Guideline Resource Unit
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Cancer Care Alberta Adaptation of the Ontario Health (Cancer Care Ontario) Clinical Practice Guideline:

Management of Ductal Carcinoma in Situ

Effective Date: July 2026

Background

Ductal carcinoma in situ (DCIS) of the breast is a non-invasive form of breast cancer. It is characterized by the presence of abnormal cells confined to the lining of the breast milk ducts. These cells have not yet spread to the surrounding breast tissue. DCIS is considered the earliest form of breast cancer and is typically detected through screening mammography. While it is not life-threatening, it requires treatment to prevent progression to invasive breast cancer.

The 2024 clinical practice guideline from Ontario Health (Cancer Care Ontario [CCO]) on the management of DCIS of the breast offers updated recommendations for clinicians and other healthcare professionals on the most effective treatment options for women with DCIS.[1] Developed by the DCIS Guideline Development Group, the guideline includes input from experts in medical oncology, radiation oncology, surgical oncology, health research methodology, and patient representatives.

This guideline, adapted from Ontario Health (CCO), replaces Cancer Care Alberta's (CCA) now-retired 2015 guideline, *Adjuvant Radiation Therapy for Ductal Carcinoma in Situ*. It expands the scope beyond radiation therapy (RT) and reduces duplication of effort.

Guideline Questions

The guideline questions addressed by Ontario Health (Cancer Care Ontario [CCO]), included:

1. What is the optimal surgical treatment for patients with DCIS, considering disease-free survival (DFS), recurrence, and significant complications after surgery (e.g., bleeding or infection)?
2. a) What margin width minimizes the risk of recurrence, complications after surgery (e.g., bleeding, infection) and increases DFS in patients with DCIS undergoing breast-conserving surgery (BCS)? b) After initial BCS or mastectomy with suboptimal margin width (close or positive), should re-excision be considered to improve DFS, reduce recurrence or decrease complications after surgery requiring reoperation within 30 days (e.g., bleeding or infection)?
3. Should molecular profile testing be added to clinical evaluation to guide the use of adjuvant therapy in patients with DCIS?
4. In DCIS patients who have undergone BCS or mastectomy, should breast irradiation be offered to improve DFS and reduce recurrence with acceptable adverse events of irradiation?
5. In DCIS patients who have undergone BCS or mastectomy, what is the role of endocrine therapy in managing DCIS to improve DFS and reduce recurrence and contralateral events with acceptable treatment adverse events?

Target Population

The following recommendations apply to adult patients (≥18 years of age) with ductal carcinoma in situ of the breast, including those with microinvasion (<1 mm through the duct).

Adaptation Methodology

The Guideline Working Group adapted OH (CCO)'s clinical practice guideline, *Management of DCIS of the Breast,* using the process outlined in OH (CCO)'s Guideline Endorsement Protocol.[2] This process included selecting a guideline, assessing its recommendations, drafting the adapted document, conducting an internal review by content and methodology experts, and completing an external review by the Alberta Provincial Breast Tumour Team.

The Guideline Working Group assessed the quality of the OH (CCO) guideline using the AGREE II tool.[3] AGREE II is a validated tool designed to assess the methodological rigour and transparency of guideline development. Detailed results of the AGREE II assessment are available in Appendix A. The overall quality of the guideline was rated a 6 on a scale from 1 to 7 by both appraisers. The AGREE II average quality ratings for the individual domains were as follows: scope and purpose scored 97%, stakeholder involvement 81%, rigor of development 88%, clarity of presentation 92%, applicability 25%, and editorial independence 96%.

The Guideline Working Group assessed each recommendation and qualifying statement from the 2024 OH (CCO), *Management of DCIS of the Breast* clinical practice guideline to determine if it should be endorsed, endorsed with modifications, or rejected. This assessment was conducted using a SurveyMonkey survey, asking respondents whether they agreed with OH (CCO)'s interpretation of the available evidence, its applicability and acceptability in the Alberta context, its feasibility for implementation, and whether any new evidence published since OH (CCO) completed its literature review on November 27, 2023, might alter the recommendations.

The survey was distributed by the Guideline Resource Unit (GURU) to the Provincial Breast Tumour Team Executive members and other key stakeholders. It remained open from June 5, 2024, to July 8, 2024. To ensure a response rate greater than 50%, three reminders were sent. Of the 19 potential respondents, 11 completed the survey, resulting in a 58% response rate. The respondents comprised 4 surgical oncologists, 4 radiation oncologists, and 3 medical oncologists, with representation from Calgary (n=6), Edmonton (n=4), and the community (n=1). Table 1 summarizes the survey results.

As part of the external review, the revised guideline, updated based on survey feedback, was sent to all members of the Provincial Breast Tumour Team, including surgical oncologists, radiation oncologists, medical oncologists, nurses, pathologists, and pharmacists, for review and feedback. The review period ran from November 8 to November 22, 2024, with a reminder sent midway. Only four people responded, one of whom provided several suggestions for improvements that have since been addressed. Subsequent revisions were discussed during a dedicated guideline retreat with the Breast Executive on June 12, 2025, and further refined in a breakout session involving radiation and surgical oncologists at the Provincial Breast Tumour Team Meeting on September 10, 2025. Following publication of additional evidence and competing provincial priorities, final revisions were deferred until the Breast Executive meeting on June 19, 2026, where the remaining outstanding comments were reviewed and addressed prior to finalization.

Recommendations

Of the 10 OH (CCO) recommendations, 1 was endorsed, 5 with minor modifications, and 4 with major modifications. One recommendation was newly created by the Cancer Care Alberta (CCA) working group. Similarly, of the 27 OH (CCO) qualifying statements, 14 were endorsed, 9 with minor modifications, and 4 with major modifications. Four qualifying statements were newly created by the CCA working group. See Appendix B for a summary of the adaptation outcomes.

Major modifications include content rewrites, reorganization, introduction of new concepts, or significant alterations, while minor modifications refer to typos, stylistic changes, or formatting adjustments. The level of adaptation, that is whether a recommendation was endorsed, with major modifications, or with minor changes, is clearly indicated, allowing readers to focus on the content and compare recommendations across guidelines if needed.

For the full evidence base and references supporting the recommendations, readers are encouraged to consult the original guideline. The references included in this adapted guideline focus on new or modified content, while the underlying recommendations remain grounded in the evidence from the original source.

Primary Treatment of DCIS: Surgical Treatment

Recommendation 1

Patients with DCIS of the breast (with or without microinvasion) who are candidates for BCS should be offered the choice of BCS or mastectomy with the option of reconstruction. The decision of whether to have one surgery over another should be made in consultation with the patient. *(Endorsed with minor modifications)*

Qualifying Statements

- Benefits and harms may vary depending on patient and disease characteristics such as patient factors/comorbidities, patient preference, tumour characteristics, life expectancy, and any contraindication to or unwillingness to receive RT. *(Endorsed)*
- When BCS is performed, all mammographically suspicious calcifications should be removed and margins should be microscopically clear of DCIS; refer to Recommendation 2. *(Endorsed)*
- The option of immediate oncoplastic breast surgery should be offered if a patient is deemed an appropriate candidate. *(Endorsed with minor modifications)*
- Mastectomy, with the option of reconstruction (immediate or delayed), should be considered for those patients who have an area of DCIS large enough that BCS would leave them with an unacceptable cosmetic result. *(Endorsed)*
- Patients eligible for genetic testing should be referred so that results may be considered before a surgical treatment plan is finalized (this may include a bilateral risk-reducing mastectomy). *(Endorsed)*

- Active surveillance is currently an area of ongoing investigation and is not yet a standard option. However, it might be an area of consideration for certain patients in the future[4]; guideline concordant care is recommended. *(Endorsed with minor modifications)*
- Positive margins should be treated surgically given the perceived low sensitivity for detecting residual disease versus postoperative changes in patients having undergone recent surgery with all imaging modalities. *(Endorsed with minor modifications)*
- Patients with DCIS measuring <2 cm should preferentially be treated with BCS, acknowledging the potential need for adjuvant RT, as mastectomy is associated with higher risk of surgical complications, and lower quality of life. [4,5,6-85] *(New)*

Recommendation 2

In patients undergoing BCS or mastectomy, a margin width of at least 2 mm is optimal to minimize the risk of local recurrence (LR). *(Endorsed)*

Qualifying Statements

- It remains entirely appropriate in pathology practice to report only DCIS at the inked margin as "positive" and to provide the distance to the closest margin(s) when margins are negative. *(Endorsed)*
- DCIS with microinvasion (DCIS-M) should be considered as DCIS when evaluating the optimal margin width and the need for additional surgery. *(Endorsed)*
- Appropriateness of re-excision of close or positive margins should be discussed with the patient prior to referral for RT. *(Endorsed with minor modifications)*

Recommendation 3

3a. For patients with negative margins (≥2 mm) undergoing BCS, routine additional surgery is not recommended. The evidence supporting the need for wider margins in the absence of RT is unclear. *(Endorsed with major modifications)*

3b. In patients with close margins (<2 mm) following BCS, a discussion should occur with the patient to weigh the risks of further surgery (re-excision or mastectomy) with the risk of recurrence for the individual patient. Patients with close margins where re-excision versus radiotherapy boost is being considered could be reviewed in a multidisciplinary discussion particularly if there is a discordance of imaging and pathology, to tailor the optimal treatment plan. *(Endorsed with minor modifications)*

3c. For patients with positive margins following BCS, re-excision should be considered as soon as information is available. Re-excision is usually not recommended for positive margins following mastectomy, as it is generally not feasible. *(Endorsed with major modifications)*

Qualifying Statements

- The potential risks of cancer recurrence versus additional surgical procedures should be discussed between the patient and the surgeon. *(Endorsed)*

- Benefits and harms of re-excision may vary depending on patient and disease characteristics such as patient factors/comorbidities, patient's preferences, tumour characteristics, life expectancy, and any contraindication to or unwillingness to receive RT. *(Endorsed)*
- For patients whose close or positive margins are anterior or posterior, there may be no benefit for re-excision in areas where there is no remaining breast tissue. Multidisciplinary discussion is encouraged to discuss the benefit of boost RT. *(Endorsed)*
- DCIS-M should be considered as DCIS when considering margin width and additional surgery. *(Endorsed)*

Primary Treatment of DCIS: Surgical Treatment and/or RT

Recommendation 4

There is insufficient data for the routine use of molecular profile testing as standard practice in patients with DCIS. Molecular profile testing should only be performed as part of a research study. *(Endorsed with minor modifications)*

Qualifying Statement

- Results from ELISA, a prospective cohort study actively recruiting patients, are expected to determine whether the combination of clinicopathological factors and the use of the Oncotype DX DCIS score can help avoid RT in patients with low-risk DCIS who have had BCS.[6] *(New)*

Recommendation 5

5a. Patients with DCIS who have undergone BCS with negative margins should be assessed for the potential benefit of adjuvant radiation. The decision to offer radiation should be based on factors such as patient age, size and grade of DCIS, and patient preferences, with a discussion between the patient and clinicians regarding the risks and benefits of RT. *(Endorsed with major modifications)*

5b. For patients with DCIS who have undergone BCS with close margins (<2 mm) for whom re-excision surgery was not performed, a radiation boost in addition to whole breast irradiation to optimize local control could be considered. *(Endorsed with minor modifications)*

5c. Post-mastectomy RT (PMRT) is not indicated but may be considered if there are multiple positive margins (tumour on ink), that cannot be surgically excised. *(Endorsed with minor modifications)*

Qualifying Statements

- The potential risks of local recurrence versus adjuvant irradiation should be discussed between the patient and clinicians post-BCS. Fully informed patients with low-risk DCIS may prefer to avoid RT. *(Endorsed with minor modifications)*
- Hypofractionated RT (HFRT) of 42.5 Gy in 16 fractions for 3.5 weeks or equivalent regimen (e.g., 40 Gy in 15 fractions in 3 weeks should be offered. We acknowledge that even shorter regimens (e.g., 26 Gy in 5 fractions in 1 week) may also be offered. *(Endorsed)*

- In patients with resected non-low-risk DCIS, as defined by BIG 3-07/TROG 07.01 (CCTG MA33), a boost of 16 Gy in 8 fractions to the tumour bed following whole breast irradiation reduces the risk of local recurrence but is associated with increased grade 2 or greater toxicity.[7,8] The risks and benefits of a boost should be weighed, with consideration of alternate acceptable boost dose-fractionation schedules such as 10 Gy in 4-5 fractions. *(Endorsed with major modifications)*
- The risk of adverse effects associated with a tumour bed boost following radiation should be discussed. *(Endorsed with minor modifications)*
- For patients with low-risk DCIS, characterized by mammographically detected low or intermediate-grade DCIS measuring 2 cm or less and who are 40 years old or older, partial breast irradiation (PBI) may be considered.[9] *(Endorsed with minor modifications)*
- The benefits of adjuvant radiation can be safely extrapolated for more than 5 cm of DCIS where complete excision is achieved. Patients were originally excluded from these studies[10-12] because advanced surgical breast-conserving techniques did not exist at that time (e.g., oncoplastic reduction mammoplasty). In these cases, multidisciplinary discussion is encouraged for those presenting with more than 5 cm of disease. *(Endorsed)*
- There is a lack of data around adding adjuvant chest wall irradiation after mastectomy as positive margins after mastectomy are quite rare. There are however studies showing higher risk of LR in patients with positive margins compared to negative margins.[13,14] It is not clear if PMRT is beneficial in this setting given there are few studies that specifically examine the LR risk post-mastectomy with positive margins with or without PMRT. Furthermore, while positive margins increase the risk of LR in this setting, overall, the LR risk is relatively low (5.3%).[14] PMRT is not indicated in this setting, but it is reasonable to consider chestwall irradiation in patients who have undergone mastectomy with a positive margin (tumour on ink) that cannot be surgically excised. *(Endorsed with major modifications)*

Management of DCIS after Primary Treatment

Recommendation 6

6a. For patients with estrogen receptor (ER)-positive DCIS, the risks and benefits of endocrine therapy, either tamoxifen or an aromatase inhibitor, could be discussed after BCS, as it has been shown to reduce the risk of subsequent breast cancer events; however, this reduction may not be clinically meaningful in the absence of a survival benefit.[15] *(Endorsed with major modifications)*

6b. The combination of RT and trastuzumab is not recommended for patients with HER2-positive DCIS who have undergone BCS.[16] *(New)*

Qualifying Statements

- Endocrine therapy does not pertain to patients with bilateral mastectomy for DCIS, but is relevant for those with unilateral mastectomy, whether they have had or not had RT. *(Endorsed with minor modifications)*

- Potential risks could include increased toxicity and adverse events, with no survival benefit. There are higher reported rates of endometrial, ovarian, and non-melanoma skin cancer with standard dose tamoxifen use and higher rates of fractures, strokes, and transient ischemic events with aromatase inhibitor use. *(Endorsed)*
- While endocrine therapy may offer some benefits, including reducing the risk of ipsilateral recurrences and contralateral events, the potential reduction in contralateral events is small (e.g., a 10-year rate of 2.3% as per the UK/ANZ DCIS trial).[17] More recent evidence suggests that low-dose tamoxifen may also reduce ipsilateral breast cancer events, particularly among postmenopausal women, although the magnitude of benefit appear to vary by menopause status and site of event.[15] Given the toxicity associated with endocrine therapy and the outdated subgroup analysis from NSABP B-24,[18] these benefits are unlikely to be significant in the context of contemporary imaging and surgical practices.[19] *(Endorsed with major modifications)*
- Regimen options include tamoxifen 20 mg for 5 years, tamoxifen 5 mg for 3 years,[20] or an aromatase inhibitor for 5 years, taken as once-daily tablets. *(Endorsed with major modifications)*
- For post-menopausal patients younger than 60 years of age, there may be a greater benefit to anastrozole compared to tamoxifen. *(Endorsed)*
- A shared decision-making process should be used to discuss individual risk, patient values, preference of agent, and duration of therapy. *(Endorsed with minor modifications)*
- ER testing should be strongly considered to determine the potential benefit of adjuvant therapy in DCIS and to inform risk stratification. ER-negative DCIS is associated with a higher risk of recurrence. *(New)*
- In the B-43 trial, involving 2,014 women with HER2-positive DCIS treated with BCS, the addition of trastuzumab to RT did not meet the goal of a 36% reduction in the ipsilateral breast cancer rate, instead resulting in a statistically nonsignificant 19% reduction.[16] As a result, the trial yielded negative findings. *(New)*

Table 1. Summary of Survey Results

Recommendations	CCA Comments	Assessment
A. Primary Treatment of DCIS: Surgical Treatment		
Recommendation 1 **1.1.** Women with DCIS of the breast (with or without microinvasion) who are candidates for BCS should be offered the choice of BCS or mastectomy with the option of reconstruction. The decision of whether to have one surgery over another should be made in consultation with the patient and should consider the balance of benefits and risks and patient preferences. **Qualifying Statements for Recommendation 1** **a.** Benefits and harms may vary depending on patient and disease characteristics such as patient factors/comorbidities, patient's preferences, tumour characteristics, life expectancy, and any contraindication to or unwillingness to receive radiation therapy (RT). **b.** When BCS is performed, all mammographically suspicious calcifications should be removed and margins should be microscopically clear of DCIS. RT options after BCS are described in Recommendation 5 below. **c.** The option of immediate lumpectomy reconstruction in the case of BCS should be offered if a patient is deemed an appropriate candidate. **d.** Mastectomy, with the option of reconstruction (immediate or delayed), should be considered for those women who have an area of DCIS large enough that BCS would leave them with an unacceptable cosmetic result. **e.** Patients eligible for genetic testing should be referred so that results may be considered before a surgical treatment plan is finalized (this may include a bilateral risk-reducing mastectomy). **f.** Active surveillance is an area of ongoing investigation; it is not a standard option currently. This might be an area of consideration for certain patients. **g.** The use of imaging modalities to assess for residual disease in patients with positive markings post BCS is outsider the scope of this guideline. The Working Group consensus favours positive margins being treated surgically given perceived low sensitivity for detecting residual disease versus postoperative changes in patients having undergone recent surgery with all imaging modalities.	• Qualifying statement g needs to be edited for spelling mistakes. 'Positive markings' should likely read 'positive margins.' • Although margins should be microscopically clear after BCS, we should acknowledge the SSO/ASTRO guideline,[21] which is heavily based on Houssami's meta-analysis,[22] that a 2 mm margin should be sought. Margins narrower than 2 mm tend to have a higher risk of LR. Patients with narrower margin should be discussed at tumour board rounds on a case-by-case basis to document why further surgery is not being performed. • Consider changing 'women' to 'patients' and rewording 'immediate lumpectomy reconstruction' with 'oncoplastics'. • I'm not sure I like the terminology 'immediate lumpectomy reconstruction' as it's not commonly used this way in the surgical literature. I suggest we acknowledge the increasing use of Oncoplastic Breast Surgery / Oncoplastic Reconstruction / Oncoplastic Breast Conserving Surgery, especially since there are centres in Edmonton where this is now the standard of care among their surgeons. • There may be a role for active surveillance for some sub-cohorts in the future. • I would favour including a statement about the increased surgical risks associated with mastectomy compared to BCS, as well as referencing the body of literature demonstrating worse quality of life outcomes with mastectomy. While it is reasonable to offer patients a choice, those who are good oncologic candidates for BCS should be made aware of the downsides of mastectomy.	Endorse unchanged 64%. Endorse with some modifications, 36%.

Recommendations	CCA Comments	Assessment
	• Discuss access to oncoplastic breast surgery and immediate breast reconstruction, particularly given the extremely low perceived risk of adjuvant PMRT. We have good access to these procedures across the province; delayed post- mastectomy reconstruction for DCIS should be uncommon.	
Recommendation 2 **2.1.** In patients undergoing BCS or mastectomy, a margin width of at least 2mm is optimal to minimize the risk of local recurrence (LR). **Qualifying Statements for Recommendation 2** **a.** It remains entirely appropriate in pathology practice to report only DCIS at inked margin as "positive", and to provide distance to closest margin(s) when margins are negative. **b.** DCIS with microinvasion (DCIS-M) should be considered as DCIS when considering the optimal margin width and additional surgery. **c.** Patients who have close or positive margins are directed to the recommendation on the benefits of re-excision prior to receiving RT.	• I'm unsure if it's necessary to specify that this applies to PURE DCIS, not mixed disease (invasive and non). • C. Stockley & A. Laws unpublished abstract for SABCS 2024: Data suggests that for single margin 1-1.9 mm, re-excision likely doesn't reduce rates of LR. Shown in other series as well (MSKCC cohort, Van Zee et al 2015; MD Anderson cohort, Tadros et al 2019). Meta-analysis on which 2 mm guideline based very limited in parsing out differences w/n 0-2 mm group. As such, guideline specifically notes that for "negative margins <2 mm... factors known to impact rates of IBTR should be considered in determining need for re-excision." Most Calgary surgeons do consider "selective" approach to re-excision for negative margins <2 mm, so my/our bias is that AB guideline should reflect above. Re-excision certainly reasonable but language can hopefully reflect that it's not necessarily mandatory.	Endorse unchanged 89%. Endorse with some modifications, 11%. Reject, 0%.
Recommendation 3 **3.1.** In patients with negative margins (at least 2 mm) undergoing BCS, routine additional surgery may not be warranted for patients if undergoing RT, but re-excision of wider excisions should be considered if the patients forego RT. **3.2.** In patients with close margins (<2 mm) from BCS or mastectomy, a discussion should occur with the patient to weigh the risks of further surgery (re-excision or mastectomy) with the risk of recurrence for the individual patient. Patients with close margins where re-excision versus boost RT is being considered should be discussed in multidisciplinary discussions involving surgical and radiation oncologists to tailor the optimal treatment plan.	• Recommendation 3.1: There is insufficient evidence supporting re-excision or additional surgery when the margin is >2 mm, even without RT. • Recommendation 3.1: For patients with negative margins (>2 mm), routine additional surgery is not recommended. • The evidence supporting wider margins for patients not undergoing RT is unclear. • Recommendation 3.1: "… but re-excision of wider excisions…" is unclear.	Endorse unchanged 44%. Endorse with some modifications, 56%. Reject, 0%.

Recommendations	CCA Comments	Assessment
3.3. In patients with positive margins from BCS or mastectomy, re-excision should be considered as soon as information is available. **Qualifying Statements for Recommendation 3** **a.** The potential risks of cancer recurrence versus additional surgical procedures should be discussed between the patient and surgeon. **b.** Benefits and harms of re-excision may vary depending on patient and disease characteristics such as patient factors/comorbidities, patient's preferences, tumour characteristics, life expectancy, and any contraindication to or unwillingness to receive RT. **c.** For patients whose close or positive margins are anterior or posterior, there may be no benefit for reexcision in areas where there is no remaining breast tissue. Multidisciplinary discussion is encouraged to discuss the benefit of boost RT. **d.** DCIS-M should be considered as DCIS when considering margin width and additional surgery.	• Recommendation 3.2: In patients with a close margin following BCS (not mastectomy), a discussion should take place with the patient to assess the risks of further surgery (re-excision or mastectomy) versus the risk of recurrence specific to the individual patient. Patients with close margins considering re-excision versus boost RT should be discussed in multidisciplinary meetings involving surgical and radiation oncologists to tailor the optimal treatment plan. • Recommendation 3.3: Revising margins after mastectomy is highly challenging and likely not feasible, and therefore should not be included as a guideline recommendation. This issue is somewhat addressed by the qualifying statements. The same applies to recommendation 3.2. • Recommendation 3.3: For patients with positive margins following BCS, re-excision should be considered. • If DCIS shows positive margins following a mastectomy, re-excision is not feasible. Therefore, recommendations should not support this practice. I would advise against re-excising positive margins for DCIS post total mastectomy. • Distinguish between margins for BCS and mastectomy. • Possibly include additional criteria for determining when a boost for a close margin may be more beneficial. • It has not been our practice, and I don't believe it's practical to deliberate on re-excision versus radiation boost at a tumour board for every patient encountering this issue.	
B. Primary Treatment of DCIS: Surgical Treatment and/or RT		
Recommendation 4 **4.1.** There are insufficient data to recommend or not recommend molecular profile testing as routine standard practice in women with DCIS. Molecular	• Include details about the ELISA trial.[6]	Endorse unchanged 90%. Endorse with some modifications, 36%.

Recommendations	CCA Comments	Assessment
profile testing should only be performed as part of a research study.		Reject, 0%.
Recommendation 5 5.1. Women with DCIS who have undergone BCS with negative margins should be offered adjuvant whole breast irradiation (WBI) (regardless of the grade of DCIS). 5.2. Women with DCIS who have undergone BCS with close margins (< 2mm) for whom re-excision surgery was not performed, multidisciplinary discussion regarding the option of radiation boost in addition to WBI to optimize local control should occur. 5.3. Post-mastectomy radiation therapy (PMRT) is not indicated for women with DCIS who have undergone mastectomy but may be considered if there are multiple positive margins (tumour on ink), that cannot be surgically excised. **Qualifying Statements for Recommendation 5** **a.** The potential risks of cancer recurrence versus adjuvant irradiation should be discussed between the patient and clinicians post BCS and post-mastectomy. Fully informed patients with low-risk DCIS may prefer to avoid RT. **b.** Hypofractionated RT (HFRT) of 42.5 Gy in 16 fractions for 3.5 weeks or equivalent regimen (e.g., 40 Gy in 15 fractions in 3 weeks) should be offered. We acknowledge that even shorter regimens (e.g., 26 Gy in 5 fractions in 1 week) may also be offered (see recommendation justification below). **c.** Although there was a benefit for boost across all patients' subtypes, the dose of 16 Gy in eight fractions may be associated with increased toxicity over time and the risks and benefits of a boost need to be weighed, as well as other potential options using lower doses (10 Gy/4-5 fractions to 16 Gy/8 fractions). **d.** The risk of adverse effects associated with tumour bed boost following WBI should be discussed. **e.** For patients with low-risk DCIS patients with mammographically detected low or intermediate-grade DCIS measuring 2 cm or less and who are 40 years old or older, partial breast irradiation (PBI) may be considered. **f.** It was the expert opinion of the Working Group that one could safely extrapolate the benefits of adjuvant radiation with more than 5cm of DCIS where complete excision is achieved. Patients were originally excluded from these studies because advanced surgical breast conserving techniques did not exist at that time (e.g., oncoplastic reduction mammoplasty).[10,11] In	• Replace WBI with radiation. • Recommendation 5.1: Should be revised to state "Women with DCIS who have undergone BCS with negative margins should be offered adjuvant (regardless of the grade of DCIS)." • Recommendation 5.2: Should be revised to state "Women with DCIS who have undergone BCS with close margins (<2 mm) for whom re-excision surgery was not performed, multidisciplinary discussion regarding the option of radiation boost in addition to WBI to optimize local control VERSUS surgical re-excision should occur." • Recommendation 5.3: Should be revised to state, "PMRT may be considered if there is a positive margin (tumour on ink), that cannot be surgically excised." • We typically use 26/5 for DCIS. The qualifying statement regarding dose fractionation could benefit from rephrasing to better align with our practice. • Include the 2023 ASTRO clinical practice guideline on accelerated partial breast irradiation (APBI),[9] if not done already. • The omission of adjuvant radiation after BCS for low-risk DCIS (>2 mm) is being evaluated (DEBRA).[12]	Endorse unchanged 67%. Endorse with some modifications, 33%. Reject, 0%.

Recommendations	CCA Comments	Assessment
these cases, multidisciplinary discussion is encouraged for those presenting with more than 5 cm of disease. **g.** There is a lack of data around adding adjuvant chestwall irradiation after mastectomy as close or positive margin after mastectomy is quite rare. There are however studies showing higher risk of LR in patients with close or positive margins compared to negative margins.[13,14] It is not clear if PMRT is beneficial in this setting given there are few studies that specifically examine the LR risk post-mastectomy with positive margins with or without PMRT. Furthermore, while close or positive margins increase the risk of LR in this setting, overall, the LR risk is relatively low (5.3%).[14] It was the expert opinion that PMRT is not indicated in this setting, but it is reasonable to consider chestwall irradiation in patients who have undergone mastectomy with multiple positive margins (tumour on ink) that cannot be surgically excised.		
C. Management of DCIS after Primary Treatment		
Recommendation 6 **6.1.** The risks and benefits of endocrine therapy, either tamoxifen or an aromatase inhibitor, after BCS should be discussed for women with estrogen receptor (ER)-positive DCIS. **Qualifying Statements for Recommendation 6** **a.** This does not pertain for women with bilateral mastectomy for DCIS, but is relevant for unilateral mastectomy, whether they have had or not had RT. **b.** Possible risks could include increased toxicity and adverse events, with no survival benefit. There are higher reported rates of endometrial, ovarian, and non-melanoma skin cancer in tamoxifen use and higher rates of fractures, strokes and transient ischemic events with aromatase inhibitors use. **c.** Possible benefits include prevention of ipsilateral recurrences and contralateral events. This is true for pre-invasive and invasive disease. **d.** Tamoxifen or aromatase inhibitor for five years taken as once-daily tablet. **e.** For post-menopausal women younger than 60 years of age, there may be a greater benefit to anastrozole compared to tamoxifen. **f.** Shared decision-making process to discuss individual risk patient value, preference of agent, duration of agent, and cost.	• Highlight the absolute benefits of endocrine therapy. Discuss the absence of a role for trastuzumab for HER2-positive disease. • The potential small reduction in contralateral events (as per the UK/ANZ DCIS trial,[17] 10-year rate of 2.3%) does not appear to justify the toxicity associated with endocrine therapy, especially considering no observed benefit in terms of ipsilateral events following surgery and RT. The subgroup analysis from NSABP B-24 is outdated;[18] and the described benefits are unlikely to apply in the context of contemporary imaging and surgical practices. • Since there is no survival benefit, adjuvant endocrine treatment is not standard of care in Canada for patients diagnosed with DCIS. It could be argued that the risks may outweigh the benefits, unless there are high-risk factors, such as positive margin after BCS in a patient declining RT. However, even this scenario, to my knowledge, has not been thoroughly studied.	Endorse unchanged 44%. Endorse with some modifications, 44%. Reject, 11%.

Recommendations	CCA Comments	Assessment
	• In our interpretation of the evidence, we believe the discussion of benefits and risks is not warranted. Endorsing this would represent a practice change. • Since ER testing is not routinely performed for DCIS in Alberta, consider adding a statement that ER testing should be performed for women potentially interested in adjuvant endocrine therapy, as the benefit is limited to those with ER-positive DCIS. • Do not support the routine use of endocrine therapy for DCIS. • The TAM-01 trial demonstrates 5 mg of tamoxifen for 3 years is an effective adjuvant endocrine therapy option with lower risks of venous thromboembolism (VTE) and uterine cancer.[20] • Consider adjusting "Tamoxifen or aromatase inhibitor for 5 years taken as a once-daily tablet" to "Regimen options include tamoxifen 20 mg for 5 years, tamoxifen 5 mg for 3 years, or an aromatase inhibitor for 5 years."	

References

1. Brackstone M, Durocher-Allen LD, Califaretti N, et al. Management of Ductal Carcinoma in Situ of the Breast. Program in Evidence-Based Care Guideline No.: 1-10 Version 4. Toronto (ON): Ontario Health (Cancer Care Ontario); 2024, Mar 31.
2. Program in Evidence-Based Care. OH (CCO) Guideline Endorsement Protocol. Accessed July 16, 2024. https://pebctoolkit.mcmaster.ca/doku.php?id=projectdev:cco_endorsement_protocol
3. Brouwers MC, Kho ME, Browman GP, et al. AGREE II: advancing guideline development, reporting and evaluation in health care. *Canadian Medical Association Journal*. 2010;182(18):E839-E842. doi:10.1503/cmaj.090449
4. Hwang ES, Hyslop T, Lynch T, et al. Active Monitoring With or Without Endocrine Therapy for Low-Risk Ductal Carcinoma In Situ: The COMET Randomized Clinical Trial. *Jama*. Mar 18 2025;333(11):972-980.
5. Rubio IT, Wyld L, Marotti L, et al. European guidelines for the diagnosis, treatment and follow-up of breast lesions with uncertain malignant potential (B3 lesions) developed jointly by EUSOMA, EUSOBI, ESP (BWG) and ESSO. *Eur J Surg Oncol*. Jan 2024;50(1):107292.
6. ClinicalTrials.gov. Prospective Evaluation of Breast-Conserving Surgery Alone in Low-Risk Ductal Carcinoma in Situ (DCIS) (ELISA). ClinicalTrials.govID: NCT04797299. Accessed July 12, 2024. https://clinicaltrials.gov/study/NCT04797299
7. Chua BH, Link EK, Kunkler IH, et al. Radiation doses and fractionation schedules in non-low-risk ductal carcinoma in situ in the breast (BIG 3-07/TROG 07.01): a randomised, factorial, multicentre, open-label, phase 3 study. *Lancet*. Aug 6 2022;400(10350):431-440.
8. Chua BH, Link EK, Olivotto IA, et al. Abstract GS2-12: Radiation doses and fractionation schedules in non-low-risk ductal carcinoma in situ in the breast (BIG 3-07/TROG 07.01): final 10-year analysis of a randomised, factorial, multicentre, open-label, phase 3 study. *Clinical Cancer Research*. 2026;32(4_Supplement):GS2-12-GS2-12.
9. Shaitelman SF, Anderson BM, Arthur DW, et al. Partial Breast Irradiation for Patients With Early-Stage Invasive Breast Cancer or Ductal Carcinoma In Situ: An ASTRO Clinical Practice Guideline. *Pract Radiat Oncol*. Mar-Apr 2024;14(2):112-132.
10. Bijker N, Meijnen P, Peterse JL, et al. Breast-conserving treatment with or without radiotherapy in ductal carcinoma-in-situ: ten-year results of European Organisation for Research and Treatment of Cancer randomized phase III trial 10853--a study by the EORTC Breast Cancer Cooperative Group and EORTC Radiotherapy Group. *J Clin Oncol*. Jul 20 2006;24(21):3381-7.
11. Donker M, Litière S, Werutsky G, et al. Breast-conserving treatment with or without radiotherapy in ductal carcinoma In Situ: 15-year recurrence rates and outcome after a recurrence, from the EORTC 10853 randomized phase III trial. *J Clin Oncol*. Nov 10 2013;31(32):4054-9.
12. ClinicalTrials.gov. De-Escalation of Breast Radiation Trial for Hormone Sensitive, HER-2 Negative, Oncotype Recurrence Score Less Than or Equal to 18 Breast Cancer (DEBRA). ClinicalTrials.govID: NCT04852887. Accessed July 11, 2024. https://www.clinicaltrials.gov/study/NCT04852887
13. Schmitz R, van den Belt-Dusebout AW, Clements K, et al. Association of DCIS size and margin status with risk of developing breast cancer post-treatment: multinational, pooled cohort study. *Bmj*. Oct 30 2023;383:e076022.
14. Kim D, Ki Y, Kim W, et al. Comparison of local recurrence after mastectomy for pure ductal carcinoma in situ with close or positive margins: A meta-analysis. *J Cancer Res Ther*. Oct-Dec 2020;16(6):1197-1202.
15. Gandini S, Guerrieri-Gonzaga A, Serrano D, et al. Low-Dose Tamoxifen in Noninvasive Breast Neoplasia: Long-Term Results From an Individual-Participant Data Pooled Analysis. *J Clin Oncol*. May 31 2026:Jco2600841.
16. Cobleigh MA, Anderson SJ, Siziopikou KP, et al. Comparison of Radiation With or Without Concurrent Trastuzumab for HER2-Positive Ductal Carcinoma In Situ Resected by Lumpectomy: A Phase III Clinical Trial. *J Clin Oncol*. Jul 20 2021;39(21):2367-2374.
17. Cuzick J, Sestak I, Pinder SE, et al. Effect of tamoxifen and radiotherapy in women with locally excised ductal carcinoma in situ: long-term results from the UK/ANZ DCIS trial. *Lancet Oncol*. Jan 2011;12(1):21-9.

18. Allred DC, Anderson SJ, Paik S, et al. Adjuvant tamoxifen reduces subsequent breast cancer in women with estrogen receptor-positive ductal carcinoma in situ: a study based on NSABP protocol B-24. *J Clin Oncol*. Apr 20 2012;30(12):1268-73.
19. Gupta A, Jhawar SR, Sayan M, et al. Cost-Effectiveness of Adjuvant Treatment for Ductal Carcinoma In Situ. *J Clin Oncol*. Jul 20 2021;39(21):2386-2396.
20. Lazzeroni M, Puntoni M, Guerrieri-Gonzaga A, et al. Randomized Placebo Controlled Trial of Low-Dose Tamoxifen to Prevent Recurrence in Breast Noninvasive Neoplasia: A 10-Year Follow-Up of TAM-01 Study. *J Clin Oncol*. Jun 10 2023;41(17):3116-3121.
21. Moran MS, Schnitt SJ, Giuliano AE, et al. Society of Surgical Oncology-American Society for Radiation Oncology consensus guideline on margins for breast-conserving surgery with whole-breast irradiation in stages I and II invasive breast cancer. *Int J Radiat Oncol Biol Phys*. Mar 1 2014;88(3):553-64.
22. Houssami N, Macaskill P, Marinovich ML, Morrow M. The association of surgical margins and local recurrence in women with early-stage invasive breast cancer treated with breast-conserving therapy: a meta-analysis. *Ann Surg Oncol*. Mar 2014;21(3):717-30.

Appendix A: AGREE II Score Sheet

	Domain		Item	Appraiser 1 Ratings[b] (BS)	Appraiser 2 Ratings[b] (RV)
1	**Scope and purpose**	1	Overall objective(s) of guideline specifically described.	**7**	**7**
		2	Health question(s) covered by guideline specifically described.	**7**	**7**
		3	Population to whom guideline meant to apply specifically described.	**6**	**7**
Domain score[a] = (41-6/42-6) *100 = 35/36*100 = 97%				Score = 41	
2	**Stakeholder involvement**	4	Guideline development group includes individuals from all relevant professional groups.	**6**	**6**
		5	Views and preferences of target population have been sought.	**5**	**6**
		6	Target users of guideline clearly defined.	**5**	**7**
Domain score[a] = (35-6/42-6) *100 = 29/36*100 = 81%				Score = 35	
3	**Rigour of Development**	7	Systematic methods used to search for evidence.	**7**	**7**
		8	Criteria for selecting evidence clearly described.	**7**	**7**
		9	Strengths and limitations of body of evidence clearly described.	**7**	**7**
		10	Methods for formulating recommendations clearly described.	**5**	**7**
		11	Health benefits, side effects, and risks considered in formulating recommendations.	**7**	**6**
		12	Explicit link b/n recommendations and supporting evidence.	**7**	**7**
		13	Guideline externally reviewed by experts prior to publication.	**7**	**7**
		14	Procedure for updating guideline provided.	**3**	**2**
Domain score[a] = (100-16/112-16) *100 = 84/96*100 = 88%				Score = 100	
4	**Clarity of presentation**	15	Recommendations specific and unambiguous	**6**	**7**
		16	Different options for mgmt. of condition or health issue clearly presented.	**7**	**7**
		17	Key recommendations easily identifiable.	**5**	**7**
Domain score[a] = (39-6/42-6) *100 = 33/36*100 = 92%				Score = 39	
5	**Applicability**	18	Guideline describes facilitators and barriers to application.	**4**	**4**
		19	Guideline provides advice and/or tools on how recommendations can be put into practice.	**2**	**4**
		20	Potential resource implications of applying recommendations considered.	**2**	**2**
		21	Guideline presents monitoring and/or auditing criteria.	**1**	**1**
Domain score[a] = (20-8/56-8) *100 = 12/48*100 = 25%				Score = 20	
6	**Editorial independence**	22	Views of the funding body have not influenced the content of the guideline.	**7**	**7**
		23	Competing interests of guideline development group members have been recorded and addressed.	**6**	**7**
Domain score[a] = (27-4/28-4) *100 = 23/24*100 = 96%				Score = 27	
Overall guideline assessment		1	Rate overall quality of guideline.	**6**	**6**
		2	I would recommend guideline for use.	**6**	**6**

[a]Domain score = (Obtained score – min. possible score) / (max. possible score – Min. possible score)
[b]Each AGREE II items and global rating items rated on 7-point scale (1, strongly disagree to 7–strongly agree).

Appendix B: Overview of CCA Adaptation Outcomes

Recommendation / Qualifying Statement	Endorsed	Endorsed with Minor Modification	Endorsed with Major Modification	New
Primary Treatment of DCIS – Surgical Treatment				
Recommendation 1		✓		
Qualifying statement 1	✓			
Qualifying statement 2	✓			
Qualifying statement 3		✓		
Qualifying statement 4	✓			
Qualifying statement 5	✓			
Qualifying statement 6		✓		
Qualifying statement 7		✓		
Qualifying statement 8				✓
Recommendation 2	✓			
Qualifying statement 1	✓			
Qualifying statement 2	✓			
Qualifying statement 3		✓		
Recommendation 3a			✓	
Recommendation 3b		✓		
Recommendation 3c			✓	
Qualifying statement 1	✓			
Qualifying statement 2	✓			
Qualifying statement 3	✓			
Qualifying statement 4	✓			
Primary Treatment of DCIS – Surgical Treatment and/or RT				
Recommendation 4		✓		
Qualifying statement 1				✓
Recommendation 5a			✓	
Recommendation 5b		✓		
Recommendation 5c		✓		
Qualifying statement 1		✓		
Qualifying statement 2	✓			
Qualifying statement 3			✓	
Qualifying statement 4		✓		
Qualifying statement 5		✓		
Qualifying statement 6	✓			
Qualifying statement 7			✓	
Management of DCIS after Primary Treatment				
Recommendation 6a			✓	
Recommendation 6b				✓
Qualifying statement 1		✓		
Qualifying statement 2	✓			
Qualifying statement 3			✓	
Qualifying statement 4			✓	

Recommendation / Qualifying Statement	Endorsed	Endorsed with Minor Modification	Endorsed with Major Modification	New
Qualifying statement 5	✓			
Qualifying statement 6		✓		
Qualifying statement 7				✓
Qualifying statement 8				✓

Development and Revision History

This guideline was developed by a small multidisciplinary working group, including select members of the Alberta Provincial Breast Tumour Team and a methodologist from the Guideline Resource Unit. The draft was externally reviewed and endorsed by the full Alberta Provincial Breast Tumour Team, which includes surgical oncologists, radiation oncologists, medical oncologists, nurses, pathologists, and pharmacists. A detailed description of the methodology used in the development process is available in the ON (CCO) Guideline Endorsement Protocol.

This guideline was originally developed in July 2026.

Maintenance

A formal review of this guideline will be conducted in 2029. If critical new evidence is brought forward before that time, however, the guideline working group members will revise and update the document accordingly.

Abbreviations

ABPI, accelerated partial breast irradiation; ASTRO, American Society of Radiation Oncology; BCS, breast conserving surgery; CCA, Cancer Care Alberta: CCO, Cancer Care Ontario; DCIS, ductal carcinoma in situ; DCIS-M, ductal carcinoma in situ with microinvasion; DFS, disease-free survival; ER, estrogen receptor; HFRT, hypofractionated radiation therapy; HR, hazard ratio; LR, local recurrence; PMRT, post-mastectomy radiation therapy; PBI, partial breast irradiation; RT, radiation therapy; SSO, Society of Surgical Oncology; VTE, venous thromboembolism; WBI, whole breast irradiation.

Disclaimer

The recommendations contained in this guideline are a consensus of the Alberta Provincial Breast Tumour Team and are a synthesis of currently accepted approaches to management, derived from a review of relevant scientific literature. Clinicians applying these guidelines should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care.

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Conflict of Interest Statements

Dr. Jeff Cao, Radiation Oncologist, reports consulting fees/advisory roles with Roche, La Roche-Posay, Novartis, and Pfizer; speaker bureau/honoraria from Roche, Pfizer, Novartis, AstraZeneca, Well Doc Alberta, Merck, La Roche-Posay, Knight, Seagen, Oncology Education, Gilead, and Daiichi Sankyo; grants/research support from CIHR-ELISA, RAPID2, and ARMOR.
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Brae Surgeoner, Knowledge Management Specialist, has nothing to disclose.

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