Canadian Medical Education Journal
Revue canadienne de l'éducation médicale

Creating a national breastfeeding and lactation policy for Canadian surgical residents

Création d'une politique nationale d'allaitement et de lactation pour les résidents en chirurgie au Canada

Larissa Rogowsky, Natalia Ziolkowski, Julia Innis, Angela Grant Buechner, Elena Springall et Jana Dengler

Volume 15, numéro 6, 2024

URI : https://id.erudit.org/iderudit/1115931ar
DOI : https://doi.org/10.36834/cmej.78114

Aller au sommaire du numéro

Éditeur(s)

Canadian Medical Education Journal

ISSN

1923-1202 (numérique)

Découvrir la revue

Citer cet article

Rogowsky, L., Ziolkowski, N., Innis, J., Grant Buechner, A., Springall, E. & Dengler, J. (2024). Creating a national breastfeeding and lactation policy for Canadian surgical residents. *Canadian Medical Education Journal / Revue canadienne de l'éducation médicale*, *15*(6), 5–18. https://doi.org/10.36834/cmej.78114

Résumé de l'article

Contexte : Malgré les avantages bien établis de l'allaitement et les difficultés auxquelles les apprenants en médecine sont confrontés pour allaiter sur leur lieu de travail, il n'existe aucune recherche spécifique qui concerne les apprenants en chirurgie au Canada. Nos objectifs étaient d'examiner les politiques existantes en matière d'allaitement et de lactation, d'interroger les expériences et opinions des apprenants en chirurgie et des directeurs de programmes, et de proposer une politique globale à l'échelle nationale.

Méthodes : Une équipe multidisciplinaire a développé cette étude qui comporte deux parties. L'examen de la portée s'est réalisée à l'aide des bases de données et de la littérature grise pour identifier les politiques nord-américaines relatives aux résidents en chirurgie. L'étude par sondage a permis de recueillir les expériences des apprenants en chirurgie canadiens qui allaitent, ainsi que les avis des directeurs de programmes sur les obstacles rencontrés, le soutien fourni et l'intérêt pour une politique d'allaitement et de lactation.

Résultats : Dix politiques ont été identifiées. Aucune ne couvrait de manière exhaustive les aspects relatifs à l'espace et aux fournitures d'allaitement, aux temps de pause, aux soutiens, et aux responsabilités des résidents. Parmi les dix directeurs de programmes ayant répondu au sondage : 60 % étaient des femmes, 70 % avaient encadré des résidents allaitant, 40 % avaient abordé la question des aménagements pour l'allaitement, et tous étaient favorables à l'instauration d'une politique. Parmi les 24 résidents interrogés : 45 % ont atteint leurs objectifs d'allaitement, 74 % ont cessé d'allaiter prématurément en raison d'obstacles professionnels, et 88 % ont signalé un faible soutien sur leur lieu de travail. Presque tous les résidents (96 %) étaient favorables à l'élaboration d'une politique.

Conclusion : Il existe une opportunité et un besoin pour une politique plus complète en matière d'allaitement et de lactation pour les résidents en chirurgie au Canada. Notre politique met en lumière les domaines clés où les résidents pourraient être mieux soutenus pour atteindre leurs objectifs d'allaitement.

Canadian Medical Education Journal

Original Research

Creating a national breastfeeding and lactation policy for Canadian surgical residents

Création d'une politique nationale d'allaitement et de lactation pour les résidents en chirurgie au Canada

Larissa Rogowsky,[1] Natalia Ziolkowski,[2] Julia Innis,[2] Angela Grant Buechner,[2] Elena Springall,[3] Jana Dengler[2]

[1]Undergraduate Faculty of Medicine, University of British Columbia, British Columbia, Canada; [2]Division of Plastic, Reconstructive, and Aesthetic Surgery, University of Toronto, Ontario, Canada; [3]University of Toronto Libraries, University of Toronto, Ontario, Canada

Correspondence to: Dr. Jana Dengler, MD MASc FRCS(C), Hand and Peripheral Nerve Surgeon, Division of Plastic and Reconstructive Surgery, Sunnybrook Health Sciences Centre, 2075 Bayview Ave, M1-516, Toronto, ON M4N 3M5; email: jana.dengler@sunnybrook.ca

Published ahead of issue: Aug 6, 2024; published: Dec 31, 2024; CMEJ 2024, 15(6) Available at https://doi.org/10.36834/cmej.78114

Abstract

Background: Despite known benefits of breastfeeding and challenges medical trainees face lactating at work, research specific to Canadian surgical trainees is lacking. Our objectives were to examine existing breastfeeding and lactation policies, query experiences and opinions of surgical trainees and program directors, and propose a comprehensive policy for programs nation-wide.

Methods: A multi-disciplinary team developed this two-part study. The scoping review used database and grey literature searches to find North American policies covering surgical residents. The survey study queried lactating Canadian surgical trainees and program directors about experiences and barriers, support provided, and interest in a breastfeeding and lactation policy.

Results: Ten policies were found. None comprehensively addressed lactation space and supplies, break times, supports, and resident responsibilities. Among ten PD survey respondents: 60% were female, 70% had lactating trainees during their tenure, 40% discussed lactation accommodations, and all were willing to instate a policy. Among 24 trainees: 45% met breastfeeding goals, 74% stopped breastfeeding prematurely due to work barriers, and 88% had little workplace support. Almost all trainees (96%) wanted a policy.

Conclusion: There is opportunity and appetite for a more comprehensive breastfeeding and lactation policy for Canadian surgical residents. Our policy highlights important areas where trainees can be better supported to meet breastfeeding goals.

Résumé

Contexte : Malgré les avantages bien établis de l'allaitement et les difficultés auxquelles les apprenants en médecine sont confrontés pour allaiter sur leur lieu de travail, il n'existe aucune recherche spécifique qui concerne les apprenants en chirurgie au Canada. Nos objectifs étaient d'examiner les politiques existantes en matière d'allaitement et de lactation, d'interroger les expériences et opinions des apprenants en chirurgie et des directeurs de programmes, et de proposer une politique globale à l'échelle nationale.

Méthodes : Une équipe multidisciplinaire a développé cette étude qui comporte deux parties. L'examen de la portée s'est réalisée à l'aide des bases de données et de la littérature grise pour identifier les politiques nord-américaines relatives aux résidents en chirurgie. L'étude par sondage a permis de recueillir les expériences des apprenants en chirurgie canadiens qui allaitent, ainsi que les avis des directeurs de programmes sur les obstacles rencontrés, le soutien fourni et l'intérêt pour une politique d'allaitement et de lactation.

Résultats : Dix politiques ont été identifiées. Aucune ne couvrait de manière exhaustive les aspects relatifs à l'espace et aux fournitures d'allaitement, aux temps de pause, aux soutiens, et aux responsabilités des résidents. Parmi les dix directeurs de programmes ayant répondu au sondage : 60 % étaient des femmes, 70 % avaient encadré des résidents allaitant, 40 % avaient abordé la question des aménagements pour l'allaitement, et tous étaient favorables à l'instauration d'une politique. Parmi les 24 résidents interrogés : 45 % ont atteint leurs objectifs d'allaitement, 74 % ont cessé d'allaiter prématurément en raison d'obstacles professionnels, et 88 % ont signalé un faible soutien sur leur lieu de travail. Presque tous les résidents (96 %) étaient favorables à l'élaboration d'une politique.

Conclusion : Il existe une opportunité et un besoin pour une politique plus complète en matière d'allaitement et de lactation pour les résidents en chirurgie au Canada. Notre politique met en lumière les domaines clés où les résidents pourraient être mieux soutenus pour atteindre leurs objectifs d'allaitement.

Introduction

The Public Health Agency of Canada and The World Health Organization recommend exclusive breastfeeding for the first six months of a child's life, followed by an additional 18 months or longer of supplementing breast milk with complementary foods as desired.[1,2] The benefits of breastfeeding are numerous for both infants and mothers, including immunological, developmental, and psychological.[3-18] Conversely, delaying milk expression can cause plugged ducts or mastitis, as well as the possibility of a decreased milk supply.[1] Despite often counseling their own patients to breastfeed, physician mothers are at high risk for unintended weaning – almost all report at least one barrier to successful lactation in the workplace.[19] Lack of support for lactation is cited as a reason to prematurely discontinue. Resident physicians report even more barriers than staff physicians due specifically to time constraints.[19] A study by Dixit et al found that 33% of pediatric trainees did not meet their breastfeeding goals.[20] This resulted in feelings of sadness, defeat, and guilt. Most of these trainees cited work demands as the primary reason for discontinuing exclusive breastfeeding. In addition, 25% were not aware of a private room to express milk. Similar outcomes were seen with internal medicine, family medicine, and anesthesia residents who reported insufficient break time as their primary barrier.[21]

Surgical training programs present even greater challenges to lactating trainees given the location (operating room), longer hours, and largely male staff.[19-24] A study of American general surgery residents found 40% who had a child during residency considered leaving their program and 30% would counsel female medical students against a surgical career because of the difficulties of becoming a mother during training.[25] These included lack of designated lactation facilities, trouble balancing work duties and lactation, and discomfort in asking to leave the operating room (OR) to express milk; this resulted in 58% stopping breastfeeding earlier than desired. A Canadian study had similar results: only 40% of surgical residents met their breastfeeding goals while 80% of non-surgical residents met theirs.[26] Furthermore, surgical residents are at increased risk of delivering preterm babies, who especially benefit from an exclusively/supplemented breastmilk diet.[1,27,28]

To date, there is a dearth of research specific to lactating Canadian surgical trainees. This study aimed to investigate the current landscape of breastfeeding and lactation policies specific to surgical residents in North America and examine the experiences and opinions of surgical trainees and program directors (PDs) in Canada regarding such a policy. Based on the results of our policy search and survey study, we propose a comprehensive breastfeeding and lactation policy for surgical residency programs in Canada that do not currently have one and invite those who do to consider updating theirs.

Methods

This was a Research Ethics Board approved single center study with two parts: scoping review (previously published protocol) and prospective survey study.[29] Research was guided by a multi-disciplinary team of five consultants with unique knowledge bases: a lactation consultant for breastfeeding expertise, a human resource (HR) specialist to advise on policy, a board-certified surgeon and resident trainee with personal knowledge of breastfeeding and lactation to provide insight on the practicality of breastfeeding and lactation policies, and a health information specialist to assist in the literature search. Consultation among team members took place throughout the study and involved frequent collaboration when examining existing policies and designing surveys to ensure all relevant topics and perspectives on breastfeeding and lactation in the workplace were considered.

Scoping review

Methodology from our previously published scoping review protocol was followed using the integrated Arksey and O'Malley and Levac et al approaches.[29-31] Breastfeeding and lactation policies were identified using five sources. First, a relevant database search (Appendix A) and hand searching references. Second, a grey literature search using relevant search terms (breastfeeding and resident, nursing, lactation, and breastfeeding policy). Third, Canadian PGMEs and surgical divisions were emailed requesting access to breastfeeding and lactation policies when none were publicly available. Fourth, Facebook (2022 Facebook, Menlo Park, California, USA) was utilized, as shown previously as an effective way to study breastfeeding.[32] Dr Milk, a private Facebook group of almost 30,000 physician mothers, was manually searched. Finally, we searched the websites of the top 50 American medical schools from the QS World University Rankings Top Medical Schools 2022.[33] The searches were limited to English, with no time restriction. Two independent coders conducted study selection. The two coders processed a small pilot sample of fifty initial search results and then compared their results to ensure common understanding of inclusion criteria. These criteria were: article includes or

heavily references a policy, breastfeeding and lactation are a distinct part of the policy, and surgical residents are covered by the policy. The coders met three times during the process; disagreements were resolved by a third party. Data extraction into a preformed Excel template was done by two coders using an iterative process and summarized quantitively. Details extracted from each policy included university, level (department of surgery vs. PGME), and components covered by each policy (lactation location, presence of refrigeration, presence of other resources in the lactation space, lactation break times, support for residents, breastfeeding rights, and resident responsibilities). These components were selected based on consultation with our team's lactation consultant and HR specialist.

Survey study

Two surveys were designed based on input from our multi-disciplinary team as well as findings from the scoping review: one for surgical trainees and one for PDs. The trainee survey queried: demographics, parental leave, breastfeeding and lactation experience, lactation location and timing, barriers to lactation at work, support from program, and breastfeeding and lactation policy. The PD survey queried: demographics, lactation knowledge, experience with lactating trainees, accommodations provided, and breastfeeding and lactation policy.

We invited all surgical PDs in Canada with available contact information participate. An initial email with embedded survey link was sent with a reminder one week later. An email to surgical program administrators was sent to request distribution of the trainee survey to all trainees in their program, with a follow-up one week later. Inclusion criteria was being either a current surgical PD or a past/current lactating surgical resident. Exclusion criteria were those that do not understand English and those trainees with no current or previous breastfeeding experience. The surveys were hosted by "Google Forms" (2022 Google, Mountain View, California, USA). All responses were stored and accessed in the USA. This company is subject to U.S. laws that allow authorities access to the records of internet service providers. All data collected was directly transferred to an auto-populated Excel sheet.

Results

Scoping review

Our search yielded 290 abstracts after duplicates were removed, then narrowed to 30 articles reviewed in full per inclusion criteria. Four articles from four different journals and referencing five different policies met criteria. Manual search and correspondence yielded an additional five policies. No policies were found in the Dr. Milk Facebook group. See Figure 1 for PRISMA diagram. Policy characteristics are summarized in Table 1.

Table 1. North American breastfeeding and lactation policies for surgical residents - policy characteristics

				Policy Components						
Journal Article	Document Title	Institution	Level	Place to Pump	Refriger -ation	Other Room Items	Breaks	Support for Residents	Breastfeeding Rights	Resident Responsibilities
Livingston-Rosanoff et al.,2019 [34]	Guidelines for Wellness of Lactating Surgical Residents	University of Michigan, USA	DOS	Y				Y		Y
Livingston-Rosanoff et al.,2019 [34]		University of Wisconsin, USA	DOS	Y				Y	Y	
Johnson et al., 2020 [35]		East Carolina University, USA	GME	Y	Y	Y		Y	Y	
Trigo et al., 2021 [36]	Lactation Policy and Procedure	Northern Ontario School of Medicine University, Canada	GME	Y		Y	Y		Y	Y
Ramsey et al., 2021 [37]	HRP Lactation Policy	University of Hawaii, USA	GME	Y		Y	Y	Y		Y
	Lactation Policy for Surgical Trainees	Northwestern University, USA	DOS	Y				Y		Y
	Nursing Mother Policy	University of Minnesota, USA	GME						Y	Y
	Well-Being Policy	University of Washington, USA	GME	Y	Y				Y	
	Work and Learning Environment Policy	University of Colorada, USA	GME	Y	Y	Y			Y	
	Resident, Fellow & Faculty Member Well-being	University of Maryland, USA	GME	Y	Y					

Abbreviations: DOS, Department of Surgery; GME, Graduate Medical Education. "Other Room Items" included chair, electrical outlet, computer, sink etc. Both timing and duration of breaks must be specified to meet criteria

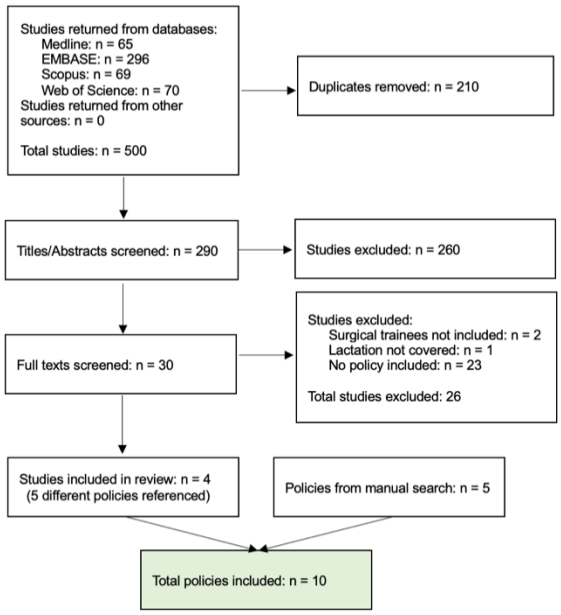

Figure 1. Prisma diagram

Notably, nine policies specified lactation location, four discussed refrigeration facilities, four indicated other available lactation equipment, and two stipulated specific timing/duration of breaks. Five defined supports for residents, six referenced breastfeeding rights, and five indicated resident responsibilities. None covered all seven.

Only two programs detailed the policy development process and utilized a multidisciplinary team: Northern Ontario School of Medicine (NOSM) and East Carolina University (ECU).[35,36] NOSM's team included an HR specialist but no lactation consultant, ECU the reverse, and both teams included staff and trainee representatives. The NOSM did not discuss access to refrigeration or trainee supports and ECU policy did not specify timing/duration of breaks or trainee responsibilities.

Survey study

Demographics: surgical trainees. There were 24 surgical trainee respondents: eight (33.3%) obstetrics and gynecology (OBGYN) trainees, six (25.0%) plastic surgery, five (20.8%) general surgery, two (8.3%) otolaryngology (ENT), two (8.3%) orthopedics, and one (4.2%) urology. They were of diverse ages: 8.3% aged 25-29, 66.7% 30-34, and 25.0% 35-40. Trainees ranged from Post Graduate Year (PGY) 1 to PGY6. Most trainees (*n* = 14; 58.3%) had taken one parental leave, several (*n* = 9; 37.5%) had taken two, and one respondent did not take any leave. The majority (*n* = 14; 58.3%) took leaves under six months. Half (*n* = 12; 50.0%) thought their parental leave was long enough. Eleven respondents (45.8%) were currently breastfeeding. The majority breastfed or are breastfeeding in PGY4 (*n* = 10; 41.7%) or PGY5 (*n* = 5; 20.8%). Thirteen (54.2%) used formula along with breast milk to meet their infants' needs. Of those that had finished breastfeeding, 55.0% (*n* = 11) did not meet their breastfeeding goals.

Demographics: program directors. Six female and four male PDs responded to the survey: four (40%) in OBGYN, two (20%) ENT, two (20%) plastic surgery, one (10%) urology and one (10%) general surgery. Nine (90%) were parents. Half (*n* = 5) had breastfed themselves, two (20%) indicated their partner had, two (20%) had not, and one (10%) declined to answer. Seven (70%) indicated they have had pregnant trainees in their program and that these trainees were breastfeeding upon return to work. Nine of ten PDs were aware of the Public Health Agency of Canada's breastfeeding recommendations.

Breastfeeding barriers. We detailed the various barriers to achieving breastfeeding goals experienced by trainees in Figure 2.

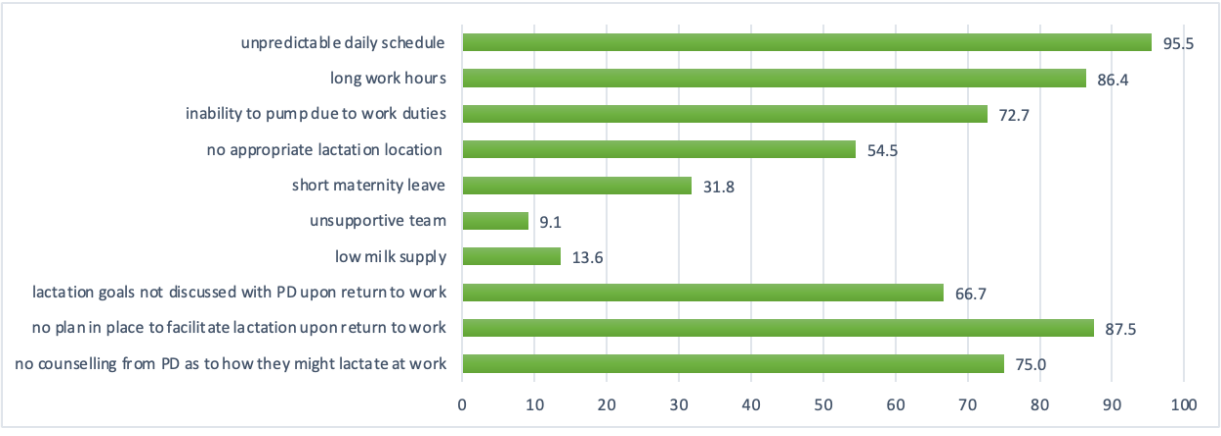

Figure 2. Percentage of trainees experiencing each barrier to lactation in the workplace

Only 27.2% (*n* = 6/22) had use of a lactation-specific or private room. The most used locations for pumping were call room (*n* = 8, 36.4%) and bathroom (*n* = 3, 13.6%). Zero respondents reported being able to pump at intervals under three hours and 36.4% (*n* = 8) were only able to pump at intervals greater than six hours. Seven (31.8%) utilized wearable pumps. Some programs provided facilities to refrigerate milk (*n* = 12, 54.5%) and sufficient breaks to express milk (*n* = 6, 27.3%). Electric breast pumps were provided for two respondents (9.1%). Half of respondents (*n* = 13, 54.2%) indicated that their residency program was generally supportive of their breastfeeding and lactation.

Program director support. Nine of ten PDs (90%) reported that lactation accommodations were not discussed in the inaugural orientation session with trainees, with three (30%) citing that the main reason for not doing so was because they had never thought about it. All seven PDs who have had pregnant trainees during their tenure had formal meetings with these residents upon their return where breastfeeding goals were discussed. Four (57%) of these PDs specifically discussed lactation accommodations that could be made for trainees.

Support for a breastfeeding and lactation policy. All ten PDs indicated they would support a breastfeeding and lactation policy for surgical residents in their program. Eight PDs indicated they would agree to participate in conflict resolution if issues arose regarding a resident's ability to meet their lactation needs, two were unsure. All but one (95.8%, *n* = 23) trainee indicated that they would want a breastfeeding and lactation policy, with only two indicating that they are aware of existing policies at their residency programs. Figure 3 compares the responses of trainees and PDs when asked what components of a policy they would support, specifically around opportunities to pump and resident responsibilities. Similar degrees of support were between trainees and PDs was seen for most policy components, with some exceptions. A majority (78.3%, *n* = 18) of responding trainees supported the option to use a wearable pump in the OR, while only 30% (*n* = 3) of PDs supported this. While 60% (*n* = 6) of PDs supported residents' responsibility to reach out to other available team members to serve in their absence while out of OR to pump, only 30.4% (*n* = 7) of trainees supported this. Table 2 summarizes a subset of qualitative feedback received from PDs and trainees when asked if they had any additional thoughts on the topic of breastfeeding during surgical training and a supportive policy for residents.

Table 2. Feedback from PDs and trainees on breastfeeding during surgical training

Program Directors	Trainees	
"Try to combine breastpumping with lunch break or other tasks that doesn't require you to be with patient or colleagues."	"Faculty were supportive, but I think more awareness would be helpful though, particularly for the staff who didn't train during a time where residents were also mothers. Also, many staff were unfamiliar with the concept of pumping being a necessity to maintain supply and also relieve engorgement. This includes the younger staff who don't have children themselves as well as older male staff whose partners may not have been working moms needing to pump. Again, no issues whatsoever, but would be nice if people were more familiar with the concept!"	"I was the first one to be pregnant during residency's and I do believe we can do better to help future residents… unfortunately for me because of an unsupportive staff my milk production stop because I wasn't allowed to pump during the day (12 hour shift) finished my OR day with rock solid breast and scrub all wet with milk. That staff even laugh at me… (and yes it was a women staff)"
"Program should support virtual attendance at teaching rounds to allow for both pumping and participation."	"As challenging as breastfeeding at work was, our program is improving and is very supportive but limited/challenges moving beyond rigours of surgical residency training. It is extremely concerning that even though home program trying to do better, residents can get completely abandoned if they end up at the wrong community hospital/elective rotation location."	"Would love a policy to protect time to pump and ensure comfortable and appropriate spaces to pump. Spaces designated for pumping often do not have fridges, computers, phones, or are not private. I would also appreciate any guidance for pumping during OR cases...I haven't done this yet and do not know if it would be well received."
"Wearable breast pump in OR is not practical. "Prolonged procedure" needs to be defined. Biggest barriers are need for appropriate space. It is often the hospital/ health authority not the university or residency program that needs to provide this space, and as a PD that is the biggest barrier I face. That the spaces residents have access to are not close enough/ logistically practical for them. OR lounges/ break rooms/ staff spaces having breastfeeding rooms would be the biggest contributor to this being easier for residents"	"Expectations were to work the same amount as always (no breaks). My supply dropped because I couldn't pump regularly so had to stop BF shortly after return to work. The length of my mat leave was my decision (didn't want to delay graduation) and if I wanted longer, it would have been possible."	"It is extremely variable. Our program attempts to be very supportive and encouraging. They are welcoming of pumping. However, the demands of surgical training are such that without active accommodations it is very hard to meet breastfeeding/pumping goals. In particular, on rotations away from the main program (ie community surgery), you lose the "protection" of your home program somewhat and are less supported."
	"Surgery is still largely male dominated, at least where I train. I think there is a lack of education to our male colleagues about what EXACTLY pumping at work entails."	"Coming from ObGyn i am appalled how little external/institution support there is"

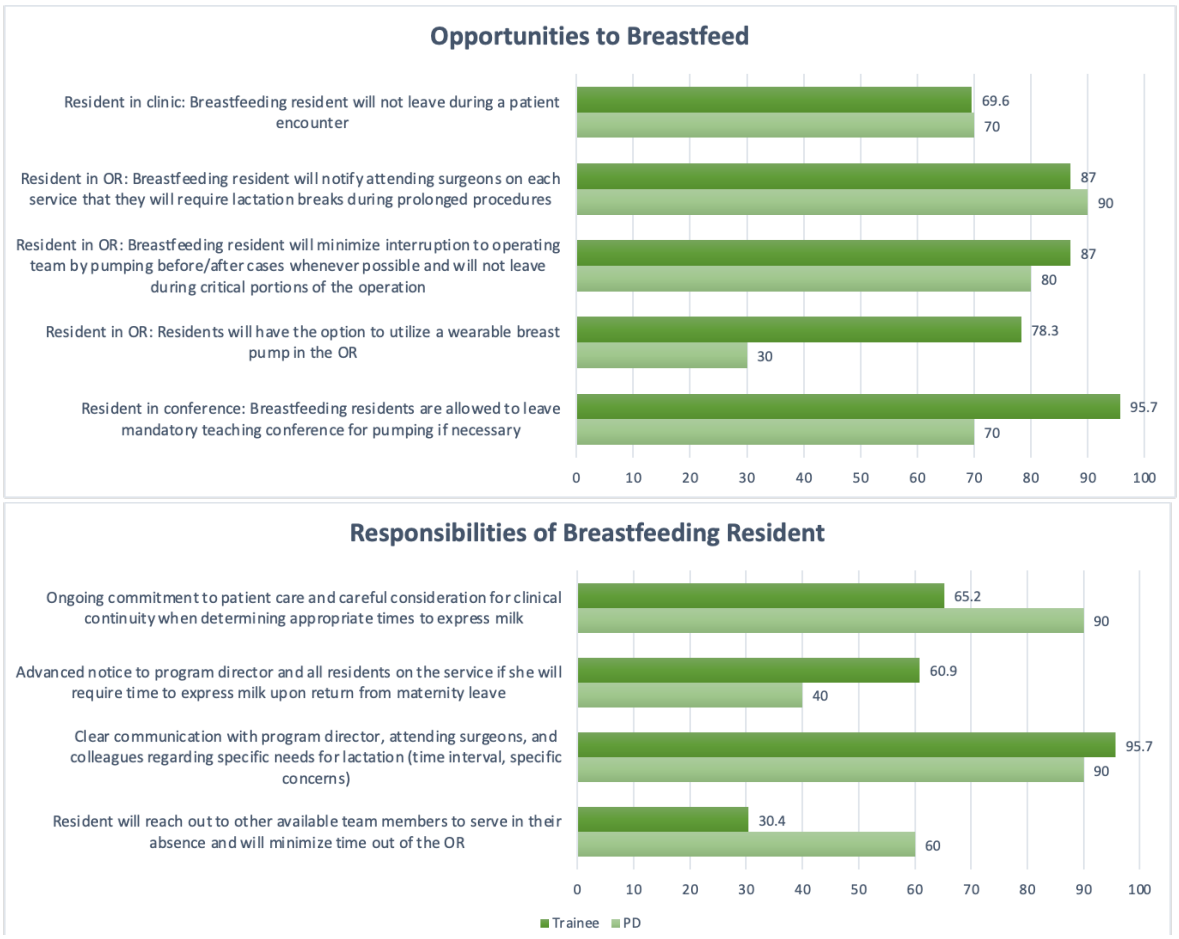

Figure 3. Percentage of PDs and trainees supporting breastfeeding and lactation policy components

Response rate. Surgical trainee response rate could not be calculated because the number of surgeons pregnant during residency was unknown, and the method of survey distribution did not allow for calculation of the total number of recipients. There were 107 surgical residency programs in Canada at the time–the departments contacted were cardiac surgery, general surgery, OBGYN, orthopedics, ENT, plastic surgery, urology, and vascular surgery. Of these, 53 had readily available contact information for program directors, giving a PD survey response rate of 18.9%.

Discussion

This scoping review and prospective study examined breastfeeding and lactation policies for surgical residents in North America using best practices and a multi-disciplinary team.[30,31] There is a paucity of such policies, and many deficiencies in those that do exist. Most focus primarily on lactation spaces but fail to establish criteria for timing and duration of breaks or responsibilities of residents and supervisors. Some refer to lactation support, but wording is vague and does not definitively state what trainees are entitled to. There is also lack of sufficient consideration for challenges specific to trainees in surgical programs. Although almost all policies lacked robustness and definitive wording, the policy by NOSM stood out for its details on lactation timing and duration, and resident responsibilities.[36]

The overall dearth of available policies applying to Canadian surgical residents, as well as the incompleteness of the policies, influenced the creation of surveys to determine what breastfeeding and lactation support is already provided by PDs, as well as what residents have experienced and what they would find useful in a policy. The results of our trainee survey echoed much of what is already known in the literature about the poor experiences of lactating residents. Reasons for these challenging experiences vary, but common themes we found were long work hours, demanding schedules, and lack of appropriate space to pump.[19,21,24,38,39] Our results bolstered existing literature showing that most breastfeeding surgical residents do not meet their breastfeeding goals. More

concerning is evidence from American ENT trainees that their breastfeeding experiences at work were so traumatizing that they do not plan to breastfeed with future pregnancies.[40]

Previous studies have shown difficult dynamics between residents and supervisors surrounding both breastfeeding and lactation knowledge and accommodations. Rangel et al found 85% of breastfeeding trainees are not comfortable asking staff for permission to leave the OR to pump.[25] A related problem is lack of knowledge among staff about time required to pump and the health concerns of delaying milk expression.[41] We found that breastfeeding was almost never discussed in residency orientation sessions and most lactating residents had little proactive guidance from PDs upon return to work. Despite these known shortcomings, we found PDs very willing to support future breastfeeding and lactation policy. A possible reason for this discrepancy is selection bias among survey respondents. It is possible PDs with a particular interest in this topic chose to respond, while trainees who felt less supported while lactating may have been more likely to respond. Regardless, in our study, the almost universal support for a policy among trainees and PDs alike suggests the need for more focus on implementation of such policy.

One potential solution to minimize impact on clinical duties is the option for trainees to use wearable pumps if they choose to and find them effective. This is particularly pertinent to surgical trainees who may be unable to leave the OR for regular breaks. Their use has been correlated with shorter lactation breaks and greater likelihood of reaching breastfeeding goals.[42] Despite this, our survey showed only 30% of PDs supported their use in the OR, with one noting specifically that they are “not practical”. It's possible that providing education to PDs and trainees alike about the functionality and benefits of wearable pumps might increase program support for their use.

Canadian trainees face greater barriers to lactation in the workplace than their American counterparts. The American College of Surgeons recommends that lactating trainees be allowed flexibility to pump, per patient protection clauses in the 2010 Affordable Care Act.[43] The Royal College of Physicians and Surgeons of Canada makes no breastfeeding-specific recommendations for trainees. Similarly, US residency programs are required to provide accessible lactation rooms to obtain accreditation.[44] These requirements do not exist in Canada. This underscores the need for breastfeeding and lactation-specific policies at Canadian residency programs, given that there is no federal legislation that guarantees paid breastfeeding breaks.

The evidence in support of a national breastfeeding and lactation policy for Canadian surgical trainees is compelling. We found trainees and PDs overwhelmingly support instating such policy. The American Academy of Family Physicians also recently published a template to assist medical schools and residency programs in policy development.[45] Formal policy can eliminate the need for each trainee to negotiate and advocate for their own lactation accommodations, reducing trainee stress and increasing the likelihood of meeting breastfeeding goals. In addition, research shows lactation can be managed in a way that minimizes impact on clinical duties.[46] Our study elucidated the policy components most valued by trainees and PDs: standard protocol for timing and duration of breaks, clearly defined trainee and supervisor responsibilities, and more convenient access to lactation-specific facilities. This, along with the content of existing policies found during our scoping review, as well as expert recommendations from our lactation consultant and HR professional, informed the creation of a comprehensive breastfeeding and lactation policy (Appendix B). We plan to propose the adoption of this policy at surgical programs across Canada. This work aims to help change surgical culture to be more inclusive, which is vital in creating a lactation-friendly environment. Additional steps forward include leadership endorsement of the policy, no repercussions for taking lactation breaks, and creation of a “new mom” network within surgical programs to encourage support and mentorship.

The primary limitation of this study was the survey distribution method. Not all PDs had available contact information. It is also possible some programs did not have female trainees at all, which could have introduced sampling and non-response bias. The number of female trainees in Canadian surgical residencies can only be estimated at about 900-1,000 across Canada.[47] Of these, only a small portion would have been pregnant during residency, and a smaller portion would decide to or be able to breastfeed. It is also not possible to know how many program administrators forwarded the survey link to their trainees. These factors precluded the calculation of a response rate. As this is a study that uses self-reported data, there may also be response bias. In addition, although gendered language was used in certain places in this paper, we acknowledge and support the pregnancy, breastfeeding and lactation experiences of all individuals, whether they

identify as women, men, non-binary, as having breasts or as not having breasts.

Conclusion

There is an opportunity and appetite to have a comprehensive breastfeeding and lactation policy for surgical residents in Canada. Our study found that residents are currently not optimally supported in their breastfeeding journeys; however, the culture is changing and slowly becoming more openly supportive. Our proposed policy highlights key areas where surgical residents can be better supported and empowered to meet their breastfeeding goals.

Conflicts of Interest: None
Funding: There was no funding for this project.
Edited by: Marcel D'Eon (editor-in-chief)

References

1. Public Health Agency of Canada. *Chapter 6: breastfeeding.* Ottawa: Public Health Agency of Canada; 2019. Available from: https://www.canada.ca/en/public-health/services/publications/healthy-living/maternity-newborn-care-guidelines-chapter-6.html
2. World Health Organization. *Guideline: counselling of women to improve breastfeeding practices*. 2018.
3. Chantry CJ, Howard CR, Auinger P. Full breastfeeding duration and associated decrease in respiratory tract infection in US Children. *Pediatrics*. 2006;117(2):425-432. https://doi.org/10.1542/peds.2004-2283
4. Sullivan S, Schanler RJ, Kim JH, et al. An exclusively human milk-based diet is associated with a lower rate of necrotizing enterocolitis than a diet of human milk and bovine milk-based products. *J Pediatr*. 2010;156(4):562-567.e1. https://doi.org/10.1016/j.jpeds.2009.10.040
5. Chen A, Rogan WJ. Breastfeeding and the risk of postneonatal death in the United States. *Pediatrics*. 2004;113(5):e435-e439. https://doi.org/10.1542/peds.113.5.e435
6. Greer FR, Sicherer SH, Burks AW, et al. The effects of early nutritional interventions on the development of atopic disease in infants and children: the role of maternal dietary restriction, breastfeeding, hydrolyzed formulas, and timing of introduction of allergenic complementary foods. *Pediatrics*. 2019;143(4). https://doi.org/10.1542/peds.2019-0281
7. Owen CG, Martin RM, Whincup PH, Smith GD, Cook DG. Effect of infant feeding on the risk of obesity across the life course: a quantitative review of published evidence. *Pediatrics*. 2005;115(5):1367-1377. https://doi.org/10.1542/peds.2004-1176
8. Rudant J, Orsi L, Menegaux F, et al. Childhood acute leukemia, early common infections, and allergy: the ESCALE study. *Am J Epidemiol*. 2010;172(9):1015-1027. https://doi.org/10.1093/aje/kwq233
9. Rosenbauer J, Herzig P, Giani G. Early infant feeding and risk of type 1 diabetes mellitus—a nationwide population-based case–control study in pre-school children. *Diabetes Metab Res Rev*. 2008;24(3):211-222. https://doi.org/10.1002/dmrr.791
10. Kramer MS, Fombonne E, Igumnov S, et al. Effects of prolonged and exclusive breastfeeding on child behavior and maternal adjustment: evidence from a large, randomized trial. *Pediatrics*. 2008;121(3):e435-e440. https://doi.org/10.1542/peds.2007-1248
11. Vohr BR, Poindexter BB, Dusick AM, et al. Beneficial effects of breast milk in the neonatal intensive care unit on the developmental outcome of extremely low birth weight infants at 18 months of age. *Pediatrics*. 2006;118(1):e115-e123. https://doi.org/10.1542/peds.2005-2382
12. Furman L, Taylor G, Minich N, Hack M. The effect of maternal milk on neonatal morbidity of very low-birth-weight infants. *Arch Pediatr Adolesc Med*. 2003;157(1):66. https://doi.org/10.1001/archpedi.157.1.66
13. Krause KM, Lovelady CA, Peterson BL, Chowdhury N, Østbye T. Effect of breast-feeding on weight retention at 3 and 6 months postpartum: data from the North Carolina WIC Programme. *Public Health Nutr*. 2010;13(12):2019-2026. https://doi.org/10.1017/S1368980010001503
14. Henderson JJ, Evans SF, Straton JAY, Priest SR, Hagan R. Impact of postnatal depression on breastfeeding duration. *Birth*. 2003;30(3):175-180. https://doi.org/10.1046/j.1523-536X.2003.00242.x
15. Schwarz EB, Brown JS, Creasman JM, et al. Lactation and maternal risk of Type 2 Diabetes: a population-based study. *Am J Med*. 2010;123(9):863.e1-863.e6. https://doi.org/10.1016/j.amjmed.2010.03.016
16. Schwarz EB, Ray RM, Stuebe AM, et al. Duration of lactation and risk factors for maternal cardiovascular disease. *Obstetr Gyn*. 2009;113(5):974-982. https://doi.org/10.1097/01.AOG.0000346884.67796.ca
17. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50 302 women with breast cancer and 96 973 women without the disease. *The Lancet*. 2002;360(9328):187-195. https://doi.org/10.1016/S0140-6736(02)09454-0
18. Lipworth L. History of breast-feeding in relation to breast cancer risk: a review of the epidemiologic literature. *J Natl Cancer Inst*. 2000;92(4):302-312. https://doi.org/10.1093/jnci/92.4.302
19. Cantu RM, Gowen MS, Tang X, Mitchell K. Barriers to breastfeeding in female physicians. *Breastfeeding Med*. 2018;13(5):341-345. https://doi.org/10.1089/bfm.2018.0022
20. Dixit A, Feldman-Winter L, Szucs KA. "Frustrated," "depressed," and "devastated" pediatric trainees. *J Human Lact*. 2015;31(2):240-248. https://doi.org/10.1177/0890334414568119
21. Ames EG, Burrows HL. Differing experiences with breastfeeding in residency between mothers and coresidents. *Breastfeeding Medicine*. 2019;14(8):575-579. https://doi.org/10.1089/bfm.2019.0001

22. Canadian Medical Association. *Number and percent distribution of physicians by specialty and gender, Canada 2019 Specialty*.; 2019.
23. Balk SJ, Yellin TG. Breast-feeding during pediatric residency: is 'breast-fed is best fed' only for others? *Pediatrics*. 1982;70(4):654-654. https://doi.org/10.1542/peds.70.4.654
24. Al-Imari L, Hum S, Krueger P, Dunn S. Breastfeeding during family medicine residency. *Fam Med*. 2019;51(7):587-592. https://doi.org/10.22454/FamMed.2019.759632
25. Rangel EL, Smink DS, Castillo-Angeles M, et al. Pregnancy and motherhood during surgical training. *JAMA Surg*. 2018;153(7):644-652. https://doi.org/10.1001/jamasurg.2018.0153
26. Mills G, Ruzycki SM, Sabourin J, Dance E. Experiences of breastfeeding among women residents in Alberta: a cross-sectional survey. *Postgrad Med*. 2021;133(1):42-47. https://doi.org/10.1080/00325481.2020.1814581
27. Cole S, Arnold M, Sanderson A, Cupp C. Pregnancy during otolaryngology residency: experience and recommendations. *Am Surg*. 2009;75(5):411-415. https://doi.org/10.1177/000313480907500512
28. Finch SJ. Pregnancy during residency. *Acad Med*. 2003;78(4):418-428. https://doi.org/10.1097/00001888-200304000-00021
29. Ziolkowski N, Rogowsky L, Innis J, Grant Buechner A, Springall E, Dengler J. Creation of a nationwide breastfeeding policy for surgical residents: a scoping review protocol. *BMJ Open*. 2022 Jun 13;12(6):e047466. https://doi.org/10.1136/bmjopen-2020-047466.
30. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Method*. 2005; 8(1):19-31. https://doi.org/10.1080/1364557032000119616
31. Levac D, Colquhoun H, O'Brien KK Scoping studies: advancing the methodology. *Implementation Sci*. 2010; 5(69). https://doi.org/10.1186/1748-5908-5-69
32. Juengst SB, Royston A, Huang I, Wright B. Family Leave and Return-to-Work Experiences of Physician Mothers. *JAMA Netw Open.* 2019;2(10):e1913054. https://doi.org/10.1001/jamanetworkopen.2019.13054
33. QS World university rankings top medical schools. QS Quacquarelli Symonds. 2022. Available from: https://www.topuniversities.com/university-rankings/university-subject-rankings/2022/medicine. [Accessed Oct 10, 2022].
34. Livingston-Rosanoff D, Shubeck SP, Kanters AE, Dossett LA, Minter RM, Wilke LG. Got Milk? Design and implementation of a lactation support program for surgeons. *Ann Surg*. 2019;270(1):31-32. https://doi.org/10.1097/SLA.0000000000003269
35. Johnson HM, Walsh DS. Crafting an evidence-based, accreditation council of graduate medical education-compliant lactation policy for residents and fellows. *Breastfeeding Med*. 2020;15(1):49-55. https://doi.org/10.1089/bfm.2019.0201
36. Trigo S, Gonzalez K, Valiquette N, Verma S. Creating a lactation-friendly learning environment for medical students and residents: a Northern Canadian perspective. *Breastfeeding Med*. 2021;16(7):511-515. https://doi.org/10.1089/bfm.2020.0331
37. Ramsey KW, Beckwith N, Heathcock L, Myers T, Balaraman V. Advocating for a culture of support for lactating medical residents in Hawai'i. *Hawaii J Health Soc Welf.* 2021;80(12):304-306. PMCID: PMC8646861.
38. Melnitchouk N, Scully RE, Davids JS. Barriers to breastfeeding for US physicians who are mothers. *JAMA Intern Med*. 2018;178(8):1130. https://doi.org/10.1001/jamainternmed.2018.0320
39. Sattari M, Serwint JR, Neal D, Chen S, Levine DM. Work-place predictors of duration of breastfeeding among female physicians. *J Pediatr*. 2013;163(6):1612-1617. https://doi.org/10.1016/j.jpeds.2013.07.026
40. Champaloux EP, Acosta AS, Gray ST, Meyer TK, Bergmark RW. Otolaryngology residents' experiences of pregnancy and return to work: a multisite qualitative study. Laryngoscope *Investig Otolaryngol*. 2022;7(5):1322-1328. https://doi.org/10.1002/lio2.878
41. Castillo-Angeles M, Smink DS, Rangel EL. Perspectives of US general surgery program directors on cultural and fiscal barriers to maternity leave and postpartum support during surgical training. *JAMA Surg*. 2021;156(7):647-653. https://doi.org/10.1001/jamasurg.2021.1807
42. McMillin A, Behravesh B, Byrne P, Unruh GK. A GME wearable breast pump program: an innovative method to meet ACGME requirements and federal law. *J Grad Med Educ*. 2021 Jun;13(3):422-423. https://doi.org/10.4300/JGME-D-20-01275.1
43. American College of Surgeons. Revised statement on the importance of workplace accommodations for pregnancy, parental leave, and lactation support for practicing surgeons. Available from: https://bulletin.facs.org/2021/08/revised-statement-on-the-importance-of-workplace-accommodations-for-pregnancy-parental-leave-and-lactation-support-for-practicing-surgeons/. [Accessed Feb 22, 2023].
44. Accreditation Council for Graduate Medical Education. *ACGME common program requirements (Residency);* 2022. Available from: https://www.acgme.org/globalassets/PFAssets/ProgramRequirements/CPRResidency_2022_TCCv2.pdf. [Accessed Feb 22, 2023].
45. American Academy of Family Physicians. *Breastfeeding and lactation for medical trainees.* Available from: https://www.aafp.org/about/policies/all/breastfeeding-lactation-medical-trainees.html. [Accessed Feb 22, 2023].
46. Creo AL, Anderson HN, Homme JH. Productive pumping: a pilot study to help postpartum residents increase clinical time. *J Grad Med Educ*. 2018;10(2):223-225. https://doi.org/10.4300/JGME-D-17-00501.1
47. The Canadian Resident Matching Service. *R-1 match reports*. 2022. Available from: https://www.carms.ca/data-reports/r1-data-reports/ [Accessed Mar 2, 2023].

Appendix A. Search strategy

Search Date: Jan 29, 2023

Totals:
Ovid MEDLINE – 65

Embase – 296

Scopus – 69

Web of Science – 70

Total: 500

De-duplicated: 290

Total abstracts reviewed: 290

Total full papers reviewed: 30

Ovid MEDLINE: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE® Daily and Ovid MEDLINE® <1946-Present>		
#	**Search Statement**	**Results**
1	Education, Medical, Graduate/	32832
2	(house staff or (intern* adj2 (medical or dental))).tw.	8688
3	((residenc* or resident*) adj2 (medical or medicine or surg* or derm* or dental or family medicine or obstetric* or oncolog* or pediatric* or paediatric*)).tw.	26403
4	(graduate medical education or pgme or gme).tw.	7740
5	1 or 2 or 3 or 4	65986
6	exp Breast Feeding/	43187
7	(Breast feeding or breastfeeding or ((breast* adj2 (collection* or expression* or pump*)) or chest feeding or lactation)).tw.	86842
8	(Direct feeding or (breast* adj3 nursing)).tw.	787
9	6 or 7 or 8	102112
10	5 and 9	148
11	health planning guidelines/ or exp policy/	177617
12	GUIDELINES AS TOPIC/	42041
13	(guideline* or policy or policies or recommendation*).tw.	995855
14	11 or 12 or 13	1116699
15	5 and 9 and 14	65

EMBASE

1	exp postgraduate education/ or exp medical education/	366311
2	(house staff or (intern* adj2 (medical or dental))).tw.	12568
3	((residenc* or resident*) adj2 (medical or medicine or surg* or derm* or dental or family medicine or obstetric* or oncolog* or pediatric* or paediatric*)).tw.	40610
4	(graduate medical education or pgme or gme).tw.	9212
5	1 or 2 or 3 or 4	396759
6	exp breast feeding/	63562
7	(Breast feeding or breastfeeding or ((breast* adj2 (collection* or expression* or pump*)) or chest feeding or lactation)).tw.	102691
8	(Direct feeding or (breast* adj3 nursing)).tw.	727
9	6 or 7 or 8	124345
10	5 and 9	878
11	exp policy/	320818
12	exp practice guideline/	684644
13	(guideline* or policy or policies or recommendation*).tw.	1393203
14	11 or 12 or 13	1889057
15	5 and 9 and 14	296

Scopus

(TITLE-ABS-KEY ("house (TITLE-ABS-KEY (“house staff" OR (intern* W/2 (medical OR

dental)) OR ((residenc* OR resident*) W/2 (medical OR medicine OR surg* OR derm* OR dental OR "family medicine" OR obstetric* OR oncolog* OR pediatric* OR paediatric*)) OR "graduate medical education" OR pgme) AND TITLE-ABS-KEY ((("breast feeding" OR

breastfeeding) OR (breast* W/2 (collection* OR expression* OR pump*)) OR "chest feeding" OR lactation OR "direct feeding" OR (breast* W/3 nursing)) AND (guideline* OR policy OR policies OR recommendation*)))

Web of Science

("house staff" OR (intern* NEAR (medical OR dental)) OR ((residenc* OR resident*) NEAR (medical OR medicine OR surg* OR derm* OR dental OR "family medicine" OR obstetric* OR oncolog* OR pediatric* OR paediatric*)) OR "graduate medical education" OR pgme OR gme) AND (("breast feeding" OR breastfeeding) OR (breast* NEAR (collection* OR expression* OR pump*)) OR "chest feeding" OR lactation OR "direct feeding" OR (breast* NEAR nursing)) AND (guideline* OR policy OR policies OR recommendation*)

Appendix B: Breastfeeding and Lactation Policy for Canadian Surgical Residents

Adapted from existing policy from NOSM[37]

Definitions

- Breast milk: is the production of human milk for child-feeding purposes
- Lactation: is the production of breast milk from mammary glands
- Breastfeeding: is the production of breast milk through direct extraction by baby
- Pumping: is the process of extracting breastmilk via a manual, battery-powered, or electric breast pump

Purpose/Scope

- Exclusive breastfeeding is recommended by the WHO and Health Canada for six months, followed by one year or longer of supplementing breastmilk with complementary foods as desired. There are significant health benefits for both mother and infant.
- Doctors recommend and champion breastfeeding to their patients and so it is important that they themselves are also enabled to breastfeed/express milk themselves.
- There is a specific need for formalized policy for surgical trainees due to the long work hours, challenging schedules, and specific locations of their work (i.e., OR).
- Providing appropriate space and protected time for pumping will help avoid negative effects of infrequent or insufficient expression of milk, such as plugged ducts, mastitis, or decrease in supply. Formal policy will help relieve the anxiety many trainees feel about requesting accommodations from their supervisors.
- Scope: this policy was specifically developed for surgical resident trainees

Objective

- The objective of this policy is to ensure all surgical trainees are well-informed of their rights to breastfeed in the workplace, are well-supported with lactation space and breaks at work, and are enabled to meet their breastfeeding goals.

Roles and Responsibilities

- **Responsibilities of Academic Leader/Supervisor**
    - Inform all trainees on maternity/parental leave of the existence of the breastfeeding and lactation policy in advance of their return to work.
    - Engage in open communication with lactating trainees about available lactation facilities and the scheduling of lactation breaks.
- **Responsibilities of Learner**
    - Clear communication with PD and attendings regarding specific lactation needs prior to returning from parental leave as well as throughout breastfeeding period.

- Commitment to patient care and careful consideration of clinical situations when planning lactation breaks throughout the day.
- *Note: trainees are not responsible for arranging team members to serve in their absence while they are on lactation breaks*

Lactation Facilities and Equipment

- **LACTATION SPACE:**
  - The lactation space provided must be a private, dedicated space for milk expression / breastfeeding with a locking door and appropriate signage/icon to ensure privacy and ease of location for trainees. Bathroom facilities are not appropriate for milk expression.
  - The room should contain at minimum a comfortable chair, a small table, an electrical outlet, and proximity to handwashing sink.
  - If possible, a small fridge, a computer and a phone is helpful to provide in a lactation space.
  - This dedicated space should be no more than five minutes' walk away from the OR or clinic where the trainee is working.
- **PUMPS:**
  - Programs should consider providing closed system hospital grade electric pumps appropriate for sharing.
    - These have been shown to significantly speed up pumping time and can thus allow trainees to return to work sooner.
  - Residents are permitted to use wearable pumps, including in OR during cases.
- **STORAGE:**
  - Trainees may store expressed milk in the lactation room fridge or in any other staff-dedicated fridge used for food and beverage storage.
  - Expressed milk should be labeled with name and date.
  - Fridges used for patients or specimen/pharmaceutical storage should not be used.

Lactation Breaks

- **RIGHT TO LACTATE:** Trainees are entitled to dedicated breaks to express milk.
  - These breaks should be approximately 30 minutes long every three to four hours, at minimum. These are lactation-specific breaks; trainees should not be asked to combine pumping with normal meal breaks, nor should they be asked to work additional time to make up for lactation breaks.
  - If additional time for pumping is required, trainees may make a request to the PD or attending.
    - There are several factors that may influence the time required to pump (I.e., infant age), and these should be considered.
- **CLINIC:** While working in clinic, trainees will be allowed to leave to pump at reasonable intervals so long as these breaks do not impact an ongoing patient encounter.
- **OR:** The trainee will notify attending surgeons before prolonged procedures in the OR that they will need to leave at certain timepoints to express milk. The trainee will minimize interruption to the procedure by pumping before or

after cases whenever possible. The trainee will organize their breaks such that they are not absent during critical portions of the procedure.

    - Trainees have the option to utilize a wearable breast pump in the OR should they choose to do so. This is not required or expected of trainees.

- **CLINICAL EMERGENCIES:** in the event of an emergency, patient safety takes precedence over lactation needs.

Support and Education

- **ANNUAL ORIENTATION:** The breastfeeding and lactation policy should be included in inaugural orientation session / handbook for incoming trainees.
- **CHECK-INS:** Programs directors / attendings are responsible for setting a meeting to review policy and create a breastfeeding plan upon trainee return to work from parental leave
- **CONFLICT RESOLUTION:** Program directors / attendings should be open to conflict resolution if any problems should arise with meeting breastfeeding goals.

Special Considerations

- **BREASTFEEDING**: Certain infants may need special attention in cases of prematurity, feeding difficulties etc. Appropriate space and accommodations will be made in these situations to enable the infant(s) to be brought to the workplace for breastfeeding at appropriate intervals.
- **SUPPORT GROUPS**: Interested residents will be encouraged and enabled to seek breastfeeding support through local support groups and resources.

Breastfeeding Rights

- *Specific to each province*

Note: Each residency program may consider context and particularities specific to their workplaces when implementing a policy. These policy changes or additions should be discussed with and validated by relevant experts.