A guide to
Invasive Breast Cancer Histopathology Reporting

Clinical details

S1.02	**Clinical information provided on request form** (complete as narrative or use the structured format below)	Text
	Specimen type	See p3
	SENTINEL NODES (if submitted)	
	Location (eg Axillary, Internal mammary)	Text
	Sentinel nodes number	___
	Sentinel nodes colour	Text
	Radioactive count	_____
	Tumour site and laterality (use clock-face analogy)	Text
	Method of localisation	Carbon track Hook wire
	New primary cancer or recurrence	New primary Local recurr. Distant met.
G1.01	Any other relevant information (eg history, clinical dx, neoadjuvant therapy, lab and imaging results)	Text
S1.03	**Pathology accession number**	Text
S1.04	**Principal clinician**	Text

Macroscopic findings

S2.01	**No. of specimens submitted**	___
S2.02	**Specimen laterality**	Left Right
S2.03	**Specimen type/Lymph tissue**	See p3
	Intraoperative consultation	Not perfomed Performed
	If perfomed record type	See p3
S2.04	**Specimen orientation**	Not oriented Oriented
	If oriented, record markers and locations	Text
S2.05	**Method of localisation**	carbon hook wire N/A
S2.06	**Specimen size**	__x__x__ mm
	If oriented use the following 3 measures:	
	Medial-lateral length	__mm
	Superficial-deep length	__mm
	Superior-inferior length	__mm
S2.07	**Specimen weight**	___ g
S2.08	**Macroscopically visible tumours?**	Absent Present
	If present, record the no. of foci	___

Macroscopic findings (cont.)

S2.09	**Gross descript. of tumour/s (for *each* tumour record)**	
	Nature of tumour	Text
	Tumour size	__x__x__mm
	Distance to nearest separate tumour foci	___mm
	Min. macro. margin clearance from any tumour deposit	__mm from (specify margin)
S2.10	**Skin**	Absent Present
	If present, record ...	
	Skin dimensions	__x__mm
	Skin abnormalities	Absent OR Ulceration Paget disease Satellite nodules Other (specify)
S2.11	**Muscle**	Absent Present
S2.12	**SENTINEL LYMPH NODES (for *each* node received record...)**	
	Site	Axilla Int. mamm chain
	Radioactive count	_____
	Uptake of dye	No Yes - Blue
	Size	__x__x__mm
	NON SENTINEL LYMPH NODES/TISSUE	
	Total number of nodes	___
	Size range	__to__mm
	Description	Text
S2.13	**Block identification key**	Text
G2.01	Other macroscopic findings	Text

Microscopic findings

S3.01	**Multiple tumours?**	Absent Present
	If present, record:	
	Quadrants involved	Text
	Total no. of tumour deposits (if >2 record)	_____
	Max span of multifocal tumour bed involved	__x__mm

For EACH tumour identified above complete S3.02-S3.04 and consider recording G3.01

S3.02	**MAX. INVASIVE TUMOUR SIZE**	
	Whole tumour size	__mm
	Max. size of invasive tumour	__mm

Microscopic findings (cont.)

G3.01	Other invasive tumour dimensions	__x__mm
S3.03	**Histological grade** (record for *each* tumour) **(Refer to p3)**	3–5 (Grade 1) 6–7 (Grade 2) 8–9 (Grade 3)
S3.04	**Invasive carcinoma subtype**	See p4
S3.05	**Peritumoural lymphovascular invasion**	Not identified Present Suspicious
	If suspicious, record the block	Text
S3.06	**Skin**	See p4
S3.07	**Muscle**	Not involved Involved
S3.08	**Treatment effect (after neoadjuvant hormonal or chemotherapy) (Refer to p4)**	No definite resp. Partial response Complete resp. Not applicable
	If no definite or partial response record the estimate of overall level of cellularity for invasive cancer	___%
	Specify neoadjuvant response classification system used	Text
	Result of treatment	Text
S3.09	**DCIS**	See p4
S3.10	**Max. extent of breast involved by DCIS**	___mm
S3.11	**Max. dimension pure DCIS**	___mm
S3.12	**Highest nuclear grade of DCIS**	Low Intermediate High
G3.02	Nuclear grade heterogeneity of DCIS	Absent Present
	If present, record, next most prevalent grade	Low Intermediate High
S3.13	**Necrosis in DCIS**	Absent Present
S3.14	**Architecture of DCIS** (Select all that apply)	comedo solid cribriform micropapillary apocrine papillary other (specify)
S3.15	**Microcalcification**	Absent Present
	If present record in which tissue(s):	in DCIS in benign tissue in invasive cancer
	Lesion(s) with microcalcification	Text
	Associated with necrosis?	No Yes
	Size and extent of microcalcification (if required, per lesion with microcalcification)	Text

Microscopic findings (cont.)

S3.16	**Paget disease**	Absent Present
S3.17	**Margin involvement by invasive carcinoma or DCIS**	Not involved Involved
	If involved, specify for *each* involved margin:	
	Type of involvement	DCIS Invasive ca DCIS & invasive ca
	Orientation of margin	Text
	Extent of involvement	___mm OR Focal
	If not involved, record for *each* close margin	
	Distance of invasive carcinoma to margin	___mm OR >10mm
	If DCIS is closer to the margin the invasive ca additionally record:	&__mm from DCIS
S3.18	**Lobular neoplasia**	Absent Present
	If present, record type	Classical Variant
	Extent	Focal Extensive
G3.03	LCIS at the margin	See p4
S3.19	**Associated breast changes**	See p4
S3.20	**SENTINEL NODES (SN)**	
	Total number of SN	___
	Number of SN with macrometastases	___
	Number of SN with micrometastases	___
	Number of SN with isolated tumour cells	___
S3.21	**NONSENTINEL NODES (NSN)**	
	Total number of NSN	___
	Number of NSN with metastases	___
S3.22	**Extranodal spread**	Absent Present
S3.23	**Treatment effect in LN**	See p4
G3.04	Other microscopic comments	Text

Ancillary test findings

S4.01	**Oestrogen receptors**	Not performed Performed Pending
	If performed, record	
	%age nuclei stained	___ to ___ %
	Predominant staining intensity	1+ Low 2+ Intermed. 3+ High
	ER result	Negative Positive

Ancillary test findings

	Progestrone receptors	Not performed Performed Pending
	If performed, record	
	%age nuclei stained	___ to ___ %
	Predominant staining intensity	1+ Low 2+ Intermed. 3+ High
	PR result	Negative Positive
S4.03	**HER2 (ISH)**	Not performed Performed Pending
	If performed, record:	
	Number of copies of HER2	___
	Number of copies of CEP17 (if assessed)	___
	HER2 result	Amplified Non-amp. diploid Non-amp polysomic Indeterminate
	HER2 IHC (if performed)	0 1+ 2+ 3+ Not performed

Synthesis and overview

S5.01	**Tumour stage and group**	See p4 and 5
S5.02	**Year & edition of staging system**	Text
G5.01	Diagnostic summary (include: Specimen type and laterality; Histological grade; Max. tumour size; Margin status; Lymph node status; Lymphovascular invasion)	Text
S5.03	**Overarching comment**	Text

S1.02 /S2.03 Specimen type

Single select from the following:

- diagnostic open biopsy
- wide local excision (partial mastectomy, quadrantectomy or segmentectomy)
- re-excision
- mastectomy
- mastectomy post neoadjuvant therapy
- other (specify)

Lymph tissue - choose all that apply:

- not submitted
- lymph node biopsy - sentinel
- lymph node biopsy - non-sentinel
- axillary sample
- axillary clearance
- other (specify)

S2.03 Intraoperative consult

Choose all that apply:

- frozen section
- imprint cytology
- gross examination for margin assessment
- other (specify)

S3.03 Histological grade

Nuclear grade

Score 1: Size equivalent to normal breast epithelial cells, regular outlines, uniform chromatin; inconspicuous nucleoli, little size variation.
Score 2: Larger nuclei, open vesicular chromatin; visible nucleoli, moderate variability in size and shape
Score 3: Vesicular nuclei; often with prominent nucleoli; exhibiting marked variation in size and shape, occasionally very large and bizarre forms.

Tubular differentiation

Score 1: >75% of invasive carcinoma forming tubular or glandular structures
Score 2: 10–75% of invasive carcinoma forming tubular or glandular structures
Score 3: <10% of invasive carcinoma forming tubular or glandular structures.
Not assessable*
* microinvasion only (each focus ≤ 1mm)

Mitotic counts

Number of mitoses per 10 high-power fields use the tables below. OR Not assessable (ie microinvasion only (each focus ≤ 1mm)

Field diameter (mm)	Mitotic frequency score 1	2	3
0.40	≤4	5–9	≥10
0.41	≤4	5–9	≥10
0.42	≤5	6–10	≥11
0.43	≤5	6–10	≥11
0.44	≤5	6–11	≥12
0.45	≤5	6–11	≥12
0.46	≤6	7–12	≥13
0.47	≤6	7–12	≥13
0.48	≤6	7–13	≥14
0.49	≤6	7–13	≥14

Field diameter (mm)	Mitotic frequency score 1	2	3
0.50	≤7	8–14	≥15
0.51	≤7	8–14	≥15
0.52	≤7	8–15	≥16
0.53	≤8	9–16	≥17
0.54	≤8	9–16	≥17
0.55	≤8	9–17	≥18
0.56	≤8	9–17	≥18
0.57	≤9	10–18	≥19
0.58	≤9	10–19	≥20
0.59	≤9	10–19	≥20

Field diameter (mm)	Mitotic frequency score 1	2	3
0.60	≤10	11–20	≥21
0.61	≤10	11–21	≥22
0.62	≤11	12–22	≥23
0.63	≤11	12–22	≥23
0.64	≤11	12–23	≥24
0.65	≤12	13–24	≥25
0.66	≤12	13–24	≥25
0.67	≤12	13–25	≥26
0.68	≤13	14–26	≥27
0.69	≤13	14–27	≥28

S3.04 Invasive carcinoma subtype

- Invasive carcinoma of No Special Type (Ductal)
  - Pleomorphic carcinoma
  - Carcinoma with osteoclast like stromal giant cells
  - Carcinoma with choriocarcinomatous features
  - Carcinoma with melanotic features
- Invasive lobular carcinoma
  - Classical
  - Tubulolobular
  - Alveolar
  - Solid
  - Pleomorphic
  - Mixed
  - Others – signet ring, histiocytoid, etc
- Tubular carcinoma
- Cribriform carcinoma
- Mucinous carcinoma
- Carcinoma with medullary features
  - Medullary
  - Atypical medullary
  - Invasive carcinoma NST (ductal) with medullary features
- Carcinoma with apocrine differentiation
- Carcinoma with signet ring cell differentiation
- Invasive micropapillary carcinoma
- Metaplastic carcinoma
  - Low grade adenosquamous carcinoma
  - Fibromatosis-like metaplastic carcinoma
  - Squamous cell carcinoma
  - Spindle cell carcinoma
  - Metaplastic carcinoma with mesenchymal differentiation
    - Chondroid differentiation
    - Osseous differentiation
    - Other types of mesenchymal differentiation
- Mixed metaplastic carcinoma
- Myoepithelial carcinoma

Rare Types of Invasive Cancer:

- Carcinomas with Neuroendocrine features
  - Neuroendocrine tumour, well differentiated Neuroendocrine tumour, poorly differentiated (small cell carcinoma)
  - Carcinoma with neuroendocrine differentiation
- Secretory carcinoma
- Invasive papillary carcinoma
- Acinic cell carcinoma
- Mucoepidermoid carcinoma
- Polymorphous carcinoma
- Oncocytic carcinoma
- Lipid rich carcinoma
- Glycogen rich/Clear cell carcinoma
- Sebaceous carcinoma
- Salivary gland/skin adnexal type tumours
- Adenoid cystic carcinoma
- Adenomyoepithelioma with carcinoma

S3.06 Skin

- Not involved
- Paget disease of the nipple (DCIS extending to skin contiguous with lactiferous sinuses)
- Invasive carcinoma involving dermis or epidermis without ulceration
- Invasive carcinoma involving dermis or epidermis with ulceration
- Ipsilateral satellite skin nodules, ie dermal deposits of invasive carcinoma, separate from the main tumour

S3.23 Treatment effect in LN

- nodes negative, no treatment effect
- nodes negative, with treatment effect
- nodes positive, with treatment effect
- nodes positive, no treatment effect
- Not applicable

S3.08 Treatment effect

- No definite response to pre-surgical therapy in the invasive carcinoma
- Partial response to pre-surgical therapy in the invasive carcinoma, residual carcinoma identified.
- Complete pathologic response in breast and lymph nodes: No residual invasive carcinoma is present in the breast or lymph nodes after pre-surgical therapy
- Not applicable

S3.09 DCIS

- Absent
- Present only in conjunction with invasive carcinoma
- Present only as pure DCIS
- Present as both pure DCIS and in conjunction with invasive carcinoma

G3.03 LCIS at the margin

- LCIS with comedo necrosis present
- Pleomorphic LCIS present

S3.19 Assoc. breast changes

- atypical ductal hyperplasia
- flat epithelial atypia
- lobular neoplasia (ALH/ LCIS)
- radial scars
- sclerosing adenosis
- fibrocystic change
- other breast changes (eg calcification) (specify)

S5.01 Tumour stage and group#

TNM descriptors (Only if applicable; select all that apply)

m- multiple foci of invasive carcinoma
r - recurrent
y - post treatment

Primary Tumour (Invasive Ca) (pT)

TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
Tis (DCIS)	Ductal carcinoma in situ
Tis (LCIS)	Lobular carcinoma in situ
Tis (Paget's)	Paget disease of the nipple NOT associated with invasive carcinoma and/or carcinoma in situ (DCIS and/or LCIS) in the underlying breast parenchyma. Carcinomas in the breast parenchyma associated with Paget's disease are categorized based on size and characteristics of the parenchymal disease, although the presence of Paget's disease should still be noted.
T1	Tumour ≤ 20 mm in greatest dimension
T1mi	Tumour ≤1 mm in greatest dimension
T1a	Tumour >1 mm but ≤ 5 mm in greatest dimension
T1b	Tumour >5 mm but ≤10 mm in greatest dimension
T1c	Tumour >10 mm but ≤20 mm in greatest dimension
T2	Tumour >20 mm but ≤50 mm in greatest dimension
T3	Tumour >50 mm in greatest dimension
T4	Tumour of any size with direct extension to the chest wall and/or to the skin (ulceration or skin nodules) Note: Invasion of the dermis alone does not qualify as pT4
T4a	Extension to the chest wall, not including only pectoralis muscle adherence/invasion
T4b	Ulceration and/or ipsilateral satellite nodules and/or oedema (including peau d'orange) of the skin, which do not meet criteria for inflammatory carcinoma
T4c	Both T4a and T4b
T4d	Inflammatory carcinoma

Regional Lymph Nodes (pN)*

*Note: Classification is based on axillary lymph node dissection with or without sentinel lymph node biopsy. Classification based solely on sentinel lymph node biopsy without subsequent axillary lymph node dissection is designated (sn) for "sentinel node" for example, pN0(sn)

pNX Regional lymph nodes cannot be assessed (eg previously removed, or not removed for pathologic study)

pN0 No regional lymph node metastasis identified histologically.

Note: isolated tumour cell clusters (ITC) are defined as small clusters of cells not greater than 0.2mm, or single tumour cells, or a cluster of fewer than 200 cells in a single histologic cross-section. ITCs may be detected by routine histology or by immunohistochemical (IHC) methods. Nodes containing only ITCs are excluded from the total positive node count for purposes of N classification but should be included in the total number of nodes evaluated.

pN0(i-) No regional lymph node metastases histologically, negative IHC

pN0(i+) Malignant cells in regional lymph node(s) no greater than 0.2 mm (detected by H&E or IHC including ITC)

pN0(mol-) No regional lymph node metastases histologically, negative molecular findings (RT-PCR)

pN0(mol+) Positive molecular findings (RT-PCR)**, but no regional lymph node metastases detected by histology or IHC

pN1 Micrometastases; or metastases in 1-3 axillary lymph nodes; and/or in internal mammary nodes with metastases detected by sentinel lymph node biopsy but not clinically detected.***

pN1mi Micrometastases (greater than 0.2 mm and/or more than 200 cells, but none greater than 2.0 mm)

pN1a Metastases in 1-3 axillary lymph nodes, at least 1 metastasis greater than 2.0 mm

pN1b Metastases in internal mammary nodes with micrometastases or macrometastases detected by sentinel lymph node biopsy but not clinically detected.***

pN1c Metastases in 1-3 axillary lymph nodes and in internal mammary lymph nodes with micrometastases or macrometastases detected by sentinel lymph node biopsy but not clinically detected.

pN2 Metastases in 4-9 axillary lymph nodes; or clinically detected**** internal mammary lymph nodes in the absence of axillary lymph node metastases

pN2a Metastases in 4-9 axillary lymph nodes (at least one tumour deposit greater than 2.0 mm)

pN2b Metastases in clinically detected**** internal mammary lymph nodes in the absence of axillary lymph node metastases

pN3 Metastases in ten or more axillary lymph nodes; or in infraclavicular (level III axillary) lymph nodes; or in clinically detected**** ipsilateral internal mammary lymph nodes in the presence of one or more positive level I, II axillary lymph nodes; or in more than three axillary lymph nodes and in internal mammary lymph nodes with micrometastases or macrometastases detected by sentinel lymph node biopsy but not clinically detected***; or in ipsilateral supraclavicular lymph nodes

pN3a Metastases in 10 or more axillary lymph nodes (at least one tumour deposit greater than 2.0 mm); or metastases to the infraclavicular (level III axillary lymph) nodes

Regional Lymph Nodes (pN)* (cont.)

pN3b Metastases in clinically detected**** ipsilateral internal mammary lymph nodes in the presence of one or more positive axillary lymph nodes; or in more than three axillary lymph nodes and in internal mammary lymph nodes with micrometastases or macrometastases detected by sentinel lymph node biopsy but not clinically detected****

pN3c Metastases in ipsilateral supraclavicular lymph nodes

Notes:

**RT-PCR: reverse transcriptase/polymerase chain reaction

***'Not clinically detected' is defined as not detected by imaging studies (excluding lymphoscintigraphy) or not detected by clinical examination

****'Clinically detected' is defined as detected by imaging studies (excluding lymphoscintigraphy) or by clinical examination and having characteristics highly suspicious for malignancy or a presumed pathologic macrometastasis based on fine needle aspiration biopsy with cytologic examination.

Distant Metastasis (M)

M0 No clinical or radiographic evidence of distant metastases

cM0(i+) No clinical or radiographic evidence of distant metastases, but deposits of molecularly or microscopically detected tumour cells in circulating blood, bone marrow, or other nonregional nodal tissue that are no larger than 0.2 mm in a patient without symptoms or signs of metastasis

M1 Distant detectable metastases as determined by classic clinical and radiographic means and/or histologically proven larger than 0.2 mm

Stage Grouping*

Stage	T	N	M
0	Tis	N0	M0
IA	T1*	N0	M0
IB	T0	N1mi	M0
	T1*	N1mi	M0
IIA	T0	N1†	MO
	T1*	N1†	M0
	T2	N0	M0
IIB	T2	N1	M0
	T3	N0	M0
IIIA	T0	N2	M0
	T1*	N2	M0
	T2	N2	M0
	T3	N1	M0
	T3	N2	M0
IIIB	T4	N0, N1, N2	M0
IIIC	Any T	N3	M0
IV	Any T	Any N	M1

*T1 includes T1mic

† T0 and T1 tumours with nodal micrometastases only are excluded from Stage IIA and are classified Stage IB.

Notes:

- M0 includes M0(i+)
- The designation pM0 is not valid; any M0 should be clinical.
- If a patient presents with M1 prior to neoadjuvant systemic therapy, the stage is considered stage IV and remains stage IV regardless of response to neoadjuvant therapy.
- Stage designation may be changed if postsurgical imaging studies reveal the presence of distant metastases, provided that the studies are carried out within 4 months of diagnosis in the absence of disease progression and provided that the patient has not received neoadjuvant therapy.
- Post-neoadjuvant therapy is designated with "yc" or "yp" prefi x. No stage group is assigned if there is a complete pathologic response (CR) to neoadjuvant therapy, for example, ypT0ypN0cM0.