

Calculating Quality Indicators for Mastectomy (787555)

Hannah Kapur BSc, Carol Dingee MD, Leo Chen MSc, Rebecca Warburton MD, Jin-Si Pao MD, Urve Kuusk MD, Amy Bazzarelli MD, Elaine McKeivitt MD
University of British Columbia Faculty of Medicine, Department of Surgery, Division of General Surgery, Mount Saint Joseph Hospital

Introduction

- Breast conserving surgery (BCS) is recommended for stage I and II breast cancer, for which adequate margins and cosmesis can be achieved, and may represent an opportunity to de-escalate surgical treatment (1).
- Despite the proven safety of BCS for the treatment of early breast cancer, the rates of total mastectomy (TM), and even contralateral prophylactic mastectomy (CPM), are increasing.
- Quality indicators (QIs) have been published by breast cancer societies in the United States (ACS-NAPBC) and Europe (EUSOMA) (2,3).
- One recommended QI is BCS rate, for which there are no published Canadian standards.
- Review of our practice at Mount Saint Joseph Hospital in 2012 showed a higher than expected mastectomy rate. To investigate further, we began prospectively collecting reasons for TM (4).

Objectives

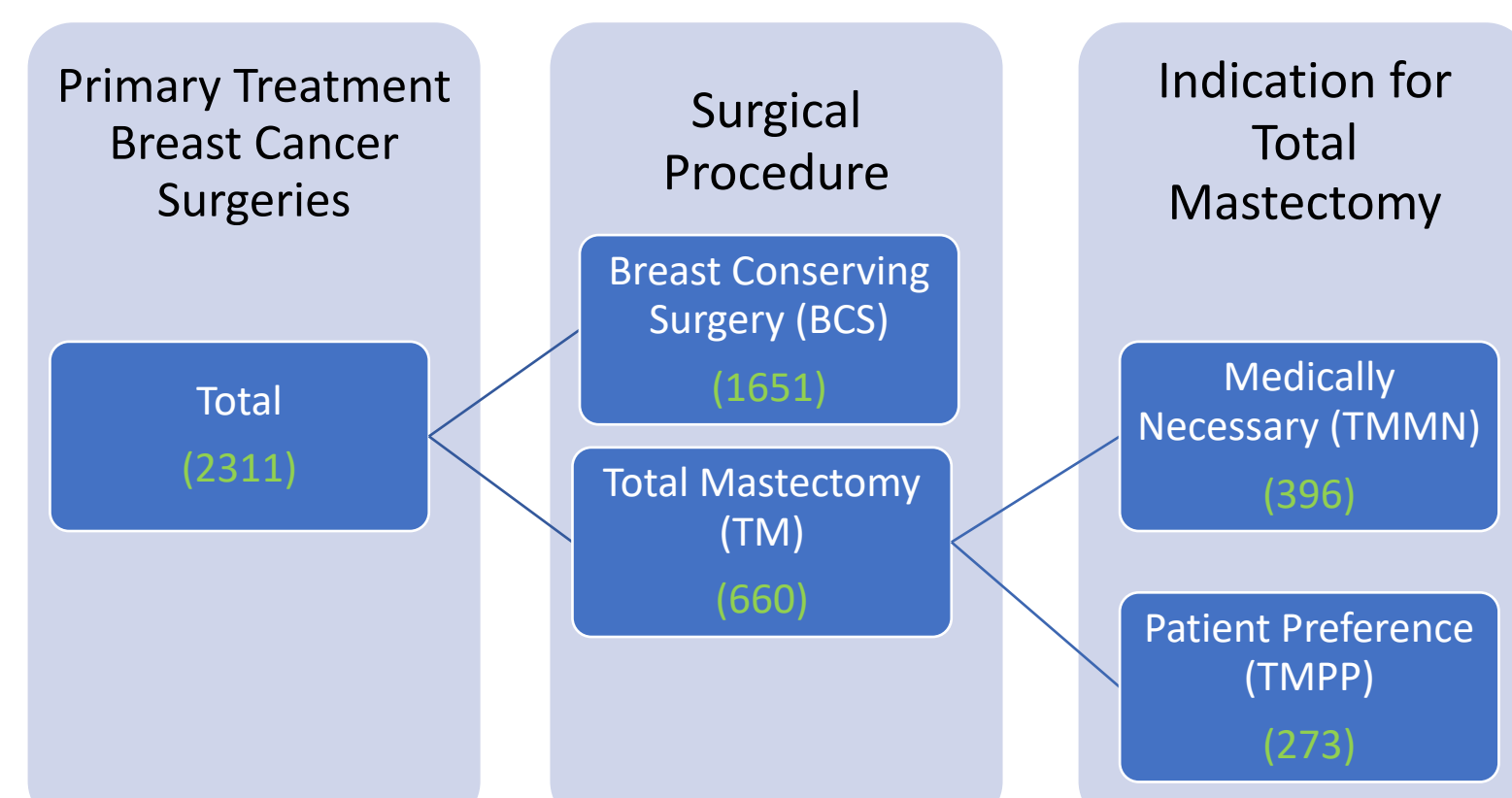
- Calculate BCS rate between 2013 and 2017 and determine compliancy with American and European QI standards.
- Examine reasons for mastectomy and identify opportunities to de-escalate surgery

Hypothesis

Mastectomy rates will be higher at our institution than European standards due to a high number of medically necessary mastectomies.

Methods

- All patients receiving a BCS or TM as their first breast cancer surgery between 2013 to 2017 were identified with our institution's database. Patient and tumour characteristics were verified by chart review.
- Inclusions:** Unifocal first diagnosis of breast cancer.
- Exclusions:** Multifocal disease, neoadjuvant therapy, contraindication to radiotherapy, and BRCA1/2 genetic predispositions.
- TMs were designated as **medically necessary** or **patient preference** according to the prospectively-collected "reason for mastectomy" indication.



Results

Figure 1: Surgery by Tumour Size

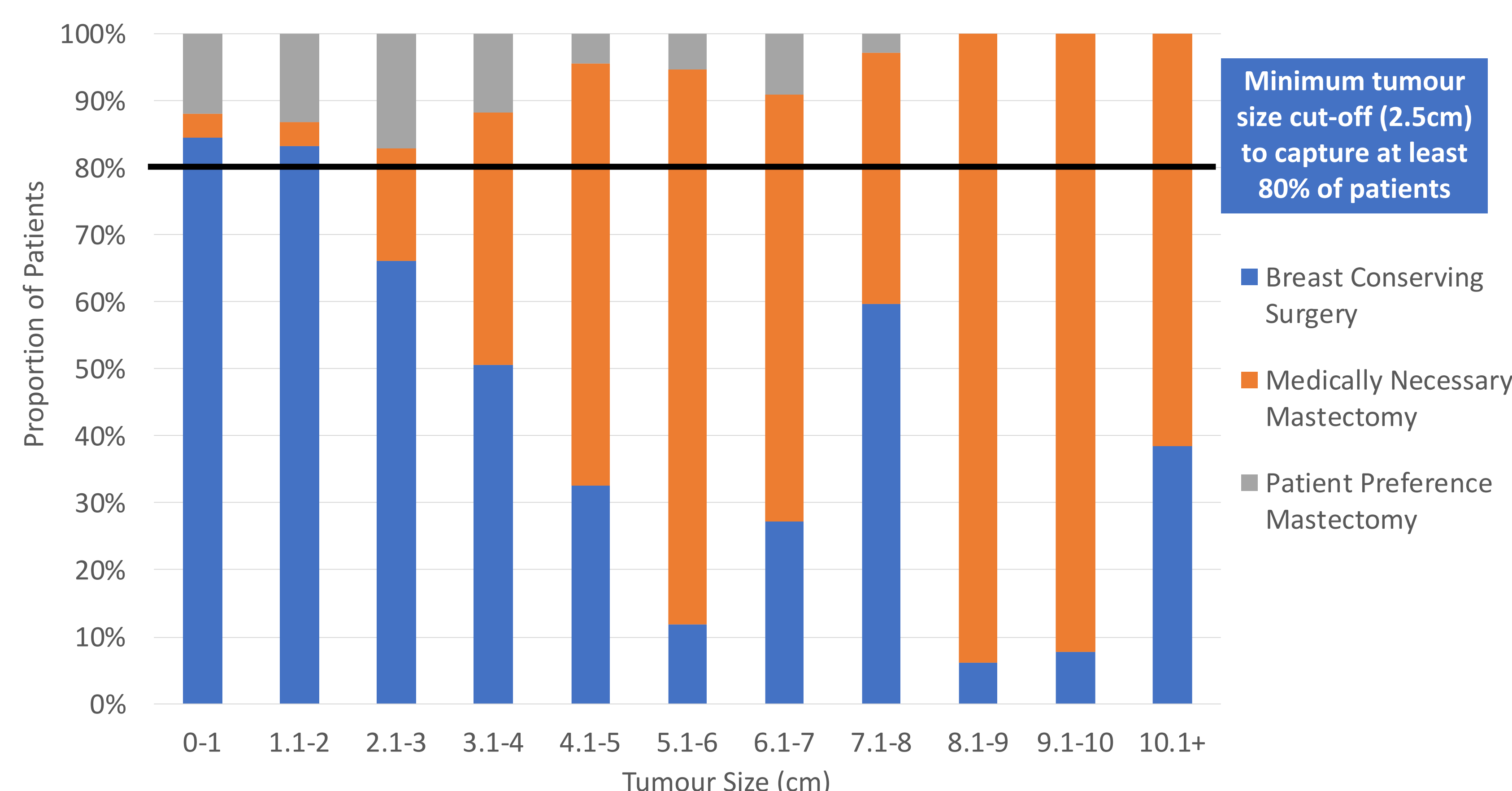


Table 1: Patient and Tumour Characteristics

		BCS	TMMN	TMPP	p-value		
					TMMN vs. BCS	TMPP vs. BCS	TMMN vs. TMPP
Patient Age (Continuous)	Mean	60.2	58.1	61.5	0.007	0.107	0.001
	Median	60	55	62	< 0.001	0.131	< 0.001
	Range	23-100	29-93	30-92	n/a	n/a	n/a
Patient Age (Categorical)	<40	47 (2.8%)	29 (7.5%)	8 (2.9%)			
	40 to 75	1464 (88.7%)	303 (78.3%)	223 (81.7%)	< 0.001	0.001	0.042
	>75	140 (8.5%)	55 (14.2%)	42 (15.4%)			
CPM	Rate	n/a	68 (17.6%)	66 (24.2%)	n/a	n/a	0.042
Bilateral Cancer	Rate	31 (1.9%)	32 (8.3%)	25 (9.2%)	< 0.001	< 0.001	0.681
Reconstruction	Rate	n/a	211 (75.1%)	106 (39.0%)	n/a	n/a	< 0.001
Presenting Problem	Mass	588 (37.4%)	249 (68.0%)	131 (49.6%)			
	Imaging Abnormality	958 (61.0%)	101 (27.6%)	121 (45.8%)	< 0.001	< 0.001	< 0.001
	Nipple Discharge	10 (0.6%)	10 (2.7%)	7 (2.7%)			
	Breast Pain	6 (0.4%)	1 (0.3%)	1 (0.4%)			
Tumour Size	Mean Pre-Operative Size	16.7	40.1	19.1	< 0.001	0.004	< 0.001
	Mean Post-Operative Size	17.0	27.9	16.9	< 0.001	0.923	< 0.001
Morphology	DCIS	326 (20.2%)	99 (26.4%)	48 (17.7%)			
	IDC	1204 (74.8%)	252 (67.2%)	207 (76.4%)	0.011	0.541	0.028
	Other (LCIS, Paget's, ILC)	80 (5.0%)	24 (6.4%)	16 (5.9%)			
Lymph Node Status	Positive	62 (4.5%)	63 (19.3%)	17 (6.9%)	< 0.001	0.164	< 0.001

Table 2: BCS Rates

Quality Indicator	Minimum Standard	Target Rate	5-year BCS Rate (2013-2017)	5-year BCS Rate Removing TMMN
NAPBC 2.3 Proportion of patients eligible for BCS treated with BCS	n/a	50%	71.4%	81.3%
EUSOMA 11c Proportion of Invasive cancers <3cm that underwent BCS	70%	85%	77.1%	83.4%
EUSOMA 11d Proportion of non-invasive cancers (DCIS) <2cm that underwent BCS	80%	90%	84.9%	90.1%

Figure 2: Reason for Mastectomy

Reasons for Total Mastectomy (%)

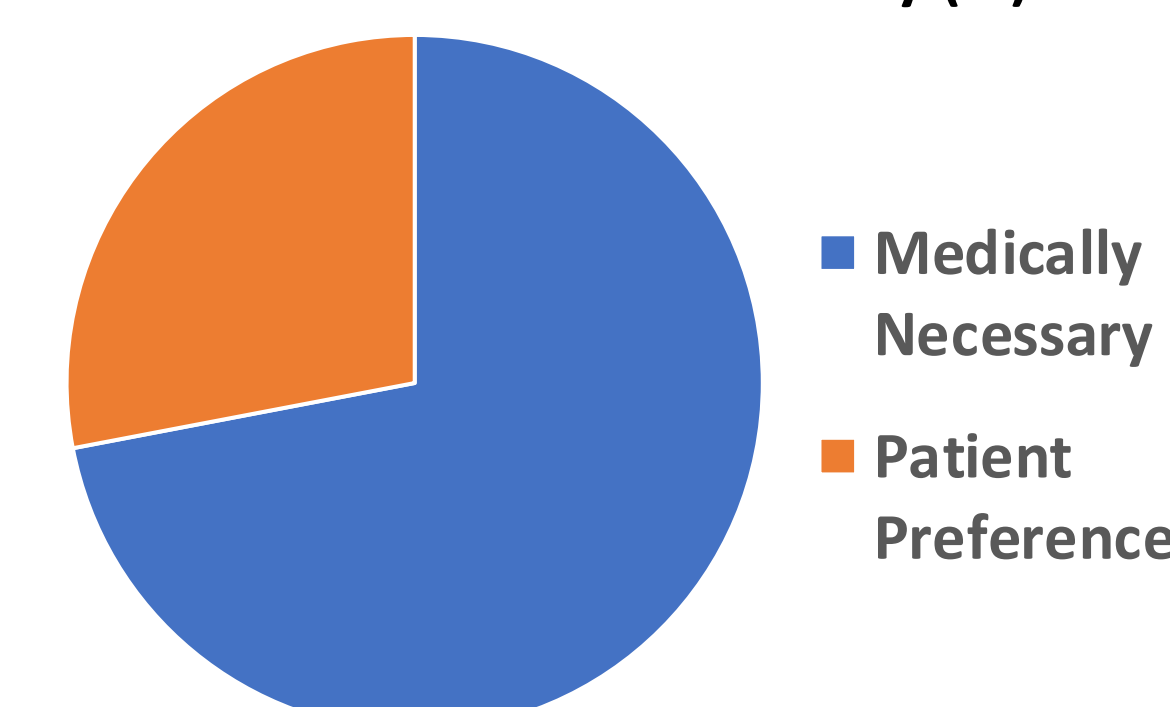
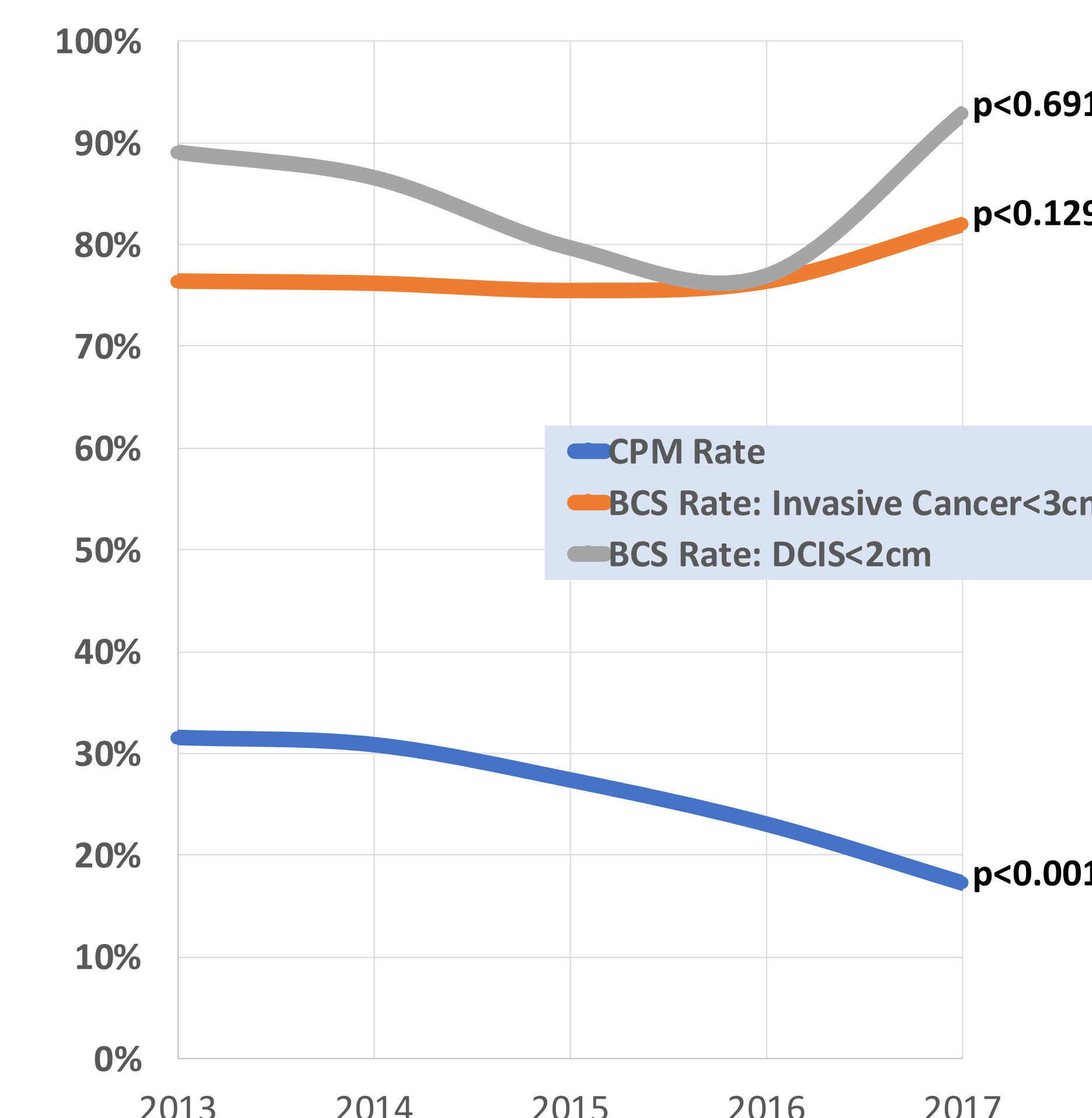


Figure 3: Time Trends



Conclusion

- Between 2013 to 2017, our institution's BCS rates met American but not European QI target rates, indicating a high mastectomy rate (Table 2).
- The majority of patients underwent TM for medical reasons, rather than by patient preference (Figure 2).
- On removal of medically necessary TMs from the BCS rate calculation, we met the European QI targets (Table 2).
- Medically necessary TMs tended to have larger tumour sizes, be node positive, and present as a palpable mass, while tumour characteristics were more similar among patients receiving BCS and TMs by patient preference (Table 1).
- There was a higher bilateral cancer rate in patients receiving TM by patient preference compared to BCS, although no difference compared to medically necessary TMs (Table 1).
- There was no difference in tumour morphology between surgery types, suggesting no over-treatment of invasive cancers compared to DCIS (Table 1).
- The highest BCS rate was among patients aged 40 to 74, so the extremes of age had higher mastectomy rates (Table 1).
- BCS rates did not change over 5-years, despite knowing they were high in 2012. Although CPM rates significantly decreased over 5-years (Figure 3).
- At smaller tumour sizes, TM by patient preference represents a larger proportion of TMs performed, and the proportion of medically necessary TM increases with tumour size (Figure 3).
- At our centre, 80% of patients would be eligible for BCS with tumour cut-off of 2.5cm inclusively (Figure 1).

Summary

- Our institution found that high mastectomy rates were largely due to a high number of medically necessary mastectomies. Removing this patient subset from our BCS rates calculation improved QI rates and better represented the proportion of patients that could have had BCS.
- Our results highlight the limitations of BCS rates as a QI to capture the extent of patient-decision making and characteristics, since tumour size alone does not consider the relative proportion to the patient's size of breast and ability to achieve clear margins and adequate cosmesis.
- CPM rates may offer a more actionable approach to reduce unnecessary surgery.

Contact Information

Hannah Kapur
• Email: hannah.kapur@alumni.ubc.ca
Dr. Elaine McKeivitt
• Email: emckeivitt@providencehealth.bc.ca

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