Chapter 3. Toward a Theoretic Basis for Quality Improvement Interventions

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Introduction

While medicine has a long history of investigating what works and why, we have a fairly limited understanding of the causal mechanisms of interventions to improve health care quality. *Implementation research* has been defined as the scientific study of methods to promote the uptake of research findings for the purpose of improving quality of care.[73] It includes the study of factors that influence the behavior of health care professionals and organizations, and the interventions that enable them to use research findings more effectively. Closing the quality gap relies on implementation research to create effective quality improvement (QI) interventions. Implementation research is referred to by many names, including action research, research utilization, practice guidelines implementation research, diffusion of innovation, translating research into practice, quality improvement research, knowledge translation, knowledge transfer, knowledge mobilization, and knowledge exchange. Research has followed two primary and related tracks: transfer or diffusion of knowledge and behavioral change.

Researchers and analysts from diverse disciplines have studied variables that influence the diffusion of innovations. In addition, numerous theories of behavioral change have been developed from a variety of perspectives-- psychology, sociology, economics, marketing, education, organizational behavior, and others. In QI, theories abound regarding ways to change the behavior of patients, clinicians, and organizations. However, these "parts" are not integrated into one overarching "whole." Most theories are descriptive, and do not predict the components that are required for effective design and implementation of quality improvement strategies. What are the important variables in the sequence of steps that will result in improved quality? How do these variables interact? Which variables are likely to matter, and under what circumstances? The application of theory to quality improvement strategies may be analogous to the use of biologic plausibility in designing new clinical treatments; a process by which researchers determine the most likely target for a treatment, and interpret study results accordingly. Developing a theory that helps to explain and predict a particular set of behaviors would allow QI implementers to zero in on an appropriate target for change, and craft the intervention to effect that change.

Development of theories with greater predictive value also would help researchers to design interventions to overcome barriers to behavioral change. Barriers to change may stymie even the most laudable (and seemingly obvious) effort to correct a health care quality problem. Ongoing

attempts to enhance clinicians' compliance with standard hand hygiene practice is a case in point.[74] Barriers to change exist at each stage in the causal pathway of noncompliance, from the psychological, to the cognitive, to the physical layout, across diverse clinical settings.

For hand hygiene, or any intervention to be effective it must be tailored to the target behavior or process, as well as to the environment itself. Cognitive theory suggests that clinicians may simply be unaware of the consequences of hygiene noncompliance, while adult-learning theorists would argue that clinicians must experience the negative consequences of their action before their behavior will change.[75] Behaviorists might suggest an intervention designed to provide feedback and reinforcement, while social theory adherents and organizational theorists would turn their attention to the culture of the organization that fails to support compliance, or to disseminate an appropriate "message," to adopt the vernacular of marketing theorists.[76] All of these are credible suppositions. Without an understanding of the theoretical construct(s) that explain mechanisms of change, efforts are likely to be scattershot, challenging even the most enthusiastic QI implementer to transfer innovations into practice efficiently and consistently.

As the hand hygiene example illustrates, numerous descriptive theories—and some predictive theories—are available. Unfortunately, they have been put to little use in the field. A literature review of surveys of physician behavior identified nearly 300 barriers to physician adherence with clinical practice guidelines, sorted into seven general categories, and further classified according to behavioral and other theories.[77] However, a recent review of guideline implementation efforts reveals that of the 235 included studies, merely 10% of the authors provided an underlying theoretical rationale for the particular intervention they had selected.[78]

For readers with an interest in QI's formative and ongoing theoretical discussion, this chapter introduces a general hierarchy that organizes various levels of theory from the macro to the micro. The authors then introduce selective examples of the theories that some researchers in the field of QI have considered as they design interventions to modify interactions among individual patients, health care providers, and the organizations they function within. The reader should note that this selective overview renders only a sampling of the numerous theoretical schools of thought from which health care quality improvement strategies are or could be designed. A comprehensive review of the entire body of theoretic work in the field of QI exceeds the scope of this review. In addition, the omission of any particular theoretic basis (and the inclusion of others) does not imply that one lacks importance or should not be accorded due consideration. Rather, the selection presented reflects the combined expertise of the EPC's technical advisors, and represents a variety of some of the more commonly utilized theoretic underpinnings that inform or show promise for QI efforts in the field of health care. Sources for more in-depth coverage of the theoretical models discussed, and others, are noted.

Hierarchy of Theories and Models

A theory describes and explains what is observed and why it happens. Various taxonomies, including the one used for the QI reviews of diabetes (*Closing the Quality Gap*, Vol. 2) and hypertension (*Closing the Quality Gap*, Vol. 3), answer the question of "what" strategies could be used to try to change behavior or transfer knowledge. Theories expand on the "what" question by addressing "how" and "why" these QI strategies or their components might or might not be effective, and under what conditions ("when" and "where"). Thus, theories provide a framework for interpreting a study's findings in its own setting, and potentially, in other settings. A model can be conceptual, as described below, or action-oriented with process steps to provide an

approach to QI. Following is a selection of models and theories that have been used to design some quality improvement strategies, or which may be useful in future work. Given the rudimentary state of the art and science of implementation research it is helpful to review what is sometimes referred to as the structural hierarchy of knowledge, or the levels of theory from the most abstract to the most specific.[77]

The terms *conceptual models, conceptual frameworks*, and *conceptual systems* often are used synonymously and represent global ideas about a phenomenon. They are used to clarify, describe, and organize ideas,[78] and could be viewed as the top level of the hierarchy. It should be noted, however, that conceptual models/frameworks and theories vary in their levels of abstraction and a continuum exists within the structural hierarchy of knowledge. Boundaries between conceptual models and levels of theory sometimes overlap, making it difficult to clearly differentiate among them within the hierarchical structure.

A *theory* is an organized, heuristic, coherent, and systematic set of statements related to significant questions that are communicated in a meaningful whole.[79] It describes observations, summarizes current evidence, proposes explanations, and yields testable hypotheses—all within specific assumptions and constraints. Theories can be described in terms of their scope, with wider scopes reflecting generally higher levels of abstraction in the knowledge hierarchy.

A *grand or macro theory* is a very broad theory that provides a general framework for the nature and goals of a discipline. Grand theories are non-specific and are made up of relatively abstract concepts that lack operational definitions and relatively abstract propositions that are not amenable to direct empirical testing.[80,81] They tend to be developed through thoughtful and insightful appraisal of existing ideas, or creative leaps beyond existing knowledge. While widely applicable, grand theoretical statements lack the detail that is necessary to fully understand the relationships between constructs and variables in specific situations. A *mid-range theory* is more limited in scope, addresses specific phenomena, and is intended to guide empirical inquiry as well as action or practice. It encompasses a limited number of concepts and a limited aspect of the real world. Mid-range theories are made up of relatively concrete concepts that are operationally defined and can be empirically tested. They are less abstract than grand theory and more abstract than empirical generalizations or micro theory.[82] A *micro, practice, or situation-specific theory* (sometimes referred to as *prescriptive theory*) has the narrowest range of interest, and focuses on specific phenomena that reflect clinical practice, and that are limited to specific populations or to a particular field of practice.

At all levels, the purpose of theory is to organize and communicate information parsimoniously and clearly, in order to describe, discover, and predict phenomena seen in the world. Whether a theory is "good" or not depends on both its ability to withstand efforts to disprove it (i.e., "falsifiability"), and its usefulness.[83] In the subsequent descriptions of selected theories, organized roughly by their level in the hierarchy, no attempt has been made to evaluate the theories, apart from the commentary on their potential applicability to QI strategies.

Conceptual Models and Grand Theories of Implementation Phenomena

Conceptual models and grand theories of implementation phenomena are essentially models or theories of change. Change theories/models may be classified as either classical or planned.[78]

Classical Theories of Change

Classical theories/models of change (sometimes referred to as descriptive or normative theories) are passive; they explain or describe the naturalistic process of change or diffusion of innovation. Perhaps the most prominent example of a classical theory of change is Everett Rogers' *diffusion of innovation theory.*[84-85] Some of the better known observations deriving from Rogers' work are the innovation-decision process, which describes how potential adopters' perceptions of the attributes or characteristics of an innovation influence diffusion of the innovation, and the relationship between adopter types and diffusion. The innovation-decision process consists of five stages that potential adopters pass through as they decide to adopt an innovation. These stages are: knowledge (becoming aware of the innovation), persuasion (developing positive attitudes toward the innovation), decision (making a cognitive decision to adopt the innovation—i.e., developing an intention to adopt), implementation (using the innovation), and confirmation (continuing to use the innovation, adapting the innovation, or abandoning it).

Rogers posited that innovations are more quickly adopted when they are compatible with current values, beliefs, and ways of doing things; are seen to be more advantageous than the current practice (relative advantage); are easy to do or use (low complexity); are observed by others to be in use (observability); and can be easily tested before being formally adopted (trialability). Another important contribution of Rogers' work has been the observation that potential adopters may fall into one of a number of adopter types, which relate to diffusion: innovators (the fastest adopter group, venturesome, cosmopolitan, socially disconnected), early adopters (opinion leaders, respected, locally well connected, self-conscious experimenters), early majority (deliberate, local observers, have watched early adopters), late majority (skeptical, more conservative, wait for majority's adoption of the innovation before adopting it themselves), and laggards (traditionalists, socially isolated, slowest to change). Readers should also consider Jonathan Lomas's *Coordinated Implementation Model,*[86-87] another implementation theory that is more descriptive in nature and focuses explicitly on the medical context. For example, the Lomas model proposes that better knowledge transfer occurs when passive continuing medical education is replaced with active dissemination that takes into consideration a broad range of interacting factors that may promote or hinder adoption (e.g., economic, personal, administrative, and community-based incentives).[88]

Limitations of Classical Theories of Change

While classical theories/models of change may help to identify potential determinants of change, they provide little information on the best way to either accelerate or hinder natural diffusion (e.g., they provide no direction for operationalizing opinion leaders). For this reason, QI implementers and researchers tend to be more interested in planned change theories/models, which are specifically intended as guides, or to cause change.[78]

Planned Models of Change

A planned change model/theory is a set of logically interrelated concepts that explain, in a systematic way, the means by which planned change occurs. These models predict how various forces in an environment will react in specified change situations, and help QI implementers control variables that increase or decrease the likelihood that change will occur.[89-90] Planned

change, in this context, refers to deliberate (not haphazard) efforts to engineer change in groups that vary in size and setting. Those who use planned change theories/models may work with individuals, but their objective is to alter ways of doing things in social systems. Examples of planned change models/theories are Green's Precede-Proceed model,[91-92] the social marketing model, Berwick's rules for dissemination,[93] and the Ottawa Model of Research Use,[94] to name several.

Precede–proceed. Precede–Proceed specifies the steps that precede an intervention and suggests ways to proceed with its implementation, including subsequent evaluation.[91] In the *precede* stages, the implementer first specifies the problem and then identifies the factors that contribute to it. These factors are categorized theoretically as predisposing, enabling, or reinforcing, and then rated in terms of importance and amenability to change. Predisposing factors include attitudes, beliefs, and perceptions, all of which provide the impetus for change. Enabling factors include the resources, facilities, and skills that must be present for change to actually occur. Reinforcing factors include rewards or incentives, such as positive feedback, that encourage change.[92] The key *proceed* stages are implementation and evaluation of the intervention. The evaluation stage examines the degree to which the protocol was implemented, and the effect the intervention had on behavior change, and on predisposing, enabling, and reinforcing factors.

Social Marketing. Social marketing is a planning model that consists of several stages: [95] *planning and strategy,* when research is conducted with the target group and resources available for the intervention are assessed; *selecting the relevant channels and materials for intervention,* when specifications of the program structure and relevant outcomes are made, and the target group is 'segmented' to create homogeneous subgroups for tailoring messages and distribution methods; *developing and piloting materials with the target audience* to determine their relevance, comprehensibility, and likely impact; and finally, *implementation, evaluation, and feedback* after which the intervention may be refined. Social marketing has largely focused on bringing about health behavior change at the community level, but has also been used as the basis for some other quality improvement strategies. For example the principles for academic detailing proposed by Soumerai and Avorn[96] are based upon social marketing approaches. In academic detailing, implementers conduct interviews to investigate baseline knowledge and motivations for current practice; focus programs on specific categories of physicians as well as opinion leaders; define clear educational and behavioral objectives; establish credibility through a respected organizational identity, reference authoritative and unbiased sources of information, and present both sides of controversial issues; stimulate active physician participation in educational interactions; use concise graphic educational materials; highlight and repeat the essential messages; and provide positive reinforcement for improved practices in followup visits.

Donald Berwick's Rules for Dissemination. While not proposed as a model *per se*, Berwick[93] has proposed a series of seven 'rules' for translating research into practice, largely derived from the theoretical work of Rogers and Van de Ven.[85-97] The seven rules require an implementer to: 1) find sound innovations, 2) find and support innovators, 3) invest in early adopters, 4) make early adopter activity observable, 5) trust and enable reinvention, 6) create slack for change, and 7) lead by example. The IOM National Priority Report (which provides the topic areas for this Series) reflects the first rule, in that the IOM committee identified clinical topics for which sound, evidence-based innovations exist, which could be implemented more broadly. This Series could be viewed as fulfilling the second rule, by finding and reviewing the research that innovators have reported.

Ottawa Model of Health Care Research Use. The Ottawa Model of Research Use[94-98] offers a comprehensive, interdisciplinary framework of elements that affect the process of health care knowledge transfer, and is derived from published literature. Although not explicitly linked to Donabedian's germinal work describing health care quality production in terms of structure, process, and outcomes,[99] the model captures these characteristics, along with important social factors. The elements considered central to the *research use* process are: the evidence-base of the innovation, potential adopters, practice environment, strategies for transferring the evidence into practice, the use of the evidence, and outcomes of the process (e.g., related to patient health, practitioner issues, and economic implications). A particular advantage of the model is that it may be applied at any level in the delivery of care (e.g., individual professional or team behavior change, hospital behavioral change, health care system change), and that the patient is incorporated as a key component of each element. The model is dynamic, meaning that each element is assumed to influence and be influenced by the others (e.g., depicted by double arrows that create multiple loops in Figure 1). Finally, in planning research transfer activities, the model relies on a process of assessment, monitoring, and evaluation (AME) of each element before, during, and after the decision is made to promote an innovation (broadly defined as research evidence that is new to the potential adopter). In brief, the model directs QI implementers to conduct a barriers assessment of the evidence-based recommendations, the potential adopters, and practice environment to determine factors that might be expected to hinder or support the uptake of the recommendations. Next, this information is used to select and tailor interventions to overcome the anticipated barriers or enhance the supports. The introduction of the interventions is then monitored, to ensure that they are being delivered as expected, are addressing the identified barriers, and that unexpected barriers have not emerged since the time of introduction that must now be addressed. Monitoring the adoption of the recommendations during the implementation phase can help determine whether the dose of intervention has been sufficient to bring about the desired change in practice, or whether more of the same or new interventions may be required. Finally, the impact of the implementation process is evaluated and the iterative process begins again. Figure 1 summarizes the key features of the model, with the QI strategies' elements bolded to emphasize the focus of this report.

Limitations of planned change models. Planned change models provide broad frameworks for planning implementation activities, but are less helpful when considering which specific interventions to use. This may be due to the fact that these theories are as yet insufficient to relate specific intervention components to a predicted effect on knowledge transfer or behavior. In addition, potentially relevant theories have not yet been validated for health care professional or organizational change.

Mid-range Theories

Mid-range theories are potentially more predictive of behavior and behavioral change at different levels. They are commonly discipline-specific, however, and their applicability to individual health behaviors and/or health care professional behavior has not been well tested in many instances.

Ferlie and Shortell[100] have suggested several levels at which interventions to improve the quality of health care might operate: the individual health professional and health care groups or teams; organizations providing health care; and the larger health care system or environment in which individual organizations are embedded. Different theories will be relevant to interventions

at different levels, for example, psychological theories will be more relevant to interventions directed at individuals and teams, while theories of organizational change will be more relevant to interventions directed at hospitals and other organizations. A full scientific rationale for interventions to improve quality requires exploration of theories relevant to interventions directed at each of these levels.

Social Psychological Theories

Individual health behaviors and health care professional behaviors are forms of human behavior that are influenced at the level of the health care system, the health care organization, the individual provider, and by the characteristics of clinical best practices. Theories of human behavior that have been successfully adopted in similar settings may provide a basis for developing a theoretical basis for understanding health care professional and organizational behavior.

Social influence theories. Social influence theory recognizes the importance of shared beliefs and assumptions, group norms, and organizational culture as determinants of individual and professional behavior. Social influence interventions attempt to promote behavioral change by influencing group perspectives. Mittman and colleagues[101] have proposed a classification scheme of potential social influence interventions for practice guideline dissemination and implementation that depends on the size of the target audience, and includes educational outreach and opinion leaders.

Motivational theories (including social cognition models). These theories propose that motivation determines behavior, and therefore the best predictors of behavior are factors that predict or determine motivation (or intention). Examples include Albert Bandura's *social cognitive theory*,[102] and the *theory of planned behavior*[103]. Bandura's social cognitive theory[102] proposes that behavior is determined by incentives and three kinds of expectancies (situation-outcome expectancies, outcome expectancies, and self-efficacy expectancies). Self-efficacy expectancies are beliefs about one's ability to perform the behavior (e.g., I can stop smoking) and have been found to be the most important construct in empirical studies[104]as well as a consistent predictor of behavioral change.[105] The theory of planned behavior (TPB) proposes that the strength of an individual's intention (or motivation) to engage in a behavior, and the degree of control they feel they have over that behavior (perceived behavioral control), are the proximal determinants of engaging in it.[103] The theory of planned behavior also proposes that intention strength is determined by three variables: attitudes towards the behavior (a product of beliefs about its consequences and evaluations of those consequences), subjective norms (a product of perceptions of the views of other individuals or groups about the behavior, and the strength of the individual's desire to gain approval of these groups), and perceived behavioral control (a function of beliefs about factors likely to facilitate or inhibit the behavior— these might include organizational constraints and patient preferences). The TPB has been shown to predict a range of individual health related behaviors with some success. Recent meta-analyses have suggested that the TPB can account for approximately 30% of the variance in health behavior.[106] The application of TPB to our understanding of providers' adherence to evidence-based advice about their practice has been limited. However, early studies suggest that it is a useful, systematic tool to identify barriers to, and facilitators of, change and is helpful in selecting appropriate forms of intervention.[107-108]

Action theories. These theories may include motivational elements, but postulate that other factors are necessary to predict behavior. Examples include operant conditioning and implementation intentions. *Operant conditioning* proposes that behaviors that have positive consequences for the individual (such as remuneration) are likely to be repeated, whereas those that have unpleasant consequences will become less frequent.[109] The principle that positive consequences promote repetition of behavior is well established and has been widely and successfully used to understand behavior and behavioral change. As rewarded behaviors are repeated, and may become "habitual," the frequency of past behavior can be a powerful predictor of future behavior. Gollwitzer[110] distinguishes between *goal intentions* (conceptually similar to intentions within the theory of planned behavior) and *implementation intentions,* which are explicit plans about when and where a goal intention will be achieved. Gollwitzer argues that by creating an implementation intention, people effectively transfer control of the behavior to the environment—establishing cues to action. This is a relatively new concept in health behavior research, however, experimental studies suggest that people who have formulated plans like these are more likely to translate their intentions into action than those who have not.[111] For example, women are told to specify where and when they will perform breast self-examination, and subsequently are found to have followed through more frequently than those with no plan regarding their intention to implement.[111] While studies thus far have utilized this theory for patient behavior change, it may be just as applicable to provider behavior change (e.g., a provider education QI strategy might incorporate a step that asks the clinician to formulate a plan for implementing a change in practice).[112]

Stage theories. These theories propose that at a given point in time, individuals are at different stages in a linear progression toward behavioral change (for example, an awareness stage occurs before an action stage), and that predictors of behavior must account for the different stages of progression. Examples include the *transtheoretical model of change*[113] and the *precaution–adoption process model.*[114] From a stage theory perspective, interventions to facilitate change will be most effective if they are tailored to the stage the individual has reached within this process. Stage theories have been widely used to develop interventions in behaviors such as smoking cessation.[114] Despite their face validity and (relatively) widespread use, a recent systematic review found that there was little evidence that interventions based on stage theories were more effective than non-stage theory interventions.[115]

Organizational Theories

To understand organizational change theories, it is helpful to define organizational behavior, and to present some background on organizational theory on a macro level. Organizational behavior is the study of individual and group attitudes and actions within an organizational setting, and describes how the resultant behavior affects the goals of the organization. Macro theories regarding how organizations function and behave fall into three major typologies: 1) *rational system theories,* which focus on the internal structures and processes of an organization, 2) *natural-system theories*, which also focus on internal workings, but emphasize the organization as a social system, noting the importance of unplanned processes and events, human relations, and integration of individual and organizational goals, and 3) *open-system theories,* which emphasize the ways in which an organization's environment relates to its structure and behavior.[116] Shortell posits that the health care system can be best understood in light of all three of these theories, because of its complex inner, social, and external structures.[117-118]

Organizational change theories, particularly the rational system models, may be most directly applicable to managing and achieving change within the health care organization and its environment. Alternatively, institutional models (described below) likely also apply to prominent QI strategies. The following section describes these mid-range models generally in terms of definition, important variables, perspective on organizational change, and strategies for change within organizations.[118-119]

Rational models. These models emphasize four stages in the process of organizational change: *awareness* of a problem or quality gap, *identification* of action to solve the problem or narrow a gap, *implementation* of the action, and finally *institutionalization,* where all relevant parties accept the change. At each stage, the models adopt three perspectives of the change process, any of which may need to be addressed, depending upon circumstances. First, the *behavioral perspective* assesses the manner in which issues connect to attitudes, culture, values, and norms within the organization. The *structural perspective* focuses on the design of activities and roles of individuals and work groups, considerations of power and influence, and variables such as complexity, centralization and formalization. Finally, the *contingency perspective* considers the interactions between behavior and structure, as well as the particular timing and circumstances of the target change. Kalunzy and colleagues[120] diagram factors influencing a change process in three dimensions, with a spiral through time showing the stages from recognition through institutionalization, with each twist in the spiral affected differentially by personnel, processes, and structure of the organization, as well as the attributes of the change. For example, at the implementation stage of an innovation that is costly or has widespread consequences for the organization, each of the factors—personnel, process, and structure—are likely to be influential. At the earlier problem recognition phase, only personnel may be involved, regardless of the nature of the change. Throughout all phases, an organization is likely to be influenced by internal and external pressure for change, as well as potential examples from other organizations about intervention possibilities.

Institutional models. In contrast to rational models, which assume that management has the freedom to implement change according to specific economic and strategic interests of the organization, institutional models specify that legitimacy seeking behaviors of organizations drive the implementation of organizational change. Legitimacy is acquired relative to the norms of the time and industry for each organization. These models may be particularly pertinent to QI because they emphasize the role of social factors including pressures to conform from outside of an organization (e.g., regulatory bodies, professional organizations). One illustration of how institutional theory explains important factors in the adoption and implementation of a QI strategy involves Total Quality Management (TQM), an organizational intervention encompassing a range of philosophies and activities. Institutional theorists hypothesize that as TQM has become more accepted, the reason for its adoption, and therefore the style of implementation is motivated by a need for legitimacy, as opposed to a strategic or economic imperative. The menu of TQM philosophies includes commitment to identifying, meeting, and then exceeding the needs of both internal and external stakeholders; continuous improvement, including raising standards; structured, problem-solving processes using statistical and other tools; and employee empowerment to improve quality, including training across all levels, functions, and areas of an organization. Activities associated with TQM include assessments of community needs; benchmarking performance; training in principles and methods of TQM; brainstorming; use of cause and effect diagrams (also known as Ishakawa or “Fishbone” diagrams), control charts, and other analytic tools. Health care organizations have either adopted their own versions of TQM, or followed a standard approach named for its progenitors (e.g.,

Juran, with its emphasis on quality audits, *Crosby,* with a focus on training, or *Deming*, with an orientation toward statistical and process tools). Westphal and colleagues[121] examined Total Quality Management programs introduced in standard or customized ways over an eight year time period to determine if implementation of this QI strategy differed depending on timing. They observed that earlier adopters customized the form of TQM in ways that improved organizational performance, as expected in a rational system theory, while later adopters more often used standardized TQM programs, apparently motivated by external factors such as accreditation ratings, and fitting with precepts of institutional theory. Thus, both the form and consequences of a particular QI strategy are influenced by the timing of its implementation, and the organization's place, relative to the health care industry as a whole.

Iles and Sutherland[122] conducted a comprehensive review of several decades of organizational change theories for the British National Health Services. They provide summaries of a large number of models, and cluster them around a small number of key questions for implementation of quality improvement strategies. The organizing questions or topics for each cluster of theories, and the specific theories and models examined in the review are shown in Figure 2.

According to this review, most of the evidentiary base for organizational theories in the health care sector is comprised of case studies, with only one cohort study on TQM examining the link between the strategy and the effect on health care quality.[123] Several case studies also examine the link between the particular theory and health outcomes, but most focus on other outcomes (e.g., job security, cost-competitiveness, position, etc.). Generally, the organizational literature related to promoting change, or "change management" is descriptive and infrequently applied to the health care setting. It is certainly conceivable that the type of evidence useful in the management area may differ from that applied to clinical practice. The complexity of health service delivery and organization may require alternative methods for assessing what qualifies as evidence. Ultimately, however, more evaluative research in this area may be useful to those implementing quality improvement strategies by highlighting potential levers for change.

Other Discipline-Based Theories

A number of other disciplines have contributed theories to patient, provider, and organizational behavior change. For example, *adult learning theory* from educational research, emphasizes the role of intrinsic personal motivation,[124] and creates interventions based on consensus development and problem-based learning.[125] Provider education strategies that incorporate these approaches may be more likely to work than those that do not address intrinsic motivation. In contrast, *marketing approaches* have been used to promote health to the general public,[126] as well as to target physician or organizational change. The advent of direct-to-consumer marketing is providing a natural experiment to determine the significance of marketing theories.

Economic theories provide insight about the policies and funding mechanisms that may contribute to efficiency (e.g., avoiding waste in achieving quality) and equity (e.g., providing the same quality regardless of individual patient characteristics). Value or quality-based purchasing activity in the U.S. marketplace is an example of a QI strategy derived from economic theory. This approach is intended to have either a direct influence on the decisions of consumers or health care organizations by using payment incentives, or an indirect influence by reducing asymmetric information between different stakeholders in a market (e.g., health plans and

consumers).[127] Theories drawn from economics therefore play a role in considerations about designing policies to increase incentives for quality.

Micro or Situation-specific Theory

As a relatively new field of inquiry, micro theories of knowledge translation and behavior change have yet to be articulated in relation to health care. These theories, should they eventually be developed, would predict the uptake of a specific behavior by a particular health professional group or subgroup when exposed to a given intervention (e.g., audit and feedback may be effective for changing radiologic ordering behavior of family physicians, but may not influence nurses' use of compression bandaging guidelines).

Conclusion

Transferring knowledge, diffusing innovation, changing behavior, or getting the system to do the "right thing," are different ways of stating the ultimate objective: to close quality gaps. Concurrent consideration of theory and actual implementation practice may yield mutually useful results. Figure 3 depicts a conceptual framework of the interactions among various mid-range theories, and incorporates some of the factors that may predictably bring about change. The applicability of these theories to behavior change and knowledge transfer at the individual health, health care professional, and organizational level remains uncertain. There are considerable challenges to the development of interventions based upon these theories. To improve our understanding of the causal mechanisms, effect modifiers, and applicability of a variety of QI strategies, QI implementers and researchers may benefit from working together to rigorously develop and test predictive theories of professional and organizational theory at the mid-range and practice levels. Insight about why a QI strategy fails or succeeds may be more easily accomplished when theory and implementation are tested side by side.

Chapter 3 Figures:

Figure 1. Ottawa Model of Research Use (Logan and Graham, 2003)

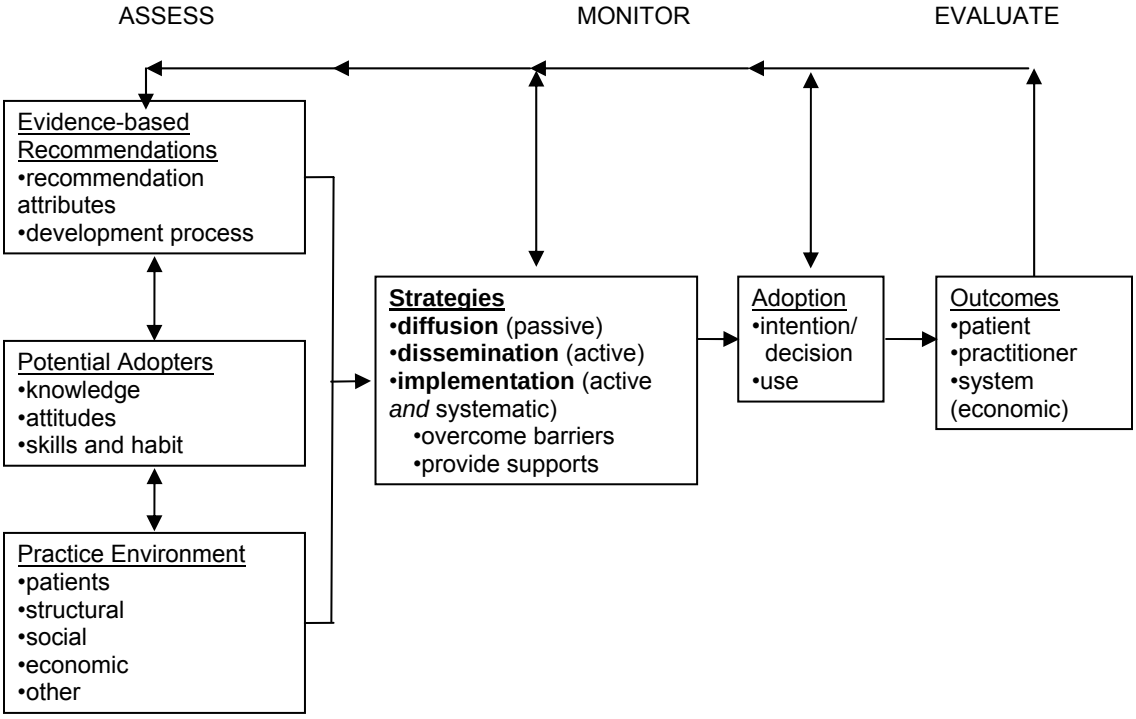


Figure 2. Organizational theories examined for evidence (adapted from Iles and Sutherland)

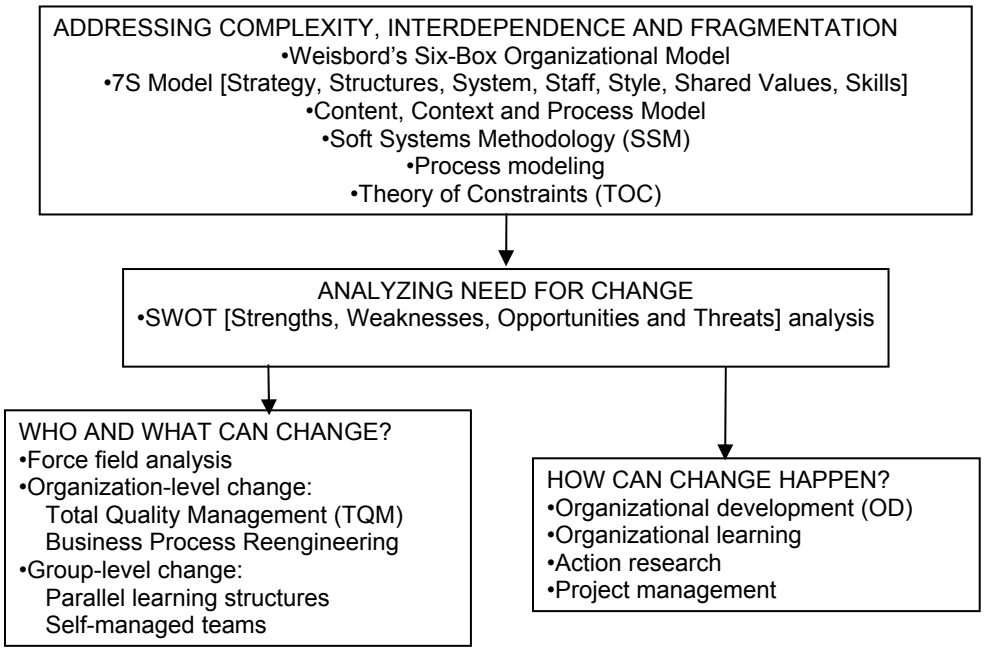
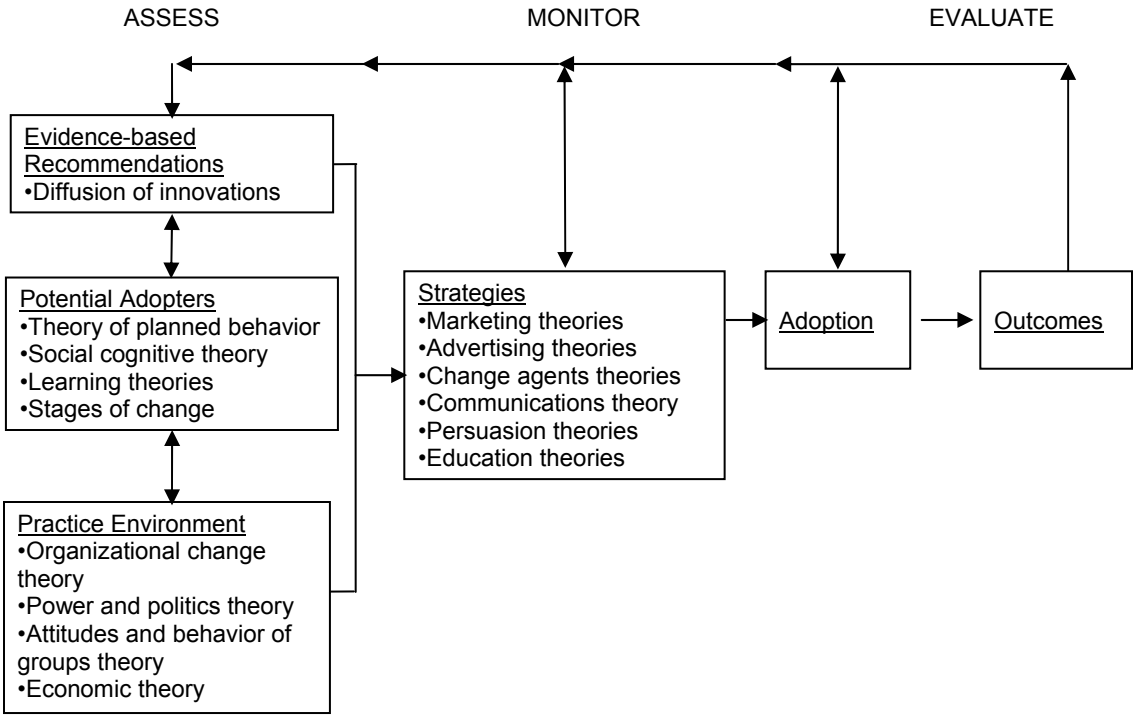


Figure 3. Examples of theories that could begin to populate the Ottawa Model of Research Use



Chapter 3 Notes

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