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## Short Communication

### Application of Quality Improvement to Improve Patient Outcomes: Obesity Prevention

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## Introduction

Healthcare facilities are faced with challenges to incorporate holistic quality care across the continuum. It is important to understand the meaning of systems and systems thinking in order for healthcare facilities to function properly. A system is several independent actions or processes interacting with each other to make a whole [1]. A systems approach in healthcare can be of value in analyzing and understanding the independent prevention and intervention programs related to the obesity epidemic and can provide a better understanding of how working together as an interdisciplinary team to accomplish a goal is more effective than an individual analysis of behavior. "Systems thinking" is applied in healthcare facilities and it is important for the multidisciplinary team to understand their interdependency when providing care to patients. Systems-thinking is a framework for understanding the inter-relationships between individual parts and comprehend that they are dependent on each other [1]. By applying this framework, coordination of care with other members of the health care team is organized to improve patient safety and outcomes.

Until recently, systems-thinking has not been applied to the obesity epidemic. Obesity prevention efforts, to date, have not been comprehensive or well integrated; understanding that obesity is a consequence of multifaceted interactions between many variables is an important milestone for obesity research [2]. The obesity epidemic poses a challenge because it is a complex problem with numerous inter-connected variables. Experts suggest that improving the complicated structure of interdependent segments of the obesity epidemic will require a holistic, integrated response from various sectors [3] in the healthcare team. Healthcare organizational leaders must understand and learn elements within and between systems therefore, healthcare models can assist them in discovery of these associations [1]. Within a system, there are

three basic elements which include inputs, conversion process, and outputs [1]. These elements can be applied to obesity prevention through patients as inputs. The conversion processes for obesity prevention patients would include educational modules as an interventional treatment. Finally, the output for obesity prevention is patients having an increase in health, a decrease in BMI, and a decrease in co-morbid conditions such as: diabetes, hypertension, and cardiovascular disease.

## Application of System's Model to Obesity Prevention: Three Core Process Model

The three core process model is incorporated as horizontal arrows as interpretations to represent methods within the organization [1]. There are a total of four arrows with three core categories that are aligned with the organizations' desired results. There are two administrative decision-making processes as arrows, one clinical/medical/technical processes and one operational/patient & client flow processes arrow. The clinical/medical/technical processes and operational/patient & client flow processes are located between the two administrative decision-making processes arrow to show how the organizational leaders and their processes impact the organization in its entirety. These core processes in this model demonstrate how the organization can evaluate each grouping to review the interdependence between each process and make adjustments or necessary improvements throughout the organization [1].

As an example of application of this model, a pediatric clinic's leaders implement a new program to train the providers of care to improve recognition and management of pediatric obesity. In the clinical/medical/technical process, the providers would be trained on the epidemiology of pediatric overweight and best practices for diagnosis, treatment, and management of overweight patients [4].

As patients would be assessed by more knowledgeable providers, more accurate screenings would be conducted and best practices would be implemented for management of overweight, therefore improving patient outcomes. By utilizing the three core process model, leaders and staff identify relationships between processes for this population to receive overall better care, definitive diagnosis, treatment and management of care [1].

## **Role of Mission, Vision and Context to Organizational Results**

An organization's mission is vital to having a vision and means to achieve performance results. If a facility or community organization's mission includes meeting the physical and psychosocial needs of the population it serves, developing an obesity prevention plan could assist in meeting that goal. By providing education and resources, an organization is not only meeting the physical and psychosocial needs of the community, but also improving the overall health of the population.

The healthcare system is dynamic with continual changes and within each organization these changes take place at various rates [1]. There are also other variables of change that affect the organization as a whole: the patient, the organizational contexts (employee transition, technological advances, and research), and communities and political environments [1]. Employees continually change positions in healthcare facilities both within and outside of the organizational structure. Evidence based research is continually conducted and should be incorporated into policies and procedures of daily care. Technological advances, or systems, to assist in organization of health care providers exist to provide quality care. Also, the community where the facility is located will be influenced to change with economic cycles, political ideologies, and election cycles [1].

## **Purpose, Desired Results, Measures of Results, Interventions, and Improvement Goals**

Through meeting an organization's mission, an increase in maturity across the quality continuum in performance measurement can be seen. A healthcare organization's measurement of performance management provides understanding into their advancement along the quality continuum [1]. The quality continuum in performance measurement analyzes healthcare organization's maturity of efforts and results. More mature organizations collect data that includes demonstration of performance from main processes, monitor progress on action plans, and reveal key business requirements. Additionally, maturity determines if the healthcare organization is meeting the needs of clients and stakeholders as well as the mission and goals of the organization or community organization [1].

## **Goal Statements**

In organizations, managers can set goals for improvements, guide incentives or rewards, and to determine how well employees fulfill their job responsibilities [1]. Organizational leaders must possess the skills to effectively and strategically set goals at all levels to improve the performance of the facility and patient outcomes. There are different types of goal statements that are purposeful in a given situation to enable success; therefore, it is imperative for leaders to examine the situation and desired results in order to select an appropriate goal statement to achieve positive outcomes [1]. There are multiple types of goal statements that encompass features of various types of goals [1]. Improvement goals will accomplish preferred results by ensuring that all components of the goals are obtained to meet the needs of the system. The goal statement should be SMART: specific, measurable, achievable, relevant, and time-framed. Once goals have been set, organizational actions are influenced by adhering to the guidelines to achieve the desired improvement result [1].

Managerial behaviors, decisions, and effectiveness are all influenced by mental models. Organizational leaders, within a system, need to be aware of mental models that could influence the organizational culture. Mental models can be utilized as guides to control behavior such as clinical guidelines for evidence based practice [5]. Once the organizational leaders understand how to utilize mental models, these are implemented to achieve optimal outcomes. In relation to obesity prevention, mental models regarding obesity can facilitate success in weight management [6]. The desired results of behavior change are to reduce the health risks associated with obesity. Organizational leaders are responsible for creating a patient focused environment. They also have an understanding of systemic structure that assists them with: policies and procedures, staff development, and personnel performance to sustain a patient focused environment [1]. By strategically incorporating quality care into management tools, leaders serve as a role model for employees with exemplar service quality [1].

## **Patient and Stakeholder Expectations**

Within obesity prevention, national research is conducted to incorporate the best evidence based practice and provide education for health promotion and a healthy lifestyle. Obesity is recognized as a major public health issue and is a multi-disciplinary problem with both genetic and environmental causes [2]. Being obese has an adverse impact on health and is associated with other co-morbid conditions. Additionally, there are negative social and psychological implications associated with being obese or overweight. This issue is very important to the consumers and community stakeholders. Stakeholders of health services organizations can be made up of a

diverse population [1]. Organizational leaders are responsible for recognizing stakeholders other than patients; accreditation bodies and national quality forum are also examples of stakeholders. The Joint Commission is an accrediting body that developed and implemented the National Patient Safety Goals (NPSGs) program and incorporates a continuous quality improvement approach applied through an annual review process [1]. By implementing the NPSGs, nurse managers can prioritize improvement needs based on the organizational vision and mission and the stakeholders' perceptions.

The Consumer Assessment of Health Providers and Systems (CAHPS) was initially implemented on a voluntary basis to assess patients' perceptions of care [1]. CAHPS was required by the Centers for Medicare & Medicaid services (CMS) in 2008 as part of Reporting Hospital Quality Data for Annual Payment Update (RHQDAPU) program and hospitals adopted the Hospital CAHPS (HCAHPS) [1]. There are three broad goals that are identified in the survey: identify patient's perspectives of care to compare to other facilities, public reporting in an effort to create an incentive for organizations to improve quality of care, and provide transparency of the quality of hospital care [1]. The results of the HCAHPS survey is reported on the CMS Hospital Compare website and updated quarterly [1]. Managers' understanding of the organizational structure, as they review HCAHPS data, will guide leadership in quality improvement. Healthcare organizations are aware that leadership is the key "to truly transform patient perceptions and clinical quality" [1].

## **Role of Quality Oversight Organizations**

Types of quality oversight organizations are seen through multiple agencies and range from: state licensing bodies [7]. Another quality oversight initiative is through licensure, accreditation, and certification [1]. Licensure is through governmental agencies whereas accreditation and certification are non-governmental and represent competence or higher education. One non-governmental accreditation organization is The Joint Commission and is a quality review for several types of health care delivery systems. This organization functions to assess quality standards, organizational compliance, and recognition of compliance [1].

## **Public and Private Policy Promoting Systems Change**

The quality oversight organizations are vital stakeholders of organizations in healthcare. Based on their structure of standards, conditions of participation, and regulations, they are increasingly being used to drive system change [1]. Quality improvement is a core function of CMS and implementation of a quality improvement plan will strategically guide agencies and stakeholders in a collaborative process to improve the health care delivery system. Transparency is an effective strategy to promote accountability

and reduce risk in health care. Value is key factor in health care quality policy at the federal level and initiatives are being taken to advance CMS toward value-based purchasing [1].

To solve problems systematically or correct performance gaps, healthcare organizational leaders must use a scientific evidence-based process [1]. There are a variety of improvement approaches that leaders can utilize systematically to help make decisions and changes. These models can assist with improved critical thinking, planning, developing process change, implementation and evaluation within a complex healthcare system. These tools can be helpful for all processes and programs including obesity prevention. By utilizing these tools, obesity prevention and health promotion programs can be evaluated and improved to meet patient needs and produce positive outcomes [1].

## **Sources of Comparative Data and Obesity Prevention**

Comparative data allows leaders to better understand their performance against other healthcare organizations [1]. In comparison of data with other organizations, leaders can review systemic structures and recognize best practices. Mandatory reporting has increased availability of access to comparative data in healthcare over the last several years. So, leaders can benchmark the data from their organization against other similar sized healthcare facilities in order to determine what areas the organization is doing well in and what improvements are to be implemented in order to provide high quality care [1].

Data sources evaluate and benchmark data regarding patient satisfaction, health plans, population data, clinical data, and comparative practices [1]. A variety of sources provide comparative data [1]. For obesity prevention strategies, an example would be the Centers for Disease Control and Prevention: Data and Statistics site that allows the community to review the statistics of nutrition, physical activity and obesity for Kentucky and other states across the nation [8]. Another example would be Hospital Compare that allows the community to review hospital results of patient satisfaction and disease-specific clinical indicators. Within this website, people can compare and review the data between hospitals within the community to assist in making decisions in where to receive their healthcare services.

## **Use of Process Improvement Tools**

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## Continuous Improvement Cycle

The Shewhart cycle or Deming Wheel consists of four steps to improve quality [1]. This cycle assists leaders in Planning, Doing, Checking or Studying and Acting (PDCA). This continuous and systematic approach is cyclical in nature. In planning, health care leaders identify an opportunity and plan for change. Doing is to implement the change on a small scale. Checking or studying is using data outcomes from the small scale or trial change. The data is evaluated to determine if a positive change has occurred. Lastly, it is to act by implementing the change on a bigger scale or organizational wide if it was successful. If the trial was unsuccessful, health care leaders can then start the cycle with new planning again [1].

An example of the PDCA cycle as applied to obesity prevention is to implement a new program. Leaders may identify the need to implement an obesity prevention plan in public health agency. A trial for new protocol or program to be implemented with new mothers with a BMI over 30.1 would be planned. The trial would take place for 30 days and then evaluation data would need to be analyzed. The staff in the agency would be surveyed for their opinion of the program and its effectiveness for these patients. When leaders are meeting with stakeholders, they could question patients regarding satisfaction with their care related to the new obesity prevention program. In addition, the agency's customer service scores should be reviewed for improvement from previous scores prior to the implementation of the program. The program would be deemed successful and plans would be made to implement the program to the public health departments within the region.

## Six Sigma DMAIC

The Six Sigma DMAIC methodology is an ongoing process or cycle that includes the following steps: define measure, analyze, improve and control [1]. The leader starts the process by defining

a problem or improvement opportunity followed by measurement of the process performance. Within measurement, data of the current process is collected. Next, organizational leaders analyze the process to evaluate the root causes of decreased performance to determine if the process has the ability to be improved or if it should be redesigned [1]. This structured format can assist leaders in brainstorming the potential or actual causes to the problem [1]. Once the root causes are identified, leaders improve the process by "Attacking" the causes of the problem [1]. Finally, leaders must control the improved process to hold the gains. The Six Sigma DMAIC process is similar to the PDCA cycle; however, it primarily focuses on evaluating root causes and ensures continuous evaluation and control [1]. Techniques and activities are utilized by healthcare organizations to meet quality standards [1]. Some may be more traditional while others may advance to a higher level of maturity; however, organizations have a common goal to strive to improve quality for internal and external customers, as well as stakeholders. By moving to a higher maturity, organizations promote better processes, quality and outcomes [1].

## Process and Deployment Flowchart

Process flowcharts can help health care leaders and teams better understand the organization [1]. Leaders must fully understand a process in order to make decisions regarding making changes or improvements. A process flowchart is a picture of the events in sequence for a process, which is one of the process improvement tools utilized by organizations to make quality improvements. Evidence based tools are available, integrated, and can assist health care leaders to better understand processes to determine where changes should be made. Through understanding processes, leaders can plan, develop, implement, evaluate, and control the needed change within the healthcare delivery system.

## Conclusion

Leaders must utilize system models to assist with making improvements to ensure quality care. In understanding processes, leaders can plan, develop, implement, evaluate, and control the needed change within the healthcare delivery system. Incorporating a systems thinking approach to obesity prevention will have the potential to address processes and facilitate ongoing communication, access to resources, and high quality care. The application of the system models to prevention and treatment of obesity shows great promise in effective coordination of care in the healthcare arena. If healthcare organizations work in a systems thinking framework, continual quality improvement can ensure high quality care [1].

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