Measuring physician engagement in quality improvement: a pilot study

Tyrone Perreira, PhD, MEd, Melissa Prokopy, LLB, Adalsteinn Brown, DPhil, Anna Greenberg, MPP, James Wright, MD, MPH, Christine Shea, PhD, MEd, and Julie Simard, PhD

The term "physician engagement" is overused and often misunderstood. It is believed that system transformation requires physician engagement in quality improvement (QI); however, no tool exists to accurately measure this. The purpose of this study was to develop an instrument that could be used to evaluate physician engagement in QI and then pilot it with a small sample of physicians and physician leaders. An electronic survey was developed using a series of focused literature searches and a modified Delphi panel of QI experts. Cognitive debriefing was performed with a group of physicians and physician leaders. The survey was then administered to 37 physicians working in Ontario hospitals. Descriptive analyses were carried out. This short, easy to administer survey allows for the collection of baseline data on facilitators of physician engagement, as well as training and participation in QI. Construct reliabilities are promising with Cronbach's alphas between 0.75 and 0.96.

KEY WORDS: physician engagement, quality improvement, hospitals, evaluation, survey

Despite the notion that physician engagement in quality improvement (QI) is critical to health system transformation, the concept remains poorly defined, measured, and researched.[1] The Ontario Hospital Association's (OHA's) Physician Provincial Leadership Council (PPLC), which comprises senior physician leaders from across the province, identified an important need for additional work in this area and supporting evidence identifying facilitators of physician engagement.[1]

The health care literature suggests that the following antecedents are necessary to enhance physician engagement: accountability[2-8]; communication[2,5-29]; incentives[30] (both financial[3,31,32] and non-financial[33]); and good interpersonal relations between physicians and administrators, with alignment of goals,[34-37] values,[7,37-40] and beliefs.[41] There must be trust[14,15,27,40,41] and respect,[6,8,38] such that physicians feel supported by their organizations.[2,42] The work environment must promote teamwork,[14,17,38,43-45] relationship building,[46,47] and the development of strategic partnerships,[48] whether intergroup[18] or peer.[47] The environment must provide opportunities to partake in and be involved in leadership[8,9,47,49] and decision-making,[2,6,8,15,22,46,50-53] and allow for assessment and suggestions for possible improvements[12] and improvement projects.[54] Finally, there must be opportunities for education, training, and support,[3,6,10,22,26,42,54-66] including training in how to use data effectively.[67] Vital to all of this is protected time to participate in these activities.[49,68-72]

No data currently exist with respect to the number of Ontario physicians formally trained or participating in QI. There is a need

to better understand facilitators and barriers to involvement as well as perceptions of significance. Thus, this study had three objectives: to develop an instrument that could be used to evaluate physician engagement in QI; to pilot the instrument with a small sample of physicians and physician leaders; and to identify facilitators and barriers to physician engagement in QI.

Methods

Part 1. Survey development

No single tool examined all of the facilitators of engagement identified in the literature. Instruments, such as the Well-being Index[73] and Culture of Care Barometer,[74] include only select components. Others, such as the Medical Engagement Survey,[75] are broken down into other well-established, distinct constructs, such as "empowerment" and "satisfaction," perhaps contributing to the ambiguity of the term, engagement.

Response burden was also a concern. Instruments were quite lengthy, even though the literature suggested that fewer questions would suffice. For example, two single-item questions to represent depersonalization (I have become more callous) and emotional exhaustion (I feel burned out) demonstrated results consistent with those based on the 22-item Maslach Burnout Inventory.[76]

As a result, two robust, comprehensive literature reviews were conducted and published.[1,77,78] The first was a scoping review to identify factors associated with, and tools used to measure, physician engagement.[1,78] The second was a conceptual analysis to study and clarify the term "physician engagement."[77] Based on these exhaustive reviews, five key constructs were identified that enhance physician engagement: well-being, interpersonal relationships, opportunities, work environment, and incentives.[1,77] A modified Delphi technique was then used to finalize key areas of focus and corresponding questions.[79-81]

Sample: Convenience sampling was used to recruit participants from Ontario, Canada, for the modified Delphi technique. The panel consisted of senior leaders from the Ontario Hospital Association (2), the Ontario Medical Association (3), Ontario Health (formerly Health Quality Ontario) (2), and faculty at the Dalla Lana School of Public Health (4), two of whom are quality improvement experts. Each of these organizations works closely with, and obtains feedback from, a pool of frontline physicians from a variety of clinical settings.

Data collection: Potential Delphi participants (n = 11) were contacted via email and in person. All agreed to participate. The panel was then sent an email that contained an Excel file (Microsoft, Redmond, Wash., USA) with constructs and sample questions. Participants were asked to rank questions on a Likert scale from one (not at all important) to five (very important) and to suggest additional indicators. Items included in a second round were determined by the first round.[82] The questions were then revised and recirculated to the team via email and an Excel spreadsheet. Questions with an average score of less than 3 were removed. Questions were then distributed to the PPLC, and feedback was obtained in person at its quarterly meeting. Cognitive debriefing was conducted with this group of physicians and physician leaders to ensure that the questions resonated with them, were actionable, were worded appropriately (e.g., not too negative or abrasive), and that respondent burden was minimized.

The survey was constructed using Checkbox 7 (Checkbox 7, Watertown, Mass., USA) online survey platform.

Part 2. Pilot study

The study design was cross-sectional. The rationale for a pilot study can be grouped into several broad classifications: process (e.g., assess feasibility of steps required), resources (e.g., assess time and budget), management (e.g., human and data optimization/management), and scientific (e.g., assessment of treatments).[83] The purpose of this pilot study was to assess feasibility of the email distribution method, assess the amount of time it takes to complete the survey, and assess data management.

Sample: Convenience sampling was used to recruit physicians from across Ontario, who were representative of the physician population at which the survey was

aimed. An email invitation was sent from the OHA to members of their PPLC to ensure variety in hospital type (i.e., community, small/rural, academic teaching, mental health, and complex continuing care/rehabilitation). Those interested in providing feedback were asked to contact the research team. Respondents were also asked to forward the link to individuals on their medical advisory committee who would complete the survey, critically assess the instrument, and provide feedback. In total, the link was distributed to 49 physicians. Based on the Canadian 2014 National Physician Survey, a 16% response rate was expected.[84]

Data collection: Potential participants were sent an information email containing a link to the online survey. This afforded an inexpensive method that allowed for rapid surveying of a large, geographically distributed sample across the province.[85] The survey was administered through Checkbox. Once participants clicked on the link, they were directed to an introduction page, which explicitly stated that by completing and submitting the survey, they were consenting to participate in this study. Following the initial invitation, participants were sent two follow-up reminders at 1-week intervals. All questions on the survey were mandatory; thus, participants were required to answer all questions on each page before proceeding to the next page of questions. Once the survey was completed, participants had the opportunity to provide additional free text and general comments.

Data: All data were categorical. They were imported from Checkbox into Excel and then directly into SPSS v. 23.

Analysis: Descriptive analyses were performed to generate frequency distributions for each variable. Negative survey items were reverse-coded and included as new variables in the data set. Cronbach's alphas were calculated for each construct to test reliability. In the literature, the ratio of sample size to number of free parameters ranges from as low as five participants per observed variable to 10-20:1.[86,87]

Ethics: Approval was obtained from the Research Ethics Board at the University of Toronto.

Table 1. Characteristics of survey respondents (*n* = 37)

Characteristic	No.	%
Sex		
Female	15	40.5
Male	22	59.5
Year of birth		
1946–1964	9	24.3
1965–1976	15	40.5
1977–1995	12	32.4
1996+	1	2.7
Formal leadership role		
No	9	24.3
Yes	28	75.7
Years practising medicine		
≤ 2	3	8.1
3–5	4	10.8
6–10	7	18.9
11–20	11	29.7
21+	12	32.4
Years in same organization		
≤ 2	6	16.2
3–5	8	21.6
6–10	7	18.9
11–20	10	27.0
21+	6	16.2

Table 2. Survey respondents' perceptions of well-being (*n* = 37)

Statement/question	No.	%
I feel I am having positive impact on people's lives through my work		
Strongly disagree	0	0.0
Disagree	1	2.7
Neutral	2	5.4
Agree	18	48.6
Strongly agree	16	43.2
The work I do is meaningful to me		
Strongly disagree	0	0.0
Disagree	1	2.7
Neutral	1	2.7
Agree	11	29.7
Strongly agree	24	64.9
I've become more callous towards people since I've started this job		
Strongly disagree	14	37.8
Disagree	9	24.3
Neutral	9	24.3
Agree	5	13.5
Strongly agree	0	0.0
I feel burned out from work		
Strongly disagree	5	13.5
Disagree	10	27.0
Neutral	13	35.1
Agree	5	13.5
Strongly agree	4	10.8
My work schedule leaves me enough time for my personal life		
Strongly disagree	2	5.4
Disagree	5	13.5
Neutral	13	35.1
Agree	15	40.5
Strongly agree	2	5.4
This organization has a positive workplace culture		
Strongly disagree	1	2.7
Disagree	2	5.4
Neutral	9	24.3
Agree	16	43.2
Strongly agree	9	24.3

Results

Characteristics of respondents

Of the 49 physicians contacted, 37 completed the survey for a response rate of 75.5%. This sample included 15 specialties from seven sites, with variation in hospital type. To avoid potential identification of participants, details related to hospital type and specialty are not reported. On average, it took five minutes and 43 seconds to complete the survey.

Respondents were 59% (*n* = 22) male, with 73% (*n* = 27) born between 1965 and 1995 (Table 1). Over 76% (*n* = 28) were in formal leadership roles, and 62% (*n* = 23) had been practising medicine for over 10 years and had been with their organizations longer than five years.

Constructs

Well-being: Over 91% (*n* = 34) of respondents agreed and strongly agreed that they felt they were having a positive impact on people's lives through their work, and 95% (*n* = 35) felt the work they do is meaningful to them (Table 2). Five (13%) felt they had become more callous toward people since they started their current job, with nine (24%) unable to decide. Nine (24%) agreed or strongly agreed that they felt burned out, with 13 (35%) unable to decide. Almost 46% (*n* = 17) felt their schedules afforded them enough time for their personal life and families, and 68% (*n* = 25) felt their organization had a positive workplace culture.

Perceptions of senior leadership and co-workers: With 76% of respondents holding formal leadership roles, it was not unexpected to find that over 73% agreed or strongly agreed that they trusted their senior leadership and that their senior leadership listened to their views, took their concerns seriously, supported and respected them (Table 3).

Table 3. Survey respondents' perceptions of senior leadership and co-workers (*n* = 37)

Statement/question	No.	%
SENIOR LEADERSHIP		
There is strong senior leadership in this organization		
Strongly disagree	0	0.0
Disagree	3	8.1
Neutral	4	10.8
Agree	10	27.0
Strongly agree	20	54.1
Senior leadership within this organization listen to my views		
Strongly disagree	1	2.7
Disagree	0	0.0
Neutral	8	21.6
Agree	13	35.1
Strongly agree	15	40.5
I feel well supported by senior leadership in this organization		
Strongly disagree	0	0.0
Disagree	2	5.4
Neutral	7	18.9
Agree	15	40.5
Strongly agree	13	35.1
I trust this organization's senior leadership		
Strongly disagree	0	0.0
Disagree	3	8.1
Neutral	7	18.9
Agree	16	43.2
Strongly agree	11	29.7
I feel senior leadership treat me with respect		
Strongly disagree	0	0.0
Disagree	3	8.1
Neutral	4	10.8
Agree	12	32.4
Strongly agree	18	48.6
I receive constructive feedback from senior leadership		
Strongly disagree	0	0.0
Disagree	3	8.1
Neutral	12	32.4
Agree	12	32.4
Strongly agree	10	27.0
My concerns are taken seriously by senior leadership		
Strongly disagree	1	2.7
Disagree	1	2.7
Neutral	4	10.8
Agree	18	48.6
Strongly agree	13	35.1
CO-WORKERS		
I feel respected by my co-workers		
Strongly disagree	0	0.0
Disagree	0	0.0
Neutral	3	8.1
Agree	12	32.4
Strongly agree	22	59.5
My interprofessional team functions well together		
Strongly disagree	0	0.0
Disagree	0	0.0
Neutral	4	10.8
Agree	13	35.1
Strongly agree	20	54.1

However, only 59% (*n* = 22) agreed or strongly agreed that senior leadership provided constructive feedback. Regarding co-workers, 92% (*n* = 34) agreed or strongly agreed that they felt respected, and 89% (*n* = 33) felt their interprofessional teams functioned well together.

Opportunities and work environment: Just over 80% (*n* = 30) of respondents agreed or strongly agreed that they have opportunities to be involved in decision-making and opportunities for leadership (Table 4). Almost 90% (n = 33) felt they had opportunities to suggest improvements; however, only 62% (*n* = 23) felt they had opportunities for training and education.

Approximately 65% (*n* = 24) agreed or strongly agreed that they had the resources they needed to do a good job. Only about 60% (*n* = 22) felt that unacceptable behaviour was consistently tackled. Over 80% (*n* = 30) of respondents felt well informed about what was happening in their organization, that two-way communication existed with the organization's administration, and that there was alignment between their goals and those of the organization. Only 62% (*n* = 23) agreed or strongly disagreed that they were held accountable for achieving results.

Scale reliabilities

All Cronbach's alphas were greater than 0.7 and were considered acceptable (Table 5).[88]

Incentives

Approximately 84% (*n* = 31) of

Table 4. Survey respondents' perceptions regarding opportunities and work environment (*n* = 37)

Statement/question	No.	%
OPPORTUNITY		
To be involved in decision-making that impacts the organization		
Strongly disagree	1	2.7
Disagree	1	2.7
Neutral	5	13.5
Agree	16	43.2
Strongly agree	14	37.8
To suggest improvements in the way things are done		
Strongly disagree	1	2.7
Disagree	1	2.7
Neutral	2	5.4
Agree	17	45.9
Strongly agree	16	43.2
Leadership opportunities are available to me		
Strongly disagree	0	0.0
Disagree	1	2.7
Neutral	6	16.2
Agree	15	40.5
Strongly agree	15	40.5
I have education and training opportunities at this organization		
Strongly disagree	0	0.0
Disagree	3	8.1
Neutral	11	29.7
Agree	13	35.1
Strongly agree	10	27.0
WORK ENVIRONMENT		
I have the resources I need to do a good jobs		
Strongly disagree	0	0.0
Disagree	4	10.8
Neutral	9	24.3
Agree	16	43.2
Strongly agree	8	21.6
Unacceptable behaviour is consistently tackled		
Strongly disagree	1	2.7
Disagree	5	13.5
Neutral	9	24.3
Agree	14	37.8
Strongly agree	8	21.6
I feel well informed about what is happening in the organization		
Strongly disagree	1	2.7
Disagree	0	0.0
Neutral	6	16.2
Agree	20	54.1
Strongly agree	10	27.0
Two-way communication exists with organization's administration		
Strongly disagree	2	5.4
Disagree	3	8.1
Neutral	4	10.8
Agree	16	48.6
Strongly agree	12	32.4
There is alignment between my goals and the organization's goals		
Strongly disagree	0	0.0
Disagree	3	8.1
Neutral	4	10.8
Agree	18	48.6
Strongly agree	12	32.4
I am held accountable for achieving results at this organization		
Strongly disagree	1	2.7
Disagree	0	0.0
Neutral	13	35.1
Agree	18	48.6
Strongly agree	5	32.4

respondents reported that their organization did not use any form of incentive to obtain outcomes (Table 6).

Quality improvement

Fewer than 14% (*n* = 5) of respondents were formally trained in QI at their organization (Table 7). Of the five people trained, four received intermediate training (e.g., the application of basic tools in small projects) and the fifth received introductory training (e.g., basic concepts and tools). All five "agreed" that the training received prepared them to participate effectively in QI projects. Regardless of training, 57% (*n* = 21) of respondents had participated in QI projects: 49% (*n* = 18) at the organization level, 40.5% (*n* = 15) at the patient level, and only 19% (*n* = 7) at the system level. Approximately 70% (*n* = 26) "did not know" or "disagreed" that useful data on their own performance to support QI were available.

When asked if their organization made it easy to participate in QI, 68% (*n* = 25) responded "yes" and identified "provision of organizational support" (*n* = 17) and "making QI part of their job" (*n* = 14) as the main facilitators. The remaining 32% (*n* = 12) that felt their organization did not make it easy to participate and identified "no training offered" (*n* = 7), "never asked" (*n* = 6), and "not enough time" (*n* = 5) as the main barriers. Approximately 60% "don't know" (*n* = 21) or "disagree" (*n* = 1) when asked if resources dedicated to QI are producing positive results. Respondents felt that the

Table 5. Reliability of survey results by construct

Construct	No. of items	Scale	Cronbach's α
Well-being	6	5 point	0.772
Senior leadership	7	5 point	0.957
Co-workers	2	5 point	0.754
Opportunity	4	5 point	0.846
Work environment	6	5 point	0.831

Table 6. Characteristics of survey respondents (*n* = 37)

Statement/question	No.	%
My organization uses incentives to obtain outcomes		
No	31	83.8
Yes	6	16.2

QI projects their organization participates in result in services that are safe (*n* = 25), patient-centred (*n* = 25), effective (*n* = 13), efficient (*n* = 10), timely (*n* = 9), and equitable (*n* = 5).

Additional questions identified for inclusion

It was suggested that Schaufeli's nine-item work engagement scale,[89] which is valid and reliable, be added to determine the level of overall "work engagement" and to establish a baseline for physicians. It was also suggested that an additional single question be added to determine whether an individual received training in QI external to their organization.

Discussion

The purpose of this pilot study was to assess the feasibility of the email distribution method, the amount of time it takes to complete the survey, and data management. No concerns with our methods were identified. All participants were able to open the information email and use the link to the survey. Completion time was short, approximate five minutes. Finally, no concerns with our data management were identified; data were easily and securely transferred between Checkbox, Excel, and SPSS software.

This short survey identifies key facilitators of physician engagement and can quickly highlight opportunities for both senior leadership and policymakers. It is promising that all scale reliabilities were found to be acceptable. This level of psychometric and formative evaluation is not present with other surveys in the engagement literature.[1] This is important and one of the reasons that such a rigorous approach to the development of this survey was taken.

The literature suggests that a dedicated effort is required by all health care workers to achieve and sustain high performance.[90] This instrument helps to identify an opportunity for formal QI training. Only a small percentage of our participants were formally trained in QI at their organization; none received advanced training, an interesting finding considering that over half participated in QI projects.

This tool helped to reveal that approximately a third of the organizations made it challenging for physicians to participate in QI, the main barriers being no training offered, no formal invitation to participate, and lack of time. Given that Ontario's *Excellent Care For All Act* requires hospitals to link executive compensation to the achievement of targets set out in the QI plan,[91] it is interesting to see that only a small number of organizations used incentives to drive outcomes within their organizations.

Table 7. Survey respondents' training and participation in quality improvement (QI) (*n* = 37)

Statement/question	No.	%
Formal training received in QI at their organization		
No	32	86.5
Yes	5	13.5
In last year, participated in QI projects		
No	16	43.2
Yes	21	56.8
For those who participated in QI, the level of projects*		
Patient	15	40.5
Organization	18	48.6
System	7	18.9
I receive useful data on my performance to support QI		
Disagree	11	29.7
Don't know	15	40.5
Agree	6	16.2
Strongly agree	5	13.5
Organization makes it easy for you to participate in QI		
No	12	32.4
Yes	25	67.6
Organization makes it easy to participate in QI by*		
Protected time	1	2.7
It's part of my job	14	37.8
Organizational support	17	46.0
Ongoing education & training	5	13.5
It's not easy to participate in QI at organization because*		
Not enough time	5	13.5
I am never asked	6	16.2
No training offered	7	18.9
Organization does not support	1	2.7
Resources dedicated to QI, producing positive results		
Strongly agree	4	10.8
Agree	11	29.7
Don't know	21	56.8
Disagree	1	2.7
QI projects in organization result in services that are*		
Safe	25	67.6
Effective	13	35.1
Patient-centred	25	67.6
Efficient	10	27.0
Timely	9	24.3
Equitable	5	13.5

*Respondents could select multiple options; thus, totals will exceed 100%.

In conjunction with participation in QI, feedback[11] and assigned accountability have also been identified as important.[3,4] Feedback related to clinical performance is critical to QI.[92] This instrument helped to show that a large proportion of respondents were unaware or confirmed that they did not receive useful data on their own performance to support QI. Many respondents reported a lack of constructive feedback, which may relate to over a third of respondents undecided with respect to whether they were held accountable for achieving results. In addition, many respondents, almost two thirds, did not know whether resources dedicated to QI were producing positive results.

Using Health Quality Ontario's six defining elements of quality care,[93] our survey helped to show that there may be opportunities for greater promotion of project results and additional QI projects focused on equitable, timely, efficient, and/or effective services. To create a high-performing health care system, a system-wide perspective is needed.[94] This instrument helps to identify a potential need for, or lack of, system-level QI projects. This is the first time this type of data has been captured and examined in Ontario. Results clearly indicated that just over half of our sample group participated in QI projects, of which the majority were at the organization and patient levels, with only a few at the system level. Finally, the Canadian Medical Association recently released a report that one in four Canadian

physicians report burnout.[95] Based on a single question, our survey found that in this small Ontario sample, approximately one in four respondents expressed burnout, supporting the use of single-item questions when possible to reduce respondent burden.[76]

This work has the potential to create opportunities for future research that can substantiate or refute common organizational theories about motivation, culture, and performance in relation to physicians. By collecting accurate, valid, and reliable longitudinal data, we can move beyond the simple association of variables and start identifying causation, which could help health care leaders make evidence-informed decisions and focus resources in areas proven to have the greatest impact.

Limitations

Our survey population was small and made up, predominantly, of individuals in hospital leadership roles. However, the purpose was not to generalize results, but to develop and test an instrument that could be used by health care leadership in Ontario to quickly evaluate key areas, suggested in the literature to impact engagement in QI within their organizations.

Conclusion

A short, easy to administer survey was developed to help Ontario hospital leaders obtain baseline data on facilitators of physician engagement, participation, and training in QI. This instrument was able to help leaders quickly evaluate key actionable areas linked to physician engagement. A larger sample is warranted for accurate validity and reliability testing. This tool could prove extremely valuable in enhancing physician engagement in QI initiatives.

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Authors

Tyrone Perreira, PhD, MEd, is an assistant professor at the University of Toronto's Institute of Health Policy Management and Evaluation, Dalla Lana School of Public Health and a research scientist at the Ontario Hospital Association.

Melissa Prokopy, LLB, is director of Legal, Policy and Professional Issues at the Ontario Hospital Association and adjunct faculty at the University of Toronto's Institute for Health Policy, Management and Evaluation.

Adalsteinn Brown, DPhil, AB, is dean of the Dalla Lana School of Public Health at the University of Toronto.

Anna Greenberg, MPP, is president of Ontario Health's business unit focused on quality.

James Wright, MD, MPH, is chief, Economics, Policy and Research at the Ontario Medical Association.

Christine Shea, PhD, MEd, is program director of Quality Improvement and Patient Safety at the University of Toronto's Institute of Health Policy Management and Evaluation, Dalla Lana School of Public Health.

Julie Simard is a doctoral student at the University of Toronto's Institute of Health Policy Management and Evaluation, Dalla Lana School of Public Health.

Author attestation

In addition to participating in the research design and development of the survey instrument, all authors contributed significantly to article preparation. Tyrone Perreira and Melissa Prokopy conceptualized the article. Adalsteinn Brown, Anna Greenberg, James Wright, Christine Shea, and Julie Simard assisted with organization and revisions of the article. All authors approved the final version.

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Correspondence to:
ty.perreira@utoronto.ca

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PERSPECTIVE

The journey to retirement for physician leaders

David Mador, MD

You have risen to a senior medical leadership role – the culmination of your administrative career. You have decided that the time is right for full retirement in the next one to three years and that this "retirement" will not entail continued medical roles or activities. Your family is strongly supportive. You have an adequate financial plan and have developed or considered other interests to keep you occupied and stimulated in retirement.

KEY WORDS: physician leader, retirement, consultation, clinical practice, transition, opportunities, planning

What, then, are some of the aspects to be considered as you embark on this relatively short journey of transition? What are the unique qualities and competencies of medical leaders that will affect your route? In other words, how are you going to get from where you are today to where you want to be in the near future? A myriad of books and articles have been written about planning and considerations needed for a successful, rewarding retirement, but little specifically about how to deliberately plan the journey to retirement.

Based on my personal experience and observations of other colleagues, I would like to share some thoughts about the transition options available to physician leaders.

Unique competencies

Senior medical leaders come from academia, health care administration, the regulatory world, or medical politics. They have generally had interesting and varied careers that have enabled the development of a veritable potpourri of skill sets, depending, of course, on where their career took them. The opportunities to develop competencies in leadership far removed from traditional medicine are substantial and, by retirement, physician leaders may be expert in information management or technology, Quality, finances, capital management, research, teaching, etc. Some are acknowledged as exceptional leaders, something to which all physician leaders aspire, but may not have achieved.

In Canada, most physician leaders still have clinical roles, although these contract as their leadership roles expand over time. In some cases, they retire from active clinical practice to enable more focus on administrative work, as I have. However, generally, all medical leaders have a solid base of clinical competencies to add to their resume.

Whatever the acquired skills may be, their combination with a clinical background means that medical leaders contemplating retirement will have many options. In the vignettes that follow, I explore some of these options and what we might learn from them.

Options for retirement

Close the door and turn off the lights

Doctor Decisive had a wide variety of medical leadership roles, culminating in a major 0.8 FTE commitment. She retained a small clinical practice supported by her hospital, but is an avid baker, traveler, reader, and grandmother. She was content and felt fulfilled with her professional career and achievements. After much thought and reflection, she set a full retirement date about 1 year