

Theoretical Foundations

Performance Change in an Organizational Setting: A Conceptual Model

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Abstract: The considerable investment in development of guidelines, critical pathways, and treatment protocols has given increased urgency to moving these recommendations into clinical practice. While methods for bringing this information to practitioners have expanded, interventions designed to change practice behaviors have had, at best, mixed results. Traditional dissemination efforts may make practitioners aware of a guideline or the results of a consensus conference, yet rarely do they improve practice. In instances where the dissemination strategy addresses knowledge and skills, there is little consistent evidence that clinical behavior is affected. The conceptual model we propose posits that to achieve long-lasting change in practice behavior, practitioners must be predisposed to change and must have the appropriate knowledge and skills to implement change, and structures within their organizations must enable and maintain these new behaviors. Elements and relationships of this model are drawn from a diverse body of literature in the behavioral sciences, health education, educational research, group dynamics, and organizational development. In reviewing strategies developed to disseminate innovations and promote their adoption, we note that the model provides insight into the factors that influence movement between the stages in the change process and the rationale for an integrative, multivariate approach to changing practice behavior. Since the model provides the basis for predicting the effect of various change strategies, as well as a blueprint for the design of such strategies, we conclude with a brief description of an experiment designed to test the model.

Key Words: Adoption, change, continuing education, diffusion, dissemination, implementation, performance improvement, practice guidelines

Government agencies, policy makers, administrators, and the research community have been urging increased efforts to ensure the implemen-

tation of findings that can improve the quality and effectiveness of health care.¹⁻⁴ Yet traditional dissemination strategies have produced minimal

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change in actual performance.^{5,6} Dissemination efforts may make practitioners aware of a guideline or the results of a consensus conference, yet rarely do they improve practice. In instances where knowledge and skills are addressed, there is little consistent evidence that either clinical behavior or clinical outcomes are affected.⁷⁻¹⁰

We posit that for meaningful changes in clinical behavior to occur—changes that comply with consensus guidelines or research findings—practitioners must be predisposed to change and must have the appropriate knowledge and skills to implement change, and structures within their organizations must enable and maintain this change. Reflecting the work of a number of dissemination theorists,¹¹⁻¹⁴ we begin by proposing and elucidating a model that accounts for the diverse factors that affect such change. Following that, we test the elements and relationships of the model against a diverse body of literature drawn from the behavioral sciences, health education, educational research, group dynamics, and organizational development. Since the model provides the basis for predicting the effect of various change strategies, as well as a blueprint for the design of such strategies, we conclude with a brief description of an experiment designed to test the model.

Model for Performance Change

Our model parallels, in truncated fashion, the transtheoretical constructs of stages and processes of change in a psychological therapeutic milieu.¹⁵⁻¹⁷ We focus on three stages in change of behavior, awareness, competence, and performance, which are comparable to Prochaska's contemplation, preparation, and action stages.

Stages

Awareness. The awareness stage is largely a passive condition entailing virtually no change of behavior. It includes elements of knowledge acquisition (recognition that an innovation exists) and a preliminary evaluation of salience (this

could apply to me). An array of sources can trigger this awareness. These include journal articles, publications, news releases, continuing education (CE) programs, professional meetings, and interaction with colleagues.

Competence. Competence denotes the capacity to perform the desired behavior. To reach this stage, practitioners must acquire the appropriate knowledge, skills, and, in some cases, attitudes that are necessary to incorporate the proposed behavior into their clinical repertoire.

Performance. The performance stage—the goal of dissemination efforts—entails behavior change, both individually and organizationally. In this stage, the new behavior in which individuals are now competent is both introduced into clinical practice and integrated into the larger organizational environment.

The stages are evident and unremarkable in themselves. Of greater interest and importance is how dissemination, education, and other change strategies produce activity across these stages. In our model, portrayed in Figure 1, predisposing, enabling, and reinforcing factors play essential mediating roles in producing change. These factors, adapted from the work of Andersen¹⁸ and Green¹⁹ in the health education literature, influence the extent and rate of the progress of practitioners in health care organizations from awareness to actual change in performance.^{19a}

Practitioners must be predisposed to acquire competence, and they must also be predisposed, once competence is achieved, to put it into everyday practice. This alone is not sufficient. In addition, elements in the work environment and in the larger organizational context must enable and reinforce the successful implementation of performance change.

Mediating Factors

Predisposing factors. Components of the predisposing factor in our model are derived from the health belief model as described by Becker.²⁰ These factors produce something akin to clarity,

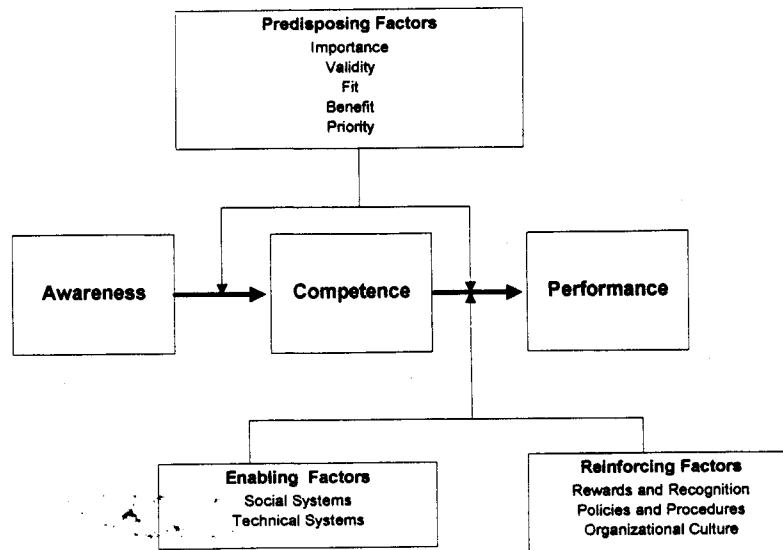


Figure 1 A model for performance improvement.

a concept Fox et al.²¹ use to describe how physicians develop an image of the changes they want to make, which, in turn, prompts the kinds of learning they will pursue. The predisposing factors organize the individual's readiness to adopt a new practice behavior into three levels: (1) appraisal of the need for change, (2) appraisal of the proposed behavior change, and (3) assignment of priority to this need. The first level of appraisal, importance, establishes the broad context for change. In this process, practitioners acknowledge the existence of a problem or opportunity for change and assess its seriousness or importance.

The second appraisal level subjects the proposed innovation or behavior change to a three-part evaluation: validity, applicability, and cost/benefit. Validity concerns the perceived technical or scientific merit of the proposed innovation or change. Do practitioners believe it to be effective? Influenced by personal style and biases, practitioners may be wary of scientific findings. In their

view, the publication of research results, even in prestigious journals, does not in itself confer validity.²² Practitioners often rely on the judgment and advice of "influentials" or "opinion leaders" within their social-professional network for confirmation that the proposed practice change is valid and ready for implementation.²³⁻²⁶

Practitioners also judge whether the proposed change is applicable to their patients and whether implementation would be deemed appropriate by their practice community. Research findings on early and late adopters can be interpreted in light of how different practitioners respond to the question of applicability.^{27,28} Practitioners may perceive that their patients or colleagues will consider certain procedures to be too radical (or too conservative). Burns et al.,^{29,30} citing the literature on institutional theory, suggest that practitioners adopt new practices not because of their technical advantages but because they conform to norms in the prevailing environment. Evaluating costs and benefits, practitioners will also weigh the value of the

proposed change against the cost of its implementation.

At the final level of appraisal, the practitioner determines the priority that should be assigned to implementing the proposed change: Is the change of sufficient importance to take action? Should action be taken immediately or can a slower adoption plan be used?

The predisposing factors enter the process recurrently. They affect the decision to acquire competence. Once competence is attained, practitioners can more accurately assess the importance, validity, fit, and benefit of the innovation. This, in turn, strengthens (or diminishes) the predisposition to implement the innovation.

Enabling factors. The remaining factors of our performance improvement model—enabling and reinforcing factors—are critical to reaching the performance stage. These factors address the work and organizational environment within which the behavior change actually occurs.

Enabling factors are comprised of the social and technical systems within an organization that facilitate, retard, or preclude the implementation of an innovation or new behavior. Our notion of social systems is grounded in the human potential/group dynamic literature.³¹⁻³⁵ In this view, the quality of a workgroup's interaction—the communication and interaction among the staff; their feelings of involvement, empowerment, and motivation; and their commitment to the team—affects organizational performance. Research on the productivity of professionals has found that, while personal characteristics play an important role, the most powerful predictor of productivity is the social systems within their organization.^{35,36}

The work of Deming, Juran, and other pioneers in the Total Quality Management (TQM) movement^{37,38} undergird our ideas about the technical systems that affect performance improvement. In this view, technical systems, including work processes, systems, and flow, and the adequacy and deployment of resources such as staff, equipment, and supplies, significantly influence workplace behavior and largely account for outcome and

productivity. Deming pointed out that only 20% of people's performance is determined by their own effort and skills and 80% by organizational factors.³⁹

Reinforcing factors. Reinforcing factors relate to the values and other characteristics of organizations that reward certain behaviors and either fail to reward or punish others. These underwrite the adoption of an innovation and are the basis for a long-term commitment to its use. Reinforcing factors exist at two levels. At one level, the "organizational culture" is embodied in organizational history as well as policy and is exemplified by the way the desired changes are viewed as consistent with organizational vision, mission, and values.^{40,41} At another level are "operational systems" that support change, create a climate of quality, and reinforce desirable new processes and procedures. For example, an organization's performance appraisal and recognition systems inform its members about which activities will be viewed as exemplary and thereby result in rewards and promotions.⁴²⁻⁴⁴

Explanatory Value of the Model

One method for testing the explanatory power of this model is to use it as a lens through which to revisit the results of previous dissemination efforts. In the section that follows, we review the results of a broad array of efforts to elicit performance change using our model to characterize the stage(s) and/or mediating factor(s) targeted by the strategy and to explain its result. We review three general categories of dissemination efforts: those concerned with wide promulgation, those that take a CE focus, and those that are multidimensional in nature and that attend specifically to one or more of the stages and/or mediating factors we propose. Our model predicts that successful dissemination efforts will be those that account for the mediating factors as well as attend to movement through the stages. Conversely, efforts that do not attend to these factors have little chance of affecting performance.

Wide Promulgation

Our model predicts that broad efforts to promulgate innovations or new behaviors through such vehicles as mailings, journal articles, or public messages will primarily affect awareness and will have little impact on competence and even less on performance. Research on large-scale, broad-based dissemination efforts bears this out. Such strategies typically do not provide the means for individuals to develop sufficient competence to use the information and they do not usually stimulate a desire to apply its use in practice.^{45,46} Evans et al.,⁴⁷ in a study of the impact of mailed educational materials, found no lasting effect on physicians' knowledge and concluded that resources using this approach may be wasted.

Grilli and Lomas⁴⁸ reviewed 23 studies of compliance with practice guidelines published between 1980 and 1991 and found a mean compliance rate with 143 clinical recommendations of just 54.5%. Other studies of the dissemination of national practice guidelines have also shown limited success in the implementation of the recommendations.⁴⁹⁻⁵⁶

A survey of physicians and a review of medical records indicated that a national consensus statement on cesarean sections did little to improve physician knowledge and had almost no effect on practice behavior.^{55,57} The 1978-80 national informational campaign by the U.S. Food and Drug Administration and the manufacturer of propoxyphene brought about nearly no change in physician prescribing behavior or in patient deaths related to the drug.⁵⁸ Furthermore, even when standards of quality of care are locally developed, reviewed, and ratified by a number of academic practices, the standards are not well met.⁵⁹

Continuing Education

Our model indicates that since instructional strategies like CE are aimed primarily at developing competence, they attend to part, but not all, of the

proposed model and will therefore be insufficient to produce performance change. CE programs assume that participants have arrived at a stage of awareness about the issue that forms the basis for the instructional activity. They may address predisposing factors by establishing the importance, validity, applicability, and benefit of the topic being addressed. While instruction in the requisite knowledge and skills fosters the movement from awareness to competence, educational activities seldom deal with the enabling or reinforcing factors, except in general ways. For example, an action planning component is sometimes included in CE activities to help participants design individualized approaches by which their new skills can be incorporated into their work setting. Yet, as the model predicts, CE does not exert a substantial influence on actual performance. Studies on the impact of continuing medical education^{6-8,10,60,61} found increased physician knowledge and, only to a much lesser extent, changed practice behavior in the direction of adopting the knowledge or skill being taught.

The mixed results can be attributed to some degree to the fact that CE does not define a single entity. The term "CE" describes education of varying duration (1-hour to 1-week experience), format (lecture, workshop, small groups, hands on), and application of educational design (degree to which outcomes are specified and matched to learning objectives and instructional design).⁶² Individual studies of the minimal change in the practice behavior of physicians^{63,64} and of nurses^{65,66} after a CE intervention confirm this finding.

Multidimensional Strategies

According to our model, strategies that address the mediating, predisposing, enabling, and reinforcing factors will increase the likelihood of change in performance. Below, we briefly review the findings of studies that have attended to one or more of these factors, illustrating the manner in

which these efforts have been more or less successful in achieving performance improvement.

Strategies that address predisposing factors.

A number of studies have demonstrated a positive relationship between a practitioner's predisposition to an innovation and its adoption in practice. Dissatisfaction with an aspect of practice and the perceived necessity for change have been identified as critical to implementing new practice behaviors.^{67,68} Several studies have demonstrated the importance of practitioners' views of the cost and patient-centered benefit of change to the modification of practice.^{19,69,70}

Strategies that address enabling factors.

Social systems. Efforts to affect social systems typically address the functioning of a group of workers/practitioners and concern issues such as group norms, decision making, conflict resolution, communication, leadership, and group harmony and its relationship to group productivity.⁷¹ A number of studies have demonstrated that attention to issues of team building and communication have had a positive impact on behaviors at the performance stage. These include enhanced collaboration between physicians and nurses,^{72,73} enhanced communication and team functioning and improved services to clients,^{74,75} and job satisfaction, role explicitness, greater use of skills, communication among staff, and greater goal clarity and attainability.⁷⁶ Conversely, in one study, failure to attend to such issues has been shown to hinder optimal care of frail individuals.⁷⁷

Technical systems. Attention to the organization's technical systems has grown in recent years.^{14,78-81} Dissemination strategies that are sensitive to the work environment (in contrast to strategies that focus only on the development of awareness and/or competence) have been found effective in achieving performance change.⁸²⁻⁸⁶ These results are reinforced by review articles concluding that CE must view behavior change as the result of the interaction between an individual and the practice environment.^{87,88} At a step beyond professional performance, analysis concludes that patient care outcomes are affected by a synergistic

combination between the practitioner and the clinical environment.⁸⁹

Added to these results are those from the field of TQM, the tools of which have been used to systematically analyze and modify processes in the workplace. Such tools applied to health care settings emphasize the contribution of both social and technical systems to the adoption of innovation and more successful client outcomes.^{39,90-96}

Strategies that address reinforcing factors.

A number of successful dissemination efforts have targeted the reinforcement of the desired behavior by changing the organizational culture or structures that support and maintain the innovation. A report of hospital success stories links professional excellence with two organizational factors: the alignment of departmental activities with the institution's overall mission and vision and the development of an extensive staff recognition system. The failure to address such contextual issues as organizational culture and values, management style, corporate goals, and distribution of resources has been shown to limit the effectiveness of dissemination efforts^{65,97,98} and has been linked to the failure of improvement efforts.⁹⁹

Strategies that address multiple factors.

Our model emphasizes that the strategies chosen to change practice behavior must be carefully designed with emphasis on the predisposing, enabling, and reinforcing factors. Further, they must be consistent with the nature of the desired practice change and the degree to which the change is dependent on organizational factors. The success of dissemination efforts that have addressed multiple stages and mediators in a tailored fashion bears out this assertion.^{12,22,100} Successful interventions have included, in various combinations, elements of information promulgation, instruction, team building, personal feedback and consultation, practitioner involvement in the design of the innovation or the implementation system, change in systems, policies, and procedures, deployment of systems to provide information on performance and outcomes related to the change, and implementation of campaigns designed to

Table 1 Impacts of Strategy

Strategy	Awareness	Predisposition	Competence	Enabling Factors	Reinforcing Factors	Performance Factors
Mailout	Yes	Yes	No	No	No	No
CE only	Yes	Yes	Yes	No	No	No
CE + TQM	Yes	Yes	Yes	Yes	Yes	Yes

show the pertinence of the innovation to organizational mission.^{86,101-106}

Testing the Proposed Model

Consistent with the call for research on approaches to better effect learning and change,¹⁰⁷ we are currently evaluating a dissemination strategy designed to incorporate all components of our performance improvement model into a three-armed randomized trial jointly funded by the Agency for Health Care Policy and Research (AHCPR) and the Department of Veterans Affairs (VA). The strategy, aimed at achieving compliance with the clinical recommendations from AHCPR guideline, The Prediction and Prevention of Pressure Ulcers in Adults, combines training and an extended team organizational improvement process supported by consultation. The project is targeted to teams of clinicians and health care professionals from single medical wards from 48 VA medical centers.

One third of the study participants take part in a CE program that focuses on developing the skills and knowledge necessary to carry out these recommendations. In addition, the program provides information and exercises intended to ensure participants of the validity, salience, applicability, and benefit of the guideline recommendations. Another third of the participants receive the same CE training program as the first group but also receive training in the tools and methods of TQM. The “process action teams” from each hospital will be equipped with knowledge and skills related to the analysis and improvement of organizations. It

is intended that these teams will continue to work together at their facility on aspects of the social and technical systems of their organization to enable the implementation of the recommendations in the AHCPR guideline. These teams also receive structured consultation over a 6-month follow-up period. The final third of the participants receive a targeted mailout of the AHCPR guideline, a promulgation strategy that we expect only to impact awareness.

The underlying hypothesis of this study is that the strategy that attends most closely to the elements of our performance model will result in the greatest compliance with the guideline recommendations and an improved clinical outcome, specifically a lowering of the incidence of pressure ulcers. Those that do not address all of the elements may affect awareness, attitude, and/or knowledge but will not produce meaningful performance change. Table 1 depicts our expectations for the effects of the three strategies.

Conclusion

Many strategies have been developed to disseminate innovations and promote their adoption. The conceptual model that we have described, and that we will test, asserts that for practitioners with the appropriate level of knowledge and skills, a combination of the predisposing, enabling, and reinforcing factors will affect behavior and will influence whether or not an innovation will be adopted by individuals within an organization. The model provides insight into the effectiveness

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of an integrative, multivariate approach to changing practice behavior and the factors that influence movement between stages in the change process.

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