Ann Surg Oncol (2023) 30:1712–1720
https://doi.org/10.1245/s10434-022-12934-x

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

ORIGINAL ARTICLE – BREAST ONCOLOGY

Surgeon Perspectives on Determinants of Same-Day Mastectomy: A Roadmap for Implementing Change

Brandon L. Ellsworth, BA[1], Daniel J. Settecerri, BA[3], Nicole M. Mott, MD, MSCR[1], Andrew Vastardis, BS[3], Ahmad M. Hider, MPhil[1], Jessica Thompson, MD[2], Lesly A. Dossett, MD, MPH[2,3], and Tasha M. Hughes, MD, MPH[2,3]

[1]University of Michigan School of Medicine, Ann Arbor, MI; [2]Department of Surgery, Michigan Medicine, Ann Arbor, MI ; [3]Center for Healthcare Outcomes and Policy, Michigan Medicine, Ann Arbor, MI

ABSTRACT

Background. Same-day discharge after mastectomy without immediate reconstruction (MwoR) has been shown to be safe, with improved patient satisfaction when compared with patients discharged 1 or more days after surgery. Nevertheless, only 16% of patients undergoing MwoR in Michigan are discharged on the day of surgery, with significant variation between facilities (3–88%). Our objective was to explore determinants of same-day discharge and offer strategies for broader implementation of this practice.

Methods. We conducted semi-structured interviews with surgeons performing MwoR across the state of Michigan. Recruitment utilized purposeful and snowball sampling methods. The Tailored Implementation in Chronic Disease (TICD) framework was used to inform the creation of the interview guide. Interviews were transcribed and then analyzed using directed content analysis guided by the TICD framework. Salient determinants were organized into patient, provider, and system-level factors.

Results. Participants (n = 26) included general surgeons, breast surgeons, and surgical oncologists. Most surgeons (n = 18, 69%) reported that they discharged fewer than 60% of patients the same day after MwoR. The most common barriers included patient knowledge at the patient level; awareness of evidence, surgeon dogma, and peer influence at the provider level; and team processes and operating room logistics at the system level.

Conclusion. We identified surgeon-defined determinants of same-day discharge after MwoR. For the identified barriers, potential implementation strategies could include incorporation of preoperative drain teachings for patients, utilizing consensus statements and opinion leaders to disseminate evidence supporting same-day mastectomies, and conducting workshops with relevant stakeholders to establish consistent facility practice patterns among surgical teams.

Same-day discharge after mastectomy without immediate reconstruction (MwoR) is well established to be safe for most patients.[1] Despite this, from 2012 to 2019 only 16% of patients undergoing MwoR in Michigan were discharged on the same day as their surgical procedure.[2] In a recent analysis of the cost of mastectomy between hospitals across Michigan, length of stay was identified as a significant contributor to cost variation.[2] Among facilities, there was wide variation in the percentage of patients discharged the same day as surgery (3–88%).[2] The national rate of outpatient mastectomies has been cited as around 40–60% throughout a similar time period, but this number is challenging to assess on a national scale as estimates from governing bodies (e.g., Agency for Healthcare Research and Quality) have included 23 h observation stays as an outpatient procedure.[3,4] Understanding this practice pattern is important as more than 100,000 mastectomies are performed each year in the United States, and unnecessary hospital stays are associated with increased healthcare costs, hospital overcrowding, nosocomial infections, and increased financial burden for patients.[5–8]

First Received: 29 August 2022
Accepted: 21 November 2022
Published Online: 19 December 2022

T. M. Hughes, MD, MPH
e-mail: tmhughes@med.umich.edu

The literature describing same-day mastectomy primarily focused on the safety and outcomes of this practice. Previous studies have demonstrated that patients discharged on the day of MwoR have equivalent surgical outcomes (e.g., complications, reoperations, emergency room visits) with improved patient-reported outcomes (e.g., satisfaction with care) than patients admitted for 1 or more nights, controlling for patient demographics and comorbidities.[9–12] There are also data suggesting that differences in surgeon practice patterns, rather than differences in patient demographics or comorbidities, may be driving this practice.[13] Moreover, a review article by the American Society of Breast Surgeons was recently released describing important factors to consider when starting a same-day mastectomy program.[14] However, the factors listed in this review were from quantitative analyses of same-day mastectomy outcomes. These findings could be enhanced from a qualitative analysis incorporating surgeons' perspectives to more thoroughly understand surgeon thought processes driving the decision to discharge or admit patients after MwoR.

The purpose of this study was to qualitatively assess the determinants (i.e., barriers and facilitators) contributing to the wide variation in practices between facilities in the state of Michigan regarding same-day discharge after MwoR. From these discovered determinants, we then aimed to propose implementation strategies to increase the uptake of same-day discharge after MwoR.

METHODS

Study Design

This study was designed utilizing the Tailored Implementation in Chronic Disease (TICD) framework to identify determinants of the use of same-day discharge after MwoR.[15] Using an implementation framework to identify determinants is advantageous as it allows for a more holistic perspective of a specific, well-defined clinical practice.[16] The TICD framework takes into consideration 57 potential determinants across 7 domains: (1) guideline factors; (2) physician-and (3) patient-level factors; (4) professional interactions such as peer influence; (5) incentives and resources; (6) capacity for organizational change; and (7) other social, political or legal factors. It was initially used to understand clinical problems in the primary care setting but has been adapted to assess de-implementation of low-value practices in surgery.[17] The TICD determinants were referenced when developing interview questions and were used as deductive codes during content analysis.[18]

Semi-structured interviews were conducted with surgeons who perform MwoR throughout the state of Michigan. This study was limited to surgeons in Michigan as the objective of this study was to use a qualitative approach to identify determinants of same-day discharge following previous work that demonstrated a wide variation in same-day mastectomy rates across the state of Michigan.[2,19] This study followed the Standards for Reporting Qualitative Research guideline.[20]

Ethics, Consent, and Permission

This study was exempt from review, by the University of Michigan Institutional Review Board. We received verbal consent before each interview, and each surgeon was offered $100 compensation for their participation.

Interview Guide Development

A semi-structured interview guide was designed with input from multiple methodologic and subject area experts (BE, LD, TH, JM, NM) [electronic supplementary Fig. 1]. Interview questions were framed around the TICD domains and determinants.[18] A pilot interview was conducted with one surgeon who met the eligibility criteria, and their feedback was incorporated into the final interview guide. The pilot interview was not included in the results.

Surgeons were asked about their practice patterns and potential determinants influencing discharge practices after MwoR (e.g., "What factors do you think are important to patients to make them comfortable being discharged after surgery?"). Additionally, surgeons were asked to share strategies they used to overcome barriers to same-day MwoR or for potential strategies that could alleviate barriers they identified, depending on their practices around this procedure (e.g., "If someone was trying to implement same-day mastectomies throughout Michigan, what do you think would be an effective way to do this?"). Lastly, demographic information was collected from the surgeons (e.g., estimated annual number of mastectomies performed, average length of stay, practice location, fellowship training, years of practice). Using census data, practice locations were used to determine if the surgeon practiced in a metropolitan, micropolitan, or rural area. A Metropolitan area included one urban center of $> 50{,}000$ people, micropolitan 10,000–50,000 people, and rural $< 10{,}000$.[21]

Participants and Interview Procedures

Surgeons were recruited via email. The invitation email included a description of the study purpose, interview process, and analysis plan. Purposive and snowball sampling was used to recruit surgeons with and without fellowship training in breast surgery and those practicing in various practice settings. Surgeons were only recruited if they performed MwoR and practiced at hospitals

participating in the previous quantitative analysis of same-day discharge at Michigan hospitals.[2]

Interviews were conducted via telephone or through video conferencing (Zoom; Zoom Video Communications, San Jose, CA, USA) by two interviewers (BE and AV) trained in qualitative methodology. All interviews were audio-recorded, transcribed verbatim, and de-identified before analysis.

Data Organization and Analysis

The interview transcripts were uploaded into NVivo12 (QSR International 2022, Melbourne, VIC, Australia) for data management and qualitative analysis. Information power was used to assess and estimate the sample size.[22] Our sample size assessment was influenced by the fact that our study question and the quality of the dialogue were clear and directed.[23] We conducted directed content analysis using the TICD domains and themes as deductive codes.[24] Given that the TICD framework has been used predominately in primary care, we were open to inductive determinants that arose from the data that were not included in the TICD framework. Two researchers manually coded all transcripts individually (BE and DS). Researchers used principles of reflexivity to guard against methodological bias from the influence of personal perceptions.[25] The two coders met routinely with each other and other team members at weekly lab meetings to compare their coding, discuss differences, and agree on final codes.[26] To develop a comprehensive narrative within each domain, we used data abstraction, case comparison, and memo writing.[27] To address trustworthiness, we discussed alternative interpretations, biases, outliers, and the clinical implications of our findings with other research team members at weekly lab meetings. The final determinants were organized into patient-, provider-, and system-level factors influencing the use of same-day discharge after MwoR.

Results Twenty-six surgeons were interviewed, including 10 general surgeons, 11 with breast surgery fellowship training, and 5 with complex general surgical oncology training. Of these 26 surgeons, 22 (85%) were women. The mean interview length was 45 min (range 40–61 min). The median time since completing residency or fellowship training was 13 years (interquartile range [IQR] 5–20 years). Approximately half (54%, $n = 14$) of surgeons practiced in academic settings, and the majority (84%, $n = 22$) practiced in metropolitan areas. Most surgeons (65%, $n = 17$) estimated their practice comprised of $> 60\%$ breast surgery and most (69%, $n = 18$) reported that they discharged fewer than 60% of patients undergoing MwoR on the same day as the procedure. Self-reported demographics are reported in Table 1.

TABLE 1 Participant demographic characteristics

Characteristic	Participants [*n* (%)]
Sex	
Female	22 (85)
Male	4 (15)
Specialty	
General surgery	10 (39)
Breast surgery	11 (42)
Surgical oncology	5 (19)
Experience, years	
Median (IQR)	13 (5–20)
< 10 years in practice	14 (54)
> 10 years in practice	12 (46)
Practice setting	
Academic	14 (54)
Community	12 (46)
Core-based statistical area type[a]	
Metropolitan	22 (84)
Micropolitan	2 (8)
Rural	2 (8)
Percentage of practice is breast surgery[b]	
≤ 30	6 (23)
31–60	3 (12)
> 60	17 (65)
Percentage of same-day mastectomies without immediate reconstruction[b]	
None	3 (12)
1–30	9 (35)
31–60	6 (23)
> 60	8 (31)

IQR interquartile range

[a] Metropolitan defined as a core-based statistical area with at least one urban center of 50,000 people, micropolitan as 10,000–50,000 people, and rural as <10,000 people

[b] Self-reported data

The following sections describe the surgeons' perspectives on determinants of the use of same-day MwoR. Questions pertaining to any differences in discharge practices between performing a unilateral or bilateral mastectomy were asked, but the surgeons did not report any meaningful differences. Potential strategies to overcome stated barriers are included within each theme. Representative quotes from participants for each theme are included in Tables 2, 3, and 4.

Patient-Level Factors

The most frequently mentioned barrier was the patient's knowledge of postoperative care instructions, specifically drain management and wound care. Surgeons frequently

TABLE 2 Patient-level determinants of the use of same-day mastectomies without immediate reconstruction using the Tailored Implementation in Chronic Disease framework with exemplary quotes

Codes	Patient motivations, patient beliefs/knowledge, postoperative care instructions, safety patient, first-/second-hand experiences, patient preferences, COVID patient, patient needs
Example interview question	"How do you think patients would respond to being discharged the same day after mastectomy?"
Domain and determinant	*Sample quote (surgeon identifier)*
Patient factors	
Patient knowledge	*It's just taking care of the drain that seems to intimidate a lot of people, there's really no reason to stay in the hospital (Surgeon 3)*
Patient preferences	*Most patients prefer to go home if it's safe, especially now with COVID. That's my motivating factor. I don't see a reason for it to be an overnight stay (Surgeon 5)*
Patient beliefs	*A mastectomy is an emotional experience. Patients come in will all sorts of beliefs from their previous experiences or their friends. That's why you must set the expectation of 'This is how it's going to be done, and this is why it's the best option for you'. Some of my partners leave the discharge decision up to the patient to decide, and it just leaves them more anxious (Surgeon 10)*

COVID coronavirus disease 2019

TABLE 3 Provider-level determinants of the use of same-day mastectomies without immediate reconstruction using the Tailored Implementation in Chronic Disease framework with exemplary quotes

Codes	Communication and influence, team processes, evidence; feasibility, compatibility, safety surgeon, effort, guidelines, trialability, observability, quality, accessibility; agreement with practice, expected outcome, knowledge about own practice, expectation setting, domain knowledge, tradition, training, experience/skill, intention and motivation, COVID provider
Example interview question	"If surgeons at your institution practice differently, does this influence you at all?"
Domain and determinant	*Sample quote (surgeon identifier)*
Individual health professional factors	
Awareness and of evidence	*I think a lot of surgeons haven't seen the evidence since most of it is in the primary literature. If you're not doing breast surgery every day, it can be hard to keep up. Creating some sort of consensus statement or recommendation would be helpful (Surgeon 20)*
Agreement with practice	*I think that there are a lot of pros to discharging patients the same day, less time spent in the hospital and nosocomial infections, and avoiding COVID (Surgeon 6)*
Surgeon dogma	*It has been difficult to change my partner's practice. He's more old school. He's not looking to change. And he's not really pressured to do that in any way (Surgeon 9)*
Professional interactions	
Peer influence	*I think there was a precedent at [hospital] that allowed me to feel more comfortable with this change towards performing same-day mastectomies. This was not the same at my other institution, and being a junior partner, it was hard to disrupt their process (Surgeon 2)*
Guideline factors	
Feasibility	*I was pleasantly surprised how easy sending patients home the same day was. You had to do more education in the office about what to expect and how to manage drain tubes, but that work saved time on the back end (Surgeon 15)*
Safety	*Well, I've been performing outpatient mastectomies for 20 years, so that's one reason that I think that it's fine. And in the process of developing the protocol at [hospital], I reviewed the literature. It's safe, without an increase in complications (Surgeon 7)*

COVID coronavirus disease 2019

mentioned patient comfort with postoperative drain management, as MwoR is one of few operations that may be safely completed with a same-day discharge but requires wound drain management by the patient after discharge. Often surgeons cited their reason for admission was for the patient to receive teachings on drain management following surgery. Multiple surgeons overcame this barrier by incorporating drain teaching into the preoperative visits. Some surgeons trained staff members to teach patients during a preoperative visit, others assigned videos for patients to watch that taught drain care, and some used both methods. The surgeons said many of these videos were

TABLE 4 System-level determinants of the use of same-day mastectomies without immediate reconstruction using the Tailored Implementation in Chronic Disease framework with exemplary quotes

Codes	Team processes; financial incentives/disincentives, non-financial incentives/disincentives, quality assurance, availability of necessary resources, support staff pre-/post-surgery, operating logistics; priority of necessary change, COVID priority, strength of supporters/opponents, facility support, influence of other facilities, capable leadership, monitoring feedback
Example interview question	"What factors of the facility you work in influence your decision around same-day discharge for mastectomy?"
Domain and determinant	*Sample quote (surgeon identifier)*
Professional interactions	
Team processes	*I discharged patients the same day in residency, but when I came here, what made it challenging to bring this to my new practice was other providers and staff didn't know this is how other people are practicing so they weren't setting that expectation with patients (Surgeon 4)*
Capacity for organizational change	
Operating room logistics	*I have only sent one patient home [the same day] lately. … The issue is the time of the operation. I only have one early start each week, and if a mastectomy case starts in the afternoon, that usually means they'll have to stay overnight.*
Priority of necessary change	*I would say that there's more of a push nationally to try to get patients out sooner for a myriad of reasons. Freeing up hospital beds, less risk for nosocomial infections. … If the patient doesn't require an overnight stay they don't need to be there (Surgeon 24)*
Relative strength of supporters and opponents	*I think everyone would be on board with this change. We perform outpatient surgery all the time, so we're not really changing anything. We have to show it's safe, then pitch it to other surgeons and staff to make sure everyone is on the same page (Surgeon 8)*
Incentive and resources	
Financial and non-financial incentives	*If you make them a short-stay admission or bill as an outpatient, the hospital doesn't get more money. But if you make them a full admission, even if they stay less than 24 hours, the hospital gets a substantial reimbursement (Surgeon 14)*

COVID coronavirus disease 2019

previously developed by other health systems and were freely available online. All surgeons that incorporated this strategy mentioned it required time and effort in the short term, but that in the long term, these interventions saved surgeons time in the clinic and postoperatively when they would usually conduct postoperative care teachings.

A pertinent facilitating factor for same-day discharge was that most surgeons expressed that patients had a strong predilection for following their surgeon's recommendation regarding the necessity of admission or discharge after surgery. To this end, the expectation set by the surgeon and their staff regarding the postoperative length of stay was a crucial factor in facilitating a same-day discharge. Surgeons felt clear, consistent expectations reduced patients' preoperative anxiety and, overall, improved the patient's surgical experience.

Surgeons did report experiences when patients had specific preferences regarding their length of stay. However, since the coronavirus disease 2019 (COVID-19) pandemic began, the trend has moved towards patients preferring a same-day discharge following MwoR. Surgeons reported that the few patients who preferred a hospital admission had previous experiences with a postoperative complication, recalled a family or friend's poor experience, or cited previous legal statements condemning outpatient mastectomies (e.g., Breast Cancer Patient Protection Act).[28] However, surgeons felt these were infrequent concerns and that patients were usually amenable to same-day discharge. Specifically, providers expressed that having a thoughtful discussion about the benefits of same-day discharge, providing patients with a reliable contact number to call in case of a complication, and reassuring patients that their postoperative pain and nausea would be adequately controlled increased the likelihood that patients would embrace same-day discharge.

Provider-Level Factors

A key differentiating factor between surgeons who mostly performed same-day MwoR versus an overnight hospital stay was their awareness and familiarity with the evidence (e.g., peer-reviewed publications) demonstrating the safety and feasibility of same-day discharge after MwoR. A common reason surgeons began performing same-day MwoR was because they learned about the evidence supporting this practice. However, many surgeons were unaware of this evidence but reported that they would likely change their practice if substantial evidence was presented.

The influence of other providers (e.g., partners, colleagues) also greatly influenced surgeons' discharge practices for MwoR patients. Surgeons with fewer years in practice usually followed the practices of their senior

colleagues, irrespective of their previous practices or thoughts about the safety or value of same-day MwoR. Both general and fellowship-trained surgeons commonly voiced this sentiment.

Most surgeons, including those who did and did not perform same-day MwoR, believed widespread implementation would be feasible for surgeons in various hospital settings. The few surgeons who did not believe it would be feasible cited two challenges. The first of these challenges, overcoming surgeon dogma, was included as an inductive code within the individual health professional factors domain**.** Surgeon dogma was defined as the well-established practice patterns surgeons seem unwilling to change.[29] Multiple surgeons tried to encourage other providers within their practices to discharge patients the same day but were often unsuccessful, commonly because the other surgeon was not motivated to change their practice. Surgeons who did have success influencing their partners credited their success to presenting evidence demonstrating the safety of same-day MwoR and sharing testimonials from their patients. The second challenge was having the necessary time or staff members to ensure patients received appropriate postoperative care teaching.

A notable facilitator cited by all surgeons was the belief that same-day discharge after MwoR would be safe for at least some patients, even if the surgeon had never discharged a MwoR patient on the day of the operation. However, surgeons differed in their opinions on which patients would be appropriate for a same-day discharge. Commonly cited factors that prohibited same-day discharge included the distance traveled to the hospital, social factors (e.g. sustainable housing, home support, transportation), medical comorbidities, and the patient's comfort level and understanding of postoperative care instructions. Additionally, surgeons primarily thought this practice added value to the patient's experience by allowing for recovery in the comfort of the patient's own home and decreasing the risk of nosocomial infections, while not increasing the risk of postoperative complications (e.g., hematomas, infections).

System-Level Factors

A salient system-level barrier to same-day discharge after MwoR involved team processes, specifically having excellent care coordination between all team members (e.g., other physicians, anesthesia, nursing, pre- and post-operative staff). Surgeons frequently mentioned the importance of all team members presenting a unified message to patients to ensure consistent expectations were being set across the surgical encounter (i.e., from preclinic visit communications through postoperative recovery). A few surgeons mentioned that some patients were anxious or unwilling to proceed with a same-day discharge after another care team member told them that a same-day discharge was not an appropriate plan. A few surgeons successfully overcame this barrier by conducting educational meetings with relevant stakeholders to discuss the topic and build congruence within the team regarding discharge plans and instructions.

Another pertinent systems-level barrier included as an inductive code under the capacity for organizational change domain was operating room logistics. One logistical factor was the time of the operation, with later operations perceived as a potential barrier to same-day discharge after MwoR. Due to the time needed to explain postoperative care instructions, surgeons expressed that same-day discharge after MwoR was more feasible if the operation was performed earlier. Another determinant was the anesthetic strategy employed. Surgeons often described that some patients were too sedated to receive postoperative teaching in a timely fashion, thus prohibiting same-day discharge. To counteract this barrier, surgeons reported working with their anesthesia provider to implement Enhanced Recovery After Surgery (ERAS) protocols that employed regional pain blocks and intravenous sedation. Surgeons who had implemented these protocols believed they were influential in reducing anesthetic needs and subsequentially improving the capacity for early postoperative communication and education with the patient. A third logistical factor involved the practice location. Surgeons who practiced at ambulatory surgery centers commonly mentioned changing their practices to perform more same-day mastectomies since they were not able to admit patients overnight.

Surgeons identified a variety of stakeholders whose support was necessary to implement same-day discharges, including the patient, support staff, nursing, other physicians (e.g., anesthesia providers, residents), and hospital administrators. Surgeons largely expressed that in recent years these stakeholders have increased recognition of the value of a reduced length of stay. Surgeons described two reasons to justify their belief that this shift in opinion had occurred. The first explanation suggested was the COVID-19 pandemic, which reduced available beds in hospitals, caused staffing shortages, and increased patients' fear of staying in the hospital. The second was the increasing body of evidence describing the safety, feasibility, cost effectiveness, and favorable patient-reported outcomes of same-day discharge after MwoR.

Financial and non-financial incentives were also commonly mentioned determinants. Surgeons unequivocally stated that they were not compensated differently depending on when they discharged the patient after surgery, and this statement was consistent for both private practice and hospital-employed surgeons. As for financial incentives for

TABLE 5 Conceptual model of potential strategies to overcome common barriers of the use of same-day mastectomies without Inductive code not corresponding to a TICD determinant

Level of change	TICD determinant	Barrier	Implementation strategies
Patient-level	Patient knowledge	Patient anxiety about postoperative care instructions	• Training staff to teach patients in the preoperative setting •Developing and distributing postoperative drain care videos for patients to watch prior to surgery
Provider-level	Awareness and familiarity of evidence	Awareness of evidence	• Distributing evidence to surgeons through opinion leaders and national organizations
	Communication and influence	Peer influence	
		Surgeon dogma[a]	
System-level	Team processes	Care coordination	• Crafting facility practice guidelines with input from multiple team members
		Operating room logistics[a]	• Conducting educational sessions with staff members

[a]Inductive code not corresponding to a TICD determinant

TICD Tailored Implementation in Chronic Disease

the hospital, most surgeons were diffident in their responses and largely split between incentives being a facilitator or barrier. However, more surgeons believed hospitals are financially incentivized to avoid same-day discharges since full admissions result in higher reimbursement for the hospital than billing for an outpatient procedure or 23 h observation. Non-financial incentives (e.g., answering overnight phone calls, rounding) were frequently mentioned, but most surgeons reported they represent only a modest influence on the decision of when to discharge patients after MwoR. Some surgeons, especially those whose patients' postoperative calls were not forwarded to residents or advanced practice providers, preferred to keep patients overnight to avoid late-night phone calls. Other surgeons discharged patients the same day to avoid rounding the following day.

Discussion This study is the first to examine the determinants of same-day discharge after MwoR. We found that surgeons largely agreed with the practice, felt it was safe, and felt it would be feasible in various practice settings. In addition, many surgeons mentioned that patients preferred same-day discharge and that it added value to their surgical experience, usually due to a more comfortable recovery and decreased risk of nosocomial infections. Lastly, due to the COVID-19 pandemic and the increasing evidence supporting same-day discharge after MwoR, some surgeons felt there is a priority for widespread implementation of same-day discharge after MwoR. Nevertheless, despite surgeons' overall enthusiasm and support for this practice, same-day discharge remains underutilized.[2] The most common barriers surgeons described were patient anxiety about postoperative care instructions at the patient level; accessibility of evidence, surgeon dogma, and peer influence at the provider level; and team processes and operating room logistics at the hospital system level. Fortunately, these barriers are potentially remediable using evidence-based implementation strategies within the TICD framework (Table 5).[18,30]

At the patient level, the most significant barrier to same-day discharge was patient knowledge surrounding wound and drain management. Multiple surgeons in this study successfully overcame this barrier by training staff or providing videos to teach patients postoperative care instructions. These surgeons worked within a diverse array of health care systems in various locations and with varying levels of resources, suggesting this strategy could be effective on a large scale. Addressing complex postoperative care instructions in the preoperative setting has been an effective strategy to improve patient's understanding, satisfaction with their care, and facilitate shorter lengths of stay following various other procedures.[31,32] In total knee arthroplasty, another procedure that commonly uses wound drains and is increasingly becoming an outpatient procedure, patients reported significantly less preoperative anxiety when preoperative pain management videos were prescribed.[33] Additionally, in a study of patients undergoing colectomy, patients were more likely to be agreeable to an expedited discharge when they received counseling preoperatively to prepare them for postdischarge care instructions.[34] Studying these interventions in MwoR and disseminating effective interventions for other surgical teams to incorporate could be one way to increase same-day mastectomy rates.

At the provider level, the primary barriers centered around the lack of awareness of the evidence supporting same-day discharge after MwoR, along with peer influence

and overcoming surgeon dogma. A potential solution for these barriers could be identifying an opinion leader in the field to endorse and disseminate the evidence supporting this practice. The use of opinion leaders can be an effective implementation strategy and has been shown to be one of the most significant motivators for surgeons to change their practice.[35] One study found that 88% of surgeons agreed that data-supported statements voiced by opinion leaders could influence them to change their practice, a more effective strategy than clinical audits or practice guidelines.[36] High-quality evidence has been generated to support the practice of same-day MwoR, and the distribution of these findings should be prioritized by local, regional, and national opinion leaders and professional societies.

At the system level, barriers to implementation included inconsistent expectation setting between providers and staff and operating room logistics (e.g., case timing/scheduling, anesthetic plan). Both could be improved by efforts aimed at improving coordination of care. One strategy could be shared discussion between stakeholders (e.g., providers, administrators, and staff) to ensure mastectomy cases are scheduled early in the day, develop unified anesthesia practice patterns, and establish consistent expectations for all stakeholders to share with patients in the pre- and postoperative setting. This strategy has been successful in total knee replacement surgery. Studies using validated scoring systems to assess coordination of care between said stakeholders found that patients receiving a total knee replacement by surgeons in care teams scoring higher in coordination reported significantly higher satisfaction, less postoperative pain, and shorter lengths of stay.[37]

This study has some limitations. First, only surgeons practicing in Michigan were included, which may limit the generalizability of our findings, although many different hospital systems with respect to practice setting (e.g., academic versus community) and urbanicity were represented in this study. Second, 84% of the surgeons worked in metropolitan areas, which could suggest there were other determinants specific to micropolitan or rural areas that were not included. However, recent data estimated that 87% of general surgeons practice in metropolitan areas, which was reflected in our sampling of surgeons.[38] Lastly, the MwoR rates for the participants were self-reported, therefore each surgeon's proportion of their practice being breast surgery or rate of same-day MwoR may be inexact.

Conclusion Same-day discharge after MwoR is a safe but underutilized practice. The findings in this study identify key determinants of same-day discharge after MwoR identified by surgeons, and the described barriers may be amenable to evidence-based implementation strategies.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1245/s10434-022-12934-x.

ACKNOWLEDGMENT The research team acknowledges Dr. Ann Sales for her contributions to the design of the interview guide.

FUNDING NM Mott and BL Ellsworth were supported by funding from the National Institute of Health, award number TL1TR002242.

DISCLOSURES Daniel J. Settecerri, Andrew Vastardis, Ahmad M. Hider, Jessica Thompson, Lesly A. Dossett, and Tasha M. Hughes have no disclosures to declare.

REFERENCES

1. Goodman AA, Méndez AL. Definitive surgery for breast cancer performed on an outpatient basis. *Arch Surg*. 1993;128(10):1149–52. https://doi.org/10.1001/ARCHSURG.1993.01420220069009.
2. Hughes TM, Ellsworth B, Berlin NL, et al. Statewide episode spending variation of mastectomy for breast cancer. *J Am Coll Surg*. 2022;234(1):14–23. https://doi.org/10.1097/XCS.0000000000000005.
3. Surgeries in hospital-based ambulatory surgery and hospital inpatient settings, 2014 #223. Available at: https://hcup-us.ahrq.gov/reports/statbriefs/sb223-Ambulatory-Inpatient-Surgeries-2014.jsp. Accessed 5 Apr 2022
4. Steiner CA, Weiss AJ, Barrett ML, Fingar KR, Davis PH. Trends in bilateral and unilateral mastectomies in hospital inpatient and ambulatory settings, 2005–2013. *Healthcare Cost and Utilization Project (HCUP) Statistical Briefs*. June 2016. Available at: http://europepmc.org/books/NBK367629. Accessed 10 Oct 2022
5. Mastectomy and double mastectomy—Brigham and women's hospital. Available at: https://www.brighamandwomens.org/surgery/surgical-oncology/resources/mastectomy. Accessed 4 Apr 2022
6. Weissman C. Analyzing the impact of long-term patients on ICU bed utilization. *Intensive Care Med*. 2000;26(9):1319–25. https://doi.org/10.1007/S001340000612.
7. Jenkins DR. Nosocomial infections and infection control. *Medicine*. 2017;45(10):629–33. https://doi.org/10.1016/J.MPMED.2017.07.005.
8. Carrera PM, Kantarjian HM, Blinder VS. The financial burden and distress of patients with cancer: understanding and stepping-up action on the financial toxicity of cancer treatment. *CA Cancer J Clin*. 2018;68(2):153–65. https://doi.org/10.3322/CAAC.21443.
9. Tamminen A, Meretoja T, Koskivuo I, et al. Same-day mastectomy and axillary lymph node dissection is safe for most patients with breast cancer. *J Surg Oncol*. 2022;125(5):831–8. https://doi.org/10.1002/JSO.26799.
10. Jogerst K, Thomas O, Kosiorek HE, et al. Same-day discharge after mastectomy: breast cancer surgery in the era of ERAS®. *Ann Surg Oncol*. 2020;27(9):3436–45. https://doi.org/10.1245/S10434-020-08386-W/TABLES/6.
11. Simpson SA, Ying BL, Ross LA, et al. Incidence of complications in outpatient mastectomy with immediate reconstruction. *J Am Coll Surg*. 2007;205(3):463–7. https://doi.org/10.1016/J.JAMCOLLSURG.2007.03.030.
12. van Zeelst L, ten Wolde B, van Eekeren R, et al. The quest for outpatient mastectomy in COVID-19 era: facilitators and barriers. *Eur J Surg Oncol*. 2022;48(2):e89. https://doi.org/10.1016/J.EJSO.2021.12.121.

13. Cao L, Perez J, Schlick K, et al. Surgical factors, rather than patient characteristics, predict inpatient vs outpatient mastectomy for breast cancer patients. *J Am Coll Surg*. 2021;233(5):S30. https://doi.org/10.1016/J.JAMCOLLSURG.2021.07.036.
14. Ludwig K, Wexelman B, Chen S, et al. Home recovery after mastectomy: review of literature and strategies for implementation American society of breast surgeons working group. *Ann Surg Oncol*. 2022;29(9):5799–808. https://doi.org/10.1245/s10434-022-11799-4.
15. Wensing M. The tailored implementation in chronic diseases (TICD) project: introduction and main findings. *Implement Sci*. 2017;12(1):1–4. https://doi.org/10.1186/S13012-016-0536-X/TABLES/1.
16. Craig P, Dieppe P, Macintyre S, Mitchie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new medical research council guidance. *BMJ*. 2008;337(7676):979–83. https://doi.org/10.1136/BMJ.A1655.
17. Berlin NL, Skolarus TA, Kerr EA, Dossett LA. Too much surgery: overcoming barriers to deimplementation of low-value surgery. *Ann Surg*. 2020;271(6):1020–2. https://doi.org/10.1097/SLA.0000000000003792.
18. University of Wisconsin-Madison, institute for clinical and translational research. TICD Checklist. Available at: https://ictr.wisc.edu/documents/ticd-checklist/. Accessed 2 Apr 2022
19. Michigan value collaborative. Available at: https://michiganvalue.org/. Accessed 25 May 2022
20. Standards for reporting qualitative research: a synthesis of recommendations. the equator network. Available at: https://www.equator-network.org/reporting-guidelines/srqr/. Accessed 2 Apr 2022
21. Metropolitan and micropolitan statistical areas map (March 2020). Available at: https://www.census.gov/geographies/reference-maps/2020/geo/cbsa.html. Accessed 2 Jun 2022
22. Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. *Qual Health Res*. 2016;26(13):1753–60. https://doi.org/10.1177/1049732315617444.
23. Lee RM, Fielding NG. Tools for qualitative data analysis. In: Handbook of data analysis. SAGE Publications; 2012. p. 530–46.
24. Manning K. Authenticity in constructivist inquiry: methodological considerations without prescription. *Qual Inq*. 2016;3(1):93–115. https://doi.org/10.1177/107780049700300105.
25. Shaw R. Embedding reflexivity within experiential qualitative psychology. *Qual Res Psychol*. 2010;7(3):233–43. https://doi.org/10.1080/14780880802699092.
26. Thorne S. Data analysis in qualitative research. *Evid Based Nurs*. 2000;3(3):68–70. https://doi.org/10.1136/EBN.3.3.68.
27. Bryant A, Charmaz K. The SAGE Handbook of Grounded Theory: Paperback Edition. Sage Publications Ltd; 2010. p.657. Available at: http://books.google.co.uk/books?id=OrgZjp9CoN8C. Accessed 23 Jun 2022.
28. Clinton-Gore accomplishments: supporting women and families. Available at: https://clintonwhitehouse3.archives.gov/WH/Accomplishments/women.html. Accessed 29 Mar 2022
29. Bellomo R. The dangers of dogma in medicine. *Med J Aust*. 2011;195(7):372–3. https://doi.org/10.5694/mja11.10866.
30. Wensing M, Oxman A, Baker R, et al. Tailored implementation for chronic diseases (TICD): a project protocol. *Implement Sci*. 2011;6(1):1–8. https://doi.org/10.1186/1748-5908-6-103/PEER-REVIEW.
31. Ong J, Miller PS, Appleby R, Allegretto R, Gawlinski A. Effect of a preoperative instructional digital video disc on patient knowledge and preparedness for engaging in postoperative care activities. *Nurs Clin North Am*. 2009;44(1):103–15. https://doi.org/10.1016/J.CNUR.2008.10.014.
32. Banki F, Ochoa K, Carrillo ME, et al. A surgical team with focus on staff education in a community hospital improves outcomes, costs and patient satisfaction. *Am J Surg*. 2013;206(6):1007–15. https://doi.org/10.1016/J.AMJSURG.2013.08.015.
33. Gündüz CS, Çalişkan N. The effect of preoperative video based pain training on postoperative pain and analgesic use in patients undergoing total knee arthroplasty: a non-randomized control group intervention study. *Clin Nurs Res*. 2021;30(6):741–52. https://doi.org/10.1177/1054773820983361.
34. Cavallaro PM, Milch H, Savitt L, et al. Addition of a scripted preoperative patient education module to an existing ERAS pathway further reduces length of stay. *Am J Surg*. 2018;216(4):652–7. https://doi.org/10.1016/J.AMJSURG.2018.07.016.
35. Arroyo NA, Gessert T, Hitchcock M, et al. What promotes surgeon practice change? a scoping review of innovation adoption in surgical practice. *Ann Surg*. 2021;273(3):474–82. https://doi.org/10.1097/SLA.0000000000004355.
36. Young JM, Hollands MJ, Ward J, Holman CDAJ. Role for opinion leaders in promoting evidence-based surgery. *Arch Surg*. 2003;138(7):785–91. https://doi.org/10.1001/ARCHSURG.138.7.785.
37. Gittell JH, Fairfield KM, Bierbaum B, et al. Impact of relational coordination on quality of care, postoperative pain and functioning, and length of stay: a nine-hospital study of surgical patients. *Med Care*. 2000;38(8):807–19. https://doi.org/10.1097/00005650-200008000-00005.
38. Larson E, Andrilla H, Kearney J, Garberson L, Patterson D. The Distribution of the General Surgery Workforce in Rural and Urban America in 2019. WWAMI Rural Health Research Center, University of Washington; March 2021