	% of DM patients who were referred to dietitian
Р	% of DM patients who attended dietitian clinic

References

1) IDF atlas , 7th edition 2015 . http://www.diabetesatlas. org/ (accessed in 1/11/2016).

2) The Institute of Medicine of the National Academics .https://www.nationalacademies.org/hmd/Global/ News%20Announcements/Crossing-the-Quality-Chasm-The-IOM-Health-Care-Quality-Initiative.aspx (accessed in 26/10/2016)

3) Wagner EH: Chronic disease management: what will it take to improve care for chronic illness? Effective Clin Effective Clin Pract 1:2-4, 1998

4) Donabedian, A. (1988). The quality of care. How can it be assessed? JAMA, 260(12), 1743-1748.

5) Pogach L, Aron DC. Sudden acceleration of diabetes quality measures. JAMA. 2011;305(7):709-710.

6) Diabetes Care 2016 Jan; 39 (Supplement 1): S13-S22. http://care.diabetesjournals.org/content/39/Supplement_ 1/S13 (accessed in 26/10/2016)

7) Wu WY1, Chen JJ, Shih A. Effect of quality improvement organization activities on outpatient diabetes care in eastern New York State. Med Care. 2006;44(12):1142-7.

8) Sequist TD1, Adams A, Zhang F, Ross-Degnan D, Ayanian JZ. Effect of quality improvement on racial disparities in diabetes care. Arch Intern Med. 2006 Mar 27;166(6):675-81.

9) Ali MK1, Singh K1, Kondal D1, Devarajan et al . Effectiveness of a Multicomponent Quality Improvement Strategy to Improve Achievement of Diabetes Care Goals: A Randomized, Controlled Trial. Ann Intern Med, 20; 165(6):399-408. 2016

10) Rachel Wilf-Miron, Arkadi Bolotin, Nesia Gordon, Avi Porath and Ronit Peled .The association between improved quality diabetes indicators, health outcomes and costs: towards constructing a "business case" for quality of diabetes care - a time series study. BMC Endocrine Disorders201414:92

11) 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;(12) : 2252-6. Available at: http://www.thelancet. com.

12) Shojania KG, Ranji SR, McDonald KM, et al. Effects of quality improvement strategies for type 2 diabetes on glycemic control: a meta-regression analysis. JAMA 2006; 296: 427-40