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Quality Assurance in Competency Training of Pre-anesthesia Consultation Skills

Michelle Wong
mwong45@uwo.ca

Abstract

The absence of quality assurance in training clinicians to perform pre-anesthesia consultations at a Canadian university is the Problem of Practice addressed in this Organizational Improvement Plan. This competency requires learners to apply their anesthesia knowledge to take medical histories; perform physical examinations; diagnose anesthetic risks; and generate anesthesia plans. Random chart audits of many learners identify deficiencies and suggest inconsistent training of this competency. This Organizational Improvement Plan analyzes the anesthesia program's organizational context to be a complex adaptive system; organizational structure to be a hierarchy; and organizational state to be static. Through the paradigms of complexity theory, interpretivism, critical theory, and pragmatism, this proposal describes how adaptive, enabling, and administrative leadership strategies will (1) improve competency training of pre-anesthesia consultations; (2) build capacity of the anesthesia program's stakeholders; and (3) foster a collaborative culture. An Integrated Framework of the Change Path Model and the Modified Plan-Do-Study-Act Cycle will serve to implement change in this organization. The research and recommendations offered in this work can be adapted for use in other clinical programs aiming to improve competency training.

Keywords: Quality Assurance, Anesthesia, Consultation, Competency, Training, Complex Adaptive System, Complexity Theory, Plan-Do-Study-Act Cycle

Executive Summary

The absence of quality assurance in training clinicians to perform pre-anesthesia consultations at a Canadian university is the Problem of Practice addressed in this Organizational Improvement Plan. This competency requires learners to apply their anesthesia knowledge to take medical histories; perform physical examinations; diagnose anesthetic risks; and generate anesthesia plans. In anesthesia practice, the pre-anesthesia consultation functions to identify patient problems prior to the planned anesthetic procedure. By collecting pertinent medical information and building a patient's health history from interviews and reconciling records, the clinician estimates and reduces the risk of adverse outcomes and death through medical optimizations, interventions, or referrals to other services prior to anesthesia. The inconsistent quality of pre-anesthesia consultations completed by learners—evident from random chart audits of many residents —suggests, however, that the quality of training of this competency is inconsistent. Consequently, this issue potentially impacts patient care and outcomes. This Organizational Improvement Plan is organized in three chapters.

Chapter 1 investigates the Problem of Practice and establishes *why* change in the anesthesia program is recommended. The chapter examines the anesthesia program's history, purpose, and objectives. After identifying the organizational context as a hierarchy within a complex adaptive system, the change leader discusses *what* the anesthesia program must change to align with the university's strategic plan for greater collaboration and educational excellence. After a PESTLE[1] analysis is performed on the organization and identified assumptions are disclosed, the change leader's leadership position and lenses of complexity theory,

[1] PESTLE analysis identifies political, economical, sociocultural, technological, legal, and environmental factors that relate to the problem of practice.

interpretivism, critical theory, and pragmatism are elucidated. The readiness of the anesthesia program to change toward the desired organizational state is discussed.

Chapter 2 discusses *how* to strategize change using a triad of administrative, adaptive, and enabling leadership approaches in the anesthesia program's complex adaptive system. A critical organizational analysis informs the development of solutions and the selection of change management frameworks such as the Change Path Model; the Plan-Do-Study-Act Model; and the Model of Improvement. Furthermore, leadership ethics will be discussed as it pertains to the Problem of Practice and the anticipated change.

Finally, Chapter 3 discusses the strategies for implementing the selected solution, as well as monitoring, evaluating, and communicating change. The selected solution requires (1) building learner capacity by replacing lectures with interactive modules and updating feedback practices with formative assessments; (2) building instructor capacity through faculty development; and (3) modifying the structure by implementing an auditable pre-anesthesia consultation form. An Integrated Framework of the Change Path Model and the Modified Plan-Do-Study-Act Cycle serves to implement change. The tasks and three-year timeline are outlined, alongside practical communication strategies.

The Next Steps and Future Considerations section discusses the change leader's growth mindset and acknowledges that a partial success of the change plan would positively impact the anesthesia program. Unexpected setbacks would offer learning opportunities for organizational growth and evolution.

This Organizational Improvement Plan provides a practical and feasible approach to improving competency training of pre-anesthesia consultation skills. By implementing this plan, this change project could influence other quality improvement initiatives in the anesthesia

program, at the university, other Canadian or international anesthesia training programs that have similar training gaps.

Acknowledgments

This major paper was written during a time of personal loss, growth, transformation, and international crisis. I am in awe of the resilience and love of my family when times are dark and uncertain. My heroes are the unsung healthcare providers who work hard to serve the community daily. The selfless healthcare workers, who make the tough decisions and dedicate their lives to the frontlines during the COVID-19 pandemic, are leaders for humanity.

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List of Acronyms

AP ..... Anesthesia Program

CAS..... Complex Adaptive System

CBME ..... Competency-Based Medical Education

CEQ..... Course Experience Questionnaire

DOPS ..... Direct Observation of Procedural Skills

EPA ..... Entrustable Professional Activity

HCM ..... Human Capital Management

HRB ..... Health Regulatory Body

Mini-CEX ..... Mini Clinical Evaluation Exercise

OIP ..... Organization Improvement Plan

PAC ..... Pre-anesthesia Consultation

PESTLE ..... Political, Economic, Sociocultural, Technological, Legal, Environmental

PoP ..... Problem of Practice

PDSA ..... Plan-Do-Study-Act

PLC ..... Professional Learning Community

QA..... Quality Assurance

QI ..... Quality Improvement

Glossary of Terms

Term	Definition
Adaptive Leadership	A follower-centered leadership approach that encourages polyarchy and continuous learning for the betterment of the organization (Heifetz, 1994; Heifetz, Grashow, & Linsky, 2009)
Adaptive Challenge or Problem	A problem of practice that requires stakeholders to learn, change behaviors, and experience trade-offs (Thygeson, Morrissey, & Ulstad, 2010)
Adult Learning Theory	Teaching adults and adult learning; adult learning theory by Knowles (Knowles, Holton, & Swanson, 2015)
Competency	A minimum level of performance (Baker, 2013); an outcome of higher education (Knowles et al., 2015); a consolidation of required knowledge or skill(s).
Complex Adaptive System	An open and dynamic learning ecosystem which is influenced by its members, internal and external factors (Lichtenstein et al., 2006).
Complexity Theory	An interdisciplinary theory that encompasses agency with schemata, self-organization, coevolution, system evolution; non-linear dynamism and network feedback systems, chaos theory and emergent order (Anderson, 1999a; Cawsey, Deszca, & Ingols, 2016; Stacey, 1995).
Pre-Anesthesia Consultation	Competency skill that involves medical history-taking, physical examination, clinical reasoning, diagnosis, and anesthesia planning.
Quality Medical Education	A standard of medical education that evolved from Flexner's medical education model of hierarchical teacher-centered processes in time-based training programs (Flexner, 1910) to student-centered clinical teaching of competency (Frank, Jabbour, & Tugwell, 1996).
Situational Leadership	A leadership approach that variably shifts on a continuum of directive and supportive styles contingent upon the leader's context (Blanchard, Zigarmi, & Nelson, 1993)

Chapter 1: Introduction and Problem

In anesthesia practice, the pre-anesthesia consultation (PAC) functions to identify patient problems prior to the planned anesthetic procedure (Zambouri, 2007). By collecting pertinent medical information; building a patient's health history from interviews; and reconciling records (Haidet & Paterniti, 2003), the clinician estimates and reduces the risk of adverse outcomes and death through medical optimizations, interventions, or referrals to other services prior to anesthesia. Identified inconsistencies and great variations in PACs performed by novice clinicians in a Canadian anesthesia program (AP) concern program administrators. "Mechanisms, procedures, and processes" (Harvey & Green, 1993, p. 19) that assess quality (i.e., quality assurance) of PACs require examination. The absence of quality assurance (QA) in PAC skills training at a Canadian university is the Problem of Practice (PoP) and provides the focus of this Organization Improvement Plan (OIP). For the purposes of confidentiality and privacy protection, the organization, its related data, and references have been intentionally unnamed. The original identifiers have been substituted with generic names.

Chapter 1 discusses the PoP and outlines its organizational context, culture, climate, internal data, external data, and relevant trends. Its intention is to establish *why* change in the AP is recommended.

Anesthesia Program's History, Purpose, and Objectives

The AP was established in 1960. The program's mission is twofold: (1) to prepare clinicians to provide general anesthesia services to patients and (2) to prepare clinicians for teaching and research in anesthesia (Anesthesia Program, 2008). The AP's vision is to improve health by advancing anesthesia through leadership and excellence in education, research, and practice (Canadian University, 2017b). Goals of the AP are to instill in its graduates: (1)

competence to meet or exceed accepted standards of specialty practice; (2) skills for life-long learning, critical appraisal, and evidence-based anesthesia practice; and (3) participation in anesthesia education and research (Anesthesia Program, 2008). The training of the PAC skill is one objective of the program.

Organizational Context

The organizational context consists of the AP's physical location; its stakeholders; its related organizations; the societal pressures; and neoliberal trends in healthcare and medical education. In addition to these topics, this section will introduce a conceptual framework for this OIP.

The AP is housed in a Canadian university. Program administrators and the anesthesiologists involved in clinical teaching are employed and contracted by the university (Table 1). The graduate students pay tuition and enroll as learners (Table 1). This teaching-learning transaction (Figure 1) involves direct patient care that is governed by (1) the health regulatory body's (HRB) ethics and standards of practice (Health Regulatory Body, 2018) and (2) the university's policies on clinical care (Canadian University Governing Council, 2008), as well as student and instructor roles and responsibilities (Canadian University School of Graduate Studies, 2019). Societal pressures through the HRB emphasize QA and quality improvement (QI) to uphold patient safety. Current neoliberal trends in healthcare and health education, where benchmarking and accreditation are norms, aim to maintain accountability to the patient and the learner, respectively. The neoliberal lens considers three mechanisms of quality: quality control and quality audit (which are both internal review processes) and thirdly, quality assessment (which is an external review with intention of comparison to, and possibly creating conformity with, other similar practices) (Shore & Wright, 1999).

Table 1

Definitions and Descriptions of Stakeholders

Stakeholder	Definition and Description	Motivation
Program Administrators	Assistant professors, licensed as anesthesiologists, tasked to operationalize institutional concepts and directions in the AP Employees of the university	Maintenance of the AP's educational effectiveness, prestigious reputation and quality of patient care.
Instructors	Itinerant frontline mentors, licensed as anesthesiologists	Instructors have altruistic motivations for teaching since the university's per diem remuneration offers a low incentive.
Learners	Licensed general practitioners who are novices in the PAC competency Adult learners (Knowles et al., 2015; Merriam, 2001)	Learners pay tuition to learn the specialty PAC skill
Patients	Recipients of care who expect exceptional, safe and quality healthcare	Advocates for high quality care and patient safety
Health Regulatory Body (HRB)	Governance of the clinician-patient interaction by the provision of ethics and safety practice standards	Tension exists between patient safety and allowance for novices gaining experiences

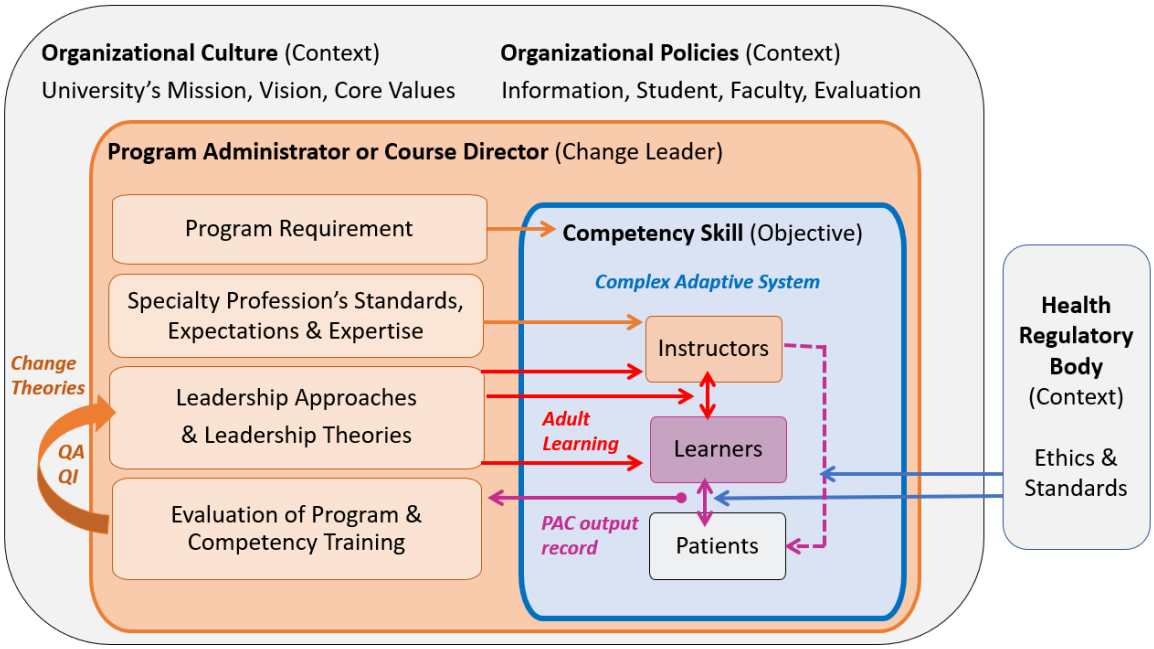

Figure 1. Conceptual framework.

Rising pressures for medical education to be publicly accountable and to adopt competency-based medical education (CBME) frameworks as the new standard of medical education (Caverzagie et al., 2017; Ferguson, Caverzagie, Nousiainen, & Snell, 2017; Frank et al., 1996; Frank, Snell, & Sherbino, 2015; Nousiainen, Caverzagie, Ferguson, & Frank, 2017) are palpable. The emphasis on achieving competency, defined as a developmental, functional, multidimensional learning outcome that progresses "from novice to master clinician" (Frank, Snell, & Sherbino, 2015, p. 7), shifts the focus from instructor-centered to learner-centered education. Other anesthesia education centers have adopted this mindset (Boet, Pigford, & Naik, 2016; Fraser, Stodel, & Chaput, 2016; Stodel et al., 2015).

The adult patient population is aging (Appendix A), and their medical health information is becoming increasingly complex (Koné Pefoyo et al., 2015). The cognitive task and clinical skill of learners to estimate and reduce the risk of adverse outcomes and death through medical

optimizations, interventions, or referrals to other services prior to anesthesia are increasingly important.

The organizational context and these societal trends shape the AP and the leadership within it. In this OIP, the AP's teaching-learning ecosystem unit will be described as a complex adaptive system (CAS, Figure 1) (Anderson, 1999a, 1999b; Eubank, Geffken, Orzano, & Ricci, 2012; Lichtenstein et al., 2006; Uhl-Bien, Marion, & McKelvey, 2007). The system's elements and persons are free to interact internally and with their external contexts (Cilliers, 2005; Keith, 2006; Morgan, 2006). This internal and external interconnectedness describe an open system (Cilliers, 2005; Morgan, 2006) because influence and information may be exchanged easily (Kuhn, 2008; McMillan, 2002). As a result, organizational learning and evolution occur to achieve organizational change (Keith, 2006; Morgan, 2006). Leadership that respects the CAS's properties and characteristics may be more effective and efficient in driving desired change (Lichtenstein et al., 2006).

Vision, mission, and values. The desired organizational state is an AP that upholds the values of excellence, ethicality, respect, compassion, accountability, social responsibility, and collaboration (Canadian University, 2017b). Current and future decisions or actions are ideally guided by many of these values. Quality improvement of PAC competency training aligns with the AP's values of training excellence, accountability to learners who pay tuition, and social responsibility to the patients who receive care. Collaboration between the program administrator, course directors, instructors, and learners is desired. This OIP will outline actions that uphold organizational values and establish collaboration among the AP's stakeholders.

Organizational structure. In 1998, the university adopted the organizational structure depicted in Figure 2. It officially transitioned from this traditional vertical hierarchy to the current horizontal collaborative structure in 2016.

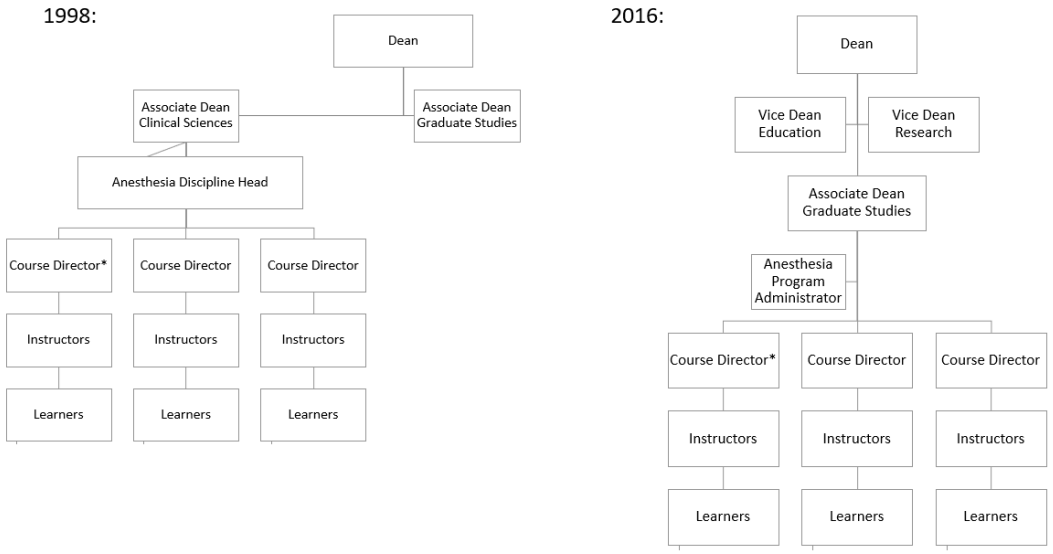

Figure 2. Comparison of 1998 and 2016 organization charts for the anesthesia program; the "*" indicates the change leader's assigned leadership position; another hierarchal structure existed prior to 1998.

Upon examination, the distinction between the two organizational charts is subtle. In the latter chart, more power is delegated to the course directors, who design and run curricula. Additionally, they have greater access to higher leadership, whereas previously, course directors reported to the discipline head. The discipline head has been retitled as AP administrator who is tasked to coordinate the course directors. The AP administrator, who currently has a directive approach, remains uneasy about this decentralization of power to frontline course directors, instructors, and even learners, because allocation of administrative roles and responsibilities, originally performed centrally, are not yet clearly delegated or defined under the new collaborative structure. Further explanation about these subtleties from higher university

leadership to stakeholders would clarify the aims and expectations of the restructuring. By the new structure, the AP administrator is tasked with a greater supportive role rather than a directive role to the collective. Therefore, the organization's new direction requires a cultural shift and this OIP is situated within a time of transition.

Organizational strategy. The AP requires program renewal to align with the university's vision and restructuring plans for collaborative education (Canadian University, 2015). The AP administrators must examine current practices, strategize, and implement change in its many activities. This OIP will only focus on the training of the PAC competency skill. Proposed strategies aim to flatten hierarchal remnants toward horizontal collaboration and yet remain respectful of the policies, standards, organizational history, and assigned leadership who may resist change (Gordon, 1999; Gutek, 2013).

The observed leader-centric leadership approaches currently employed in the AP resemble the Situational Leadership® II (Blanchard et al., 1993; Northouse, 2016; Sims, Faraj, & Yun, 2009). This unidirectional approach utilizes directive and/or supportive styles in varying degrees to address situations and followers (Blanchard et al., 1993). Current directive leadership approaches mismatch with course directors' expectations for supportive or delegative approaches (Blanchard et al., 1993). This results in "social stressors" and "counterproductive work behaviors" among followers (Schyns & Schilling, 2013, p. 151). A desired leadership approach builds community, improves collaboration, quality, and safe patient care (Manser, 2009; Rydenfält, Johansson, Odenrick, Åkerman, & Larsson, 2015). Proposed leadership strategies in this OIP aim to be effective in the PoP's CAS; to align with the desired organizational state; and to meet the teaching-learning objectives of the AP.

Reconfiguration of PAC competency training will require reconfiguration of the AP's organizational strategy to align with the university's updated collaborative organizational structure. The perspective of the change leader who is interested in better alignment and organizational improvement will be discussed in the next paragraphs.

Personal Leadership Position Statement

This OIP is written from the change leader's perspective. This personal leadership position statement articulates my power, agency, and core values. It describes how these aspects translate into selected leadership paradigms and practices for the context of this academic clinical setting. This statement also discusses my motivations and strengths to be effective in the AP.

Power and agency. As the change leader, I hold an assistant professor position that functions as a course director with frontline clinical teaching duties. Additionally, I possess the informal roles of assistant program administrator and clinic operations co-manager. Past experiences as a learner, an instructor, and currently as an academic educator inform my intimate understanding of the existing organizational structure and systems. Stakeholders respect my commitment and seek advice when needed. As an individual with mid-level power, a diplomatic voice has been historically effective when suggesting change.

Personal core values. Personal core values of responsibility, integrity, justice, education, collegiality, communication, and competency will influence my approach to organizational change.

Responsibility. Responsibility is a central core value. I expect accountability for one's actions from myself and the stakeholders. A leader's prerogative is to grant respect and

responsibilities to chosen delegates of assigned duties. Furthermore, morality and ethics are expected in the performance of these academic and clinical responsibilities.

Integrity. Integrity consists of two concepts: (1) the coherence between intention and action (Crossan, 2013) and (2) achievement of community cohesiveness. As the change leader, I maintain consistent expectations for myself and the stakeholders. I express integrity by using a consistent communication style that fosters trust and confidence from stakeholders.

Justice. The practice and the perception of fairness are important (Schyns & Schilling, 2013). I weigh multiple perspectives and alternatives prior to decision-making. Where it is possible, I distribute decision-making, empower and involve stakeholders in the change process to ensure fairness (Dudar, Scott, & Scott, 2017).

Education. Self-awareness, self-reflection and self-criticism (Bowen, Bessette, & Chan, 2006) as continuous daily activities (Blumenthal, Bernard, Bohnen, & Bohmer, 2012) support professional development and team learning. As a change leader, I "protect and support" professionals (Mintzberg, 1998, p. 146) and promote their growth mindsets (Dweck, 2006; Katz & Dack, 2013) to enable transformative change, which ultimately, positively impacts the organization.

Collegiality through communication. Positive, consistent, concise, clear, and respectful verbal and written interactions at all positional levels foster good team dynamics and cooperation. As an approachable individual, I welcome staff ideas and insights that may elicit potential solutions for the PoP (Lambrechts, Bouwen, Grieten, Huybrechts, & Schein, 2011). Social perceptiveness and tact assist me to guide and delegate stakeholders in their attainment of organizational goals. I celebrate their successes and tactfully communicate challenges. These actions contribute to collegiality.

Competencies of knowledge and skills. Knowledge, technical skills, social judgment, and problem-solving skills in leadership (Katz, 1974; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000) are paramount in anesthesia practice (Smith & Greaves, 2010) and academic administrative roles (Northouse, 2016; Randall & Coakley, 2007). Strong team and resource management as well as learning and adaptive behaviors (Winn, 2003) are skills required to influence others (Northouse, 2016; Randall & Coakley, 2007; Sims et al., 2009; Yukl, 2008).

Leadership paradigms. Sustaining a "paradigmatic embeddedness" (Kuhn, 2008, p. 181) in theory thematically grounds and unifies the OIP's choices and content. Complexity theory with interpretivist, critical, and pragmatist perspectives color the change leader's foundational leadership orientations surrounding the PoP.

Complexity theory. By complexity theory, from the interdisciplinary work done at the Sante Fe Institute in New Mexico, the organization under study is called a complex adaptive system (CAS) (Anderson, 1999a, 1999b). The PoP's CAS (Figure 1) consists of instructors training learners to perform patient consultations in a university anesthesia clinic. The teaching-learning transaction is in the context of active patient care. All components bounded by the CAS in this OIP will be examined. The system's elements and persons are free to interact internally and with their external contexts (Cilliers, 2005; Keith, 2006; Morgan, 2006) shown as the broader university and the health regulatory body (HRB; grey areas in Figure 1). This interconnectedness describes an open system (Cilliers, 2005; Morgan, 2006) because influence and information may be exchanged easily (Kuhn, 2008; McMillan, 2002). As a result, organizational learning and evolution may occur to achieve organizational change (Keith, 2006; Morgan, 2006).

Interpretivism. Autonomous stakeholders organize themselves under changing conditions (Anderson, 1999a, 1999b; Cilliers, 2005). In the PoP, autonomy appears to have contributed to inconsistent PAC services performed by novice clinicians (i.e., learners). Interpretivism (Weber, 1922) asserts that reality and meaning of the current organizational state originate from how "[stakeholders] interpret events differently" (Mack, 2010, p. 8) and how they act based on their motivations and beliefs (Table 1). This examination and subsequent understanding will help plan actions that engage stakeholders toward organizational change.

Critical theory. Through the Frankfurt School's critical lens, the existing power inequalities between tiers of the formal organization chart (Figure 2) and tiers of the informal social structures generated between patients, learners, instructors, and program administrators will be examined. The conflict between the university's hierarchy and stakeholders' autonomy ready the organization for change initiatives (Cawsey et al., 2016) that reduce the power differential (Steinberg & Kincheloe, 2010). Consistent with critical theory, strengthening democracy and building community (Steinberg & Kincheloe, 2010) are this OIP 's aims.

Pragmatism. Ultimately, the OIP proposes solutions for the PoP (Belzer & Ryan, 2013). Practical aspects of complexity theory encourage the change leader to acquire deep knowledge of the PoP and to select one or more structural or system element(s) to modify and then to observe the resultant stakeholder responses in iterative cycles (Davis & Sumara, 2005). Chapters 2 and 3 will elaborate further.

Current leadership practices. Situational leadership (Blanchard et al., 1993; Sims et al., 2009) and adaptive leadership (Heifetz, 1994; Heifetz et al., 2009; Heifetz, Kania, & Kramer, 2004; Thygeson et al., 2010) are approaches that best describe my leadership style. In top-down relationships (e.g., professor-learner), selective application of supportive and directive leadership

style elements is effective. The supportive leadership style is akin to Alvesson and Spicer's (2011) coach or gardener metaphor. Learners' skills and motivations vary as they progress through their training. "Situational leadership suggests that leaders should change the degree to which they are directive or supportive to meet the changing needs of followers" (Northouse, 2016, p. 94). Blanchard et al. (1993) outline when competencies are low, coaching by a high-directive/high-supportive style serves best. As learning advances toward expertise, learners require fewer directives and gain greater clinical autonomy. Supporting and delegating styles become appropriate (Blanchard et al., 1993). Thus, leadership selects when, where, and how influence will be exercised to attain social goals (Mumford et al., 2000).

Motivations. As a change leader interested in QI in PAC competency training, self-awareness of my change agent type assists with future change implementation (Cawsey et al., 2016). I identify most with the "Continuous Improver" (Cawsey et al., 2016). As an assistant professor on the frontline of clinical teaching anesthesia learners, I function as a middle manager who coordinates the activities of clinical instructors and learners to facilitate clinical teaching, learning and patient care. As a problem-solver by nature, I systematically analyze, and consider making changes to existing systems and processes surrounding the PoP. Natural tendencies lead me to formulate proposals for incremental achievable initiatives. My detailed understanding of the AP's internal complex processes and microcosm of people align with being a knowledgeable change leader (Cawsey et al., 2016).

Strengths. Change leaders who are self-aware of their strengths and weaknesses are better equipped to champion change (Cawsey et al., 2016). The strengths I possess include emotional intelligence and commitment to improvement. Emotional intelligence is defined collectively as interpersonal skills, empathy, self-regulation, a positive attitude, a realistic

outlook, detail-orientation, and motivation. It is a complex personal skill that enables coping with one's own emotions, in addition to interpreting and navigating others' emotions (Cawsey et al., 2016). Organizational learning and change processes proposed for the PoP will be stressful for those involved. Possessing emotional intelligence helps to equip the change leader to be sensitive to the social relationships. To lead successful change, the emotional quotient[2] will be proportionally greater than the intelligence quotient.

A second strength is a commitment to improvement. I am open to opportunities that make activities and processes better (Cawsey et al., 2016). The change leader has consistent motivation to make improvements in the AP is a positive force aimed toward bettering the AP.

The described leadership position, paradigms, and practices of the change leader will integrate into the AP's organizational context for this OIP on improving PAC competency training. The complex array of leadership paradigms (i.e., complexity, interpretivist, critical, and pragmatist lenses) and practices (i.e., situational and adaptive leadership) are considered because the leadership PoP is complex and multilayered. The leadership PoP is discussed in detail below.

Leadership Problem of Practice

The PoP is the absence of quality assurance (QA) in competency training of the pre-anesthesia consultation (PAC) skill at a Canadian university. Pre-anesthesia consultation requires learners to apply their anesthesia knowledge to take medical histories, perform physical examinations, diagnose anesthetic risks, and generate anesthesia plans. Over the past few years, professors responsible for training PAC skills routinely identify missing clinical information in PAC documentation when performing random chart audits. Quality improvement (QI) in training

[2] Level of emotional intelligence

PAC skills is needed. Similar gaps in PAC competency training are reported by other anesthesia training programs (de Oliveira Filho & Schonhorst, 2004; Tsen, Segal, Pothier, & Bader, 2000). This PoP is consistent with QI initiatives in postgraduate medical education worldwide (Da Dalt et al., 2010; Genn, 2001; Kayyal & Gibbs, 2012). This OIP explores best strategies to improve training of the PAC competency skill.

Framing the Problem of Practice

Historically, the AP has not emphasized the PAC as a priority. This is evidenced by the small amount of curriculum time allocated to its introduction and teaching to learners. At present, a one-hour lecture introduces the clinical activity. One half-year course trains medical history-taking and physical examination. Another course teaches the related anesthetic knowledge. While these curriculum elements are present, novices are not directly supervised in the AP's PAC clinic, which creates a missing link in solidifying their PAC knowledge and skills. At times, novice learners perceive the PAC as a hurdle to the anesthetic procedure. This misconception omits the importance of choosing patient cases that avoid risk, adverse events, and outcomes. Thus, training novices to diagnose anesthetic risks should not be taken lightly.

By viewing the AP as a CAS (Figure 1), the PoP is framed by the internal and external elements which are interconnected. Within an open system, influence and information line every interaction. Analysis of internal and external factors that shape the PoP enriches the understanding of *why* change is warranted and offers ideas on *what* in the AP to change. First, elucidation of internal factors and inherent assumptions justify the significance of the PoP. Secondly, PESTLE analysis examines the external environment in which the AP exists (Cawsey et al., 2016; Connor, McFadden, & McLean, 2012; Fairholm, 2009). The PESTLE acronym represents political, economic, sociocultural, technological, legal, and environmental factors.

Internal factors and inherent assumptions shaping the Problem of Practice. Assumptions are beliefs that bear truths from the change leader's perspective. These understandings shape the interpretation of the PoP and will inevitably impact proposed solutions.

The PAC is ill-defined. A standard definition is lacking according to the *Practice Advisory* by the American Society of Anesthesiologists Task Force on Pre-anesthesia Evaluation (2012). From opinion surveys, this committee performed Delphi methodology[3] and synthesized a consensus statement about the content of PACs noting that it is not limited to:

> (1) readily accessible medical records, (2) patient interview, (3) a directed pre-anesthesia examination, (4) preoperative tests when indicated, and (5) other consultations when appropriate. At a minimum, a directed pre-anesthesia physical examination should include an assessment of the airway, lungs, and heart (American Society of Anesthesiologists Task Force on Pre-anesthesia Evaluation, 2012, p. 493).

An older Delphi study by de Oliveira Filho and Schonhorst (2004) defines PACs to include the "physician-patient relationship, medical history, physical examination, patient education, and pre-anesthesia records" (p. 62). This study offers foundational information but uses a narrower focus than the *Practice Advisory* (American Society of Anesthesiologists Task Force on Pre-anesthesia Evaluation, 2012).

The PAC is a significant step prior to a patient receiving anesthesia. Pre-anesthesia consultations are performed routinely in anesthesia practice (Feeley, 1999) and is an "essential component of basic anesthetic practice" (American Society of Anesthesiologists Task Force on

[3] The Delphi method is a research technique that involves multiple rounds of questionnaires sent to experts. The results are aggregated to yield consensus about the research topic.

Pre-anesthesia Evaluation, 2012, p. 487). Tsen et al. (2000) found anesthesia program directors to agree that PAC is an "important skill" (p. 1135). Primary research documents effectiveness and importance of PACs in perioperative medicine (Fischer, 1996; Harnett, Correll, Hurwitz, Bader, & Hepner, 2010; Klopfenstein, Forster, & Van Gessel, 2000; Parker, Tetzlaff, Litaker, & Maurer, 2000; Pollard & Olson, 1999; Pollard, Zboray, & Mazze, 1996).

PAC documentation is a true representation of the clinician-patient interaction. Learners in the AP are expected to document their patient interaction comprehensively and accurately in PAC paper forms. If the documentation is a true representation of reality, then the inconsistent quality of the learner's PAC interaction identifies the PoP. The observed inconsistent PACs risk errors in information exchange or "interoperability" (Ahmadian, Cornet, van Klei, & de Keizer, 2008, p. 131) between anesthesia providers (i.e., learners, instructors, and assistant professors). In systematic literature reviews, great diversity in the data collection for PACs exists (Ahmadian, Cornet, van Klei, & de Keiz er, 2008; Ahmadian, Cornet, Van Klei, & De Keizer, 2011). For this OIP, restructuring or reinventing the current PAC form to "a standard core dataset" (Ahmadian et al., 2008, p. 131) may be a consideration.

Quality of clinical instruction on PAC skills impacts learners' performance of this skill. Consistency and reliability of clinical teaching plays a role in the quality of learners' PACs. Real-time formal feedback on learners' PACs is not practiced routinely in APs (Tsen et al., 2000), thus the teaching opportunity to emphasize this diagnostic step may be delayed or missed, contributing to the inconsistent quality of PACs. High workloads limit the program administrators' time to design training and calibration programs (Skeff, Stratos, Berman, & Bergen, 1992) to formally assess clinical teachers (Sadler, 1983, 1989, 1998). Debates about the best method of clinical teaching within the AP and in the medical education literature are

ongoing (Eva, Hatala, LeBlanc, & Brooks, 2007; Kassirer, 2010; Ramani & Leinster, 2008) and warrant exploration.

Chart audit adequately evaluates the PAC competency skill. Anesthetic procedures performed by learners are always directly supervised by instructors. In contrast, the PAC clinic which focuses on patient assessment is inadequately staffed and direct supervision is infrequently achieved. Tsen et al.'s (2000) survey finds that one third of programs report low interest or proficiency in PAC competency. In the PoP, learners initially receive an in-person orientation and training session. The completed PAC forms and supplemental paperwork are occasionally reviewed in-person with instructors, but often they are reviewed remotely by faculty over the phone in real-time or later (i.e., remote supervision). Similarly, Tsen et al. (2000) reports that 57% of programs had an attending anesthesiologist physically present; 29% had an attending reachable by pager only; 18% of programs had no supervision for their PAC clinics. These statistics illustrate that the PoP is experienced across North America and is a worthwhile QI initiative that may have grander impact.

Random chart audits of PAC documentation have exposed the PoP (Sanazaro, 1976; Sargeant, 2012). Neoliberalist oversight has become a public expectation and "accountability […] constitutes the system itself" (Ranson, 2003, p. 459). Therefore, chart audits have become acceptable practices for assessing quality (Ranson, 2003).

External factors shaping the Problem of Practice. The change leader considers elements that are outside the sphere of the AP. These factors directly and indirectly influence the PoP and will thus affect the proposed solutions.

Political factors. Policies, standards, organizational history, and personnel in assigned leadership positions currently support maintaining the status quo. Revision of PAC training

practices will require disrupting the old traditions. Policies to review include documentation practices; student and instructor roles and responsibilities; and *Standards of Practice* (Health Regulatory Body, 2018). All proposed solutions to the PoP should uphold privacy laws (e.g., Personal Health Information Protection Act, 2004).

Economic factors. Current neoliberal trends to audit in health education and healthcare pressure organizations to be effective and efficient (Sanazaro, 1976; Sargeant, 2012) while maintaining accountability to the learner and the patient. Quality assurance and improvement efforts strain human resources in the AP. Staff shortages are constant issues which make initiatives difficult. Increasing the efforts of frontline instructors to adopt new teaching practices risks dissent when finances cannot support increases in compensation or the hiring of more staff (Lane, 2007). Upgrading the equipment and facility are also limited by financial resources. Neoliberalism favours cost-effective initiatives, especially when resources are scarce.

Sociocultural factors. Rising pressures for medical education to be publicly accountable and to improve their teaching effectiveness and practices have led to the adoption of competency-based medical education (CBME) frameworks as the new standard of medical education (Caverzagie et al., 2017; Ferguson et al., 2017; Frank et al., 1996, 2015; Nousiainen et al., 2017). There is emphasis on achieving competency, defined as a habitual and judicious use of an integrated set of attributes, knowledge, clinical reasoning, technical skills, non-technical skills, attitudes, values, and behaviors by the learner to meet individual and community needs (de Oliveira Filho & Schonhorst, 2004). Competency is "impermanent and context-dependent" (de Oliveira Filho & Schonhorst, 2004, p. 65). A developmental, functional, multidimensional learning outcome that progresses "from novice to master clinician" (Frank, Snell, & Sherbino, 2015, p. 7) shifts the focus from instructor-centered to learner-centered education. Other

anesthesia education centers have adopted this mindset (Boet et al., 2016; Fraser, Stodel, & Chaput, 2016; Stodel et al., 2015). Currently, implementation of anesthesia CBME is still in its infancy (Fraser, Stodel, Jee, Dubois, & Chaput, 2016; Nousiainen et al., 2017).

The adult patient population is aging, and their medical health information is becoming increasingly complex (Appendix A). The cognitive task and clinical skill of learners to estimate and reduce the risk of adverse outcomes and death through medical optimizations, interventions or referrals to other services prior to anesthesia are increasingly important.

Technological factors. Paper charting is currently the primary method for PAC documentation at this clinic. This institution is amid implementation of electronic health records. However, anesthesia information management systems (Driscoll, Columbia, & Peterfreund, 2007) are not planned for the immediate future due to high upfront costs.

Legal factors. Societal pressures through the HRB emphasizes QA/QI in professional practices that ensure patient safety. Learners and instructors are involved in direct anesthetic care, thus both stakeholders are accountable to the *Standards of Practice* (Health Regulatory Body, 2018). The *Standards of Practice* (Health Regulatory Body, 2018) offers examples of the type of information that should be included in the PAC, however, this is a minimal standard and the AP aims to train this competency skill to exceed standards.

Environmental factors. The facility and infrastructure where PACs take place are small. Proposed solutions for the PoP should assume that there will be no change in venue and no renovation of the venue. The complexity lens suggests that the physical layout of the clinic and work elements like medical forms may be modifiable constructs to consider in this OIP.

After examination of PESTLE factors that shape the PoP, the analysis extends to a wider perspective. The subsequent paragraphs discuss questions that emerge from the PoP.

Guiding Questions Emerging from the Problem of Practice

By interrogating the absence of QA in training clinicians to perform PACs, three lines of inquiry arise. These guiding questions provoke in-depth understandings of the PoP's themes. The questions are as follows:

- Are patients' rights honoured when limited supervision is provided?
- What models of education should be practiced in anesthesia programs?
- How can limited human resources be maximized?

Are patients' rights honoured when limited supervision is provided? In this PoP, as seen in random chart audits, "self-regulated learners are not always successful when left to develop their own strategies" (Cho et al., 2017, p. 11). In this clinical training environment, patients understand they are being assessed and treated by learners with various competencies because patients are visibly entering a school. Patients would have an inherent understanding that their care providers are not fully certified or licensed anesthesiologists. Commonly, PACs occur in an unsupervised clinic. This is acceptable practice because (1) the learners are licensed general practitioners who are able to see patients independently; (2) the PAC appointment poses minimal safety risks from medical history-taking and non-invasive physical examinations; and (3) there are ample opportunities to review, revisit, and revise a consultation. Nevertheless, improvements in patient safety and care are worthwhile pursuits that support patients' rights. Mediation of this ethical conflict between patients' rights to supervised care and learners' rights to self-regulated learning is a dilemma raised by this PoP and will be explored further in Chapter 2.

Currently, the PAC clinic assumes a learner (i.e., a licensed general practitioner) to be diligent, conscientious, motivated, disciplined, accountable, and responsible in their use and acquisition of clinical knowledge and skills. This PoP reminds educators that these

characteristics may not be inherent in all learners and that learners' "illusions of competence" (Bjork[4] cited by Brydges, Dubrowski, & Regehr, 2010, p. 551) should be promptly identified. Learners' cognitive errors, misunderstandings, and overestimations of preparedness directly violate patients' rights; thus, these misgivings should be prevented, and training PAC skills should be improved.

What models of education should be practiced in anesthesia programs? Some conservative educators state that historically, self-regulated learning in an apprenticeship model adequately trains competent anesthesiologists, despite the evidence of inconsistent PACs. Learners enter the AP with general practitioners' skills or partial mastery of PAC skills. Greater supervision and active teaching from an instructor or a more capable peer would benefit the learner (Brydges et al., 2010). The teaching-learning transaction shown as a double-headed red arrow in Figure 1 prompts the exploration of adult learning theory (Knowles et al., 2015; Merriam, 2001) which yields concepts and ideas of how to better approach didactic teaching. Additional training concepts such as clinical reasoning, competency, and uncertainty (Farnan, Johnson, Meltzer, Humphrey, & Arora, 2008; Kassirer, 2010; Ramani & Leinster, 2008) also contribute to best practices in clinical training. These are lines of inquiry for the future working group tasked with implementing change in the AP.

The international adoption of competency-based medical education (CBME) in response to increased pressure for greater accountability (i.e., rising public expectation for quality care and rising student expectations for quality education) has promoted CBME as the new standard

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[4] Bjork R.A. (1994). Memory and metamemory considerations in the training of human beings. In J. Metcalfe & A. Shimamura (Eds.), *Metacognition: Knowing about knowing* (pp. 185-205). Cambridge, Mass: MIT Press.

model (Caverzagie et al., 2017; Ferguson et al., 2017; Nousiainen et al., 2017). In addition to Canada, New Zealand, Australia, the United States, the United Kingdom, and the Netherlands have parallel trends of adopting CBME. Anesthesia programs in Canada have begun to transition (Leung, 2002; Touchie & Ten Cate, 2016), guided by the CanMEDS Framework of seven Roles: Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, and Professional (Frank, 2005; Frank et al., 1996, 2015). Defining the PAC skill in terms of these seven Roles provides conceptual outcomes to assess the AP's learners.

A criticism of CBME is the normalization of sufficiency rather than proficiency or excellence (Buja, 2019; Leung, 2002; Touchie & Ten Cate, 2016). The model strives to efficiently train learners to a level of sufficiency and thus, adequate anesthesiologists are produced rather than excellent anesthesiologists. Once trainees achieve the learning objectives and outcomes, the CBME model does not outline a strategy for training excellent or gifted learners. Can the CBME model be modified from its pure form to develop excellence?

How can limited human resources be maximized? Human capital is a critical consideration in this PoP's organizational strategy. Short staffing, as seen in the AP, is a chronic problem in most clinical programs at the university. Typically, conversations on this topic emphasize numbers and not the underutilized quality of existing staff. Effective "human capital management (HCM)" strategies relate to maximizing employee engagement, workforce optimization, and building learning capacity (Bassi & McMurrer, 2007, p. 117).

Currently, investments in instructor capital is low which reflects a need for greater instructor capital management. Investment in faculty can also be improved. Bassi and McMurrer (2007) assert that a well-designed job with delineated time to achieve the appropriate workload helps to tackle employee engagement. With supportive workplace environments and processes

that recognize and reward merit, the instructor workforce can be optimized (Bassi & McMurrer, 2007). Offerings of professional development, learning, innovation, and training are also HCM practices to enhance in the AP. These are ideal suggestions, but any considerations must be feasible and practical to impact the AP. By employing these or other suggested strategies on instructors, the change leader aims to boost their performances or "maximiz[e the AP's] return on people" (Bassi & McMurrer, 2007, p. 115). *How* to implement these considerations will be explored in Chapter 3.

Leadership-Focused Vision for Change

The change leader in the AP aims to align systems and structures with the overarching institutional vision of collaboration. Prior to envisioning the AP's aims, it is important to analyze the organization's existing building blocks.

Current organizational state. There are two perspectives to consider when examining the current organizational state; the perspectives from: (1) leadership and (2) stakeholders. Currently, the AP is accustomed to the culture of a traditional hierarchy (Figure 2). Leadership gives top-down directives to frontline stakeholders (i.e., course directors, instructors, and learners). With the restructuring to decentralize power, the delineation and extent of the power, roles, and responsibilities remain unclear for AP leadership. Frontline stakeholders are granted greater autonomy or control, but again, the delineation and extent of power remain unclear. Therefore, uneasiness, uncertainty, anxiety (Schein, 2004) and even frustration inhabit the current organizational state-in-transition as new processes, structures and systems are proposed and continually changed.

The teaching-learning dynamic of training PAC can be described as "strolling" (Stoll & Fink cited by Lumby & Foskett, 2011, p. 455). The impetus to improve the quality of PAC

practices to match external trends is low. The cultural shift required to sustain the organization's new direction will require the culture to be invigorated and motivated for change.

Desired organizational state. The AP aims to uphold the university's values of excellence, ethicality, respect, compassion, accountability, social responsibility and collaboration (Canadian University, 2017b). Quality improvement initiatives focused on PAC competency training align with the AP's values of training excellence, accountability to learners who pay tuition, and social responsibility to the patients who receive care. Ideally, the collaborative organization facilitates the AP leader(s) to coordinate course directors' activities toward grander schemes and course directors to initiate change through their course designs and curricula. Clarity of definition and delegation of all stakeholders' roles and responsibilities are desired to operationalize the new collaborative structure, to establish organizational learning and to integrate shared mindsets (Belle, 2016). Reducing uncertainty meets a basic survival need (Pigg, 1999), fosters "psychological safety" (Schein, 2004, p. 322), and grooms greater camaraderie and cooperation (Belle, 2016) within the AP's "learning community" (Senge, 1990). In this way, stakeholders co-create a dynamic organizational culture (Lumby & Foskett, 2011).

The establishment of a shared mental model for QI of PAC competency training is desired. An AP that is active in QI and program development strives to transform students, to build not only their knowledge and skills to adapt to complex PAC practices, but also their capacity for self-reflection, self-awareness, and self-development.

Gap to the envisioned future. The change leader views the gap between current and desired state as a "discrepancy" (Armenakis & Harris, 2002, p. 170). A large gap is difficult to eliminate when there are "underlying values and attitudes that sustain the status quo" (Klein,

1996, p. 40). To reduce this gap, the change leader begins by setting priorities. Next, stakeholders' interests will need balancing and change drivers will need harnessing.

Priorities for change in the anesthesia program. Shifting to a collaborative culture is the AP's priority given that the overarching university has already restructured. Alignment of the local culture with the grander culture will take time and incremental shifts in thinking and values of the AP's stakeholders. The achievement of cultural alignment will facilitate the current QI initiative and future QI initiatives.

As part of the university's renewed vision, the institution prioritizes faculty development, recognizing that this is key to sustaining improved education delivery to its students. Building capacity of the AP community to improve clinical teaching is a goal of the change leader but may not be a realized priority of the current AP leadership. Internally, the AP offers no professional development for its course directors and instructors to improve their clinical teaching.

At present, the AP curriculum is fixed, but its delivery is malleable. Updates to the delivery of the AP curriculum elevate the quality of competency training. Identifying and implementing effective and efficient instructive techniques for anesthesia training are considerations for QA/QI initiatives. Currently the AP's PAC clinic is unstructured with informal teaching that follows an outdated apprenticeship model (Commitee on Quality of Health Care in America Institute of Medicine, 2001; Ramani & Leinster, 2008) with intermittent or delayed feedback to learners. Quality standards in anesthesia education are evolving (Frank, 2005; Frank et al., 1996, 2010, 2015) and the current plateau observed in the AP risks its stagnation.

Balancing stakeholders' interests. Convincing the stakeholders that PAC training is a priority and enlisting their participation for a change initiative are anticipated to be challenges. The change leader would need to balance and negotiate the competing priorities and interests of

stakeholders (Table 1). Establishing shared ownership of the PoP by stakeholders and identifying common ground may gear the group toward organizational improvement (Belle, 2016; Kotter, 1996). *How* to communicate this common ground will be discussed in Chapter 3.

Change drivers. The envisioned future state of the AP will be constructed in collaboration with its university, teaching staff, and students. Hierarchal influence from the university will push the AP to adopt collaborative practices and horizontal organizational structures. The anesthesiologists that participate as instructors influence the PAC competency training by bringing their experiences and collective understanding of PAC practice. This professional community has the potential to drive teaching practices and educational directions in the AP.

Anesthesia Program's Readiness for Change

Change readiness refers to a collective preparedness, willingness, and ability of the AP to endure ongoing learning and adaptation. At present, the AP exists in a comfortable state, but within a university that is experiencing tension. This tension, derived from the university's transitions to collaborative structures and systems, establishes an expectation that the AP will change as well. The beliefs, attitudes, and intentions of stakeholders currently require alignment to gear their desired behaviors and motivate their actions toward the change initiative (Armenakis, Harris, & Mossholder, 1993). Establishment of a shared psychological state will require promotion of favourable change drivers and mitigation of unfavourable resistors. The change leader's aim is to harness the existing tension and to prime the AP for change.

Internal change drivers predominantly include potential champions of change (Cawsey et al., 2016). Stakeholder analysis assesses key players' perceptions of and anticipated reactions to

changes (Figure 3; Cawsey et al., 2016). Collaboration strategies with stakeholders will differ depending on their stance on the proposed change.

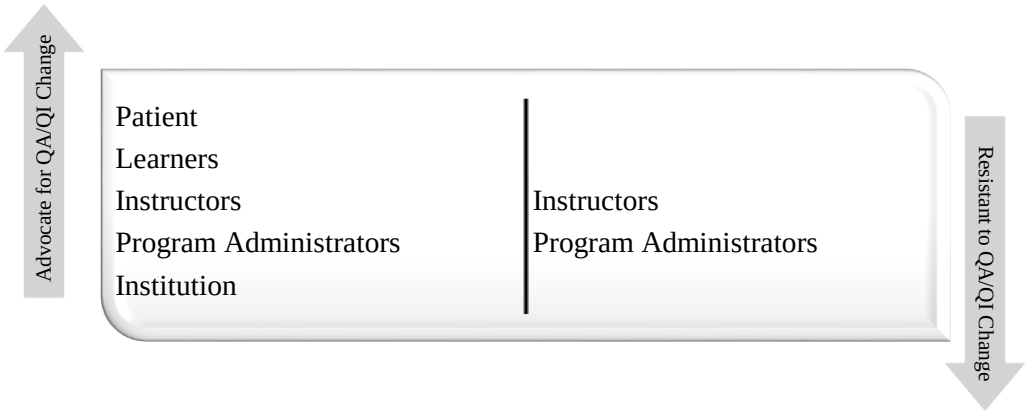

Figure 3. Force Field Analysis diagram.

Advocates for change value the change to be advantageous with minimal costs to themselves. Learners and patients are anticipated to support and wish for the change in PAC quality. Learners are consumers of the university where they invest tuition and time. Patients are the ultimate recipients of QA/QI in PAC training and have the rights and expectations for quality assessments, diagnoses, and care from their care providers. These advocates exhibit the openness to change and will likely act to expedite or nurture the change (Cawsey et al., 2016). Stakeholders who are actively engaged will volunteer to champion change (Armenakis & Harris, 2009).

Although instructors and program administrators may share the overall idealism of improving competency training, they may hesitate to participate in change initiatives pertaining to PAC training because of perceptions of threat to positional turf, conservative complacencies, challenges of high workload, inadequate incentive systems and structures. The AP leadership may resist change if it is proposed by junior members. The perception of threat to the leadership's positional turf, while it may be objectively unsubstantiated, forms a cognitive

obstacle for change proposals that refresh organizational history (Hargreaves, 2007). Conservatism may oppose proposals for change if traditional training practices are perceived to be adequate.

The PoP's social groups will wish to reduce the power differential (Steinberg & Kincheloe, 2010). Dissatisfaction with the power inequality will favour change readiness (Cawsey et al., 2016). Consistent with critical theory, the OIP strengthens democracy and builds community (Steinberg & Kincheloe, 2010). Program administrators in their assigned positions impose rules and mandate how teaching and learning happen which may not necessarily suit instructors or learners. This conflict prompts change in the AP.

Previous change experiences also positively influence the AP's readiness for change. The changes that have been implemented in the past range in size. Examples include alterations within academic courses to add or eliminate components, shifts in schedules due to both external and internal factors, changes in personnel and their assigned positions, and university restructuring. This array of change has conditioned stakeholders who have withstood this period to expect change. They have learned to be flexible, adaptable, and resilient during transitions (Cawsey et al., 2016) which signals to change leaders that the AP has capacity to endure change.

Change readiness, not only considers the AP's "psychological climate" (Lehman, Greener, & Simpson, 2002, p. 199), but also the institutional constructs, circumstances, and resources such as the physical space of the PAC clinic, staffing, training resources for learners and instructors, computer access, technological capabilities, and communication channels. This OIP assumes the physical space is unchangeable. The current staffing numbers are stable but active recruitment is ongoing because annual attrition of instructors is anticipated given past patterns of instructors' behaviors. These ongoing efforts can distract and detract from efforts to

increase training resources. As discussed earlier, the AP has low human capital (Bassi & McMurrer, 2007) that will need to be enhanced by this OIP's implementation plan. Training resources exist for learners but not for instructors yet. The training resources for learners that exist need to be updated. Technologically, the AP is equipped with both on-site and remote computer access. Communication is primarily by email. Thus, some formal institutional elements support the AP's readiness for change, whereas others require development.

Additional external drivers that promote the QA/QI of competency training include societal pressures represented by the HRB, the international postgraduate medical education community (Da Dalt et al., 2010; Genn, 2001; Kayyal & Gibbs, 2012) and the university community. Maintaining and exceeding practice standards within the profession are the mandate of the HRB. Remaining current and competitive in the education market drive organizational change. Cultural shifts in the university's mission, vision, and values will directly influence the AP to match its university's culture.

In brief, multiple indicators reveal a moderate level of organizational readiness to improve PAC training. While past events and experiences of the AP have established an understanding of what change is about, the psychological climate needs cultivating to reduce resistance and to maximize supports. Some formal institutional elements can be resources for change, but other elements need developing. Raising awareness for the PoP and negotiating hurdles that impede change will be the task of undeterred change leaders or champions who consider resistance as natural (Dent & Goldberg, 1999). Their composure and constructive mindsets will tackle resistance systematically. Chapter 3 will further discuss strategies against resistance and outlines *how* to create organizational readiness by creating a sense of urgency.

Summary

This chapter introduces the absence of QA in competency training of the PAC skill at a Canadian university as the PoP and *why* change in the AP is recommended. Given that the organization is in transition from a vertical hierarchy to a horizontal collaborative structure, it is primed for change. A change leader intent on QI of PAC competency training in a CAS such as the AP will influence, where possible, the external and internal forces to train excellence; to achieve accountability to learners and patients; and to foster a shared vision of collaboration in the organization. Emergent guiding questions from the analysis of the PoP will be further explored in Chapter 2, that discusses the change leader's leadership approach and potential solutions; and Chapter 3, that discusses the coordination of human and resource management.

Chapter 2: Planning and Development

The problem of practice (PoP) is the absence of quality assurance (QA) in competency training of the pre-anesthesia consultation (PAC) skill at a Canadian university. The PoP requires a leadership approach, a change management framework, and critical organizational analysis before solutions are identified and developed. The processes for *how* to achieve change in the context of a complex adaptive system (CAS) like the anesthesia program (AP) will be introduced, then proposed solutions will be discussed. Finally, leadership ethics will be discussed as it pertains to the PoP and the anticipated change.

Leadership Approach to Change

Leadership influences *how* to attain social goals (Mumford et al., 2000) of a CAS like the AP. The change leader plans to predominantly use adaptive and enabling leadership approaches, supported by an administrative leadership approach, to bring change to PAC training. Given the power and agency of a middle management position, the change leader ideally has both a balcony view of and a front seat to the PoP (Heifetz, 1994). Resolution of the PoP will be through stakeholder learning, innovation and new behaviors (Uhl-bien et al., 2007). This section discusses *how* adaptive, enabling, and administrative leadership can facilitate these stakeholder functions.

Adaptive leadership. Adaptive leadership, originated by Heifetz (1994), prescribes a series of actions that the change leader will apply to this PoP.

First, the leadership "focus[es] attention" (Heifetz et al., 2004, p. 30) on the quality assurance/quality improvement (QA/QI) issue and places the PoP under magnification to diagnose "negative events that were seemingly innocuous but many of which contribute to [the PoP]" (Manser, 2009, p. 145). Examples of such events in this PoP include the brief orientation

lecture given to learners; the generic PAC documentation form; and the remote supervision of learners. The change leader will critically analyze contributing organizational issues in a subsequent section.

Next, the change leader raises awareness; "awaken[s]" urgency (Cawsey et al., 2016; Kotter, 1995); "generate[s,] and maintain[s] productive distress" (Heifetz et al., 2004, p. 30) to motivate stakeholders about the potential perils of a remotely supervised learner with "illusions of competence" (Bjork[5] cited by Brydges, Dubrowski, & Regehr, 2010, p. 551). The change leader aims to "[root the problem in stakeholders'] attitudes, priorities, or behavior[s]" (Heifetz, Kania, & Kramer, 2004, p. 25), which in turn will stimulate the creation of solutions. For example, adaptive leadership encourages interactions, relationship-building, shared decision-making, and teamwork to improve PAC training. These intentions align well with the interpretivist paradigm and the organization's vision for better collaboration and a flatter organizational structure. Additionally, QI initiatives in the AP require adaptive coordination, leadership, and teamwork to prevent adverse events (Manser, 2009).

Thirdly, by the adaptive leadership approach, challenges and opportunities can be mapped for each proposed solution, taking into consideration the AP's context, logistical feasibility, required human capital, and needed financial resources. By "fram[ing] the issues" (Heifetz et al., 2004, p. 30), the change leader will highlight the difficulties and opportunities for action.

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[5] Bjork R.A. (1994). Memory and metamemory considerations in the training of human beings. In J. Metcalfe & A. Shimamura (Eds.), *Metacognition: Knowing about knowing* (pp. 185-205). Cambridge, Mass: MIT Press.

Finally, an adaptive leader will "mediate conflict among stakeholders" and address conflict head-on (Heifetz et al., 2004, p. 30). When assigned authorities provide flexibility, system dynamics support leadership emerging from the learners and instructors (i.e., from the bottom-up). Adaptive leadership strategically takes advantage of this emergence "to produce new patterns of cognition and behavior" (Lichtenstein et al., 2006, p. 5) in interacting agents when they address the PoP.

The strength of the adaptive leadership approach is its offerings of prescribed actions, however, details of *how* to perform these acts in a medical education domain are unspecified and are left to the practitioner to design (Northouse, 2016), or to investigate in supplemental resources (Thygeson et al., 2010). In comparison, enabling leadership is more abstract than adaptive leadership, but raises awareness of the CAS to the change leader and reminds that the AP is dynamic.

Enabling leadership. Enabling leadership will aim to catalyze interactive conditions between program administrators, instructors, and learners such that adaptive leadership can flourish. Catalysts may involve "injecting tension" to motivate adaptive changes (Uhl-Bien et al., 2007, p. 309). Similarly, Morgan (2006) discusses "cybernetic points" (p. 92) around which agents have the space to create, to learn, to act, to behave, and even to transform. Tension arises as an internal or external pressure and is intentionally maneuvered by the change leader. A tension may be a small or large change in the AP's structure, system, or context. Thus, it may take the form of a proposed solution. In response to tensions, "agents realign their schema" to accommodate and to mitigate the tension (Lichtenstein et al., 2006, p. 5). The change leader orchestrates; "creates 'enabling conditions' that allow a system to find its own form" (Morgan, 2006, p. 111); and covertly performs boundary management (Mintzberg, 1998). In other words,

the change leader will harness the change drivers; will implement elements of change; and will monitor the resulting performance and outcomes.

Administrative leadership. Administrative leadership will be used to support the more dominant adaptive and enabling leadership approaches. In contrast, administrative leadership is a vertical, managerial, top-down approach (Lichtenstein et al., 2006) that constrains and imposes limitations on the CAS's creative, learning, and adaptive capabilities (Uhl-bien, Marion, & Mckelvey, 2007). The episodic induction of specific, seemingly small, leadership events is an administrative leadership strategy to generate change in a flexible indirect way (Lichtenstein et al., 2006). Leadership would also be mindful that direct and imposed controls may yield unintended or unpredictable outcomes and that "small changes […] can have huge downstream effects" for the AP (Cawsey et al., 2016, Chapter 3). A change leader with assigned authority may use this approach to bureaucratically coordinate and implement elements of the solution that standardize practices for patient safety and documentation. When using administrative leadership, it is important to avoid behaviors of "bad leadership", such as micromanagement (Alvesson & Sveningsson, 2003; Kellermann, 2004; Schyns & Schilling, 2013) that would stifle the dynamism of the CAS or render the change leader's efforts among autonomous stakeholders ineffective.

Practically, the application of each leadership approach is dependent on the task at hand or the presented situation during the change process. The change leader's repertoire of adaptive, enabling, and administrative leadership helps to address the dynamic context of a CAS. The possession of this collection is superior to possession of only one leadership approach. *How* this triad of leadership approaches will be applied to the PoP will be discussed in Chapter 3.

Framework for Leading the Change Process

The selection of a change management framework considers my leadership approach, type of organizational change, and organizational context.

Personal leadership approach. Keeping consistent with the Personal Leadership Position Statement, complexity theory imbued with interpretivist, critical, and pragmatist paradigms frames *how* the change process will be led. Leading change in this OIP will respect four complexity concepts: (1) self-organization; (2) nonlinearity; (3) interactionism; and (4) adaptive systems.

Self-organization asserts that autonomous stakeholders organize themselves when they are under tension or changing conditions (Anderson, 1999a, 1999b; Cilliers, 2005). Therefore, a change leader who has an in-depth understanding of stakeholders' behaviors may anticipate their patterns when change is implemented.

Changes implanted in the AP may yield unpredictable outcomes (Anderson, 1999a, 1999b; Kuhn, 2008; McMillan, 2002). To prepare for these unexpected or unintended results, the change leader will select a change management framework that has a mechanism for iteration. Thus, the selected change management approach will incorporate episodic incremental changes. If the process veers off-course, there will be a way for the change leader to nudge the change process toward the vision of improved PAC competency training.

Furthermore, the change process will occur because of interactions within the formal and informal social structures. The selected change management framework will "mobilize" (Cawsey et al., 2016) patients, learners, instructors, and program administrators. Their view of the change process will need to be respected (i.e., interpretivism). Their interactions will "accelerate" (Cawsey et al., 2016) the change process (i.e., interactionism).

Finally, the change process is framed in an adaptive system that is open to information, influence, learning, and evolution (Cilliers, 2005; Keith, 2006; Kuhn, 2008; McMillan, 2002; Morgan, 2006). Change leaders with deep knowledge of the AP as a CAS and its stakeholders' motivations, decision-making, and behavior patterns will be able to "forecast" outcomes (Plsek, 2010, p. 313). The change leader will weigh multiple solutions (i.e., change processes) for their trade-offs and likelihoods for success (Heifetz & Linsky, 2002).

The change leader's approach to the change process should be compatible with the selected change management framework. Concordance between the leadership approach with the change management framework will evoke authenticity and genuineness. The change leader that leads with conviction and coherence between intention and action (Crossan, 2013) will demonstrate integrity to the team. A creative, versatile, and flexible change leader (Yukl & Mahsud, 2010) who has intentional strategies and pragmatic tools for this PoP (Cilliers, 2005) will be successful in the pursuit of QI in PAC training.

While complexity theory lacks "exact tools to solve our complex problems" (Cilliers, 2005, p. 257), the theory first encourages acquiring deep knowledge of the PoP and then encourages cultivating the "environment [to facilitate] emergence" (Smith & Humphries, 2004, p. 102). Stated in another way, an adaptive leader may select one or more structural or system element(s) to modify and then observe the resultant stakeholder responses in iterative cycles (Davis & Sumara, 2005). Based on this complexity concept, I select Deming's Plan-Do-Study-Act Cycle and the Model for Improvement (Figure 4B and C) (Moen, 2010) because the cycle enables an iterative process of incremental change, observation, and measurement.

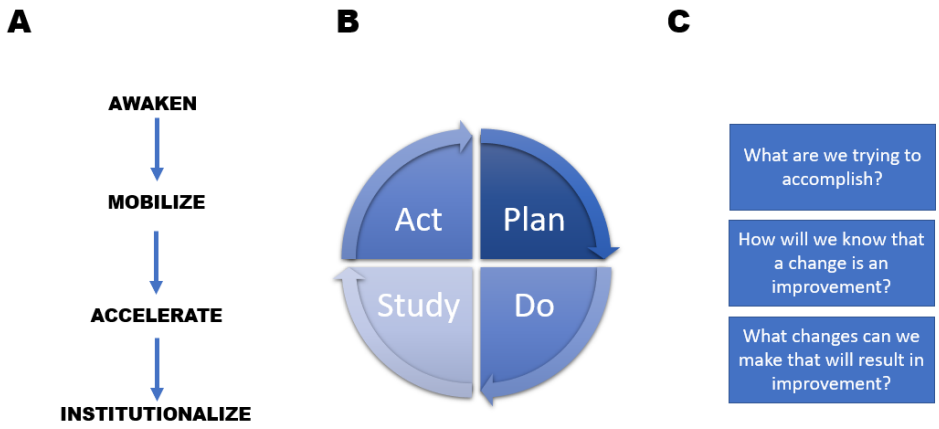

Figure 4. A. Change Path Model; B. Plan-Do-Study-Act Cycle; C. Model for Improvement; adapted from ACT Academy (2017).

Type of organizational change. Deming's PDSA Cycle combined with the Model of Improvement also supports the implementation of discontinuous organizational change (Cawsey et al., 2016). The desired organizational change for improving PAC competency training is an attempt to re-engineer an existing component of the AP. The OIP intends to inject change that can be categorized as episodic. In the AP that prefers the status quo, a change like the one proposed by this OIP is infrequent (Cawsey et al., 2016).

The proposed change will also be "reactive" (Cawsey et al., 2016). In this PoP, the impetus for organizational change is the AP evolving in a context of collaboration and neoliberalism. The inconsistent quality of PACs observed in the learners' chart documentations prompts this closer look and QI response. The identification of the PoP prompts the change leader's intention to remodel the current PAC training model which includes the related feedback practices, instructional practices, structures, and systems of the PAC clinic.

A suitable change management framework will offer opportunities for stakeholders to collaborate and for change leaders to measure the effectiveness of their implemented changes.

Although the change aims to remodel existing PAC training practices, the change leader intends to introduce gradual changes so stakeholders will be more likely to accept the transition to a new model. If change recipients require less effort and energy to adapt, the change will have a greater likelihood to take hold or "institutionalize" (Cawsey et al., 2016). Minimizing disruption to the existing structures and systems would also assist the organization's shift. The AP's transition from the current state to the desired state would require incremental alignments to gradually increase stakeholders' capacity; modify organizational structures and systems; and embed a culture of QA/QI for sustained change.

Organizational context. Leading change in a CAS requires the change leader to consider both macroscale and microscale perspectives. Thus, the selected change management framework should reflect both macroscale and microscale perspectives. A single framework that meets this criterion does not exist and thus, frameworks will be combined for this OIP. The combined framework would respect the AP as an open system with agents and elements that are free to interact internally and with their external contexts (Cilliers, 2005; Keith, 2006; Morgan, 2006). It is expected that influence and information may be exchanged easily (Kuhn, 2008; McMillan, 2002) and that organizational learning and evolution will result from change management.

Change management frameworks. The outlined considerations support the selection of two frameworks that will be combined and integrated for this OIP: the Change Path Model (Cawsey et al., 2016) and the Modified Plan-Do-Study-Act (PDSA) Cycle (Moen, 2010).

Change Path Model. The Change Path Model (Figure 4A) has its basis in complexity theory (Cawsey et al., 2016; Lichtenstein et al., 2006) and thus, respects the AP's organizational dynamics. This framework encourages the change leader to: (1) raise awareness about the PoP;

(2) identify change components after gap analysis; (3) plan actions and implement change; and (4) sustain change (Cawsey et al., 2016). The first step addresses the AP's organizational readiness for change as discussed in Chapter 1. The change leader must first raise awareness about the PoP and then share the aims to improve PAC training while demonstrating that the project adds organizational value. Once stakeholder resistance is reduced and buy-in is achieved, the change leader may "mobilize" (Cawsey et al., 2016) incremental changes with the help of stakeholders. The goal of step two is to develop the change components or possible solutions for reducing the gap between the current and desired state. Action planning and implementation of these solutions are the third step. Procedures and tools will be employed to support the change. The last stage of the change initiative requires strategies and practices, such as periodic performance measures or monitoring, to embed and sustain the organizational improvements. Steps three and four will be covered in Chapter 3 of this OIP.

Modified Plan-Do-Study-Act Cycle. Deming's Plan-Do-Study-Act (PDSA) Cycle (Figure 4B) and the Model for Improvement (Figure 4C) were combined by Langley, Nolan, and Nolan (1994) and will be referred to, in this OIP, as the Modified PDSA Cycle (Figure 5). It utilizes an iterative process of incremental change, observation, and measurement. This strategy is consistent with the adaptive leadership approach and has been shown to be useful and popular in CASs and health care organizations (Health Quality Ontario, n.d.). The Modified PDSA Cycle respects complexity theory's tenet that implemented change can result in unpredictable outcomes and allows change leaders to revisit and revise their interventions over time.

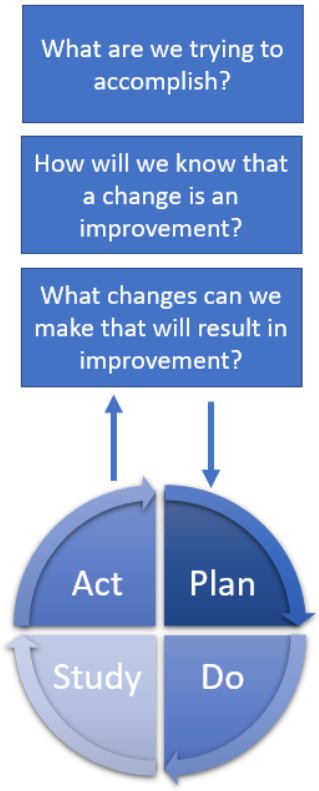

Figure 5. Modified PDSA Cycle; adapted from ACT Academy (2017).

During the Plan phase, change leaders and agents determine who, what, where, and when to make the intentional change. The plan is set into motion during the Do phase and the team documents successes, problems, and unexpected outcomes. Next, in the Study phase, outcomes are analyzed, summarized and subsequently, decisions are made in the Act phase to determine what next steps will be in the PDSA Cycle that follows. Langley, Nolan, and Nolan (1994) supplemented the PDSA Cycle with preceding questions that direct change leaders to envision the desired state; name outcome measures and monitoring strategies; and design solutions. Together, the Model and Cycle form a continuous process that may be repeated until the desired state is achieved.

Integration of the Change Path Model with the PDSA Cycle. The integration of the Change Path Model framework with the PDSA framework, depicted in Figure 6, is logical because the Change Path Model provides the procedural pillars that anchor the entire OIP (i.e., macroscale perspective), while the iterative Modified PDSA Cycles provide microprocesses within those boundaries. This overlay offers the change leader a more comprehensive guide, and yet offers maneuverability and practicality in this PoP's CAS. The Integrated Framework (Figure 6) offers a stepwise, informed, and incremental approach. It is the proposed strategy for leading change in this OIP.

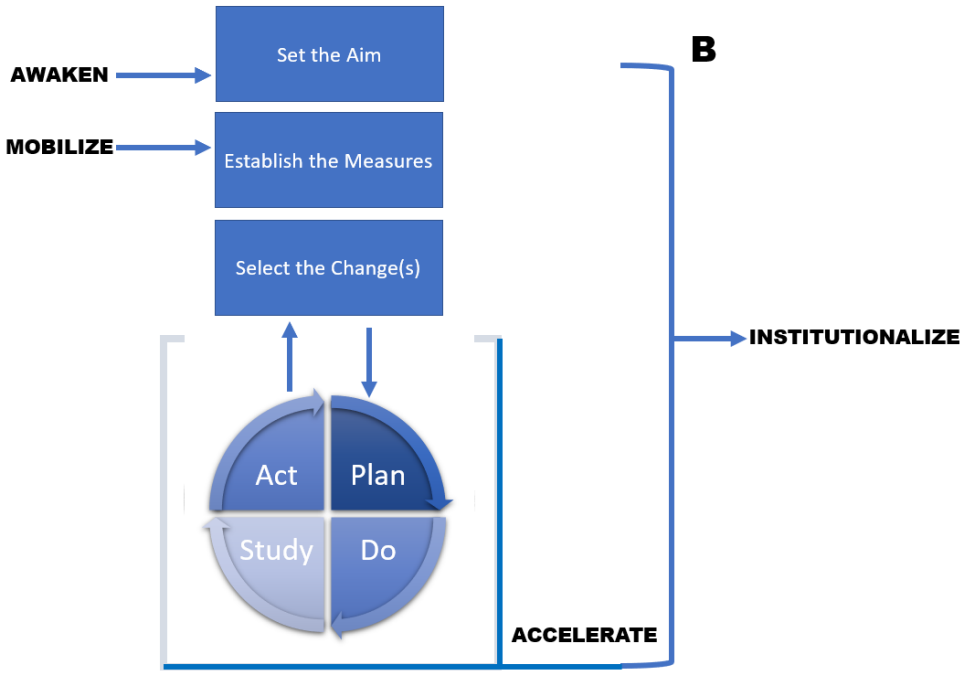

Figure 6. Integrated Framework of Change Path Model and Modified Plan-Do-Study-Act Cycle; adapted from ACT Academy (2017).

Critical Organizational Analysis

The AP is currently in a stable state or equilibrium where daily operations run smoothly but the quality of the PACs requires improvement. The contextual forces surrounding the AP

arise from the public via the HRB, the university's policies, and the students' demands for quality education; these forces encourage organizational evolution and growth. Furthermore, the AP is tasked to match the direction the overarching university has taken in restructuring toward a collaborative organizational structure. With these forces and drivers present, the AP, along with its PAC practices, are at the cusp of transformation.

The change leader must determine *what* to modify, adapt, or design in the AP's inner workings so that PAC training practices improve and thrive. Nadler and Tushman's Congruence Model (Nadler & Tushman, 1980) offers four organizational elements for the change leader to consider: (1) the task of the organization; (2) stakeholders and human resources; (3) the formal organization; and (4) the informal organization. This model asserts that an organization's performance is dependent on the congruence among these four elements and on their alignment with the organizational context and collaboration strategy. The model assumes that both the organization and the environment is dynamic. It recognizes that achieving alignment between the two is the challenge. Each element will be described below.

Task of PAC training. The training task requires both didactic learning and clinical experiences. Currently, PAC training is informal because it involves a brief one-hour didactic orientation on the PAC and then on-the-job training or apprenticeship style learning (Stodel et al., 2015) that is dependent on the engagement of day-to-day instructors, if they are available during PAC sessions. The learning is, at times, self-directed with intermittent or delayed feedback. To the novice learner, the little amount of formal curriculum time and attention to PACs dedicated by AP leadership may convey a message that PACs are less important than the anesthesia procedure itself, when it is the profession's belief that the PAC is an essential diagnostic step for risk management and aversion of potential adverse events. Therefore, more

formal training and modification or selecting another training model (i.e., not apprenticeship) (DaRosa et al., 2013; Woods, Mylopoulos, & Brydges, 2011) maybe the needed change.

People. Learners receive the training provided by the AP's program administrators and frontline instructors. These stakeholders have various motivations, as outlined in Table 1, and have various levels of engagement in the PoP. It will be important for the change leader in this OIP to identify like-minded change facilitators and leaders to participate in the QI initiatives.

Moreover, there may be variable teaching skillsets among the trainers. Trainer calibration may be a strategy to increase the capacity of the program administrators and instructors (i.e., training-the-trainers).

Formal organization. Complexity theory suggests that the formal organization which includes organizational structures and systems be modified to create energies or "tensions" (Smith & Humphries, 2004) so that the organization morphs toward an improved state. The assigned power of the change leader may be limited in his/her ability to modify grander elements of the "organizational design profile" (Keidel, 2005, p. 44), but modifying small components within the PAC clinic is possible to favour resolution of the PoP. Keidel (2005) outlines structure to include: the organization chart, physical layout, workflow, and information flow; and outlines systems to include: financial and nonfinancial rewards; methods for stakeholders to meet; and decision-making processes. From this list, workflow, documentation practices, nonfinancial rewards, stakeholder interactions, and decision-making are components that may be modified by the change leader. The other components will be considered beyond the power or influence of the change leader.

Workflow. The methods of teaching PAC didactically and clinically may be examined. Current practices of a single orientation lecture and apprenticeship style training are observed to

be insufficient and contributory to the PoP. At present, learners perform PACs with patients and then document their findings and interaction on paper forms. The PAC may be presented to an instructor or if an instructor is not available, to a course director or program administrator for immediate or delayed feedback. By examining this workflow, three components are modifiable: (1) lecture modality; (2) clinical teaching style; and (3) feedback practices which can be solutions for this PoP.

Documentation practices. Novice learners use a paper form that includes broad headers that prompt questions for medical history-taking. The level of detail documented by the learner appears related to the level of knowledge and experiences the learner possesses and is thus, quite variable. This variability is seen in past random chart audits. Strategies from the field of medical informatics[6] may help standardize documentation practices. Modifying this structural element would introduce tension around which self-organization (Burns, 2001) or autocorrection of part of the PoP may occur.

Nonfinancial rewards. Program administrators and instructors participate in teaching activities because it offers enjoyment through social interaction and altruism toward the development of young professionals. Other benefits include continuing education credits toward their professional licensure requirements with the HRB. Are there other nonfinancial incentives for instructors to increase their engagement in PAC training?

Stakeholder interactions. Relationships in the PAC clinic are hierarchal where there is a power differential between the pairs: program administrator and instructor; program

[6] Medical informatics is a field that integrates information science, computer science, and health care. Resources and methods of acquisition, storage, retrieval and use of health care information are its focus (Michigan Technological University, 2019).

administrator and learner; and instructor and learner. As the organization structure changes to a more collaborative construct, greater cooperation and less hierarchal control between these pairs will be needed (Keidel, 2005). Specifically, *how* to encourage this relationship shift will be explored in Chapter 3.

Decision-making. In the context of the PoP, there are two spheres of decision-making. First, there are decisions passed down from program administrators. These decisions guide and specify how the PAC clinic will operate (e.g., workflow, documentation, and interactions). The second sphere of decision-making occurs among the instructors, learners, and patients. Collaborative decision-making would allow for contributions from all stakeholders as to *how* to improve the PAC process, the learning and patient experience. Fostering bidirectional input between the two spheres of decision-making would better align with the goal of collaboration.

Informal organization. Making the implicit norms like culture and behaviors explicit are important in change projects (Cawsey et al., 2016; Katz & Dack, 2013). Currently, the AP is accustomed to the culture of a traditional hierarchy and is uneasy and uncertain about proposed new processes, structures, and systems. The culture will need to increase its dynamism so that it is motivated for change. To achieve this, the change leader needs to groom the AP's "learning community" (Senge, 1990) in such a way that fosters "psychological safety" (Schein, 2004, p. 322) for stakeholders to co-create a dynamic organizational culture (Lumby & Foskett, 2011) that supports remedying the PoP. Community development and the establishment of a shared mental model for QI of PAC competency training is desired.

Keeping Nadler and Tushman's Congruence Model in mind (Nadler & Tushman, 1980), possible solutions that modify formal and informal organizational elements will be considered in the following section.

Possible Solutions for the Problem of Practice

After interrogating this PoP, the insights lead the change leader to reject the option of maintaining the status quo and inspire the change leader to design four possible solutions to improve competency training of the PAC skill.

Consideration: Maintenance of the status quo. Maintaining the status quo is a consideration for this PoP. Educators with the conservative perspective state that the status quo has trained competent practitioners thus far, despite the inconsistent quality of PACs identified by random chart audit (Sanazaro, 1976; Sargeant, 2012). Supporters for this option will identify that there is no direct evidence of poor patient outcomes resulting from PACs performed by novices. "Suspicion[s] of… educational change and innovation" (Gutek, 2013, p. 203) may make educational change unwelcome. This option has the advantage of spending no time, effort, or money. The major disadvantage of this option is the continuance of outdated practices which will not resolve the PoP.

The proposed solutions for the AP, presented in Table 2, would need to be suited for a CAS, its organizational dynamics, and the change leader's selected leadership approach, previously described as the trio of adaptive, enabling, and administrative leadership. Each solution for this PoP aims to bring about training excellence of the PAC skill and will outline the resources needed, the benefits, risks, consequences, and how the PDSA Cycle would be performed. These proposed solutions are inspired from the critical organizational analysis.

Table 2

Possible Solutions for the Problem of Practice

No.	Possible Solution	Description	Advantages	Disadvantages
0	Maintain the status quo	Training remains as is	No time, effort, or funds requirement	PoP and PAC training remains unchanged
1	Update the training model and feedback practices	Interactive modules supplement or replace lectures	Flipped classroom strategy involves low faculty workload, cost, and time	Online case-based learning modules increases faculty's workload and requires time
		Updated training model improves clinical instruction	Outcome-based training model offers training objectives	Restructuring the training model increases workload
		Formative assessments of PAC skills	Real-time feedback to learners	Orientation/calibration session requires time, effort and possibly funds to cater the meeting
			Simple assessment tool to use	
2	Build community, culture, and a shared mental model	Extensive faculty development builds instructor capacity	Pedagogical tools and strategies engage instructors	Time and effort increases
				Funds to cater the meeting
3	Modify the formal organization	Implementation of an auditable preanesthetic consultation form	PAC form facilitates definition and oversight	Time and effort increases
		Enhancement of the nonfinancial incentives	Engagement is enhanced without funds	Creativity to design nonfinancial incentives
		Decision-making system modification	Stakeholders engage in the solution	Assigned leadership shares power
4	Combination of solutions 1, 2, 3	Replace lectures with interactive modules	Components are within the power agency of the change leader	Time, effort, human resources, and coordination required to implement four change efforts (see Description column)
		Implement formative skills assessment	Division of labour is possible among change champions	
		Build instructor capacity through focused faculty development		
		Implement an auditable PAC form		

Solution 1: Update the training model and feedback practices. The current apprenticeship model for training requires informal self-directed learning by students (Woods et al., 2011). Preliminary knowledge is provided didactically to novices prior to clinic entry but this knowledge is rudimentary and not comprehensive. Learners are expected to enrich their own knowledge with concurrent coursework and their own reading selections. While performing PACs with patients, learners are occasionally under direct supervision, but more often, they are not. Instead, a faculty member is reachable by phone in real-time or later to review the case. Three components are modifiable in this workflow: (1) the lecture modality; (2) the training model; and (3) the feedback practices.

Build learner capacity: Supplement or replace lectures with interactive modules. Basic anesthesia knowledge required for PACs is delivered in an orientation lecture. Lectures are considered a passive teaching strategy. For this PoP, the use of active teaching strategies, like student-directed seminars known as a flipped classroom[7], would build learner capacity to better perform PACs. These sessions would engage learners to retain knowledge (Martinelli et al., 2017), skills and attitudes that would help the learner with the complex, dynamic, and knowledge-intensive process of the PAC. Active learning sessions, developed to include simulation and roleplaying with equipment, practice tools, and references, could result in improved learning outcomes. There would be minimal workload for the faculty to design sessions because learners would be tasked to design their own learning sessions. Faculty and

[7] An approach whereby students prepare in advance of classroom sessions to be equipped with knowledge prior to classroom participation (Martinelli et al., 2017).

instructors would be facilitating the session to ensure key points and concepts are covered. Therefore, in alignment with neoliberal values, cost and time would be saved.

Alternatively, online case-based learning modules with complementary facilitation by faculty would also achieve active engagement (Fraser, Stodel, Jee, et al., 2016). Creation of these modules would require significant time and efforts from faculty to design the case and testing materials. An appropriate interface is readily available to faculty to use for their courses. This strategy has a significant workload upfront. Faculty would need to redistribute their current workload to have time to design these learning tools. Better delegation of simple tasks to administrative support staff may offset some of the faculty's workload to help with time efficiencies.

Update the training model to improve clinical instruction. The AP continues to use the outdated apprenticeship model (Woods et al., 2011). This model is deficient because it fails to define skills and functional learning outcomes called competencies required of successful anesthesiologists. The developmental outcome in this PoP is the performance of PACs.

The implementation of a learner-centered, outcomes-based education model called competency-based medical education (CBME), specifically the CanMEDs Framework, in the AP may contribute to a PoP solution. By this framework's terminologies, the PACs is considered an Entrustable Professional Activity (EPA) which comprises of milestones (Stodel et al., 2015). Milestones would be the component tasks that a learner performs to achieve the EPA; examples include: empathetic and relevant patient-interviewing; measuring and interpreting blood pressure; examining patient airways; interpreting breath sounds; and anesthesia planning. Framing the PAC competency in this way explicitly outlines and defines the end task for the curriculum developer or influencer (i.e., change leader). Clarity of training objectives better

defines the change vision for the change leader(s) (i.e., program administrators), facilitators (i.e., instructors), and followers (i.e., learners). The main challenge is the high workloads that currently limit the program administrators' time to design training tools and reframe training to the CBME model.

Update feedback practices: Formative assessments of PAC skills. Real-time formal feedback on learners' PACs is not practiced routinely in the AP, thus the teaching opportunity to emphasize this diagnostic step may be delayed or missed, contributing to the inconsistent quality of PACs. To remedy this situation, the learners would be directly observed in frequent patient interactions, then assessors would perform work-based assessments that employ faculty coaching and immediate, personalized feedback. Work-based assessments such as the Mini-Clinical Evaluation Exercise (Mini-CEX) and Direct Observation of Procedural Skills (DOPS) (Lorwald et al., 2018) would encourage feedback conversations that are constructive toward performance improvement; train skills of self-awareness; and train reflection in the learners. Implementation of these simple tools would be straightforward. A brief orientation for instructors and learners could easily be done at minimal costs.

Solution 2: Build community, culture, and a shared mental model. The challenge in this PoP is shifting the inherent hierarchal culture that is accustomed to its status quo to a collaborative culture that is dynamic in QI initiatives. The change leader is tasked with identifying implicit static norms and noncollaborative behaviors and making these explicit to the AP community through collegial communications (Cawsey et al., 2016; Katz & Dack, 2013). The communications would need to be through open, respectful media, and fair formats, like workshops, that allow stakeholders to participate safely (Schein, 2004). The informal organization of the AP will need to be influenced with the adaptive leadership strategy which

encourages organizational change from the grassroots (i.e., learners and instructors). By creating a "learning community" (Senge, 1990) from the ground up, stakeholders of the AP, through these open communication channels, share their mindsets and realize that aims for high performance in anesthesia training and learning are common goals.

Build instructor capacity through extensive faculty development. Workshops and seminars that build instructors' knowledge, skills, and attitudes will align their teaching practices. The quality of learners' PACs is believed to be affected by the consistency and reliability of instructors' clinical teaching. Faculty or instructor development would provide pedagogical tools and strategies. Moreover, the development of teaching evaluations or instructor calibration programs (Skeff et al., 1992) to formally assess clinical teachers (Sadler, 1983, 1989, 1998) would also be introduced, but could be potentially stressful. Active participation in these sessions will facilitate stakeholders' buy-in, engagement and commitment to the change efforts (Cawsey et al., 2016). Time and effort would be required to design the workshops and seminars. Resources may be required to cater and host an appreciation reception.

In addition to improving teaching practices, the change leader wishes to introduce the mindset of "clinical leadership" as defined by Blumenthal, Bernard, Bohnen, and Bohmer (2012) as an anesthesiologist's "ability to serve as both a manager and a leader of diverse teams in pursuit of maximally effective patient care" (p. 514). Developing instructors' capacity to be clinical leaders when clinically teaching may change PAC training significantly. Faculty development is important (Fraser, Stodel, Jee, et al., 2016). The study by Rydenfält et al. (2015) observed that "leadership behaviors associated with patient safety appeared to be more distributed" (p. 453) among clinicians in a team. Establishing a culture of accountability in PAC training would also help to sustain behavioral or social change (Cawsey et al., 2016).

Solution 3: Modify the formal organization. In the PAC clinic, program administrators may catalyze QI practices by "injecting tension" (Uhl-Bien et al., 2007, p. 309) through the modification of "embedded structures" (Hannay, Jaafar, & Earl, 2013, p. 73) or work elements and systems that situate the PoP. By altering these components of the PoP's environment, the stakeholders will self-organize or adapt to the modifications, positively toward the PoP's resolution. Using the PDSA framework or iterative cycles of change (Davis & Sumara, 2005), the change leader can cultivate the "environment [incrementally to facilitate] emergence" (Smith & Humphries, 2004, p. 102) and monitor responses.

Modify the structure: Implement an auditable pre-anesthesia consultation form. A key structure in this PoP is the paper form used by learners to perform PACs. The form serves as a tangible tool and provides cognitive cues for the user to take medical histories and prompt physical examinations relevant to anesthesiologists. The current version offers a basic framework with broad headings that minimally prompts its users, thus allowing for great variability identified in the PoP. The newly designed form would outline "a standard core dataset" (Ahmadian et al., 2008, p. 131) agreed upon by program administrators and instructors. Consensus on these "minimum specs" (Morgan, 2006, p. 100) among these educators would better define the PAC activity for its learners. Furthermore, employment of a standardized "inspectable template" (Genn, 2001) would create a neoliberal "auditable structure" (Shore & Wright, 1999, p. 570) that can be monitored during the change process. Therefore, objectives of QA in this OIP would be met, while such a form would continue to offer "space" and autonomy (Morgan, 2006, p. 100) for the learners and instructors.

With further forethought, if resources allow, design of a digital form that can be used on a handheld portable device would ideally offer real-time documentation as well as interactive engagement for learners during patient care.

Enhance the nonfinancial incentives. Given that instructors are paid per diem, their motivation, job satisfaction, and engagement in the PAC training clinic may be improved if the change leader enhances their nonfinancial incentives. The perceived importance of the PAC training task (i.e., "valence" or good for the profession or society), their expected success (i.e., self-efficacy) in clinical teaching, and expected personal reward (e.g., enjoyment, learning, recognition, accolades, continuing education credits) impact the instructors' internal drive or motivation to participate in PAC competency training. Establishment of a shared vision for PAC training; building instructors' capacity through training-the-trainer workshops; and designing recognition programs and credit reward systems are strategies that the change leader could employ to enhance stakeholder involvement in the PoP.

Modify the decision-making system. Currently, decision-making occurs from the AP administrator. A change leader would need to influence this leadership to share decision-making power with assistant program administrators and instructors. Implementation of mechanisms or processes to invite input from assistant program administrators and instructors would be ideal. Formal in-person joint sessions, informal discussions with stakeholders or simple surveys may be ways to infuse decision-making with multiple perspectives representative of the stakeholders involved. This collaboration further engages stakeholders to participate in solutions.

Consideration: Challenges of Solutions 1, 2, and 3. The presented solutions pose challenges of increased workload and time for this short-staffed AP. Some of the elements in each solution are large undertakings and would be unmanageable for a change leader holding a

part-time appointment to orchestrate. For example, in Solution 1, updating the training model to a CBME model is beyond the agency of the change leader and would require an overhaul of an ingrained apprenticeship system. In Solution 2, building instructor capacity through extensive faculty development would likely alienate the instructors if this is presented abruptly. Resistance would likely ensue. In Solution 3, enhancing the nonfinancial structures and modifying decision-making requires influencing and amending grander organizational schemes. This is beyond the scope of the change leader's power. Based on these understandings, another solution is presented that selects more feasible components of Solutions 1, 2, and 3.

Solution 4: Combining elements of Solutions 1, 2, and 3. Implementing every described element of Solutions 1, 2, and 3 would be ambitious. Selection of simple elements from the described Solutions 1, 2, and 3 would be most realistic and is presented as Solution 4. The performance of multiple change efforts derived from Solutions 1, 2, and 3, simultaneously in parallel, will achieve the PoP's resolution (Figure 7). Addressing the problem with multiple mini-solutions concurrently will increase the probability of success and reduce the likelihood of an unpredictable outcome. Solution 4 is the best of the presented alternatives, but this solution still requires a great amount of time, effort, human resources, and inter-solution coordination. Orchestrating multiple efforts is complex in comparison to pursuing one solution. The selected solution elements below are within the power and agency of the change leader to achieve and are thus, worthy of pursuit in this OIP:

a) Build learner capacity: Replace lectures with interactive modules (Solution 1);

b) Update feedback practices: Formative assessments of PAC skills (Solution 1);

c) Build instructor capacity through faculty development (Solution 2); and

d) Modify the structure: Implement an auditable PAC form (Solution 3).

These four elements will be called change efforts in Chapter 3 (Figure 7). Conceptually, each change effort will fulfil the "Select the Change" step of its own PDSA Cycle (Figure 6).

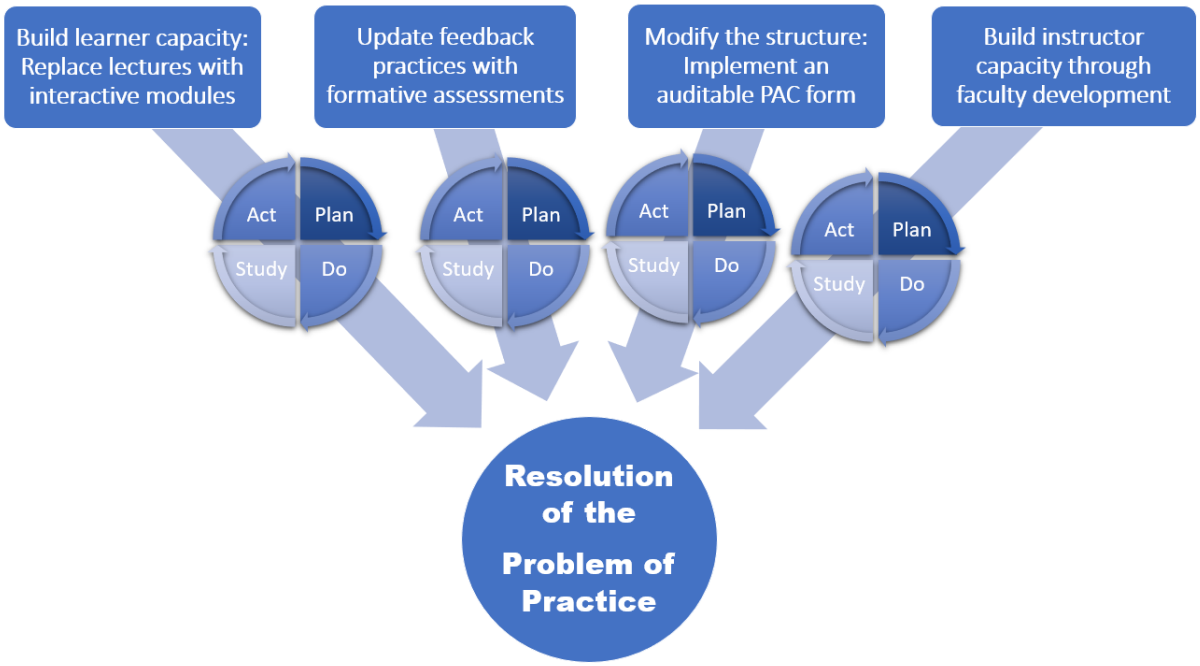

Figure 7. Simultaneous PDSA Cycles.

A detailed plan on *how* Solution 4 will be implemented will be discussed in Chapter 3.

Leadership Ethics in Organizational Change

Leadership considers ethics to be important in organizational change and anesthesia practice (Boudreaux, 2003; Burnes, 2009). Quality assurance or quality improvement practices raise ethical concerns and conflicting principles. Ethical principles of justice, altruism, and utilitarianism pertain to this OIP and will be discussed.

Justice. To resolve the PoP, the change leader will exemplify fairness and equity. The critical organizational analysis considers stakeholders' points of view. When implementing the change plan, there will be opportunity for input from stakeholders so there is democracy and equity. Workload distribution and delegation of responsibilities will keep the ethical principle of justice in mind.

Altruism. The OIP is a proposal of QA/QI which strives to better the AP for the increased well-being of stakeholders. Learners and patients are the focus of this project. The selected solution strives to improve learners' training and patient safety. To achieve the solution's elements, the leadership actions will aim to build the community of the teaching team comprised of the program administrators, course directors, and instructors by valuing collaboration and shared mental models to improve anesthesia education.

Utilitarianism. In line with the pragmatic perspective, the OIP proposes leadership actions and behaviors that intend to be useful and contributory to resolving the PoP. Designed activities aim to achieve the greatest amount of good for the AP. The intention of this OIP is to produce positive outcomes such as patient satisfaction, learner satisfaction, and ultimately, better training of PAC skills.

Challenges of egoism. Change leaders may face internal challenges such as their own personal predispositions. The maintenance of objectivity and minimization of emotionality are personal obstacles when implementing change involving human processes in an organization. For example, the change leader may identify personal frustration or anxiety when meeting resistance from individuals or stakeholder groups or when meeting resistance from existing bureaucracy, policy makers, or higher leadership. Management of emotions can be overwhelming if the change leader lacks practice tools, strategies, or resources. Without solutions to these internal challenges, change leaders may "self-sabotag[e] their own initiatives" (Cawsey et al., 2016, Chapter 1) by becoming defensive when engaging conflicts or aversive when personally anxious, and thus, be an ineffective leader.

A potential solution for this managerial challenge is to increase the change leader's capacity by altering attitudes, building skills and abilities so that he or she can better address

roadblocks. Professional development for change leaders may offer practice tools and strategies to help leaders address the human management aspect of organizational change. "Train-the-trainer" workshops or programs can better equip managers through skills-building (Evans, Thornton, & Usinger, 2012). Addressing internal challenges is typically the change leader's responsibility to be self-aware of internal challenges and find his or her own resources and remedies.

Increasing the QA of PAC competency training aims to increase oversight of existing practices and ensure adherence to acceptable standards. Bureaucratic measures of inspection "mas[k] paternalism" (Shore & Wright, 1999, p. 559), and thereby increase egoism of leadership and displace autonomy of stakeholders. Furthermore, implementation of uniformity through auditable practices aims to be utilitarian but consequentially limits educational liberalism. It is expected that modifying organizational structures to be auditable will involve transition pains for all those involved and that creates an ethical dilemma. Leadership will need to balance these opposing principles to sustain organizational change.

Challenges to stakeholders' autonomy. Oftentimes, resistance originates from a threat to autonomy where people feel powerless and unheard in the change process (Blumenthal et al., 2012; Schein, 2004). Change leaders may view the resistance from change recipients as an indicator that there may be underlying perspectives and knowledge gaps that were not originally considered in the plans for organizational change. Change leaders may encourage stakeholders to provide input and become involved, thereby seizing the opportunity to elucidate the etiology of the stakeholders' resistance. Change implementers who can support change recipients and alleviate their expressions of dissatisfaction, frustration, and apathy can help mediate toward constructive outcomes. Change implementers can interview individuals, hold open townhall

forums, or offer an anonymous suggestions box to provide avenues of communication. These tools can function as a first step for resolution of resistance.

Assumptions exist where stakeholders align toward the vision and participate in the proposed trajectory; however, in the event that instructors resist to improve their teaching practices despite capacity-building efforts hosted by change leadership, their autonomy and right to resist will conflict with leadership's aims to achieve the greater good. Unfortunately given the staff shortage, a conflict of this nature may persist when retaining nonprogressive staff is necessary.

Responsibilities of the anesthesia program. Through the deontological lens, the AP has the duty to act morally and uphold ethical responsibilities of its university and the HRB. There are obligations to the students and to the patients. The students who pay tuition expect to learn knowledge and skills to meet the requirements of the specialty profession, whereas the patients expect safe procedures and positive therapeutic outcomes. Possible solutions for this PoP must adhere to these deontological principles.

Ethical leadership approach. The practice of ethical leadership utilizes honesty, truth, integrity, and justice. Leadership that is honest means that intentions and actions toward stakeholders are not deceptive. Efforts are made to identify the underlying etiologies of the PoP to acquire a foundational understanding of the truth and reality. This is important so that planned actions are not misled by misunderstandings. A change leader that demonstrates integrity practices two concepts: (1) the coherence between intention and action (Crossan, 2013) and (2) achievement of community cohesiveness. The change leader of this PoP aims to maintain consistent expectations of self and stakeholders. Integrity may be expressed using a consistent communication style that fosters trust and confidence for stakeholders. Additionally, the practice

and the perception of fairness are important (Schyns & Schilling, 2013). Multiple perspectives and alternatives are weighed prior to decision-making. Distributing decision-making, where possible, empowers and involves stakeholders in the change process to ensure fairness (Dudar et al., 2017).

Summary

The PoP requires coherence between the leadership approach and change management framework to effectively and efficiently initiate change. Complexity theory threads the two together and aids in the critical organizational analysis to identify *what* to change. Possible solutions were identified and developed. Revision of PAC training practices will require time and effort to disrupt the current comfortable organizational state. Implementation of Solution 4 while adhering to ethical considerations will be selected for this OIP and further developed in Chapter 3.

Chapter 3: Implementation, Evaluation, and Communication

How to strategize change in the anesthesia program's (AP) context of a complex adaptive system (CAS) requires leadership that is informed by the critical organizational analysis; the selected change management framework; the timeframe; and the available resources. The selected solution comprises of four change efforts: (a) building learner capacity by replacing lectures with interactive modules; (b) updating feedback practices with formative assessments; (c) building instructor capacity through faculty development; and (d) modifying the structure by implementing an auditable PAC form (Figure 7). This chapter discusses the strategies for implementing, monitoring, evaluating, and communicating change.

Change Implementation Plan

Implementation of the selected solution will require strategies to engage and empower stakeholders; to manage the transition and resources; and to navigate issues that may arise. The proposed change implementation plan will align the priorities and goals of the university and the AP with those of the stakeholders and the change leader. Stakeholders' responsibilities and timelines will be charted, along with *how* the change leader plans to manage the organizational transition using adaptive leadership.

Priorities and goals. The change leader's primary priority is to inspire participation from the AP's stakeholders by showcasing the need for and benefits of improving PAC competency training. To begin, the change leader must first raise awareness and achieve their buy-in. It would be prudent to inform the group about the PoP and highlight the goals of the quality improvement (QI) initiative which include building capacity of the AP's stakeholders and fostering a culture of collaboration. These QI activities directly link with three of the university's key strategies:

1. To enrich educational programs and strengthen teaching quality;

2. To empower stakeholders and foster teamwork and collaboration; and
3. To strengthen organizational capacity

(Canadian University, 2019).

These supporting key strategies of the university elevate this OIP to a greater purpose and vision and therefore, greatly support *why* this QI initiative is pursued. This connection also signals to stakeholders that their strategies, successes, and challenges from this QI project can impact the larger organization (i.e., other university projects). Additionally, the change leader will highlight that the PoP is not isolated to the AP, but is also observed internationally at other anesthesia training centers (Da Dalt et al., 2010; Genn, 2001; Kayyal & Gibbs, 2012). After their awareness is achieved, the change leader's second priority is to combine the Anesthesia Program's Readiness for Change with a sense of urgency (Kotter, 1995).

Creating urgency will require the change leader to highlight this QI initiative as a great opportunity that requires timely action. The opportunity to prevent a patient safety concern before it happens or to expedite learners' progressions, so they become autonomous sooner, provides the call to action. The change leader aims to acquire "aggressive cooperation" (Kotter, 1995, p. 60) from stakeholders and to overcome the required "action inertia" (Godkin, 2010, p. 200) for the project to begin rolling. Personalized attention to stakeholders will encourage them to volunteer as change champions, especially if their priorities and the project's change efforts are well-aligned.

Stakeholders' attention to priorities. For stakeholders to engage in the QI initiative, their priorities must be respected. Determinations of *who* will lead which change effort is suggested in Table 3. Stakeholders who are dedicated to their priorities will likely feel

comfortable volunteering for tasks that are familiar or like their existing roles and responsibilities.

Table 3

Alignment of Stakeholders' Priorities with Change Efforts

Stakeholder	Priorities	Change Effort
Change Leader	To improve PAC competency training	Will build instructor capacity through faculty development
Program Administrators	To maintain AP's educational effectiveness, prestigious reputation and quality of patient care.	Will update feedback practices with formative assessments
Course Directors	To improve their didactic or clinical courses	Will build learner capacity by replacing lectures with interactive modules and to modify the structure by implementing an auditable PAC form
Instructors	To clinically teach learners anesthesia skills	Will help to build instructor capacity through faculty development and update feedback practices with formative assessments
Learners	To learn the specialty anesthesia skills	Will help to build learner capacity by replacing lectures with interactive modules and to modify the structure by implementing an auditable PAC form
Patients	To receive and advocate for high quality care and safety	Will help to update feedback practices with formative assessments

Stakeholder responsibilities. To kick-start this initiative, the change leader carries the weight of the responsibilities at the outset. This person researches, strategizes, and forecasts how the project will proceed. While sustaining the vision, the change leader sets up the goals and priorities. Once these are established, the change leader prepares and maps the project because it is important to be highly organized and thoroughly knowledgeable about PAC competency training and its context. This individual will structure and anchor the project with major tasks, timelines, and nominations for change champions and delegates. After the change leader softens the organization's resistance and assembles stakeholders to the cause, the person practices

adaptive, enabling, and administrative leadership to propel the project forward in the environment of a complex adaptive system (CAS).

From a position of middle management, the change leader will focus energies on building instructor capacity. The change leader is well-positioned to take on this pivotal responsibility because the success of the change implementation plan is dependent on its frontline instructors. Furthermore, the psychological safety, climate, and culture is easier to monitor and cultivate when the change leader is situated among this populous. This individual will arrange workshops, training sessions, and questionnaires to gain further insight.

Change champions will have responsibilities in this change implementation plan as well. Multiple stakeholders, by a concerted effort, will engage in leadership tasks once they internalize the PoP and volunteer their energies to achieve the desired organizational state. Eliciting volunteerism is consistent with the adaptive leadership strategy (Heifetz, 1994). Each task requires a "most responsible person" to lead the activity's progress (Table 4). This identified person is in the best position to lead the task because they have resources at hand or already have roles and responsibilities that best align with the task.

The program administrator already has the assigned role of overseer and would be suitable to begin conversations with stakeholders about the AP's vision statement, outcomes, and the definition of the PAC skill. Additionally, the program administrator is positioned to influence multiple courses and the AP's clinics, thus adapting the Mini-CEX formative assessment tool, and sharing it across multiple outlets is possible.

Course directors have responsibilities related to their courses. These individuals already have the assigned position to arrange didactic and clinical lessons for their learners. Design and development of course content is within their existing duties, thus tasking these change

champions to lead the development of the new PAC form is straightforward and not an extensive increase in their workloads.

Table 4

Change Implementation Plan

Leadership Actions	Most Responsible Person	Proposed Timeline: Month No.
PLAN		
1. Create AP vision statement	Program Administrator	1
2. Create change project vision statement	Change Leader	1
3. Host faculty meeting about change project	Change Leader	2
4. Define AP outcomes	Program Administrator	3
5. Define outcome of PAC competency skill	Program Administrator	4-6
6. Design auditable PAC form	Course Director	7
7. Adapt Mini-CEX / DOPS for AP use	Program Administrator	7
8. Refine PAC form	Course Director	8
9. Refine Mini-CEX/DOPS	Program Administrator	8
10. Approve PAC form, Mini-CEX/DOPS	Course Director	9
11. Design instructional process for learners	Course Director	10-11
12. Design instructional process for instructors	Change Leader	10-11
13. Create/select training materials for learners	Course Director	10-11
14. Create/select training materials for instructors	Change Leader	10-11
15. Review training materials with faculty	Change Leader	12
DO		
16. Host instructor professional development	Change Leader	13
17. Host training session for learner	Course Director	13
18. Pilot test PAC Form	Course Director	14-24
19. Pilot test Mini-CEX/DOPS	Program Administrator	14-24
STUDY		
20. Conduct focus group interviews/survey: learners	Course Director	24
21. Conduct focus group interviews/survey: instructors	Change Leader	24
22. Amend PAC form	Course Director	25
23. Amend Mini-CEX/DOPS	Program Administrator	25
24. Review progress with faculty	Change Leader	25
ACT		
25. Re-train/re-calibrate learners	Course Director	26
26. Re-train/re-calibrate instructors	Change Leader	26
27. Formally implement PAC Form	Course Director	26-36
28. Formally implement Mini-CEX/DOPS	Program Administrator	26-36
29. Share experience with other change projects	Change Leader	Ongoing

Contributors to the change efforts include instructors, learners, and patients. These individuals will not be assigned responsibilities but are enabled to participate in the QI initiative. The opportunity shall remain open for any individual who wishes to champion the cause or task. Enthusiasm from followers will expedite the change effort and increase the engagement among

their peers. Leadership that emerges from the ground up should be highly encouraged by assigned leaders and sought as an asset.

Conceptually, the selected solution's four change efforts will each undergo its own Modified PDSA Cycle, but practically, many of the required tasks will contribute to one or more change efforts or PDSA Cycles. For this reason, each change effort cannot be examined or performed in isolation. Instead, the change implementation plan intermingles leadership actions from different change efforts. Table 4 lists the leadership actions and the most responsible person who is best suited to take responsibility for them. The most responsible person will be encouraged to invite input and collaboration from other stakeholders for each task. Table 4's rightmost column suggests a proposed timeline. This practice tool functions as an initial template of *what* to do and *who* will lead, but inevitably, after stakeholders input their ideas on task design, activity and timeline, details of *how* to perform the task will be decided and this template will become more formal.

Timelines. When contemplating simultaneous PDSA Cycles (Figure 7), the change leader identifies steps that could be concurrently performed and steps that could be staggered. For the change leader, it is simpler to synchronize the Plan, Do, Study, and Act phases and organize the timeline by phase (Table 4). Then, the administration of each phase becomes cognitively separate and manageable (i.e., less daunting, or overwhelming). In Table 4, the four change efforts are reduced to achievable tasks sequenced in a three-year timeline for the change leader and change champions to follow. Therefore, this representation offers an overview of the change implementation plan and can be used for project management purposes. Each task can be linked to one or more university key strategies and one or more change efforts (Appendix B).

The strategic use of incremental change to implement the chosen solution slowly integrates its components into the existing social or cultural fabric without destabilizing the AP.

Manage the transition. The change leader and champions, collectively called the change coalition (Kotter, 1995), requires the following strategies to manage the transition and the tasks.

Alleviate stakeholders' resistance. Fear and uneasiness often accompany change because disruption of the status quo impacts stakeholders' self-interests (Kotter & Schlesinger, 2008). A change leader who pre-emptively prepares to mitigate resistance is strategic and wise to recognize that this barrier will affect the change project's viability downstream. With the understanding that resistance is natural (Dent & Goldberg, 1999), the change leader systematically diagnoses potential sources of resistance. In Chapter 1, the force field analysis identified instructors and program administrators to be potential resistors. By performing a strategic needs analysis (Smith & Love, 2004), the change leader identifies what is required for onboarding these resistors.

Program administrators. Individuals holding positional power may perceive a change initiative, originating from a junior member, to be a threat to their positional turf. A change leader needs to influence these administrators to share their decision-making power. Their participation is a prerequisite for their commitment to the planned change (Kotter & Schlesinger, 2008). Casual discussions at the coffeemaker with program administrators provide the change leader opportunities to raise awareness about the PoP and to discern and dismantle previously made assumptions about intentions and aims. The program administrators have rich, helpful insights that will refine the change implementation plan's design and implementation. Engaging these stakeholders is essential to the change's success.

Instructors. As introduced in Chapter 1, instructors are itinerant frontline clinical teachers who limit their time commitment because of per diem compensation. Informal one-on-one conversations with each instructor or simple surveys circulated en masse gain their perspectives about the PoP and invite their participation in the decision-making in this OIP. This group has previously been external to the decision-making related to the direction of the AP and invitations to collaborate would potentially engage stakeholders or unlock an untapped resource. Being unaccustomed to this level of participation, instructors need support in the form of listening, guidance, and training to ameliorate their anxiety and fears.

To invite instructors' participation in the design of solutions, the change leader will first align mindsets or visions toward QI in PAC competency training by building their capacity in an orientation workshop. Instructors have the valuable frontline perspective and their efforts, contributions, and insights should be acknowledged. When instructors feel safe to participate (Schein, 2004), open dialogue and fair forums allow implicit perspectives, needs, and knowledge gaps to become explicit (Katz & Dack, 2013). In these workshops, instructors will be asked to share their teaching experiences and challenges related to training PAC skills. By encouraging discussions, the change leader acquires instructors' buy-in, engagement, and commitment to future change efforts (Cawsey, et al., 2016). These building sessions will enhance the instructors' repertoire of pedagogical, instructional, and assessment strategies for clinical training.

A prudent change leader will prepare to address instructors who have a "low tolerance for change" (Kotter & Schlesinger, 2008, p. 4). These individuals have attitudes and behaviors that are difficult to win over. Although these persons are few, they are a significant force of resistance. At the workshop, the change leader, practicing adaptive leadership, will have the opportunity to "focus [stakeholders'] attention" on the PoP and to "frame" the opportunities and

challenges of change implementation (Heifetz et al., 2004, p. 30). The change leader will orally and visually introduce the clinical leadership[8] mindset, to promote the service orientation, and to emphasize the relevance of PAC training on patient safety. These individuals require concrete information to buy-in. Another consideration to reverse resistance is the negotiation of rewards. Unfortunately, negotiating monetary incentives are beyond the change leader's power of agency, but enhancing awareness of nonfinancial incentives such as the professional valence[9], efficacy in clinical teaching, enjoyment, learning, recognition, accolades, and continuing education credits or opportunities is possible.

Empower change champions to achieve the envisioned desired state. The change leader will need to recruit change champions who will form a "guiding coalition" (Kotter, 1995, p. 61), generate urgency at the inception of change and sustain the implementation of change. This committee shares commitment and agency to guide the change movement. According to Kotter (1995), at least 75% of the management should be convinced that change is needed. Aligning 75% of the individuals to the change vision is possible with strategic perseverance by the change leader. Using adaptive leadership, the change leader can engage the coalition by reassuring their power to partake in the direction and processes of the project (Northouse, 2016). Program administrators who enlist as change champions will be powerful advocates for the change vision because their formal power enables directives. Frontline instructors who are quick to adopt the initiative can be pioneers to pilot the innovations in the PAC clinic. Thus, "the work [is given] back to the people" as prescribed by adaptive leadership (Northouse, 2016, p. 270). By

[8] Clinical leadership describes a service that manages and leads teams to pursue effective patient care (Blumenthal et al., 2012).

[9] Perceived professional or societal importance of the PAC training task

demonstrating that the improvements are successful in practice, these pioneers can, by example, sway other members of the AP to support change. Thus, monitoring progress, celebrating, and communicating short-term successes are responsibilities of the change champions (Kotter, 1995). They will impact the generalized buy-in and continued engagement.

Change champions will need to combat the AP's apathy toward change (Godkin, 2010). To achieve the required "action inertia" (Godkin, 2010, p. 200) among members of the AP, the change champions will develop a collaborative culture by sharing knowledge, highlighting commonalities (e.g., goals, mindsets), and forming formalized communication channels and networks for learning to reduce the isolation of instructors (Table 5). The establishment of these systems and structures (Keidel, 2005) will develop the AP as a professional learning community (PLC). By making understandings explicit within the first weeks of the implementation, a workshop can mold individual mindsets toward a shared mental model, thus the group forms a PLC of members who support each other. Understanding the collective benefits of learners' timely achieving autonomous performance of PAC competency, such as reduced supervision and workload, justifies the change plans to the PLC.

Table 5

Proposed Timeline for Leadership Actions in the Plan Phase

Most Responsible Person	Leadership Actions in Plan Phase	Communication	Month No.
Change Leader	Create change project vision statement	Conduct casual conversations with program administrators and course directors	1-2
		Host faculty meeting/workshop about vision, PoP and change project.	1-2
	Design instructional process for instructors	Conduct collaborative work meetings	10-12

Most Responsible Person	Leadership Actions in Plan Phase	Communication	Month No.
	Create/select training materials for instructors	Conduct collaborative work meetings	10-12
	Review training materials with faculty	Host meeting to review and ready materials	10-12
Program Administrators	Create AP vision statement	Conduct casual conversations with program administrators and course directors	1-2
	Define AP outcomes	Host workshop about vision, PoP and change project.	3
	Define outcome of PAC competency skill	Present service orientation and clinical leadership mindset using visual aids and facts Host open forum for stakeholders to share experiences teaching PAC practice, skills, and outcomes to define PAC competency	4-6
	Adapt Mini-CEX / DOPS for AP use	Conduct collaborative work meetings	7-8
	Refine Mini-CEX/DOPS		7-8
Course Directors	Design auditable PAC form	Host focus group of stakeholders to discuss PAC documentation practices	7
	Refine PAC form	Conduct collaborative work meetings	7-8
	Approve PAC form, Mini-CEX/DOPS	Host meeting to review PAC form and Mini-CEX/DOPS Send e-newsletter about progress to stakeholders Inform stakeholders of training session dates and times	9
	Design instructional process for learners	Conduct collaborative work meetings	10-11
	Create/select training materials for learners	Conduct collaborative work meetings	10-11

As the community's isolationist culture devolves, the change leader and champions will discern what initiatives are crucial, rational, and essential. They will need to remain focused on the vision through the inevitable criticism that will emerge (Dudar et al., 2017) and the periodic resistance that they will encounter.

Manage supports and resources. Cataloguing current resources, estimating required resources, and acquiring resources are important in the implementation of change. Resource management is critical when the project is underway.

Workforce. The change leader and the other AP faculty members are the workforce tasked with designing interactional modules, training materials, auditable PAC forms, and adaptation of the Mini-CEX/DOPS formative assessment tool (Kogan, Holmboe, & Hauer, 2009; Weller et al., 2009). These creative tasks would require time and effort which the faculty members do not currently have. Reassignment of menial tasks (e.g., clinic scheduling) to administrative assistants (Canadian University, 2017a) will afford faculty time to be assigned to creative design. Delegation of some of the faculty member's clinical teaching assignments to per diem instructors would also allow for dedication to the change project.

Instructor engagement. Throughout implementation, participation and input from stakeholders should be maintained to sustain commitment as the project evolves (Smith & Love, 2004). Assembly of the itinerant instructors has been an existing challenge. The AP holds an annual meeting at the start of the academic year for orientation, socialization, and an opportunity to voice issues. These meetings are attended by the instructors who are motivated and engaged, but some instructors are less participative and do not attend. Currently, attendance is not a condition of employment. The introductory workshop will be held during this annual meeting, using this time to raise awareness about the PoP and to acquire feedback from stakeholders on

the existing plan. To increase attendance at this annual meeting, the option to video conference or web conference into the meeting may be offered to increase attendance. There is free software that can make this possible, so access to this service would not be difficult. This format would be novel to the AP and would potentially increase remote engagement while sharing information and experiences. This proposed online PLC for professional development "can reduce isolation of teaching" and "link educators and leaders across distance and time" (Dudar et al., 2017, p. 72). Those who are unable to attend the meeting will have access to meeting minutes or recordings and will have the opportunity to provide comment or feedback. Maintenance of project engagement may be achieved by establishing an open virtual meeting room where instructors and faculty members can sign-on and collaborate. It will be important for program administrators, instructors, and the change leader to meet regularly to discuss progress, manage roadblocks and dispel tensions that may arise in the project's course (Dudar et al., 2017).

Time. The implementation of change should be efficient and effective. The change leader aims to complete this project in three years. Incorporating stakeholders in the decision-making will increase the time required for strategizing (Kotter & Schlesinger, 2008). As a consideration, the change leader will selectively allocate time toward collaborative activities that significantly advance the change movement. Kotter (1995) reminds change leaders that skipping steps in the change management scheme does not save time, while Dudar et al. (2017) suggest that investing time in "professional learning can actually speed up a change process." (p. 70). From these suggestions, Table 5 outlines the sequential leadership tasks that may be delegated to change champions (Cawsey et al., 2016) and estimated timelines relative to a to-be-determined start date. A contingency plan for timeline delays will also be devised with stakeholders' input.

Financial resources. Direct access to financial resources from the budget is limited, however, finding opportunities, such as the university's Education Fund[10], exist. By submitting a proposal and application, the change leader may request monies for audio-visual equipment, computer services, subscriptions to web conferencing software and portable tablet computers. The change leader would apply in January to be considered for this funding.

Technological advancements. Currently, the clinical management software functions in point-of-care documentation[11] practices but it is not user-friendly and requires further development. First, the PAC form will be developed in paper form, but its design should be permissive and easy to transition into a digital format. Piloting the PAC paper form in the clinic will allow for testing and revision before implementing the digital format which will require a request to the information technology personnel to help create. This two-step process will require time to test and implement, but once the draft is finalized and then digitized, the result will be user-friendly, effective, and efficient.

The university recently implemented a new learning management engine, a digital academic toolbox software system, that has the functionalities of hosting online forums, instructional content, interactive modules, surveys, self-paced videos, evaluation, and testing. The change champions can utilize this electronic application to design a PAC training infrastructure that serves both instructors and learners. Implementation issues include designing the content for digital transferability and usability. After the Mini-CEX/DOPS formative assessment tool (Kogan et al., 2009; Weller et al., 2009) is adapted, it will need to be reformatted

[10] Anonymized fund name
[11] Point of care documentation is clinical information collected while delivering care to patients.

and incorporated into the toolboxes of the clinical courses so that learners' performances in PAC skills can be tracked longitudinally. Consultation with the academic administrators and information technology personnel would determine if interpretable performance output reports can be produced.

Navigate implementation issues. In addition to alleviating stakeholders' resistance, empowering change champions, managing resources, change leaders will navigate implementation issues involving systems implementation. This OIP will kick-start a conversation and potential transition of the AP toward competency-based medical education (CBME). This project integrates its concepts and terminologies to the AP and the organization. Defining the PAC competency with the direct inputs of stakeholders will explicitly define this learning outcome for the curriculum developer or change leader. Not only is the information system impacted, but also the evaluation system. The system changes will be important for the grander change vision.

Flexible leadership (Yukl & Mahsud, 2010) will be required to navigate unexpected situations that may arise during the intentional interventions being implemented in the AP. The PDSA Cycles inherently incorporate a mechanism to anticipate change in the change plan. It advocates for incremental implementation of the change effort, testing it in the practice field, learning its effects, and making modifications with each feedback loop.

Acknowledge limitations. The change implementation plan assumes the AP remains relatively static in its organizational state, structure, systems, and leadership in the next few years. Any sudden challenge to the AP that arises will place this change implementation plan into flux or even pause. Consequently, a change plan reset will be needed to reestablish beliefs, behaviors, and plans. Change leaders require contingency plans to evade hardships, but

sometimes even these contingencies do not meet the unexpected curveballs. “Panta rhei”, an aphorism from Heraclitus of Ephsesus (Mark, 2010), acknowledges that all things change, including the change plan (Mintrop, 2016).

Build momentum to manage change. The management of change will require cyclical modifications, monitors, and evaluations advocated by the PDSA Cycle. With each iteration, the momentum should gain and head toward achieving the end goal. Table 4 illustrates the task sequence, but these may also be organized according to short-, mid-, and long-term goals.

Short-term goals. Short-term goals include raising awareness about the PoP to the stakeholders, eliciting their input on the definition of the PAC skill, and identifying the change champions. The creation of the PAC form, Mini-CEX tool, and basic training materials for the learners and instructors are straightforward concrete tasks that can be achieved in a short timeframe (Table 5). As the tasks of the Do phase are completed (Table 6), a checkmark will result in positive reinforcement and encouragement to proceed.

Midterm goals. The embedment of the PAC documentation form and the Mini-CEX form as organizational structures (i.e., a learners’ clinic management tool and a formative assessment tool, respectively) are midterm goals. To achieve these goals, training, review, and revision of these items will be required to achieve proper integration. This will take time and processing to observe whether learner outcomes, as indicated in the Mini-CEX, improve. In the second year of implementation, the launch of online instructional modules will be a midpoint goal where faculty and instructor development can become formalized. These creations will further enlist information and technology personnel to help their development. Staging this step will be dependent on their availabilities.

Table 6

Proposed Timeline for Leadership Actions in the Do Phase

Most Responsible Person	Leadership Action in Do Phase	Communication	Month No.
Change Leader	Host instructor professional development	Host workshop for instructors to build their capacity and clinical teaching skills Inform about pilot testing PAC form and Mini-CEX tool	13
Program Administrators	Pilot test Mini-CEX/DOPS	Inform about pilot Mini-CEX tool	14-24
Course Directors	Host training session for learner	Host training session for learner and orientation to online instructional modules Inform about pilot testing PAC form and Mini-CEX tool	13
	Pilot test PAC Form	Inform about pilot testing PAC form	14-24

Long-term goals. Building community, culture, and a shared mental model for QI in PAC competency training are long-term goals of the AP. Institutionalizing these changes into the fabric of the AP will set-up the AP for its future projects and directions. Ultimately, this QI project aims to make contributions to the grander goals of the university. Enrichment of the AP and its teaching quality, empowerment of its stakeholders, and enhancement of the university's capacity (Canadian University, 2019) will inspire further visioning.

The implementation of the solution is intended to achieve the desired organizational state of improved PAC training. The detailed task sequences in Table 4 create a formal plan for changing the AP in a three-year timeline. The change leader using adaptive leadership strategies will engage stakeholders to achieve the short-term, midterm, and long-term goals and priorities.

Coordination of supports and resources will be instrumental to achieve change. The subsequent sections of this chapter will discuss measures and performance indicators that will track progress.

Change Process Monitoring and Evaluation

The chosen solution for the PoP comprises of four change efforts. *How* each change effort will be monitored will be discussed in this section. As shown in Figure 6, the establishment of measures precedes each PDSA Cycle. Clarity of the monitoring process are important to outline at the outset. Setting the expectations of each PDSA Cycle provides a map that funnels toward the solution of the PoP. Each change effort will require its own evaluation tools and performance indicators (Table 7). Change champions in the Do stages carry out the plans, record expected and unexpected observations, and begin the data analyses. While change champions direct the process using administrative leadership, enabling leadership will motivate adaptive changes (Uhl-bien et al., 2007) in the learners.

Monitoring the training model update. A course director will monitor learners as their capacity grows. Interactive modules created by the course director will incorporate a pre-test and post-test to determine whether PAC knowledge improves. Development of the modules will begin during the first year of change, and the piloting of the pre- and post-test will occur in the Do stage during the second year of change. For this PDSA Cycle, the course director assigns the interactive module to the learners by administrative leadership. Enabling leadership is practiced when designing the interactive modules to encourage knowledge synthesis during combinations of live seminars and online modules. The change champion will record learners' acquisition of knowledge relevant for the PAC skill by administering a written multiple-choice test prior to the start of the interactive module and a second written multiple-choice test after the module has

been completed. This data will inform the course director whether instructional processes are inadequate or adequate in building learners' capacities for the PAC skill.

Table 7

Change Effort, Monitor, Performance Indicator

Change Effort	Monitoring Tool Used by Change Leader	Performance Indicator
Build learner capacity by replacing lectures with interactive modules	Multiple-choice tests per module	Didactic knowledge
Update feedback practices with formative assessments	Mini-Clinical Evaluation Exercise (Mini-CEX)	Clinical knowledge
		Patient assessment
		Planning
		Preparation
		Organization efficiency
		Vigilance
		Problem-solving or Decision-making
		Insight
		Technical proficiency
		Documentation practice
		Patient interaction
		Team interaction
		Risk minimization
		Overall Mini-CEX score
Build instructor capacity through faculty development	Course Experience Questionnaire (CEQ)	Student satisfaction
		Teaching quality
	School Organizational Health Questionnaire	Instructor morale
		Collaborative climate
Modify the structure by implementing an auditable PAC form	Focus group interviews	Form utility
	Pre- and Post-Questionnaires	Form satisfaction

Monitoring the feedback practices update. The feedback practices are in the leadership domain of a program administrator. Currently, learners are evaluated daily by a subjective binary indicator of clinical adequacy. This change effort aims to implement the Mini-Clinical

Evaluation Exercise (Mini-CEX), a new formative assessment tool for learners, that consists of multiple performance measures including: clinical knowledge, patient assessment, planning, preparation, organization efficiency, vigilance, problem-solving or decision-making, insight, technical proficiency, documentation, patient interaction, team interaction, and risk minimization (Australian and New Zealand College of Anaesthetists, 2012). The performance, measured on a 9-point scale, is scored based on the level of supervision that the learner requires. A learner who requires significant supervision and prompting will score low (i.e., 1), whereas a learner who is clinically safe and autonomous will score high (i.e., 9). The program administrators will implement this evaluation tool and track learners' and instructors' use of the tool in the PAC clinic by reviewing the collected evaluations. In the timeline, the adoption and implementation of the Mini-CEX in the PAC clinic will be after the definition of the PAC skill and the implementation of the PAC form.

Monitoring the building of community, culture, and the shared mental model. Building instructor capacity is best pursued by a program administrator or assistant program administrator who achieves buy-in and enhances camaraderie by hosting an orientation workshop that establishes the aim to improve PAC competency training. Questionnaires administered before and after the session would collect data on instructors' preconceived definition of PAC skills, roles, responsibilities, and their new understanding, respectively.

Monitoring the structure modification. Implementation of a new PAC form will impact the PAC clinic structure. This change effort will be championed by a course director who would design the PAC auditable form. A survey to instructors will be conducted to ascertain the definition of the PAC skill to inform the design of the auditable PAC form. This structure modification will be one of the first changes made to the PAC clinic because it is a task that can

easily precede the other change components. The bureaucratic implementation of this new PAC clinic structure would inject tension (Uhl-bien et al., 2007) into the PAC clinic and adaptive processes would align instructors and learners to standardize their practices for patient safety and documentation. Interviews with focus groups and questionnaires would be used to gather data on whether the PAC form was user-friendly and serving its intended purpose.

Evaluation of change processes. A Study period after the dynamic Do stage designates time for data analyses of each cycle (Table 8).

Table 8

Proposed Timeline for Leadership Actions in the Study Phase

Most Responsible Person	Leadership Action in Study Phase	Communication	Month No.
Change Leader	Conduct focus group interviews/survey with instructors	Conduct focus group interviews or online survey to acquire feedback from instructors	24-25
	Review progress with faculty	Send e-newsletter about progress to stakeholders	
Program Administrators	Amend Mini-CEX/DOPS	Conduct collaborative work meetings	24-25
Course Directors	Conduct focus group interviews/survey with learners	Conduct focus group interviews or online survey to acquire feedback from learners	24-25
	Amend PAC form	Conduct collaborative work meetings	

Change champions will ask whether their actions met objectives. After the change champions summarize their findings, the change leader assesses the overall progress and facilitates the Act phase. To improve PAC training, the change leader uses adaptive leadership to encourage shared decision-making and teamwork among the change champions when compiling analyses and preparing for the Act phase.

Tracking microscale changes. During the Study stage, individual pilots pertaining to the change efforts will generate performance indicators (Monitoring the **training model update.** A course director will monitor learners as their capacity grows. Interactive modules created by the course director will incorporate a pre-test and post-test to determine whether PAC knowledge improves. Development of the modules will begin during the first year of change, and the piloting of the pre- and post-test will occur in the Do stage during the second year of change. For this PDSA Cycle, the course director assigns the interactive module to the learners by administrative leadership. Enabling leadership is practiced when designing the interactive modules to encourage knowledge synthesis during combinations of live seminars and online modules. The change champion will record learners' acquisition of knowledge relevant for the PAC skill by administering a written multiple-choice test prior to the start of the interactive module and a second written multiple-choice test after the module has been completed. This data will inform the course director whether instructional processes are inadequate or adequate in building learners' capacities for the PAC skill.

Table *7*). The change leader will identify positive progress when the learners' multiple-choice tests scores and Mini-CEX scores are consistently high. Advancement of the community, culture and shared mental model would be indicated by positive comments during focus group interviews from instructors and satisfactory scores on their questionnaires. Positive reviews on the utility and effectiveness of the piloted PAC form would be captured in focus group interviews from instructors and learners and their questionnaires would show satisfactory scores.

Setbacks would be indicated by negative scores on any of the above performance indicators, thus would signal the need for revision in the Act stage. The quantitative scores and

qualitative feedback would inform the change champions that modifications or revisions on the interventions are required.

Tracking macroscale changes in the anesthesia program. The institutionalization of the change vision also requires evaluation. The focus of evaluation is on the teaching quality and the collaborative climate.

Student evaluations. Learner evaluation of perceived teaching quality is a measure of consumer satisfaction, however identifying "good teaching" is a "complicated matter" (Ramsden, 1991, p. 131). Students' perceptions of curriculum, instruction, and assessment are determinants of their learning approaches and learning outcomes (Wilson, Lizzio, & Ramsden, 1997). Their evaluations are valid, reliable, and useful indicators of teaching quality (Marsh, 1984). The Course Experience Questionnaire (CEQ) has demonstrated validity and usefulness as a multidimensional performance indicator of teaching effectiveness for higher education courses and programs (Ramsden, 1991; Wilson et al., 1997). This summative program evaluation tool, not yet used by the AP, initiates dialogue as to what constitutes best practices in teaching in the AP and fuels an evaluation process rather than an outcome measure (Wilson et al., 1997). The CEQ asks students to rate on 5-point Likert scales: the quality of teaching; clearness of goals and standards; appropriateness of workload; appropriateness of assessments; emphasis on independence; and helpfulness in development of generic skills (Wilson et al., 1997). The questionnaire may be used yearly to benchmark the current state, the state-in-progress, and the resulting organizational state.

Collaborative climate. The AP's culture will be monitored during this QI initiative. The School Organizational Health Questionnaire is a psychometrically sound and valid measure of instructor morale and the dimensions of the AP's organizational climate by evaluating "appraisal

and recognition, curriculum coordination, effective discipline policy, excessive workload, goal congruence, participative decision-making, professional growth, professional interaction, role clarity, student orientation, and supportive leadership" (Hart, Wearing, Conn, Carter, & Dingle, 2000, p. 211). Introducing this questionnaire highlights a range of organizational behavior and human resource management issues relevant to the change goal.

Feedback into the implementation plan. After the Study period, the Act phase affords revision and modifications of the original change plan (Table *9*).

In the Act stage, the change leader along with the change champions will reflect, brainstorm, and decide on the required modifications for the next PDSA Cycle or whether the change effort should be abandoned. The change champions will mediate challenges and harness opportunities for the next cycle. The change leader will use adaptive leadership to take advantage of their emergent leadership, coordinate, and support their suggestions as the PDSA Cycles converge toward the change vision training excellence in PAC skills.

Table 9

Proposed Timeline for Leadership Actions in the Act Phase

Most Responsible Person	Leadership Action in Act Phase	Communication	Month No.
Change Leader	Re-train/re-calibrate instructors	Host update session for instructors	26-36
	Share experience with other change projects	Network within the university	
		Showcase and disseminate the experience in academic publications or conferences about PoP and OIP	
Program Administrators	Formally implement Mini-CEX/DOPS	Send e-newsletter about progress to stakeholders	26-36
Course Directors	Re-train/re-calibrate learners	Host workshop for learners	26-36
	Formally implement PAC Form		

The current change plan assumes organizational state, structure, systems, and leadership remain static in the next few years. If any changes are made to the AP and the university (i.e., the organizational context) while the Plan, Do, Study phases transpire, refinement of the implementation plan may need to occur to adapt to the changes. If leadership or change champions change, buy-in will need to be reestablished among the new players.

The PDSA Cycle change management model offers the change leader and coalition compartmentalized processes to improve PAC competency training. The Study and Act phases designate time to track change. Performance indicators, such as Mini-CEX and questionnaires, will help the change leader determine the effectiveness of the implemented change efforts and decide whether intended progress is achieved. Importantly, a mechanism in the PDSA Cycle facilitates revision if this is required in the change process.

Plan to Communicate the Need for Change and Change Process

Raising awareness about the PoP in the AP is the initial step to initiating change. The Integrated Framework (Figure 6) illustrates the first step as "Awaken" and "Set the Aim". Communicating the need to amend PAC teaching practices begins by educating stakeholders about what is the current state and what is the desired state, thus, appealing to their heads and hearts, respectively, to incite interest in QI of the PoP (Kotter, 2014). Disclosing this discrepancy aims to generate urgency among the stakeholders that change is needed (Armenakis & Harris, 2009; Kotter, 1995). Communicating the change vision by every possible medium is important (Kotter, 1995) to, in effect, continuously persuade and rally change recipients of the need for change. Although speeches, sending memos, and newsletters are forms of persuasive communication that transmit a mass message intending to educate and teach about the cause

(Armenakis & Harris, 2009), they will only work in the short-term. Long-term strategies for communication will be considered and discussed below.

Communication strategies to various stakeholders. Throughout implementation, participation and input from stakeholders should be maintained to sustain commitment as the project evolves (Smith & Love, 2004). Program administrators, course directors, and the change leader will meet regularly to discuss progress and to manage roadblocks and tensions that may arise in the project's course (Dudar et al., 2017). Eliciting active participation from stakeholders is a long-term communication need with strong returns for "genuine buy-in to sustai[n] change" (Armenakis & Harris, 2009, p. 130). While persuasive communications are sporadically interjected to the AP from time to time, it instills only short-term buy-in. Enabling leadership that encourages active participation in the form of learning, problem-solving, and decision-making grants change recipients an opportunity for "self-discovery" within the context of the PoP; this "self-discovery" has profound impact on buy-in (Armenakis & Harris, 2009, p. 172). As a result of contributing to the proposed solution's appropriateness and anticipated efficacy, the change recipients feel they are privileged to participate; they will somehow benefit; and they will have less hesitation to volunteer in the tasks contributing to change (Armenakis & Harris, 2009). In effect, valence enables volunteerism derived from internal motivation (Armenakis & Harris, 2009).

Communication with each stakeholder group will require different approaches to honour their different perspectives, needs, and agendas. These tailored and targeted approaches will be discussed here.

Program administrators. To achieve buy-in from these individuals, the change leader will initially use periodic informal conversations to educate program administrators on the PoP

and the rationale for change. These water cooler chats or coffee dates serve as opportunities to share ideas; to invite their expertise and input; and to encourage participation in the project's design and implementation. Casual communications present the project in a nonthreatening light; mitigate misunderstanding; and engender trust. Thus, the change leader's intentions and aims for PAC competency training improvement are transparent and reassure these stakeholders that the gains to the AP outweigh any perceived losses to their self-interests (if any). Their participation is a prerequisite for their commitment to the planned change (Kotter & Schlesinger, 2008), hence engaging program administrators in the "Set the Aim" phase (Figure 6) will provide the change leader opportunities to discern and dismantle previously made assumptions and to confirm the accuracy of the organizational information and analyses. The program administrators' perspectives may be rich with helpful insights that may assist the refinement of the OIP's design and implementation.

Instructors. Informal one-on-one conversations with each instructor, focus group meetings or performing simple surveys en masse gain their multiple perspectives about the PoP and invite their participation in the decision-making in this OIP. This group has previously been external to the decision-making related to the direction of the AP and invitations to collaborate will potentially engage an untapped resource.

At the annual meeting or workshop, the change leader will orally present with visual aids to introduce the clinical leadership[12] mindset; to promote the service orientation; and to emphasize the relevance of PAC training on patient safety. These individuals may require

[12] Clinical leadership describes a service that manages and leads teams to pursue effective patient care (Blumenthal et al., 2012).

concrete information to buy-in. Another consideration to reverse resistance is the negotiation of rewards. Unfortunately, negotiating monetary incentives are beyond the change leader's power of agency, but enhancing awareness of nonfinancial incentives such as the professional valence[13], efficacy in clinical teaching, enjoyment, learning, recognition, accolades, and continuing education credits or opportunities is possible.

Learners. Learners are recipients of change and would demonstrate the least resistance. Explanatory communication through didactic lectures, facilitated seminars or online learning modules to this group should be clear and concise. Instructors should communicate patience and empathy as this group acquires the PAC skill. Learners will have the opportunity to provide input on the need for change and help in the design and utility of the PAC form and Mini-CEX formative assessment tool. A subset of learners will provide feedback to change champions in focus group interviews.

Crafted communication strategy. Designed communications are messages that are received as intended. Throughout implementation, participation and input from stakeholders should be maintained to sustain commitment as the project evolves (Smith & Love, 2004). It will be important for program administrators, instructors, and the change leader to meet or contact regularly to discuss progress and to manage roadblocks and tensions that may arise in the project's course (Dudar et al., 2017).

The following six strategies are adapted from components of Armenakis and Harris' (2002) and Barrett's (2002) communication model and Klein's (1996) principles of organizational communications along with communication concepts from Kotter (1995).

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[13] Perceived professional or societal importance of the PAC training task

Link all communications to the change vision. Broadcasting the vision frequently through different media and channels is essential from setting the aim to sustaining the change (Barrett, 2002; Klein, 1996). Repetition helps recipients retain and internalize the messaging. All communications that link its contents to the change vision will be cohesive, clear, and persuasive that the change vision is "good" and not just needed (Armenakis & Harris, 2002). By linking a communication's objective with a strategic objective (Table *10*) that connects to the central vision, performance of change goals will likely result (Barrett, 2002).

Table 10

Alignment of Strategic Objectives and Communication Objectives

Strategic Objective	From	To	Communication Objective	Audience (Media)
Update training model	Time-based training	Competency-based training	Define the benefits of CBME Promote conversations about ideal training model	All stakeholders (In-person workshop)
	Passive training (e.g., limited supervision after introductory lecture)	Active training of PAC skills	Train-the-trainers through interactive modules on how to supervise PAC clinic	Program Administrators Instructors (In-person workshop)
Update feedback practices	Simple binary formative assessments (e.g., "meets expectations" versus "needs improvement")	Detailed multifaceted formative assessments (e.g., Mini-CEX/DOPS)	Highlight the disadvantages of the current binary assessment Highlight the benefits of Mini-CEX	Program Administrators (In-person workshop and email memo)
Build community, culture, and shared mental model	Absence of faculty and instructor development	Introduce faculty and instructor development	Meet instructors in person or online in a workshop setting to build their skills and capacity.	Program Administrators Instructors (In-person workshop and online module)
	Isolation and individualism	Build collaboration	Organize networking and team opportunities	Program Administrators Instructors (In-person workshop and online collaboration space)
	Mental model of task-orientation is implicit (e.g., teach anesthesia residents)	Make explicit the shared mental model; shift toward a vision-orientation (e.g., excellence in anesthesia education)	Host workshops to raise awareness about the vision	Program Administrators Instructors (In-person workshop and online module)

Strategic Objective	From	To	Communication Objective	Audience (Media)
Modify the formal structures and systems	Traditional hierarchal structures and systems	Modify the structures (e.g., new PAC form) and systems (e.g., information, feedback, meeting systems) to support strategic objectives	Collaborate on the design of new structures and modification of existing systems.	All Stakeholders (In-person workshop and online collaborations)

Diminish or eliminate stakeholders' concerns. Anticipation of resistance, dissent, and confusion will help the change leader to minimize roadblocks. Anticipated concerns about workload, rewards, and efficacy are anticipated and will be addressed with prepared responses (Table *11*).

Table 11

Anticipated Concerns and Planned Responses

Concern	Description	Planned Responses	Communication Strategy
Workload	Change champions (e.g., program administrators, course directors) will increase workload during the period of change	Aim for even distribution and delegation of workload Emphasize change vision and shared mental model Emphasize that improvements will facilitate working smarter, not harder, as an outcome of this temporary increase in workload	In-person workshop
Reward	"What's in it for me?" Personal valence Self-interests	Provide examples of value-added to stakeholders (e.g., program administrators' outputs may be added to personal teaching dossiers and curriculum vitae; instructors improve clinical teaching skill)	In-person workshop
Efficacy	"Can we successfully implement the change?" Implementation anxiety Confidence in capacity	Build capacity of learners, instructors, and program administrators through active processes and exercises Reassure stakeholders that the project incorporates iterative processes of piloting, monitoring, evaluating, and revision Advocate for a growth mindset (Dweck, 2006; Katz & Dack, 2013)	In-person workshop, E-Newsletter

Preemptive discussions and prepared responses by the change leader will offset the dissemination of concerns and misinformation which can impede and possibly revert ongoing advancing efforts. Furthermore, face-to-face communication is a powerful tool in advancing the change movement (Klein, 1996), especially in a complex adaptive system (CAS) where multiple perspectives, interpretations, and understandings may be anticipated from a single message.

Maintain open communication. Open communication consistently facilitates two-way empathetic dialogue between change leaders and stakeholders. Communication is more effective when there is a perception that the change leader holds similar values, education, and beliefs with change recipients (Kang, 2015). In-person conversations achieve this conveyance because direct interactions offer immediate feedback through verbal and non-verbal cues (Klein, 1996). Openness by the change leader and coalition not only fosters support, approachability, and trust, but also enables a safe space for conflict which stimulates growth.

Coordinate consistent messaging. To avoid cynicism in the AP and the grander university organization, both verbal (i.e., words and print) and non-verbal (i.e., actions and behaviors) communication must be coordinated and consistent to maintain credibility and trust (Barrett, 2002; Kotter, 1995). Consistent messaging also includes redundancy in multimedia. It is important to avoid undermining comments and behaviors that can detrimentally setback the project (Kotter, 1995).

Communicate milestones and progress. The broadcast of milestone achievements and progress, not only inform the stakeholders, but also maintain the momentum for continuing the project and prompt analytical thinking among stakeholders as to how progress can be furthered (Kotter, 1995). Dissemination of e-newsletters to stakeholders will inform and celebrate successes.

Celebrate wins. Celebration of successes recognizes and rewards the involved stakeholders and informs the AP of the ongoing progress and improvements (Kotter, 1995). Clear improvements or goal achievements are important to share with the stakeholders. Giving accolades in e-newsletters and in-person during workshops and meetings will be positive communications. Highlighting short-term, midterm, and long-term wins can continue to build momentum toward resolution of the PoP.

A communication strategy that empowers stakeholders to adopt the change vision and sustains their interest in improving PAC competency training will advance the change implementation plan. Tailored messaging that is consistent, persistent, and steadfast will serve the cause best as change processes in iterative PDSA Cycles ebb and flow.

Next Steps and Future Considerations

This OIP offers an analysis of the AP's organizational state; a future vision of the AP; a proposed change process to improve PAC competency training from the current state to future state; and a communication plan to ensure effective messaging to stakeholders. The next step is to put the plan into practice.

By implementing this OIP, the change leader uses PDSA Cycles to create moments of learning and adaptation for all who are involved. The change leader with the growth mindset (Dweck, 2006; Katz & Dack, 2013) should prepare for two possible outcomes after the implementation is attempted: complete success or partial success. A partial success may simply include a conversation about PAC training practices in the AP's community. Another partial success would be the modification of the PAC form, without the interactive instructional modules to fully support the change plan's goals and priorities. This change would still be impactful on the informational system of the PAC clinic. Therefore, any resulting change that

moves the organization forward could be viewed as organizational growth. While aspirations presented in this OIP are grand, small achievements will impact the AP's future greatly, as suggested by complexity sciences (Cawsey et al., 2016).

Unexpected setbacks resulting from this OIP offer learning opportunities and consideration for revamping this specific OIP but also other novel OIPs. Although this OIP's intention is to specifically improve PAC competency training, it may ignite bigger conversations about the adoption of competency-based anesthesia training for other or all anesthesia skills taught in the AP. The definition of the PAC skill or EPA may prompt the definition of other EPAs and spur other QA/QI initiatives within the named AP or, perhaps, even extend to QA/QI initiatives in other national and international APs if this case study is disseminated through conference presentations or publications.

Institutionalization aims to sustain the achieved changes into the organization's future (Cawsey et al., 2016). While the AP continuously develops, embedding these changes within its CAS requires the change leader or coalition to showcase the positive impacts of the QA/QI initiative and to consider succession planning that continues the direction of the envisioned change (Kotter, 1995). By achieving this project, a precedent will be set for future initiatives in the AP.

This OIP has greater implications than for the AP. The complete or partial successes or even setbacks of this change project could inform other university projects and guide their development. Other academic disciplines may borrow concepts or ideas to develop or benefit their QI initiatives. Hence, this OIP may influence the resolution of other institutional PoPs.

Summary

Chapter 3 details the implementation plan, featuring Solution 4, that aims to resolve the absence of QA in PAC competency training. Aims of academic excellence, patient safety improvements, stakeholder empowerment, and collaboration are adhered to in this OIP by employing the Integrated Framework for its change processes. The adaptive leadership strategy to align stakeholders' priorities with the proposed four change efforts will strive to harness their motivations and encourage their volunteerism. The change leader will sustain stakeholders' engagement as the AP undergoes iterative cycles of change implementation, monitoring, and evaluation during a three-year timeline. Regular monitoring of the change efforts will be performed using multiple choice tests on learners before and after their instructional intervention; formative assessment of learners using the Mini-CEX when they perform the PAC activity; questionnaires that evaluate the cultural shift toward collaboration; and focus group interviews that assess the effectiveness of the new auditable PAC form. Strategic communication was identified by the change leader as essential in this change project's success. A communication plan that tailor-fits messages to stakeholders and persistently mitigates resistance is important to feature in an AP that exhibits CAS features. The change leader that expects unexpected setbacks views these situations as typical of CASs and appreciates that any partial success is still organizational growth and evolution.

Conclusion

This Organizational Improvement Plan (OIP) methodically discussed the absence of quality assurance (QA) in training clinicians to perform pre-anesthesia consultations (PACs) at a Canadian university and accomplished an in-depth organizational analysis to identify the anesthesia program (AP) as a complex adaptive system (CAS). With aims to transition the AP from a hierarchal to a collaborative culture, the change leader, a part-time assistant professor and course director, has informal middle management privileges that enable this individual to comprehensively understand *why* this PoP exists. Dominated by the complexity lens, the change leader considered interpretivist, critical, and pragmatic views along with neoliberal values for this anesthesia education problem. Aspirations for training excellence motivated this OIP, situated within a time of moderate organizational change readiness.

Subsequently, the change leader selected a trio of leadership approaches that suited the AP's CAS. The change leader strategized *how* change will occur using adaptive, enabling, and administrative leadership approaches. These strategies included: focusing stakeholders' attention on the macroscale and microscale aspects of the PoP to encourage stakeholders to adopt the vision and cause; injecting points of tension by modifying organizational structures and work elements to encourage self-organization toward the desired state; and lastly, sparingly giving directives to honour autonomous stakeholders. A solution composed of four logistically feasible change efforts was chosen out of more complicated solutions that were determined to be beyond the power agency of the change leader. The selected solution would require (1) building learner capacity by replacing lectures with interactive modules and updating feedback practices with formative assessments; (2) building instructor capacity through faculty development; and (3) modifying the structure by implementing an auditable pre-anesthesia consultation form.

Finally, a change implementation plan was discussed, as well as *how* monitoring, evaluating, and communicating change would occur. The Integrated Framework that combines the Change Path Model, the Plan-Do-Study-Act Cycle, and the Model of Improvement was selected for structuring the change process. Tasks, outlined in a three-year timeline, were strategically assigned based on the change leader's stakeholder analysis which matched stakeholders' priorities to most related change efforts. A communication strategy of consistent, persistent, and steadfast messaging was devised to raise awareness; to recruit participation; and to sustain motivation and engagement of stakeholders toward resolving the PoP.

In conclusion, this OIP outlined *why, how, what,* and *when* change will occur, as well as *who* will participate to improve the quality of PAC training. In turn, patient care and anesthesia outcomes will be improved. With this plan, the change leader aims to promote a growth mindset and to influence other quality improvement initiatives in the AP, at the university, and other Canadian or international anesthesia training programs that have similar training gaps. Neoliberal trends continue to pressure health education to adopt publicly accountable models like CBME and will likely influence other clinical programs that identify themselves as complex adaptive systems.

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Appendix A: Supplemental Figure

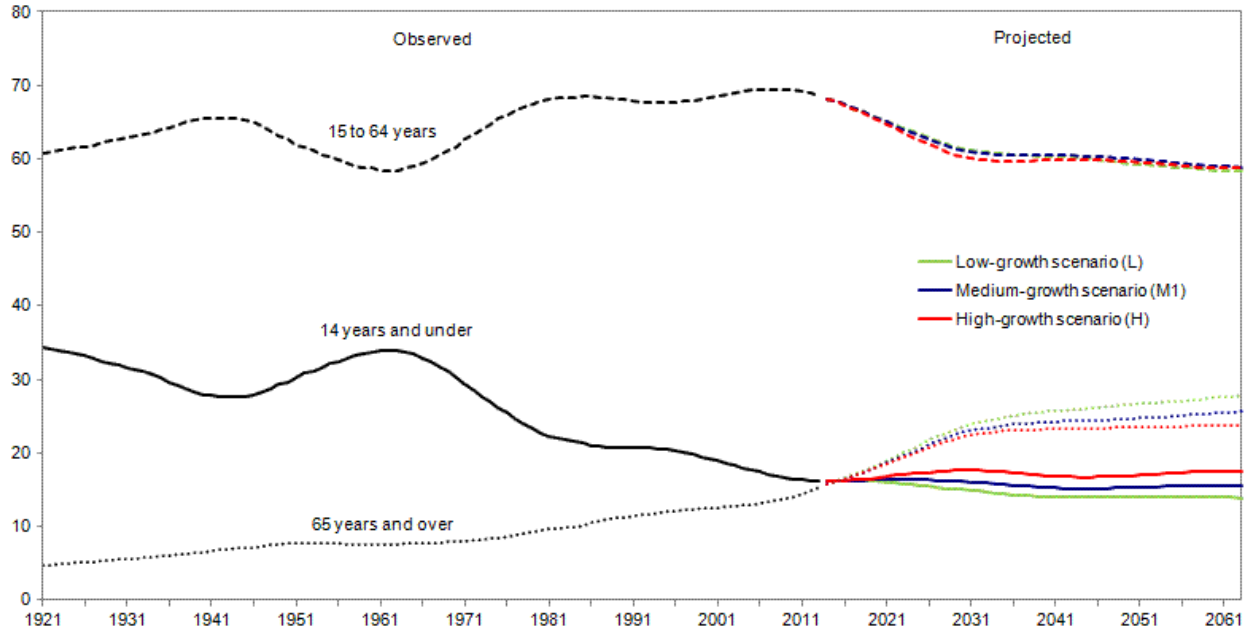

Figure 8. Canadian census population data: Distribution of the total population by age group, observed (1921 to 2013) and projected (2014 to 2063) according to the low-growth (L), medium-growth (M1) and high-growth (H) scenarios, Canada (Statistics Canada: Demography Division, 2016).

Appendix B: Detailed Change Implementation Plan

Table 12

Detailed Change Implementation Plan

Leadership Actions in Sequence	Key University Strategies (p. 59)			Change Efforts (Figure 7)					Change Champions ✓Task Assignment ●Most Responsible Person					Communication Channel / Process used by the Change Leader	Timeline		
	Strengthen Teaching	Engage Collaboration	Increase Capacity	Interactive Modules	Formative Assessment	Auditable PAC form	Instructor Capacity	Change Leader	Program Administrator	Course Director	Instructors	Learners		Planned Month	Contingency Month	Task Completed
Set the Aim: Improve PAC competency training	✓	✓	✓	✓	✓	✓	✓	✓ ●	✓	✓			Research and preparation	0	0	
Establish the Measures: Questionnaires, informal interviews, formative and summative assessments	✓	✓	✓	✓	✓	✓	✓	✓ ●	✓	✓			Consultation with stakeholders (e.g. water cooler chats, coffee dates)	0	0	
Select the Change(s): PAC form, evaluation tools, and instructional practices	✓	✓	✓	✓	✓	✓	✓	✓ ●	✓	✓				0	0	
PLAN																
Create AP vision statement	✓		✓			✓			✓ ●				Casual conversations with program administrators to confirm AP vision	1		
Create change project vision statement	✓		✓			✓		✓ ●	✓	✓			Casual conversations with program administrators and course directors	1		
Host faculty meeting about change project		✓	✓	✓	✓	✓		✓ ●	✓				Host workshop about vision, PoP and change project.	2		

Leadership Actions in Sequence	Key University Strategies (p. 59)			Change Efforts (Figure 7)				Change Champions √Task Assignment ●Most Responsible Person					Communication Channel / Process used by the Change Leader	Timeline		
	Strengthen Teaching	Engage Collaboration	Increase Capacity	Interactive Modules	Formative Assessment	Auditable PAC form	Instructor Capacity	Change Leader	Program Administrator	Course Director	Instructors	Learners		Planned Month	Contingency Month	Task Completed
Define AP outcomes	✓			✓		✓		✓	✓ ●	✓			Present service orientation and clinical leadership mindset using visual aids and facts	3		
Define outcome of PAC competency skill	✓			✓		✓		✓	✓ ●	✓	✓		Open forum for stakeholders to share experiences teaching PAC practice, skills, and outcomes to define PAC competency	4-6		
Design auditable PAC form	✓			✓			✓			✓ ●	✓	✓	Host focus group of stakeholders to discuss PAC documentation practices	7		
Adapt Mini-CEX / DOPS for AP use	✓			✓	✓		✓	✓	✓ ●	✓			Independent work / Collaborative work meetings	7		
Refine PAC form	✓			✓			✓	✓	✓	✓ ●	✓	✓		8		
Refine Mini-CEX/DOPS	✓			✓	✓		✓	✓	✓ ●	✓	✓	✓		8		
Approve PAC form, Mini-CEX/DOPS	✓	✓		✓	✓		✓	✓	✓	✓ ●			Host meeting to review PAC form and Mini-CEX/DOPS Send e-newsletter about progress to stakeholders Inform stakeholders of training session dates and times	9		

Leadership Actions in Sequence	Key University Strategies (p. 59)			Change Efforts (Figure 7)				Change Champions ✓Task Assignment ●Most Responsible Person				Communication Channel / Process used by the Change Leader	Timeline		
	Strengthen Teaching	Engage Collaboration	Increase Capacity	Interactive Modules	Formative Assessment	Auditable PAC form	Instructor Capacity	Change Leader	Program Administrator	Course Director	Instructors	Learners		Planned Month	Contingency Month	Task Completed
Design instructional process for learners	✓			✓		✓			✓	✓ ●			Independent work / Collaborative work meetings	10-11		
Design instructional process for instructors				✓		✓		✓ ●						10-11		
Create/select training materials for learners	✓			✓				✓	✓	✓ ●				10-11		
Create/select training materials for instructors	✓			✓				✓ ●						10-11		
Review training materials with faculty	✓	✓		✓		✓		✓ ●		✓	✓		Host meeting to review and ready materials	12		
DO																
Host instructor professional development		✓	✓			✓		✓ ●					Host workshop for instructors to build their capacity and clinical teaching skills Inform about pilot testing PAC form and Mini-CEX tool	13		
Host training session for learner	✓			✓						✓ ●			Host training session for learner and orientation to online instructional modules Inform about pilot testing PAC form and Mini-CEX tool	13		
Pilot test PAC Form	✓			✓			✓			✓		✓	Preliminary data collection	14-24		

Leadership Actions in Sequence	Key University Strategies (p. 59)			Change Efforts (Figure 7)					Change Champions ✓Task Assignment ●Most Responsible Person				Communication Channel / Process used by the Change Leader	Timeline		
	Strengthen Teaching	Engage Collaboration	Increase Capacity	Interactive Modules	Formative Assessment	Auditable PAC form	Instructor Capacity	Change Leader	Program Administrator	Course Director	Instructors	Learners		Planned Month	Contingency Month	Task Completed
										●						
Pilot test Mini-CEX/DOPS	✓			✓	✓		✓		✓ ●		✓	✓		14-24		
STUDY																
Conduct focus group interviews/survey: learners	✓			✓		✓				✓ ●	✓	✓	Conduct focus group interviews or online survey to acquire feedback from learners	24		
Conduct focus group interviews/survey: instructors	✓	✓		✓		✓		✓ ●			✓		Conduct focus group interviews or online survey to acquire feedback from instructors	24		
Amend PAC form	✓			✓			✓			✓ ●	✓		Independent work / Collaborative work meetings	25		
Amend Mini-CEX/DOPS	✓			✓	✓		✓		✓ ●		✓			25		
Review progress with faculty	✓	✓				✓		✓ ●					Send e-newsletter about progress to stakeholders	25		
ACT																
Re-train/re-calibrate learners	✓			✓						✓ ●			Host workshop for learners	26		
Re-train/re-calibrate instructors	✓	✓		✓		✓		✓ ●					Host update session for instructors	26		
Formally implement PAC Form	✓			✓			✓			✓ ●	✓		Send e-newsletter about progress to stakeholders	26-36		

Leadership Actions in Sequence	Key University Strategies (p. 59)			Change Efforts (Figure 7)				Change Champions ✓Task Assignment ●Most Responsible Person					Communication Channel / Process used by the Change Leader	Timeline		
	Strengthen Teaching	Engage Collaboration	Increase Capacity	Interactive Modules	Formative Assessment	Auditable PAC form	Instructor Capacity	Change Leader	Program Administrator	Course Director	Instructors	Learners		Planned Month	Contingency Month	Task Completed
Formally implement Mini-CEX/DOPS	✓			✓	✓		✓		✓ ●		✓		Send e-newsletter about progress to stakeholders	26-36		
Share experience with other change projects		✓	✓			✓		✓ ●					Network within the university Showcase and disseminate the experience in academic publications or conferences about PoP and OIP	Ongoing		