

BMJ Open

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Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-014303
Article Type:	Research
Date Submitted by the Author:	14-Sep-2016
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Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Intensive care, Qualitative research
Keywords:	Physicians, Volunteers, QUALITATIVE RESEARCH, MEDICAL EDUCATION & TRAINING

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Volunteer physician engagement: an investigation of a national simulation based training program

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Key Words: volunteer, engagement, qualitative research, medical education, critical care

Abstract

Objectives: Conceptual clarity on physician volunteer engagement is lacking in the medical literature. The aim of this study was to present a conceptual framework to describe the elements which influence physician volunteer engagement and to explore volunteer engagement within a national educational program.

Setting: The context for this study was the Acute Critical Events Simulation (ACES) program in Canada, which has successfully evolved into a national educational program, driven by physician volunteers.

Method: A conceptual framework was constructed based on an extensive literature review and expert consultation. Secondary qualitative analysis was undertaken on fifteen semi-structured interviews conducted from 2012 to 2014 with participants, including program directors and health care professionals across Canada. An additional fifteen interviews were conducted to achieve thematic saturation. Data was analyzed iteratively and inductive coding techniques applied.

Results: From 2010 to 2014 the program recruited 73 volunteer health care professionals who contributed to the creation of educational materials and/or served as instructors. The majority were physicians. From the physician volunteer data, eleven themes emerged. The most prominent themes included volunteer recruitment, retention, exchange, recognition, educator network, and quasi volunteerism. Captured within these interrelated themes were the framework elements, including the synergistic effects of emotional, cognitive and reciprocal engagement. Behavioural engagement was driven by these factors along with a cue to action, which led to contributions to the ACES program.

Conclusion: This investigation provides a preliminary framework and supportive evidence towards understanding the complex construct of physician volunteer engagement. The need for this research is particularly important in present day, where growing fiscal constraints create challenges for medical education to do more with less.

Article Summary

Strengths and limitations of this study

- First study to synthesize key elements of physician volunteer engagement into a conceptual framework.
- Covers an issue little investigated and draws upon a wider theoretical background.
- Qualitative data obtained provides new insights into physician volunteer engagement, which may be useful in practically improving volunteer engagement strategies.
- Our findings were obtained in one country, within one national program.
- Explored volunteer engagement in a highly engaged group of physicians, study was not able to explore disengagement.

Introduction

Physician volunteers are essential to health care delivery and medical education.¹

Despite the growing needs to optimize volunteer physician engagement, there is a paucity of data on how to improve and maintain engagement. Volunteerism can be defined as any altruistic act, which is undertaken without financial gain while engagement has been defined as being “actively committed” or “to involve oneself or become occupied; to participate.”^{2,3}

Physicians appear to highly value their role as volunteers. In a US study by Gruen et al., 95 % of physicians surveyed rated community participation as important”.⁴ Yet, in a national survey of 319 physicians, only 39% participated in volunteer activities.⁵

Therefore, there appears to be a wide gap between the perceived importance of volunteering and its translation into action or engagement. Such studies illustrate the need to better understand the determinants of physician volunteer engagement and the ways in which it can be optimized.

Most of the medical literature on engagement is centered on the patient and behaviors that promote health. A few isolated studies focusing on physician engagement were located but there is currently no accepted model describing the multifaceted dimensions of physician volunteer engagement.⁶⁻¹⁰ We can draw from the social science literature in order to define and examine the various components of engagement.

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3 The concept of engagement, specifically, school engagement has been synthesized in a
4 review by Fredricks et al.¹¹ They present engagement as a multifaceted construct
5 including three dynamically interrelated components: behavioural, emotional and
6 cognitive engagement. Behavioural engagement is related specifically to the on task
7 behavior. Emotional engagement is related to the value of the tasks as determined by the
8 individual. Value is further divided into 4 components: “interest (enjoyment of the task),
9 attainment value (importance of doing well on the task for confirming aspects of one’s
10 self-schema), utility value (importance of the task for future goals), and cost (negative
11 aspects of engaging in the task).”¹¹ Cognitive engagement refers to an individual’s
12 motivational goals and self-regulated learning. This concept can be further described as a
13 psychological investment in learning, understanding, and mastering knowledge or skills
14 with a “desire to go beyond the requirements, and a preference for challenge.”¹¹
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34 In this study, we sought to develop a conceptual framework to describe and explore the
35 components and theoretical underpinnings of physician volunteer engagement. We
36 began our investigation with a secondary analysis of a comprehensive needs assessment
37 in a quality improvement initiative aimed at the overall enhancement of the Acute
38 Critical Events Simulation (ACES) program. Later, we extended this initial work by
39 obtaining additional data to provide evidence towards understanding the complex
40 construct of physician volunteer engagement.
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53 **Context**

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3 The ACES Program is a national educational program aimed at improving the proficiency
4 of individuals and teams involved in the early management of critically ill patients.
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8 Nurses, respiratory therapists, and physicians who are the first to respond to a patient in
9 crisis come from various disciplines and practice in diverse milieus. Their experience
10 managing acutely ill patients is often very limited given the low incidence of critical
11 illness. Yet, clinical studies indicate that early recognition and management are most
12 effective in lowering both morbidity and mortality. Randomized controlled trials and
13 guidelines emphasize the importance of the 'golden-hour' in patients with conditions such
14 as myocardial infarction, stroke, and sepsis.¹²⁻¹⁶ The ACES program includes various
15 simulation modalities delivered online or face-to-face as well as books and didactic
16 material. It also includes instructor certification courses. Most of the educational
17 materials have been customized to meet the needs of different groups of learners.
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34 This program was initially developed from the vision and efforts of a small collective of
35 Canadian critical care physicians who volunteered their time and expertise. It has
36 successfully evolved into a national educational program, has been acquired by the Royal
37 College of Physicians and Surgeons of Canada (RCPSC), and continues to advance and
38 grow. Volunteers remain fundamental to the ACES program. They create materials,
39 organize courses, teach, and conduct research. From 2010 to 2014 the program recruited
40 a total of 73 volunteers, 69 of whom were physicians. The need for volunteers is
41 increasing due to increasing demand, addition of new forms of simulation, growth of
42 online curriculum and anticipated movement to a competency-based program.
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Method

A conceptual framework was constructed; data collection instruments were selected and developed based on this model; qualitative data collection was performed and analyzed iteratively.

Conceptual Framework

A conceptual framework is meant to explain the key factors, constructs, or variables, and their presumed relationships.^{17,18} An extensive literature review along with expert consultation informed the development of the framework. We developed the model depicted in Figure 1, to explore volunteer physician engagement in a comprehensive manner. For our study, the physician behavior of participation as a volunteer is the dependent variable. All other elements, which contribute and lead to this behavior, are the independent variables under investigation. In this figure, we have depicted two physicians and one leader for simplicity. In reality there may be many leaders and physicians. We define a leader as an individual within the group who influences others towards a mutual purpose or common goal. We define an individual's engagement as a multidimensional construct including emotional and cognitive engagement which ultimately can lead to behavioral engagement, with tasks directed toward contributing to organizational development and/or a specific domain, such as education, quality and safety, etc.

<Insert Figure 1 about here>

1
2
3 An individual's overall engagement is impacted by their demographic and psychosocial
4 characteristics. The emotional and cognitive components drive behavior. The
5
6 bidirectional arrows between these components indicates that the presence and/or
7
8 development of one component may impact the other. The behavior itself may further
9
10 promote the emotional and cognitive components and enhance volunteer behaviors
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12 (indicated by the arrow back to the emotional and cognitive components). In addition,
13
14 the behavior requires a "cue to action" or trigger (which can be either intrinsic or
15
16 extrinsic to the individual). A simplistic example of an extrinsic "cue to action" may
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18 involve the director of the program contacting a volunteer to participate.
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27 Individual volunteers have the potential to impact each other and synergistically enhance
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29 engagement of each other. We have termed this variable "reciprocal engagement." This
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31 is akin to mutual engagement involving not only individual actions/attributes but also the
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33 actions/attributes of others.¹⁹ This relationship and enhanced engagement potential is
34
35 likely secondary to the impact on the individuals' emotional, cognitive and behavioral
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37 components and/or may provide a trigger leading to the behavior.
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44 Leaders have their own intrinsic characteristics, emotional and cognitive components
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46 which drive the behavior. Reciprocal engagement may also synergistically increase the
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48 engagement of both the leader and individuals.
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53 Ultimately, the behavioral engagement of the individual volunteers can lead to increased
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55 organizational performance.²⁰ Sustainability of the volunteers likely depends on these
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3 factors being maintained and may fluctuate for an individual over time with periods of
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5 greater and lesser engagement, for example based on the presence or absence of a “cue to
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7 action” and also based on changes in organizational culture, leadership and other
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9 individuals.
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12 13 14 15 **Data Collection and Analysis**

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17 Interviews were conducted between October 2012 to August 2015. Participant selection
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19 was carried out using maximum variation purposive sampling to identify individuals that
20
21 would provide a balanced representation.²¹⁻²³ Participants included program directors
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23 from different specialties and health care professionals from different backgrounds.
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26
27 Semi-structured interview guides were designed to follow a broad, pre-determined line of
28
29 inquiry that was flexible and that could evolve as data collection unfolded, permitting
30
31 exploration of emerging themes. Interview guides were created by an interdisciplinary
32
33 team of investigators with expertise in medical education, simulation, sociological and
34
35 qualitative research methods. Interviews lasted from forty-five to sixty minutes, were
36
37 audio-recorded, and transcribed verbatim. (See Appendix S1, online for interview
38
39 guides).
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46 Qualitative data analysis of the comprehensive data set included the application of
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48 inductive coding techniques and the use of the NVIVO software for data
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50 management.^{21,24} The research team followed Creswell’s coding process where data is
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52 first explored to gain a general sense of the data and then coded. These codes were
53
54 described and collapsed into themes.²¹ The analysis team consisted of 3 researchers who
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3 participated in coding training and meetings to develop the codebook. The three
4
5 researchers generated codes (from the same interview transcripts) independently. Then,
6
7 they engaged in consensus discussions. Inter-rater reliability, assessed prior to
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9 independent coding, demonstrated a 95.73% agreement and a 0.75 Kappa score which is
10
11 considered to be substantial agreement.²⁵ The volunteer construct was further explored
12
13 and coded, through a more focused analytic approach in order to gain an in-depth
14
15 understanding of volunteer engagement.²⁶ In an iterative process, additional interviews
16
17 were performed to reach saturation of the subthemes specific to volunteer engagement.
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19 This study was granted an official exemption by The Ottawa Hospital Research Ethics
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21 Board.
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30 Results

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32 For the larger study (quality improvement initiative of the ACES program) 15 interviews
33
34 were performed to gain a broad and comprehensive understanding of the ACES program,
35
36 which included program directors and health care professionals across Canada;
37
38 physicians (n=11), nurses (n=2) and RTs (n=2) (interview guide 1). Upon analysis of this
39
40 interview data the 'physician as volunteer' theme was identified. To further explore this
41
42 finding, and achieve thematic saturation (qualitative) we performed an additional 15
43
44 interviews of physician volunteers (interview guide 2). Overall, thirty of thirty-three
45
46 invited individuals agreed to participate in the semi-structured interviews for a response
47
48 rate of 91%. All physician volunteers that were interviewed were full time clinicians and
49
50 members part of the ACES faculty, who are called to participate as needed. Participants
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52 are displayed in Table 1.
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6 <Insert Table 1 about here>
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10 To gain an in-depth understanding of the phenomenon of volunteer engagement, the data
11 set was coded and 11 themes were identified and sub-coded. Of these themes, six
12 interrelated themes – volunteer recruitment, volunteer retention, volunteer exchange,
13 volunteer recognition, educator network, and quasi-volunteerism were most prominent in
14 our data. A summary of the qualitative findings is presented in Table 2. Prototypical
15 quotes are provided to elucidate each theme.
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27 <Insert Table 2 about here>
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32 **Volunteer Recruitment**

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34 **Word of Mouth.** All recruitment was accomplished through word of mouth. That is, the
35 cue to action was uniformly described by volunteers as an informal interaction with
36 another volunteer, usually a leader who would call the volunteers to request their
37 involvement.
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43 I just got a call from him [ACES Director] one day, he introduced himself and
44 talked about this program where a few guys were getting together and trying to do
45 this thing and at that time there were, I don't know, about 6 or 7 guys and he
46 asked if I wanted to be part of it.
47
48

49 **Snowball Approach.** A snowball approach was described by participants as a means of
50 identifying and recruiting high quality volunteers.
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54 What I would do is have more than one person get in touch with the person they
55 are trying to recruit. First of all you want to cherry pick the people you want to
56 recruit. It's just like a draft in sports or something. You want to cherry pick the
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3 people you want on your team and once you've earmarked certain people and say,
4 "this person is not just strong clinically but also has great personal skills, is
5 humble enough to listen to feedback, and to not get offended by it but to work
6 with it."
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8
9 **Career Stage.** Participants explored the different career stages of physicians who are
10 recruited to volunteer with the program and felt that younger physicians are generally
11
12 easier to recruit.
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16 If it was in the middle part of their [physician] career, they may be on a certain
17 track and it's difficult to engage them. I think it would be great if we could
18 recruit people at mid-career because they have a bit more experience, a bit more
19 knowledge about how things should work or how things should flow. On the
20 other hand, if you recruit younger people, I think they are more enthusiastic and
21 have completely new ideas and that's not a bad thing either right? For me, it was
22 great to be involved early on but I was definitely a little shy to come forward with
23 suggestions initially because, yeah, it's just a very established crowd.
24
25

26
27 **Barriers.** The main barriers to recruitment included career trajectory (as described
28 above) and individual time constraints, including both personal and professional
29 demands. These barriers also pertained to the retention of volunteers. As volunteer
30 physicians continue along their career they may choose different pursuits (e.g., research)
31 and then do not have time to remain an ACES volunteer.
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41 **Volunteer Retention**

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43 **Distributed Leadership and Career Paths.** The organization embraces an open culture
44 creating a collaborative environment, which allows for new leaders to be brought in and
45 mentored by long standing leaders. This relationship enables long-standing leaders to
46 remain involved with the program while balancing other career demands. In this way,
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48 ACES is able to deepen its leadership base by distributing responsibilities to others.
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55 I have decreased in participation, though I still remain section chair, well it is
56 more of a co-chair position because I have a capable colleague who has taken
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4 over some of the curriculum development...I don't see myself in this role for
5 perpetuity and so it's a good opportunity for people to transition and I think it's
6 part of the natural transition process. I still remain involved and committed to
7 being part of the National ACES Program and I still assist locally but I have
8 decreased my involvement. It is more of a career choice and balancing the
9 different aspects of my career that I've taken on as well.
10

11 **Program Change and Evolution.** The program's continual growth, ongoing
12 modifications and innovative nature were described by volunteers as being very
13 intellectually stimulating. This cognitive component was described by many participants
14 as a major contributor to their initial and ongoing commitment and involvement with the
15 program.
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23 I think the fact that we change and we grow is very important. If it was just the
24 same program every year it will eventually become stagnant and people will lose
25 interest.
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28 **Comfort Zone.** Comfort zone is indicative of a behavioral state within which a person
29 operates in an 'anxiety neutral' condition. The objective is to push or lead individuals
30 beyond their comfort zone until comfort is achieved, which enables a consistent high-
31 level performance.^{27,28} During their interviews volunteers were asked if they felt they
32 were drawn to more challenging tasks. One physician put it like this,
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40 So, why is it that you have to get out of your comfort zone? Why do you have to
41 embark on a new mission or path that is quite challenging, one that there is no
42 guarantee that it is going to work? I actually enjoy the process. I love working
43 with others, I love creating things, and I love taking something that's just in the
44 idea stage, and you know transforming it into something that's actually real.
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47 **Reciprocal Engagement.** Participants identified that a volunteer can enhance another
48 volunteer's engagement and this process is cyclical. Participants further identified that
49 interacting and connecting with students further enhanced their overall engagement.
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54 It's amazing to go [to the ACES course] and see all these people giving their time
55 because they love to teach and want people to do better. They are genuinely
56 interested in the well-being of these fellows to be better doctors and it's catching
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3 you can't help but get your love of education back.
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6 When you see other people grow, you grow with it. You grow in parallel,
7 and in fact, it helps you become a better person. It's wonderful to see
8 someone when they start young with enthusiasm, intelligence. These
9 things are the raw materials, you know. And, this person blossoms
10 and becomes a great researcher, and someone who has a great
11 future...that is an incredible reward and it motivates you.
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13

14 **Intrinsic Motivation.** We use the psychological lens of motivation to underpin our
15 understanding of intrinsic motivation. There is a fundamental distinction between actions
16 that are self-determined and those that are controlled.^{29,30} The former, which reflects an
17 individual's personal attributes and internal (intrinsic) motivation, was identified as
18 contributing to the volunteers' participation in the program. The answer might be as
19 simple as, 'I was built like that. This is who I am'. In fact, many described a strong
20 internal drive to participate, hoping that they 'would be called' to action more frequently
21 to perform tasks for the organization. One participant described his experience like
22 sitting on the bench waiting for the coach to call:
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35 I guess one of the biggest things as a volunteer, you're always somebody who is
36 kind of on the bench and the coach may call you into play at any time. And, you
37 kind of wonder if you're gonna get called off the bench to play...I love it and I
38 love being invited back each time.
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40

41 **Learners.** Fellows, often referred to as high-level learners by the volunteers, served as
42 catalysts for both emotional and cognitive engagement in the ACES program. Some
43 volunteers expressed the gratification they felt in teaching the next generation of
44 intensivists, while others expressed the fulfillment in teaching such advanced learners:
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50 It's gratifying to feel like you are teaching the next generation of docs as they
51 come through and they are high level learners who are about to become
52 intensivists themselves so they are keen to learn.
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55 I do enjoy interacting with the students, they are usually a pretty neat group of
56 people. It's sort of the highest level of teaching you get to do. It's neat to have
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3 such advanced learners to teach to.
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7 **Volunteer Exchange**

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9 **Career Opportunities.** We use volunteer exchange from the theory of social exchange
10 which posits that social behavior is the result of an exchange process.³¹ Volunteers noted
11 that aside from receiving continuing medical education (CME) credit for their
12 volunteerism, their participation in the ACES course provided additional benefits for their
13 careers:
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21 Being an ACES volunteer means that this is Royal College (RC) accredited and I
22 think that speaks a lot to the quality of the course but also for an academic person
23 who might have additional interests in teaching more RC courses, this work
24 stands out quite a bit.
25
26

27 **Keeping Current.** Volunteering in the ACES course gave individuals the benefit of
28 staying current at a national level. This knowledge acquisition and networking
29 opportunity both enhanced an individual's practice personally and professionally.
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33
34 It's a good group of people, so it's always a good time and it's a way to keep your
35 finger on the pulse of how things are going nationally and talk to people about
36 what is going on in other centers.
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40 **Academic Currency.** The benefit of volunteering in the course was viewed by many
41 individuals in terms of professional value whereby the experience counts towards
42 promotion and tenure at an academic institution.
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47 It's always something you can list in your own CV within our medical practice
48 plan. Teaching at these things counts in terms of academic points, you can put
49 down each year that you taught this and that has academic currency.
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52 **Volunteer Recognition**

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54 **Personal Recognition.** Attainment value, such that involvement of volunteers with the
55 program confirmed aspects of one's self "this is who I am," was further described in the
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3 form of personal recognition of their role as educators, by colleagues at other universities,
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5 across the country.
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8 **Scholarly/Academic Work.** Volunteers want their work in the ACES program to be
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10 recognized as scholarly contributions. The ACES program leadership sends letters of
11
12 recognition to volunteers' department heads, however, participants described difficulty in
13
14 getting universities to recognize ACES contributions as scholarly.
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18 Our impression is that physicians from academic centers are willing to work...to
19
20 do quite a bit of work as a volunteer provided that their work is considered
21
22 scholarly work.

23
24 I think ACES does a very good job at recognizing our contributions. They
25
26 catalogue and document the contributions on an annual basis, they send letters to
27
28 our Department heads so they recognize us. I think the greater impact is to have
29
30 an opportunity to enhance this recognition as scholarly work, to meet the criteria
31
32 for standard publication in a peer review outlet.

33 34 35 **Educator Network**

36
37 **Common Vision.** Personal perceptions of the importance of the volunteer work coupled
38
39 with a common vision, passion for education and collaborative spirit was described by
40
41 participants. At the highest level the penultimate goal of potentially impacting patient
42
43 care as an outcome was described by both leaders and volunteers. The potential effect
44
45 on patient care (utility value) was further described as being achievable through the
46
47 volunteers' abilities and opportunity to help the residents acquire the knowledge and
48
49 skills required to excel in the clinical setting.

50
51 I think we share a common vision, a common passion. We all believe in
52
53 education, I think that through collaboration we can do greater things than we
54
55 could independently. There's a sense of satisfaction of doing it.

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57 **Duration of Participation/Loyalty.** Participants expressed feelings of loyalty to other
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59 volunteers in the network, especially those who have been involved for a longer duration.
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3 I think there's always going to be some loyalty because you've invested a great
4 period of time. Also, it is one of the few tangible creations that you've helped
5 develop and so you feel part of it.
6
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8 **Affect.** Deep and meaningful emotional components connecting volunteers to the ACES
9 program educator network were identified. Being part of a network elicited strong
10 positive emotions. The enjoyment experienced by volunteers was strongly linked to
11 interactions with other like-minded educators. The face-to-face interaction of volunteers
12 on an annual basis at varying Canadian locations was described as an essential part of the
13 organization.
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22 You feed off the energy of the others, and they feed off your energy...it is a
23 fantastic success component. There was one person who organized the initial
24 think tank but he kind of tied the whole thing together...like molding clay into a
25 form but the clay consisted of a whole bunch of people with lots of ideas...one of
26 the key components has to be the involvement of people who love it and like to
27 think outside the box because as soon as you do that, you have a recipe for
28 success.
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32 Being a part of this network is intellectually very pleasing, it's emotionally
33 rewarding. You end up feeling like you are part of this community. As a
34 physician, you end up being a better physician because you are learning things
35 from others that you can apply at the bedside.
36
37

38 When we meet it's like a bunch of friends getting together...everybody is full of
39 energy when you arrive...everybody is happy, people are smiling...and you are
40 basically like a big family...It's mostly, I think, emotional at that stage.
41
42

43 **Quasi Volunteerism**

44 **Academic Pressure.** The terms Quasi volunteer is reflected in both extrinsic and
45 intrinsic motivations to extend effort into a relationship and/or activity. That is,
46 volunteers in academic teaching hospitals described 'academic pressures', especially for
47 younger doctors, where they felt they were required to meet specific academic
48 expectations:
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56 The premise that its volunteerism is somewhat true. Nobody has a gun to my
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3 head saying I have to do it but we all have to do something, academically. So, I
4 guess it's quasi-volunteerism. Like if I wasn't doing this I would have to,
5 especially us younger docs, like we are all on some degree of academic pressure
6 to keep the university happy. So, if I were not doing this teaching, I'd be doing
7 something else, you know?
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9

10
11 **Curriculum Vitae.** Intrinsically, participant volunteers used the teaching exposure at the
12 national ACES course to grow their own CVs. As such, for some, the volunteer
13 activities were not performed for purely altruistic reasons, but also for professional gain:
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18 It's good to have in your career, you have to have exposure to teaching outside of
19 your center so this gives me the opportunity to fulfill that, so it's not all altruistic.
20 it's something that I do need to do for my curriculum vitae.
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23 **Discussion**

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26 The productivity, success, and sustainability of the ACES organization depends on the
27 recruitment, retention and recognition of volunteers in a collaborative network. As
28 depicted in our conceptual framework, the synergistic effects of the individual's
29 emotional and cognitive engagement along with reciprocal engagement within the
30 environmental context and culture of the organization, followed by a cue to action, leads
31 to the volunteers behavioural engagement in volunteer activities. This behavioural
32 engagement of the volunteers leads to the output of contribution to the ACES program.
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46 Our study yields several key findings that contribute to our understanding of what
47 motivates physicians to volunteer, and perhaps more importantly what sustains their
48 volunteerism. With respect to recruitment, we found that word-of-mouth recruitment was
49 the primary vehicle to engage new members. In the marketing literature, word-of-mouth
50 is defined as an interpersonal communication, independent of the organization's
51 marketing activities, about an organization or its products.³² Our findings support this
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3 literature in that word-of-mouth is a dyadic communication between a source and a
4
5 recipient.³³ This implies that the occurrence of word-of-mouth is determined by
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7 characteristics of the recipient, the characteristics of the source, and their mutual
8
9 relationship.^{34,35}
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15 Word-of-mouth communication was found to be particularly effective in securing buy-in
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17 from new members when done early in the recruitment phase. That is, a phone call from
18
19 one of the long-standing members of ACES early in the selection phase was conducted so
20
21 as to “feel out” potential new members. This also tended to have the effect in attracting
22
23 the potential recruit. This supports earlier research that demonstrated that receiving
24
25 positive information through word-of-mouth early in the recruitment process is positively
26
27 related to perceived organizational attractiveness and actual recruitment.³⁶ Within the
28
29 business literature, this phenomenon is called the accessibility-diagnostics model. The
30
31 model suggests that information provided through word-of-mouth affects potential
32
33 recruits’ early evaluations of the organization because of its accessibility in memory and
34
35 its feedback potential.^{37,38} That is, if a physician receives positive word-of-mouth
36
37 information on a given program or organization they are more likely to think favourably
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39 when asked at a later date to perform a volunteer activity. This finding has clear practical
40
41 implications for practice in that organizations should try to stimulate positive word-of-
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43 mouth early in the recruitment process because of its positive impact on potential recruits
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45 attraction to an organization and subsequent retention.
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3 Long-standing ACES volunteers take careful measures to select, and subsequently recruit
4 new members. In turn, this recruitment effort has a significant impact on long-term
5 retention. The majority of physicians recruited become committed to the ACES program
6 and have long-term sustainability as volunteers. We have found that a key to this
7 commitment and sustainability lies in the embeddedness of the social networks among
8 volunteer physicians. Research on teams in which dyads are found within larger groups
9 of people (e.g., ACES volunteer physicians within the larger medical community)
10 suggests that people are likely to collaborate with others who possess qualities and skills,
11 and know-how that are complementary to their own and relevant to reaching a particular
12 objective.³⁹ Interestingly, we found that many of the new recruits were already well
13 known to at least several of the ACES physician volunteers, and thus were already in
14 their educator network. This supports the notion that people are inclined to create
15 relationships with friends of their friends (or the business associates of their business
16 associates). The effect of sharing mutual acquaintances on attachment appears to be
17 additive in that each additional mutual acquaintance shared by an unconnected dyad
18 (relationship) additionally increased the likelihood that they will become acquainted.⁴⁰
19 Perhaps the reason for the excellent retention and deep commitment of ACES physician
20 volunteers is explained by the structure of the ACES social networks which comprises
21 many third party connections. Research states that ties connecting people who share
22 several common third party connections are more likely to withstand the test of time.^{41,42}
23 As related to our conceptual framework, we understand that physician volunteers exercise
24 both emotional (intrinsic commitment & loyalty) and cognitive (intellectual challenge &
25 constant change/growth) engagement that directly relate to the retention of volunteers.
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6 Our study has shown that financial incentives are of low to absent value to physician
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8 volunteer engagement in all activities within the ACES program. The emotional and
9
10 cognitive rewards coupled with reciprocal engagement were key elements. In addition,
11
12 the organizational culture provided the basis for successful engagement. The need to
13
14 enhance scholarly recognition was identified. Literature supports that the internal
15
16 motivation is a strong driver of volunteer teacher participation.⁹ The high value placed
17
18 on personal satisfaction appears to be consistent across a variety of contexts. This
19
20 domain of personal satisfaction can be further broken down into the emotional, cognitive
21
22 and reciprocal form of engagement and mapped to our conceptual framework. In
23
24 particular, physicians felt a strong sense of cognitive engagement with regard to being
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26 ‘pushed’ out of their comfort zone so as to reach a new and expanded state of
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28 performance.
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36 We found workload and increased external demands to be a threat to physician volunteer
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38 activities. Yet, in the ACES group we identified healthcare professionals that have
39
40 remained engaged despite considerable external demands. In fact most volunteers in this
41
42 program would contribute further if called upon. The high level of engagement of these
43
44 individuals is complex and involves many elements of the conceptual framework. In
45
46 some circumstances, when other demands increased, volunteers modified their role and
47
48 mentored new leaders, allowing for ongoing engagement. Moving away from traditional
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50 ‘individual’ leadership theories, team leadership theory includes the concept of team
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52 leadership capacity, which includes the entire range of the team’s leadership.⁴³ It appears
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3 that the ACES organizational structure has capitalized on this distributed shared
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5 leadership approach to ensure sustainable and diversity of available leaders.
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10 **Limitations**

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12 There are several limitations to our study. It was a cross-sectional study, performed in a
13
14 single context of highly engaged health care professionals most of whom were located at
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16 academic teaching hospitals. The nature of engagement within the organization may be
17
18 context specific. Further studies are required to determine the transferability our findings
19
20 to other contexts. In our study we sought perspectives from volunteers performing
21
22 various tasks. However, given the sample size it is not possible to determine if the
23
24 underlying components of engagement change with variation in the roles. Further, we
25
26 did not examine the time spent volunteering (e.g., hours/weeks per year) nor did we seek
27
28 out individuals who may have volunteered but later completely withdrew. We will
29
30 ensure to capture this data in our future work. Finally, when the volunteer role includes
31
32 teaching, we identified that the reciprocal engagement between the student and teacher
33
34 adds to the overall engagement of the volunteer. This component was not in our
35
36 conceptual framework and could be added in future investigations where the volunteer
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38 role includes teaching.
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48 **Future Research**

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50 The presumption that engagement is malleable is an exciting prospect.^{44,45} A cohesive
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52 framework is required to facilitate understanding of the complex construct of volunteer
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54 physician engagement and this framework can be utilized in the development of
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3 multifaceted approaches to enhance volunteer physician engagement. For example, an
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5 intervention may include enhancing reciprocal engagement through collaborative
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7 meetings and enhancing interpersonal relationships; emotional engagement by connecting
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9 with individuals on a deeper level with respect to the meaning and potential outcomes of
10
11 their work; cognitive engagement by including intellectually challenging tasks, and
12
13 recognition of the volunteers work through faculty appointment, newsletters among their
14
15 peers, awards and scholarly acknowledgement. Further research is also required to
16
17 determine how we measure engagement. The conceptual framework presented in this
18
19 paper may aid in the design of measurement tools. The strategies and tools may vary
20
21 depending on type of volunteer activity and setting. Furthermore, research is required to
22
23 explore the construct of disengagement, and also to determine if different professional
24
25 “identities,” such as nurses, respiratory therapists, administrators, have different
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27 facilitators and inhibitors to engagement.
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36 **Conclusion**

37
38 Volunteer physicians are essential to the growth and sustainability of the ACES program.
39
40 This organization has demonstrated great success with engaging highly effective
41
42 volunteers. Our conceptual framework and qualitative findings provide a preliminary
43
44 framework as an important initial step in understanding the complex construct of
45
46 volunteer physician engagement. This study will guide us in our development of a
47
48 multifaceted intervention, aligned with the conceptual framework, to enhance volunteer
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50 physician engagement within the organization. Finally, given the current economic
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3 climate, providing compensation may not be financially feasible or sustainable so
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6 alternative approaches must be explored to engage volunteer physicians.
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5 **Contributors:** Dr. Sarti and Dr. Sutherland had full access to all the data in the study
6 and take responsibility for the integrity of the data and the accuracy of the data analysis.
7 Study concept and design: Sarti, Sutherland, Landriault, DesRosier, Brien, Cardinal
8 Acquisition of data: Sarti, Sutherland, Landriault, DesRosier
9 Analysis and interpretation of data: Sarti, Sutherland, Landriault, Cardinal
10 Drafting of the manuscript: Sarti and Sutherland
11 Critical revision of the manuscript for important intellectual content: Sarti, Sutherland,
12 Landriault, DesRosier, Brien, Cardinal
13 Obtained funding: Landriault, Brien, Cardinal
14 Administrative, technical, or material support: Landriault, DesRosier
15 Study supervision: Sarti, Sutherland, Cardinal
16 All authors have approved the final version of this manuscript.
17
18

19
20 **Acknowledgements:** We would like to thank the healthcare professionals who
21 participated in this study and shared their experiences and opinions with the research
22 team.
23

24 **Funding/Support:** Resources and secretariat support for this project were provided by
25 the Royal College
26

27
28 **Competing interest:** None.
29

30 **Ethics approval:** This study was granted an official exemption by the Chair of The
31 Ottawa Hospital Research Ethics Board
32

33
34 **Disclaimer:** None
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36 **Previous Presentations:** None
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List of Figures:

Figure 1. Conceptual Framework

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3 **List of Tables:**
4

5
6 Table 1. Characteristics of interview participants.
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8 Table 2. Summary of the qualitative findings.
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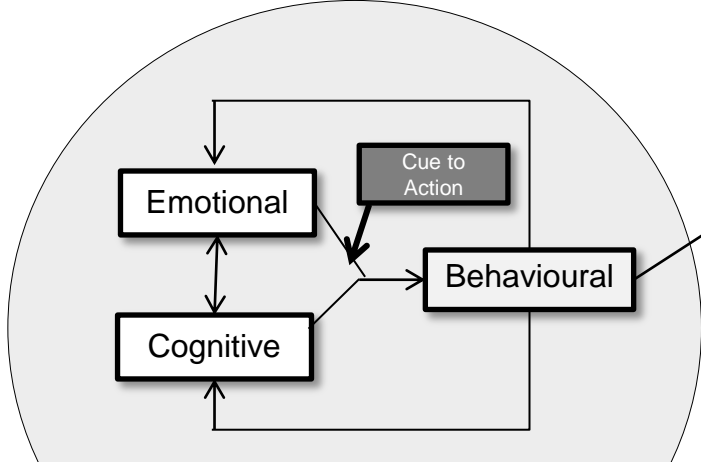
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List of Supplemental Online Content

Appendix S1. Interview Guides.

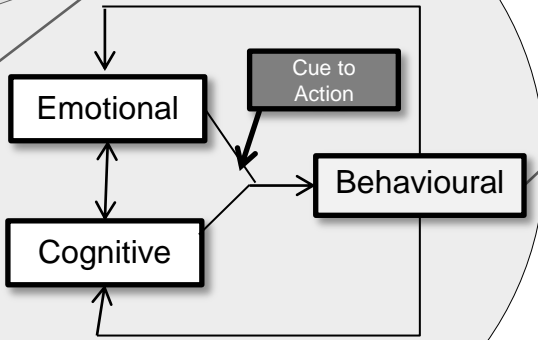
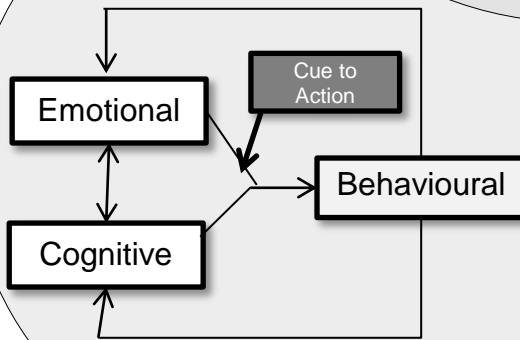
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Leader Engagement



Organizational Contribution / Performance

Reciprocal Engagement



Physician Engagement

Physician Engagement

Environment / Context / Organizational Culture

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Table 1. Characteristics of interview participants.

Characteristic	n	%
Number	30	
Region *		
Mountain	7	23
Prairies	3	10
Ontario	14	47
Quebec	2	7
Atlantic	4	13
Specialty/Discipline **		
Critical Care	23	77
Anesthesia	7	23
Internal Medicine	5	17
Surgery	3	10
Family Medicine	3	10
Nurses	2	7
Respiratory Therapists	2	7
Pediatric Critical Care	1	3

* The regions of Canada have been divided in the following way: Mountain includes British Columbia and Alberta; Prairies include Saskatchewan and Manitoba; Atlantic includes all Atlantic Provinces.

** Individuals were classified under their current practice specialties. Note that an individual may be practicing in more than one specialty.

Table 2: Summary of the qualitative findings.

1. Volunteer Recruitment
a. Word of mouth
b. Snowball approach
c. Career stage
d. Barriers
2. Volunteer Retention
a. Distributed leadership and career paths
b. Program change and evolution/innovation
c. Comfort zone
d. Reciprocal engagement
e. Intrinsic motivation
f. Learners
3. Volunteer Exchange
a. Career opportunities
b. Keep current
c. Academic currency
4. Volunteer Recognition
a. Personal recognition
b. Scholarly/academic work
5. Educator Network
a. Common vision
b. Duration or participation/loyalty
c. Affect
6. Quasi Volunteerism
a. Academic pressure
b. Curriculum vitae

Interview Guide 1

Introduction

1. Introduction

Thanks for agreeing to participate ... We are conducting a needs assessment for the ACES course (introduce the project). Consent.

2. Background

- a. Goal of the ACES course - provide the learner with the necessary knowledge, skills and attitude to recognize and manage a patient who is acutely and critically ill in the first hour of presentation
- b. Modality of the ACES course - multimodal: e-learning, book, case seminars, technical skill workshop, simulation, and bedside tools

3. Purpose of the needs assessment

- a. Interest expressed by various groups to customize the ACES course to a specific population
- b. Facilitate the dissemination of the course across Canada
- c. Exploring interest in an interprofessional course
- d. Explore business models that would facilitate dissemination
- e. Explore peer-review process and means of promoting academic contributions of faculty

4. Please let us know if you are NOT in a position to answer some of the questions (e.g. vice-dean discussing weaknesses of residents during resuscitation)

5. Interview will be recorded; all information will be kept confidential

Demographics

1. What is your professional designation?
2. What are your current roles?
3. Can you let me know what type of institution you work in (Community Hospital, Secondary, Tertiary, and Quaternary)?
4. When it comes to responding to a crisis, what is the usual makeup of the team in your institution?
5. Are you familiar with the ACES course? Have you participated or taught an ACES course?

Content

1. When it comes to responding to a crisis, what are the team's strengths?
2. When it comes to responding to a crisis, what are team's weaknesses?
3. Probes
 - a. What about (mention any members of the team that have not been addressed)

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4. At the end of the course, the learner should be able to..... (Please list the 5 most important performance objectives)
 5. Is there anything else that you can think of that we have not discussed?

Course format

1. Do you think that pre-course on-line content would be useful?
 - a. Do you anticipate that you or your learners may have any problems accessing online material?
 - b. What is the purpose of having pre-course on-line content?
 - i. Teaching knowledge, decision-making, other?
 - ii. Preparation for the face-to-face course
 - iii. Assessment of learners?
 - iv. Others
 - c. What should be the duration of a pre-course on-line session?
 - d. Should the pre-course on-line content be mandatory?
 - i. If so, can you think of ways to ensure your or your learners compliance with mandatory online content?
2. Do you think that post-course on-line content would be useful?
 - a. Would it be useful for you to have access to the pre-course on-line content after the course for further revision? How long?
 - b. What is the purpose of having post-course on-line content?
 - i. Teaching knowledge, decision-making, other?
 - ii. Preparation for the face-to-face course
 - iii. Assessment of learners?
 - iv. Post-course assessment of knowledge retention
 - v. Others
 - c. What should be the duration of an on-line session?
 - i. Post face-to-face course
 - d. Should post-course on-line content be mandatory?
 - i. If so, can you think of ways to ensure your or your learners compliance with mandatory online content?
3. Do you think that the program should have a face-to-face course?
 - a. How long should the course be?
 - b. What should be the preferred modalities?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?

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- e. Other?
 - c. What should be the relative proportion of time spent for each modality?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?
 - e. Other?
 - d. Should the pre-course material be reviewed during the face-to-face course?
 - e. What should determine the instructor to participant ratio?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?
 - e. Other?
 - f. Tell me what you think about making this course interprofessional...
 - a. What would be the advantages?
 - b. What would be the challenges?
4. How complicated is it for your institution/organization to organize a course that contains a large components of simulation training?
- a. Do you have access to simulation laboratory with the required equipment?
 - b. Do you have access to simulation engineer
 - c. Do you have trained instructors
 - d. Do you have course co-coordinators with experience delivering such courses

Market analysis

1. What do you like most about the ACES course?
2. What changes would most improve the ACES course?
3. Do you know of competing courses currently available?
4. What do you like the most about these other courses?
5. What changes would most improve these other courses?
6. If you are not likely to deliver the ACES course, why not?
7. What would make you more likely to deliver the ACES course?
 - a. Is costing an issue?
 - b. Are difficulties delivering the ACES course an issue?
 - i. Low participants to instructor ratio
 - ii. Space
 - iii. Equipment

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- iv. Personnel (simulation engineer, trained actors, course coordinator)
8. Imagine that you are tasked to widely disseminate this course in order to improve patient care. Can you think of a business model that would favor wide dissemination?
- a. Keeping in mind that there is a cost related to the development and dissemination of the material.

Peer review process

1. Do you have any suggestions on how to best organize and facilitate the peer-review process?
 - a. Initially
 - b. On an ongoing process

Recognition

1. How could the Royal College best recognize your or your institution's contributions in the creation and delivery of the ACES course?
 - a. Would it help if creators were informed of their material evaluations and extent of dissemination? How often?
 - b. Would including the sums invested in the completion of the project be useful as a means of recognition?

Interview Guide 2

Volunteer Engagement in the ACES program

- Target – Leadership within the organization and some Volunteer Physicians
- Introduction, Confidentiality, Consent

Leadership Questions:

1. What is your role in the ACES program?
2. How do volunteers impact the program? Has this changed over the years / history of the program?
3. Who are the volunteers?
4. Where are they located?
5. What roles do volunteers perform?
 - a. *Probe – development, delivery, administration, promotion of the program, etc. Specifically link to the conceptual framework*
6. Are there more ways that you envision them being involved?
7. Why do you think physicians volunteer their time with the ACES program?
 - a. *Probes: To be completed -*
 - i. *Behavioural*
 - ii. *Emotional*
 - iii. *Cognitive*
 1. *The challenge of the activity? Or mastering challenging / difficult ideas/skills/tasks?*
8. How are they currently recruited?
9. What are the barriers to recruitment and retention of volunteers?
10. What are the facilitators to recruitment and retention of volunteers?
11. How are they rewarded/appreciated for their contribution?
12. How do you see the ACES program evolving and how will this impact the volunteers? Impact the need for volunteers?
13. If a need for more volunteers is identified - Any solutions to increasing capacity and retention?

Questions regarding your volunteer involvement

14. Do you volunteer time with the ACES program?
15. What activities / role do you perform as a volunteer?
16. Why do you volunteer?
17. How is your contribution acknowledged?

Volunteer Questions:

1. What is your role in the ACES program?
2. How long have you been a volunteer with ACES?
3. How did you become involved with ACES?
4. Why do you volunteer?
 - a. Probes:
 - i. Behavioural
 - ii. Emotional
 - iii. Cognitive
 1. Do find this work challenging? by the activity and or your involvement? Or mastering challenging / difficult ideas/skills/tasks?
 - b. What specifically – ie, what part is challenging? What part do you 'love'? what part are you most 'interested' in?
5. Have you ever considered increasing your involvement with ACES?
6. Have you ever considered decreasing or discontinuing your involvement with ACES?
7. Are there factors that maintain your involvement with ACES?
8. What improvements could be made to better meet your needs as a volunteer with the organization?

BMJ Open

Exploring the components of physician volunteer engagement: a qualitative investigation of a national Canadian simulation based training program

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-014303.R1
Article Type:	Research
Date Submitted by the Author:	10-Mar-2017
Complete List of Authors:	Sarti, Aimee J.; Ottawa Hosp, Critical Care Sutherland, Stephanie; Ottawa Hosp, Critical Care Landriault, Angele; Royal College of Physicians and Surgeons of Canada (RCPSC), Practice, Performance and Innovation (PPI) unit DesRosier, Kirk; Royal College of Physicians and Surgeons of Canada (RCPSC), Practice, Performance and Innovation (PPI) unit Brien, Susan; Royal College of Physicians and Surgeons of Canada Cardinal, Pierre; Ottawa Hosp, Critical Care
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Intensive care, Qualitative research
Keywords:	Physicians, Volunteers, QUALITATIVE RESEARCH, MEDICAL EDUCATION & TRAINING

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Exploring the components of physician volunteer engagement: a qualitative investigation of a national Canadian simulation based training program

Sarti, Aimee J. MD; Sutherland, Stephanie PhD; Landriault, Angele BScN; DesRosier, Kirk; Brien, Susan MD, MEd; Cardinal, Pierre MD, MScEpi

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Key Words: volunteer, engagement, qualitative research, medical education, critical care

Abstract

Objectives: Conceptual clarity on physician volunteer engagement is lacking in the medical literature. The aim of this study was to present a conceptual framework to describe the elements which influence physician volunteer engagement and to explore volunteer engagement within a national educational program.

Setting: The context for this study was the Acute Critical Events Simulation (ACES) program in Canada, which has successfully evolved into a national educational program, driven by physician volunteers. From 2010 to 2014 the program recruited 73 volunteer health care professionals who contributed to the creation of educational materials and/or served as instructors.

Method: A conceptual framework was constructed based on an extensive literature review and expert consultation. Secondary qualitative analysis was undertaken on fifteen semi-structured interviews conducted from 2012 to 2013 with program directors and health care professionals across Canada. An additional fifteen interviews were conducted in 2015 with physician volunteers to achieve thematic saturation. Data was analyzed iteratively and inductive coding techniques applied.

Results: The majority were physicians. From the physician volunteer data, eleven themes emerged. The most prominent themes included volunteer recruitment, retention, exchange, recognition, educator network, and quasi volunteerism. Captured within these interrelated themes were the framework elements, including the synergistic effects of emotional, cognitive and reciprocal engagement. Behavioural engagement was driven by these factors along with a cue to action, which led to contributions to the ACES program.

Conclusion: This investigation provides a preliminary framework and supportive evidence towards understanding the complex construct of physician volunteer engagement. The need for this research is particularly important in present day, where growing fiscal constraints create challenges for medical education to do more with less.

Article Summary

Strengths and limitations of this study

- First study to synthesize key elements of physician volunteer engagement into a conceptual framework.
- Covers an under-investigated issue and draws upon a wider theoretical background.
- Qualitative data obtained provides new insights into physician volunteer engagement, which may offer practical ideas to improve volunteer engagement strategies.
- Our findings were obtained in one country, within one national program.
- Explored volunteer engagement in a highly engaged group of physicians, study was not able to explore disengagement.

Introduction

Physician volunteers are essential to health care delivery and medical education.¹

Despite the growing need to optimize volunteer physician engagement, there is a paucity of data on how to improve and maintain engagement. Volunteerism can be defined as any altruistic act, which is undertaken without financial gain while engagement has been defined as being “actively committed” or “to involve oneself or become occupied; to participate.”^{2,3}

Physicians appear to highly value their role as volunteers. In a US study by Gruen et al., 95 % of physicians surveyed rated community participation as important”.⁴ Yet, in a national survey of 319 physicians, only 39% participated in volunteer activities.⁵

Therefore, there appears to be a wide gap between the perceived importance of volunteering and its translation into action or engagement. Such studies illustrate the need to better understand the determinants of physician volunteer engagement and the ways in which it can be optimized.

Most of the medical literature on engagement is centered on the patient and behaviors that promote health. A few isolated studies focusing on physician engagement were identified but there is currently no accepted model describing the multifaceted dimensions of physician volunteer engagement.⁶⁻¹⁰ We can draw from the social science literature in order to define and examine the various components of engagement.

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3 The concept of engagement, specifically, school engagement has been synthesized in a
4 review by Fredricks et al.¹¹ They present engagement as a multifaceted construct
5 including three dynamically interrelated components: behavioural, emotional and
6 cognitive engagement. Behavioural engagement is related specifically to the on task
7 behavior. Emotional engagement is related to the value of the tasks as determined by the
8 individual. Value is further divided into 4 components: “interest (enjoyment of the task),
9 attainment value (importance of doing well on the task for confirming aspects of one’s
10 self-schema), utility value (importance of the task for future goals), and cost (negative
11 aspects of engaging in the task).”¹¹ Cognitive engagement refers to an individual’s
12 motivational goals and self-regulated learning. This concept can be further described as a
13 psychological investment in learning, understanding, and mastering knowledge or skills
14 with a “desire to go beyond the requirements, and a preference for challenge.”¹¹
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34 In this study, we sought to develop a conceptual framework to describe and explore the
35 components and theoretical underpinnings of physician volunteer engagement. We
36 began our investigation with a secondary analysis of a comprehensive needs assessment
37 in a quality improvement initiative aimed at the overall enhancement of the Acute
38 Critical Events Simulation (ACES) program. Later, we extended this initial work by
39 obtaining additional data to provide evidence towards understanding the complex
40 construct of physician volunteer engagement.
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53 **Context**

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3 The ACES Program is a national educational program aimed at improving the proficiency
4 of individuals and teams involved in the early management of critically ill patients.
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8 Nurses, respiratory therapists, and physicians who are the first to respond to a patient in
9 crisis come from various disciplines and practice in diverse milieus. Their experience
10 managing acutely ill patients is often very limited given the low incidence of critical
11 illness. Yet, clinical studies indicate that early recognition and management are most
12 effective in lowering both morbidity and mortality. Randomized controlled trials and
13 guidelines emphasize the importance of the 'golden-hour' in patients with conditions such
14 as myocardial infarction, stroke, and sepsis.¹²⁻¹⁷ The ACES program includes various
15 simulation modalities delivered online or face-to-face as well as books and didactic
16 material. It also includes instructor certification courses. Most of the educational
17 materials have been customized to meet the needs of different groups of learners.
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34 This program was initially developed from the vision and efforts of a small collective of
35 Canadian critical care physicians who volunteered their time and expertise. It has
36 successfully evolved into a national educational program, has been acquired by the Royal
37 College of Physicians and Surgeons of Canada (RCPSC), and continues to advance and
38 grow. Volunteers remain fundamental to the ACES program. They create materials,
39 organize courses, teach, and conduct research. From 2010 to 2014 the program recruited
40 a total of 73 volunteers, 69 of whom were physicians. The need for volunteers is
41 increasing due to greater demand, addition of new forms of simulation, growth of online
42 curricula and anticipated movement to a competency-based program.
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Method

A conceptual framework was constructed; secondary analysis of the ACES quality improvement initiative data was performed; additional interviews were conducted; qualitative data collection was performed and analyzed iteratively.

Conceptual Framework

A conceptual framework is meant to explain the key factors, constructs, or variables, and their presumed relationships to be studied.^{18,19} An extensive literature review along with expert consultation informed the development of the framework. We opted for a more pre-structured qualitative research design as we wanted to bound the study within a set of engagement variables, yet at the same time we needed to maintain enough flexibility to allow for emergent findings so as to better understand the construct of physician engagement. We adapted a student engagement conceptual framework.¹¹ We found Fredericks et al.'s theory of engagement to be useful in our medical context. In further modifying the conceptual framework we used the 'bins approach,' whereby the framework is mostly a visual catalogue of roles to be studied (e.g., physician leaders and physicians), and within each role, how the variables of engagement influence their actions.¹⁹ A multidisciplinary panel of experts iteratively collaborated on the modifications to the conceptual framework included critical care physicians and leaders, administrators, system-level policymakers and a sociologist.

We developed the model depicted in Figure 1, to explore volunteer physician engagement in a comprehensive manner. For our study, the physician behavior of participation as a

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2
3 volunteer is the desired outcome. All other elements, which contribute and lead to this
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5 behavior are under investigation. In this figure, we have depicted two physicians and one
6
7 leader for simplicity. In reality there may be many leaders and physicians. We define a
8
9 leader as an individual within the group who influences others towards a mutual purpose
10
11 or common goal.²⁰ We define an individual's engagement as a multidimensional
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13 construct including emotional and cognitive engagement which ultimately can lead to
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15 behavioral engagement, with tasks directed toward contributing to organizational
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17 development and/or a specific domain, such as education, quality and safety, etc.¹¹
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22 <insert Figure 1 about here>
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29 An individual's overall engagement is impacted by their demographic and psychosocial
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31 characteristics. The emotional and cognitive components drive behavior. The
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33 bidirectional arrows between these components indicates that the presence and/or
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35 development of one component may impact the other. The behavior itself may further
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37 promote the emotional and cognitive components and enhance volunteer behaviors
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39 (indicated by the arrow back to the emotional and cognitive components). In addition,
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41 the behavior requires a "cue to action" or trigger (which can be either intrinsic or
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43 extrinsic to the individual). A simplistic example of an extrinsic "cue to action" may
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45 involve the director of the program contacting a volunteer to participate.
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52 Individual volunteers have the potential to impact each other and synergistically enhance
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54 one another's engagement.' We have termed this variable "reciprocal engagement." This
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3 is akin to mutual engagement involving not only individual actions/attributes but also the
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5 actions/attributes of others.²¹ This relationship and enhanced engagement potential is
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7 likely secondary to the impact on the individuals' emotional, cognitive and behavioral
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9 components and/or may provide a trigger leading to the behavior.
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15 Leaders have their own intrinsic characteristics, emotional and cognitive components
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17 which drive the behavior. Reciprocal engagement may also synergistically increase the
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19 engagement of both the leader and individuals.
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24 Ultimately, the behavioral engagement of the individual volunteers can lead to increased
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26 organizational performance.²² Sustainability of the volunteers likely depends on these
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28 factors being maintained and may fluctuate for an individual over time with periods of
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30 greater and lesser engagement, for example based on the presence or absence of a “cue to
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32 action” and also based on changes in organizational culture, leadership and other
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34 individuals.
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41 **Data Collection and Analysis**

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43 As part of a quality improvement initiative of the ACES program, interviews were
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45 conducted between 2012 to 2013. Participant selection was carried out using maximum
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47 variation purposive sampling to identify individuals that would provide a balanced
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49 representation.²³⁻²⁵ Participants included program directors from different specialties and
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51 health care professionals from different backgrounds. Upon analysis of this interview
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53 data the ‘physician as volunteer’ theme was identified. To further explore this finding,
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3 and achieve thematic saturation we performed additional interviews with physician
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6 volunteers in 2015.
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11 Semi-structured interview guides were designed to follow a broad, pre-determined line of
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13 inquiry that was flexible and that could evolve as data collection unfolded, permitting
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15 exploration of emerging themes. Interview guides were created by an interdisciplinary
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17 team of investigators with expertise in medical education, simulation, sociological and
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19 qualitative research methods. Interviews lasted from forty-five to sixty minutes, were
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21 audio-recorded, and transcribed verbatim. (See Appendix S1, online for interview
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23 guides).
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30 Qualitative data analysis of the comprehensive data set included the application of
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32 inductive coding techniques, utilizing thematic content analysis, and NVIVO software for
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34 data management.^{19,23} The research team followed Creswell's coding process where data
35
36 is first explored to gain a general sense of the data and then coded. These codes were
37
38 described and collapsed into themes.²³ The analysis team consisted of 3 researchers who
39
40 participated in coding training and meetings to develop the codebook. The three
41
42 researchers generated codes (from the same interview transcripts) independently. Then,
43
44 they engaged in consensus discussions. Inter-rater reliability, assessed prior to
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46 independent coding, demonstrated a 95.73% agreement and a 0.75 Kappa score which is
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48 considered to be substantial agreement.²⁶ The volunteer construct was further explored
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50 and coded, through a more focused analytic approach in order to gain an in-depth
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52 understanding of volunteer engagement.²⁷ In an iterative process, additional interviews
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3 were performed to reach saturation of the subthemes specific to volunteer engagement.
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6 This study was granted an official exemption by The Ottawa Hospital Research Ethics
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8 Board.
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11 12 13 Results

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16 For the larger study (quality improvement initiative of the ACES program) 15 interviews
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18 were performed to gain a broad and comprehensive understanding of the ACES program,
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20 which included program directors and health care professionals across Canada;
21
22 physicians (n=11), nurses (n=2) and RTs (n=2) (interview guide 1). An additional 15
23
24 interviews of physician volunteers were performed (interview guide 2). Overall, thirty
25
26 of thirty-three invited individuals agreed to participate in the semi-structured interviews
27
28 for a response rate of 91%. All physician volunteers that were interviewed were full
29
30 time clinicians and members of the ACES faculty, who are called to participate as
31
32 needed. Participants are displayed in Table 1.
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41 **Table 1. Characteristics of interview participants.**

42 Characteristic	43 n	44 %
45 Number	30	
46 Region *		
47 Mountain	7	23
48 Prairies	3	10
49 Ontario	14	47
50 Quebec	2	7
51 Atlantic	4	13
52 Specialty/Discipline **		
53 Critical Care	23	77
54 Anesthesia	7	23
55 Internal Medicine	5	17
56 Surgery	3	10
57 Family Medicine	3	10

Nurses	2	7
Respiratory Therapists	2	7
Pediatric Critical Care	1	3

* The regions of Canada have been divided in the following way: Mountain includes British Columbia and Alberta; Prairies include Saskatchewan and Manitoba; Atlantic includes all Atlantic Provinces.

** Individuals were classified under their current practice specialties. Note that an individual may be practicing in more than one specialty.

To gain an in-depth understanding of the phenomenon of volunteer engagement, the data set was coded and 11 themes were identified and sub-coded. Of these themes, six interrelated themes – volunteer recruitment, volunteer retention, volunteer exchange, volunteer recognition, educator network, and quasi-volunteerism were most prominent in our data. A summary of the qualitative findings is presented in Table 2. Prototypical quotes are provided to elucidate each theme.

Table 2: Summary of the qualitative findings.

1. Volunteer Recruitment
a. Word of mouth
b. Snowball approach
c. Career stage
2. Volunteer Retention
a. Distributed leadership and career paths
b. Program change and evolution/innovation
c. Comfort zone
d. Reciprocal engagement
e. Intrinsic motivation
f. Learners
g. Barriers
3. Volunteer Exchange
a. Career opportunities
b. Keep current
c. Academic currency
4. Volunteer Recognition
a. Personal recognition
b. Scholarly/academic work
5. Educator Network

- a. Common vision
- b. Duration or participation/loyalty
- c. Affect

6. Quasi Volunteerism

- a. Academic pressure
- b. Curriculum vitae

Volunteer Recruitment

Word of Mouth. All recruitment was accomplished through word of mouth. That is, the cue to action was uniformly described by volunteers as an informal interaction with another volunteer, usually a leader who would call the volunteers to request their involvement.

I just got a call from him [ACES Director] one day, he introduced himself and talked about this program where a few guys were getting together and trying to do this thing and at that time there were, I don't know, about 6 or 7 guys and he asked if I wanted to be part of it.

Snowball Approach. A snowball approach was described by participants as a means of identifying and recruiting high quality volunteers. With this approach, leaders would contact volunteers within the group, who in turn would reach out to contacts in their social networks to identify potential new recruits who have the qualities required to contribute to the group.

What I would do is have more than one person get in touch with the person they are trying to recruit. First of all you want to cherry pick the people you want to recruit. It's just like a draft in sports or something. You want to cherry pick the people you want on your team and once you've earmarked certain people and say, "this person is not just strong clinically but also has great personal skills, is humble enough to listen to feedback, and to not get offended by it but to work with it."

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2
3 **Career Stage.** Participants explored the different career stages of physicians who are
4 recruited to volunteer with the program and felt that younger physicians are generally
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6
7
8 easier to recruit.
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11 If it was in the middle part of their [physician] career, they may be on a certain
12 track and it's difficult to engage them. I think it would be great if we could
13 recruit people at mid-career because they have a bit more experience, a bit more
14 knowledge about how things should work or how things should flow. On the
15 other hand, if you recruit younger people, I think they are more enthusiastic and
16 have completely new ideas and that's not a bad thing either right? For me, it was
17 great to be involved early on but I was definitely a little shy to come forward with
18 suggestions initially because, yeah, it's just a very established crowd.
19
20

21 22 **Volunteer Retention**

23
24 **Distributed Leadership and Career Paths.** The organization embraces an open culture
25 creating a collaborative environment, which allows for new leaders to be brought in and
26 mentored by long standing leaders. This relationship enables long-standing leaders to
27 remain involved with the program while balancing other career demands. In this way,
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34 ACES is able to deepen its leadership base by distributing responsibilities to others.
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37 I have decreased in participation, though I still remain section chair, well it is
38 more of a co-chair position because I have a capable colleague who has taken
39 over some of the curriculum development...I don't see myself in this role for
40 perpetuity and so it's a good opportunity for people to transition and I think it's
41 part of the natural transition process. I still remain involved and committed to
42 being part of the National ACES Program and I still assist locally but I have
43 decreased my involvement. It is more of a career choice and balancing the
44 different aspects of my career that I've taken on as well.
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47 **Program Change and Evolution.** The program's continual growth, ongoing
48 modifications and innovative nature were described by volunteers as being very
49 intellectually stimulating. This cognitive component was described by many participants
50 as a major contributor to their initial and ongoing commitment and involvement with the
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57 program.
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3 I think the fact that we change and we grow is very important. If it was just the
4 same program every year it will eventually become stagnant and people will lose
5 interest.
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8 **Comfort Zone.** Comfort zone is indicative of a behavioral state within which a person
9 operates in an ‘anxiety neutral’ condition. The objective is to push or lead individuals
10 beyond their comfort zone until comfort is achieved, which enables a consistent high-
11 level performance.^{28,29} During their interviews volunteers were asked if they felt they
12 were drawn to more challenging tasks. One physician put it like this,
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20 So, why is it that you have to get out of your comfort zone? Why do you have to
21 embark on a new mission or path that is quite challenging, one that there is no
22 guarantee that it is going to work? I actually enjoy the process. I love working
23 with others, I love creating things, and I love taking something that’s just in the
24 idea stage, and you know transforming it into something that’s actually real.
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27 **Reciprocal Engagement.** Participants identified that a volunteer can enhance another
28 volunteer’s engagement and this process is cyclical. Participants further identified that
29 interacting and connecting with students further enhanced their overall engagement.
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34 It’s amazing to go [to the ACES course] and see all these people giving their time
35 because they love to teach and want people to do better. They are genuinely
36 interested in the well-being of these fellows to be better doctors and it’s catching
37 you can’t help but get your love of education back.
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40 **Intrinsic Motivation.** We use the psychological lens of motivation to underpin our
41 understanding of intrinsic motivation. There is a fundamental distinction between actions
42 that are self-determined and those that are controlled.^{30,31} The former, which reflects an
43 individual’s personal attributes and internal (intrinsic) motivation, was identified as
44 contributing to the volunteers’ participation in the program. The answer might be as
45 simple as, ‘I was built like that. This is who I am’. In fact, many described a strong
46 internal drive to participate, hoping that they ‘would be called’ to action more frequently
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3 to perform tasks for the organization. One participant described his experience like
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5 sitting on the bench waiting for the coach to call:
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8 I guess one of the biggest things as a volunteer, you're always somebody who is
9 kind of on the bench and the coach may call you into play at any time. And, you
10 kind of wonder if you're gonna get called off the bench to play...I love it and I
11 love being invited back each time.
12

13
14 **Learners.** Fellows, often referred to as high-level learners by the volunteers, served as
15 catalysts for both emotional and cognitive engagement in the ACES program. Some
16
17 volunteers expressed the gratification they felt in teaching the next generation of
18
19 intensivists, while others expressed the fulfillment in teaching such advanced learners:
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22
23 It's gratifying to feel like you are teaching the next generation of docs as they
24 come through and they are high level learners who are about to become
25 intensivists themselves so they are keen to learn.
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28 **Barriers.** The main barriers to retention included career trajectory (as described above)
29 and individual time constraints, including both personal and professional demands. As
30
31 volunteer physicians continue along their career they may choose different pursuits (e.g.,
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33 research) and then do not have time to remain an ACES volunteer.
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40 **Volunteer Exchange**

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42 **Career Opportunities.** We use volunteer exchange from the theory of social exchange
43 which posits that social behavior is the result of an exchange process.³² Volunteers noted
44
45 that aside from receiving continuing medical education (CME) credit for their
46
47 volunteerism, their participation in the ACES course provided additional benefits for their
48
49 careers:
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54 Being an ACES volunteer means that this is Royal College (RC) accredited and I
55 think that speaks a lot to the quality of the course but also for an academic person
56 who might have additional interests in teaching more RC courses, this work
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stands out quite a bit.

Keeping Current. Volunteering in the ACES course gave individuals the benefit of staying current at a national level. This knowledge acquisition and networking opportunity both enhanced an individual's practice personally and professionally.

It's a good group of people, so it's always a good time and it's a way to keep your finger on the pulse of how things are going nationally and talk to people about what is going on in other centers.

Academic Currency. The benefit of volunteering in the course was viewed by many individuals in terms of professional value whereby the experience counts towards promotion and tenure at an academic institution.

It's always something you can list in your own CV within our medical practice plan. Teaching at these things counts in terms of academic points, you can put down each year that you taught this and that has academic currency.

Contributing to another's program was further described as a method of building up ones currency in that there was an expectation that, in turn, volunteer peers would "pay back" the favor at a later date.

Volunteer Recognition

Personal Recognition. Attainment value, such that involvement of volunteers with the program confirmed aspects of one's self "this is who I am," was further described in the form of personal recognition of their role as educators, by colleagues at other universities, across the country.

Scholarly/Academic Work. Volunteers want their work in the ACES program to be recognized as scholarly contributions. The ACES program leadership sends letters of

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3 recognition to volunteers' department heads, however, participants described difficulty in
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5 getting universities to recognize ACES contributions as scholarly.
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8 I think ACES does a very good job at recognizing our contributions. They
9 catalogue and document the contributions on an annual basis, they send letters to
10 our Department heads so they recognize us. I think the greater impact is to have
11 an opportunity to enhance this recognition as scholarly work, to meet the criteria
12 for standard publication in a peer review outlet.
13

14 15 16 **Educator Network**

17
18 **Common Vision.** Personal perceptions of the importance of the volunteer work coupled
19 with a common vision, passion for education and collaborative spirit was described by
20 participants. At the highest level the penultimate goal of potentially impacting patient
21 care as an outcome was described by both leaders and volunteers. The potential effect
22 on patient care (utility value) was further described as being achievable through the
23 volunteers' abilities and opportunity to help the residents acquire the knowledge and
24 skills required to excel in the clinical setting.
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35 I think we share a common vision, a common passion. We all believe in
36 education, I think that through collaboration we can do greater things than we
37 could independently. There's a sense of satisfaction of doing it.
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40 **Duration of Participation/Loyalty.** Participants expressed feelings of loyalty to other
41 volunteers in the network, especially those who have been involved for a longer duration.
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44 I think there's always going to be some loyalty because you've invested a great
45 period of time. Also, it is one of the few tangible creations that you've helped
46 develop and so you feel part of it.
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49
50 **Affect.** Deep and meaningful emotional components connecting volunteers to the ACES
51 program educator network were identified. Being part of a network elicited strong
52 positive emotions. The enjoyment experienced by volunteers was strongly linked to
53 interactions with other like-minded educators. The face-to-face interaction of volunteers
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3 on an annual basis at varying Canadian locations was described as an essential part of the
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5 organization.
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8 When we meet it's like a bunch of friends getting together...everybody is full of
9 energy when you arrive...everybody is happy, people are smiling...and you are
10 basically like a big family...It's mostly, I think, emotional at that stage.
11

12 **Quasi Volunteerism**

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14 **Academic Pressure.** The terms Quasi volunteer is reflected in both extrinsic and
15 intrinsic motivations to extend effort into a relationship and/or activity. That is,
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17 volunteers in academic teaching hospitals described 'academic pressures', especially for
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19 younger doctors, where they felt they were required to meet specific academic
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21 expectations:
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27 The premise that its volunteerism is somewhat true. Nobody has a gun to my
28 head saying I have to do it but we all have to do something, academically. So, I
29 guess it's quasi-volunteerism. Like if I wasn't doing this I would have to,
30 especially us younger docs, like we are all on some degree of academic pressure
31 to keep the university happy. So, if I were not doing this teaching, I'd be doing
32 something else, you know?
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36 **Curriculum Vitae.** Intrinsically, participant volunteers used the teaching exposure at the
37 national ACES course to grow their own CVs. As such, for some, the volunteer
38
39 activities were not performed for purely altruistic reasons, but also for professional gain:
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41

42 It's good to have in your career, you have to have exposure to teaching outside of
43 your center so this gives me the opportunity to fulfill that, so it's not all altruistic.
44 it's something that I do need to do for my curriculum vitae.
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49 **Discussion**

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52 The productivity, success, and sustainability of the ACES organization depends on the
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54 recruitment, retention and recognition of volunteers in a collaborative network. As
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56 depicted in our conceptual framework, the synergistic effects of the individual's
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3 emotional and cognitive engagement along with reciprocal engagement within the
4 environmental context and culture of the organization, followed by a cue to action, leads
5 to behavioural engagement in volunteer activities and contributions to the ACES
6 program. Wherein the conceptual framework has underpinned and bounded the study, as
7 described by Fredricks et al. (2004), we have also found that it is difficult to specifically
8 separate out the behavioural, emotional and cognitive elements of engagement. We feel
9 that our findings call for richer characterizations of how physicians behave, feel, and
10 think.
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24 Overall, our study yields several key findings that contribute to our understanding of
25 what motivates physicians to volunteer, and perhaps more importantly what sustains their
26 volunteerism. With respect to recruitment, we found that word-of-mouth recruitment was
27 the primary behavioural vehicle to engage new members. In the marketing literature,
28 word-of-mouth is defined as an interpersonal communication, independent of the
29 organization's marketing activities, about an organization or its products.³³ Our findings
30 support this literature in that word-of-mouth is a dyadic communication between a source
31 and a recipient.³⁴ This implies that the occurrence of word-of-mouth is determined by
32 characteristics of the recipient, the characteristics of the source, and their mutual
33 relationship.^{35,36}
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51 Word-of-mouth communication was found to be particularly effective behavioral
52 component in securing buy-in from new members when done early in the recruitment
53 phase. That is, a phone call from one of the long-standing members of ACES early in the
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3 selection phase was conducted so as to gain an initial impression of potential new
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5 members. This also tended to have the effect in attracting the potential recruit. This
6
7 supports earlier research that demonstrated that receiving positive information through
8
9 word-of-mouth early in the recruitment process is positively related to perceived
10
11 organizational attractiveness and actual recruitment.³⁷ Within the business literature, this
12
13 phenomenon is called the accessibility-diagnostics model. The model suggests that
14
15 information provided through word-of-mouth affects potential recruits' early evaluations
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17 of the organization because of its accessibility in memory and its feedback potential.^{38,39}
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19 That is, if a physician receives positive word-of-mouth information on a given program
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21 or organization they are more likely to think favourably when asked at a later date to
22
23 perform a volunteer activity. This finding has clear practical implications for practice in
24
25 that organizations should try to stimulate positive word-of-mouth early in the recruitment
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27 process because of its positive impact on potential recruits attraction to an organization
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29 and subsequent retention.
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39 Long-standing ACES volunteers take careful measures to select, and subsequently recruit
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41 new members. In turn, this recruitment effort has a significant impact on long-term
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43 retention. The majority of physicians recruited become committed to the ACES program
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45 and have long-term sustainability as volunteers. We have found that a key to this
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47 commitment and sustainability lies in the strength of the social networks among volunteer
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49 physicians. Research on teams in which dyads are found within larger groups of people
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51 (e.g., ACES volunteer physicians within the larger medical community) suggests that
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53 people are likely to collaborate with others who possess qualities and skills, and know-
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3 how that are complementary to their own and relevant to reaching a particular objective.⁴⁰
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5 Interestingly, we found that many of the new recruits were already well known to at least
6
7 several of the ACES physician volunteers, and thus were already in their educator
8
9 network. This supports the notion that people are inclined to create relationships with
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11 friends of their friends (or the business associates of their business associates). The effect
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13 of sharing mutual acquaintances on attachment appears to be additive in that each
14
15 additional mutual acquaintance shared by an unconnected dyad (relationship) additionally
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17 increased the likelihood that they will become acquainted.⁴¹ Perhaps the reason for the
18
19 excellent retention and deep commitment of ACES physician volunteers is explained by
20
21 the structure of the ACES social networks which comprises many third party
22
23 connections. Research states that ties connecting people who share several common third
24
25 party connections are more likely to withstand the test of time.^{42,43} As related to our
26
27 conceptual framework, we understand that physician volunteers exercise both emotional
28
29 (intrinsic commitment & loyalty) and cognitive (intellectual challenge & constant
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31 change/growth) engagement that directly relate to the retention of volunteers.
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41 Personal satisfaction was an overarching finding that mapped directly to the emotional
42
43 and cognitive elements of engagement within the conceptual framework. Our study has
44
45 shown that financial incentives are of low to absent value to physician volunteer
46
47 engagement in all activities within the ACES program. The emotional and cognitive
48
49 rewards coupled with reciprocal engagement were key elements. In addition, the
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51 organizational culture provided the basis for successful engagement. The need to enhance
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53 scholarly recognition was identified. Literature supports that the internal motivation is a
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3 strong driver of volunteer teacher participation.⁹ The high value placed on personal
4
5 satisfaction appears to be consistent across a variety of contexts. This domain of personal
6
7 satisfaction can be further broken down into the emotional, cognitive and reciprocal form
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9 of engagement and mapped to our conceptual framework. In particular, physicians felt a
10
11 strong sense of cognitive engagement with regard to being ‘pushed’ out of their comfort
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13 zone so as to reach a new and expanded state of performance.
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19 We found workload and increased external demands to be a threat to physician volunteer
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21 activities. Yet, in the ACES group we identified healthcare professionals that have
22
23 remained engaged despite considerable external demands. In fact, most volunteers in this
24
25 program would contribute further if called upon. The high level of engagement of these
26
27 individuals is complex and involves many elements of the conceptual framework. In
28
29 some circumstances, when other demands increased, volunteers modified their role and
30
31 mentored new leaders, allowing for ongoing engagement. Moving away from traditional
32
33 ‘individual’ leadership theories, team leadership theory includes the concept of team
34
35 leadership capacity, which includes the entire range of the team’s leadership.⁴⁴ It appears
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37 that the ACES organizational structure has capitalized on this distributed shared
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39 leadership approach to ensure sustainable and diversity of available leaders.
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48 **Limitations**

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50 There are several limitations to our study. It was a cross-sectional study, performed in a
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52 single context of highly engaged health care professionals most of whom were located at
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54 academic teaching hospitals. The nature of engagement within the organization may be
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3 context specific. Further studies are required to determine the transferability our findings
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5 to other contexts. In our study we sought perspectives from volunteers performing
6
7 various tasks. However, given the sample size it is not possible to determine if the
8
9 underlying components of engagement change with variation in the roles. Further, we
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11 did not examine the time spent volunteering (e.g., hours/weeks per year) nor did we seek
12
13 out individuals who may have volunteered but later completely withdrew. We will
14
15 ensure to capture this data in our future work. Finally, when the volunteer role includes
16
17 teaching, we identified that the reciprocal engagement between the student and teacher
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19 adds to the overall engagement of the volunteer. This component was not in our
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21 conceptual framework and could be added in future investigations where the volunteer
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23 role includes teaching.
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32 **Future Research**

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34 The presumption that engagement is malleable is an exciting prospect.^{45,46} A cohesive
35
36 framework is required to facilitate understanding of the complex construct of volunteer
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38 physician engagement and this framework can be utilized in the development of
39
40 multifaceted approaches to enhance volunteer physician engagement. For example, an
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42 intervention may include enhancing reciprocal engagement through collaborative
43
44 meetings and enhancing interpersonal relationships; emotional engagement by connecting
45
46 with individuals on a deeper level with respect to the meaning and potential outcomes of
47
48 their work; cognitive engagement by including intellectually challenging tasks, and
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50 recognition of the volunteers work through faculty appointment, newsletters among their
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52 peers, awards and scholarly acknowledgement. Further research is also required to
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3 determine how we measure engagement. The conceptual framework presented in this
4 paper may aid in the design of measurement tools. The strategies and tools may vary
5 depending on type of volunteer activity and setting. Furthermore, research is required to
6 explore the construct of disengagement, to determine if different professional “identities,”
7 such as nurses, respiratory therapists, administrators, have different facilitators and
8 inhibitors to engagement. Future studies may also explore if volunteer participation
9 impacts an individuals’ clinical practice or career path.
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22 **Conclusion**

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24 Volunteer physicians are essential to the growth and sustainability of the ACES program.
25 This organization has demonstrated great success with engaging highly effective
26 volunteers. Our conceptual framework and qualitative findings provide a preliminary
27 framework as an important initial step in understanding the complex construct of
28 volunteer physician engagement. This study will guide us in our development of a
29 multifaceted intervention, aligned with the conceptual framework, to enhance volunteer
30 physician engagement within the organization. Finally, given the current economic
31 climate, providing compensation may not be financially feasible or sustainable so
32 alternative approaches must be explored to engage volunteer physicians.
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5 **Contributors:** Dr. Sarti and Dr. Sutherland had full access to all the data in the study
6 and take responsibility for the integrity of the data and the accuracy of the data analysis.
7 Study concept and design: Sarti, Sutherland, Landriault, DesRosier, Brien, Cardinal
8 Acquisition of data: Sarti, Sutherland, Landriault, DesRosier
9 Analysis and interpretation of data: Sarti, Sutherland, Landriault, Cardinal
10 Drafting of the manuscript: Sarti and Sutherland
11 Critical revision of the manuscript for important intellectual content: Sarti, Sutherland,
12 Landriault, DesRosier, Brien, Cardinal
13 Obtained funding: Landriault, Brien, Cardinal
14 Administrative, technical, or material support: Landriault, DesRosier
15 Study supervision: Sarti, Sutherland, Cardinal
16 All authors have approved the final version of this manuscript.
17
18

19
20 **Acknowledgements:** We would like to thank the healthcare professionals who
21 participated in this study and shared their experiences and opinions with the research
22 team.
23

24 **Funding/Support:** Resources and secretariat support for this project were provided by
25 the Royal College
26

27
28 **Competing interest:** None.
29

30 **Ethics approval:** This study was granted an official exemption by the Chair of The
31 Ottawa Hospital Research Ethics Board
32

33
34 **Disclaimer:** None
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36 **Previous Presentations:** None
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5 **List of Figures:**
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7 Figure 1. Conceptual Framework
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List of Tables:

Table 1. Characteristics of interview participants.

Table 2. Summary of the qualitative findings.

For peer review only

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4 **List of Supplemental Online Content**
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7 Appendix S1. Interview Guides.
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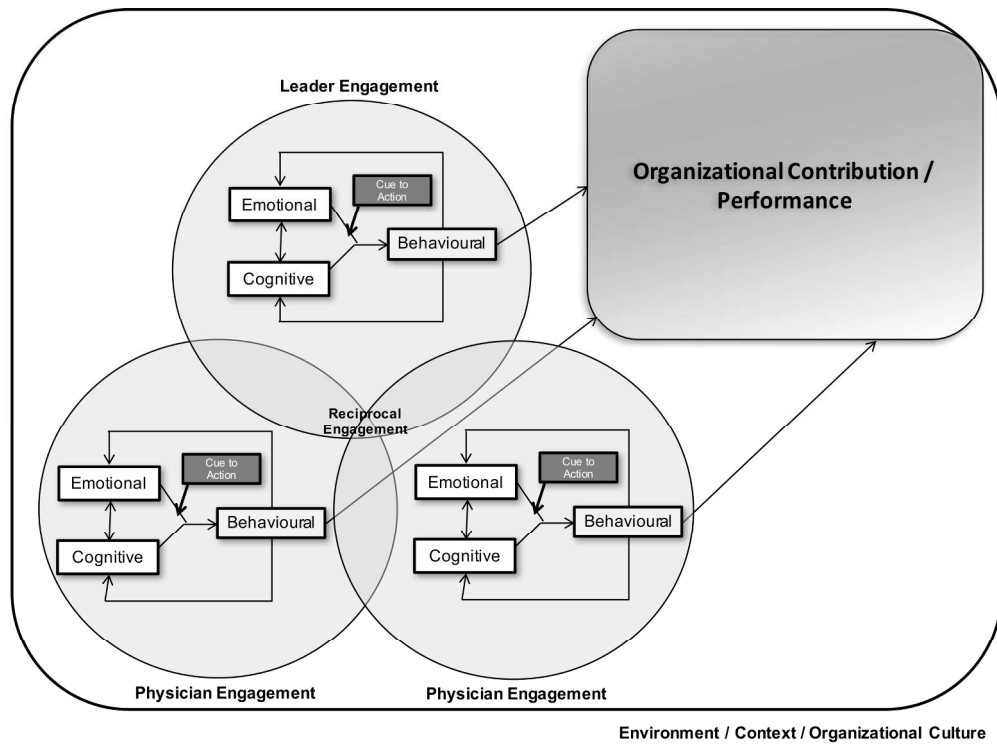


Figure 1. Conceptual Framework

215x161mm (300 x 300 DPI)

ew only

Table 1. Characteristics of interview participants.

Characteristic	n	%
Number	30	
Region *		
Mountain	7	23
Prairies	3	10
Ontario	14	47
Quebec	2	7
Atlantic	4	13
Specialty/Discipline **		
Critical Care	23	77
Anesthesia	7	23
Internal Medicine	5	17
Surgery	3	10
Family Medicine	3	10
Nurses	2	7
Respiratory Therapists	2	7
Pediatric Critical Care	1	3

* The regions of Canada have been divided in the following way: Mountain includes British Columbia and Alberta; Prairies include Saskatchewan and Manitoba; Atlantic includes all Atlantic Provinces.

** Individuals were classified under their current practice specialties. Note that an individual may be practicing in more than one specialty.

Table 2: Summary of the qualitative findings.

1. Volunteer Recruitment
a. Word of mouth
b. Snowball approach
c. Career stage
2. Volunteer Retention
a. Distributed leadership and career paths
b. Program change and evolution/innovation
c. Comfort zone
d. Reciprocal engagement
e. Intrinsic motivation
f. Learners
g. Barriers
3. Volunteer Exchange
a. Career opportunities
b. Keep current
c. Academic currency
4. Volunteer Recognition
a. Personal recognition
b. Scholarly/academic work
5. Educator Network
a. Common vision
b. Duration or participation/loyalty
c. Affect
6. Quasi Volunteerism
a. Academic pressure
b. Curriculum vitae

Interview Guide 1

Introduction

1. Introduction

Thanks for agreeing to participate ... We are conducting a needs assessment for the ACES course (introduce the project). Consent.

2. Background

- a. Goal of the ACES course - provide the learner with the necessary knowledge, skills and attitude to recognize and manage a patient who is acutely and critically ill in the first hour of presentation
- b. Modality of the ACES course - multimodal: e-learning, book, case seminars, technical skill workshop, simulation, and bedside tools

3. Purpose of the needs assessment

- a. Interest expressed by various groups to customize the ACES course to a specific population
- b. Facilitate the dissemination of the course across Canada
- c. Exploring interest in an interprofessional course
- d. Explore business models that would facilitate dissemination
- e. Explore peer-review process and means of promoting academic contributions of faculty

4. Please let us know if you are NOT in a position to answer some of the questions (e.g. vice-dean discussing weaknesses of residents during resuscitation)

5. Interview will be recorded; all information will be kept confidential

Demographics

1. What is your professional designation?
2. What are your current roles?
3. Can you let me know what type of institution you work in (Community Hospital, Secondary, Tertiary, and Quaternary)?
4. When it comes to responding to a crisis, what is the usual makeup of the team in your institution?
5. Are you familiar with the ACES course? Have you participated or taught an ACES course?

Content

1. When it comes to responding to a crisis, what are the team's strengths?
2. When it comes to responding to a crisis, what are team's weaknesses?
3. Probes
 - a. What about (mention any members of the team that have not been addressed)

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4. At the end of the course, the learner should be able to..... (Please list the 5 most important performance objectives)
 5. Is there anything else that you can think of that we have not discussed?

Course format

1. Do you think that pre-course on-line content would be useful?
 - a. Do you anticipate that you or your learners may have any problems accessing online material?
 - b. What is the purpose of having pre-course on-line content?
 - i. Teaching knowledge, decision-making, other?
 - ii. Preparation for the face-to-face course
 - iii. Assessment of learners?
 - iv. Others
 - c. What should be the duration of a pre-course on-line session?
 - d. Should the pre-course on-line content be mandatory?
 - i. If so, can you think of ways to ensure your or your learners compliance with mandatory online content?
2. Do you think that post-course on-line content would be useful?
 - a. Would it be useful for you to have access to the pre-course on-line content after the course for further revision? How long?
 - b. What is the purpose of having post-course on-line content?
 - i. Teaching knowledge, decision-making, other?
 - ii. Preparation for the face-to-face course
 - iii. Assessment of learners?
 - iv. Post-course assessment of knowledge retention
 - v. Others
 - c. What should be the duration of an on-line session?
 - i. Post face-to-face course
 - d. Should post-course on-line content be mandatory?
 - i. If so, can you think of ways to ensure your or your learners compliance with mandatory online content?
3. Do you think that the program should have a face-to-face course?
 - a. How long should the course be?
 - b. What should be the preferred modalities?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?

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- e. Other?
 - c. What should be the relative proportion of time spent for each modality?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?
 - e. Other?
 - d. Should the pre-course material be reviewed during the face-to-face course?
 - e. What should determine the instructor to participant ratio?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?
 - e. Other?
 - f. Tell me what you think about making this course interprofessional...
 - a. What would be the advantages?
 - b. What would be the challenges?
4. How complicated is it for your institution/organization to organize a course that contains a large components of simulation training?
- a. Do you have access to simulation laboratory with the required equipment?
 - b. Do you have access to simulation engineer
 - c. Do you have trained instructors
 - d. Do you have course co-coordinators with experience delivering such courses

Market analysis

1. What do you like most about the ACES course?
2. What changes would most improve the ACES course?
3. Do you know of competing courses currently available?
4. What do you like the most about these other courses?
5. What changes would most improve these other courses?
6. If you are not likely to deliver the ACES course, why not?
7. What would make you more likely to deliver the ACES course?
 - a. Is costing an issue?
 - b. Are difficulties delivering the ACES course an issue?
 - i. Low participants to instructor ratio
 - ii. Space
 - iii. Equipment

- 1
2
3 iv. Personnel (simulation engineer, trained actors, course coordinator)
4
5 8. Imagine that you are tasked to widely disseminate this course in order to improve
6 patient care. Can you think of a business model that would favor wide
7 dissemination?
8
9 a. Keeping in mind that there is a cost related to the development and
10 dissemination of the material.
11

12 Peer review process

- 13
14 1. Do you have any suggestions on how to best organize and facilitate the peer-
15 review process?
16 a. Initially
17 b. On an ongoing process
18
19

20 Recognition

- 21 1. How could the Royal College best recognize your or your institution's
22 contributions in the creation and delivery of the ACES course?
23 a. Would it help if creators were informed of their material evaluations and
24 extent of dissemination? How often?
25 b. Would including the sums invested in the completion of the project be
26 useful as a means of recognition?
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Interview Guide 2

Volunteer Engagement in the ACES program

- Target – Leadership within the organization and some Volunteer Physicians
- Introduction, Confidentiality, Consent

Leadership Questions:

1. What is your role in the ACES program?
2. How do volunteers impact the program? Has this changed over the years / history of the program?
3. Who are the volunteers?
4. Where are they located?
5. What roles do volunteers perform?
 - a. *Probe – development, delivery, administration, promotion of the program, etc. Specifically link to the conceptual framework*
6. Are there more ways that you envision them being involved?
7. Why do you think physicians volunteer their time with the ACES program?
 - a. *Probes: To be completed -*
 - i. *Behavioural*
 - ii. *Emotional*
 - iii. *Cognitive*
 1. *The challenge of the activity? Or mastering challenging / difficult ideas/skills/tasks?*
8. How are they currently recruited?
9. What are the barriers to recruitment and retention of volunteers?
10. What are the facilitators to recruitment and retention of volunteers?
11. How are they rewarded/appreciated for their contribution?
12. How do you see the ACES program evolving and how will this impact the volunteers? Impact the need for volunteers?
13. If a need for more volunteers is identified - Any solutions to increasing capacity and retention?

Questions regarding your volunteer involvement

14. Do you volunteer time with the ACES program?
15. What activities / role do you perform as a volunteer?
16. Why do you volunteer?
17. How is your contribution acknowledged?

Volunteer Questions:

1. What is your role in the ACES program?
2. How long have you been a volunteer with ACES?
3. How did you become involved with ACES?
4. Why do you volunteer?
 - a. *Probes:*
 - i. *Behavioural*
 - ii. *Emotional*
 - iii. *Cognitive*
 1. *Do find this work challenging? by the activity and or your involvement? Or mastering challenging / difficult ideas/skills/tasks?*
 - b. What specifically – ie, what part is challenging? What part do you ‘love’? what part are you most ‘interested’ in?
5. Have you ever considered increasing your involvement with ACES?
6. Have you ever considered decreasing or discontinuing your involvement with ACES?
7. Are there factors that maintain your involvement with ACES?
8. What improvements could be made to better meet your needs as a volunteer with the organization?

COREQ Checklist for Qualitative Study.

Domain 1: Research team and reflexivity

Personal Characteristics

1. Interviewer/facilitator - Which author/s conducted the interview or focus group?

- A.S., S.S., A.L.

2. Credentials - What were the researcher's credentials?

- A.S.: MD, MEd
- S.S.: PhD
- A.L.: RN, BScN.

3. Occupation - What was their occupation at the time of the study?

- A.S. – Intensivist / Clinical Scholar, The Ottawa Hospital; Clinician Investigator in the Clinical Epidemiology Program (CEP) at the Ottawa Hospital Research Institute (OHRI)
- S.S. Research consultant for The Department of Critical Care, The Ottawa Hospital
- A.L. – Instructional/Curriculum Designer at the Royal College of Physicians and Surgeons of Canada; practicing Critical Care nurse in a tertiary Intensive Care Unit

4. Gender - Was the researcher male or female?

- All interviewers were female

5. Experience and training - What experience or training did the researcher have?

- A.S. was in her second year of a clinical scholars program. She completed a fellowship with the Academy for Innovation in Medical Education at the University of Ottawa, and was a Masters of Health Professionals Education Candidate, University of Dundee, Scotland. She had performed numerous qualitative and mixed method investigations.
- S.S. has expertise in mixed methods research with an MA (Hons.) in measurement and evaluation, and a PhD in educational research, with 20 years of research and evaluation experience.
- A.L. has gained experience in conducting needs assessment (using interviews, focus groups and walkthrough) for the development of educational material as part of her occupation and was in the process of completing her Masters of Education (MA Ed) which included graduate level courses in qualitative methods. She had also received training in interviewing skills.
- Co-authors experienced in both quantitative and qualitative research, medical education, palliative and critical care.

Relationship with participants

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3 6. Relationship established - Was a relationship established prior to study commencement?
4

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- No.

7
8 7. Participant knowledge of the interviewer - What did the participants know about the researcher?
9

- 10
- Participants were aware of the rationale for the study and the researcher's level of training.

11
12 8. Interviewer characteristics - What characteristics were reported about the interviewer/facilitator?
13

- 14
- The interviewer's level of training and occupation were reported.

15
16
17 Domain 2: Study design

18
19 Theoretical framework

20
21 9. Methodological orientation and Theory - What methodological orientation was stated to underpin the
22 study?
23

- 24
- Qualitative investigation with constructivism as guiding theoretical framework.

25
26
27 Participant selection

28
29 10. Sampling - How were participants selected?
30

- 31
- Purposive, snowball sampling.

32
33 11. Method of approach - How were participants approached?
34

- 35
- Email and telephone.

36
37 12. Sample size - How many participants were in the study?
38

- 39
- 30 interviews

40
41 13. Non-participation- How many people refused to participate or dropped out? Reasons?
42

- 43
- 0

44
45
46 Setting

47
48 14. Setting of data collection - Where was the data collected?
49

- 50
- Telephone interviews

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52 15. Presence of non-participants Was anyone else present besides the participants and researchers?
53

- 54
- No

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56
57 16. Description of sample - What are the important characteristics of the sample?
58
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- Secondary qualitative analysis was undertaken on fifteen semi-structured interviews with participants, including program directors and health care professionals across Canada. An additional fifteen interviews with physician volunteers were conducted to achieve thematic saturation.

Data collection

17. Interview guide - Were questions, prompts, guides provided by the authors? Was it pilot tested?

- Semi structured guides were developed for the focus groups, interviews, and walkthroughs, with probes to guide as necessary. All tools were pilot tested prior to use in this study.

18. Repeat interviews - Were repeat interviews carried out?

- No.

19. Audio/visual recording - Did the research use audio or visual recording to collect the data?

- Interviews were audio recorded and transcribed.

20. Field notes - Were field notes made during and/or after the interview or focus group?

- Yes, both during and after.

21. Duration - What was the duration of the interviews or focus group?

- Interviews were approximately 1 hour.

22. Data saturation - Was data saturation discussed?

- Yes

23. Transcripts returned - Were transcripts returned to participants for comment and/or correction?

- No, the transcripts were not returned to the participants. To ensure accuracy of transcriptions, each transcript was verified with the audio recordings prior to data analysis.

Domain 3: Analysis and findings

Data analysis

24. Number of data coders - How many data coders coded the data?

- Three researchers coded the data

25. Description of the coding tree - Did authors provide a description of the coding tree?

- No. Available upon request.

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3 26. Derivation of themes - Were themes identified in advance or derived from the data?
4

- 5 • Inductive – Themes were derived from the data
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8 27. Software - What software, if applicable, was used to manage the data?
9

- 10 • Yes, NVIVO
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12 28. Participant checking - Did participants provide feedback on the findings?
13

- 14 • No
15
16

17 Reporting

18 29. Quotations presented - Were participant quotations presented to illustrate the themes / findings?
19 Was each quotation identified?
20

- 21 • Yes
22
23

24 30. Data and findings consistent - Was there consistency between the data presented and the findings?
25

- 26 • Yes
27
28

29 31. Clarity of major themes - Were major themes clearly presented in the findings?
30

- 31 • Yes
32

33 32. Clarity of minor themes - Is there a description of diverse cases or discussion of minor themes?
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BMJ Open

Exploring the components of physician volunteer engagement: a qualitative investigation of a national Canadian simulation based training program

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2016-014303.R2
Article Type:	Research
Date Submitted by the Author:	19-Apr-2017
Complete List of Authors:	Sarti, Aimee J.; Ottawa Hosp, Critical Care Sutherland, Stephanie; Ottawa Hosp, Critical Care Landriault, Angele; Royal College of Physicians and Surgeons of Canada (RCPSC), Practice, Performance and Innovation (PPI) unit DesRosier, Kirk; Royal College of Physicians and Surgeons of Canada (RCPSC), Practice, Performance and Innovation (PPI) unit Brien, Susan; Royal College of Physicians and Surgeons of Canada Cardinal, Pierre; Ottawa Hosp, Critical Care
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Intensive care, Qualitative research
Keywords:	Physicians, Volunteers, QUALITATIVE RESEARCH, MEDICAL EDUCATION & TRAINING

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Exploring the components of physician volunteer engagement: a qualitative investigation of a national Canadian simulation based training program

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Key Words: volunteer, engagement, qualitative research, medical education, critical care

Abstract

Objectives: Conceptual clarity on physician volunteer engagement is lacking in the medical literature. The aim of this study was to present a conceptual framework to describe the elements which influence physician volunteer engagement and to explore volunteer engagement within a national educational program.

Setting: The context for this study was the Acute Critical Events Simulation (ACES) program in Canada, which has successfully evolved into a national educational program, driven by physician volunteers. From 2010 to 2014 the program recruited 73 volunteer health care professionals who contributed to the creation of educational materials and/or served as instructors.

Method: A conceptual framework was constructed based on an extensive literature review and expert consultation. Secondary qualitative analysis was undertaken on fifteen semi-structured interviews conducted from 2012 to 2013 with program directors and health care professionals across Canada. An additional fifteen interviews were conducted in 2015 with physician volunteers to achieve thematic saturation. Data was analyzed iteratively and inductive coding techniques applied.

Results: From the physician volunteer data, eleven themes emerged. The most prominent themes included volunteer recruitment, retention, exchange, recognition, educator network, and quasi volunteerism. Captured within these interrelated themes were the framework elements, including the synergistic effects of emotional, cognitive and reciprocal engagement. Behavioural engagement was driven by these factors along with a cue to action, which led to contributions to the ACES program.

Conclusion: This investigation provides a preliminary framework and supportive evidence towards understanding the complex construct of physician volunteer engagement. The need for this research is particularly important in present day, where growing fiscal constraints create challenges for medical education to do more with less.

Article Summary

Strengths and limitations of this study

- First study to synthesize key elements of physician volunteer engagement into a conceptual framework.
- Covers an under-investigated issue and draws upon a wider theoretical background.
- Qualitative data obtained provides new insights into physician volunteer engagement, which may offer practical ideas to improve volunteer engagement strategies.
- Our findings were obtained in one country, within one national program.
- Explored volunteer engagement in a highly engaged group of physicians, study was not able to explore disengagement.

Introduction

Physician volunteers are essential to health care delivery and medical education.¹

Despite the growing need to optimize volunteer physician engagement, there is a paucity of data on how to improve and maintain engagement. Volunteerism can be defined as any altruistic act, which is undertaken without financial gain while engagement has been defined as being “actively committed” or “to involve oneself or become occupied; to participate.”^{2,3}

Physicians appear to highly value their role as volunteers. In a US study by Gruen et al., 95 % of physicians surveyed rated community participation as important”.⁴ Yet, in a national survey of 319 physicians, only 39% participated in volunteer activities.⁵

Therefore, there appears to be a wide gap between the perceived importance of volunteering and its translation into action or engagement. Such studies illustrate the need to better understand the determinants of physician volunteer engagement and the ways in which it can be optimized.

Most of the medical literature on engagement is centered on the patient and behaviors that promote health. A few isolated studies focusing on physician engagement were identified but there is currently no accepted model describing the multifaceted dimensions of physician volunteer engagement.⁶⁻¹⁰ We can draw from the social science literature in order to define and examine the various components of engagement.

1
2
3 The concept of engagement, specifically, school engagement has been synthesized in a
4 review by Fredricks et al.¹¹ They present engagement as a multifaceted construct
5 including three dynamically interrelated components: behavioural, emotional and
6 cognitive engagement. Behavioural engagement is related specifically to the on task
7 behavior. Emotional engagement is related to the value of the tasks as determined by the
8 individual. Value is further divided into 4 components: “interest (enjoyment of the task),
9 attainment value (importance of doing well on the task for confirming aspects of one’s
10 self-schema), utility value (importance of the task for future goals), and cost (negative
11 aspects of engaging in the task).”¹¹ Cognitive engagement refers to an individual’s
12 motivational goals and self-regulated learning. This concept can be further described as a
13 psychological investment in learning, understanding, and mastering knowledge or skills
14 with a “desire to go beyond the requirements, and a preference for challenge.”¹¹
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34 In this study, we sought to develop a conceptual framework to describe and explore the
35 components and theoretical underpinnings of physician volunteer engagement. We
36 began our investigation with a secondary analysis of a comprehensive needs assessment
37 in a quality improvement initiative aimed at the overall enhancement of the Acute
38 Critical Events Simulation (ACES) program. Later, we extended this initial work by
39 obtaining additional data to provide evidence towards understanding the complex
40 construct of physician volunteer engagement.
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53 **Context**

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3 The ACES Program is a national educational program aimed at improving the proficiency
4 of individuals and teams involved in the early management of critically ill patients.
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8 Nurses, respiratory therapists, and physicians who are the first to respond to a patient in
9 crisis come from various disciplines and practice in diverse milieus. Their experience
10 managing acutely ill patients is often very limited given the low incidence of critical
11 illness. Yet, clinical studies indicate that early recognition and management are most
12 effective in lowering both morbidity and mortality. Randomized controlled trials and
13 guidelines emphasize the importance of the 'golden-hour' in patients with conditions such
14 as myocardial infarction, stroke, and sepsis.¹²⁻¹⁷ The ACES program includes various
15 simulation modalities delivered online or face-to-face as well as books and didactic
16 material. It also includes instructor certification courses. Most of the educational
17 materials have been customized to meet the needs of different groups of learners.
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34 This program was initially developed from the vision and efforts of a small collective of
35 Canadian critical care physicians who volunteered their time and expertise. It has
36 successfully evolved into a national educational program, has been acquired by the Royal
37 College of Physicians and Surgeons of Canada (RCPSC), and continues to advance and
38 grow. Volunteers remain fundamental to the ACES program. They create materials,
39 organize courses, teach, and conduct research. From 2010 to 2014 the program recruited
40 a total of 73 volunteers, 69 of whom were physicians. The need for volunteers is
41 increasing due to greater demand, addition of new forms of simulation, growth of online
42 curricula and anticipated movement to a competency-based program.
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Method

A conceptual framework was constructed; secondary analysis of the ACES quality improvement initiative data was performed; additional interviews were conducted; qualitative data collection was performed and analyzed iteratively.

Conceptual Framework

A conceptual framework is meant to explain the key factors, constructs, or variables, and their presumed relationships to be studied.^{18,19} An extensive literature review along with expert consultation informed the development of the framework. We opted for a more pre-structured qualitative research design as we wanted to bound the study within a set of engagement variables, yet at the same time we needed to maintain enough flexibility to allow for emergent findings so as to better understand the construct of physician engagement. We adapted a student engagement conceptual framework.¹¹ We found Fredericks et al.'s theory of engagement to be useful in our medical context. In further modifying the conceptual framework we used the 'bins approach,' whereby the framework is mostly a visual catalogue of roles to be studied (e.g., physician leaders and physicians), and within each role, how the variables of engagement influence their actions.¹⁹ A multidisciplinary panel of experts iteratively collaborated on the modifications to the conceptual framework included critical care physicians and leaders, administrators, system-level policymakers and a sociologist.

We developed the model depicted in Figure 1, to explore volunteer physician engagement in a comprehensive manner. For our study, the physician behavior of participation as a

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3 volunteer is the desired outcome. All other elements, which contribute and lead to this
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5 behavior are under investigation. In this figure, we have depicted two physicians and one
6
7 leader for simplicity. In reality there may be many leaders and physicians. We define a
8
9 leader as an individual within the group who influences others towards a mutual purpose
10
11 or common goal.²⁰ We define an individual's engagement as a multidimensional
12
13 construct including emotional and cognitive engagement which ultimately can lead to
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15 behavioral engagement, with tasks directed toward contributing to organizational
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17 development and/or a specific domain, such as education, quality and safety, etc.¹¹
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<insert Figure 1 about here>

29
30 An individual's overall engagement is impacted by their demographic and psychosocial
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32 characteristics. The emotional and cognitive components drive behavior. The
33
34 bidirectional arrows between these components indicates that the presence and/or
35
36 development of one component may impact the other. The behavior itself may further
37
38 promote the emotional and cognitive components and enhance volunteer behaviors
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40 (indicated by the arrow back to the emotional and cognitive components). In addition,
41
42 the behavior requires a "cue to action" or trigger (which can be either intrinsic or
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44 extrinsic to the individual). A simplistic example of an extrinsic "cue to action" may
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46 involve the director of the program contacting a volunteer to participate.
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53 Individual volunteers have the potential to impact each other and synergistically enhance
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55 one another's engagement.' We have termed this variable "reciprocal engagement." This
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3 is akin to mutual engagement involving not only individual actions/attributes but also the
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5 actions/attributes of others.²¹ This relationship and enhanced engagement potential is
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7 likely secondary to the impact on the individuals' emotional, cognitive and behavioral
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9 components and/or may provide a trigger leading to the behavior.
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15 Leaders have their own intrinsic characteristics, emotional and cognitive components
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17 which drive the behavior. Reciprocal engagement may also synergistically increase the
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19 engagement of both the leader and individuals.
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24 Ultimately, the behavioral engagement of the individual volunteers can lead to increased
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26 organizational performance.²² Sustainability of the volunteers likely depends on these
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28 factors being maintained and may fluctuate for an individual over time with periods of
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30 greater and lesser engagement, for example based on the presence or absence of a “cue to
31
32 action” and also based on changes in organizational culture, leadership and other
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34 individuals.
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41 **Data Collection and Analysis**

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43 As part of a quality improvement initiative of the ACES program, interviews were
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45 conducted by AL between 2012 to 2013. Participant selection was carried out using
46
47 maximum variation purposive sampling to identify individuals that would provide a
48
49 balanced representation.²³⁻²⁵ All participants were initially contacted by email or
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51 telephone. Participants included program directors from different specialties and health
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53 care professionals from different backgrounds. Upon analysis of this interview data the
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3 'physician as volunteer' theme was identified. To further explore this finding, and
4
5 achieve thematic saturation AS and SS performed additional telephone interviews with
6
7 physician volunteers in 2015.
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12 Semi-structured interview guides were designed to follow a broad, pre-determined line of
13
14 inquiry that was flexible and that could evolve as data collection unfolded, permitting
15
16 exploration of emerging themes. Interview guides were created by an interdisciplinary
17
18 team of investigators with expertise in medical education, simulation, sociological and
19
20 qualitative research methods. Interview guides were piloted with a sub group of ACES
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22 instructors who were not involved in the research study. None of the interviewers had a
23
24 relationship with any of the study participants prior to study commencement. Study
25
26 participants were made aware of the interviewers' level of training and organizational
27
28 affiliation(s). Interviews lasted from forty-five to sixty minutes, were audio-recorded, and
29
30 transcribed verbatim. (See Appendix S1, online for interview guides). The interviewers
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32 (AS and SS) took ongoing field notes during the data collection process to aid in the
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34 analysis phase.
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44 Qualitative data analysis of the comprehensive data set included the application of
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46 inductive coding techniques, utilizing thematic content analysis, and NVIVO software for
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48 data management.^{19,23} The research team followed Creswell's coding process where data
49
50 is first explored to gain a general sense of the data and then coded. These codes were
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52 described and collapsed into themes.²³ The analysis team consisted of 3 researchers (AS,
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54 SS and AL) who participated in coding training and meetings to develop the coding tree
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3 and codebook. The three researchers (AS, SS and AL) generated codes (from the same
4
5 interview transcripts) independently. Then, they engaged in consensus discussions.
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7 Inter-rater reliability, assessed prior to independent coding, demonstrated a 95.73%
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9 agreement and a 0.75 Kappa score which is considered to be substantial agreement.²⁶
10
11 The volunteer construct was further explored and coded, through a more focused analytic
12
13 approach in order to gain an in-depth understanding of volunteer engagement.²⁷ In an
14
15 iterative process, additional interviews were performed to reach saturation of the
16
17 subthemes specific to volunteer engagement. To ensure the analysis process, and
18
19 subsequent themes were appropriate and reflected ACES facilitators/leaders views,
20
21 members of our research team who worked with the ACES program (PC and AL)
22
23 engaged in informal discussions with ACES members so as to vet the findings. This
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25 study was granted an official exemption by The Ottawa Hospital Research Ethics Board.
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34 **Results**

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37 For the larger study (quality improvement initiative of the ACES program) 15 interviews
38
39 were performed to gain a broad and comprehensive understanding of the ACES program,
40
41 which included program directors and health care professionals across Canada;
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43 physicians (n=11), nurses (n=2) and RTs (n=2) (interview guide 1). An additional 15
44
45 interviews of physician volunteers were performed (interview guide 2). Overall, thirty
46
47 of thirty-three invited individuals agreed to participate in the semi-structured interviews
48
49 for a response rate of 91%. All physician volunteers that were interviewed were full
50
51 time clinicians and members of the ACES faculty, who are called to participate as
52
53 needed. Participants are displayed in Table 1.
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Table 1. Characteristics of interview participants.

Characteristic	n	%
Number	30	
Region *		
Mountain	7	23
Prairies	3	10
Ontario	14	47
Quebec	2	7
Atlantic	4	13
Specialty/Discipline **		
Critical Care	23	77
Anesthesia	7	23
Internal Medicine	5	17
Surgery	3	10
Family Medicine	3	10
Nurses	2	7
Respiratory Therapists	2	7
Pediatric Critical Care	1	3

* The regions of Canada have been divided in the following way: Mountain includes British Columbia and Alberta; Prairies include Saskatchewan and Manitoba; Atlantic includes all Atlantic Provinces.

** Individuals were classified under their current practice specialties. Note that an individual may be practicing in more than one specialty.

To gain an in-depth understanding of the phenomenon of volunteer engagement, the data set was coded and 11 themes were identified and sub-coded. Of these themes, six interrelated themes – volunteer recruitment, volunteer retention, volunteer exchange, volunteer recognition, educator network, and quasi-volunteerism were most prominent in our data. A summary of the qualitative findings is presented in Table 2. Representative quotes are provided to illustrate each theme.

Table 2: Summary of the qualitative findings.

1. Volunteer Recruitment
a. Word of mouth
b. Snowball approach

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3	
4	c. Career stage
5	2. Volunteer Retention
6	a. Distributed leadership and career
7	paths
8	b. Program change and
9	evolution/innovation
10	c. Comfort zone
11	d. Reciprocal engagement
12	e. Intrinsic motivation
13	f. Learners
14	g. Barriers
15	
16	3. Volunteer Exchange
17	a. Career opportunities
18	b. Keep current
19	
20	c. Academic currency
21	
22	4. Volunteer Recognition
23	a. Personal recognition
24	b. Scholarly/academic work
25	
26	5. Educator Network
27	a. Common vision
28	b. Duration or participation/loyalty
29	c. Affect
30	
31	6. Quasi Volunteerism
32	a. Academic pressure
33	b. Curriculum vitae

Volunteer Recruitment

Word of Mouth. All recruitment was accomplished through word of mouth. That is, the cue to action was uniformly described by volunteers as an informal interaction with another volunteer, usually a leader who would call the volunteers to request their involvement.

I just got a call from him [ACES Director] one day, he introduced himself and talked about this program where a few guys were getting together and trying to do this thing and at that time there were, I don't know, about 6 or 7 guys and he asked if I wanted to be part of it.

Snowball Approach. A snowball approach was described by participants as a means of identifying and recruiting high quality volunteers. With this approach, leaders would

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3 contact volunteers within the group, who in turn would reach out to contacts in their
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5 social networks to identify potential new recruits who have the qualities required to
6
7 contribute to the group.
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11 What I would do is have more than one person get in touch with the person they
12 are trying to recruit. First of all you want to cherry pick the people you want to
13 recruit. It's just like a draft in sports or something. You want to cherry pick the
14 people you want on your team and once you've earmarked certain people and say,
15 "this person is not just strong clinically but also has great personal skills, is
16 humble enough to listen to feedback, and to not get offended by it but to work
17 with it."
18

19
20 **Career Stage.** Participants explored the different career stages of physicians who are
21 recruited to volunteer with the program and felt that younger physicians are generally
22 easier to recruit.
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27 If it was in the middle part of their [physician] career, they may be on a certain
28 track and it's difficult to engage them. I think it would be great if we could
29 recruit people at mid-career because they have a bit more experience, a bit more
30 knowledge about how things should work or how things should flow. On the
31 other hand, if you recruit younger people, I think they are more enthusiastic and
32 have completely new ideas and that's not a bad thing either right? For me, it was
33 great to be involved early on but I was definitely a little shy to come forward with
34 suggestions initially because, yeah, it's just a very established crowd.
35
36

37 38 **Volunteer Retention**

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40 **Distributed Leadership and Career Paths.** The organization embraces an open culture
41 creating a collaborative environment, which allows for new leaders to be brought in and
42 mentored by long standing leaders. This relationship enables long-standing leaders to
43 remain involved with the program while balancing other career demands. In this way,
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51 ACES is able to deepen its leadership base by distributing responsibilities to others.
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54 I have decreased in participation, though I still remain section chair, well it is
55 more of a co-chair position because I have a capable colleague who has taken
56 over some of the curriculum development...I don't see myself in this role for
57 perpetuity and so it's a good opportunity for people to transition and I think it's
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3 part of the natural transition process. I still remain involved and committed to
4 being part of the National ACES Program and I still assist locally but I have
5 decreased my involvement. It is more of a career choice and balancing the
6 different aspects of my career that I've taken on as well.
7
8

9 **Program Change and Evolution.** The program's continual growth, ongoing
10 modifications and innovative nature were described by volunteers as being very
11 intellectually stimulating. This cognitive component was described by many participants
12 as a major contributor to their initial and ongoing commitment and involvement with the
13 program.
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21 I think the fact that we change and we grow is very important. If it was just the
22 same program every year it will eventually become stagnant and people will lose
23 interest.
24

25
26 **Comfort Zone.** Comfort zone is indicative of a behavioral state within which a person
27 operates in an 'anxiety neutral' condition. The objective is to push or lead individuals
28 beyond their comfort zone until comfort is achieved, which enables a consistent high-
29 level performance. During their interviews volunteers were asked if they felt they were
30 drawn to more challenging tasks. One physician put it like this,
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37 So, why is it that you have to get out of your comfort zone? Why do you have to
38 embark on a new mission or path that is quite challenging, one that there is no
39 guarantee that it is going to work? I actually enjoy the process. I love working
40 with others, I love creating things, and I love taking something that's just in the
41 idea stage, and you know transforming it into something that's actually real.
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45 **Reciprocal Engagement.** Participants identified that a volunteer can enhance another
46 volunteer's engagement and this process is cyclical. Participants further identified that
47 interacting and connecting with students further enhanced their overall engagement.
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52 It's amazing to go [to the ACES course] and see all these people giving their time
53 because they love to teach and want people to do better. They are genuinely
54 interested in the well-being of these fellows to be better doctors and it's catching
55 you can't help but get your love of education back.
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3 **Intrinsic Motivation.** We use the psychological lens of motivation to underpin our
4 understanding of intrinsic motivation. There is a fundamental distinction between actions
5 that are self-determined and those that are controlled. The former, which reflects an
6 individual's personal attributes and internal (intrinsic) motivation, was identified as
7 contributing to the volunteers' participation in the program. The answer might be as
8 simple as, 'I was built like that. This is who I am'. In fact, many described a strong
9 internal drive to participate, hoping that they 'would be called' to action more frequently
10 to perform tasks for the organization. Interestingly, participants spoke of a willingness
11 to give more of their time, noting that financial incentives were of low to absent value in
12 their activities with the ACES program. One participant described his experience like
13 sitting on the bench waiting for the coach to call:
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29 I guess one of the biggest things as a volunteer, you're always somebody who is
30 kind of on the bench and the coach may call you into play at any time. And, you
31 kind of wonder if you're gonna get called off the bench to play...I love it and I
32 love being invited back each time.
33
34

35 **Learners.** Fellows, often referred to as high-level learners by the volunteers, served as
36 catalysts for both emotional and cognitive engagement in the ACES program. Some
37 volunteers expressed the gratification they felt in teaching the next generation of
38 intensivists, while others expressed the fulfillment in teaching such advanced learners:
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45 It's gratifying to feel like you are teaching the next generation of docs as they
46 come through and they are high level learners who are about to become
47 intensivists themselves so they are keen to learn.
48

49 **Barriers.** The main barriers to retention included career trajectory (as described above)
50 and individual time constraints, including both personal and professional demands. As
51 volunteer physicians continue along their career they may choose different pursuits (e.g.,
52 research) and then do not have time to remain an ACES volunteer.
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Volunteer Exchange

Career Opportunities. We use volunteer exchange from the theory of social exchange which posits that social behavior is the result of an exchange process.²⁸ Volunteers noted that aside from receiving continuing medical education (CME) credit for their volunteerism, their participation in the ACES course provided additional benefits for their careers:

Being an ACES volunteer means that this is Royal College (RC) accredited and I think that speaks a lot to the quality of the course but also for an academic person who might have additional interests in teaching more RC courses, this work stands out quite a bit.

Keeping Current. Volunteering in the ACES course gave individuals the benefit of staying current at a national level. This knowledge acquisition and networking opportunity both enhanced an individual's practice personally and professionally.

It's a good group of people, so it's always a good time and it's a way to keep your finger on the pulse of how things are going nationally and talk to people about what is going on in other centers.

Academic Currency. The benefit of volunteering in the course was viewed by many individuals in terms of professional value whereby the experience counts towards promotion and tenure at an academic institution.

It's always something you can list in your own CV within our medical practice plan. Teaching at these things counts in terms of academic points, you can put down each year that you taught this and that has academic currency.

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4 Contributing to another's program was further described as a method of building up ones
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8 currency in that there was an expectation that, in turn, volunteer peers would "pay back"
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11 the favor at a later date.

12 13 14 15 **Volunteer Recognition**

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18 **Personal Recognition.** Attainment value, such that involvement of volunteers with the
19
20 program confirmed aspects of one's self "this is who I am," was further described in the
21
22 form of personal recognition of their role as educators, by colleagues at other universities,
23
24 across the country.

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27 **Scholarly/Academic Work.** Volunteers want their work in the ACES program to be
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29 recognized as scholarly contributions. The ACES program leadership sends letters of
30
31 recognition to volunteers' department heads, however, participants described difficulty in
32
33 getting universities to recognize ACES contributions as scholarly.
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36
37 I think ACES does a very good job at recognizing our contributions. They
38 catalogue and document the contributions on an annual basis, they send letters to
39 our Department heads so they recognize us. I think the greater impact is to have
40 an opportunity to enhance this recognition as scholarly work, to meet the criteria
41 for standard publication in a peer review outlet.
42
43

44 45 **Educator Network**

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47 **Common Vision.** Personal perceptions of the importance of the volunteer work coupled
48
49 with a common vision, passion for education and collaborative spirit was described by
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51 participants. At the highest level the penultimate goal of potentially impacting patient
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53 care as an outcome was described by both leaders and volunteers. The potential effect
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55 on patient care (utility value) was further described as being achievable through the
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3 volunteers' abilities and opportunity to help the residents acquire the knowledge and
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6 skills required to excel in the clinical setting.
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8 I think we share a common vision, a common passion. We all believe in
9 education, I think that through collaboration we can do greater things than we
10 could independently. There's a sense of satisfaction of doing it.
11

12 **Duration of Participation/Loyalty.** Participants expressed feelings of loyalty to other
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15 volunteers in the network, especially those who have been involved for a longer duration.
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17 I think there's always going to be some loyalty because you've invested a great
18 period of time. Also, it is one of the few tangible creations that you've helped
19 develop and so you feel part of it.
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21

22 **Affect.** Deep and meaningful emotional components connecting volunteers to the ACES
23
24 program educator network were identified. Being part of a network elicited strong
25
26 positive emotions. The enjoyment experienced by volunteers was strongly linked to
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28 interactions with other like-minded educators. The face-to-face interaction of volunteers
29
30 on an annual basis at varying Canadian locations was described as an essential part of the
31
32 organization.
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37 When we meet it's like a bunch of friends getting together...everybody is full of
38 energy when you arrive...everybody is happy, people are smiling...and you are
39 basically like a big family...It's mostly, I think, emotional at that stage.
40
41

42 **Quasi Volunteerism**

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44 **Academic Pressure.** The terms Quasi volunteer is reflected in both extrinsic and
45
46 intrinsic motivations to extend effort into a relationship and/or activity. That is,
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48 volunteers in academic teaching hospitals described 'academic pressures', especially for
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50 younger doctors, where they felt they were required to meet specific academic
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52 expectations:
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56 The premise that its volunteerism is somewhat true. Nobody has a gun to my
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3 head saying I have to do it but we all have to do something, academically. So, I
4 guess it's quasi-volunteerism. Like if I wasn't doing this I would have to,
5 especially us younger docs, like we are all on some degree of academic pressure
6 to keep the university happy. So, if I were not doing this teaching, I'd be doing
7 something else, you know?
8
9

10 **Curriculum Vitae.** Intrinsically, participant volunteers used the teaching exposure at the
11 national ACES course to grow their own CVs. As such, for some, the volunteer
12 activities were not performed for purely altruistic reasons, but also for professional gain:
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17 It's good to have in your career, you have to have exposure to teaching outside of
18 your center so this gives me the opportunity to fulfill that, so it's not all altruistic.
19 it's something that I do need to do for my curriculum vitae.
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25 **Discussion**

26
27 The productivity, success, and sustainability of the ACES organization depends on the
28 recruitment, retention and recognition of volunteers in a collaborative network. As
29 depicted in our conceptual framework, the synergistic effects of the individual's
30 emotional and cognitive engagement along with reciprocal engagement within the
31 environmental context and culture of the organization, followed by a cue to action, leads
32 to behavioural engagement in volunteer activities and contributions to the ACES
33 program. Wherein the conceptual framework has underpinned and bounded the study, as
34 described by Fredricks et al. (2004), we have also found that it is difficult to specifically
35 separate out the behavioural, emotional and cognitive elements of engagement. We feel
36 that our findings call for richer characterizations of how physicians behave, feel, and
37 think.
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3 Overall, our study yields several key findings that contribute to our understanding of
4 what motivates physicians to volunteer, and perhaps more importantly what sustains their
5 volunteerism. With respect to recruitment, we found that word-of-mouth recruitment was
6 the primary behavioural vehicle to engage new members. In the marketing literature,
7 word-of-mouth is defined as an interpersonal communication, independent of the
8 organization's marketing activities, about an organization or its products.²⁹ Our findings
9 support this literature in that word-of-mouth is a dyadic communication between a source
10 and a recipient.³⁰ This implies that the occurrence of word-of-mouth is determined by
11 characteristics of the recipient, the characteristics of the source, and their mutual
12 relationship.^{31,32}

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29 Word-of-mouth communication was found to be particularly effective behavioral
30 component in securing buy-in from new members when done early in the recruitment
31 phase. That is, a phone call from one of the long-standing members of ACES early in the
32 selection phase was conducted so as to gain an initial impression of potential new
33 members. This also tended to have the effect in attracting the potential recruit. This
34 supports earlier research that demonstrated receiving positive information through word-
35 of-mouth early in the recruitment process is positively related to perceived organizational
36 attractiveness and actual recruitment.³³ Within the business literature, this phenomenon
37 is called the accessibility-diagnostics model. The model suggests that information
38 provided through word-of-mouth affects potential recruits' early evaluations of the
39 organization because of its accessibility in memory and its feedback potential.^{34,35} That
40 is, if a physician receives positive word-of-mouth information on a given program or
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3 organization they are more likely to think favourably when asked at a later date to
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5 perform a volunteer activity. This finding has clear practical implications for practice in
6
7 that organizations should try to stimulate positive word-of-mouth early in the recruitment
8
9 process because of its positive impact on potential recruits' attraction to an organization
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11 and subsequent retention.
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16
17 Long-standing ACES volunteers take careful measures to select, and subsequently recruit
18
19 new members. In turn, this recruitment effort has a significant impact on long-term
20
21 retention. The majority of physicians recruited become committed to the ACES program
22
23 and have long-term sustainability as volunteers. We have found that a key to this
24
25 commitment and sustainability lies in the strength of the social networks among volunteer
26
27 physicians. Research on teams in which dyads are found within larger groups of people
28
29 (e.g., ACES volunteer physicians within the larger medical community) suggests that
30
31 people are likely to collaborate with others who possess qualities and skills, and know-
32
33 how that are complementary to their own and relevant to reaching a particular objective.³⁶
34
35 Interestingly, we found that many of the new recruits were already well known to at least
36
37 several of the ACES physician volunteers, and thus were already in their educator
38
39 network. This supports the notion that people are inclined to create relationships with
40
41 friends of their friends (or the business associates of their business associates). The effect
42
43 of sharing mutual acquaintances on attachment appears to be additive in that each
44
45 additional mutual acquaintance shared by an unconnected dyad (relationship) additionally
46
47 increased the likelihood that they will become acquainted.³⁷ Perhaps the reason for the
48
49 excellent retention and deep commitment of ACES physician volunteers is explained by
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3 the structure of the ACES social networks which comprises many third party
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5 connections. Research states that ties connecting people who share several common third
6
7 party connections are more likely to withstand the test of time.^{38,39} As related to our
8
9 conceptual framework, we understand that physician volunteers exercise both emotional
10
11 (intrinsic commitment & loyalty) and cognitive (intellectual challenge & constant
12
13 change/growth) engagement that directly relate to the retention of volunteers.^{40,41}
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20 Personal satisfaction was an overarching finding that mapped directly to the emotional
21
22 and cognitive elements of engagement within the conceptual framework. Our study has
23
24 shown that financial incentives are of low to absent value to physician volunteer
25
26 engagement in all activities within the ACES program. The emotional and cognitive
27
28 rewards coupled with reciprocal engagement were key elements. In addition, the
29
30 organizational culture provided the basis for successful engagement. The need to enhance
31
32 scholarly recognition was identified. Literature supports that the internal motivation is a
33
34 strong driver of volunteer teacher participation.⁹ The high value placed on personal
35
36 satisfaction appears to be consistent across a variety of contexts. This domain of personal
37
38 satisfaction can be further broken down into the emotional, cognitive and reciprocal form
39
40 of engagement and mapped to our conceptual framework. In particular, physicians felt a
41
42 strong sense of cognitive engagement with regard to being 'pushed' out of their comfort
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44 zone so as to reach a new and expanded state of performance.^{42,43}
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53 We found workload and increased external demands to be a threat to physician volunteer
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55 activities. Yet, in the ACES group we identified healthcare professionals that have
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3 remained engaged despite considerable external demands. In fact, most volunteers
4
5 interviewed in this program would contribute further if called upon. The high level of
6
7 engagement of these individuals is complex and involves many elements of the
8
9 conceptual framework. In some circumstances, when other demands increased,
10
11 volunteers modified their role and mentored new leaders, allowing for ongoing
12
13 engagement. Moving away from traditional ‘individual’ leadership theories, team
14
15 leadership theory includes the concept of team leadership capacity, which includes the
16
17 entire range of the team’s leadership.⁴⁴ It appears that the ACES organizational structure
18
19 has capitalized on this distributed shared leadership approach to ensure sustainable and
20
21 diversity of available leaders.
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29 **Limitations**

30
31 There are several limitations to our study. It was a cross-sectional study, performed in a
32
33 single context of highly engaged health care professionals most of whom were located at
34
35 academic teaching hospitals. The nature of engagement within the organization may be
36
37 context specific. Further studies are required to determine the transferability our findings
38
39 to other contexts. In our study, we sought perspectives from volunteers performing
40
41 various tasks. However, given the sample size it is not possible to determine if the
42
43 underlying components of engagement change with variation in the roles. Further, we
44
45 did not examine the time spent volunteering (e.g., hours/weeks per year) nor did we seek
46
47 out individuals who may have volunteered but later completely withdrew. We will
48
49 ensure to capture this data in our future work. Finally, when the volunteer role includes
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51 teaching, we identified that the reciprocal engagement between the student and teacher
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3 adds to the overall engagement of the volunteer. This component was not in our
4
5 conceptual framework and could be added in future investigations where the volunteer
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7 role includes teaching.
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10 11 12 **Future Research**

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15 The presumption that engagement is malleable is an exciting prospect.^{45,46} A cohesive
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17 framework is required to facilitate understanding of the complex construct of volunteer
18
19 physician engagement and this framework can be utilized in the development of
20
21 multifaceted approaches to enhance volunteer physician engagement. For example, an
22
23 intervention may include enhancing reciprocal engagement through collaborative
24
25 meetings and enhancing interpersonal relationships; emotional engagement by connecting
26
27 with individuals on a deeper level with respect to the meaning and potential outcomes of
28
29 their work; cognitive engagement by including intellectually challenging tasks, and
30
31 recognition of the volunteers work through faculty appointment, newsletters among their
32
33 peers, awards and scholarly acknowledgement. Further research is also required to
34
35 determine how we measure engagement. The conceptual framework presented in this
36
37 paper may aid in the design of measurement tools. The strategies and tools may vary
38
39 depending on type of volunteer activity and setting. Furthermore, research is required to
40
41 explore the construct of disengagement, to determine if different professional “identities,”
42
43 such as nurses, respiratory therapists, administrators, have different facilitators and
44
45 inhibitors to engagement. Future studies may also explore if volunteer participation
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47 impacts an individuals’ clinical practice or career path.
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Conclusion

Volunteer physicians are essential to the growth and sustainability of the ACES program.

This organization has demonstrated great success with engaging highly effective volunteers. Our conceptual framework and qualitative findings provide a preliminary framework as an important initial step in understanding the complex construct of volunteer physician engagement. This study will guide us in our development of a multifaceted intervention, aligned with the conceptual framework, to enhance volunteer physician engagement within the organization. Finally, given the current economic climate, providing compensation to physicians for additional education related activities may not be financially feasible or sustainable so alternative approaches must be explored to engage volunteer physicians.

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4 **Contributors:** Dr. Sarti and Dr. Sutherland had full access to all the data in the study
5 and take responsibility for the integrity of the data and the accuracy of the data analysis.
6 Study concept and design: Sarti, Sutherland, Landriault, DesRosier, Brien, Cardinal
7 Acquisition of data: Sarti, Sutherland, Landriault, DesRosier
8 Analysis and interpretation of data: Sarti, Sutherland, Landriault, Cardinal
9 Drafting of the manuscript: Sarti and Sutherland
10 Critical revision of the manuscript for important intellectual content: Sarti, Sutherland,
11 Landriault, DesRosier, Brien, Cardinal
12 Obtained funding: Landriault, Brien, Cardinal
13 Administrative, technical, or material support: Landriault, DesRosier
14 Study supervision: Sarti, Sutherland, Cardinal
15 All authors have approved the final version of this manuscript.
16
17
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19

20 **Acknowledgements:** We would like to thank the healthcare professionals who
21 participated in this study and shared their experiences and opinions with the research
22 team.
23

24 **Funding/Support:** Resources and secretariat support for this project were provided by
25 the Royal College
26
27

28 **Competing interest:** None.
29

30 **Ethics approval:** This study was granted an official exemption by the Chair of The
31 Ottawa Hospital Research Ethics Board
32
33

34 **Disclaimer:** None
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36 **Previous Presentations:** None
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Figure 1. Conceptual Framework

For peer review only

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List of Supplemental Online Content

Appendix S1. Interview Guides.

For peer review only

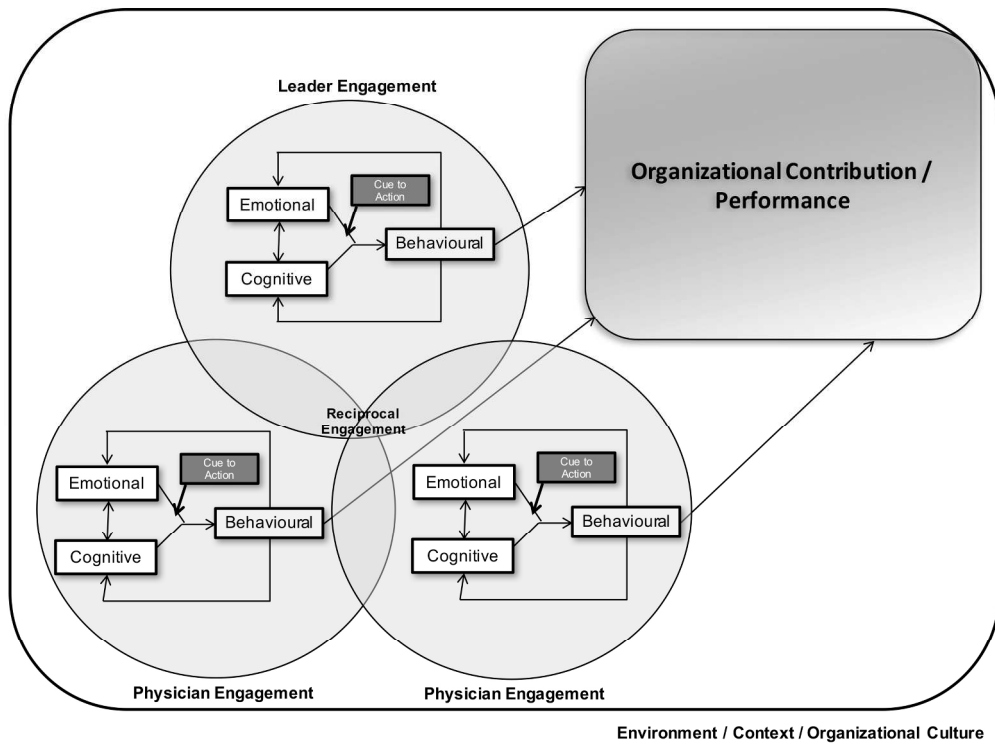


Figure 1. Conceptual Framework

215x161mm (300 x 300 DPI)

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Table 1. Characteristics of interview participants.

Characteristic	n	%
Number	30	
Region *		
Mountain	7	23
Prairies	3	10
Ontario	14	47
Quebec	2	7
Atlantic	4	13
Specialty/Discipline **		
Critical Care	23	77
Anesthesia	7	23
Internal Medicine	5	17
Surgery	3	10
Family Medicine	3	10
Nurses	2	7
Respiratory Therapists	2	7
Pediatric Critical Care	1	3

* The regions of Canada have been divided in the following way: Mountain includes British Columbia and Alberta; Prairies include Saskatchewan and Manitoba; Atlantic includes all Atlantic Provinces.

** Individuals were classified under their current practice specialties. Note that an individual may be practicing in more than one specialty.

Table 1. Characteristics of interview participants.

279x361mm (300 x 300 DPI)

Table 2: Summary of the qualitative findings.

1. Volunteer Recruitment
a. Word of mouth
b. Snowball approach
c. Career stage
2. Volunteer Retention
a. Distributed leadership and career paths
b. Program change and evolution/innovation
c. Comfort zone
d. Reciprocal engagement
e. Intrinsic motivation
f. Learners
g. Barriers
3. Volunteer Exchange
a. Career opportunities
b. Keep current
c. Academic currency
4. Volunteer Recognition
a. Personal recognition
b. Scholarly/academic work
5. Educator Network
a. Common vision
b. Duration or participation/loyalty
c. Affect
6. Quasi Volunteerism
a. Academic pressure
b. Curriculum vitae

Table 2. Summary of the qualitative findings.

279x361mm (300 x 300 DPI)

Interview Guide 1

Introduction

1. Introduction

Thanks for agreeing to participate ... We are conducting a needs assessment for the ACES course (introduce the project). Consent.

2. Background

a. Goal of the ACES course - provide the learner with the necessary knowledge, skills and attitude to recognize and manage a patient who is acutely and critically ill in the first hour of presentation

b. Modality of the ACES course - multimodal: e-learning, book, case seminars, technical skill workshop, simulation, and bedside tools

3. Purpose of the needs assessment

a. Interest expressed by various groups to customize the ACES course to a specific population

b. Facilitate the dissemination of the course across Canada

c. Exploring interest in an interprofessional course

d. Explore business models that would facilitate dissemination

e. Explore peer-review process and means of promoting academic contributions of faculty

4. Please let us know if you are NOT in a position to answer some of the questions (e.g. vice-dean discussing weaknesses of residents during resuscitation)

5. Interview will be recorded; all information will be kept confidential

Demographics

1. What is your professional designation?

2. What are your current roles?

3. Can you let me know what type of institution you work in (Community Hospital, Secondary, Tertiary, and Quaternary)?

4. When it comes to responding to a crisis, what is the usual makeup of the team in your institution?

5. Are you familiar with the ACES course? Have you participated or taught an ACES course?

Content

1. When it comes to responding to a crisis, what are the team's strengths?

2. When it comes to responding to a crisis, what are team's weaknesses?

3. Probes

a. What about (mention any members of the team that have not been addressed)

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4. At the end of the course, the learner should be able to..... (Please list the 5 most important performance objectives)
 5. Is there anything else that you can think of that we have not discussed?

Course format

1. Do you think that pre-course on-line content would be useful?
 - a. Do you anticipate that you or your learners may have any problems accessing online material?
 - b. What is the purpose of having pre-course on-line content?
 - i. Teaching knowledge, decision-making, other?
 - ii. Preparation for the face-to-face course
 - iii. Assessment of learners?
 - iv. Others
 - c. What should be the duration of a pre-course on-line session?
 - d. Should the pre-course on-line content be mandatory?
 - i. If so, can you think of ways to ensure your or your learners compliance with mandatory online content?
2. Do you think that post-course on-line content would be useful?
 - a. Would it be useful for you to have access to the pre-course on-line content after the course for further revision? How long?
 - b. What is the purpose of having post-course on-line content?
 - i. Teaching knowledge, decision-making, other?
 - ii. Preparation for the face-to-face course
 - iii. Assessment of learners?
 - iv. Post-course assessment of knowledge retention
 - v. Others
 - c. What should be the duration of an on-line session?
 - i. Post face-to-face course
 - d. Should post-course on-line content be mandatory?
 - i. If so, can you think of ways to ensure your or your learners compliance with mandatory online content?
3. Do you think that the program should have a face-to-face course?
 - a. How long should the course be?
 - b. What should be the preferred modalities?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?

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- e. Other?
 - c. What should be the relative proportion of time spent for each modality?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?
 - e. Other?
 - d. Should the pre-course material be reviewed during the face-to-face course?
 - e. What should determine the instructor to participant ratio?
 - a. Simulation?
 - b. Case-based seminars?
 - c. Technical skills workshops?
 - d. Didactic lecture?
 - e. Other?
 - f. Tell me what you think about making this course interprofessional...
 - a. What would be the advantages?
 - b. What would be the challenges?
4. How complicated is it for your institution/organization to organize a course that contains a large components of simulation training?
- a. Do you have access to simulation laboratory with the required equipment?
 - b. Do you have access to simulation engineer
 - c. Do you have trained instructors
 - d. Do you have course co-coordinators with experience delivering such courses

Market analysis

1. What do you like most about the ACES course?
2. What changes would most improve the ACES course?
3. Do you know of competing courses currently available?
4. What do you like the most about these other courses?
5. What changes would most improve these other courses?
6. If you are not likely to deliver the ACES course, why not?
7. What would make you more likely to deliver the ACES course?
 - a. Is costing an issue?
 - b. Are difficulties delivering the ACES course an issue?
 - i. Low participants to instructor ratio
 - ii. Space
 - iii. Equipment

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- iv. Personnel (simulation engineer, trained actors, course coordinator)
8. Imagine that you are tasked to widely disseminate this course in order to improve patient care. Can you think of a business model that would favor wide dissemination?
- a. Keeping in mind that there is a cost related to the development and dissemination of the material.

12 Peer review process

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1. Do you have any suggestions on how to best organize and facilitate the peer-review process?
 - a. Initially
 - b. On an ongoing process

20 Recognition

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1. How could the Royal College best recognize your or your institution's contributions in the creation and delivery of the ACES course?
 - a. Would it help if creators were informed of their material evaluations and extent of dissemination? How often?
 - b. Would including the sums invested in the completion of the project be useful as a means of recognition?

Interview Guide 2

Volunteer Engagement in the ACES program

- Target – Leadership within the organization and some Volunteer Physicians
- Introduction, Confidentiality, Consent

Leadership Questions:

1. What is your role in the ACES program?
2. How do volunteers impact the program? Has this changed over the years / history of the program?
3. Who are the volunteers?
4. Where are they located?
5. What roles do volunteers perform?
 - a. *Probe – development, delivery, administration, promotion of the program, etc. Specifically link to the conceptual framework*
6. Are there more ways that you envision them being involved?
7. Why do you think physicians volunteer their time with the ACES program?
 - a. *Probes: To be completed -*
 - i. *Behavioural*
 - ii. *Emotional*
 - iii. *Cognitive*
 1. *The challenge of the activity? Or mastering challenging / difficult ideas/skills/tasks?*
8. How are they currently recruited?
9. What are the barriers to recruitment and retention of volunteers?
10. What are the facilitators to recruitment and retention of volunteers?
11. How are they rewarded/appreciated for their contribution?
12. How do you see the ACES program evolving and how will this impact the volunteers? Impact the need for volunteers?
13. If a need for more volunteers is identified - Any solutions to increasing capacity and retention?

Questions regarding your volunteer involvement

14. Do you volunteer time with the ACES program?
15. What activities / role do you perform as a volunteer?
16. Why do you volunteer?
17. How is your contribution acknowledged?

Volunteer Questions:

1. What is your role in the ACES program?
2. How long have you been a volunteer with ACES?
3. How did you become involved with ACES?
4. Why do you volunteer?
 - a. *Probes:*
 - i. *Behavioural*
 - ii. *Emotional*
 - iii. *Cognitive*
 1. *Do find this work challenging? by the activity and or your involvement? Or mastering challenging / difficult ideas/skills/tasks?*
 - b. What specifically – ie, what part is challenging? What part do you ‘love’? what part are you most ‘interested’ in?
5. Have you ever considered increasing your involvement with ACES?
6. Have you ever considered decreasing or discontinuing your involvement with ACES?
7. Are there factors that maintain your involvement with ACES?
8. What improvements could be made to better meet your needs as a volunteer with the organization?

COREQ Checklist for Qualitative Study.

Domain 1: Research team and reflexivity

Personal Characteristics

1. Interviewer/facilitator - Which author/s conducted the interview or focus group? (P.10)

- A.S., S.S., A.L.

2. Credentials - What were the researcher's credentials? (P.1)

- A.S.: MD, MEd
- S.S.: PhD
- A.L.: RN, BScN.

3. Occupation - What was their occupation at the time of the study? (P.1)

- A.S. – Intensivist / Clinical Scholar, The Ottawa Hospital; Clinician Investigator in the Clinical Epidemiology Program (CEP) at the Ottawa Hospital Research Institute (OHRI)
- S.S. Research consultant for The Department of Critical Care, The Ottawa Hospital
- A.L. – Instructional/Curriculum Designer at the Royal College of Physicians and Surgeons of Canada; practicing Critical Care nurse in a tertiary Intensive Care Unit

4. Gender - Was the researcher male or female? (P.1)

- All researchers (data collection, coding/data analysis) were female

5. Experience and training - What experience or training did the researcher have? (P.27)

- A.S. was in her second year of a clinical scholars' program. She completed a fellowship with the Academy for Innovation in Medical Education at the University of Ottawa, and was a Masters of Health Professionals Education Candidate, University of Dundee, Scotland. She had performed numerous qualitative and mixed method investigations.
- S.S. has expertise in mixed methods research with an MA (Hons.) in measurement and evaluation, and a PhD in educational research, with 20 years of research and evaluation experience.
- A.L. has gained experience in conducting needs assessment (using interviews, focus groups and walkthrough) for the development of educational material as part of her occupation and was in the process of completing her Masters of Education (MA Ed) which included graduate level courses in qualitative methods. She had also received training in interviewing skills.
- Co-authors experienced in both quantitative and qualitative research, medical education, palliative and critical care.

Relationship with participants

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3 6. Relationship established - Was a relationship established prior to study commencement? (P. 10)

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- No.

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8 7. Participant knowledge of the interviewer - What did the participants know about the researcher?
9 (P.10)

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11 Participants were aware of the rationale for the study and the researcher's level of training. 8.

12 Interviewer characteristics - What characteristics were reported about the interviewer/facilitator? (P.27)

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- The interviewer's level of training and occupation were reported (see Contributors section).

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17 Domain 2: Study design (P.7)

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19 Pre-structured qualitative research design

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21 9. Methodological orientation and Theory - What methodological orientation was stated to underpin the
22 study? (P.7)

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- Qualitative study guided by a conceptual framework.

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27 Participant selection

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29 10. Sampling - How were participants selected? (p.9)

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- Purposive sampling.

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33 11. Method of approach - How were participants approached? (P.9)

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- Email and telephone.

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37 12. Sample size - How many participants were in the study? (P.11)

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- 30 interviews

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41 13. Non-participation- How many people refused to participate or dropped out? Reasons? (P.11)

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- Participation and non-participation rates provided (30 of 33 individuals participated). It can be noted that due to external time demands, 3 of the potential participants could not be interviewed during our data collection time window.

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49 Setting

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51 14. Setting of data collection - Where was the data collected? (P.10)

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- Telephone interviews

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55 15. Presence of non-participants Was anyone else present besides the participants and researchers?
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- No

16. Description of sample - What are the important characteristics of the sample? (P. 11 & 12)

- Secondary qualitative analysis was undertaken on fifteen semi-structured interviews with participants, including program directors and health care professionals across Canada. An additional fifteen interviews with physician volunteers were conducted to achieve thematic saturation. Important sample characteristics included health care provider role and geographic location.

Data collection

17. Interview guide - Were questions, prompts, guides provided by the authors? Was it pilot tested? (Appendix S1), and P. 10

- Semi structured guides were developed for the focus groups, interviews, and walkthroughs, with probes to guide as necessary. All tools were pilot tested prior to use in this study.

18. Repeat interviews - Were repeat interviews carried out?

- No.

19. Audio/visual recording - Did the research use audio or visual recording to collect the data? (P. 10)

- Interviews were audio recorded and transcribed.

20. Field notes - Were field notes made during and/or after the interview or focus group? (P. 10)

- Yes, both during and after.

21. Duration - What was the duration of the interviews or focus group? (P. 10)

- Interviews lasted from 40 to 60 minutes.

22. Data saturation - Was data saturation discussed? (P. 11)

- Yes

23. Transcripts returned - Were transcripts returned to participants for comment and/or correction?

- No, the transcripts were not returned to the participants. To ensure accuracy of transcriptions, each transcript was verified with the audio recordings prior to data analysis.

Domain 3: Analysis and findings

Data analysis

24. Number of data coders - How many data coders coded the data? (P. 10)

- Three researchers coded the data

25. Description of the coding tree - Did authors provide a description of the coding tree? (P. 10)

- No. Available upon request but we did mention the creation of it in the manuscript.

26. Derivation of themes - Were themes identified in advance or derived from the data? (P. 10)

- Inductive – Themes were derived from the data

27. Software - What software, if applicable, was used to manage the data? (P. 10)

- Yes, NVIVO

28. Participant checking - Did participants provide feedback on the findings? (P. 11)

- No

Reporting

29. Quotations presented - Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? (P. 13,14,15,16,17,18 & 19)

- Yes, participant quotations were presented to illustrate the themes presented. No, each quotation was not identified so as to maintain assurances of confidentiality and anonymity.

30. Data and findings consistent - Was there consistency between the data presented and the findings? (P. 12)

- Yes, the quotes explicate the themes as presented.

31. Clarity of major themes - Were major themes clearly presented in the findings? (P. 13)

- Yes, the major themes are presented throughout the results section with representative quotes.

32. Clarity of minor themes - Is there a description of diverse cases or discussion of minor themes? (P. 12)

- Yes, we have provided the name of the main theme along with the associated sub themes, and have explicated these within the results section.