**ICCR Ductal Carcinoma In Situ, Variants of Lobular Carcinoma In Situ and Low Grade Lesions Histopathology Reporting Guide**

**Elements in black text are CORE Elements in grey text are NON-CORE o indicates single select values □ indicates multi-select values**

|  |  |
| --- | --- |
| Definition of Core elements | CORE elements are those which are essential for the clinical management, staging or prognosis of the cancer. These elements will either have evidentiary support at Level III-2 or above (based on prognostic factors in the National Health and Medical Research Council (NHMRC) levels of evidence1). In rare circumstances, where level III-2 evidence is not available an element may be made a core element where there is unanimous agreement by the Dataset Authoring Committee (DAC). An appropriate staging system e.g., Pathological TNM staging would normally be included as a CORE element.  Non-morphological testing e.g., molecular or immunohistochemical testing is a growing feature of cancer reporting. However, in many parts of the world this type of testing is limited by the available resources. In order to encourage the global adoption of ancillary tests for patient benefit, International Collaboration on Cancer Reporting (ICCR) recommends that some ancillary testing in ICCR Datasets is included as core elements. Where the technical capability does not yet exist, laboratories may consider temporarily using these data elements as NON-CORE items.  The summation of all CORE elements is considered to be the minimum reporting standard for a specific cancer.  Reference  1 Merlin T, Weston A and Tooher R (2009). Extending an evidence hierarchy to include topics other than treatment: revising the Australian 'levels of evidence'. *BMC Med Res Methodol* 9:34. |
| Definition of Non-core elements | NON-CORE elements are those which are unanimously agreed should be included in the dataset but are not supported by level III-2 evidence. These elements may be clinically important and recommended as good practice but are not yet validated or regularly used in patient management.  Key information other than that which is essential for clinical management, staging or prognosis of the cancer such as macroscopic observations and interpretation, which are fundamental to the histological diagnosis and conclusion e.g., macroscopic tumour details, may be included as either CORE or NON-CORE elements by consensus of the DAC. |
| Scope of this dataset | The dataset has been developed for the reporting of resection specimens for ductal carcinoma in situ (DCIS) of the breast. The protocol applies to cases of DCIS and for where microinvasion (≤1 mm) is present. It also covers other in situ lesions including pleomorphic and florid variants of lobular carcinoma in situ (LCIS), as well as encapsulated papillary carcinoma and solid papillary carcinoma in situ. This dataset may also be used in those rare cases of DCIS removed at core biopsy but without evidence of residual DCIS in a subsequent excision specimen. This protocol should only be used for re-excisions when they contain the largest extent of DCIS.  A separate dataset should be completed for bilateral DCIS and for each excision specimen in unilateral disease.  Ductal carcinoma in situ (DCIS) (with or without microinvasion) diagnosed on needle core biopsies only, and residual DCIS post neoadjuvant therapy are outside the scope. Separate ICCRdatasets cover DCIS associated with invasive breast carcinomas1 and breast resections in the neoadjuvant setting. Surgically removed lymph nodes are covered in a separate ICCR dataset which may be used, as appropriate, in conjunction with this dataset.2  **References**  1 International Collaboration on Cancer Reporting (2021). *Invasive Carcinoma of the Breast Histopathology Reporting Guide*. Available from: http://www.iccr-cancer.org/datasets/published-datasets/breast (Accessed 20th June 2021).  2 International Collaboration on Cancer Reporting (2021). *Surgically Removed Lymph Nodes for Breast Tumours Histopathology Reporting Guide*. Available from: http://www.iccr-cancer.org/datasets/published-datasets/breast (Accessed 20th June 2021).  a If no residual disease is identified, a biopsy scar should be sought and reported if present. If after surgical/ radiological/pathological consultation, it is concluded that the entire lesion was removed with the biopsy, features of the biopsy should be reported as the final pathology. |

| **Core/**  **Non-core** | **Element name** | **Values** | **Commentary** | **Implementation notes** |
| --- | --- | --- | --- | --- |
| Core | CLINICAL INFORMATION | * Information not provided   **Presentation mode**   * Information not provided * Screening * Symptomatic   **Current clinical findings for which this surgery is performed**   * Information not provided * Paget disease of the nipple * Nipple discharge * Palpable mass * Other, *specify*   **Prior history of breast cancer**   * Information not provided * No * Yes, *specify laterality, site(s), diagnosis, and prior treatment(s)*   **Imaging modality**   * Information not provided * None * Mammography * Ultrasound * Magnetic resonance imaging (MRI) * Other, *specify*   **Radiological findings**   * Information not provided * None * Single lesion * Multiple lesions * Calcifications * Architectural distortion * Mass * Other, *specify*   Extent by imaging, if available  \_\_\_\_ mm  Clip inserted   * Yes * No * Not known   **Specimen x-ray available**   * Information not provided * Yes * No   **Known genetic predisposition**   * Information not provided * None * Gene predisposition, *specify*   **Other clinical information, *specify*** | The provision of accurate clinical information is considered important to provide context to the specimen. This includes the nature of the abnormality, its method of detection, and the patient’s medical history, including past history of breast disease or other cancer, prior treatments, and inherited genetic mutations, such as *BRCA1* or *BRCA2*. |  |
| Core | OPERATIVE PROCEDUREa | * Not specified * Excision (less than total mastectomy) * Diagnostic excision/excision biopsy/localisation biopsy * Therapeutic wide local excision * Duct excision/ microdochectomy * Re-excision * Total mastectomy * Simple mastectomy * Nipple-sparing mastectomy * Skin-sparing mastectomy * Modified radical mastectomy * Radical mastectomy * Additional specimens, *specify* | The nature of the operation or procedure(s) performed is important to ensure appropriate pathological examination protocols are followed, and to inform clinical correlation and post-operative management. The nature, extent, focality of the abnormality and patient choice can influence the type of operation. Multiple procedures may be performed and sent as separate specimens, which require cross correlation. Many different surgical procedures are used to manage breast disease and, as appropriate, more details can be included as free text.  Partial mastectomy, lumpectomy and quadrantectomy/segmental excision are considered synonymous with wide local excision. | a If a lymph node staging specimen is submitted, then a separate dataset is used to record the information. |
| Core | SPECIMEN LATERALITY | * Left * Right * Not specified | Specification of the side and site in the breast is important for clinical correlation and accuracy of the patient medical record.  A separate dataset should be completed for each tumour in the instance of bilateral DCIS and for each excision in unilateral disease. |  |
| Non-core | SPECIMEN DIMENSIONS | \_\_\_\_ mm x \_\_\_\_ mm x \_\_\_\_ mm |  |  |
| Non-core | SPECIMEN WEIGHT | \_\_\_\_ g |  |  |
| Core | TUMOUR SITE | * Not specified   Distance from nipple \_\_\_\_ mm  AND  Position, *specify* \_\_\_\_ o’clock  OR   * Upper outer quadrant * Lower outer quadrant * Upper inner quadrant * Lower inner quadrant * Central * Other, *specify* | A measure of distance from the nipple is required. Clock face delineation of location is a more commonly used determination of site than quadrant alone, but either is acceptable.  Specification of the side and site in the breast is important for clinical correlation, post-operative management discussion and accuracy of the patient medical record especially when there are multiple lesions for correlation with radiology/prior biopsies. |  |
| Core and  Non-core | TUMOUR DIMENSIONS | * No residual DCIS or lesion (dimension from previous core biopsy)   Maximum dimension of DCIS *(specify exact measurement rounded to nearest mm)*b  \_\_\_\_ mm  Additional dimensions  \_\_\_\_ mm x \_\_\_\_ mm  **Number of microinvasive foci \_\_\_\_**   * Cannot be assessed, *specify* | Although not required for pT classification or stage assignment, the size (extent) of ductal carcinoma in situ (DCIS) is an important factor in patient management1,2 as it is correlated with close or positive margins,3,4 the likelihood of residual disease after re-excision,3-6 local recurrence,1,7,8 and the possibility of missed areas of invasion.9,10 There may be challenges to size determination of DCIS, in which case multiple parameters including radiological input, will be helpful. Large sections (whole-mount) are useful for size evaluation.  Size should also be given for pleomorphic and florid lobular carcinoma in situ (LCIS)lesions (but not classic LCIS which is considered a ‘benign’ lesion in the American Joint Committee on Cancer (AJCC) Staging Manual 8th edition11 (unlike the Union for International Cancer Control (UICC) TNM 8th edition12) where no invasive disease is seen; pleomorphic and florid LCIS behave more like DCIS being less likely to be multifocal/bilateral and having a higher incidence of associated ipsilateral invasive carcinoma than classic LCIS.  If no residual disease is identified, a biopsy scar should be sought and reported if present. If after surgical/radiological/  pathological consultation, it is concluded that the entire lesion was removed with the biopsy, features of the biopsy should be reported as the final pathology.  **References**  1 MacDonald HR, Silverstein MJ, Mabry H, Moorthy B, Ye W, Epstein MS, Holmes D, Silberman H and Lagios M (2005). Local control in ductal carcinoma in situ treated by excision alone: incremental benefit of larger margins. *Am J Surg* 190(4):521-525.  2 O'Sullivan MJ and Morrow M (2007). Ductal carcinoma in situ--current management. *Surg Clin North Am* 87(2):333-351, viii.  3 Dillon MF, Mc Dermott EW, O'Doherty A, Quinn CM, Hill AD and O'Higgins N (2007). Factors affecting successful breast conservation for ductal carcinoma in situ. *Ann Surg Oncol* 14(5):1618-1628.  4 Cheng L, Al-Kaisi NK, Gordon NH, Liu AY, Gebrail F and Shenk RR (1997). Relationship between the size and margin status of ductal carcinoma in situ of the breast and residual disease. *J Natl Cancer Inst* 89(18):1356-1360.  5 Sigal-Zafrani B, Lewis JS, Clough KB, Vincent-Salomon A, Fourquet A, Meunier M, Falcou MC and Sastre-Garau X (2004). Histological margin assessment for breast ductal carcinoma in situ: precision and implications. *Mod Pathol* 17(1):81-88.  6 Neuschatz AC, DiPetrillo T, Steinhoff M, Safaii H, Yunes M, Landa M, Chung M, Cady B and Wazer DE (2002). The value of breast lumpectomy margin assessment as a predictor of residual tumor burden in ductal carcinoma in situ of the breast. *Cancer* 94(7):1917-1924.  7 Di Saverio S, Catena F, Santini D, Ansaloni L, Fogacci T, Mignani S, Leone A, Gazzotti F, Gagliardi S, De Cataldis A and Taffurelli M (2008). 259 Patients with DCIS of the breast applying USC/Van Nuys prognostic index: a retrospective review with long term follow up. *Breast Cancer Res Treat* 109(3):405-416.  8 Asjoe FT, Altintas S, Huizing MT, Colpaert C, Marck EV, Vermorken JB and Tjalma WA (2007). The value of the Van Nuys Prognostic Index in ductal carcinoma in situ of the breast: a retrospective analysis. *Breast J* 13(4):359-367.  9 Maffuz A, Barroso-Bravo S, Najera I, Zarco G, Alvarado-Cabrero I and Rodriguez-Cuevas SA (2006). Tumor size as predictor of microinvasion, invasion, and axillary metastasis in ductal carcinoma in situ. *J Exp Clin Cancer Res* 25(2):223-227.  10 Moore KH, Sweeney KJ, Wilson ME, Goldberg JI, Buchanan CL, Tan LK, Liberman L, Turner RR, Lagios MD, Cody Iii HS, Giuliano AE, Silverstein MJ and Van Zee KJ (2007). Outcomes for women with ductal carcinoma-in-situ and a positive sentinel node: a multi-institutional audit. *Ann Surg Oncol* 14(10):2911-2917.  11 Amin MB, Edge S, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM and Meyer LR (eds) (2017). *AJCC Cancer Staging Manual. 8th ed*. Springer., New York.  12 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA. | b Based on a  combination of  macroscopic and  microscopic  assessment. |
| Core | DIAGNOSTIC CLASSIFICATION | * DCIS * Paget disease of the nipple * Encapsulated papillary carcinoma * Solid papillary carcinoma in situ * Pleomorphic lobular carcinoma in situ (LCIS) * Florid LCIS * Mixed, *specify subtypes present*c * Other, *specify* | To ensure consensus and consistency of reporting, it is recommended to use the nomenclature and definitions for diagnosis and classification provided by the most recent edition of the World Health Organization (WHO) Classification of Breast Tumours, 5th edition, 2019.1 The International Collaboration on Cancer Reporting (ICCR)dataset includes 5th edition Corrigenda, September 2020.2  Ductal carcinoma in situ (DCIS) varies in cell appearance, growth pattern and extent of disease and is now considered to represent a heterogeneous group of in situneoplastic processes. When DCIS involves the epidermis of the nipple only, without underlying invasive carcinoma or DCIS, the classification is Paget disease of the nipple, the majority of which are high nuclear grade and strongly positive for HER2.  Pleomorphic lobular carcinoma in situ (LCIS) has overlapping features with DCIS and may be treated similarly, but at present there is insufficient evidence to establish definitive recommendations for treatment. The current understanding of the natural history of pleomorphic LCIS and florid LCIS is limited, and the optimal treatment is unknown with regard to pursuing negative margins and consideration of additional adjuvant therapies. Nevertheless, although pleomorphic and florid LCIS are not currently included in the AJCC pTis classification3 they remain as a category in the UICC TNM 8th edition4 and there is emerging evidence suggesting that these forms of LCIS might be better treated as DCIS,1,5 in particular the practice of excision to negative margins.  **References**  1 WHO Classification of Tumours Editorial Board (2019). *Breast Tumours. WHO Classification of Tumours, 5th Edition*. IARC Publications, Lyon.  2 WHO Classification of Tumours Editorial Board (2020). *Breast Tumours, WHO Classification of Tumours, 5th Edition, Volume 2 - Corrigenda September 2020.* Available from:  <https://publications.iarc.fr/Book-And-Report-Series/Who-Classification-Of-Tumours/Breast-Tumours-2019> (Accessed 16th June 2021).  3 Amin MB, Edge S, Greene FL, Byrd DR, Brookland RK, Washington MK, Gershenwald JE, Compton CC, Hess KR, Sullivan DC, Jessup JM, Brierley JD, Gaspar LE, Schilsky RL, Balch CM, Winchester DP, Asare EA, Madera M, Gress DM and Meyer LR (eds) (2017). *AJCC Cancer Staging Manual. 8th ed*. Springer., New York.  4 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA.  5 Foschini MP, Miglio R, Fiore R, Baldovini C, Castellano I, Callagy G, Bianchi S, Kaya H, Amendoeira I, Querzoli P, Poli F, Scatena C, Cordoba A, Pietribiasi F, Kovács A, Faistova H, Cserni G and Quinn C (2019). Pre-operative management of Pleomorphic and florid lobular carcinoma in situ of the breast: Report of a large multi-institutional series and review of the literature. *Eur J Surg Oncol* 45(12):2279-2286. | Value list based on the WHO Classification of Breast Tumours (2019).  Note that permission to publish the WHO Classification of Tumours may be needed in your implementation. It is advisable to check with the International Agency for Research on Cancer (IARC).  c Tumour exhibiting more than one tumour type should be designated  mixed and the types present stated. |
| Core | HISTOLOGICAL NUCLEAR GRADE | * Grade 1 (Low) * Grade 2 (Intermediate) * Grade 3 (High) | Nuclear grading of entities within the scope of this dataset includes DCIS, encapsulated papillary carcinoma and solid papillary carcinoma in situ. For high nuclear grade encapsulated papillary carcinoma, the ICCR Invasive carcinoma of the breast dataset should be used.1  High nuclear grade is considered a high risk factor for recurrence2-5 and breast cancer specific mortality,6 although some studies do not show such an effect,7,8 which may be due to interobserver variability in grading or use of different classification schemes.9  Nuclear grade of DCIS is largely determined by nuclear size and pleomorphism although other morphologic features (see Table 1) are also useful.10  **Table 1** **(See the end of the document for Table)**  **References**  1 International Collaboration on Cancer Reporting (2021). *Invasive Carcinoma of the Breast Histopathology Reporting Guide*. Available from: http://www.iccr-cancer.org/datasets/published-datasets/breast (Accessed 20th June 2021).  2 Cheung S, Booth ME, Kearins O and Dodwell D (2014). Risk of subsequent invasive breast cancer after a diagnosis of ductal carcinoma in situ (DCIS). *Breast* 23(6):807-811.  3 Kerlikowske K, Molinaro AM, Gauthier ML, Berman HK, Waldman F, Bennington J, Sanchez H, Jimenez C, Stewart K, Chew K, Ljung BM and Tlsty TD (2010). Biomarker expression and risk of subsequent tumors after initial ductal carcinoma in situ diagnosis. *J Natl Cancer Inst* 102(9):627-637.  4 Rakovitch E, Nofech-Mozes S, Hanna W, Narod S, Thiruchelvam D, Saskin R, Spayne J, Taylor C and Paszat L (2012). HER2/neu and Ki-67 expression predict non-invasive recurrence following breast-conserving therapy for ductal carcinoma in situ. *Br J Cancer* 106(6):1160-1165.  5 Wang SY, Shamliyan T, Virnig BA and Kane R (2011). Tumor characteristics as predictors of local recurrence after treatment of ductal carcinoma in situ: a meta-analysis. *Breast Cancer Res Treat* 127(1):1-14.  6 Narod SA, Iqbal J, Giannakeas V, Sopik V and Sun P (2015). Breast Cancer Mortality After a Diagnosis of Ductal Carcinoma In Situ. *JAMA Oncol* 1(7):888-896.  7 Falk RS, Hofvind S, Skaane P and Haldorsen T (2011). Second events following ductal carcinoma in situ of the breast: a register-based cohort study. *Breast Cancer Res Treat* 129(3):929-938.  8 Zhang X, Dai H, Liu B, Song F and Chen K (2016). Predictors for local invasive recurrence of ductal carcinoma in situ of the breast: a meta-analysis. *Eur J Cancer Prev* 25(1):19-28.  9 Cserni G and Sejben A (2020). Grading Ductal Carcinoma In Situ (DCIS) of the Breast – What’s Wrong with It? *Pathology & Oncology Research* 26(2):665-671.  10 Anonymous (1997). Consensus Conference on the classification of ductal carcinoma in situ. The Consensus Conference Committee. *Cancer* 80(9):1798-1802.  11 College of American Pathologists (2020). *Protocol for the Examination of Resection Specimens From Patients With Ductal Carcinoma In Situ (DCIS) of the Breast*. Available from: https://documents.cap.org/protocols/cp-breast-dcis-resection-19-4301.pdf (Accessed 20th September 2020). | Applicable to DCIS, encapsulated papillary carcinoma and solid papillary carcinoma in situ. |
| Non-core | HISTOLOGICAL ARCHITECTURAL PATTERN | * Cribriform * Micropapillary * Papillary * Solid * Other (e.g., clinging/flatd), *specify* | Historically DCIS has been classified according to architectural pattern with some systems also including ‘comedo DCIS’ as an architectural type. Other classification systems have used nuclear grade and the presence or absence of comedo necrosis for categorisation. It should be noted that comedo necrosis can be seen in association with a range of architectural patterns and nuclear grades.1,2  However, there is significant variability of architectural pattern within an individual case of DCIS, and the perceived lack of reproducibility makes its application problematic. Therefore, cytonuclear morphology is now recommended for histological grading of DCIS3 as although true grade variation does occur, in general, there is greater homogeneity of nuclear grade than of architectural pattern in DCIS within a lesion.4  **References**  1 Anonymous (1997). Consensus Conference on the classification of ductal carcinoma in situ. The Consensus Conference Committee. *Cancer* 80(9):1798-1802.  2 Silverstein MJ, Lagios MD, Recht A, Allred DC, Harms SE, Holland R, Holmes DR, Hughes LL, Jackman RJ, Julian TB, Kuerer HM, Mabry HC, McCready DR, McMasters KM, Page DL, Parker SH, Pass HA, Pegram M, Rubin E, Stavros AT, Tripathy D, Vicini F and Whitworth PW (2005). Image-detected breast cancer: state of the art diagnosis and treatment. *J Am Coll Surg* 201(4):586-597.  3 College of American Pathologists (2020). *Protocol for the Examination of Resection Specimens From Patients With Ductal Carcinoma In Situ (DCIS) of the Breast*. Available from: https://documents.cap.org/protocols/cp-breast-dcis-resection-19-4301.pdf (Accessed 20th September 2020).  4 Quinn CM and Ostrowski JL (1997). Cytological and architectural heterogeneity in ductal carcinoma in situ of the breast. *J Clin Pathol* 50(7):596-599. | Applicable to DCIS only.  d Applies to high nuclear grade DCIS only. |
| Core | NECROSIS | * Not identified * Present * Central (Comedo) necrosis * Focal (Punctate) necrosis (<10% duct diameter) | Although there is significant inter-observer variation, two broad types of necrosis have been identified: 1) Central (comedo) necrosis, most often associated with high nuclear grade and worse breast cancer specific survival1 but only inconsistently with recurrence; and 2) Focal (punctate) necrosis, the clinical significance of which is unclear. Therefore, a pragmatic approach for classification of necrosis is proposed: central (comedo), focal (punctate) and ‘not identified’ as follows:   * **Central (“comedo”):** The central portion of an involved ductal space is replaced by an area of expansive necrosis that is easily detected at low magnification. Ghost cells and karyorrhectic debris are generally present. Although central (comedo) necrosis is generally associated with high grade nuclei, it can also occur with ductal carcinoma in situ (DCIS) of intermediate (or occasionally low) nuclear grade and in pleomorphic lobular carcinoma in situ (LCIS) and florid LCIS. * **Focal (“punctate”):** Small foci, or single cell necrosis (≤10%) that are indistinct at low magnification, which are not considered central (comedo). * **Necrosis not identified.**   Although there is inconsistency in the thresholds and criteria used to assign presence or absence of central (comedo) necrosis, a cut off of at least 10% of duct diameter which captures most central (comedo) necrosis2 is to be used, with focal (punctate) necrosis as <10%.  The presence of necrosis is associated with mammographic calcifications, with central (comedo) necrosis often correlating with a linear and/or branching pattern on radiology. There is also frequent calcification in patients with recurrent DCIS that originally presented with mammographic calcifications.3,4  **References**  1 Narod SA, Iqbal J, Giannakeas V, Sopik V and Sun P (2015). Breast Cancer Mortality After a Diagnosis of Ductal Carcinoma In Situ. *JAMA Oncol* 1(7):888-896.  2 Harrison BT, Hwang ES, Partridge AH, Thompson AM and Schnitt SJ (2019). Variability in diagnostic threshold for comedo necrosis among breast pathologists: implications for patient eligibility for active surveillance trials of ductal carcinoma in situ. *Mod Pathol* 32(9):1257-1262.  3 Wang SY, Shamliyan T, Virnig BA and Kane R (2011). Tumor characteristics as predictors of local recurrence after treatment of ductal carcinoma in situ: a meta-analysis. *Breast Cancer Res Treat* 127(1):1-14.  4 Zhang X, Dai H, Liu B, Song F and Chen K (2016). Predictors for local invasive recurrence of ductal carcinoma in situ of the breast: a meta-analysis. *Eur J Cancer Prev* 25(1):19-28. |  |
| Core and Non-core | MARGIN STATUSe | * Cannot be assessed   **Anterior margin**   * Involvement cannot be determined, *specify* * Involved   Extent of margin involvement  \_\_\_\_ mm   * Not involved   Distance of tumour from closest  margin (if <5 mm) \_\_\_ mm   * ≥5 mm * Cannot be determined, *specify*   **Posterior margin**   * Involvement cannot be determined, *specify* * Involved   Extent of margin involvement  \_\_\_\_ mm   * Not involved   Distance of tumour from closest  margin (if <5 mm) \_\_\_ mm   * ≥5 mm * Cannot be determined, *specify*   **Superior margin**   * Involvement cannot be determined, *specify* * Involved   Extent of margin involvement  \_\_\_\_ mm   * Not involved   Distance of tumour from closest  margin (if <5 mm) \_\_\_ mm   * ≥5 mm * Cannot be determined, *specify*   **Inferior margin**   * Involvement cannot be determined, *specify* * Involved   Extent of margin involvement  \_\_\_\_ mm   * Not involved   Distance of tumour from closest  margin (if <5 mm) \_\_\_ mm   * ≥5 mm * Cannot be determined, *specify*   **Medial margin**   * Involvement cannot be determined, *specify* * Involved   Extent of margin involvement  \_\_\_\_ mm   * Not involved   Distance of tumour from closest  margin (if <5 mm) \_\_\_ mm   * ≥5 mm * Cannot be determined, *specify*   **lateral margin**   * Involvement cannot be determined, *specify* * Involved   Extent of margin involvement  \_\_\_\_ mm   * Not involved   Distance of tumour from closest  margin (if <5 mm) \_\_\_ mm   * ≥5 mm * Cannot be determined, *specify*   **Other margin, *specify \_\_\_\_\_\_\_\_\_\_\_\_***   * Involvement cannot be determined, *specify* * Involved   Extent of margin involvement  \_\_\_\_ mm   * Not involved   Distance of tumour from closest  margin (if <5 mm) \_\_\_ mm   * ≥5 mm * Cannot be determined, *specify* | Assessment of the adequacy of excision requires close correlation between the surgical excision procedure and pathological examination and in some circumstances such as the presence of calcification, as well as radiological correlation. In particular it is essential that the pathologist is made aware of the depth of tissue excised and whether the surgeon has excised all the tissue from the subcutis to the pectoral fascia.  There remains some controversy regarding the minimum width of uninvolved tissue that defines ‘complete’ excision in breast conserving surgery, although narrower margins are now more widely accepted as adequate than previously. For this reason it is recommended that the pathologist reports the measurement of the distance between the inked margins and DCIS (and invasive carcinoma).  Some centres find it helpful to report the approximate extent of margin involvement and the following system is recommended:   * Unifocal: one focus of carcinoma at the margin (single duct involvement) * Multifocal: two or more foci of carcinoma at the margin * Extensive: carcinoma present at the margin over a broad front (>5 mm).   If additional margins are taken, it is important to incorporate that into the margin measurements.  Note: There is an assumption that all breast tissue will be resected in patients undergoing a complete mastectomy and that pathological examination of margins is of limited value. However, there is evidence that margin involvement can increase the risk of local recurrence after mastectomy,1,2 and a statement of the distance to the closest margin(s) and site(s) of margin (including nipple if nipple sparing mastectomy) for such mastectomy specimens should be included.  **References**  1 Fitzsullivan E, Lari SA, Smith B, Caudle AS, Krishnamurthy S, Lucci A, Mittendorf EA, Babiera GV, Black DM, Wagner JL, Bedrosian I, Woodward W, Gainer SM, Hwang R, Meric-Bernstam F, Hunt KK and Kuerer HM (2013). Incidence and consequence of close margins in patients with ductal carcinoma-in situ treated with mastectomy: is further therapy warranted? *Ann Surg Oncol* 20(13):4103-4112.  2 Glorioso JM, Gonzalez Juarrero AB, Rodysill BR, Harmsen WS, Habermann EB, Carter JM, Mutter RW, Degnim AC and Jakub JW (2017). Margin Proximity Correlates with Local Recurrence After Mastectomy for Patients Not Receiving Adjuvant Radiotherapy. *Ann Surg Oncol* 24(11):3148-3156. | e Core for all wide local excision specimens, similar non-complete mastectomy and some (refer to Note) complete mastectomy specimens. |
| Core | BIOPSY SITE | * Information not provided * Evidence of marker clip reaction * Evidence of previous core biopsy | In some cases, other pathologic findings are important for the clinical management of patients.  If the biopsy was performed for a benign lesion and the DCIS is an incidental finding, this should be documented e.g., DCIS in an excision for a palpable fibroadenoma.  Peritumoural lymphovascular invasion is a very rare finding in association with DCIS alone. Additional sampling should be pursued to attempt to identify an area of invasion. If there has been prior surgery or needle biopsy, the possibility of artifactual displacement of epithelial cells into lymphatics should be considered. Lymph node biopsy may be performed in patients with DCIS and lymphovascular invasion.  If there has been a prior core needle biopsy or incisional biopsy, the biopsy site should be sampled and documented in the report. If the intention was to completely re-excise a prior surgical site, the report should document biopsy changes at the margin that could indicate an incomplete excision.  In some situations, inclusion of coexisting conditions can be also considered beneficial if this supports clinicopathological correlation or patient management. Examples include: microcalcification detected mammographically and extension into or involvement of a benign lesion such as a sclerosing lesion, papillary lesion, or fibroepithelial lesion.  An exhaustive description of all coexisting conditions is not required. |  |
| Non-core | COEXISTENT PATHOLOGY | * None identified * Present, *specify* | In some cases, other pathologic findings are important for the clinical management of patients.  If the biopsy was performed for a benign lesion and the DCIS is an incidental finding, this should be documented e.g., DCIS in an excision for a palpable fibroadenoma.  Peritumoural lymphovascular invasion is a very rare finding in association with DCIS alone. Additional sampling should be pursued to attempt to identify an area of invasion. If there has been prior surgery or needle biopsy, the possibility of artifactual displacement of epithelial cells into lymphatics should be considered. Lymph node biopsy may be performed in patients with DCIS and lymphovascular invasion.  If there has been a prior core needle biopsy or incisional biopsy, the biopsy site should be sampled and documented in the report. If the intention was to completely re-excise a prior surgical site, the report should document biopsy changes at the margin that could indicate an incomplete excision.  In some situations, inclusion of coexisting conditions can be also considered beneficial if this supports clinicopathological correlation or patient management. Examples include: microcalcification detected mammographically and extension into or involvement of a benign lesion such as a sclerosing lesion, papillary lesion, or fibroepithelial lesion.  An exhaustive description of all coexisting conditions is not required. |  |
| Core | MICROCALCIFICATIONS | * Not applicable * Not identified * Lesional calcification present * Present in non-neoplastic tissue | Ductal carcinoma in situ (DCIS) found in biopsies performed for microcalcifications will almost always be at the site of the calcifications or in close proximity.1,2 Some of these lesions may also include an invasive component.  The pathologist must be satisfied that the specimen has been sampled in such a way that the lesion responsible for the calcifications has been examined microscopically. The presence of the targeted calcifications in the specimen can be confirmed by specimen radiography. The relationship of the radiologic calcifications to the DCIS should be indicated.  **References**  1 Silverstein MJ, Lagios MD, Recht A, Allred DC, Harms SE, Holland R, Holmes DR, Hughes LL, Jackman RJ, Julian TB, Kuerer HM, Mabry HC, McCready DR, McMasters KM, Page DL, Parker SH, Pass HA, Pegram M, Rubin E, Stavros AT, Tripathy D, Vicini F and Whitworth PW (2005). Image-detected breast cancer: state of the art diagnosis and treatment. *J Am Coll Surg* 201(4):586-597.  2 Owings DV, Hann L and Schnitt SJ (1990). How thoroughly should needle localization breast biopsies be sampled for microscopic examination? A prospective mammographic/pathologic correlative study. *Am J Surg Pathol* 14(6):578-583. |  |
| Core and  Non-core | ANCILLARY STUDIES | * Not performed * Performed * Estrogen receptor (ER), record results * Progesterone receptor (PR), record results * Other, specify test(s) and result(s)   **Representative blocks for ancillary studies**, *specify those blocks best representing tumour and/or normal tissue for further study* | The results of any additional ancillary studies such as multigene test results are recommended to be included or added subsequently to the pathology report to ensure a record of all assays performed on the case are recorded in a single comprehensive report.Testing of DCIS for estrogen receptor (ER) is recommended to determine potential benefit of endocrine therapy as adjuvant chemo-prevention (depending on surgery undertaken), while testing DCIS for progesterone receptor (PR) is considered optional, and testing for other biomarkers is currently not relevant.1  **Reference**  1 Allison KH, Hammond MEH, Dowsett M, McKernin SE, Carey LA, Fitzgibbons PL, Hayes DF, Lakhani SR, Chavez-MacGregor M, Perlmutter J, Perou CM, Regan MM, Rimm DL, Symmans WF, Torlakovic EE, Varella L, Viale G, Weisberg TF, McShane LM and Wolff AC (2020). Estrogen and Progesterone Receptor Testing in Breast Cancer: ASCO/CAP Guideline Update. *J Clin Oncol* 38(12):1346-1366. |  |
| Core | PATHOLOGICAL STAGING (UICC TNM 8th edition)f | **TNM Descriptors**  (only if applicable)   * m - multiple foci of DCIS * r - recurrent   **Primary tumour (pT)g**   * TX Primary tumour cannot be assessed * T0 No evidence of primary tumour * Tis (LCIS) Lobular carcinoma in situh * Tis (DCIS) Ductal carcinoma in situ * Tis (Paget) Paget disease of the nipple not associated with invasive carcinoma and/or carcinoma in situ (DCIS and/or LCIS) in the underlying breast   parenchymai   * T1mi Microinvasion 0.1 cm or less in greatest dimensionj | The Tumour Node Metastasis (TNM) system of the UICC 8th edition Staging Manual is recommended.1  **Pathologic Classification**  Additional descriptors can be used:  The suffix ‘m’ indicates the presence of multiple primary tumours in a single site and is recorded in parentheses, e.g., pT(m) NM.  The ‘r’ prefix indicates a recurrent tumour when staging is carried out after a documented disease-free interval.  **Reference**  1 Brierley JD, Gospodarowicz MK and Wittekind C (eds) (2016). *Union for International Cancer Control.* *TNM Classification of Malignant Tumours, 8th Edition*, Wiley, USA. | Note that permission to publish the TNM cancer staging tables may be needed in your implementation. It is advisable to check.  f Reproduced with permission.  Source: UICC TNM Classification of Malignant Tumours, 8th Edition, eds by James D. Brierley, Mary K. Gospodarowicz, Christian Wittekind. 2016, Publisher Wiley (incorporating any errata published up until 6th October 2020).  g Note that the results of surgically removed lymph nodes are derived from a separate dataset.  h The AJCC exclude Tis (LCIS).  i Carcinomas in the breast parenchyma associated with Paget disease are categorised based on the size and characteristics of the parenchymal disease, although the presence of Paget disease should still be noted.  j Microinvasion is the extension of cancer cells beyond the basement membrane into the adjacent tissues with no focus more than 0.1 cm in greatest dimension. When there are multiple foci of microinvasion, the size of only the largest focus is used to classify the microinvasion. (Do not use the sum of all individual foci.) The presence of multiple foci of microinvasion should be noted, as it is with multiple larger invasive carcinomas. |

**Table**

**Table 1: Nuclear grade of ductal carcinoma in situ.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Feature** | **Grade I (Low)** | **Grade II (Intermediate)** | **Grade III (High)** |
| **Pleomorphism** | Monotonous (monomorphic) | Intermediate | Markedly pleomorphic |
| **Size** | 1.5 to 2 x the size of a normal RBC or a normal duct epithelial cell nucleus | Intermediate | >2.5 x the size of a normal RBC or a normal duct epithelial cell nucleus |
| **Chromatin** | Usually diffuse, finely dispersed chromatin | Intermediate | Usually vesicular with irregular  chromatin distribution |
| **Nucleoli** | Only occasional |  | Prominent, often multiple |
| **Mitoses** | Only occasional | Intermediate | May be frequent |
| **Orientation** | Polarised toward luminal spaces | Intermediate | Usually not polarised toward the luminal space |

Definition: RBC, red blood cell.

Reproduced with permission from College of American Pathologists (2020). *Protocol for the Examination of Resection Specimens From Patients With Ductal Carcinoma In Situ (DCIS) of the Breast*. College of American Pathologists.11

**Reference**

11 College of American Pathologists (2020). *Protocol for the Examination of Resection Specimens From Patients With Ductal Carcinoma In Situ (DCIS) of the Breast*. Available from: https://documents.cap.org/protocols/cp-breast-dcis-resection-19-4301.pdf (Accessed 20th September 2020).