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Barriers and Facilitators to Implementing Addiction Medicine Fellowships: A Qualitative Study with Fellows, Medical Students, Residents and Preceptors --Manuscript Draft--

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8 **A Qualitative Study with Fellows, Medical Students, Residents and Preceptors**
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4 **Barriers and Facilitators to Implementing Addiction Medicine Fellowships:**
5 **A Qualitative Study with Fellows, Medical Students, Residents and Preceptors**
6

7
8 **ABSTRACT**
9

10 **Background:** Although progress in science has driven advances in addiction medicine, this
11 subject has not been adequately taught to medical trainees and physicians. As a result, there has
12 been poor integration of evidence-based practices in addiction medicine into physician training
13 which has impeded addiction treatment and care. Recently, a number of training initiatives have
14 emerged internationally, including the addiction medicine fellowships in Vancouver, Canada.
15 This study was undertaken to examine barriers and facilitators of implementing addiction
16 medicine fellowships.
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26 **Methods:** We interviewed trainees and faculty from clinical and research training programmes
27 in addiction medicine at St Paul's Hospital in Vancouver, Canada (N=26) about barriers and
28 facilitators to implementation of physician training in addiction medicine. We included medical
29 students, residents, fellows and supervising physicians from a variety of specialities. We
30 analysed interview transcripts thematically by using NVivo software.
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38 **Results:** We identified six domains relating to training implementation: (1) organisational, (2)
39 structural, (3) teacher, (4) learner, (5) patient and (6) community related variables either hindered
40 or fostered addiction medicine education, depending on context. Human resources, variety of
41 rotations, peer support and mentoring fostered implementation of addiction training. Money,
42 time and space limitations hindered implementation. Participant accounts underscored how
43 faculty and staff facilitated the implementation of both the clinical and the research training.
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51 **Conclusions:** Implementation of addiction medicine fellowships appears feasible, although a
52 number of barriers exist. Research into factors within the local/ practice environment that shape
53 delivery of education to ensure consistent and quality education scale-up is a priority.
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60 **Keywords:** *addiction; substance-related disorders; medical education; qualitative research*
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4 **BACKGROUND**

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7 Around the globe, harms stemming from substance use represent a significant social,
8 health, and economic burden [1]. The associated mortality and morbidity stemming from
9 substance use (e.g., HIV, hepatitis C) place considerable demands on healthcare systems [2, 3]
10 and represent an urgent public health priority. Advances in addiction science have helped to
11 identify effective treatments for substance use disorders (e.g. opioid agonist therapies,
12 contingency management) [4, 5]. These treatments are often delivered in general medical settings
13 and are associated with significant improvements in health and social outcomes of people with
14 substance use disorders (SUD) [6, 7], including physical and mental health functioning [8].
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26 The important role of physicians in the management of SUD is well documented [9, 10].
27 Specifically, evidence-based therapeutic interventions delivered by trained physicians, including
28 pharmacological and psychosocial interventions, can increase motivation for and enrolment in
29 specialised treatment programmes [11]. For example, people receiving opioid agonist treatment
30 in primary care are twice as likely to stay in treatment compared with those who attend a
31 specialist site [12]. However, the impact of physicians in SUD-related care is often diminished
32 due to the widespread underutilisation of evidence-based treatments for SUDs [13].
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43 Adequate diagnosis and treatment of SUDs by physicians often does not occur due to a
44 lack of knowledge and accredited training in addiction medicine [14, 15]. Historically,
45 undergraduate medical education and postgraduate clinical training programs have not invested
46 in the implementation of addiction medicine training for health care providers, and, when they
47 have, it has mostly been for psychiatrists trained in small programmes [13, 16]. As a result, many
48 physicians feel unprepared to treat people with SUDs, most of whom receive care from non-
49 medical professionals without formal substance-related training [13, 17]. Recently, a number of
50 diverse initiatives to address this shortcoming have emerged internationally. For instance, the
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4 Addiction Medicine Foundation (AMF) has established fellowships in addiction medicine and
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6 accredited 27 of these programmes (63 total slots annually) to date, including four programmes
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8 (16 slots) in Canada [18]. This limited number of training opportunities falls far short of the
9
10 demand for specialised addiction treatment services due to the high number of people with SUDs
11
12 who need such treatment [1]. Countries like Australia or Netherlands have developed substantial
13
14 training programmes and Masters in Addiction Medicine, respectively [19]. Other governments
15
16 (e.g., Norway) have recognised the increasing interest in addiction medicine among doctors and
17
18 created addiction medicine diplomas or specialties [19, 20]. Focusing on the new generation of
19
20 doctors, the UK's project on 'Substance Use in the Undergraduate Medical Education' improved
21
22 the addiction medicine knowledge of medical students [21], while the importance of addiction
23
24 medicine training for clinicians has also been recently highlighted in Ireland [22]. Unfortunately,
25
26 although these programmes teach addiction medicine to physicians, their content and intensity
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28 varies significantly from country to country.
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36 To overcome the deficits in training locally, two fellowship training programmes have
37
38 been established in Vancouver, Canada: 1) the interdisciplinary St. Paul's Hospital Goldcorp
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40 Addiction Medicine Fellowship, and 2) the Canadian Addiction Medicine Research Fellowship
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42 [23]. Of note, Vancouver has Canada's largest drug scene, which has been a significant driver of
43
44 local HIV and hepatitis C epidemics [24]. As a result, this has led to an environment in which
45
46 drug policies and programmes have been launched as pragmatic responses to the local drug use
47
48 epidemic (requiring comprehensive responses) and their successful evaluation has led some to be
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50 adopted or pursued elsewhere [25]. The two fellowships are examples of such pragmatic
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52 responses.
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4 First, within this environment operates the St. Paul's Hospital Goldcorp Addiction
5 Medicine Fellowship that provides 12 months of funded training to 12 trainees from Psychiatry,
6 Internal Medicine, Family Medicine, Social Work and Nursing. The physician component is
7 accredited by the AMF and includes specialty training in in-patient and outpatient addiction
8 management, as well as concurrent disorders [26]. There are nine core mandatory blocks of four
9 weeks' duration each, and three elective blocks. The core blocks are: (i) the St. Paul's Hospital
10 Addiction Medicine Consultation Service; (ii) inpatient and outpatient chemical dependency
11 detox; (iii) outpatient chemical dependency; (iv) women's recovery; (v) pain management; (vi)
12 management of concurrent disorders; (vii) inner city youth mental health programme; (viii)
13 longitudinal outpatient continuity of care experience, and (ix) research. Fellows' salary is funded
14 through a private donation and the B.C. Ministry of Health. For further description of how the
15 programme is delivered, please refer to previous publication [27].
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33 Second, a new research fellowship for addiction specialists was launched in 2014. The
34 Canada Addiction Medicine Research Fellowship trains physicians to develop the skills required
35 for a career as clinician-scientists in substance use research. This training occurs through: (i)
36 immersion in SUDs research training programme (i.e., British Columbia Centre on Substance
37 use and B.C. node of the Canadian Research Initiative in Substance Misuse); (ii) training in
38 diverse research methodologies (e.g., cohort studies, qualitative studies) through didactic
39 lectures, workshops, and monthly journal clubs; (iii) mentorship in the development of
40 manuscripts for submission to peer reviewed journals using data from two prospective cohorts of
41 people who use drugs [28-30]. Each year, four part-time, one-year fellowships of \$50,000 CDN
42 each are available thanks to funding from the National Institute of Drug Abuse. The content and
43 delivery methods of the fellowship have been described elsewhere [31].
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4 Finally, the Addiction Medicine Consult Team (AMCT) at St. Paul's Hospital supports
5 the fellowship programmes and is a distinct clinical service consisting [26]. AMCT provides
6 inpatient Addiction Medicine consultations to general inpatient and psychiatry wards in the
7 hospital. Patients come often from the Downtown Eastside area of Vancouver, BC, where
8 AMCT's colleagues from the B.C. Centre on Substance Use conduct longitudinal cohort studies
9 of people who inject drugs or who live with HIV/AIDS. The overlap between research and
10 clinical care informs research agendas and fosters the uptake of novel research findings in
11 practice [26, 32]. In sum, the integration of both research and clinical training in addiction
12 medicine at the under- and post-graduate level, which has been developed within a single
13 academic centre, is unique and has not been described previously. We sought to develop a more
14 complete description of the implementation process to aid educators and administrators in the
15 development of similar programmes elsewhere [33].
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33 We, therefore, conducted a qualitative evaluation of this rare combination of clinical plus
34 research training courses, focusing on barriers and facilitators of implementing physician training
35 in addiction medicine.
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42 **METHODS**

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44 We conducted qualitative interviews to explore implementation of the St. Paul's Hospital
45 Goldcorp Addiction Medicine Fellowship and the Canada Addiction Medicine Research
46 Fellowship, as well as barriers and facilitators to the implementation of these fellowship
47 programmes. We selected the qualitative design specifically because of its capacity to elucidate
48 participants' experiencing during the implementation of these fellowship programmes and thus
49 deepen understandings of contextual influences on their uptake [34, 35].
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4 We sought to recruit individuals who: had completed a clinical fellowship, research
5 fellowship, or enhanced skills training; were staff of the AMCT; and, had completed a one-
6 month research rotation with the training programme as part of their undergraduate medical
7 training or residency. We also sought to recruit (iv) teaching faculty for the fellowship (including
8 nurse, social worker and fellowship director). We sent an email to all potential participants
9 explaining the study and inviting them to participate. Two email reminders followed if they did
10 not respond between March-July 2015. We based our interview guide on a scoping literature
11 review about addiction medicine education and a qualitative study on a similar topic that piloted
12 the questions [36, 37]. The first author conducted and audio-recorded the interviews in the
13 hospital, or in a location convenient for participants; external staff transcribed the recordings. All
14 participants were informed of the study purposes, voluntary and confidential participation, before
15 they signed informed consents.
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33 Data were imported into NVivo (version 10), a qualitative data analysis software
34 programme, to facilitate coding. We analysed the data according to Braun and Clarke's five-step
35 process, including: 1) data preparation, transcription and familiarization; 2) generation of initial
36 codes; 3) theme assessment; 4) theme review; and, 5) theme finalization [38, 39]. Furthermore,
37 our analysis was informed by Damschroder et al.'s Consolidated Framework for Advancing
38 Implementation Science Research (CFIR) [40]. This meta-framework attempts to unify all
39 published implementation theories based on the robustness of the evidence behind them. As
40 such, its generic nature allows studying underlying concepts to overcome artificial barriers and to
41 transcend beyond the limitations of individual "labels". The framework has five major domains:
42 intervention characteristics, outer setting, inner setting, characteristics of the individuals
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4 involved, and the process of implementation [40]. The first author analysed the data, and two
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6 team members reviewed data and provided feedback on the analysis and themes.
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10 RESULTS

11 *Participant demographics*

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16 In total, 26 learners from the 2013-15 training cohorts (84% of 31 potential participants)
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18 participated in this study, including 14 women and 12 men. All participants were involved in the
19
20 fellowship programmes as learners (n=23) or staff (n=3). Participants included: a) clinical
21
22 fellows (n = 8); b) research fellows (n = 4); c) enhanced skills learners (n = 2); d) students and
23
24 residents who had completed a one-month rotation and prepared a case report or other
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26 publication (n = 11); and, e) staff of the AMCT and teaching faculty for the fellowship
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28 (including nurse, social worker and fellowship ex-director; n = 4).
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33 We organised the data in relation to Damschroder et al.'s consolidated framework into six
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35 major types of barriers and facilitators of the implementation: 1) structural, 2) organisational, 3)
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37 mentor, 4) learner, 5) patient and 6) community concerns. As shown in Figure 1, at the heart of
38
39 the training implementation was the learner-mentor-patient triad set in the organisational and
40
41 structural context. We operationalized the outer setting as structural, community and
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43 organisational concerns, the inner setting as learner concerns, and the individuals involved were
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45 teachers and patients.
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50 <insert Figure 1 here>
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53 **1. Structural concerns**

54 **1.1 Funding for the training helps “get rid of the fire” but not completely**

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57 Although funding for the fellowship programmes was welcomed, it was perceived as a
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59 partial solution in efforts to address the underlying conditions affecting people with SUDs. For
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4 example, SUDs were characterised by one of the participating physicians as “*the smoke from a*
5 *fire, and the fire is burning really strongly right now, and the fellowship is a way to train fire*
6 *people, although you need more than just a fire person to put out a fire.* [Participant #24]” She
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8
9 further emphasized that the training is an important aspect of solving SUDs. However, as she
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11
12 explained, it is not the ultimate answer:
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16 “It’s [fellowship] just going to make a dent in getting rid of that fire [SUD], and
17 it’s an important aspect of it, and it’s great that people are getting opportunities to
18 grow and change and focus on this and learn about all the different nuances of
19 addiction medicine etc., but it’s not [the answer].” [Participant #24, clinical
20 fellow]
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24 Most of the patients treated by study participants in the St Paul’s Hospital were extremely
25
26 marginalised people with multiple chronic diseases, were despised by the mainstream society
27
28 and engaged in shunned income-generation activities that included scavenging and stealing.
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30 While quality health care provided by qualified professionals can improve health of people with
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32 SUDs, it cannot in and of itself fully address the underlying issues of poverty, displacement,
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34 colonisation, homelessness, and unemployment.
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39 Faculty and administrative staff perceived the funded fellowship programmes (full or
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41 partial) favourably because it secured protected time to build the educational infrastructure of the
42
43 Addiction Medicine Fellowship (e.g., clinical sites for rotations, didactic sessions and materials).
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45 From the learners’ perspective, the funding allowed them to engage in learning activities and
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47 limit clinical duties:
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51 “It was an opportunity where you could be funded part-time to step away, a little
52 bit away, from clinical responsibilities.” [Participant #1, research fellow]
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55 The funding also accelerated the fellowship establishment by providing financial stability
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57 and allowing the accreditation of the fellowship, giving fellows the opportunity to apply for the
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4 license from the AFM, and thus supporting the growth of the SUD specialist workforce. For
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6 example:

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9 “Then, funding came in the summer of 2012 which really again boosted us a lot
10 cause we knew it could be a reality, and then we applied for [accreditation].”
11 [Participant #11, faculty]
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14 15 **1.2 Implementation of knowledge & practice environment and patient population** 16

17
18 The learners recognised that the fellowship “*really was geared to teaching the science*
19 *behind addiction.*” However, the ‘knowledge’ learned through the fellowship was not always
20 perceived as transferable to daily practice because of the nature of practice environment and
21 patient population. Therefore, it was necessary to adapt practices to the specifics of the
22 environment and population, as well as broader social-structural determinants of health (e.g.,
23 insurance, employment). Some participants saw potential financial constraints as a barrier to
24 treatment provision, especially among low-income populations. As one participant explained:
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35 “I had difficulty because I knew that none of the patients that I would end
36 working with would be able to even afford [these specific medications].”
37 [Participant #10, clinical fellow]
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40 The preceptors applied best-practice guidelines in their decisions intuitively without talking to
41 learners about the evidence, or specific trials, explicitly. The following quote illustrates barriers
42 encountered by the participants when implementing new knowledge and the iterative process of
43 seeking new evidence and applying it in practice:
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50 “I don’t [think] it’s always verbalized that we’re choosing this medication
51 because this is the evidence-based medication, it’s just kind of get [it] done and
52 then you sort of have to figure out later whether that was the most correct
53 decision...” [Participant #16, resident]
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56 She continued to describe financial and social barriers to implementing the learning on evidence-
57 based medicine in disadvantaged populations:
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4 “There are limitations, we always say there’s no typical patient, especially on the
5 [hospital] addiction service, because there are so many limitations around
6 finances, around social issues that influence people’s [...] results, treatment and
7 you can’t always do what might be the best possible thing, because it’s not safe in
8 that situation, or it’s not feasible...” [Participant #16, resident]
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10
11 She further describes how the patient in question experienced multiple methadone and
12 antiretroviral treatment interruptions and re-initiations due to drug use and social instability. The
13
14 participant described that the most evidence-based approach in this situation would be to start the
15
16 patient on an opioid agonist and an antiretroviral treatment, and to keep her on them “forever,”
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18 but felt that it might not be “doable” or given the underlying social-structural inequities.
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24 25 **2. Organisational concerns**

26 **2.1. Organisational & staffing support as the ‘backbone’ of implementation**

27
28 Participant accounts underscored how faculty and staff facilitated the implementation of
29
30 both the clinical and the research training. They included not only mentors and administrators,
31
32 but also attending physicians, statisticians, senior researchers and other centre staff. Senior
33
34 researchers met with the learners to formulate their research questions, draft analysis plans and
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36 refine the manuscripts. Centre staff helped with other tasks, such as, admission, clinical rotations
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38 or organisation of meetings. Statisticians analysed the data for the learners’ manuscripts. As one
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40 participant spoke about his relationships with the clinical team:
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46 “I’ve actually established nice long-standing relationships with almost everyone
47 who I worked with on the [hospital] addiction service which is fantastic.”
48 [Participant #3, resident]
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51 Participants from both streams – clinical and research – emphasized the utility of the
52
53 overlap between faculties of both streams that ensured continuity of their learning process. Some
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55 learners did the clinical fellowship and then the research fellowship and were then in the
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57 programme for two years, maximizing opportunities for learning.
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4 **2.2. First-year hurdles – Infrastructure and resources**

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6 Time constraints and limited availability of research or clinical space were the main
7 barriers in the organisational domain. The learners pointed to the newness of the fellowship that
8 was lacking infrastructure in some rotations (e.g., financial, technical and bureaucratic
9 infrastructure). One or two rotation clinics did not have a learning space with a desk for
10 participants. This prevented people from performing tasks learned in their clinical training:
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18 “[The clinical rotation] was quite disorganised and they didn’t really have much
19 of a teaching infrastructure developed when I went through, so there was a lot of
20 independent work at that rotation. It was ok but there’s areas of improvement for
21 that rotation, for sure.” [Participant #26, clinical fellow]
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27 **3. Mentorship concerns**

28 **3.1. Mentors’ responses**

29
30 There was considerable overlap between mentors for the clinical rotations, research
31 projects and fellowships that fostered development of working relationships between faculty and
32 learners. It allowed participants to continue their professional growth and move between
33 different educational programmes. Some learners suggested that mentors needed to supervise
34 their work more closely, especially for research projects. Therefore, the main issues within this
35 domain were interpersonal. If mentors met with the learners regularly, learners were able to track
36 their progress better:
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47 “I think if there’s set blocks maybe even just once a month where you have like a
48 half an hour sit-down with the mentors, which should be mandatory, where you
49 can go over the month, the progress, the struggles, what works, what didn’t work -
50 I think that would be helpful.” [Participant #26, clinical fellow]
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54 **3.2. Educators looked up to as ‘role models’**

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56 Teaching made clinician teachers “better doctors” and their characteristics were
57 paramount in clinical learning through role modelling: “I’m a better doctor because I’m a teacher
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4 at the fellowship [Participant #12, faculty].” If the teacher was from the same medical discipline,
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6 learners perceived it as being especially helpful. Furthermore, non-physician mentors sometimes
7
8 induced stress in learners by requesting too many updates. Learners felt better understood by
9
10 physicians because they “went through the medical school” and saw clinical mentors as role
11
12 models:
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15
16 “I think also having him [mentor] who’s done internal medicine residency and we
17
18 had the same training, so from the clinical aspect, I looked up to him.”
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20 [Participant #10, clinical fellow]
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22 **4. Learner concerns**

23 **4.1 Tough balance**

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25 Learners’ concerns included barriers and facilitators of programme implementation from
26
27 the perspective of trainees. The lack of previous background in research among clinicians was
28
29 perceived as a barrier to training in addiction medicine research. At times, learners coming from
30
31 more clinical backgrounds felt frustrated, isolated, and anxious about the future, especially in
32
33 cases where their previous research training was limited. By extension, physicians on clinical
34
35 rotations struggled with the prevailing stigma associated with drug use. Although they
36
37 recognised that their peers did not generally see medically managing SUDs as a “super popular
38
39 thing to do,” they thought that training SUD specialists, and creating jobs for them in health care,
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41 could help establish addiction medicine as a respected specialty and counter existing stigma.
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47 For most learners, training in addiction medicine and research was something performed
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49 in addition to their already busy schedules, which included seeing patients and running clinics.
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51 Providers with high clinical workloads struggled in the clinical and research training activities
52
53 and some clinical rotations were busier than others. The tension between training and competing
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55 priorities is well illustrated in this participant’s quote:
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59 “The one thing that I’m struggling a little bit with is that I’m busier this year than
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61 I was last year, and the project to me is a bit bigger as well, so this time, I feel like
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4 I'm the one slowing the project down cause I'm not always able to get back to the
5 researchers." [Participant #8, student]
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7

8 **4.2 Learners prioritise writing papers over "twiddling their thumbs"** 9

10 Demanding workloads put an increased strain on the participants. However, learners
11 sought to take steps to manage their time effectively and efficiently, such as rotating their tasks
12
13 or finding some extra time in their schedules. As one learner explained:
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15

16 "I think always trying to have a challenge on the side so that's why I was so
17 happy to engage in so many different research projects that year because if there
18 was a couple of hours of down time, I made sure that I had something that I could
19 be doing [Writing papers] yeah exactly, or editing, or whatever as opposed to just
20 sort of sitting here twiddling my thumbs or going for coffee." [Participant #10,
21 clinical fellow]
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26 Other facilitators of clinical-research training were mainly related to the personal characteristics
27 of learners, such as previous background and training in research and motivation to learn from
28 the experience. Those who were capable of self-directed learning benefitted from the training the
29 most because of the experiential nature of learning. For example:
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34 I feel like I'm able to provide better care, and talk to patients, and educate them
35 around their disease, and I'm more comfortable teaching, once I've personally
36 had a bit of experience in it. [...] the more cases I see, and the more teaching I
37 do, the more I like it." [Participant #14, research fellow]
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44 **5. Patient concerns**

45 **5.1 Becoming 'sensitised' to learning from patients** 46 47

48 Our analysis demonstrated that patients "taught" learners lessons regarding addiction
49 medicine, and thus facilitated learning implementation. Physicians learned that trust in the
50 therapeutic relationship was critical to patient engagement and treatment success. Subsequently,
51 patients' engagement increased the potential for success of treatment. The physicians became
52 sensitised to learning from patients:
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4 “So, I really learned more and more, just from my participants and the patients
5 that I see.” [Participant #9, nursing fellow]
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7
8 Having both research and clinical interactions with patients, due to the fluidity between the
9
10 clinical and science programmes, helped to solidify the new learning:
11

12 “It was nice to see that progression where you have an incident and then you can
13 write about it and then let people know that [...] It really helped me to appreciate
14 the research.” [Participant #18, student]
15
16

17
18 However, barriers related mainly to the practice environment and patient population, described
19
20 above, thwarted this learning. Patients in hospitals had severe SUDs with many concurrent social
21
22 and mental health problems that rendered them unstable and the complexity of their conditions
23
24 precipitated numerous challenges related to their care.
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26

27 **5.2 Patients’ struggles**

28
29 The learners recognised that the patient population in the hospital was more complex than
30
31 in other settings due to housing issues, mental health comorbidities and polysubstance use
32
33 disorder that required specialised treatments. The faculty also recognised this dynamic and
34
35 highlighted the need to de-centralise housing and diversify treatment modalities. Sometimes, the
36
37 learning was difficult and confrontational, probably varying as a result of setting – inpatient vs.
38
39 outpatient – and help seeking:
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44 “I was verbally assaulted by patients. I had trays hurled at me and I had people
45 who didn’t want to talk about their addictions issues, or receive any sort of care,
46 so that, as the predominant population [in hospital], I found very difficult,
47 whereas an out-patient setting, people are dying to see a doctor for this, and they
48 really wish to get into it, and talk about it, and focus on treatment options.”
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50 [Participant #25, clinical fellow]
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54 This experience resonated with the perceived need for outpatient clinical rotation that would give
55
56 the clinical learners different perspectives. Similarly, the research learners felt their “hands were
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58 a bit tied” due to the restrictions integral to the nature of the researcher-participant relationship.
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4 Within addiction medicine research, the study restrictions could be difficult to navigate for the
5
6 clinician-researcher because of other co-morbid diseases and social circumstances that make it
7
8 hard to just focus on study protocol. As one participant observed during the research interview
9
10 with a patient:
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14 “I have the best interests of the participant [patient with SUD treated by the
15 service] in mind but within the constraints of a study protocol.” [Participant #16,
16 resident]
17

18 19 **6. Community concerns**

20 21 **6.1 Gains of the community of practice**

22
23 The wider context of implementing addiction medicine and best practice was the
24
25 community of practice [41]. It consisted of colleagues within the healthcare system that were not
26
27 part of the training, preceptors and staff in the clinical rotations, as well as the prevention and
28
29 harm reduction organisations not involved in the rotations. This community of practice provided
30
31 support and mentoring to junior learners, as well as linkages between the senior clinicians and
32
33 staff. The hospital team was perceived as a group of innovators who sought to provide improved
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35 or enhanced care to patients:
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40 “...because I’ve had this contact with them and all so lovely, it’s so easy to have
41 access to these giant brains [...] it’s about connection and about creating that web
42 of people that you can use as resources.” [Participant #19, enhanced skills learner]
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45 Although this community was a source of peer support and mentorship, providing many gains
46
47 for the fellows (e.g., access to experts and expertise or teamwork), being part of it was not
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49 without risks.
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51 52 **6.2 Risks of the community of practice.**

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54 However, some negative attitudes of this closely woven “web of people” could be
55
56 detrimental to the growth of an early-career addiction specialist. Some learners were challenged
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58 to advocate on behalf of addiction medicine as a discipline because it was seldom considered to
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4 be “sexy area of medicine” by colleagues in other disciplines. However, having those
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6 conversations forced them to be certain that this was a suitable career path. Other inter-
7
8 professional challenges within addiction medicine, such as entrenched attitudes and clinical
9
10 practices, made implementation of new learning difficult:
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14 “I think when people are very set about the way that they should do things. Either
15 because they side with a certain side of the evidence, or if they choose to not
16 follow the evidence, that can make things very difficult because it not only makes
17 the learning difficult, but it also makes discussion and solidification of ideas much
18 more difficult.” [Participant #20, clinical fellow]
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21 22 **DISCUSSION** 23

24
25 Our qualitative analysis of interviews explored how structural, personal and
26 organisational barriers shape the implementation of provider training in addiction medicine.
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28 Money, time and space limitations inhibited implementation. Human resources, variety of
29
30 rotations, peer support and mentoring facilitated training. In summary, our results yield further
31
32 support for using the Damschroder et al.’s Consolidated Framework for Advancing
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34 Implementation Science Research (CFIR) [40] to operationalise and analyse barriers and
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36 facilitators of implementing addiction medicine fellowships.
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43 Our participants recalled several formative experiences when their attitude to working
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45 with people who have SUDs has been challenged by community members. Although difficult,
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47 our findings suggest that having to defend one’s positive regard to working in the SUD field can
48
49 solidify the resolve of being an SUD specialist [44, 45]. The other CFIR domains of our
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51 implementation strategy – intervention characteristics and process of implementation – have
52
53 been described elsewhere [23, 26].
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58 Several narrative reviews have focused on undergraduate and postgraduate education
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60 regarding SUDs [22, 46-48], noting how it is hindered by inflexibility of training programmes
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4 and a lack of hands-on training [49, 50]. Mentoring in balancing the competing needs of clinical
5 and research careers is inadequate and career guidance is minimal to non-existent [51, 52]. Such
6 an unsupportive training environment can allow physicians to be distracted by other competing
7 interests [49, 53, 54]. Additionally, there seems to be few mechanisms for addiction physicians
8 to pursue formal training in research as clinician-scientists. Programmes, such as the one
9 described in this article, have the potential to overcome these barriers, in addition to integrating
10 addiction medicine into graduate medical education [55]. In particular, the integration should
11 address the two identified major barriers to practicing addiction medicine: 1) insufficient
12 knowledge, training and experience working with patients with SUDs; and, 2) a lack of specialist
13 support [56].
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28 Our results are consistent with previous literature that has endorsed a combined didactic
29 and interactive learning strategy for SUD education [47, 57-59]. Physicians in our study
30 suggested several improvements to the outer level of implementation, especially the structure
31 and organisation of the addiction medicine education. Some suggestions for improvement
32 appeared to reflect the “newness” of the fellowship and that some rotations were having learners
33 present for the first time. This can be overcome by continued funding for the programme and
34 refinement of activities, and subsequent expansion of the SUD-specialist workforce coming out
35 of the fellowship. Indeed, funding current programmes is not enough; new programmes should
36 be established and other comprehensive responses, such as increased profile of SUD and of those
37 who treat it, are needed to meet the needs of people with SUDs. Promoting SUD education
38 among generalist physicians can heighten the chances of screening, early diagnosis and treatment
39 [60]. Although training alone will not solve the SUD problem, it is a *conditio sine qua non* for
40 successful treatment.
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4 There are several limitations to this study. The small sample comprising clinical fellows,
5 residents, students and staff from a single Canadian programme limits potential generalizability.
6
7 Our participants were not selected randomly, although we invited everybody who was involved
8
9 in the training and obtained an excellent response rate. We met the threshold of data saturation as
10 recommended for non-probabilistic sample sizes [61]. It is likely that physicians, who seek
11 specialised training, are more likely to have positive attitudes towards, and more clinical
12 experience with, people who have SUD [62]. Nevertheless, the key strength of our study is
13 examination of the unique combination of physician training in addiction medicine and research
14 that provided a rare opportunity to explore the implementation of clinical and academic training
15 in this field.
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29 **CONCLUSION**

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32 Training in addiction medicine is feasible and acceptable for healthcare providers.
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34 Learners experience the training favourably. Its implementation faces barriers like any other
35 innovation. We must understand the barriers and facilitators specific to these types of
36 programmes if we want to develop stronger local implementation strategies and quality
37 standards. These findings can inspire set up, scale up and standardisation of addiction medicine
38 programmes in other countries.
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7 **Declarations:**
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10 **Ethics approval and consent to participate**

11 The Providence Health Care/ University of British Columbia Research Ethics Board approved
12 this study. Research has been conducted in compliance with the Helsinki Declaration.
13

14 **Consent for publication**

15 Not applicable
16

17 **Availability of data and material**

18 The datasets generated and/or analysed during the current study are not publicly available due to
19 restrictions of the Providence Health Care Research Institute's Research Ethics Board that does
20 not allow sharing of data collected as part of research approved by the Board.
21

22 **Competing interests**

23 None reported.
24
25

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41

42 **Authors' contributions**

43 JK contributed substantially to the conception and design of the work and analysed the data for
44 the work. RM contributed substantially to the analysis of data for the work. WS, KA, AM, LR,
45 EW and WC contributed substantially to the conception and design and interpretation of the data
46 of the work. All authors read and approved the final version of the manuscript.
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48

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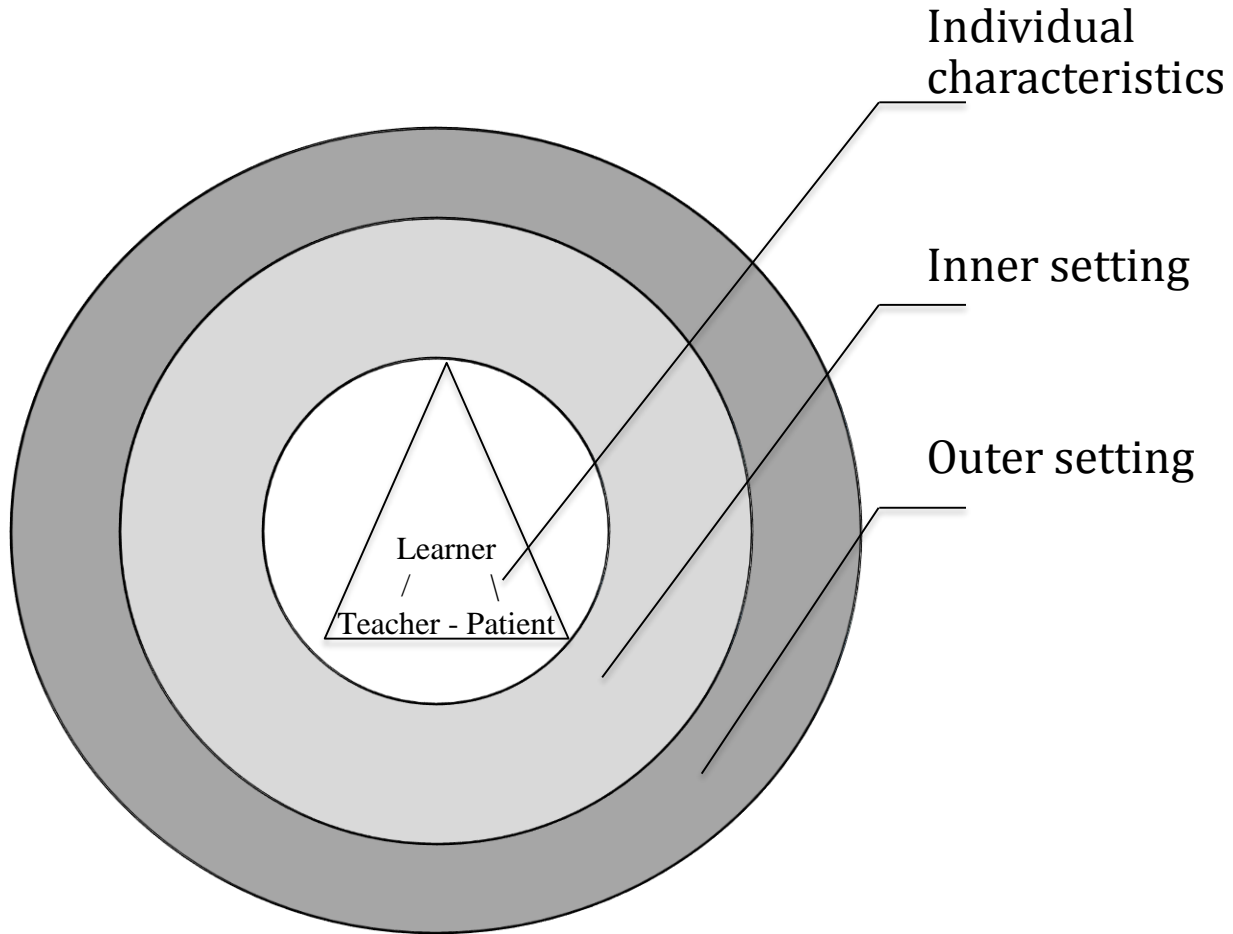
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4 **Figure 1 Framework for implementation of addiction medicine education**
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Note. At the heart of the training implementation was the learner-mentor-patient triad set in the organisational and structural context. We operationalized the outer setting as structural, community and organisational concerns, the inner setting as learner concerns, and the individuals involved were teachers and patients [40]. At the individual level, access to the “giant brains” of preceptors fostered learning. At the inner level, it was evident that our learners rose to the challenge of managing their time and balancing competing priorities with their learning. This inner motivation stemmed from personal values and attitudes, which, in turn, were shaped by the community of learning and practice – the final, outer level of implementation.