# Complete Summary

## GUIDELINE TITLE

Surgical management of early stage invasive breast cancer.

## BIBLIOGRAPHIC SOURCE(S)

Breast Cancer Disease Site Group. Surgical management of early stage invasive breast cancer [full report]. Toronto (ON): Cancer Care Ontario (CCO); 2003 Jan [online update]. 20 p. (Practice guideline; no. 1-1). [77 references]

## GUIDELINE STATUS

This is the current release of the guideline.

The FULL REPORT, initially the full original Guideline or Evidence Summary, over time will expand to contain new information emerging from their reviewing and updating activities.

Please visit the Cancer Care Ontario Web site for details on any new evidence that has emerged and implications to the guidelines.

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## SCOPE

### DISEASE/CONDITION(S)

Breast Cancer

### GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness
Management

## CLINICAL SPECIALTY

Oncology
Radiation Oncology
Surgery

## INTENDED USERS

Physicians

## GUIDELINE OBJECTIVE(S)

To make recommendations about surgical management and techniques in the treatment of early stage invasive breast disease (Stage I and II)

## TARGET POPULATION

Women with early stage (Stage I and II) breast cancer who are eligible for either breast conservation therapy or mastectomy.

## INTERVENTIONS AND PRACTICES CONSIDERED

1. Breast conservation therapy (lumpectomy with axillary dissection; radiotherapy and further surgery, if necessary)
2. Modified radical mastectomy
3. Preoperative (neoadjuvant) chemotherapy
4. Sentinel lymph node biopsy (considered but evidence is insufficient to support a recommendation)

## MAJOR OUTCOMES CONSIDERED

Survival (overall and disease-free), local recurrence (for lumpectomy patients), and quality of life

# METHODOLOGY

## METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

## DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The literature was searched using MEDLINE (through June 2002) and the Cochrane Library (Issue 2, 2002). The Physician Data Query (PDQ) database, clinical trial and practice guideline Internet sites, abstracts published in the

proceedings of the annual meetings of the American Society of Clinical Oncology and the American Society of Radiation Oncology, article bibliographies, and personal files were also searched to June 2002.

The search strategy combined disease-specific terms (breast neoplasms/ or breast cancer.tw. or mammary neoplasms/) and treatment-specific terms (mastectomy/ or mastectomy.tw,sh. or mastectomy or segmental/ or lumpectomy.tw. or breast conserv:.tw. or conserv:.tw. or sentinel.tw or axilla:.tw.) with design-specific terms (meta-analysis.pt,sh,tw. or randomized controlled trial:.sh,pt,tw. or randomized controlled trials/ or random:.tw.). The literature search was not restricted by language.

**Inclusion Criteria**

Articles were eligible for inclusion in the systematic review of the evidence if they were randomized controlled trials comparing breast conservation therapy versus mastectomy or were randomized trials on the surgical management of the axilla. Trials investigating the efficacy and safety of sentinel lymph node biopsy were also eligible. Outcomes of interest included overall or disease-free survival, local recurrence, distant recurrence, and quality-of-life. Both abstract and full reports were eligible.

Evidence-based practice guidelines, meta-analyses, systematic reviews, and economic analyses addressing the guideline questions were also included in the guideline report.

## NUMBER OF SOURCE DOCUMENTS

- In the surgical management of early-stage invasive breast cancer, eleven randomized controlled trials, four meta-analyses, and four guidelines comparing the effect of breast-conserving therapy versus mastectomy on overall survival or recurrence were identified and reviewed.
- In the surgical management of the axilla, six randomized controlled trials, one meta-analysis, two clinical practice guidelines on axillary dissection, and one randomized trial on axillary node sampling were identified and reviewed.
- One meta-analysis and one clinical practice guideline on sentinel lymph node biopsy were also included in this guideline report.
- In comparing quality-of-life in patients undergoing breast conservation therapy versus mastectomy, 13 papers reporting quality-of-life data from randomized trials, one systematic review, and one meta-analysis were identified.

## METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Committee)

## RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

## METHODS USED TO ANALYZE THE EVIDENCE

Meta-Analysis
Review of Published Meta-Analyses
Systematic Review with Evidence Tables

## DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Survival data from six randomized trials were combined using the meta-analysis software package, Metaannalyst[0.988] (J. Lau, Boston, MA). Results were expressed as odds ratios (OR), where OR <1.0 for the occurrence of a specific event favours breast conservation therapy and OR >1.0 favours mastectomy.

## METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

## DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

With no observed differences in overall survival or distant recurrence, the Breast Cancer Disease Site Group (DSG) felt that for eligible candidates, the choice between breast conservation therapy and modified radical mastectomy should be based upon patient preference.

In order to make an informed decision, patients should be fully aware of the risks and benefits of each procedure. Breast conservation therapy typically involves tumour excision with clear margins, axillary dissection, and adjuvant breast irradiation. There is also a potential need for further surgery, possibly a mastectomy, in cases of local recurrence. A modified radical mastectomy involves the removal of the entire breast, including the nipple and areola complex, and the fascia over the pectoralis muscles while sparing the underlying muscles and innervation. Breast reconstruction is an option for patients who choose mastectomy.

The DSG agreed that that there is insufficient evidence to make recommendations regarding sentinel lymph node biopsy alone at this time. The DSG acknowledged that some clinicians in Ontario are beginning to train for the procedure and are building expert teams in anticipation of the potential demand should sentinel node biopsy alone become standard practice. The DSG agreed that patients should be encouraged to participate in clinical trials investigating this procedure.

Given that quality-of-life measures are difficult to capture objectively, the DSG felt that the evidence surrounding quality of life after surgery was conflicting. While some evidence suggests that women who receive breast-conserving therapy may have higher body self image than those who receive mastectomy, other measures of psychosocial well-being were inconclusive.

## RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

## COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

### METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

### DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Practitioner feedback was obtained through a mailed survey of 201 practitioners in Ontario (42 Medical Oncologists, 41 Radiation Oncologists, and 118 Surgeons). The survey consisted of 21 questions about the quality of the practice-guideline-in-progress (PGIP) report and whether the draft recommendations should be approved as a practice guideline. Written comments were invited. Follow-up reminders were sent two weeks (post card) and four weeks (complete package mailed again) later. The Breast Cancer Disease Site Group (DSG) reviewed the results of the survey.

The practice guideline report was circulated to members of the Practice Guidelines Coordinating Committee (PGCC) for review and approval. All members of the PGCC returned ballots. Seven PGCC members approved the practice guideline report as written, one member approved the guideline and provided suggestions for consideration by the Breast Cancer DSG, and three members approved the guideline conditional on the DSG addressing specific concerns.

PGCC members noted the discussion of neoadjuvant chemotherapy and contraindications to conservative surgery that were included in the guideline report, and asked that recommendations or qualifying statements be formulated by the DSG to address these issues.

The practice guideline reflects the integration of the draft recommendations with feedback obtained from the external review process. It has been approved by the Breast Cancer DSG and the Practice Guidelines Coordinating Committee.

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

- Women who are eligible for breast conservation therapy should be offered the choice of either breast conservation therapy with axillary dissection or modified radical mastectomy.
- Removal and pathological examination of level l and II axillary lymph nodes should be the standard practice in most cases of Stage I and II breast carcinoma.
- There is promising but limited evidence that is not as yet sufficient to support recommendations regarding sentinel lymph node biopsy alone. Patients should be encouraged to participate in clinical trials investigating this procedure. However, axillary dissection is the standard of care.

### CLINICAL ALGORITHM(S)

None provided

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

- In the surgical management of early-stage invasive breast cancer, eleven randomized controlled trials, four meta-analyses, and four guidelines comparing the effect of breast-conserving therapy versus mastectomy on overall survival or recurrence were identified and reviewed.
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## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

- Eleven large randomized trials that followed participants for up to 20 years did not detect significant differences in overall survival or in rates of distant recurrence between breast-conserving surgery and mastectomy.
- Six randomized trials, spanning four decades, detected absolute improvements in survival rates ranging from 4% to 16% with axillary node dissection compared to no axillary dissection. Meta-analysis of results from the six trials detected a significant survival benefit of 5.4% (95% confidence interval, 2.7% to 8.0%; $p<0.01$) for axillary node dissection. However, evolving treatment modalities may diminish the effect of the survival benefit.

### POTENTIAL HARMS

Axillary lymph node dissection is the current standard of surgical care. It carries significant risk of morbidity in terms of lymphedema and long-term post-surgical dysthesias. With no set criteria used to define lymphedema and a variety of assessment techniques in use, there is wide variation in reported rates of lymphedema following axillary dissection. Rates ranging from 2% to 70% have been reported. In a recent study, arm morbidity was assessed in 110 patients after partial mastectomy with axillary dissection and in most cases, irradiation. A total of 19% of patients developed lymphedema (defined as a >10% increase in arm volume), and 49% had reduced arm mobility (defined as a 15 degree impairment of shoulder mobility). After five years, 31% of patients continued to report some arm pain after breast conservation therapy.

## CONTRAINDICATIONS

### CONTRAINDICATIONS

While the majority of patients with operable breast cancer are candidates for breast-conserving surgery, there are a few situations in which it may be contraindicated. Practitioners should consider the relative contraindications to surgery reviewed below when discussing treatment decisions with individual patients.

Some patients may decline conservative surgery for personal reasons and prefer a modified radical mastectomy. Before undergoing conservative surgery, all patients should be informed of the need for postoperative radiotherapy to the breast. If radiotherapy is not readily accessible, is contraindicated (for reasons such as prior radiation, pregnancy, severe cardiac or lung disease that could be worsened by radiation, scleroderma, or systemic lupus) or is declined by the patient, then conservative surgery is generally not recommended. In the case of pregnancy, lumpectomy could be carried out with breast irradiation delayed until after delivery.

Patients with large tumours (e.g., >5 cm) or a small volume breast may not have a satisfactory cosmetic result and may be better served by modified radical mastectomy followed by reconstruction. The presence of multiple tumours in more than one quadrant of the breast (multicentricity), the presence of diffuse malignant microcalcifications on mammography, or clinical signs of skin involvement are contraindications to conservative surgery, as is an inability to obtain clear margins with breast-conserving surgery. When conservative surgery is contraindicated, the preferred alternative treatment is usually modified radical mastectomy. However, for some patients, such as the elderly or those with co-morbid medical conditions, total (simple) mastectomy may be a satisfactory alternative.

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

- With no difference in survival or distant recurrence, the choice between breast conservation therapy with axillary dissection and modified radical mastectomy should be dependent upon patient preference where appropriate.
- Each patient should be fully informed of the risks and benefits of each procedure.
- Patients should be aware that breast conservation therapy involves tumour excision with clear margins, axillary dissection, and adjuvant breast irradiation.
- Patients who choose breast conservation therapy should be aware that there is also the potential need for further surgery, possibly a mastectomy, in cases of local recurrence.
- Evidence surrounding quality of life after surgery is conflicting, but there is some evidence suggesting that women who receive breast-conserving therapy may have higher body self image than those who undergo mastectomy.

- In some instances, preoperative chemotherapy can shrink a large primary tumour and allow for breast conservation therapy. However, in such circumstances, there may be an increased risk of local breast cancer recurrence following breast irradiation.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Living with Illness

### IOM DOMAIN

Effectiveness
Patient-centeredness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

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### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

1996 Feb 14 (revised January 2003)

### GUIDELINE DEVELOPER(S)

Program in Evidence-based Care - State/Local Government Agency [Non-U.S.]

### GUIDELINE DEVELOPER COMMENT

The Practice Guidelines Initiative (PGI) is the main project of the Program in Evidence-based Care (PEBC), a Province of Ontario initiative sponsored by Cancer Care Ontario and the Ontario Ministry of Health.

## SOURCE(S) OF FUNDING

Cancer Care Ontario, Ontario Ministry of Health and Long-Term Care

## GUIDELINE COMMITTEE

Provincial Breast Cancer Disease Site Group

## COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

For a current list of past and present members, please see the Cancer Care Ontario Web site.

## FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Members of the Breast Cancer Disease Site Group disclosed potential conflict of interest information.

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## GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Cancer Care Ontario Web site.

## AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Surgical management of early stage invasive breast cancer. Summary. Toronto (ON): Cancer Care Ontario. Electronic copies: Available in Portable Document Format (PDF) from the Cancer Care Ontario Web site.
- Browman GP, Levine MN, Mohide EA, Hayward RSA, Pritchard KI, Gafni A, et al. The practice guidelines development cycle: a conceptual tool for practice guidelines development and implementation. J Clin Oncol 1995;13(2):502-12.

## PATIENT RESOURCES

None available

## NGC STATUS

This summary was completed by ECRI on January 5, 1999. The information was verified by the guideline developer as of February 22, 1999. This summary was updated by ECRI on April 12, 2002 and most recently on July 21, 2003. The most recent information was verified by the guideline developer as of August 6, 2003.

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