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ORIGINAL ARTICLE – BREAST ONCOLOGY

Same-Day Surgery for Mastectomy Patients in Alberta: A Perioperative Care Pathway and Quality Improvement Initiative

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ABSTRACT

Background. Same-day surgery (SDS) following mastectomy is safe and well accepted. Overnight admission in patients fit for discharge is an inefficient use of health resources. In response to a national review highlighting SDS following mastectomy at 1.4% in Alberta, a perioperative pathway was conceived.

Methods. The pathway was implemented across Alberta at 13 hospitals beginning in 2016. A steering committee was assembled, and clinical and administrative leads at each site were identified. Opportunities along the patient care experience whereby action could be taken to promote uptake of SDS were identified. Provincially branded support materials including presentations, order sets, and standard operating procedures were developed. Nurse educators provided in-service teaching such as standardized drain care and discharge teaching. Educational booklets, group classes, and online resources were developed for patients and families. An audit of SDS rates, unscheduled return to the emergency department (ED), and readmission rates was reported to teams quarterly, allowing for iterative modifications. Patient-reported experience measures (PREMs) were collected.

Results. SDS following mastectomy increased from 1.7 to 47.8%, releasing an estimated 831 bed days per year. No differences in unexpected return to the ED or readmission to hospital existed between SDS patients and those admitted overnight. A total of 102 patients completed the PREM survey, of whom 90% felt "excellent or good" with the plan to go home, how to care for themselves once home, and who to contact should issues arise.

Conclusions. Implementation of a provincial perioperative pathway improved uptake of SDS following mastectomy and demonstrated favorable PREMs.

BACKGROUND

In Canada, one in eight women will develop invasive breast cancer during their lifetime,[1] which translates to over 2300 cases of breast cancer each year in Alberta.[2] In the 2016–2017 fiscal year, nearly 1000 mastectomies were performed in Alberta, with similar rates to date.[3]

For over 20 years there has been emerging evidence to support early discharge, or same-day surgery (SDS), following mastectomy, with overwhelming evidence now demonstrating that this practice is safe without differences in complication rates.[4–18] In fact, one study has shown higher odds of postoperative complications in patients admitted to hospital following their surgery.[17] Early discharge significantly improves shoulder movement and wound pain, and those discharged from hospital early have fewer complaints and reduced rates of depression and

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anxiety.[19] In patients having SDS there is no difference between readmission rates, wound complications, reoperation rates, or number of visits to the emergency department.[20,21]Patient satisfaction with SDS has been shown to be higher, and psychological recovery quicker, in those receiving SDS.[4,6,11,14,15,22,23] Literature also suggests that SDS is not associated with a significant increase in caregiver burden.[11]

Taken together, this evidence suggests that, with appropriate selection of medically and socially fit patients, mastectomy should be delivered as a day surgery procedure. In fact, SDS is considered standard of practice in many jurisdictions,[20] though adoption of this practice varies substantially by geographic region.[24,25] Quality improvement pathways and protocols have been shown to improve uptake of SDS.[16,21] Improved cost effectiveness is another potential benefit of SDS, with multiple studies showing cost savings. [6,15,26] Overnight hospital stays for major breast cancer surgery, in patients who are best served at home, is an inefficient use of acute-care resources.

Despite the benefits and safety of mastectomy as a day-surgery procedure, the majority of patients in Alberta who undergo mastectomy have an overnight admission postoperatively.[24,27] In 2014, the Canadian Partnership Against Cancer (CPAC) examined the rate of same-day surgery for mastectomy by province and reported that, in Alberta, only 1.4% of mastectomies were being performed as SDS.[25] Alberta's rates were amongst the lowest in the country; by comparison, in Ontario, 38.7% of mastectomies were performed as SDS.[25]

In response to the CPAC data and low rate of SDS following mastectomy, a perioperative care pathway quality improvement initiative was implemented with the goal of changing how breast cancer care is delivered in Alberta. The aim of this study is to describe our experience with this provincial quality improvement initiative to develop and implement a perioperative pathway supporting SDS for medically and socially fit breast cancer patients receiving mastectomy. In addition, we evaluated patient satisfaction and quality of recovery using patient-reported experience measures (PREMs) during the implementation period.

METHODS

A perioperative pathway supporting SDS following mastectomy was conceived and implemented in collaboration with Alberta Health Service's Cancer Strategic Clinical Network (CSCN). The CSCN's mandate is to lead and support evidence-informed improvements and bring innovation to healthcare through the shared effort of stakeholders across the province. This project commenced in 2016 with in-services completed in mid-2018. The SDS perioperative pathway was a quality improvement initiative. As a quality improvement initiative with minimal risk, this initiative did not require approval from our institution's health research ethics board as per the "A Projects Ethics Community Consensus Initiative (ARECCI) Ethics Screening Tool". http://aihealthsolutions.ca/arecci/screening.

The SDS perioperative pathway was implemented across the Province of Alberta (population of approximately 4.5 million) at 13 hospitals providing breast cancer surgery. These sites ranged from tertiary-care academic institutions with dedicated breast programs to community hospitals with 1–2 general surgeons providing breast cancer surgery. Of the 13 hospitals included, 7 were in an urban center, and 6 were regional or rural centers.

The SDS perioperative pathway was designed to support three main groups: surgeons/nurse navigators, patients/caregivers, and perioperative care nurses. It consisted of five main components with regional modifications to support local barriers to uptake:

1. Creation of a provincial steering committee to implement the pathway with hospital medical and operational leads to encourage accountability and sustainability
2. Surgeon and nurse navigator education and resources
3. Patient and caregiver education and resources
4. Perioperative nursing education and resources
5. Evaluation and feedback on quality metrics using a provincial measurement dashboard

Engagement of Provincial Steering Committee and Hospital Leads

The CSCN was responsible for coordinating activities of this project, including assembling a provincial steering committee, formulating partnerships and collaborations, consensus building, and pathway design methodology. The pathway was created in conjunction with patient advisors to enhance integrated knowledge translation.

At each of the hospital sites, six to eight clinical and administrative champions were identified, including a local breast surgeon and nurse navigator (where available) as well as operational leads for each of the following areas: breast health/general surgery clinic, preadmission clinic, day-surgery unit, inpatient unit, operating room, and postanesthetic recovery room. Pathway activities were facilitated in conjunction with the CSCN clinical leads that provided education and awareness on the safety and efficacy of SDS following mastectomy. Committee members were responsible to act as champions for the perioperative pathway and assisted in identifying local opportunities to

improve the patient care experience. Specific actionable steps to improve the utilization, safety, and support of patients receiving SDS were identified and implemented based on assessment of current and future desired state. Members facilitated the activities of the pathway, disseminated teaching and resources, and iteratively fed back issues and barriers that impacted progress.

Surgeon and Nurse Navigator Education and Resources

Customized materials designed for surgeons and nurse navigators were created and included: a formal presentation on SDS following mastectomy, examples of standardized pre- and postoperative order sets, and the development of a standard operating procedures framework for early postoperative complications, adapted to local resources. Surgeons were educated and encouraged to preoperatively arrange for SDS in medically and socially fit patients undergoing mastectomy (unilateral, bilateral). The pathway avoided strict inclusion criteria so as to allow for clinical judgement and surgeon autonomy. The initiative relied on local stakeholders wanting to adopt best practices but did not carry any punitive or incentive aspects, financial or otherwise. Surgeons were encouraged to consider SDS for patients where possible, but this typically excluded patients with significant comorbidities, those with greater than 3 h driving time to return to hospital, those with significant psychosocial reasons requiring admission, and those of advanced age (typically greater than 80 years). Though evidence supports the safety and efficacy of SDS following mastectomy with immediate reconstruction, these patients were excluded from this initiative as a formal enhanced recovery after surgery (ERAS) process was being simultaneously implemented at some centers. Surgeons were encouraged to book eligible patients as first case or early in the day using standardized preoperative order sets. Example postoperative order sets were provided, however surgeons were encouraged to adopt or continue their current practice at their own discretion. The order sets included aspects of modern ERAS protocols including strategies such as preoperative use of antiemetics, routinely scheduled Tylenol and antiinflammatories, and avoidance of narcotics. Routine regional anesthetic strategies such as paravertebral blocks were not incorporated.

Patient and Caregiver Education and Resources

Provincially branded patient education booklets, standardized teaching scripts for individual and group teaching sessions, an educational video, and online resources were developed for patients and caregivers. Actual practice varied by region based on existing local staffing resources, however online materials were universally available in all centers. In general, following or at the initial surgical consultation, patients would meet with the nurse navigator (either in person or by phone call as available) and receive standardized one-on-one teaching as well as a provincial patient education package called "Your Journey Through Breast Cancer Surgery" (available to print from myhealthalberta.ca). This resource reinforced day surgery for mastectomy and set the expectation upfront that most patients (unless identified by surgeon) would go home on the same day as their surgery. Patients were also invited to attend a group education class where available, depending on region. During these sessions, patients and caregivers were educated on what to expect prior to and following surgery, drain teaching, information on controlling pain and nausea, and possible postoperative complications and were given information on who to call and what to do should a complication arise, in accordance with local resources. Patients and caregivers were given nursing contact information and a plan for assessment outside of emergency services if a postoperative issue was encountered; For example, some clinics had a nurse-initiated phone call to patients at high risk of early postoperative complications and would be available for questions on postoperative day 1 through 3.

Perioperative Nursing Education and Resources

Two dedicated nurse educators provided on site in-service training for perioperative nursing teams at 13 hospitals. Preadmission clinic, day surgery, OR, and postanesthesia care unit (PACU) nursing staff were educated on the perioperative pathway and made aware that most patients would be discharged home on the day of surgery unless previously indicated or unless they had a complication or issues requiring conversion to an overnight stay. Following surgery, the surgical team would use a standardized discharge patient information handout that included information on supportive postoperative medications and references to the "Your Journey Through Breast Cancer Surgery" for common postoperative questions and concerns. In the postanesthetic recovery room, nursing staff were educated to reinforce perioperative day-surgery educational materials. Day-surgery recovery nursing staff similarly educated patients on potential early postoperative complications and drain care.

Evaluation and Feedback

The primary outcomes evaluated by the perioperative pathway included: rate of SDS, safety (30-day unexpected return to emergency department or readmission rate), and patient satisfaction. Patient satisfaction was collected prospectively using voluntary patient survey data during

the implementation period. Data were collected prior to (from 2011/2012) and following pathway implementation (beginning in 2016/2017).

Patients with ductal carcinoma in situ or invasive breast cancer were identified using the International Classification of Disease (ICD-10) codes (D05.0-9 and C50.011-019) using the Alberta Cancer Registry (ACR). Inclusion criteria included: diagnosis between 2012 and 2018, age > 18 years, and Alberta resident at time of diagnosis. Deterministic linkage by personal health number (PHN) was used to link patients to multiple datasets including the Discharge Abstract Database (DAD) to determine hospital admissions and the National Ambulatory Care Reporting System (NACRS) for outpatient data. Hospital admissions were refined by surgical procedure (1.YM.89 and 1.YM.91—Radical/total mastectomy). Patients were coded as SDS only if they left hospital on the *same* calendar day as their surgery, otherwise they were coded as overnight stay (OS), even if the stay was less than 24 h.

Patient-reported experience measures (PREMs) were measured using a voluntary online survey 1 week postoperatively. Subjective recovery following surgery was assessed using the standardized Quality of Recovery (QoR-15) questionnaire.

A measurement framework using a provincial dashboard report (Tableau) was created and used to provide timely feedback on key measures and adverse outcomes to clinical teams and administrators. Data on the SDS rate, emergency department visits within 30 days of surgery, readmission rates, and patient satisfaction metrics were audited and fed back to each site to promote ongoing quality improvement.

RESULTS

The implementation of the SDS perioperative pathway occurred across the province over 18 months, with final nursing in-services completed in mid-2018. Between 914 and 1036 mastectomies were performed per year in Alberta during the study period (Table 1).

Rate of Same-Day Surgery

The rate of SDS following mastectomy in Alberta increased from 1.7% in 2011/2012 to 47.8% in 2018/2019 (Table 1), with the largest increase after formal implementation of the SDS pathway, releasing an estimated 831 bed days in 2017/2018. Modifications to aspects of the pathway were made in accordance with local patient population and resource characteristics. Major barriers that were verbalized to CSCN leads during iterative feedback sessions included: lack of surgery-specific nurse navigator support in smaller regions, surgeon preference for overnight admission, and patient travel time > 3 h.

Patient Safety: Return to Emergency Department and Readmission

Unscheduled return to the emergency department within 30 days of surgery ranged from 22 to 27% for SDS patients and from 24 to 25% for OS patients, with no statistical difference between groups (Table 2). Unplanned readmission rates ranged from 2 to 6% for SDS patients versus 3–5% for OS patients with a statistical difference between groups existing only in the 2016/2017 year ($p = 0.0312$) but no differences thereafter (Table 2).

Patient Satisfaction

A total of 102 patients completed the PREM survey, with 90% of respondents indicating that they felt "excellent or good" with the plan to go home, while 90% felt "excellent or good" with how to take care of themselves once home, 87% felt "excellent or good" with how to care for their drain, 84% felt "excellent or good" to care for their incision, and 90% felt "excellent or good" about who to contact if they required support or had an issue (Fig. 1). Subjective recovery 1 week following surgery was assessed using the QoR-15 questionnaire, with patients rating their recovery from 0 (poor/none of the time) to 10 (excellent/none of the time) across various domains (pain management, ability to eat, sleep, care for themselves, feel in control, general well-being, and return to work or usual home activities). The average response across categories pertaining to return to normal activities was 7.6 out of 10 (Table 3).

DISCUSSION

A standardized provincial pathway supporting improved perioperative care allowing SDS for mastectomy was created with broad engagement of the surgery community. It was supported with evidence and metrics/targets to address unexplained variation within the province. This work demonstrates that such a pathway can improve the uptake of SDS following mastectomy while maintaining high quality of recovery and patient satisfaction. We outlined the specific strategies used in our pathway: the use of a provincial steering committee, hospital site leads, and administrative champions, education to all providers (surgeons, nurse navigators, perioperative nurses), patient/caregiver education and resources, and a comprehensive feedback audit. Institutions similarly facing low uptake of this practice may find aspects of our pathway

TABLE 1 Number and percentage of mastectomies performed as day surgery in Alberta

Year	Number of mastectomies performed as day surgery	Total number of mastectomies performed in Alberta	Percentage of mastectomies performed as day surgery (%)
2011/2012	18	1066	1.7[b]
2012/2013	30	993	3.0
2013/2014	36	1036	3.5
2014/2015	53	997	5.3
2015/2016	77	1029	7.5
2016/2017[a]	213	947	22.5
2017/2018	336	914	36.8
2018/2019	441	923	47.8

[a]Indicates the year the SDS perioperative pathway was implemented

[b]Administrative and CPAC data reporting on baseline rate of SDS differ (1.7% shown above versus 1.4% reported by CPAC)

TABLE 2 Unplanned return to the emergency room or readmission within 30 days

Year	Unplanned return to emergency room			Unplanned readmission		
	SDS	OS	*p* value	SDS	OS	*p*-value
2016/2017	47/213 (22%)	176/734 (24%)	1.0000	13/213 (6%)	22/734 (3%)	0.0312
2017/2018	90/336 (27%)	146/578 (25%)	0.6672	6/336 (2%)	23/458 (4%)	0.1034
2018/2019	97/441 (22%)	116/482 (24%)	0.5776	13/441 (3%)	24/482 (5%)	0.2974

SDS same-day surgery, *OS* overnight admission

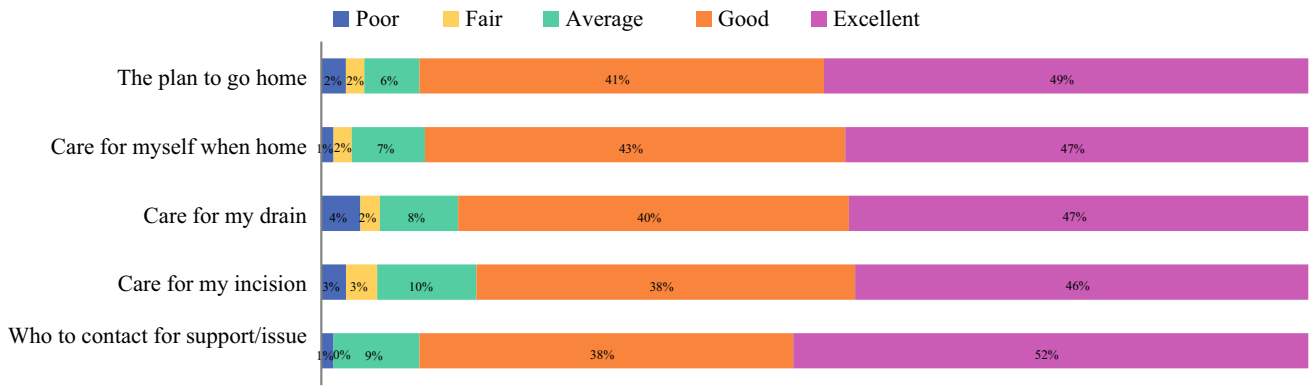

FIG. 1 Results of voluntary patient-reported experience measures (PREMs) survey, revealing that 90% of respondents felt "excellent" or "good" with the plan to go home, 90% felt "excellent" or "good" with how to take care of themselves once home, 87% felt "excellent" or "good" with how to care for their drain, 84% felt "excellent" or "good" to care for their incision, and 90% felt "excellent" or "good" about who to contact if they required support or had an issue

useful in reducing practice variation. This study is the first to report a Canadian experience using a multitiered provincial pathway to reduce significant variation in breast cancer surgery care delivery.

This project improved knowledge translation (KT) by improving the uptake of a well-accepted practice in a setting where implementation was low. It targeted various aspects of the "action cycle" described by Straus and colleagues,[27] including engaging stakeholders to identify problems/variations in current practice. The framework then informed the design of interventions that adapted knowledge to the local context, monitored uptake, and evaluated outcomes, creating ongoing quality improvement and sustainability. Collecting information on PREMs and subjective recovery ensured that the pathway was rooted in patient-centered care and helped reinforce practice changes.

During the implementation of the SDS perioperative pathway, regional differences existed that required tailoring of the intervention. There was varied understanding of the evidence supporting SDS following mastectomy across providers including surgeons and nursing staff. Overt

TABLE 3 Mean subjective recovery 1 week following surgery using the Quality of Recovery (QoR-15) questionnaire

QoR-15 question	Mean response (SD)
Able to breathe easily	9.2 (1.6)
Able to enjoy food	8.0 (2.6)
Feeling rested	7.1 (2.6)
Having a good sleep	6.8 (2.6)
Able to look after personal toileting and hygiene unaided	8.6 (2.2)
Able to communicate with family and friends	9.2 (1.7)
Getting support from hospital doctors and nurses	7.7 (3.1)
Able to return to work or usual home activities	5.9 (3.2)
Feeling comfortable and in control	7.0 (2.8)
Having a feeling of general well-being	7.0 (2.8)
Moderate pain	4.4 (3.1)[a]
Severe pain	1.9 (2.8)[a]
Nausea or vomiting	2.0 (3.1)[a]
Feeling worried or anxious	3.1 (2.9)[a]
Feeling sad or depressed	2.4 (3.0)[a]

SD standard deviation

[a]Favorable when respondents chose lower numbers

administrative support varied; while some centers felt implementation was highly valuable, others did not view this as a priority issue or as relevant. Some centers had attempted patient education classes in the past with poor attendance and therefore questioned the value. There were regional differences in patient volumes, presence of formal breast programs, and availability of formal nurse navigation support. Preimplementation patient education resources ranged from minimal to comprehensive, with variation in who delivered teaching to patients (surgeon versus clinical nurse or formal nurse navigator). There were also regional differences in how patients were managed postoperatively, either in a formal day-surgery unit with defined closing times on the same calendar day as the procedure, versus 23-h units that remained open past 10:00 pm. For day-surgery units, concern was raised regarding the capacity of the unit to accommodate the proposed pathway, as previously these patients would be transferred to an inpatient unit; for 23-h-stay units, the lack of a defined "closing" or discharge time was felt to have initially contributed to a lack of perceived value in same-day discharge and the potential for a subsequent non-breast admission when the bed became available later in the day. Despite addressing these regional differences, the largest barriers to the pathway implementation were a perceived lack of appropriate support, such as nurse navigation, and surgeon preference or perception that overnight admissions strengthened the quality of care and ensured greater safety for the patient.

This study has several limitations that warrant discussion. We created a measurement framework that used routinely collected administrative data over chart review or prospective methods to ensure sustainable and timely feedback to the 13 hospitals across Alberta. As a result, more nuanced variables such as the number of patients initially booked for day surgery but converted to an overnight admission, reason for conversion, whether the rates differed based on unilateral or bilateral procedures, and the time of day the surgery was performed were not collected. While we did identify other factors such as comorbidity and distance from hospital, these were in aggregate form to inform populations serviced and were not evaluated on an individual level. Our study did not formally evaluate rates of SDS according to eligibility; rather, the intent was to provide data to the sites to track their rates of SDS compared with other sites across the province and to address local challenges that contributed to this variability. While we did not collect granulated data on patient-specific factors, members of the CSCN team met with surgeons and teams locally to discuss barriers to uptake and develop strategies to address these barriers.

From a patient perspective, we used a pathway-specific questionnaire and standardized recovery scale to evaluate satisfaction, as opposed to a more qualitative approach, which may have yielded richer information. We did however include a free text box whereby patients could leave "other" feedback. When these responses were analyzed, none were about quality of care or perceived decreased value of their surgical experience, which may indicate that there is a discrepancy between what surgeons and patients perceive as value adds.

While the SDS perioperative pathway improved SDS from 1.7 to 47.8%, the majority of patients (52%) are still being admitted overnight, which will be the target of future work in this area. Regional adoption was variable but largely dependent on surgeon preference. Learning from and exporting successful strategies from high-adoption sites to low-adoption sites may continue to improve the rates of SDS. Given our sustainable measurement framework, we have the ability to report on a provincial level moving forward. To date, this initiative has relied on local stakeholders wanting to adopt best practice but did not carry any punitive or incentive aspects. As we continue to prove patient safety and satisfaction with SDS and as surgeons continue to adopt this practice, local department heads and hospital administrators may use this knowledge to mandate implementation by late adopters.

CONCLUSION

A provincial quality improvement initiative promoting best practices in breast cancer perioperative care resulted in higher use of SDS following mastectomy at variably resourced hospitals across our province. This resulted in a significant release of resources while maintaining high patient safety and satisfaction. A systematic and multidisciplinary approach to pathway development and implementation is an important and feasible strategy for improving the design and delivery of healthcare.

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REFERENCES

1. Canadian Cancer Society's Steering Committee on Cancer Statistics. Canadian cancer statistics 2017. Toronto: Canadian Cancer Society; (2017).
2. Alberta Health Services. Surveillance & reporting: 2012 report on cancer statistics in Alberta. Edmonton: Cancer Control Alberta, Alberta Health Services; (2015).
3. Alberta Health Services Tableau Dashboard. Mastectomy rate in Alberta. (2019). https://tableau.albertahealthservices.ca.
4. Margolese RG, Lasry JC. Ambulatory surgery for breast cancer patients. *Ann Surg Oncol.* 2000;7(3):181–7.
5. Goodman AA, Mendez AL. Definitive surgery for breast cancer performed on an outpatient basis. *Arch Surg.* 1993;128(10):1149–52.
6. Seltzer MH. Partial mastectomy and limited axillary dissection performed as a same day surgical procedure in the treatment of breast cancer. *Int Surg.* 1995;80(1):79–81.
7. Dravet F, Belloin J, Dupre PF, Fracois T, Robard S, Theard JL, Classe JM. Role of outpatient surgery in breast surgery. Prospective feasibility study. *Ann Chir.* 2000;125(7): 668–76.
8. Dooley WC. Ambulatory breast cancer surgery. *Am J Surg.* 2002;184(6):545–8.
9. Friedman D. Definitive breast cancer surgery as an outpatient: rationale and our experience. *Ann Ital Chir.* 2004;75(5):525–8.
10. Wells M, Harrow A, Donnan P, et al. Patient, carer and health service outcomes of nurse-led early discharge after breast cancer surgery: a randomised controlled trial. *Br J Cancer.* 2004;91(4):651–8.
11. Athey N, Gilliam D, Sinha P, Kurup VJ, Hennessey C, Leaper DJ. Day-case breast cancer axillary surgery. *Ann R Coll Surg Engl.* 2005;87(2):96–8.
12. Carcano G, Uccella L, Ferrari A, et al. Breast cancer surgery as an outpatient in Italy: is it possible? *Chir (Buchur).* 2005;18:323–5.
13. Marchal F, Dravet F, Classe J, et al. Post-operative care and patient satisfaction after ambulatory surgery for breast cancer patients. *Eur J Surg Oncol.* 2005;31(5):495–9.
14. Marla S, Stallard S. Systematic review of day surgery for breast cancer. *Int J Surg.* 2009;7(4):318–23.
15. Weber W, Barry M, Junqueira M, Lee S, Mazella A, Sclafani L. Initial experiences with a multidisciplinary approach to decreasing the length of hospital stay for patients undergoing unilateral mastectomy. *Eur J Surg Oncol.* 2011;37(11):944–49.
16. Cordeiro E, Jackson T, Cil T. Same-day major breast cancer surgery is safe: an analysis of short-term outcomes using NSQIP data. *Ann Surg Oncol.* 2016;23(8):2480–6.
17. Duriaud H, Kroman N, Kehlet H. Feasibility and safety of outpatient breast cancer surgery. *Dan Med J.* 2018;65(3):A5458.
18. Ny Y, Chan P, Chen J, Seah M, Teo C, Tan E. Adopting ambulatory breast cancer surgery as the standard of care in an Asian population. *Int J Breast Cancer.* 2014;672743.
19. Robson N, Cutress R, Sainsbury R, Rew D, Royle G. Implementation of a short-stay programme after breast cancer surgery. *Br J Surg.* 2010;97:189–94.
20. Ballardini B, Cavalli M, Manfredi G, et al. Surgical treatment of breast lesions at a day center: experience of the European Institute of Oncology. *Breast.* 2016;27:169–74.
21. Marrazzo A, Taormina P, David M, et al. Surgical treatment of early breast cancer in day surgery. *Chir Ital.* 2007;59(5):687–91.
22. Bian J, Halpern, M. Trends in outpatient breast cancer surgery among Medicare fee-for-service patients in the United States from 1993–2002. *Chin J Cancer.* 2011;30(3):197–203.
23. Case C, Johantgen M, Steiner C. Outpatient mastectomy: clinical, payer and geographic influences. *Health Serv Res.* 2001;36(5):869–84.
24. de Kok M, Dirksen CD, Kessel AG, et al. Cost-effectiveness of a short stay admission programme for breast cancer surgery. *Acta Oncol.* 2010;49(3):338–46.
25. Canadian Partnership Against Cancer: Examining disparities in cancer control: a system performance special focus report. https://www.partnershipagainstcancer.ca/topics/disparities-in-cancer-control/ (2014). Accessed 9 April 2019.
26. Porter G, Wagar B, Bryant H, et al. Rates of breast cancer surgery in Canada from 2007/08 to 2009/10: a retrospective cohort study. *CMAJ Open.* 2014;2(2):102–8.
27. Straus SE, Tetroe J, Graham ID. Knowledge translation in health care: moving from evidence to practice (2nd ed). Oxford: BMJ Books; 2013.