NAACCR Standards for Cancer Registries, Laboratory Electronic Pathology Reporting Guidelines, Version 5.1

Appendix A. College of American Pathologists (CAP) Definition of Synoptic Reporting

COLLEGE of AMERICAN PATHOLOGISTS

A.1. Definition of Synoptic Reporting

Synoptic reporting in surgical pathology is a style of reporting that has advantages for a variety of users of surgical pathology reports.[1–3] For pathologists, synoptic reporting can improve the completeness, accuracy, and ease of creating the report.[4–12] For clinicians, synoptic reports can make data extraction from the report both more rapid and more accurate.[13–15] For researchers and cancer registrars, synoptic reporting also ensures that these data elements are amenable to scalable data capture, interoperability, and exchange, enabling the creation of structured data sets to facilitate research.

In order to help pathologists achieve these goals, the CAP has developed a list of specific features that define *synoptic* report formatting for accreditation compliance. These include:

> All required data elements outlined on the currently applicable surgical case summary from the cancer protocol that are included in the report must be displayed in synoptic format.
> - Synoptic reporting is defined by the data element followed by its answer (response), e.g., "Tumor size: 5.5 cm." Outline format without the paired "data element: response" format is not considered synoptic.
> - The data element does not have to be identical (i.e., verbatim) to that listed in the CAP protocol and may be rephrased (e.g., for conciseness) as long as the intended meaning remains clear.
> - Multiple related elements can be combined into a single data entry, as long as the individual responses can be distinguished by the reader and as long as the intended meaning remains clear. Examples include but are not limited to:

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[1] College of American Pathologists. "Resources & Publications: Cancer Protocols." www.cap.org/cancerprotocols.

[2] Ellis DW, Srigley J. "Does standardised structured reporting contribute to quality in diagnostic pathology? The importance of evidence-based datasets." *Virchows Arch*. 2016;468(1):51–59.

[3] Srigley JR, McGowan T, Maclean A, Raby M, Ross J, Kramer S, Sawka C. "Standardized synopticcancer pathology reporting: a population-based approach." *J Surg Oncol*. 2009;99(8):517–524.

[4] Kang HP, Devine LJ, Piccoli AL, Seethala RR, Amin W, Parwani AV. "Usefulness of a synoptic data tool for reporting head and neck neoplasms based on the College of American Pathologists cancer checklists." *Am J Clin Pathol*. 2009;132(4):521–530.

[5] Idowu MO, Bekeris LG, Raab S, Ruby SG, Nakhleh RE. "Adequacy of surgical pathology reporting ofcancer: a College of American Pathologists Q-Probes study of 86 institutions." *Arch Pathol Lab Med*. 2010;134(7):969-974.

[6] Messenger DE, McLeod RS, Kirsch R. "What impact has the introduction of a synoptic report for rectal cancer had on reporting outcomes for specialist gastrointestinal and nongastrointestinal pathologists?" *Arch Pathol Lab Med* 2011;135(11):1471–1475.

[7] Karim RZ, van den Berg KS, Colman MH, McCarthy SW, Thompson JF, Scolyer RA. "The advantage ofusing a synoptic pathology report format for cutaneous melanoma." *Histopathology*. 2008;52(2):130–138.

[8] Lam E, Vy N, Bajdik C, Strugnell SS, Walker B, Wiseman SM. "Synoptic pathology reporting for thyroid cancer: a review and institutional experience." *Expert Rev Anticancer Ther*. 2013;13(9):1073–1079.

[9] Valenstein PN. "Formatting pathology reports: applying four design principles to improve communicationand patient safety." *Arch Pathol Lab Med.* 2008;132(1):84–94.

[10] Renshaw MA, Renshaw SA, Mena-Allauca M, Carrion PP, Mei X, Narciandi A, Gould EW, Renshaw AA. "Performance of a web based method for generating synoptic reports." *J Pathol Inform.* 2017;8:13.

[11] Renshaw MA, Gould EW, Renshaw A. "Just say no to the use of no: alternative terminology for improving anatomic pathology reports." *Arch Pathol Lab Med*. 2010;134(9):1250–1252.

[12] Renshaw SA, Mena-Allauca M, Touriz M, Renshaw A, Gould EW. "The impact of template format on the completeness of surgical pathology reports." *Arch Pathol Lab Med.* 2014;138(1):121–124.
[13] Renshaw AA, Mena-Allauca M, Gould EW. "Reporting Gleason grade/score in synoptic reports of radical prostatectomies." *J Pathol Inform.* 2016;7:54.
[14] Strickland-Marmol LB, Muro-Cacho CA, Barnett SD, Banas MR, Foulis PR. "College of American Pathologists Cancer Protocols: optimizing format for accuracy and efficiency." *Arch Pathol Lab Med.* 2016;140(6):578–587.
[15] Renshaw AA, Gould EW. "Comparison of accuracy and speed of information identification by non-pathologists in synoptic reports with different formats." *Arch Pathol Lab Med.* 2017;141:418–422.

  - Anatomic site or specimen, laterality, and procedure
  - Pathology Staging Tumor Node Metastasis (pTNM) staging elements
  - Negative margins, as long as all negative margins are specifically enumerated where applicable
  - Tumor type and grade
  - All parts of grade (e.g., "Gleason grade: 3+4 = 7 (Group 3)")
  - Breast tubule formation, nuclear pleomorphism, and mitotic rate
  - All portions of an ancillary study result (e.g., "Estrogen receptor: Positive, 100% of cells, strong")
  - Positive cores/total cores
  - Positive lymph nodes/total lymph nodes
  - Size (when giving more than one dimension)
- Required data elements may be listed in any order.
- Additional methods may be used in order to enhance or achieve visual separation, such as use of headers, indentations, or bolding and/or font variations.
- Additional items may be added within the synoptic report as needed.
- Required elements may appear in a summary format elsewhere in the report IN ADDITION TO, but not as replacement for, the synoptic report (i.e., all required elements must be in the synoptic portion of the report in the format defined above).
- Wording of the responses is at the discretion of the reporting pathologist.

Within this framework a variety of different formats are allowed. Specifically, pathologists may choose to have two separate columns for data elements and responses (may be easier to read or preferred by clinicians) or may left justify the responses. Responses can be on the same line (may be easier to read) or on the following line/s. Pathologists may also choose to add additional formatting items, including bolding/italics or indentation to increase the readability of the report. Pathologists may also choose to add additional formatting to improve natural language parsing. In some cases, the pathologist may want to include a substantial amount of information as a response, and this may be referenced using the phrase "see note." Pathologists may use a list with filled-in checkboxes for their responses, but this is discouraged since this may easily be misread by a clinician.

The CAP has developed a few examples of synoptic reporting (attached) for the use as training tools for inspectors. Sample reports 1-7 are examples of acceptable synoptic reporting; Sample reports 8 and 9 do not show acceptable synoptic style reporting. Please refer to the specific CAP cancer protocol for further information concerning requirements for accreditation purposes.

A.2. Synoptic Report Example #1

CARCINOMA OF THE COLON OR RECTUM

TUMOR SUMMARY:	Colon
Procedure:	Left hemicolectomy
Tumor site:	Left (descending) colon
Tumor size:	6 cm
Tumor perforation:	Not identified
Histologic type:	Adenocarcinoma
Grade:	Grade 2/4, Moderately differentiated
Extent:	Invades pericolonic adipose tissue
Margins:	Free, 2 cm radial
Treatment effect, primary site:	No prior treatment
Lymphovascular invasion:	Cannot be determined
Perineural invasion:	Not identified
Tumor deposits:	Not identified
Lymph nodes, # sampled:	24
Lymph nodes, # involved:	1
Stage (AJCC 8):	pT3 pN1a

A.3. Synoptic Report Example #2

CARCINOMA OF THE PROSTATE

ADDED "|" TO IMPROVE NATURAL LANGUAGE PARSING

| Procedure:	Radical prostatectomy
| Histologic type:	Adenocarcinoma
| Gleason primary pattern:	Grade 4
| Gleason secondary pattern:	Grade 3
| Gleason tertiary pattern:	Not applicable
| Gleason score:	Score 7
| Grade group:	Group 3
| Tumor size:	100 mm
| Extraprostatic extension:	Not identified
| Urinary bladder neck invasion:	Not identified
| Seminal vesicle invasion:	Not identified
| Margins:	Positive, focal, left posterior
| Treatment effect, primary site:	None
| Regional lymph nodes:	No lymph nodes submitted or found
| Stage (AJCC 8):	mpT2 pNX

A.4. Synoptic Report Example #3

CARCINOMA OF THE PROSTATE
GRADES COMBINED ON TWO LINES

TUMOR SUMMARY:	Prostate, prostatectomy
Procedure:	Radical prostatectomy
Type:	Adenocarcinoma
Grade:	Gleason grade 3 + 4 = 7 (Group 3)
Gleason tertiary pattern:	Not applicable
Tumor size:	At least 1.1 cm as measured from the glass slide
Extraprostatic extension:	None
Urinary bladder neck invasion:	None
Seminal vesicle invasion:	None
Margins:	Positive, focal, left posterior
Treatment effect, primary site:	None
Lymph nodes, # sampled:	0
Stage (AJCC 8):	mpT2 pNX

A.5. Synoptic Report Example #4

DUCTAL CARCINOMA *IN SITU* OF THE BREAST

SPECIMEN, LATERALITY, AND PROCEDURE COMBINED ON ONE LINE, AS ALLOWED

Specimen, Laterality, Procedure: Partial breast, right, excision without wire-guided localization

Estimated size of DCIS: at least 380 mm

Histologic Type: Ductal carcinoma *in situ*

Architectural Patterns: Solid

Nuclear Grade: Grade II (intermediate)

Necrosis: Present, focal

Margins: Margin(s) uninvolved by DCIS Distance from closest margin: 4 mm Specify closest margins: Superior

Regional Lymph Nodes: No lymph nodes submitted or found

Pathologic Staging (pTNM)

Primary Tumor (pT): pTis (DCIS) Regional Lymph Nodes (pN): pNX

A.6. Synoptic Report Example #5

LEFT BREAST MASTECTOMY

Procedure: Total mastectomy (including nipple and skin)
Specimen Laterality: Left Tumor
Size: Greatest dimension of largest focus of invasion >1MM: 3.5 mm
Histologic Type: Invasive ductal carcinoma (no special type or otherwise specified)
Histologic Grade: Glandular (Acinar) / Tubular Differentiation: Score 2 Nuclear Pleomorphisim: Score 1
Mitotic Rate: Score 1 Overall Grade: Grade 1
Tumor Focality: Single focus of invasive carcinoma
DCIS: No DCIS present in specimen
Invasive Carcinoma Margins: Margins uninvolved by invasive carcinoma Distance from closest margin: 25mm Closest Uninvolved
Margin: Deep
Lymph Nodes: Uninvolved by tumor cells
Total number of nodes examined (sentinel and nonsentinel): 13 Number of sentinel lymph nodes examined: 3
Treatment Effect: No known presurgical therapy
Primary Tumor (pT): pT1a
Regional Lymph Nodes (pN): pN0
Estrogen and Progesterone Receptors: Previously performed
(HER2) ERBB2 Status: Previously performed

A.7. Synoptic Report Example #6

GASTROINTESTINAL STROMAL TUMOR (GIST)—Based on AJCC/UICC TNM, 8th edition

USES THE CAP CANCER CHECKLIST, AS ALLOWED

Procedure

_____Local excision

__X__Resection

Specify type (e.g., partial gastrectomy):_____total gastrectomy_____

_____Metastasectomy

_____Other (specify): _____

_____Not specified

Tumor Site

Specify (if known): __gastric body_____

_____Not specified

Tumor Size

Greatest dimension: 5.3 cm

*Additional dimensions: 4.8 x 4.5 cm

_____Cannot be determined (see "Comment")

Tumor Focality

__X__Unifocal

_____Multifocal

Specify number of tumors: _____

Specify size of tumors: _____

HistologicSubtype

_____Gastrointestinal stromal tumor, spindle cell type

_____Gastrointestinal stromal tumor, epithelioid type

__X__Gastrointestinal stromal tumor, mixed

_____Gastrointestinal stromal tumor, other (specify): _____

Mitotic Rate
Specify: 2 /5 mm^2

***Necrosis**
* X Not identified
* Present
*Extent: %
* Cannot be determined

Histologic Grade
GX: Grade cannot be assessed
X G1: Low grade; mitotic rate ≤5/5 mm^2
G2: High grade, mitotic rate >5/5 mm^2

Risk Assessment
None
Very low risk
X Low risk
Moderate risk
High risk
Overtly malignant/metastatic
Cannot be determined None

Margins
Cannot be assessed
X Uninvolved by GIST
Distance of tumor from closest margin (millimeters or centimeters): mm or
cm Specify margin (if known):
Involved by GIST
Specify margin(s) (if known):

Regional Lymph Nodes (Note D)
X No lymph nodes submitted or found

Lymph Node Examination (required only if lymph nodes are present in specimen)

Number of Lymph Nodes Involved:
Number cannot be determined (explain):

Number of Lymph Nodes Examined:
Number cannot be determined (explain):

Pathologic Stage Classification (pTNM, AJCC 8th Edition) (Note G)

Note: Reporting of pT, pN, and (when applicable) pM categories is based on information available to the pathologist at the time the report is issued. Only the applicable T, N, or M category is required for reporting; their definitions need not be included in the report. The categories (with modifiers when applicable) can be listed on 1 line or more than 1 line.

TNM Descriptors (required only if applicable) (select all that apply)
m (multiple)
r (recurrent)

_____y (posttreatment)

Primary Tumor (pT)

_____pTX: Primary tumor cannot be assessed

_____pT0: No evidence of primary tumor

_____pT1: Tumor 2 cm or less

_____pT2: Tumor more than 2 cm but not more than 5 cm

__X__pT3: Tumor more than 5 cm but not more than 10 cm

_____pT4: Tumor more than 10 cm in greatest dimension

Regional Lymph Nodes (pN) (Note D)

__X__pN0: No regional lymph node metastasis or unknown lymph node status

_____pN1: Regional lymph node metastasis

Distant Metastasis (pM) (Note D) (required only if confirmed pathologically in this case)

_____pM1: Distant metastasis

Specify site(s), if known: _____

+ Additional Pathologic Findings

+ Specify: _____

Ancillary Studies (Note E)

Note: For molecular genetic and further immunohistochemical study reporting, the CAP GIST Biomarker Template should be used. Pending biomarker studies should be listed in the Comments section of this report.

Immunohistochemical Studies

__X__KIT (CD117)

_X_Positive

____Negative

_____DOG1 (ANO1)

____Positive

____Negative

_____Other (specify): _____

_____Pending

_____Not performed

+ Molecular Genetic Studies (eg, *KIT*, *PDGFRA*, *BRAF*, *SDHA/B/C/D*, *or NF1* mutational analysis)

+_____Submitted for analysis; results pending

+_____Performed, see separate report: _____

+_____Performed

+ Specify method(s) and results: _____

+_____Not performed

+ Preresection Treatment (select all that apply)

+_____No known preresection therapy

+_____Previous biopsy or surgery (specify): _____

+_____Systemic therapy performed (specify type): _____

+_____Therapy performed, type not specified

+_____Not specified

Treatment Effect (Note F)

__X__No known presurgical therapy

_____Not identified

_____Present

+ Specify percentage of viable tumor:_____%

_____Cannot be determined

+ Comment(s)

A.8. Unacceptable Synoptic Report Example #7

COLON

NOT ACCEPTABLE AS SYNOPTIC STYLE REPORTING: NOT ALL ELEMENTS ARE PRESENT AND DIAGNOSTIC PARAMETER PAIR IS ABSENT

Diagnosis:

Colon, right hemicolectomy:

Invasive adenocarcinoma, 3.4 x 3.0 cm
involving muscularis propria All margins
negative
No lymphatic invasion
No metastatic tumor identified

A.9. Unacceptable Synoptic Report Example #8

KIDNEY

NOT ACCEPTABLE AS SYNOPTIC STYLE REPORTING: ALTHOUGH ALL REQUIRED ELEMENTS ARE PRESENT, DIAGNOSTIC PARAMETER PAIR IS ABSENT

Diagnosis:

Kidney, Left (Radical Nephrectomy):

Clear cell adenocarcinoma, Furhman nuclear grade 3, 8.3 cm, unifocal involving upper pole of kidney and extending into the renal vein with the renal vein margin positive. Sarcomatoid features not identified.

No lymph nodes submitted, adrenal gland uninvolved, lymphatic invasion present, no venous large vessel invasion, pT3, Nx. No significant pathologic alterations identified.