INTRODUCTION
Breast conservation surgery (BCS) is the standard of care for the treatment of early stage breast cancer. A margin of normal tissue around the cancer is required to ensure complete resection, however, there are currently no studies that confidently define what constitutes an adequate surgical margin. This controversy leads to increased rates of re-excision, and also raises concerns about the value of revision surgery.

STUDY OBJECTIVES
1) to identify the rate of re-excision for a close or positive margin in Manitoba after original lumpectomy for invasive or non-invasive breast cancer between 2009 and 2012
2) to identify markers that can predict the presence of residual disease found at revision surgery in patients with invasive cancer.

METHODS
This retrospective cohort study included patients with invasive or non-invasive breast cancer who underwent a lumpectomy between 2009 and 2012, with a close (<2mm) or positive margin that led to a re-excision.

Patients were identified through the provincial cancer registry. Patient demographics, type of surgery and tumour pathological details were identified from the Cancer Registry, and operative and pathology reports. Each of the 6 anatomical margins was reported for margin status (focally positive, positive, close, negative, or unknown), as well as margin width and pathology type at the margin (invasive/non-invasive).

RESULTS
Of the 2458 patients identified, 539 patients underwent a re-excision for a close or positive margins, resulting in a re-excision rate of 21.9% (Figure 1).

In our cohort of 311 re-exisions for invasive cancer, 37.3% of patients with invasive cancer had no residual disease identified on the revision surgery pathology report. 50% of Lumpectomies and 83% of mastectomies had evidence of residual disease (Figure 2).

On univariable analysis, the size of invasive component, the grade of invasive component, nodal stage, and the number of positive margins were related to the status of residual disease at the second surgery (p-values < 0.05).

With the exception of nodal stage, the same variables remained statistically significant on multivariable analysis (Table 2).

CONCLUSIONS
The rate of re-excision in Manitoba for women with close or positive margins following BCS is 21.9%, which is lower than what has been previously reported in the literature for other jurisdictions.

After the first surgery, predictors of residual disease include:
1) size of the invasive component
2) grade of the invasive component,
3) the number of positive margins are related to residual disease after re-excision.

Our results suggest an identifiable subgroup of patients who could potentially avoid unnecessary surgery, and could help to dramatically reduce the rates of revision surgery for breast cancer in the future.

CONTACT
For more information, please contact:
Maged Hashed MD PhD FRCPC
Department of Radiation Oncology
CancerCare Manitoba, 675 McDermot Ave
Winnipeg, Manitoba
Canada R3E 0V9
maged.hashed@cancercare.mb.ca

AKNOWLEDGEMENTS
Thank you to the University of Manitoba and the Cancer Registry at CancerCare Manitoba for their support to accomplish this work.