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Applying Kotter's 8-Step Process for Leading Change to the Digital Transformation of an Orthopedic Surgical Practice Group in Toronto, Canada

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Abstract

Primary health care in Canada has entered a period of transformational change with a key initiative including support for implementation of electronic medical records. Lack of engagement by end-users has been found to be the key factor contributing to failed implementations of EMR in the healthcare setting. Change models have been found to be effective tools to bring about organizational transformations. In this study, Kotter's 8 Step Process for Leading Change is implemented to digitally transform a community-based three-surgeon orthopaedic surgical practice in Toronto, Canada. Having identified the residual paper-based operational tasks employed by the partner surgeons and staff, and having implemented the digital alternative for these tasks through the use of a comprehensive EMR computer program, Kotter's 8-Step Process for Leading Change is successfully applied to the EMR adoption process leading to digital transformation above a 95% threshold.

Keywords: Electronic medical records; EMR; Transformative change; Organizational change; Motivation; Leading change; Kotter's model; Digital transformation; EMR adoption

Introduction

This research involves the digital transformation of an orthopedic surgical practice office housing three community orthopedic surgeons and a physical therapy treatment clinic in Toronto, Ontario. All three surgeons engage in both a private community orthopaedic surgery practice and hold surgical privileges at a local community hospital which serves a catchment area of more than 850,000 people in the northwest Greater Toronto Area. The clinic employs two full time physical therapists and one office manager for therapy services as well as four administrative assistants who manage the surgeon's practices.

In order to qualify for three years of implementation funding from the Ontario Medical Association's "EMR Adopter Program [1], and offset the financial burden of converting to a fully digital clinic which is estimated to be in excess of $75,000, the clinic must engage in and adopt a paper-free global operational process. In addition the affiliate hospital's medical staff members have received a mandate to switch to dedicated electronic communication between external practice offices and the hospital (Table 1).

All three partner surgeons continue to employ paper-based processes for certain tasks which have been identified through an internal process of practice review to be responsible for digital communications below a 95% threshold. This 95% threshold was determined in consultation with Ontario MD [1] as a reasonable and practical threshold given the presence of paper-based mail, journals, reports and files that continue to be circulated by external sources not employing electronic processes. Failure of the practice to adopt EMR at the 95% threshold would lead to ineligibility for implementation funding costing upwards of $75,000, a shortfall in digital integration with our affiliate hospital system, and the potential of missing essential information from patient charts as well as problems processing laboratory and radiographic requisitions or viewing reports--possibly leading to treatment errors, and litigative consequences.

Staff Member	Age	Sex	Position	Prior Experience with Dedicated EMR
A	25	F	Admin	No
B	26	F	Admin	No
C	30	F	Admin	No
D	32	F	Office Manager	No
E	36	M	Physician	No
F	37	M	Physician	No
G	49	F	Physician	No
H	56	F	Admin	No

Table 1: The demographic and EMR experiential breakdown of the participants are summarized in table two below: Staff Member Characteristics.

Methods

Eight organizational members of the 10 individuals who work in the clinic participated in the study. The two physiotherapists were not available for participation. The author used qualitative open coding to perform a pre-adoption interview with each of the 8 participating members with the goal of gathering qualitative data on member attitudes towards the process of adopting Accuro EMR. In order to quantify the pre-implementation use of electronic communication and medical record keeping, a "digital rate" was determined prior to performing the pre-adoption interview. Each communication "event" was counted over the process of one business week. One event was defined as the transmission of a document--either in paper form (a prescription handed to a patient, a report or file mailed from the clinic) or through digital means (email, fax, modem, internet upload/download) and compared to determine the rate of digital clinical communication processes, or the current percent EMR adoption.

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A pre-adoption interview was then carried out by the author with each organizational member which included 3 orthopaedic surgeons, 4 surgical administrators and the clinic manager (n=8). During the pre-adoption interview, the author addressed the need for change (to achieve grant funding and meet hospital communication mandate), described the proposed 8-step model in detail, and conducted an open interview to determine individual barriers to EMR adoption by asking each clinic member the following two questions: 1) Why do you continued to use paper-based processes when digital alternatives are available? 2) What are the residual paper-based processes that you currently use?

Each step in Kotter's [2] model was then addressed individually by the author with the group (Figure 1). Step one [2] to communicate urgency, was achieved by emphasizing the deadlines from Ontario MD [1] for funding and from the affiliate hospital for digital communication during individual interviews with all staff. Step two [2], building a guiding team, was carried out through the engagement of a physician champion and an administrative champion to communicate the vision and serve as role models to educate, encourage, and provide feedback to other members during the process. Steps three and four [2] to create a vision and communicate it for buy-in were achieved through the use of multiple channels (email reminders, face to face meetings, individual interviews and electronic feedback from the EMR program demonstrating functionality and familiarity with the program). Step five, the removal of obstacles [2] in order to enable action was addressed through individual one-on-one in-services on the use of Accuro®EMR in medical practice; and through a one-on-one in-service with the author and each team member on the specific use of the program in orthopaedic practice. Finally Kotter's sixth step was addressed--creating short term wins that provide momentum--through a meeting with an OntarioMD [1] representative and the physician champion (author) to review EMR application and provide final approval of grant funding [2]. Kotter's seventh step maintaining momentum--was addressed through the confirmation of threshold adoption by a representative from OntarioMD [1]; and feedback from our affiliate hospital health records department confirming digital integration between the clinic and hospital [2]. Kotter's eighth step--incorporating change into the culture [2], will proceed through "nurturing" a new culture of digital practice [3]. OntarioMD [1] and representatives from Accuro®EMR publish weekly "tips and tricks" via email for optimizing EMR use. These have been incorporated into a summary presentation by the administrative champion at each subsequent monthly staff meeting. In addition, the destruction through shredding of all remaining paper forms was scheduled in conjunction with a major clinic social event to celebrate the achievement of our digital transformation goal.

Due to small data size, interview responses were analyzed qualitatively using narrative analysis as described by Taylor-Powell and Rennell [4]. According to Guba and Lincoln [5], open-ended interview questions which constitute qualitative inquiry, as used in this research, should not be judged by criteria such as reliability as it is considered subjective. As a control measure, two third party non-employee reviewers coded the interview data in order to validate the summary of the interviewer used to identify barriers to adoption. These were compared to the interviewer's summary and in each case, all three summaries matched to 100% accuracy (1.00) of interpretation. According to Miles and Huberman [6], intercoder reliability should approach a kappa value of greater than or equal to 0.90. This finding correlated with Klahr and Kotovsky's [7] finding (1989) that large amounts of complex qualitative information can be accurately and reproducibly processed without bias or random error between coders. There was no intercoder error noted between the three coders in this study (author/interviewer and two third-party reviewers) for clinic member's reasons for failure to adopt EMR.

Step One: Communicate Urgency
Step Two: Build a Guiding Team
Step Three: Create a Vision
Step Four: Communicate for Buy-In
Step Five: Remove Obstacles
Step Six: Create Short Term Wins to Provide Momentum
Step Seven: Maintain Momentum
Step Eight: Incorporate Change Into Organizational Culture
Kotter, J. 2007

Figure 1: Kotter's Eight Step Model of Leading Change.

Expressed Barrier	Frequency of Mention
Lack of knowledge of digital alternative	**100% (8/8)**
Habit	**75% (6/8)**
Lack of motivation to change	**50% (4/8)**
Lack of knowledge of consequences	**50% (4/8)**

Table 2: Staff Member Perceived Barriers to EMR Adoption.

Results

Table 2 represents staff member's perceived barriers to EMR adoption. In particular, the partner surgeons identified lack of knowledge of the digital alternatives and paper-based process habits as their top two barriers.

The pre-implementation digital rate was calculated at 54% based on the number of digital events compared to the number of total communication events over the 5 day period (948 digital events/1755 total events). This was noted to be 41% below desired threshold for grant funding and compliance with the hospital mandate which was set for the purposes of this study at 95% OntarioMD [1]. The post-implementation digital rate of adoption was 98% (1759 digital events/1795 total events) representing a 44% increase in EMR adoption by clinic staff and surgeons. Implementation grant funding was confirmed by a representative from OntarioMD [1] at the end of December, 2012.

Discussion

Primary health care in Canada has entered a period of transformational change with a key initiative including support for implementation of electronic medical records (EMR) [8] Transformational change has been defined as a major shift in an organization's vision, mission, culture or goals [9] EMRs are computerized medical information systems intended to replace existing paper-based medical records--the patient chart [10]. The perceived advantages of EMRs include optimizing patient encounters and improving access to information as well as reducing errors, optimizing billing, creating a database for research and quality improvement, and reduction of paper use [11].

Lack of engagement by end-users has been found to be the key factor contributing to failed implementations of EMR in the healthcare setting [12]. Inadequate customization, consultation with users in system choice, use of clinical champions, and involvement of clinical and administrative staff in engagement efforts have been identified as

failure factors [12]. In the past, provincial governments have invested in primary care information technology focusing primarily on the architecture of the technology and not on clinically useful applications [8]. This has resulted in poor EMR adoption levels among physicians [13]. Several barriers identified by Boonstra and Broekhuis [13] include financial, technical, time, psychological, social, legal, and inherent resistance to organizational change.

Cohn et al. [3] found that physician engagement and consensus building are primary determinants of an effective EMR implementation program. In a case analysis of a hospital-based EMR implementation in Cohn's article [3] success was found to be multifactorial and included seeking early physician participation, providing sufficient resources to carry out the transformation, and using a logical framework of implementation. Cohn et al. [3] used Kotter's 8-step change model to "defrost" and then to "embed" EMR into daily practice. According to Cohn et al. [3], 95% of the case hospital physicians now use the EMR system, and the hospital has helped three other similar facilities adopt EMR technology.

According to Ray [14], change models are effective tools to bring about organizational transformations--Kotter's [2] model representing one such tool successfully implemented in health care systems [14-16,3,17,2] found that change has both an emotional and situational component, and methods for managing each can be expressed in step-wise fashion. Kotter's [2], model expressed as an eight step process (developing urgency, building a guiding team, creating a vision, communicating for buy-in, enabling action, creating short-term wins, reinforcing, and making it stick) addresses organizational, individual and even environmental barriers to change [2]. Campbell [16], introduces Kotter's philosophy of organizational change, referencing situational and emotional components of change that should not be underestimated by managers. He suggests addressing EMR integration into physician offices through a process of incremental phases to avoid overwhelming organizational members [16].

Even with the use of an effective model, Aiken and Keller [18], claimed that failure to create organizational change results from a lack of understanding of certain aspects of human nature which they consider predictable. Reasons for unsuccessful change include failure: to recognize differences in motivation; to use employee-driven change messages; to communicate a balanced message of the pros and cons of change; on the leader's behalf to act as role models for effective change; to overestimate the impact of influential organizational members in resistance to change; to recognize that money is not necessarily a motivating factor in change; to recognize the impact of employee perceptions; and to recognize the impact of environmental factors external to the organization [18]. By identifying potential barriers prior to implementing Kotter's model [2], it may be possible to incorporate counter measures to avoid resistance. Kotter [2] notes that transformation efforts require organizations to follow a series of steps--none which should be skipped. In the 2007 The Best of Harvard Business Review reprint of his original 1996 article Kotter [2] describes potential process errors including a lack of urgency, no guiding coalition, lack of communication of the vision for change, failure to identify and remove obstacles, to identify success along the way, to prematurely declaring victory and lack of anchoring for change into the culture.

Motivation plays an integral role in facilitating organizational change [19]. According to Kurt Lewin [20], who originally presented his classic work in 1947, organizational change requires motivation and must follow the steps of unfreezing, moving and refreezing to effectively create transformation. Focusing on the supportive communication of principles of change highlighting the need for organizational change, and not focusing solely on the individual--serves as an effective method to introduce the change process [19].

In review of the literature, motivation requires personalized strategies [19]. According to Warschkow [21] most surgeons tend to see themselves as achievement orientation and extraverted. Extraverts tend to be focused on goals related to socioeconomic and political status [22], whereas achievement oriented people tend to be focused on anticipating pride upon achieving goals [23]. Motivating through addressing individual needs is a significant factor in several motivational theories as presented by Schermerhorn [19]. Alderfer's ERG theory of existence, relatedness, and growth suggests that more than one need at a time can be addressed when designing motivational strategies [19]. McClelland's acquired needs theory appeals to individual needs for affiliation, achievement and power [19]. Both these motivational theories in principle appear to correlating well with Warschkow's [21], findings concerning surgeon personality types and the related motivating factors inherent to these types [21] and could therefore be considered when designing specific tasks for the transformational change effort.

Finally, in addition to using a change model, identifying barriers to change, and considering motivational factors for those directly involved in the change, the organizational structure of the change effort must be considered. According to Schermerhorn [19], faster responses to technological changes are best mediated through the use of self-managing teams. A self-managed team is defined as a self-directed small group (from 5 to 15 individuals) empowered to make their own decisions and manage their own processes [19]. Members strategize, plan, execute, train one another, and evaluate one another and share tasks and responsibilities [19].

EMR adoption by our orthopaedic clinic away from paper-based communications methods represents transformative change [9,10] and benefits the clinic on many levels [11]. The need to adopt EMR above a threshold of 95% by the end of 2012 represents the catalyst for change in our organization. Through a process of quantifying current EMR adoption by calculating digital versus paper-based communication events over the course of one week, it was determined that two of the clinic's three surgeons continued to write paper prescriptions and fill out paper diagnostic requisitions in place of the available digital alternatives--leading to EMR participation below threshold.

In review of the literature concerning EMR adoption in healthcare systems, it appears that end-user engagement could be improved by addressing awareness of the digital alternatives, through customization of the EMR program to meet individual surgeon needs, and by employing specific motivational strategies to enhance surgeon participation [12]. At our clinic, we had achieved some movement toward a fully integrated electronic records system through exposure to our affiliate hospital's EMR system, Meditech [24], now in place for many months; as well as through our initial adoption phase of the Accuro®EMR program [25].

Kotter [2] warns us that failure to successfully implement organizational change may occur if we do not address potential barriers or consider individual motivational factors [2]. Failure to change may also occur if we do not create an atmosphere of urgency, or fail to embed the change into organizational culture [2]. Barriers to EMR adoption have been identified to include issues related to finances, technology and training, time constraints, psychological resistance or habit, and even social factors [13]. The two main residual paper-based procedures identified as major contributors to our clinic's failure to meet the

digital transformation threshold are the use of paper prescriptions and diagnostic study requisition forms. The "habit" of using paper for these two specific processes therefore cannot be overlooked as a barrier to change since the loss of the physical patient "chart" to a computer-based digital "file" has significantly changed the feel of patient care for our clinic's surgeons. Kotter's model provides a framework to address organizational change in a stepwise fashion while at the same time offering the opportunity to enhance the change process by addressing motivational factors such as those relevant to surgeons [21]. Strategies to motivate those involved in the change process should be individualized. By appealing to the Warschkow [21], stereotypical surgeon personality type, motivating factors could be addressed in order to optimize surgeon participation in the transformation--the need for completing the digital transformation of the clinic appealing to the consequence of lost grant funding (extrovert motivator) and to the attainment of the 95% transformation level (achievement oriented goal). Urgency is addressed by the need to achieve a 95% digital transformation threshold by the end of 2012 in order to save $75, 000 and to avoid reprimand from our affiliate hospital. Buy-in can be addressed at each stage of the Kotter's [2] model by reinforcing need, encouraging participation through recognizing motivational factors and avoiding failure by identifying and addressing relevant barriers.

Finally, according to Schermerhorn [19], the use of a self-managing team in the clinic's digital transformation effort may lead to a more rapid process of change. Kotter's model [2] represents a tool that can be self-administered through a group process of self-management and therefore would lend itself to Schermerhorn's [19] concept of a faster response to a change in technology. Our clinic's three surgeons and four five administrative members comprise an eight member team which fits within the framework of being able to function effectively [19].

An alternative solution to the problem of digital transformation would be to let consequences lead to action. By allowing the clinic to fail to achieve funding by missing the 95% digital transformation deadline, and subsequently receive a warning or reprimand from our affiliate hospital or licensing college, the partner surgeons who continue to use paper-based processes may be motivated to change. Unfortunately, although this reactive approach may lead to a more complete digital transformation of the clinic, the cost to the clinic's surgeons may be unrecoverable. And finally, although the interview itself served as a point of information and communication concerning urgency and need, as well as addressing individual barriers to change-- and alone may have sufficed to "unfreeze" the current culture in preparation for EMR adoption--Kotter's model was implemented with the goal of anchoring digital communication into clinic culture.

Kotter's 8 Step Process for Leading Change is therefore an effective tool to bring about transformational change in the implementation of electronic medical records in a community orthopaedic surgical practice office. The model addressed the importance of a step-wise process in affecting organizational transformative change as well as considering individual differences in member's needs, goals and perceptions which play an integral role in individual engagement in the change process. Kotter's model and other successful change models address the importance of embedding a desired transformation into organizational culture through regular and repetitive encouragement, feedback, reinforcement and recognition of successes.

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