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Preoperative Breast Magnetic Resonance Imaging Guideline

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The evidence base for this guideline is Evidence Summary 1-25 ES plus some additional analysis of the data in the current document. 1-25 ES is available at <https://www.cancercareontario.ca/sites/ccocancercare/files/assets/pebc1-25es.pdf>

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PUBLICATIONS RELATED TO THIS REPORT

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Eisen A, Fletcher GG, Fienberg S, George R, Holloway C, Kulkarni S, Seely JM, Muradali D. Breast Magnetic Resonance Imaging for Preoperative Evaluation of Breast Cancer: A Systematic Review and Meta-Analysis. *Canadian Association of Radiologists Journal*. 2023;0(0). <https://journals.sagepub.com/doi/10.1177/08465371231184769>

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Preoperative Breast Magnetic Resonance Imaging Guideline

Recommendations

This is a quick reference guide and provides the guideline recommendations only. See the Full Report for further details including key evidence associated with each recommendation, the systematic review, and the guideline development process.

GUIDELINE OBJECTIVES

To make recommendations about whether preoperative breast magnetic resonance imaging (MRI) should be added to conventional imaging (mammography and/or ultrasound) in patients with newly diagnosed breast cancer, and to make recommendations about specific indications if evidence allows.

TARGET POPULATION

Patients diagnosed with breast cancer of any stage for which additional information on disease location or extent in the breast obtained prior to surgery may influence staging, treatment, or prognosis. The guideline does not address patients diagnosed with breast cancer but without an identified cancerous lesion in the breast (occult breast cancer).

INTENDED USERS

1. Radiologists, surgeons, and other clinicians involved in determining extent of disease and treatment of patients diagnosed with breast cancer.
2. Members of the Breast Cancer Advisory Committee, Ontario Health (Cancer Care Ontario) (OH [CCO]) staff, and others involved in the review and update of the Breast Cancer Pathway Map [see <https://www.cancercareontario.ca/en/pathway-maps/breast-cancer>].

RECOMMENDATIONS

Recommendation 1

- Preoperative breast MRI should be considered on a case-by-case basis in patients diagnosed with breast cancer for whom additional information about disease extent could influence treatment. The ensuing decision of whether to conduct MRI should be made in consultation with the patient and must take into account the balance of benefits and risks and patient preferences.
- Stronger recommendations for specific situations are provided in Recommendations 2 and 3.

Qualifying Statements for Recommendation 1

- Benefits and harms (see Key Evidence and Table 2-1) may vary depending on patient and disease characteristics such as breast density, tumour size, tumour stage, number and distribution of tumours (multicentric or multifocal), subtype of cancer, type of surgery being considered or preferred, adjuvant treatment, and patient factors/comorbidities.
- System issues such as MRI availability may result in treatment delays that may modify the decision.
- “Treatment” in the recommendation includes surgery as well as radiation and systemic treatment.

- In patients with strong preference for mastectomy or with contraindications to breast conserving surgery (BCS), MRI is unlikely to change surgical planning in the ipsilateral breast. Breast MRI may still impact treatment if mammographically occult contralateral breast cancer (CBC) is detected.
- Contrast-enhanced mammography (contrast-enhanced spectral mammography, contrast-enhanced digital mammography), diffusion-weighted imaging (DWI) MRI, magnetic resonance spectroscopy, or other advanced imaging techniques are known to provide additional information beyond that of conventional imaging and be suitable instead of or in addition to CE-MRI. Potential adverse effects due to contrast agent and radiation exposure vary among these techniques, whereas many other potential benefits and harms in Table 2-1 would be relevant. These are mentioned briefly in the systematic review, but evaluation was outside of scope. They are less widely available and there is much less evidence regarding their effect on patient outcomes.

Recommendation 2

- Preoperative breast MRI is recommended in patients diagnosed with invasive lobular carcinoma (ILC) for whom additional information about disease extent could influence treatment. The decision of whether to conduct MRI should be made in consultation with the patient and must take into account the balance of benefits and risks and patient preferences.

Qualifying Statements for Recommendation 2

- Risks and benefits will vary depending on patient and disease characteristics.
- System issues such as MRI availability may result in treatment delays that may modify the decision.

RECOMMENDATIONS: Recommendations related to MRI and treatment planning but without comparative studies in the Evidence Summary

Recommendation 3

Preoperative breast MRI is recommended, based on the opinion of the Working Group, in the following situations:

- a) To aid in surgical planning of BCS in patients with suspected or known multicentric or multifocal disease.
- b) To identify additional lesions in patients with dense breasts.
- c) To determine the presence of pectoralis major muscle/chest wall invasion in patients with posteriorly located tumours or when invasion of the pectoralis major muscle or chest wall is suspected.
- d) To aid in surgical planning for skin/nipple-sparing mastectomies or for autologous reconstruction, oncoplastic surgery, and BCS with suspected nipple/areolar involvement.
- e) Patients with familial/hereditary breast cancer but who have not had recent breast MRI as part of screening or diagnosis.

Qualifying Statements for Recommendation 3

Preoperative breast MRI is recommended in the above situations if additional information about disease extent could influence treatment. The decision of whether to conduct MRI should be made in consultation with the patient and must take into account the balance of benefits and risks and patient preferences.