

Chapter 1 : Basics of Quality Improvement -- Practice Management

Quality Improvement Methods 2. Affinity Diagram. a. Definition: An affinity diagram organizes ideas according to their calendrierdelascience.com about similar observations or ideas are posted and then grouped together visually so as to support insights and to promote creativity when thinking about them.

This study reports on a diabetes QI project in rural Guatemala whose primary aim was to improve glycemic control of a panel of adult diabetes patients. Initial assessment Formative research suggested multiple areas for programmatic improvement in ambulatory diabetes care. Implementation A bundle of improvement activities were implemented at the home, clinic and institutional level. Evaluation Control charts of mean hemoglobin A1C HbA1C and proportion of patients meeting target HbA1C showed improvement as special cause variation was identified 3 months after the intervention began. Control charts for secondary process measures offered insights into the value of different components of the intervention. Intensity of home-based diabetes education emerged as an important driver of panel glycemic control. Statistical process control charts are a promising methodology for use with panels or registries of diabetes patients. Statistical process control SPC is a set of powerful QI methodsâ€”which include the use of control chartsâ€”that can detect statistical changes in a healthcare process earlier than traditional research methodologies, including during the testing phase of an intervention [3]. There have been limited published applications of control charts in resource-limited settings or with diabetes panels [4]. In this study, we report on a small primary care QI project in rural Guatemala whose primary aim was to improve glycemic control in patients with Type 2 diabetes. Our clinical program is described in detail elsewhere [7]. Formative research In , we conducted a needs assessment of diabetes care in rural Guatemala [8], which suggested several areas for improvement. First, diabetes patients generally had limited health literacy on topics including the natural history of the disease, the role of diet and lifestyle, and prevention of common complications. Second, due to economic difficulties and health system shortcomings, diabetes patients often sought care at multiple health facilities and lacked care continuity. Fourth, patients expressed strong preference for Mayan-language care delivery. The theory of change for the intervention was visualized in a key driver diagram [9] in Fig. Figure 1 Key driver diagram for diabetes QI in rural Guatemala. Primary drivers for the diabetes QI project were conceptualized at the Home, Clinic and Organizational levels. Improvement activities were structured to address each level. Implementation The QI intervention, which began in October , addressed key drivers drawn from formative research. Interventions targeting home-level drivers The primary activity at the home level was the implementation of a diabetes education program for patients and family members. We previously had adapted a well-known Latino chronic disease curriculum for use in Mayan-speaking populations [11], and in October we initiated group-based education sessions. However, despite formative research on the feasibility of group education, actual attendance at group sessions was very low. In May , therefore, we re-launched our education intervention as a home-visit program delivered by a nurse educator consisting of eight sessions over 1 year. The group-based curriculum was revised to encourage family participation, emphasize dietary and lifestyle aspects, and incorporate motivational interviewing techniques. Interventions targeting clinic-level drivers In October , we created and filled the position of diabetes coordinator, who managed the panel, expedited subspecialty referrals, and delivered training to diabetes nurses. At this time, language policies were also formalized to mandate care delivery in Mayan languages when applicable. Finally, retention of diabetes ground-level staff clinical nurses and diabetes educators became a potentially critical problem due to staff burnout. In September , we implemented a package of retention strategies including salary increases, flexible work arrangements and formal professional development opportunities. Interventions targeting organization-level drivers Three activities were most important at this level. First, in March , an electronic diabetes registry was created to track individual patient data in real time, display trends in cohort-level control, and provide clinical reminders to providers. In July , our institution hired a pharmaceutical procurement specialist and implemented a new electronic drug distribution system. The new procurement officer and distribution system together were intended to reduce supply chain failuresâ€”especially for insulinâ€”and free up clinical staff from

responsibilities relating to medicine distribution. Evaluation Sample This QI project was carried out with all adult type 2 diabetes patients served in the diabetes program. This sampling decision permitted evaluation of the impact of the QI project on long-term patients under active management for whom sufficient baseline clinical data were available. Among the eight patients in the eligible sample who were dropped from the analysis due to lack of longitudinal data, two had abandoned care in the 12 months prior to the launch of the QI program and six were lost to follow-up after the launch. There were no statistically significant differences in gender, age or community location between those who dropped out and those retained; however, baseline HbA1C was higher in patients who dropped out 9. We justify our target as appropriate to our context given the high risk of severe hypoglycemia in rural Guatemalan towns with limited access to emergency services. Secondary measures were process indicators we considered proxies for each key driver Fig. At the home and clinic level, we measured visit intensity as defined by the mean number of visits in each setting per patient quarter. At the organization level, we considered insulin use to be a proxy for overall institutional capacity as well as, given the psychological and cultural barriers to insulin use [13], a marker for the acceptability to patients of offered services , and we assessed the proportion of patients with insulin prescriptions. Data collection and analysis Diabetes program data were collected and stored in our electronic medical record, OpenMRS <http://> We used Stata version 13 College Station, TX to generate descriptive statistics for baseline patient characteristics. Control charts Control charts are the primary tool of SPC and permit analysis of process data [14]. Control charts have been used in a variety of health settings [15]. We created three complementary control charts of panel glycemic control: X-bar and S and P charts permit underlying data of variable subgroup sizes, which is an important feature of longitudinal diabetes program evaluation, as HbA1C values are typically not available for all patients during each period. The CUSUM chart was selected to assess for cumulative improvement of panel performance as each data point incorporates information from prior time periods [14]. Secondary process measures were assessed via X-bar and S charts for mean home and clinic visits per quarter and a P chart for the proportion of patients receiving insulin prescriptions each quarter. For all of the control charts, we followed methods well established in the literature for identifying special cause variation. First, we used the first 12 data points to generate the baseline mean. For our data set, this included 10 quarters of pre-intervention data and two data points that overlapped with the intervention Q4 and Q1. We applied the following criteria to identify special cause variation [14]: Sensitivity analysis A challenge of assessing improvement in panel quarterly mean HbA1C with control charts is that individuals with better or worse disease control may be monitored at a different frequency in the intervention period relative to the baseline period. If differential monitoring occurs, the detection of special cause in a control chart may not reflect true changes in underlying panel glycemic control. We, therefore, conducted a sensitivity analysis using the full-rank cohort by carrying forward HbA1C values from prior quarters, and replacing them as new values became available [14]. Following methods described in the literature, control limits were adjusted to account for autocorrelation [14]. Results Patient characteristics Baseline demographic and clinical characteristics of the patient sample Table 1 included a female preponderance among clinic patients, low levels of formal education and high proportion of patients with abnormal body mass index BMI. Mean age was Most patients expressed preference for the local Mayan language over Spanish.

Chapter 2 : Navigate 2 Advantage Access for Quality Improvement

Background. The necessity for quality and safety improvement initiatives permeates health care. 1, 2 Quality health care is defined as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" 3 (p.).

Service relationship with internal customers Never compromise quality Customer driven standards The Concept of Continuous Improvement by TQM TQM is mainly concerned with continuous improvement in all work, from high level strategic planning and decision-making, to detailed execution of work elements on the shop floor. It stems from the belief that mistakes can be avoided and defects can be prevented. It leads to continuously improving results, in all aspects of work, as a result of continuously improving capabilities, people, processes, technology and machine capabilities. Continuous improvement must deal not only with improving results, but more importantly with improving capabilities to produce better results in the future. The five major areas of focus for capability improvement are demand generation, supply generation, technology, operations and people capability. A central principle of TQM is that mistakes may be made by people, but most of them are caused, or at least permitted, by faulty systems and processes. This means that the root cause of such mistakes can be identified and eliminated, and repetition can be prevented by changing the process. Preventing mistakes defects from occurring mistake-proofing or poka-yoke. Where mistakes recur, stopping production until the process can be corrected, to prevent the production of more defects. If the current reality does not include important preconditions, TQM implementation should be delayed until the organization is in a state in which TQM is likely to succeed. If an organization has a track record of effective responsiveness to the environment, and if it has been able to successfully change the way it operates when needed, TQM will be easier to implement. If an organization has been historically reactive and has no skill at improving its operating systems, there will be both employee skepticism and a lack of skilled change agents. If this condition prevails, a comprehensive program of management and leadership development may be instituted. A management audit is a good assessment tool to identify current levels of organizational functioning and areas in need of change. An organization should be basically healthy before beginning TQM. If it has significant problems such as a very unstable funding base, weak administrative systems, lack of managerial skill, or poor employee morale, TQM would not be appropriate. People need to feel a need for a change. Kanter addresses this phenomenon by describing building blocks which are present in effective organizational change. Departures from tradition are activities, usually at lower levels of the organization, which occur when entrepreneurs move outside the normal ways of operating to solve a problem. A crisis, if it is not too disabling, can also help create a sense of urgency which can mobilize people to act. In the case of TQM, this may be a funding cut or threat, or demands from consumers or other stakeholders for improved quality of service. After a crisis, a leader may intervene strategically by articulating a new vision of the future to help the organization deal with it. A plan to implement TQM may be such a strategic decision. Such a leader may then become a prime mover, who takes charge in championing the new idea and showing others how it will help them get where they want to go. Finally, action vehicles are needed and mechanisms or structures to enable the change to occur and become institutionalized. Task identification would include a study of present conditions assessing current reality, as described above ; assessing readiness, such as through a force field analysis; creating a model of the desired state, in this case, implementation of TQM; announcing the change goals to the organization; and assigning responsibilities and resources. This final step would include securing outside consultation and training and assigning someone within the organization to oversee the effort. This should be a responsibility of top management. In fact, the next step, designing transition management structures, is also a responsibility of top management. In fact, Cohen and Brand and Hyde assert that management must be heavily involved as leaders rather than relying on a separate staff person or function to shepherd the effort. An organization wide steering committee to oversee the effort may be appropriate. Developing commitment strategies was discussed above in the sections on resistance and on visionary leadership. Special all-staff meetings attended by executives, sometimes designed as input or dialog sessions, may be used to kick off the

process, and TQM newsletters may be an effective ongoing communication tool to keep employees aware of activities and accomplishments. Management of resources for the change effort is important with TQM because outside consultants will almost always be required. Choose consultants based on their prior relevant experience and their commitment to adapting the process to fit unique organizational needs. While consultants will be invaluable with initial training of staff and TQM system design, employees management and others should be actively involved in TQM implementation, perhaps after receiving training in change management which they can then pass on to other employees. A collaborative relationship with consultants and clear role definitions and specification of activities must be established. In summary, first assess preconditions and the current state of the organization to make sure the need for change is clear and that TQM is an appropriate strategy. Leadership styles and organizational culture must be congruent with TQM. If they are not, this should be worked on or TQM implementation should be avoided or delayed until favorable conditions exist. Remember that this will be a difficult, comprehensive, and long-term process. Leaders will need to maintain their commitment, keep the process visible, provide necessary support, and hold people accountable for results. Use input from stakeholder clients, referring agencies, funding sources, etc. TQM can be a powerful technique for unleashing employee creativity and potential, reducing bureaucracy and costs, and improving service to clients and the community. Conclusion TQM encourages participation amongst shop floor workers and managers. What Is Total Quality Control?

Chapter 3 : Quality Improvement Methodologies | NIDDK

A culture of improvement frequently develops in an organization that is committed to quality, because errors are reported and addressed. "Improved communication with resources that are internal and external to an organization, such as, funders, civic and community organizations.

From the literature, a conceptual framework has been developed for the classification of quality improvement strategies See Chapters 1–3. These interventions can target organizations, providers, patient communities, or individual patients, and have been evaluated in a wide variety of formats. For each study, reviewers described key features of the intervention in free-text format and answered a series of questions designed to characterize the intervention in terms of its component QI strategies. The taxonomy of QI strategies is defined as follows:

- Provider reminders—Information tied to a specific clinical encounter, provided verbally, in writing, or by computer, that is intended to prompt the clinician to recall information e.
- Facilitated relay of clinical data to providers—Clinical information collected directly from patients is relayed to the provider in situations where the data are not generally collected during a patient visit, or when collected using a means other than the existing local medical record system e.
- The investigators expected there to be some overlap with the provider reminder systems strategy, but kept them separate at the abstraction stage. This was done to allow for the possibility that the data could be subsequently analyzed with and without collapsing the strategies.
- The practice of benchmarking refers to the distribution of performance data from institutions or providers regarded as leaders in the field. It is considered a type of audit and feedback, so long as local data is provided in addition to the benchmark figures.
- Provider education—Any intervention that includes one of the following three substrategies: Patient education—Live appearance patient education, for individuals or members of a patient group or community, or via the distribution of printed or audio-visual educational materials. Only those approaches that include patient education as part of a multifaceted strategy were evaluated. Those in which patient education was the sole approach were excluded. One of the upcoming volumes in the Closing the Quality Gap series may be used to review the topic of patient education with regard to its effect on a variety of chronic diseases, including diabetes.
- Promotion of self-management—The distribution of materials e.
- The authors expected some overlap with the patient education and patient reminders strategies, but elected to separate the strategies at the abstraction stage. This was done to allow for the possibility that the data could be analyzed subsequently, with and without collapsing the strategies.
- Patient reminders—Any effort directed toward patients that encourages them to keep appointments or adhere to other aspects of self-care.
- Organizational change—Changes in the structure or delivery of care designed to improve the efficiency or breadth and depth of clinical care. These include the use of disease management or case management tactics coordination of assessment, treatment, and arrangement for referrals by a person or multidisciplinary team in collaboration with or supplementary to the primary care provider ; other personnel or team changes; the use of telemedicine communication and case discussion between distant health care professionals ; Total Quality Management TQM or Continuous Quality Improvement CQI approaches quality problem cycles of measurement, intervention design, implementation, and re-measurement ; and changes to medical records systems or hospital information systems.
- Financial, regulatory, or legislative incentives—Interventions with positive or negative financial incentives directed at providers e.
- This strategy also included positive or negative financial incentives directed at patients, system-wide changes in reimbursement e.
- In addition to the aforementioned QI strategies, the authors had planned initially to abstract data on intervention features such as social influence e.
- The potential roles identified in structured form were: Additional potential roles include facilitated communication between providers e.

Scope This report focuses on quality improvement strategies that target adult patients with type 2 diabetes mellitus DM. It is the sixth leading cause of death among the general U. Accordingly, quality improvement strategies have a tendency to focus on adult type 2 diabetics. The reviewers did not assess QI strategies for children with diabetes, due to the higher prevalence of type 1 DM although cases of type 2 DM also are on the rise among children , as well as the unique challenges involved with the treatment of this patient population and their potential to limit the applicability of QI

strategies tested in the adult population. Studies that focused exclusively on gestational diabetes also were excluded. A wide range of interventions targeting patient behavior, individual provider behavior, and systemic problems has been researched and implemented to address these quality gaps. As documented previously, the treatment goals for diabetic patients are clear and well supported by research. Providers can avail themselves of a variety of safe and effective treatments to help patients reach these goals. Thus, the focus of this review is interventions that seek to change the methods by which organizations or providers deliver care, with the goal of improving individual patient outcomes. Studies that focused exclusively on patient behavioral changes were not included in this review, but will likely be addressed in a future series report on patient education and self-management as QI strategies for chronic illness.

Inclusion and Exclusion Criteria The general inclusion criteria were described in the chapter on Methods, in Volume 1 of this series. Briefly, included studies are required to:

- Many of the abstracted outcomes relate to blood pressure control and modification of important cardiovascular risk factors e.
- When a study reported such outcomes but did not include any measures specifically related to glycemic control or the prevention of diabetic complications e.
- For instance, a study of blood pressure control in diabetics would be excluded from the present review if the only outcomes reported were related to hypertension. The study would, however, be eligible for inclusion in the hypertension review Volume 3 of this series.
- Studies also were excluded when their outcomes consisted solely of provider or patient understanding, satisfaction, or self-efficacy; or solely of costs and resource use i.

Included Trial Designs Randomized trials offer the best means of isolating the effects of a given intervention, as patients in different study groups generally differ only with respect to their exposure to the treatment i. Patient randomized trials and cluster randomized trials have been included in the review for this reason. In the former, individual patients are assigned randomly to an intervention group or a control group. Patient randomized trials represent the gold standard for health care evaluations. For trials of QI interventions, however, the advantages of patient randomized trials must be weighed against the disadvantage of contamination. Because clinicians will care for patients in both study groups, the level of care received by the control group patients may improve over the course of the trial. This could lead to an apparent null result, despite the improvement in patient outcomes occurring as a result of the intervention. This approach overcomes the problems of contamination at the cost of a decreased effective sample size. The choice of a clustered RCT versus patient RCT, therefore, depends on the magnitude of the contamination across patients that would occur under the latter design choice.

Terminology to Distinguish Studies, Interventions, and Comparisons Since the reviewed articles did not present their study data in a uniform fashion, the authors adopted the following terminology to better describe the quality improvement interventions reviewed for this volume:

- When a single study led to multiple publications articles describing different aspects of the study, e.
- A single study may include several different study arms groups of subjects , with different QI interventions provided to the subjects in each study arm. These are often reported in a single published article. For purposes of analysis, the researchers regarded each intervention that was studied in contrast to a control group as a separate comparison. For example, a single study with one control group and three different arms receiving different QI interventions e.
- When an article reported several comparisons, the reviewers performed a separate data abstraction for each comparison. The intervention described in a particular study may be multifaceted, that is, it may involve more than one QI strategy. For example, the intervention may consist of a combination of provider education and provider reminders. A multifaceted intervention that was applied to a single study arm and judged against the control group was treated as a single comparison. This step was considered a means of enhancing the completeness of the EPOC database search, in an effort to be as thorough and meticulous as possible. Appendix C shows the structured abstraction forms used to guide these judgments. A total of articles merited full-text reviews. These involved two independent reviewers, at least one of whom was a core investigator or senior methodologist as opposed to a trained research assistant. At the full-text level, reviewers abstracted basic information on the study design, quality improvement strategy, and variety of outcomes. The complete full-text abstraction form also is shown in Appendix C. All disagreements were resolved by consensus.

Publication Bias Publication bias refers to an overestimation of effect size, and is due to the preferential publication of positive studies. Given the absence of a single, well-established analytic method for detecting or correcting the effects of

publication bias, 48 50 the preferred approach to preventing this source of error is a thorough search for unpublished research. Unlike research into topics of clinical care, e. For disease-specific reviews, as opposed to reviews of general strategies e. To that end, the conference proceedings of several prominent meetings in endocrinology and diabetes care were reviewed. Another problem that may exacerbate the impact of publication bias on reviews of quality improvement studies involves the research often conducted by personnel interested in pragmatic, local quality improvement. The results of such studies may be less likely to be submitted for publication, while investigators involved in clinical research trials generally have a stronger incentive to publish. And though publication bias may occur at the level of journal acceptance, it is unlikely that investigators would opt not to submit their work anywhere, simply because the trial had a negative finding. By contrast, some quality improvement studies may be undertaken by personnel for whom quality assurance activities are a part of their job descriptions. The emphasis often is placed on measures of success in such instances, rather than on research dissemination. In effect, the incentive to publish may be particularly low when the evaluation result is negative. Unfortunately, the relatively unstructured format of these project narratives makes for time-intensive searches. And while recent changes to the database denied the reviewers access during the timeframe of this project, they plan to revisit the access issue for future topics in the series. The difficulty in obtaining unpublished QI trials and vulnerability to publication bias were incentives for analyzing the studies in terms of median effect sizes. As described in greater detail in the Methods section of Volume 1, the investigators summarized their findings for a given QI type or study feature by reporting the median effect size achieved by the studies e. Publication bias is more likely a factor in smaller, low quality studies. When the results report larger effects for a given intervention, they will not affect the median so long as their total number is small. Outcome Measures Investigators targeted three broad categories of study outcomes: Measures of disease control included intermediate clinical outcomes such as HbA1c and blood pressure, as well as clinical endpoints such as mortality, cardiovascular events, vision loss, and amputation. Quality improvement studies generally have insufficient power to detect changes in morbidity and mortality, as such studies require large numbers of patients and lengthy observation periods. HbA1c levels have a well-established connection to glycemic control over time and to the prevention of important diabetic complications. Serial monitoring of serum HbA1c, blood pressure, and cholesterol, as well as monitoring for nephropathy with microalbuminuria , neuropathy by foot examinations , and retinopathy with dilated retinal examinations are widely accepted care practices see Appendix A. Guidelines for the care of diabetic patients continue to evolve, and significant changes have occurred within the last half-decade alone. While recommendations for optimal glycemic control have remained stable, new data have led to recommendations for tighter blood pressure and hyperlipidemia control. But most of the quality improvement strategy trials reviewed for this study were undertaken in years when less restrictive guidelines were in place, and therefore contain targeted goals that would be considered suboptimal by current standards. Since the focus of this review was to identify effective strategies for implementation, the investigators opted to include studies designed to improve provider adherence with the targets deemed acceptable at the time of the original study—even in those instances where they no longer were consistent with present guidelines. Core outcomes were abstracted using a structured format, in an effort to permit quantitative analysis. For measures of disease control, the core outcome consisted of changes in serum HbA1c and blood pressure. Serum lipids, creatinine, and outcomes related to retinal disease and foot ulcers also were captured, with the expectation that such outcomes were reported in too many different formats across studies to permit their inclusion in the quantitative analysis. As mentioned previously, investigators also included clinical endpoints such as death and amputation, but expected studies to report these infrequently and to be underpowered to detect differences across study groups.

Chapter 4 : Quality management - Wikipedia

Quality Improvement Methods 1. A-3 worksheet. a. Definition: Communication and participation are key elements of quality calendrierdelascience.comg the important points of an improvement project across on a single page is a good way to assure needed information is communicated to everyone who needs it.

Creating a Quality Improvement Plan “ The graduate develops a quality improvement plan in a healthcare environment in order to promote patient-centered care, build effective work teams, and influence organizational change. Quality Improvement Plan Introduction: Health information management professionals will be given opportunities to be members of quality improvement QI teams. Because of their expertise in health information management, they are often asked to gather data, analyze it, and present it for quality improvement activities. Understanding the quality improvement models used in healthcare administration and clinical practice from the perspectives of all types of healthcare professionals facilitates team building and achieving success in QI initiatives. Your submission must be your original work. Use the Turnitin Originality Report available in Taskstream as a guide for this measure of originality. You must use the rubric to direct the creation of your submission because it provides detailed criteria that will be used to evaluate your work. Each requirement below may be evaluated by more than one rubric aspect. The rubric aspect titles may contain hyperlinks to relevant portions of the course. Develop a quality improvement plan that is based on the scenario by doing the following: Discuss how to initiate a quality improvement project for this clinical problem. Identify three areas of focus for quality improvement in the scenario. Describe the types of data gathered in part A1 e. Explain your process for gathering the data. Identify a quality improvement model that can be implemented. Describe the steps of the quality improvement model you chose. Discuss the influence external accrediting agencies have on the quality improvement process. Describe the focus of one organization that helps to drive quality standards for the department. Discuss one example of how you will use benchmarking and performance measures to monitor the progress made toward quality improvement goals. Identify the team members who would contribute to the quality improvement team. Describe the professional roles and responsibilities of each team member identified in part B. Explain how each team member contributes to the project. Discuss the qualities the team needs in order to facilitate project success. Summarize why a quality improvement project is needed for the given scenario. Discuss how you would communicate your ideas for quality improvement project implementation to organizational leaders. Describe the steps you will take to implement the quality improvement project in the organization. Acknowledge sources, using APA-formatted in-text citations and references, for content that is quoted, paraphrased, or summarized.

Chapter 5 : Quality Improvement Essentials Toolkit

Quality Improvement Methods Dr. Abdalla Ibrahim Certified Healthcare Surveyor Accreditation Specialist abdallaibrahim@calendrierdelascience.com 2. Definitions Quality: Do the right thing right from the first time and every time Improvement: Make things better Method: a series of steps.

Establish a culture of quality in your practice. The culture of a practiceâ€™ attitudes, behaviors, and actionsâ€™ reflect how passionately the practice team embraces quality. The QI culture looks different for every practice, but may include establishing dedicated QI teams, holding regular QI meetings, or creating policies around your QI goals. Determine and prioritize potential areas for improvement. You will need to identify and understand the ways in which your practice could improve. Examine your patient population e. Use established quality measures, such as those from the National Quality Forum www.nqf.org. Collect and analyze data. Data collection and analysis lie at the heart of quality improvement. Your data will help you understand how well your systems work, identify potential areas for improvement, set measurable goals, and monitor the effectiveness of change. Quality improvement efforts should be transparent to your staff, physicians, and patients. Include the entire practice team and patients when planning and implementing QI projects, and communicate your project needs, priorities, actions, and results to everyone patients included. When a project is successful, celebrate and acknowledge that success. Commit to ongoing evaluation. Quality improvement is an ongoing process. A high-functioning practice will strive to continually improve performance, revisit the effectiveness of interventions, and regularly solicit patient and staff feedback. Quality Improvement Models and Tools Quality improvement models present a systematic, formal framework for establishing QI processes in your practice. Examples of common QI models include the following: The result is a framework that uses PDSA cycles to test interventions on a small scale. Six Sigma is a method of improvement that strives to decrease variation and defects. Quality improvement tools are standalone strategies or processes that can help you better understand, analyze, or communicate your QI efforts. Examples of QI tools www.nqf.org.

Chapter 6 : Introduction and Implementation of Total Quality Management (TQM)

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Processes that are inefficient and variable, changing case mix of patients, health insurance, differences in provider education and experience, and numerous other factors contribute to the complexity of health care. The goals of measuring health care quality are to determine the effects of health care on desired outcomes and to assess the degree to which health care adheres to processes based on scientific evidence or agreed to by professional consensus and is consistent with patient preferences. Because errors are caused by system or process failures, it is important to adopt various process-improvement techniques to identify inefficiencies, ineffective care, and preventable errors to then influence changes associated with systems. Each of these techniques involves assessing performance and using findings to inform change. This chapter will discuss strategies and tools for quality improvement—including failure modes and effects analysis, Plan-Do-Study-Act, Six Sigma, Lean, and root-cause analysis—that have been used to improve the quality and safety of health care. The rationale for measuring quality improvement is the belief that good performance reflects good-quality practice, and that comparing performance among providers and organizations will encourage better performance. In the past few years, there has been a surge in measuring and reporting the performance of health care systems and processes. One of the challenges in using measures in health care is the attribution variability associated with high-level cognitive reasoning, discretionary decisionmaking, problem-solving, and experiential knowledge. These measures are generally developed through a process including an assessment of the scientific strength of the evidence found in peer-reviewed literature, evaluating the validity and reliability of the measures and sources of data, determining how best to use the measure e. Benchmarking in health care is defined as the continual and collaborative discipline of measuring and comparing the results of key work processes with those of the best performers²⁶ in evaluating organizational performance. There are two types of benchmarking that can be used to evaluate patient safety and quality performance. Internal benchmarking is used to identify best practices within an organization, to compare best practices within the organization, and to compare current practice over time. The information and data can be plotted on a control chart with statistically derived upper and lower control limits. However, using only internal benchmarking does not necessarily represent the best practices elsewhere. Competitive or external benchmarking involves using comparative data between organizations to judge performance and identify improvements that have proven to be successful in other organizations. Quality Improvement Strategies More than 40 years ago, Donabedian²⁷ proposed measuring the quality of health care by observing its structure, processes, and outcomes. Structure measures assess the accessibility, availability, and quality of resources, such as health insurance, bed capacity of a hospital, and number of nurses with advanced training. Process measures assess the delivery of health care services by clinicians and providers, such as using guidelines for care of diabetic patients. Outcome measures indicate the final result of health care and can be influenced by environmental and behavioral factors. Examples include mortality, patient satisfaction, and improved health status. Twenty years later, health care leaders borrowed techniques from the work of Deming²⁸ in rebuilding the manufacturing businesses of post-World War II Japan. The TQM model is an organizational approach involving organizational management, teamwork, defined processes, systems thinking, and change to create an environment for improvement. This approach incorporated the view that the entire organization must be committed to quality and improvement to achieve the best results. CQI has been used as a means to develop clinical practice³⁰ and is based on the principle that there is an opportunity for improvement in every process and on every occasion. CPI, an approach lead by clinicians that attempts a comprehensive understanding of the complexity of health care delivery, uses a team, determines a purpose, collects data, assesses findings, and then translates those findings into practice changes. From these models, management and clinician commitment and involvement have been found to be essential for the successful implementation of change.

Shojania and colleagues 38 developed a taxonomy of quality improvement strategies see Table 1 , which infers that the choice of the quality improvement strategy and methodology is dependent upon the nature of the quality improvement project. The lack of scientific health services literature has inhibited the acceptance of quality improvement methods in health care, 43 , 44 but new rigorous studies are emerging. It has been asserted that a quality improvement project can be considered more like research when it involves a change in practice, affects patients and assesses their outcomes, employs randomization or blinding, and exposes patients to additional risks or burdensâ€”all in an effort towards generalizability. This is a method that has been widely used by the Institute for Healthcare Improvement for rapid cycle improvement. Langley and colleagues 51 proposed three questions before using the PDSA cycles: The PDSA cycle starts with determining the nature and scope of the problem, what changes can and should be made, a plan for a specific change, who should be involved, what should be measured to understand the impact of change, and where the strategy will be targeted. Change is then implemented and data and information are collected. Results from the implementation study are assessed and interpreted by reviewing several key measurements that indicate success or failure. Lastly, action is taken on the results by implementing the change or beginning the process again. This method is applicable to preanalytic and postanalytic processes a. This method is suitable for analytic processes in which the precision and accuracy can be determined by experimental procedures. One component of Six Sigma uses a five-phased process that is structured, disciplined, and rigorous, known as the define, measure, analyze, improve, and control DMAIC approach. Next, continuous total quality performance standards are selected, performance objectives are defined, and sources of variability are defined. As the new project is implemented, data are collected to assess how well changes improved the process. To support this analysis, validated measures are developed to determine the capability of the new process. This methodology overlaps with the Six Sigma methodology, but differs in that Lean is driven by the identification of customer needs and aims to improve processes by removing activities that are non-value-added a. Steps in the Lean methodology involve maximizing value-added activities in the best possible sequence to enable continuous operations. Physicians, nurses, technicians, and managers are increasing the effectiveness of patient care and decreasing costs in pathology laboratories, pharmacies, 59â€”61 and blood banks 61 by applying the same principles used in the Toyota Production System. Two reviews of projects using Toyota Production System methods reported that health care organizations improved patient safety and the quality of health care by systematically defining the problem; using root-cause analysis; then setting goals, removing ambiguity and workarounds, and clarifying responsibilities. When it came to processes, team members in these projects developed action plans that improved, simplified, and redesigned work processes. Root Cause Analysis Root cause analysis RCA , used extensively in engineering 62 and similar to critical incident technique, 63 is a formalized investigation and problem-solving approach focused on identifying and understanding the underlying causes of an event as well as potential events that were intercepted. The Joint Commission requires RCA to be performed in response to all sentinel events and expects, based on the results of the RCA, the organization to develop and implement an action plan consisting of improvements designed to reduce future risk of events and to monitor the effectiveness of those improvements. Those involved in the investigation ask a series of key questions, including what happened, why it happened, what were the most proximate factors causing it to happen, why those factors occurred, and what systems and processes underlie those proximate factors. Answers to these questions help identify ineffective safety barriers and causes of problems so similar problems can be prevented in the future. Often, it is important to also consider events that occurred immediately prior to the event in question because other remote factors may have contributed. The notion has been put forth that it is a truly rare event for errors to be associated with irresponsibility, personal neglect, or intention, 71 a notion supported by the IOM. Even the majority of individual factors can be addressed through education, training, and installing forcing functions that make errors difficult to commit. Failure Modes and Effects Analysis Errors will inevitably occur, and the times when errors occur cannot be predicted. In health care, FMEA focuses on the system of care and uses a multidisciplinary team to evaluate a process from a quality improvement perspective. This method can be used to evaluate alternative processes or procedures as well as to monitor change over time. To monitor change over time, well-defined measures are needed that can provide objective

information of the effectiveness of a process. In , the Joint Commission mandated that accredited health care providers conduct proactive risk management activities that identify and predict system weaknesses and adopt changes to minimize patient harm on one or two high-priority topics a year. In conducting a hazard analysis, it is important to list all possible and potential failure modes for each of the processes, to determine whether the failure modes warrant further action, and to list all causes for each failure mode when the decision is to proceed further. After the hazard analysis, it is important to consider the actions needed to be taken and outcome measures to assess, including describing what will be eliminated or controlled and who will have responsibility for each new action. Several common themes emerged: Substantial and strong leadership support, 80â€™83 involvement, 81 , 84 consistent commitment to continuous quality improvement, 85 , 86 and visibility, 87 both in writing and physically, 86 were important in making significant changes. Substantial commitment from hospital boards was also found to be necessary. Yet adopting a nonpunitive culture of change took time, 61 , 90 even to the extent that the legal department in one hospital was engaged in the process to turn the focus to systems, not individual-specific issues. There were many advantages to basing the work of the quality improvement strategies on the teamwork of multidisciplinary teams that would review data and lead change. Team leaders that emphasized efforts offline to help build and improve relationships were found to be necessary for team success. The multidisciplinary structure of teams allowed members to identify each step from their own professional practice perspective, anticipate and overcome potential barriers, allowed the generation of diverse ideas, and allowed for good discussion and deliberations, which together ultimately promoted team building. Teams were seen as being able to increase the scope of knowledge, improve communication across disciplines, and facilitate learning about the problem. Group work was seen as difficult for some and time consuming, and problems arose when everyone wanted their way, 97 which delayed convergence toward a consensus on actions. Team members needed to learn how to work with a group and deal with group dynamics, confronting peers, conflict resolution, and addressing behaviors that are detrimental. As suggested by Berwick, the leaders of the quality improvement initiatives in this review found that successful initiatives needed to simplify; 96 , standardize; stratify to determine effects; improve auditory communication patterns; support communication against the authority gradient; 96 use defaults properly; automate cautiously; 96 use affordance and natural mapping e. Several initiatives standardized medication ordering and administration protocols, 78 , 87 , , , â€™” , , â€™” realizing improvements in patient outcomes, nurse efficiency, and effectiveness. Related to simplification and standardization is the potential benefit of using information technology to implement checks, defaults, and automation to improve quality and reduce errors, in large part to embedding forcing functions to remove the possibility of errors. Often workflow and procedures needed to be revised to keep pace with technology. Using and analyzing data was viewed as critical, yet some team members and staff may have benefited from education on how to effectively analyze and display findings. Repeated measurements were found to be useful for monitoring progress, but only when there was a clear metric for measuring the degree of success. It was also purported that the costs associated with change will be recouped either in return on investment or in reduced patient risk and thus reduced liability costs. There were several examples of this. Two initiatives that targeted pain management found that educating staff on pain management guidelines and protocols for improving chronic pain assessment and management improved staff understanding, assessment and documentation, patient and family satisfaction, and pain management. Lack of time and resources made it difficult to implement the initiative well. Influential factors attributed to the success of the initiatives were effecting practice changes that could be easily used at the bedside; 82 using simple communication strategies; 88 maximizing project visibility, which could sustain the momentum for change; establishing a culture of safety; and strengthening the organizational and technological infrastructure. Collaboratives could also be a vehicle for encouraging the use of and learning from evidence-based practice and rapid-cycle improvement as well as identifying and gaining consensus on potentially better practices. Quality tools used to define and assess problems with health care were seen as being helpful in prioritizing quality and safety problems 99 and focusing on systems, 98 not individuals. The various tools were used to address errors and growing costs 88 and to change provider practices. These are discussed as follows: The rapid-cycle aspect of PDSA began with piloting a single new process, followed by

examining results and responding to what was learned by problem-solving and making adjustments, after which the next PDSA cycle would be initiated. The majority of quality improvement efforts using PDSA found greater success using a series of small and rapid cycles to achieve the goals for the intervention, because implementing the initiative gradually allowed the team to make changes early in the process and not get distracted or sidetracked by every detail and too many unknowns. HFEMA was viewed as a valid tool for proactive analysis in hospitals, facilitating a very thorough analysis of vulnerabilities. The strength of the following practice implications is associated with the methodological rigor and generalizability of these strategies and projects: The importance of having strong leadership commitment and support cannot be overstated. Leadership needs to empower staff, be actively involved, and continuously drive quality improvement. Without the commitment and support of senior-level leadership, even the best intended projects are at great risk of not being successful. Champions of the quality initiative and quality improvement need to be throughout the organization, but especially in leadership positions and on the team. A culture of safety and improvement that rewards improvement and is driven to improve quality is important. The culture is needed to support a quality infrastructure that has the resources and human capital required for successfully improving quality. Quality improvement teams need to have the right stakeholders involved. Due to the complexity of health care, multidisciplinary teams and strategies are essential. Quality improvement teams and stakeholders need to understand the problem and root causes. There must be a consensus on the definition of the problem.