Contextual Competence: How residents develop competent performance in new settings

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Abstract

Introduction: Medical education continues to diversify its settings. For postgraduate trainees, moving across diverse settings, especially community-based rotations, can be challenging personally and professionally. Competent performance is embedded in context; as a result, trainees who move to new contexts are challenged to use their knowledge, skills and experience to adjust. What trainees need to adapt to and what that requires of them are poorly understood. This research takes a capability approach to understand how trainees entering a new setting develop awareness of specific contextual changes that they need to navigate and learn from.

Methods: We used constructivist grounded theory with in-depth interviews. A total of 29 trainees and recent graduates from three internal medicine training programmes in Canada participated. All participants had completed at least one community-based rotation geographically far from their home training site. Interviews were recorded, transcribed and anonymised. The interview framework was adjusted several times following initial data analysis.

Results: Contextual competence results from trainees’ ability to attend to five key stages. Participants had first to meet their physiological and practical needs, followed by developing a sense of belonging and legitimacy, which paved the way for a reconstitution of competence and appropriate autonomy. Trainee’s attention to these stages of adaptation was facilitated by a process of continuously moving between using their knowledge and skill foundation and recognising where and when contextual differences required new learning and adaptations.

Discussion: An ability to recognise contextual change and adapt accordingly is part of Nussbaum and Sen’s concept of capability development. We argue this key skill has not received the attention it deserves in current training models and in the support postgraduate trainees receive in practice. Recommendations include supporting residents in their capability development by debriefing their experiences of moving between settings and supporting clinical teachers as they actively coach residents through this process.
There are distinct conceptual frameworks that can be used to understand what developing competence in a new setting entails for residents. For instance, there is a substantial body of literature on transfer that studies how medical trainees apply knowledge and concepts to new tasks. This literature has studied how, for instance, basic science knowledge or clinical reasoning is applied to new problems or in new situations. The finding that competent performance in one set of problems or situation is a poor predictor of performance in another is referred to as context-specificity. There are two main approaches to facilitate transfer between contexts. One is to decontextualise conceptual knowledge to enable its application in new contexts, and the other is to provide multiple situations in which learners can practice concepts. The latter is clearly recognisable in medical education’s approach to the increasing frequency of moves from one site to another during residency training. The underlying assumption is that competence, seen as the results of an individual’s ability to apply knowledge and skills, is indeed transferable across sites, and, in turn, increased exposure to different sites contributes to the breadth and depth of accumulated competence. From this perspective, building up individual competence is the way to mitigate the challenges resulting from moving across training sites. The dominant focus in this conceptual framework on competent performance in new contexts has its roots in a cognitivist perspective on competence.

With this study, we aim to add to our field’s understanding of what competent performance in new settings requires of residents by deliberately taking the perspective that competent performance itself is not individual but contextual. Epstein described how: ‘competence is contextual, reflecting the relationship between a person’s abilities and the tasks he or she is required to perform in a particular situation in the real world’. Rather than something individual and transferable, within this framework competent performance is seen as the result of an activity that takes place in the moment and emergent from an interplay of individual and contextual factors, including the community to be served. A conceptual framework that fits this perspective well is Nussbaum and Sen’s ‘capability approach’—a school of thought originating in economics that focuses on what people are able to do and to be. It defines capability as the combination of individuals’ ability and the opportunities and constraints they encounter in using their abilities. More specifically, although competence reflects skilled performance in a particular job, often inferred from what a resident does, capability encompasses what residents can think or do that is relevant to their professional task of contributing to patient care. This includes the ability to identify and make use of existing opportunities for learning and creating new opportunities for professional growth. As Erawt explained, ‘part of a professional’s capability involves being able to develop or transform one’s practice over time, to create new knowledge through one’s practice as well as learning from others’.

This notion confronts medical educators with the challenge to educate not only for individual competence expressed in residents’ current performance, but also to help residents develop the ability to adapt to new environments,
the processes we set out to explore. We received ethics approval from the Research Ethics Boards at three Canadian universities: The University of British Columbia (UBC), University of Calgary (UCalgary) and Western University.

2.1 | Context

In Canada, with extensive distributed medical education operant in postgraduate programmes, residents are faced with major changes between their contexts of learning. For example, a resident may face moving from an urban tertiary care hospital to a regional centre hundreds of kilometres away with few subspecialists onsite and limited complex investigations possible. In this study, we focused on residents’ experiences of training in a rural community at a relatively large geographical distance from their main training site. Being removed from their familiar personal and professional environment enabled us to discuss with our participants how they learned to perform competently again in this new environment.

2.2 | Participants

We recruited residents from postgraduate years (PGY) 3 to 5 and recent graduates who had experience either training at a community site or doing locums at community sites. Eligible residents were provided by the GIM programmes of UBC, UCalgary and Western University. Residents were contacted by one of the researchers (SA or JB), who explained the research aims, processes and informed consent procedure. Participants were offered a $50 gift card as an incentive. We interviewed 29 participants (13 male, 16 female; aged 27-35, mean age 30). 15 were UBC trainees, 5 were from UCalgary, and 9 were from Western University. Ten were PGY3 internal medicine residents, 14 were GIM residents (4 PGY4 and 10 PGY5), and 5 were recent GIM graduates. Of the 29 participants, 23 had done rotations in the same site more than once, whereas 6 had gone only once to each setting. The average number of community rotations that participants had done was 4.6, ranging from 1-10. The average length of interviews was 45 minutes. All interviews were conducted by JB in the period between March 2017 and January 2018. JB did not have a current or former role in the residents’ education. Interviews were audiotaped, transcribed, anonymised and returned to participants for review. All locations, universities, and hospitals were anonymised.

2.3 | Interviews

The research team constructed an interview framework sensitised by theoretical concepts of clinical workplace context. Participants were asked to describe how new training sites differed from those they had experienced, and how they noticed and adjusted their practice to those differences. The interview framework was tested with a
GiM resident who met the eligibility criteria for the study. Following
the first four interviews, the research team read the transcripts and
adjusted the interview framework.

2.4 Data analysis

Data collection and data analysis were iterative. Three members of
the research team (JB, SA, PT) developed an initial coding framework
based on analysis of eight transcripts. All members of the research
team then coded a subsection of transcripts and wrote interpretative
memos. This process informed further theoretical sampling. For instance,
after 10 interviews the initial coding framework was instrumental in recognising that additional information on specific
learning required to enable adaption to new work environments
would be insightful. This informed the interviews that followed. In
the later stages of the analysis, a hierarchy in the themes that re-
sulted become clearer. Models that included similar hierarchy, spe-
cifically Maslow’s dynamic theory of motivation, were identified as
a potentially useful for framing and organising the results. In line
with a CGT approach, analysis followed the constant comparison of
themes to new data. Interviewing stopped after the research team
established that no new themes emerged from the final set of tran-
scripts and data sufficiency had been reached. All transcripts were
reviewed by at least two members of the research team, leading to a
final coding structure and a document of memos. The team then met
three times face-to-face to discuss the findings and identify impor-
tant themes and the relationships between them.

2.5 Reflexivity

The lead investigator on this project, JB, was a family physician by
training who went on to play a key role in setting up and developing
distributed medical education programmes in British Columbia. She
approached the interviews with a passion for understanding resi-
dents’ experiences and was struck by the emotional connection she
felt when discussing their challenges in starting a new rotation. SA
and PT worked closely with her on the development of the inter-
view guide and the initial coding. SA brought in her perspective as a
linguist and assisted JB as a research assistant. PT is a Dutch gynae-
ocologist and medical education researcher who has a research inter-
est in transitions and workplace learning that were relevant to this
study. The rest of the author team introduced a variety of other per-
spectives on distributed medical education, and learning and con-
text in health professions education from both clinical and academic
backgrounds. Amongst them, team members have held a variety of
roles relevant to this study, such as clinical supervision of residents
in community-based, rural and remote contexts (JB, MT, KM), educa-
tion leadership and policymaking (MT, CW), and education research
(RE). JB passed away in January 2020. She had prepared this manu-
script and created a draft for the main sections. The rest of the team
worked together to finish this paper.

3 RESULTS

Working inductively from the experiences that participants shared, we
identified a number of key stages that residents go through in
adapting to a new site. Participants described first establishing ways
to meet their physiological and practical needs, followed by develop-
ing a sense of belonging and legitimacy, which then paved the way
for a re-constitution of competence and appropriate autonomy in a
novel context. Although different participants experienced aspects
of these key stages in different ways, a shared recognition of the
importance of each stage for being able to contribute to competent
performance in a new location was present in the data. We have
depicted these stages in a hierarchy similar to Maslow’s dynamic
theory of motivation to depict that ‘lower levels’, such as physi-
ological and practical needs, are fundamental for developing compe-
tence and autonomy. Notwithstanding the hierarchy between these
stages, we did find that in practice, participants attended to stages
simultaneously or sometimes in a different sequence. An inability to
successfully attend to lower stages appeared to inhibit their ability
to adequately deal with the challenges of the higher levels although
it did not necessarily prevent them from doing so. We call the de-
piction of these stages in Figure 1 Bates’ hierarchy of contextual
competence.

Before moving on to illustrate how participants experienced
each of these stages, it is of note that the process of moving to a new
training site could lead to strong emotions. There were residents for
whom working at a new remote site was not unfamiliar, for instance
because they were raised in a similar town or had been to that same
site before. However, many participants also described feelings of
isolation, loneliness, doubt and, initially, incompetence. Interestingly,
none had reported having had an opportunity to debrief from their
experiences, and many commented that having the chance to reflect
during the interviews was useful to them emotionally. These emo-
tions were closely linked to the extent of the differences they ex-
perienced between their previous training site(s) and the new sites
they encountered. Although participants expected to have to adjust
to a new clinical context, they were often surprised by the effort of
adaptation required beyond their clinical environment.

Oh it was – it was pretty lonely. I’ve got to say, yeah.
Because you’re without – yeah, you’re by yourself,
you’re in a new place.

Participant 5

3.1 Physiological and practical needs

Basic needs that participants realised they needed to attend to when
coming to a new site were related to knowing where they would live
and sleep, where to get food, and how to get around. Participants
coming from an urban environment with extensive public transpor-
tation and 24 hours a day shopping and dining described how they
needed to adjust and how critical these first steps can be.
I just show up on the first day and you get the lay of the land and you can – whenever I show up in a new city I always try and find food, that’s my first priority and then try to find a gym. So, food then gym and then unpack and you show up on your first day and try to get the lay of the land and lay of the hospital and see what’s available. You figure it out in the first few days and the rest of the rotation is based off of what you came come up with.

Participant 6

These early experiences helped to develop practical know-how required for contextual competence. As trainees became more experienced with preparing to move to new training communities, they learned to what practical research they needed to undertake prior their arrival in order to determine transportation, grocery shopping, and the location of both the hospital and their own home base.

Don’t go there on a Sunday when you don’t have groceries and everything is closed. These are things nobody tells you. On a Sunday the entire town shuts down and there’s nothing to eat.

Participant 6

Some participants explained that they valued being supported in these practical matters, such as having their accommodation arranged and transportation covered. Once they had sorted out these matters, they could turn their attention to the unfamiliar aspects of their new clinical sites. For example, some trainees explored the hospital, ensuring that they knew how to get in after hours, where to meet the first day and sometimes how to use the clinical information system.

So they put you up right across the street from the hospital you’re going to be working at, so that’s a, you know, a big load off, obviously, for people to not have to worry about transportation or accommodations. But you know, obviously, there’s a bit of a trepidation because you’re going into something that is already quite difficult, and so now you’re going to have a lot of responsibility. And so, you know, certainly, at the beginning, you’re anticipating that, and you’re also, you know, overwhelmed as it usually is, and you’re starting a new rotation just in terms of the physical where do I go, how do I find the rooms, where’s the bathroom, where do I put my lunch, and all of those, you know, regular things.

Participant 11

At the start of the rotation, they sought to clarify how general internal medicine was organised as part of the health care delivery in this community. Some trainees developed a mental checklist to ensure that they knew what investigation, diagnostic, and treatment
resources were available onsite. Although some trainees clarified with their preceptor exactly what their duties were to be, those that did not were surprised to find several days into the rotation that they had been expected to be managing a particular aspect of care, such as reading electrocardiograms. Surprises like this were upsetting to trainees and led them to be more direct in clarifying expectations in their next rotation.

### 3.2 Legitimacy & belonging

When arriving at a new site, especially in smaller rural communities, participants often described that they did not feel at home. They felt they were not part of the community in ways that were not as tangible when they moved between training sites closer to their home base. Many of them described being away not only from their friends, families and peer group of other learners, but also from their cultural, ethnic or religious communities. Some described feeling like ‘aliens’, resulting in feelings of loneliness and isolation.

And I think moreover you know when you go up north the ethnic diversity is not really there, so I think that subconsciously made me not feel at home as well when I was in a city that’s predominantly white and First Nations, which is not something that I’m used to, so I just didn’t feel as home as when I’m closer to Main Site B Area.

Participant 27

Loneliness was helped by the social inclusion into a welcoming community. But the inclusion also came with a cost: participants described the lack of anonymity of being a new doctor in a small town, something they had not encountered in larger urban settings.

Yeah I mean one of the big things that stood out, because it’s such a small place, everybody knows everybody else and it’s very collegial and all of the medical professionals are very friendly and welcoming. And it’s got a really good sense of community and you also get the sense of like you’re valued as an individual and not you know just you’re another one of the residents or whatever ...

Participant 3

But if you – you know if you screw up today at Hospital MB1 as a Resident and then you go back tomorrow, probably nobody there knows that you screwed something up yesterday. But in a 50 bed hospital where everybody knows you by your first name, if you screw up today and when you go back tomorrow, people are going to be like yeah, you screwed up yesterday (laughs).

Participant 10

The legitimacy of the trainee’s presence in the community was predicated on their role in the hospital and their providing care to the community. As a result, the legitimacy of their being there and their sense of belonging were related. These were in turn mainly influenced by the limited time they spent in the community and the prospect of working in a similar community after finishing their training. Over time, some trainees were able to embed themselves more fully in the community, exploring both personal and professional domains. These trainees explained that they were exploring what they would be looking for as independent medical practitioners. For those trainees, the legitimacy of learning in the community as a trainee led to a sense of belonging that could potentially influence their career decisions. Others, particularly those who had decided on subspecialty training, remained less well-integrated with the community. Although they valued learning from the rotation, the setting and scope of practice were not aligned with their final professional choices, thereby limiting their interest in investing the effort to become more fully integrated in, what was for them, a transient experience.

### 3.3 Competence and autonomy

The top levels of Bates’ hierarchy of contextual competence consist of developing the ability to effectively contribute to competent performance in a new situation and developing autonomy in their clinical performance. For that to happen, residents had to learn ‘how to get things done around here’. Some engaged in specific information-seeking behaviours such as spending time with the nurses, asking for an orientation from their preceptor, or sometimes even asking their preceptors about more specific and high-level tasks such as to whom to refer patients.

But then the different things are always the logistical stuff – you know, how are charts organized and where you keep the charts and who are the different doctors, right? So, I knew my preceptor, and I’d heard some names of people that worked in the community. But when I needed to speak to the general surgeon, I didn’t know what he or she looked like, I didn’t know, you know, where to find them. You know, computer systems are different, how do you refer people, what labs you can do, what investigations and interventions you can do are all different when you’re in the community. So that I find is usually -- defines the first week at any new rotation.

Participant 14

Although some information about how to accomplish routine tasks was easy to discern, trainees found other information difficult to elicit. For example, understanding the scope and role of general practitioners in different community contexts was particularly
challenging, which was exacerbated by the broad scope of practice and the heavy clinical load in some communities.

It was rough, because it really was a new environment. Coming from a tertiary centre where internal medicine, I know kind of the boundaries of what internal medicine takes care of and where we hand things over to other people to be involved in their care ... [but here] I didn’t really know what those boundaries were, I didn’t know how much of it the GPs would do versus we would do. I didn’t know exactly if you are the subspecialist or at some point you should call another subspecialist you know over the phone.

Participant 27

Over time, trainees shifted from focusing on logistics to more deliberately experiencing and understanding differences in the way clinical medicine is practiced. Their continued participation in unfamiliar processes and practices often helped them to understand that there could be various ways to provide high-quality and effective patient care.

I think...that when you're only exposed to one way of doing things, it sort of just makes sense and focuses the way that it’s done. And I found that, you know, in many of the times that I’ve gone elsewhere for training is that when you’re exposed to a different way of doing things, you can kind of think and step back and say, 'Oh, this is an interesting way. Maybe this looks better. Maybe in some way it works worse.' And you sort of get an idea. And you can kind of think to yourself, think more critically about why do we do the things the way that we do them, and is there a difference -- is there a reason that, you know, one of these approaches is better than others, are there certain situations one of these approaches is better than others.

Participant 11

Participants described how, gradually, they were able to adapt their decision making in order to participate effectively in local clinical practice, and in doing so they gained greater autonomy in their clinical performance. However, the path towards overcoming the differences and challenges mentioned above was rarely articulated or pointed out. Trainees often were unable to describe how they discovered differences or learned how to deal with them. Most cited role modelling or understanding emerging from experience. Trainees explained that over time they learned to fit in. They learned from people's reactions to what they did or from their responses to what they suggested. This reflected an ambient sense that adaptation is required but not explicitly addressed or discussed as part of their training journeys.

So I think there's certain contextual factors that come into play and I think generally, like when you start a rotation, like, you know, if I had not been there before, usually the first one to two weeks you're kind of learning some of these other processes in the background, 1) by trial and error; and 2) by kind of shadowing, you know, what's kind of being role modelled to you.

Participant 9

3.4 | Developing contextual competence

Our data suggested that contextual competence results from residents’ ability to tend to all of the key stages represented in Figure 1 when moving to a new training site. Although this process was recognisable in all participants’ accounts, each participant described an individual trajectory of learning and adaptation. An individual's trajectory was influenced by their past experiences—either personal (immigrant, rural) or professional (previous community rotations), self-described personality (adaptable, like change) and motivation. Participants whose accommodation was arranged and who were supported in sorting out their practical needs early on could attend to the higher stages of adaptation more quickly. Examples of prior personal experience that could affect an individual's trajectory of adaptation were spending summer holidays in a site quite similar, leading to feelings of familiarity and allowing trainees to concentrate on adapting to the clinical medicine environment. Furthermore, previous personal experiences of adaptation, such as immigrating to Canada or adjusting to new family structures, were described as contributing to adapt to new community training contexts.

I had been essentially packing up every couple of years when I was outside Canada and moving on to a new place and having to get settled into a new system and learning the computer system and learning the different things and different sites, going to Regional Campus F wasn’t much of a problem, it wasn't like a shock. I was like, okay well let’s just – how do they do things here; and that was like my fifth time learning a new system so I was okay with that; so yeah definitely that was good. From a personal point of view as well, packing up, moving to a new sort of – moving to a new housing and that sort of thing, having been away outside Canada for eight years I got that part right.

Participant 16

4 | DISCUSSION

This study set out to clarify what contextual changes Canadian GIM residents have to navigate when entering a remote, community-based placements, and how their responses to these contextual changes impact their ability to contribute to competent performance
in that setting. By deliberately taking the perspective that competent performance itself is contextual, we were able to recognise five key stages that require residents’ attention, ultimately leading to the ability to gain increasing autonomy in how they contribute to safe and effective practice in their setting. The hierarchy that we found between these key stages is depicted in Figure 1. These results are in line with research on nursing students’ experiences during their clinical placements reported by Levett-Jones and Lathlean,28 who found that a basic sense of safety and security was the basis on which, amongst other factors, a sense of belonging could begin to develop. In their study, they linked these findings to Maslow’s hierarchy of needs as we did. The basic needs in Maslow’s model and the psychological need of belongingness appear to be recurrent and stable findings that are important to all (health care) learners, especially during rural or remote placements.27,28,33,34 Our work contributes a more nuanced understanding of the notion of capability in the context of medical training. As a result of our focus on ‘capability’, that is what people are able to do and to be, our findings help to see that there are two elements at play as residents attend to each of the levels of Bates’ hierarchy of contextual competence: (a) the knowledge and skill foundations that enable safe task performance in the first place, and (b) the ability to recognise contextual change and adapt accordingly. The addition of this second element is what enables capability development. As Fraser and Greenhalgh explained, capability is ‘the extent to which individuals can adapt to change, generate new knowledge, and continue to improve their performance’.23

Much of the literature related to capability is conceptual rather than empiric; we argue therefore that our findings add a much-needed understanding of how trainees interact with contextual changes to build versatility into their developing competence. Our analyses demonstrate that capability in the context of working and learning in a remote site requires more than just applying one’s medical knowledge and prior achieved competence to a new situation. It also involves adapting the self in order to enable function in that new situation. It entails attending to elements of self-care and belonging just as much as adapting clinical skills. It also requires weaving clinical knowledge and skill foundation with an understanding of how contextual differences require new learning and adaptations.

Previous studies have tended to conceptualise capability as relating primarily to case complexity; individuals learn to recognise the elements of a clinical situation that render it distinct from cases they have seen before and adapt their approaches to address the identified complexity.35,36 Our analysis shows that the adaptations required for contextual competence are much broader. As learners move to entirely new settings, they grapple not only with differences in clinical case complexity, but also with issues of system organisation, identity, community and belonging. Our results suggest that recognising and adapting to these contextual shifts is equally critical to establishing competence in a new setting.

For educators, it follows that the question of how capability might be nurtured and trained assumes paramount importance. Fraser and Greenhalgh note that capability can be built through learning experiences that require individuals to ‘engage with an uncertain and unfamiliar context in a meaningful way’.22 Our work offers hints of what that meaningful engagement might look like. One of the striking and unexpected findings of our work was that none of the participants in our study had previously had an opportunity to debrief their experiences of moving from one community to another. We see that as a lost opportunity to enhance the development of capability. Tate and Ahluwalia note that a pedagogy that supports capability development must instil an ability to see and respond to novelty.35 Learners cannot adapt unless they first recognise that adaptation is needed. Clinical teachers can facilitate learners’ recognition of novelty as they move from one setting to another by engaging in explicit conversations throughout learners’ placements in these new settings. A question for future research is what an optimal balance looks like between allowing residents to ‘productively struggle’ with learning to adapt and developing capability versus smoothing transitions by proactively addressing key issues in each of the areas residents face (such as physiological and practical needs, increasing legitimacy). Regardless, to be effective facilitators, though, teachers need to engage in some reflection of their own, as they may struggle initially to recognise the ways in which a setting so familiar to them might be disorienting to their learners. Teachers also need to appreciate that learners may need time to attend to the lower stages of Bates’ hierarchy and that the most meaningful supports in this process may be physiological, practical and personal as much as medical. This puts teachers in a position of coach, requiring a different set of skills compared to the training and assessment of clinical competence.37 It is likely that they, too, need support to develop their ability to support learners in their capability development.

This study has several limitations. We focused on a specific group, that is (general) internal medicine residents in the Canadian postgraduate system that requires residents go on multiple four-week community-based rotations. As expected, we found that this group of participants experienced large contextual changes. Yet these contextual changes are specific to this group and training within this system. It is likely that those who experience different types of change during their training or who have the opportunity to stay in (a remote) rotation longer would emphasise different aspects of what contributed to their contextual competence. Another consequence of our research methods is the variability of experiences between our participants. The specific combination of site, amount and type of change, individual background, previous personal experiences and differences in training phase led to a range of experiences that enabled, but also forced us to develop relatively abstract areas of contextual competence (see Figure 1). A less diverse sample of experiences might have led to more concrete descriptors of contextual competence, but it might also have had limited application beyond those contexts from which it was drawn. Finally, the majority of our participants reflected back on multiple rotations during their interview. On average, our participants had completed 4.6 community-based rotations when we interviewed them. It may be that more recent rotation experiences
influenced how they looked back on their earlier rotations. Though this may not be an issue for understanding their developmental trajectories, it may have skewed their reflections and our understanding of what contextual factors impacted their earlier rotation experiences.

5 | CONCLUSION

Contextual competence results from trainees’ ability to tend to several key stages. They first need to meet their physiological and practical needs, followed by a need for belonging and legitimacy, and finally a re-constitution of competence and appropriate autonomy in a novel context. To that end, trainees also need to develop the ability to recognise when things are different, combined with the intellectual habits of reflecting on how and why those differences might matter. We argue that helping trainees to develop their abilities to recognise contextual change and adapt accordingly is as important as helping them to develop the knowledge and skills they need to practice safe care. In turn, the cultivation of contextual competence contributes to learners’ development of capability, facilitating their ability to adapt regularly to the myriad contexts of training and practice that they will encounter across the arc of their careers.

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CONFLICT OF INTEREST

The authors report no competing interests.

AUTHOR CONTRIBUTIONS

The authors meet the four authorship criteria recommended by the International Committee of Medical Journal Editors. Joanna Bates has been included as author posthumously and hence she couldn’t approve the version to be published. She initiated the research project, procured the funding for it, collected the data, analyzed it and created a complete draft of the paper before she passed away. As a result, her contributions certainly warrant authorship.

ETHICAL APPROVAL

This study received ethics approval from the Research Ethics Boards at three Canadian universities: the University of British Columbia (UBC), University of Calgary (UCalgary), and Western University.

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