COLLEGE of AMERICAN PATHOLOGISTS

Master

Anatomic Pathology Checklist

CAP Accreditation Program

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Anatomic Pathology Checklist

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ON-LINE CHECKLIST DOWNLOAD OPTIONS

Participants of the CAP accreditation programs may download the checklists by logging into cap.org and going to e-LAB Solutions Suite - Accreditation Checklists. They are available in different checklist types and formatting options, including:

- Master — contains ALL of the requirements and instructions available in PDF, Word/XML or Excel formats
- Custom — customized based on the laboratory's activity (test) menu; available in PDF, Word/XML or Excel formats
- Changes Only — contains only those requirements with significant changes since the previous checklist edition in a track changes format to show the differences; in PDF version only. Requirements that have been moved or merged appear in a table at the end of the file.

CHECKLIST ACCREDITATION RESOURCES

CAP accredited laboratories have access to additional checklist accreditation tools and resources found on the CAP website (cap.org) by logging into e-LAB Solutions Suite - Accreditation Resources. Content found in Accreditation Resources includes:

- A library of past Focus on Compliance webinars and laboratory inspection preparation videos
- Answers to the most common checklist questions
- Customizable templates and forms (eg, competency assessment, personnel, validation/verification, quality management)
- Proficiency testing (PT) frequently asked questions, forms, and troubleshooting guides
- IQCP eligibility, frequently asked questions, forms, templates, and examples
- Laboratory director education and resources
- Quality management resources
- Inspector training and inspection tip sheets
- Self and post inspection toolbox

SUMMARY OF CHECKLIST EDITION CHANGES
Anatomic Pathology Checklist
12/26/2024 Edition

The information below includes a listing of checklist requirements with significant changes in the current edition and previous edition of this checklist. The list is separated into three categories:

1. New
2. Revised:
   - Modifications that may require a change in policy, procedure, or process for continued compliance; or
   - A change to the Phase
3. Deleted/Moved/Merged**:**
   - Deleted
   - Moved — Relocation of a requirement into a different checklist (requirements that have been resequenced within the same checklist are not listed)
   - Merged — The combining of similar requirements

NOTE: The requirements listed below are from the Master version of the checklist. The customized checklist version created for inspections and self-evaluations may not list all of these requirements.

Previously Cited Checklist Requirements

- The **inspector's version** of the checklist contains a listing of previously cited checklist requirements. Specific information on those citations, including the inspection date and inspector comments, is included following each related requirement within the checklist.
- Laboratories can access data on previously cited deficiencies by logging into e-LAB Solutions Suite on cap.org and going to Accreditation Reports - Inspection Summation Report.

NEW Checklist Requirements

Requirement	Effective Date
ANP.10290	12/26/2024
ANP.22560	12/26/2024
ANP.22975	12/26/2024
ANP.29680	12/26/2024
ANP.29720	12/26/2024
ANP.33110	12/26/2024

REVISED Checklist Requirements

Requirement	Effective Date
ANP.10041	08/24/2023
ANP.11610	12/26/2024
ANP.12350	08/24/2023
ANP.12500	12/26/2024
ANP.22550	12/26/2024
ANP.22750	12/26/2024
ANP.22965	12/26/2024
ANP.22969	08/24/2023
ANP.22970	12/26/2024
ANP.22978	12/26/2024
ANP.23041	12/26/2024
ANP.24200	08/24/2023
ANP.29630	12/26/2024
ANP.33120	12/26/2024

DELETED/MOVED/MERGED Checklist Requirements
None

INTRODUCTION

This checklist is used in conjunction with the All Common (COM) and Laboratory General Checklists to inspect an anatomic pathology laboratory section or department.

Do NOT use this Checklist if the laboratory does NOT perform any on-site preparation or examination of anatomic pathology specimens, but refers all submitted material to an outside laboratory, or if the laboratory's involvement in anatomic pathology is limited to filing of reports and/or slides.

Laboratories that do not file slides on-site (eg, "read-only" laboratories) must retain a sample of cases and all associated slides on-site for review by the inspector on all days when the laboratory is subject to its regular on-site inspection. The sample must, at a minimum, include all cases and associated slides accessioned over a continuous 2-week period within the previous 2 years.

*If telepathology is used by the pathologist to review slides or images for primary diagnosis, frozen section diagnosis, formal second-opinion consultations, ancillary techniques in which the pathologist participates in interpretation of images, or real-time evaluation of FNA specimens for triaging and preliminary diagnosis, refer to the Telepathology and Remote Data Assessment section of the Laboratory General Checklist for additional requirements. Telepathology occurs when a pathologist views digitalized or analog video or still image(s), or other data files (eg, flow cytometry files) at an off-site or remote location and an interpretation is rendered that is included in a formal diagnostic report or recorded in the patient record. The Telepathology and Remote Data Assessment section of the Laboratory General Checklist is not applicable if the image(s) and/or data files are generated and interpreted **within the same laboratory** using the laboratory's validated software.*

Policy/Procedure icon - The placement of this icon next to a checklist requirement indicates that a written policy or procedure is required to demonstrate compliance with the requirement. The icon is not intended to imply that a separate policy or procedure is required to address individual requirements. A single policy or procedure may cover multiple checklist requirements.

***Laboratories not subject to US regulations:** Checklist requirements apply to all laboratories unless a specific disclaimer of exclusion is stated in the checklist. When the phrase "FDA-cleared/approved test (or assay)" is used within the checklist, it also applies to tests approved by an internationally recognized regulatory authority (eg, CE-marking).*

GENERAL ANATOMIC PATHOLOGY

PERSONNEL

Inspector Instructions:

READ

- Policy for assessing professional competency
- Sampling of records for assessment of professional competency

ANP.10010 Professional Competency **Phase II**

The laboratory director ensures the professional competency of pathologists who provide interpretive services to the anatomic pathology laboratory.

NOTE: The mechanism for competency assessment must be pertinent to the type of interpretive services provided (eg, general anatomic, neuropathology, renal pathology, forensic pathology). There must be a written policy for assessing professional competency at defined intervals, criteria for the assessment, and records of the assessment must demonstrate review by the laboratory director.

Evidence of Compliance:

- ✓ Participation in a peer educational program (eg, CAP Educational Anatomic Pathology Programs) or intra-departmental or inter-institutional peer review program **OR**
- ✓ Metrics developed from diagnostic quality management reports (ANP.10100, ANP.10150, ANP.12075, etc.) **OR**
- ✓ Quality management records (internal audits, error reports, etc.) **OR**
- ✓ Individual assessment according to defined criteria

SURGICAL PATHOLOGY

QUALITY MANAGEMENT

Many technical and procedural quality control items are covered elsewhere in this Checklist. They are integral components of a comprehensive quality management system and should be included within the defined system. This section determines if there is an active system of surveillance of the quality of surgical pathology activities, particularly the diagnostic reports. How this is accomplished depends upon the number of departmental staff, as well as the volume and type of diagnostic material. Such a system must include appropriate combinations of activities such as the use of intra- and extra-departmental consultations, circulation of diagnostic material (random or by case type), periodic review of completed surgical pathology reports, and participation in self-assessment and performance improvement programs.

Inspector Instructions:

	• Sampling of surgical specimen submission and examination policies and procedures • Instructions for handling bodies • Sampling of the following records: previous/current material review, intra-departmental consultations, extra-departmental consultations • Sampling of records of formalin monitoring
	• Does your laboratory exclude any specimen types from routine submission to the pathology department? • What is the process for histology personnel to provide feedback on quality issues identified in tissue sections submitted for processing? • What is your laboratory's course of action when a significant disparity exists between the initial intra-operative consultation and final pathology diagnosis?

ANP.10016 Surgical Pathology Exclusion **Phase I**

The institution defines specimen types that may be excluded from routine submission to the pathology department for examination, where applicable.

NOTE: This policy may be made in conjunction with the hospital administration and appropriate medical staff departments and must be in compliance with national, federal, state (or provincial), and local laws and regulations. The laboratory director should have participated in or been consulted by the medical staff in deciding which surgical specimens are to be sent to the pathology department for examination.

The California Department of Health Care Services requires all tissues and objects removed during surgery to be submitted for pathology examination, unless a specific request is submitted to the state requesting a variance.

This checklist item is not applicable if 1) all specimens are submitted to pathology, or 2) the laboratory is not part of an institution that provides surgical services.

REFERENCES
1) Netser JC, *et al*. Value-based pathology: a cost-benefit analysis of the examination of routine and non-routine tonsil and adenoid specimens. *Am J Clin Pathol.* 1997;108:158-165
2) Zarbo RJ, Nakleh RE. Surgical pathology specimens for gross examination only and exempt from submission. A College of American Pathologists Q-Probes study of current policies in 413 institutions. *Arch Pathol Lab Med.* 1999;123:133-139
3) College of American Pathologists. *Policy M. Surgical Specimens to be Submitted to Pathology for Examination.* Northfield, IL: CAP; 2022.
4) Jean Iacino. AFL 16-07, Program Flexibility Letter Recall. California Department of Public Health, State of California Health and Human Services Agency. June 13, 2016.
5) Zhai Q, Siegal GP. Quality Management in Anatomic Pathology. Northfield, IL: CAP Press, 2017.

ANP.10032 Surgical Pathology Microscopic Exemptions — Phase I

The institution defines which types of surgical specimens (if any) may be exempt from microscopic examination.

NOTE: Irrespective of any exemptions, microscopic examination may be performed whenever there is a request by the submitting or attending physician, or at the discretion of the pathologist when indicated by the clinical history or gross findings. Policies that exempt certain types of specimens from microscopic examination may be approved by the medical staff or appropriate committee. Typical exempt specimens include foreskins in children, prosthetic cardiac valves without attached tissue, torn meniscus, varicose veins, tonsils in children below a certain age, etc.

REFERENCES
1) Weibel E. Pathological findings of clinical value in tonsils and adenoids. *Acta Otolaryngol.* 1965;60:331-338
2) Wolkomir AF, *et al*. Selective microscopic examination of gallbladders, hernia sacs and appendices. *Am Surg.* 1991:57:289-292
3) Boutin P, Hogshead H. Surgical pathology of the intervertebral disc: is routine examination necessary? *Spine.* 1992;17:1236-1238
4) Cornell WB, Levin HS. The inguinal hernia sac: trash or treasure? Anatomic pathology II check sample, APII-9. Chicago, IL: American Society of Clinical Pathology, 1993:17(4)
5) Delong WH, Grignon DJ. Pathologic findings in ribs removed at the time of radical nephrectomy for renal cell carcinoma. *Int J Surg Pathol.* 1994;1:177-180
6) Raab SS. The cost-effectiveness of routine histologic examination. *Am J Clin Pathol.* 1998;110:391-396
7) Zarbo RJ, Nakleh RE. Surgical pathology specimens for gross examination only and exempt from submission. A College of American Pathologists Q-Probes study of current policies in 413 institutions. *Arch Pathol Lab Med.* 1999;123:133-139
8) College of American Pathologists. *Policy M. Surgical Specimens to be Submitted to Pathology for Examination.* Northfield, IL: CAP; 2022.

ANP.10038 Tissue Sample Quality — Phase II

Trained histology personnel responsible for tissue processing provide feedback on the quality of the tissue sections received for tissue processing.

NOTE: Inadequate fixation, overly thick tissue sections, non-decalcified bone, the presence of staples, etc., can lead to poor quality histologic sections and/or poor quality special stains/special studies.

The feedback on quality issues must be provided to a pathologist. When non-pathologist personnel assist in grossing, feedback must be provided to a pathologist with responsibility for supervising non-pathologist personnel. In case of other pathology subspecialities that gross tissue specimens (eg, dermatology), the feedback is provided to the individual responsible for the gross processing of those specimens.

This requirement applies to both laboratories that gross tissue and perform all processing onsite, as well as laboratories that gross tissue and send it to another laboratory for processing, embedding, and sectioning (regardless of the outside laboratory's accrediting organization).

Records of such feedback and corrective action taken when problems are identified may be incorporated into the laboratory's quality management program.

Evidence of Compliance:

- ✓ Records of feedback and corrective action for problems identified with tissue quality

*****REVISED** 08/24/2023***

ANP.10041 Quality of Formalin **Phase I**

The laboratory monitors the quality of formalin provided for fixation of specimens to be submitted for pathology and for use as a fixative in the laboratory (eg, spot check or other processes).

NOTE: Laboratories that mix their own formalin need to check and record the pH to ensure that it was mixed correctly. The standard for tissue fixation is 10% neutral buffered formalin with a pH of 7.0.

Laboratories that purchase formalin ready for use or prefilled containers that are distributed to areas that collect specimens are also responsible for ensuring the quality of the formalin.

This requirement does not apply to situations where specimens are received from outside sources using containers not provided by the laboratory.

Evidence of Compliance:

- ✓ Records of pH checks for new batches of formalin prepared by the laboratory **OR**
- ✓ Records of manufacturer's quality control of pH **OR**
- ✓ Records of spot checks performed by the laboratory for purchased formalin ready for use

REFERENCES

1) Compton CC, Robb JA, Anderson MW, et al. Preanalytics and Precision Pathology: Pathology Practices to Ensure Molecular Integrity of Cancer Patient Biospecimens for Precision Medicine. *Arch Pathol Lab Med.* 2019;143(11)1346-63.

ANP.10042 Histologic Preparation Quality **Phase I**

Pathologists or their designees provide feedback to the histology laboratory on the quality of histologic preparations. This process includes the daily recording of the histologic preparation quality for each day of tissue processing and slide preparation.

NOTE: Histologic preparations refer to H & E sections, histochemical stains, immunohistochemistry preparations, and in situ hybridization preparations.

This requirement applies to laboratories that process and interpret histologic preparations at the same location, as well as laboratories that interpret histologic preparations processed at another laboratory (regardless of that outside laboratory's accrediting organization).

When histologic preparations are inadequate or cross-contamination between specimens or cases is identified, feedback and corrective action must be recorded. These records may also be incorporated into the laboratory's quality management system.

Specific quality control requirements for special stains, immunohistochemistry, and other special studies are found elsewhere in this checklist.

Evidence of Compliance:

- ✓ Records of feedback and corrective action for problems identified with histologic prep quality

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(a)].

ANP.10050 Previous/Current Material Review **Phase II**

When appropriate, previous cytologic and/or histologic material from the patient is reviewed with current material being examined.

NOTE: Because sequential analysis of cytologic and histologic specimens may be critical in patient management and follow-up, efforts must be made to routinely review previous material. Records of the retrospective review should be included in the current patient report.

REFERENCES
1) Bozzo P. Implementing quality assurance. Chicago, IL: American Society of Clinical Pathology, 1991:72-74

ANP.10100 Intra-operative/Final Diagnosis Disparity — Phase II

When significant disparity exists between initial intra-operative consultation (eg, frozen section, intra-operative cytology, gross evaluation) and final pathology diagnosis, it is reconciled and recorded in the surgical pathology report and in the departmental quality management file.

REFERENCES
1) Gephardt GN, Zarbo RJ. Interinstitutional comparison of frozen section consultations. A College of American Pathologists Q-Probes study of 90 538 cases in 461 institutions. *Arch Pathol Lab Med.* 1996;120:804-809
2) Nakhleh RE, Zarbo RJ. Amended reports in surgical pathology and implications for diagnostic error detection and avoidance. A College of American Pathologists Q-Probes study of 1 667 547 accessioned cases in 359 laboratories. *Arch Pathol Lab Med.* 1998;122:303-309
3) Firlik KS, *et al*. Use of cytological preparations for the intraoperative diagnosis of stereotactically obtained brain biopsies: a 19year experience and survey of neuropathologists. *J Neurosurg.* 1999;91:454-458

ANP.10150 Intra and Extra-Departmental Consultations — Phase I

The laboratory has a defined process for handling information from intra- and extra-departmental consultations in the patient's final report.

NOTE: Intra-departmental consultations may be included in the patient's final report, or filed separately. The pathologist in charge of the surgical pathology case must decide whether the results of intra-departmental consultations provide relevant information for inclusion in some manner in the patient's report.

Records of extra-departmental consultations must be readily accessible within the pathology department. The method used to satisfy this requirement is at the discretion of the laboratory director, and can be expected to vary according to the organization of the department. These consultations can be retained with the official surgical pathology reports or kept separately, so long as they can be readily linked.

Evidence of Compliance:

- ✓ Records of consultations included in the final report **OR**
- ✓ Records of consultations readily accessible within the pathology department

REFERENCES
1) Leslie KO, *et al*. Second opinions in surgical pathology. *Am J Clin Pathol.* 1996;106(suppl 1):S58-S64
2) Tomaszewski JE, *et al*. Consensus conference on second opinions in diagnostic anatomic pathology. Who, what, and when. *Am J Clin Pathol.* 2000;114:329-335
3) Hahm GK, *et al*. Quality assurance of second opinion in gastrointestinal and liver pathology. *Am J Clin Pathol.* 2000;114:631
4) Renshaw AA, *et al*. Blinded review as a method of quality improvement in surgical pathology. *Arch Pathol Lab Med.* 2002;126:961-963
5) Azam M, Nakhleh RE. Surgical pathology extradepartmental consultation practices. A College of American Pathologists Q-probes study of 2746 consultations from 180 laboratories. *Arch Pathol Lab Med.* 2002;126:405-412
6) Cooper K, *et al.* Institutional consultations in surgical pathology. How should diagnostic disagreements be handled? *Arch Pathol Lab Med.* 2002;126:650-651

ANP.10250 Extra-Departmental Consultation — Phase I

When extra-departmental cases are submitted to the laboratory for consultation, they are accessioned according to the standard practices of the laboratory, and a final pathology report is prepared, with a copy sent to the originating laboratory.

NOTE: In most cases, original materials including slides and blocks should be promptly returned to the original institution. However, in some situations (for example, when the patient is receiving ongoing care at the referral institution pending tumor resection, etc.) it may be appropriate for the referral laboratory to retain slides/blocks for a period of time. In such situations, a letter should be sent to the originating laboratory along with the consultation report, requesting permission to retain the slides/blocks and accepting transfer of stewardship of the patient materials from the original laboratory to the referral institution.

Evidence of Compliance:

✓ Patient reports for extra-departmental cases

ANP.10260 Slide/Block Handling **Phase I**

The laboratory handles original slides/blocks following a defined process for consultation and legal proceedings.

NOTE: This must include appropriate handling and accurate records of the use, circulation, referral, transfer, and receipt of original slides and blocks. The laboratory must have a record of the location of original slides and blocks that have been referred for consultation or legal proceedings.

ANP.10270 Off-Site Autopsies **Phase I**

As applicable, there is a defined process for performance of autopsies off-site.

NOTE: If feasible, autopsies should be performed within the institution; however, if an institution does not perform autopsies, there must be a written policy that addresses how an autopsy is obtained when one is requested.

*****NEW** 12/26/2024***

ANP.10290 Instructions for Body Handling **Phase II**

There are documented instructions covering such items as receipt, storage, and release of bodies.

NOTE: In some institutions, such policies and procedures may reside in the nursing or security manuals. In such cases, the laboratory must have copies of the manuals available at the time of inspection.

This requirement is not applicable if the laboratory is not responsible for handling bodies.

QUALITY CONTROL

SURGICAL SPECIMEN EXAMINATION

Note that requirements relating to collection and accessioning of specimens are covered in the Laboratory General Checklist. During the on-site inspection, the handling of surgical specimens must be evaluated.

"Grossing" is defined as a tissue specimen examination requiring knowledge of anatomy and judgment about sampling and sectioning. This includes the dissection of the specimen, selection of tissue, and any level of examination/description of the tissue including color, weight, measurement, or other characteristics of the tissue.

A "pathologist" is defined as a physician who has successfully completed an approved graduate medical education program in pathology. In the US, a physician is defined as a doctor of medicine, doctor of osteopathy,

or doctor of podiatric medicine who is licensed by the state to practice medicine, osteopathy, or podiatry within the state in which the laboratory is located. In jurisdictions not subject to US regulations, a physician is defined as an individual who has a primary medical school degree (eg, MBBS, MBChB, MD, DO) in keeping with the standards of that particular jurisdiction.

Laboratories that do not file slides on-site (for example, some "read-only" laboratories) must retain a sample of cases and all associated slides on-site on all days when the laboratory is subject to its regular on-site inspection. The sample must, at a minimum, include all cases and all associated slides accessioned over a continuous two-week period within the previous two years.

Inspector Instructions:

	• Sampling of surgical specimen handling and retention policies and procedures • Sampling of sub-optimal specimen records/log • Sampling of records of daily review of histologic slide quality • Sampling of performance evaluations for individuals assisting with grossing • Records of personnel qualifications and experience for individuals assisting with grossing
	• Sampling of slides (quality, labeling)
	• What is your course of action when you receive sub-optimal specimens? • How does your laboratory ensure specimen identity throughout processing and examination? • How does your laboratory ensure quality testing when non-pathologists assist in gross examinations?

ANP.11250 Adequate Storage **Phase I**

Refrigerated storage is available for large or unfixed specimens.

ANP.11275 Radioactive Material Handling - Specimens **Phase II**

The laboratory safely handles specimens that may contain radioactive material (eg, sentinel lymph nodes, breast biopsies, prostate "seeds," *etc.*).

NOTE: Policies and procedures may be developed in conjunction with the institutional radiation safety officer, and must comply with state regulations for the safe handling of specimens containing radionuclides. They should distinguish between low radioactivity specimens such as sentinel lymphadenectomy and implant devices with higher radiation levels.

The pathology department may wish to monitor these specimens for radioactivity, with safe storage of specimens until sufficient decaying has occurred, before proceeding with processing in the histology laboratory.

REFERENCES

1) Glass EC, *et al*. Editorial: radiation safety considerations for sentinel node techniques. *Ann Surg Oncol.* 1999:6:10
2) Miner TJ, *et al*. Guideline for the safe use of radioactive materials during localization and resection of sentinel lymph nodes. *Ann Surg Oncol.* 1999;6:75-82
3) Cibull ML. Handling sentinel lymph node biopsy specimens. A work in progress. *Arch Pathol Lab Med*. 1999;123:620-621
4) Pfeifer JD. Sentinel lymph node biopsy. *Am J Clin Pathol.* 1999;112:599-602
5) Barnes CA. False-negative frozen section results. *Am J Clin Pathol.* 2000;113:900.
6) Fitzgibbons, PL, *et al*. Recommendations for handling radioactive specimens obtained by sentinel lymphadenectomy. *Am J Surg Pathol*. 2000;24:1549-1551

ANP.11525 Tissue Assessment Record **Phase I**

If a statement of adequacy, preliminary diagnosis, or recommendations for additional studies is provided at the time of tissue specimen collection, records of that statement are retained.

NOTE: Records might include a note in the patient's medical record or in the final pathology report.

ANP.11550 Specimen Retention - Grossing **Phase I**

Gross specimens are retained until at least two weeks after the final reports are signed and results are reported to the referring physician.

REFERENCES
1) Travers H. Q&A Section. Northfield, IL: College of American Pathologists CAP Today, March 1992:63
2) Travers H. Q&A Section. Savage RA, editor. CAP Today, November 1993:86-87
3) Tracey ME. Hospital takes closer look at specimen returns. CAP Today, July 1992:81
4) Lester SC. Manual of surgical pathology. New York, NY: Churchill Livingstone, 2001:18-20
5) Zhai Q, Siegal GP. Quality Management in Anatomic Pathology. Northfield, IL: CAP Press, 2017.

ANP.11600 Gross Examination - Qualifications **Phase II**

All macroscopic tissue gross examinations are performed by a qualified pathologist or pathology resident, or another qualified individual (see note), or under the supervision of a qualified pathologist.

NOTE: For specific tissue types only, there are other qualifications that are accepted for individuals performing tissue examination, including the following:

- *For neuromuscular pathology specimens, an MD or DO licensed to practice (if required) in the jurisdiction where the laboratory is located who has completed a training program in neuromuscular pathology approved by HHS (ie, the American Academy of Neurology Committee for Neuromuscular Pathology Training Program) may qualify to perform gross examination.*
- *Other exceptions for dermatopathology, ophthalmic pathology and oral pathology as defined in the CLIA regulation 42CFR493.1449(f) and (g).*

ANP.11605 Gross Examination - Supervision **Phase II**

When individuals other than a pathologist or pathology resident/fellow assist in gross examinations, the extent of their activities and the nature of supervision is defined.

NOTE: A protocol must list the specific types of specimens for which non-pathologists are permitted to assist in the gross examination. The laboratory director is responsible for this protocol. This requirement does not apply to grossing performed by other qualified individuals for specific pathology subspecialities as defined in ANP.11600.

The nature of the supervision (eg, pathologist physically present in the laboratory area versus availability by phone or electronic means for consultation) must be established for each individual. The supervision must be provided by a qualified pathologist (or other qualified individual). For example, an MD or DO dermatologist licensed to practice (if required) in the jurisdiction where the laboratory is located who is board certified in dermatology is qualified to supervise non-pathologists for dermatopathology cases, including Mohs surgery cases.

The protocol must comply with national, federal, state (or provincial), and local laws.

The following requirements apply to laboratories with California licensure:

- *A pathologist assistant certified by the American Association of Pathologists' Assistants or American Society for Clinical Pathology must work under the supervision and control of a*

qualified pathologist (either physically present in the laboratory or available by telephone or other electronic means).

- *Non-certified personnel who perform grossing must work under direct supervision of a qualified pathologist when engaging in the processing of specimens involving dissection (present in the vicinity of the clinical laboratory subspecialty area and be available for consultation and direction).*
- *Tissue processing that doesn't involve dissection may be performed under the supervision and control of a qualified pathologist.*

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1489(b)(7)].
2) Cibull ML. Q&A. Northfield, IL: College of American Pathologists CAP Today. 1997;11(7):112
3) Grzybicki DM, et al. National practice characteristics and utilization of pathologists' assistants. Arch Pathol Lab Med. 2001;125:905-912
4) California Business and Professions Code §1269.3.

*****REVISED** 12/26/2024***

ANP.11610 Gross Examination - Qualifications to Assist with Grossing **Phase II**

For laboratories subject to US regulations, individuals other than a pathologist or pathology resident (or an individual who meets the grossing subspecialty qualifications listed under ANP.11600) who assist in gross examinations meet high complexity testing personnel qualifications. For laboratories not subject to US regulations, such individuals are qualified under national, state or provincial, and local regulations, as applicable.

NOTE: Individuals assisting with grossing may perform physical examination/description of tissue specimens, including color, weight, measurement or other characteristics of the tissue, or other mechanical procedures (eg, dissection) under appropriate supervision. The laboratory director may delegate the grossing of specimens to non-pathologist individuals, but is responsible for determining whether an individual's education, training and experience meet the required qualifications.

For laboratories subject to US regulations, these individuals must be qualified as high complexity testing personnel under the CLIA regulations. The minimum training/experience required of such personnel is:

1. *An earned associate degree in a laboratory science (chemical or biological science) or medical laboratory technology, obtained from an accredited institution, OR*
2. *Education/training equivalent to the above that includes the following:*
   - *60 semester hours or equivalent from an accredited institution. This education must include 24 semester hours of medical laboratory technology courses, OR 24 semester hours of science courses that includes six semester hours of chemistry, six semester hours of biology, and 12 semester hours of chemistry, biology or medical laboratory technology in any combination, AND*
   - *Laboratory training including either completion of a clinical laboratory training program approved or accredited by the Accrediting Bureau of Health Education Schools (ABHES), or the Commission on Accreditation of Allied Health Education Programs (CAAHEP) (note that this training may be included in the 60 semester hours listed above), OR at least three months of recorded laboratory training in each specialty in which the individual performs high complexity testing.*

If there are more stringent state or local regulations for grossing qualifications, they must be followed. Additional educational pathways for qualifying as high complexity testing personnel may be found in the CAP Personnel Guidance Document located in e-LAB Solutions Suite on cap.org (log-in required) under Accreditation Resources - Accreditation Checklists.

For US Department of Defense laboratories, effective May 29, 2014, newly hired high complexity testing personnel must have either:

- *A minimum of an associate degree in a biological or chemical science or medical laboratory technology from an accredited institution **AND** be certified by the ASCP, AMT or other*

board or registry deemed comparable by OASD(HD) or their designee Center for Laboratory Medicine Services (CLMS) as an MLT or MT/MLS; OR

- *Successfully completed an official U.S. military medical laboratory procedures training course of at least 50 weeks duration and currently hold the military enlisted occupational specialty of medical laboratory specialist (laboratory technician).*

Evidence of Compliance:

✓ Records of qualifications including degree or transcript and work history in related field

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28):[42CFR493.1489].
2) California Business and Professions Code §1269.3.

ANP.11640 Competency Assessment of Individuals Assisting with Grossing — Phase II

The competency of individuals assisting with grossing is assessed at least annually by a qualified pathologist (or by another qualified individual for specific subspecialties as defined in ANP.11600).

NOTE: Please refer to GEN.55500 and GEN.55505 on competency assessment in the Laboratory General Checklist for a list of criteria and frequency for competency assessment. Not all six elements may apply in all cases.

For dermatopathology cases, including Mohs surgery, an MD or DO dermatologist who is licensed to practice (if required) in the jurisdiction where the laboratory is located and is board certified in dermatology is qualified to perform gross examination and evaluate non-pathologists.

Evidence of Compliance:

✓ Records of competency assessment performed at a defined frequency

REFERENCES
1) Cibull ML. Q&A. Northfield, IL: College of American Pathologists *CAP Today.* 1997;11(7):112
2) Grzybicki DM, *et al*. The usefulness of pathologists' assistants. *Am J Clin Pathol.* 1999;112:619-626
3) Galvis CO, *et al*. Pathologists' assistants practice. A measurement of performance. *Am J Clin Pathol.* 2001;116:816-822

ANP.11660 Surgical Tissue Diagnosis — Phase II

All surgical tissue diagnoses are made by a qualified pathologist. Exceptions for other qualified individuals for specific subspecialities are described in the NOTE.

NOTE: The following are exceptions for specific types of tissue diagnosis for non-pathologist individuals:

- *Neuromuscular pathology specimens may be interpreted by an MD or DO who is licensed to practice (if required) in the jurisdiction where the laboratory is located and has completed a training program in neuromuscular pathology approved by HHS (ie, the American Academy of Neurology Committee for Neuromuscular Pathology Training Program).*
- *Other exceptions for dermatopathology, ophthalmic pathology and oral pathology as defined in the CLIA regulation 42CFR493.1449(f) and (g).*

Evidence of Compliance:

✓ Pathology reports signed by diagnosing pathologist or other qualified individual based on subspecialty

REFERENCES
1) Cibull ML. Q&A. Northfield, IL: College of American Pathologists CAP Today. 1997;11(7):112
2) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(b)(c)(d)].
3) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1449(b)(f)(g)].

ANP.11670 Specimen - Gross Examination — Phase I

Written instructions or guidelines are readily available in the laboratory for the proper dissection, description, and histologic sampling of various specimen types (eg, mastectomy, colectomy, hysterectomy, renal biopsy, etc.).

NOTE: The instructions/guidelines should address large or complicated specimen types and smaller specimens requiring special handling, such as muscle biopsies, renal biopsies, and rectal suction biopsies for Hirschsprung's disease. Guidelines serve an important educational function in departments with postgraduate (residency) programs. However, they also are useful in providing consistency in the handling of similar specimen types in departments without such training programs.

The ideal thickness for specimen sections submitted in cassettes is 5 mm or less.

ANP.11680 Cross Contamination - Grossing — Phase II

The laboratory minimizes cross-contamination of specimens during grossing.

NOTE: Problems with cross-contamination must be addressed in the surgical pathology quality management system.

At a minimum, cleaning (eg, wiping or rinsing) of forceps and scalpel blades between cases is required. In addition, if a laboratory processes both small specimens (eg, biopsies) and large specimens (eg, surgical resections), cleaning of instruments and cutting surfaces must be performed between cases. Avoid re-using cotton swabs/applicator sticks on multiple specimens or "double-dipping" the cotton swab/applicator in the ink. Some laboratories may choose to use disposable surfaces (eg, formalin absorbent pads, butcher paper, etc.) for large cases. Grossing of similar types of specimens sequentially should be avoided, if feasible.

REFERENCES

1) Lott R, Tunnicliffe J, Sheppard E, et al. *Practical Guide to Specimen Handling in Surgical Pathology.* Northfield, IL: College of American Pathologists; 2023. 11.0. https://documents.cap.org/documents/practical-guide-specimen-handling.pdf. Published September 2023. Accessed December 21, 2023.
2) Gephardt GN, Zarbo RJ. Extraneous tissue in surgical pathology: A College of American Pathologists study of 275 laboratories. *Arch Pathol Lab Med.* 1996;120:1009-14

ANP.11716 Paraffin Microtomy — Phase II

The appropriate thickness of paraffin embedded tissue sections for various tissue types and procedures is defined.

NOTE: Paraffin embedded sections are routinely sectioned at 4-5 microns. Some tissues (eg, renal biopsy) may require thinner sections, while some special stain techniques (eg, Congo red stain) may require thicker sections. Use of the recommendations in the table below is at the discretion of the laboratory director.

Tissue	Thickness
Routine Paraffin	**4 to 5 microns**
Renal Sections	**1 to 3 microns**
Bone Marrow	**2 to 3 microns**
Nerve histochemical staining	**6 to 15 microns**
Amyloid demonstration	**6 to 12 microns**

ANP.11734 Slide Quality — Phase II

Slides are of sufficient quality for diagnosis.

NOTE: Histopathology slides must be of adequate technical quality to be diagnostically useful. Criteria to evaluate include adequate tissue fixation, processing, thickness of sections, absence of interfering tissue folds and tears, and good staining technique and coverslipping. For hematoxylin and eosin and other routine stains, the patient slide serves as the internal control to ensure adequate staining technique. The sections must be cut from sufficient depth in the block to include the entire tissue plane.

INTRA-OPERATIVE CONSULTATION (RAPID DIAGNOSIS)

NOTE: This checklist subsection applies to intra-operative consultations including gross examination of specimens, frozen sections, touch preparations, scrape preparations, etc.

Inspector Instructions:

	• Sampling of policies and procedures (gross examinations, frozen sections, touch preps, scrape preps) • Sampling of verbal report records • Sampling of final intra-operative consultation reports • Sampling of cryostat decontamination records
	• Sampling of reagents and slides (labeling) • Sampling of frozen section cases (quality of sectioning and staining)
	• What is your laboratory's course of action regarding residual frozen tissue?

ANP.11756 Reagents **Phase II**

All solutions and stains are properly labeled and changed on a defined schedule.

NOTE: All solutions and stains must be properly labeled with the contents, and, if applicable, date they are changed/filtered and expiration date. All solutions and stains must be changed or filtered following a defined process, determined by the usage of the reagents.

Evidence of Compliance:

✓ Written records of reagent change process **OR** records of reagent change on a QC log

ANP.11810 Intra-operative Slide Preparation Quality **Phase II**

Frozen section, touch and scrape preparations are adequate for intra-operative diagnosis.

ANP.11850 Intra-Operative Results **Phase II**

The results of intra-operative surgical consultations are recorded and signed by the individual who rendered the diagnosis.

NOTE: The intent of this requirement is for the laboratory to maintain a contemporaneous report of the consultation. This may be a handwritten, signed report or a computer-generated report with electronic signature.

ANP.11900 Verbal Reports **Phase II**

If verbal reports are given, the pathologist is able to speak directly with intra-operative medical/surgical personnel.

Evidence of Compliance:
- ✓ Records of intra-operative result report notification

ANP.11950 Verbal Report/Patient ID **Phase II**

The patient's identification is checked and confirmed before delivery of any verbal report.

ANP.12000 Final Report **Phase II**

All intra-operative consultation reports are made a part of the final surgical pathology report.

ANP.12050 Intra-operative Slide Handling **Phase II**

All frozen section, touch and scrape preparation slides are permanently stained, mounted, properly labeled, and retained with the rest of the slides from the case.

Evidence of Compliance:
- ✓ Retained frozen section preparation slides

REFERENCES
1) Zhai Q, Siegal GP. Quality Management in Anatomic Pathology. Northfield, IL: CAP Press, 2017.

ANP.12075 Residual Frozen Tissue After Frozen Section Examination **Phase I**

Following frozen section examination, the residual frozen tissue is routinely processed into paraffin, and histologic sections are prepared and examined for comparison with the frozen section interpretation.

NOTE: Subject to the exceptions below, the laboratory must prepare a paraffin block and stained slide(s) from each frozen section block.

Correlation of frozen section findings with a permanent section prepared from routinely fixed and processed residual frozen tissue is an important quality improvement mechanism. Evaluation of such permanent sections provides important feedback on the accuracy of frozen section diagnoses and improves recognition of specific frozen section morphologic alterations.

The only exceptions to this requirement, at the discretion of the laboratory director, responsible pathologist, or Mohs surgeon, are as follows:
- *Frozen tissue submitted at the time of initial diagnosis for specialized studies or frozen tissue from lesions that have the potential for additional studies using archived frozen tissue at a later time (eg, diffuse gliomas)*
- *Other frozen sections where the margin or lesion has been exhausted during the frozen section evaluation and no pertinent residual tissue remains*
- *Mohs frozen sections. However, occasionally, examination of paraffin sections of tissue from Mohs procedures is warranted (refer to the American Academy of Dermatology and AAD Position Statement, Appropriate Uses of Paraffin Sections in Association with Mohs Micrographic Surgery).*

Evidence of Compliance:

✓ Records of frozen and permanent tissue section correlation

REFERENCES

1) Rickert RR. Quality assurance goals in surgical pathology. *Arch Pathol Lab Med.* 1990;114:1157-1162
2) Association of Directors of Anatomic and Surgical Pathology. Recommendations on quality control and quality assurance in anatomic pathology. *Am J Surg Pathol.* 1991;15:1007-1009
3) Gephardt GN, *et al.* Interinstitutional comparison of frozen section consultations. A College of American Pathologists Q-probes study of 90 538 cases in 461 institutions. *Arch Pathol Lab Med.* 1996;120:804-809
4) Novis DA, *et al.* Interinstitutional comparison of frozen section consultation in small hospitals. *Arch Pathol Lab Med.* 1996;120:1087-1093
5) Zhai Q, Siegal GP. Quality Management in Anatomic Pathology. Northfield, IL: CAP Press, 2017.
6) *American Academy of Dermatology and AAD Position Statement, Appropriate Uses of Paraffin Sections in Association with Mohs Micrographic Surgery* Revised 08/19/2014; Accessed 7/11/2019.

FINE NEEDLE ASPIRATE (FNA) SPECIMENS

NOTE: This checklist section applies if FNA specimens are evaluated and reported in the Surgical Pathology section.

If FNA slides are screened by cytotechnologists, the Cytopathology Checklist must be used.

Inspector Instructions:

	• Sampling of FNA policies and procedures
	• Sampling of slides (approximately five cases for labeling, quality) • Sampling of primary specimen containers (labeling)
	• How do you ensure there is no cross contamination of FNA specimens?

ANP.12094 FNA Error Prevention **Phase II**

The pathologist performing FNA procedures verifies patient identification using at least two patient identifiers, the procedure site, and the procedure to be performed.

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). *Patient and Laboratory Specimen Identification Processes.* 1st ed. CLSI standard PRE01. Clinical and Laboratory Standards Institute, Wayne, PA; 2024.

ANP.12096 Cross-Contamination - FNA **Phase II**

The laboratory prevents cross-contamination of FNA specimens during processing and staining.

NOTE: Methods to prevent cross-contamination may include cytocentrifuge, filter and monolayer preparations. Smears made from highly cellular cases should be stained after the other cases, and the staining fluids must be changed or filtered at appropriate intervals. One procedure

to detect contamination is to insert a clean blank slide in each staining run and examine it for contaminating cells.

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2023(Dec 28) [42CFR493.1274(b)(2-3)].

SURGICAL PATHOLOGY REPORTS

Reporting requirements for use of analyte-specific reagents and other reagents used in laboratory-developed tests are included in the All Common Checklist (COM.40850).

Inspector Instructions:

	• Sampling of records of communication of significant/unexpected surgical and cytologic findings • Written procedures for cancer reporting, including the use of synoptic format (when appropriate) • Sampling of surgical pathology reports for completeness, including gross description and pathologist review
	• How does your laboratory correlate the results of specialized studies (eg, flow immunophenotyping, cytogenetics, ISH studies) with the morphologic diagnosis? • What actions are taken for reporting errors identified in synoptic reports that are reported with the CAP Cancer Protocols?
	• Select a sampling of surgical pathology reports, including reports (eg, 10 cases) from recently changed cancer protocols or high volume procedures. Evaluate the reports to determine if the reports are in a synoptic format and have the required data elements.

ANP.12155 Gross Description Report Elements **Phase II**

All surgical pathology reports include gross descriptions, information essential for diagnosis and patient care, and essential processing information.

NOTE:
1. *Descriptions must include information regarding type, number, dimensions and/or weight of specimens, measurements and extent of gross lesions, as applicable.*
2. *Processing information must include a summary of block/slide designations, type of specimen fixation and processing (eg, formalin-fixed paraffin-embedded sections, air-dried imprints), cold ischemia time, and length of time in fixative, as applicable.*
3. *Annotated drawings and photographs are valuable tools for recording gross findings, but are not adequate replacements for a text description*

Evidence of Compliance:

✓ Surgical pathology reports including the required gross description elements

REFERENCES
1) Association of Directors of Anatomic and Surgical Pathology. Recommendations for the reporting of resected large intestinal carcinomas. *Am J Clin Pathol.* 1996;106:12-15
2) Imperato PJ, *et al*. Radical prostatectomy specimens among Medicare patients in New York State. A review of pathologists' reports. *Arch Pathol Lab Med.* 1998;122:966-971
3) Cochran AJ, *et al*. Recommendations for the reporting of tissues removed as part of the surgical treatment of cutaneous melanoma. *Am J Clin Pathol.* 1998;110:719-722
4) Ruby SG. Clinician interpretation of pathology reports. Confusion or comprehension? *Arch Pathol Lab Med.* 2000;124:943-944

5) Powsner SM, *et al*. Clinicians are from Mars and pathologists are from Venus. Clinician interpretation of pathology reports. *Arch Pathol Lab Med.* 2000;124:104-1046
6) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(e)].

ANP.12170 Report Review — Phase II

All reports are reviewed and signed by the pathologist or other qualified physician as defined in ANP.11660.

NOTE: The review of the report by the pathologist must include review of the gross examination, microscopic descriptions (if provided), and pathologic diagnosis.

A single signature on the final pathology report indicates that the responsible pathologist has reviewed all sections of that report. Signatures for each section of the report are not necessary.

The inspector must review a broad sampling of surgical pathology reports issued since the previous on-site inspection, representing at least the most common types of specimens seen in the laboratory. When diagnostic reports are generated by computer or telecommunications equipment, the actual signature or initials of the pathologist may not appear on the report. It is nevertheless essential that the laboratory have a procedure that ensures and records that the responsible pathologist has reviewed and approved the completed report before its release. In the occasional situation when the diagnosing pathologist is not available for timely review and approval of the completed report, the laboratory may have a procedure for review and approval of that report by another pathologist. In that circumstance, the names and responsibilities of both the pathologist who made the diagnosis and the pathologist who performs final verification must appear on the report.

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(c)(d)].

ANP.12173 Mohs Report — Phase I

A written report is generated for each Mohs surgical procedure.

NOTE: A written note, report, or diagram must be included in the patient's medical record or operative report. The report must include required elements such as gross description, accession number, designation of relationship of blocks to the slides, and clear diagnosis on each specimen.

ANP.12175 Significant and Unexpected Findings — Phase II

Significant and unexpected surgical pathology findings are communicated to the responsible clinician and records of those communications are retained.

NOTE: Certain surgical pathology diagnoses may be considered significant and unexpected warranting special communication to the responsible clinician(s). The pathology department determines diagnoses to be defined as "significant and unexpected," in cooperation with local clinical medical staff. Examples include: malignancy in an uncommon location or specimen type (eg, hernia sac, intervertebral disk material, tonsil, etc.), change of a frozen section diagnosis after review of permanent sections, amendments to reports that may significantly affect patient care, neoplasms causing paralysis, or fat in an endometrial curettage.

There must be a reasonable effort to ensure that clinicians receive the communications. The records must include the following:

- *Date of communication*
- *Time of communication (if required by laboratory policy)*
- *Responsible individual communicating the result*
- *Person notified using identifiers traceable to that person (a first name alone is inadequate)*

- *Findings communicated.*

An appropriate notification includes a direct dialog with the responsible individual or an electronic communication (secure email or fax) with confirmation of receipt by the responsible individual.

The record of the communication may be included directly on the patient report or in a separate location. It is not necessary to separately summarize the findings communicated if the record of the communication is on the patient report. For communications recorded in a separate location, the findings communicated may be summarized or reference the case number.

This requirement takes the place of critical result notification in the All Common Checklist (COM.30000 and COM.30100) for surgical pathology findings.

Evidence of Compliance:

✓ Records of communication of significant/unexpected findings

REFERENCES

1) Zarbo RJ, Nakhleh RE, Walsh M; Quality Practices Committee, College of American Pathologists. Customer satisfaction in anatomic pathology. A College of American Pathologists Q-Probes study of 3065 physician surveys from 94 laboratories. *Arch Pathol Lab Med.* 2003 Jan;127(1):23-9
2) Silverman JF, Pereira TC. Critical values in anatomic pathology. Arch Pathol Lab Med. 2006;130:638-640
3) LiVolsi VA. Critical values in anatomic pathology; how do we communicate? Am J Clin Pathol 204;122:171-172
4) Allen TC. Critical Values in anatomic pathology? Arch Pathol Lab Med 2007;131:684-68
5) Pereira TC, Liu Y, Silverman JF. Critical Values in surgical pathology. Am J Clin Pathol 2004;122:201-205
6) Association of Directors of Anatomic and Surgical Pathology. Critical diagnosis (critical values) in anatomic pathology. Am J Surg Pathol 2006;30:897-899
7) Nakhleh RE, Souers R, Brown RW. Significant and Unexpected Diagnoses in Surgical Pathology: A College of American Pathologists Survey of 1130 Laboratories. *Arch Pathol Lab Med.* 2009; 133;1375-1378.
8) Sarewitz SJ, Williams RB. Significant and Unexpected versus Critical Results in Surgical Pathology. Editorial. *Arch Pathol Lab Med.* 2009; 133:1366.

ANP.12185 Amended Reports — Phase II

The laboratory issues an amended report and promptly notifies the responsible clinician(s) when there are changes to reports that affect current patient care.

NOTE: The amended report must state the reason for the amendment. The format of amended reports is at the discretion of the laboratory. For extensive interpretive or textual data, replicating the entire original and amended pathology reports may be cumbersome and render the report difficult to interpret. In such cases, a comment in the amended report summarizing the previous information and the reason for the amendment may be provided.

Records of the notification must include date, responsible laboratory individual, and person notified.

Evidence of Compliance:

✓ Patient reports containing the reason for the amendment **AND**
✓ Records of notifications

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2003(Jan 24):3713 [42CFR493.1291(k)].

*****REVISED** 08/24/2023***

ANP.12350 Cancer Protocols — Phase II

All required data elements in applicable CAP Cancer Protocols are included with appropriate responses using a synoptic format in surgical pathology reports from definitive resection specimens for primary invasive malignancies, as well as cases of ductal carcinoma in situ of the breast (DCIS) and biopsies of pediatric tumor types listed in the CAP Cancer Protocols.

NOTE:

1. *This checklist requirement is not applicable to:*
   - *Cancer for which no CAP Cancer Protocol is available*

- *Additional surgical procedures performed after definitive surgical resection such as excision for positive margins or lymph node sampling*
- *Definitive resection specimens that do not contain cancer (eg, following neoadjuvant chemotherapy)*
- *Diagnostic biopsy (except for pediatric tumor types listed in the CAP Cancer Protocols), cytology specimens, or other diagnostic procedures done prior to definitive surgical therapy.*
- *Metastatic tumors or resections for recurrent tumors*
- *Special studies, including biomarker testing performed in another laboratory.*

2. *Reports must include the required core and applicable conditional data elements along with the appropriate responses from the current edition of the CAP Cancer Protocols. Data elements and responses do not have to be identical (ie, verbatim) to that listed in the CAP protocol and may be rephrased (eg, for conciseness) as long as the intended meaning remains clear.*
3. *The synoptic component of the cancer reports meets the following four key criteria:*
   - *All core elements must be reported whether applicable or not. Elements identified in the Cancer Protocols as conditional only need to be reported if applicable.*
   - *All data elements and responses must be reported in an element response pair format, ie, defined as data element followed by its response (eg, Histologic type: Invasive lobular carcinoma).*
   - *Each element response pair must be listed on a separate line or in a tabular format to achieve visual separation. Two or more data elements may NOT be listed together on one line with the following exceptions:*
     - *Anatomic site or specimen, laterality, and procedure*
     - *Pathologic Staging Tumor Node Metastasis (pTNM) staging elements*
     - *Negative margins, as long as all negative margins are specifically enumerated where applicable*
   - *All required data elements must be listed together in one location in the pathology report and may be listed in any order. Additional items may be added within the synoptic report as needed.*
4. *Required data elements may appear in a summary format elsewhere in the report IN ADDITION TO, but not as a replacement for the synoptic report (ie, all required elements must be listed together in one location in the synoptic portion of the report in the formal defined above).*
5. *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.*
6. *The synoptic report may be produced either manually or by a commercial electronic reporting tool or specialized software.*
7. *The laboratory must either have processes to ensure compliance with this checklist requirement or perform an assessment of compliance. Examples of processes to ensure compliance include LIS-built-in checks, use of templates for reporting, or LIS-generated reports. Alternative processes may be implemented at the discretion of the laboratory director.*
8. *For reporting errors that either involve missing required data elements or are deemed to be other omissions or errors that may adversely affect patient care (errors that may be impactful to patient care, errors that affect treatment decisions and staging of cancer, etc.), the laboratory must issue an amended or addendum report. The laboratory is not required to issue an amended or addendum report for omissions or errors that have no significant effect on current patient care.*
9. *Laboratories outside of the US may use regionally produced cancer reporting datasets.*
10. *The laboratory has up to eight months from the posting date of the CAP Cancer Protocol to implement data element changes.*

Evidence of Compliance:

- ✓ Surgical pathology reports for definitive cancer resection with required data elements and in synoptic format **AND**
- ✓ Records from processes used to ensure reporting compliance **AND**

✓ Records of corrective action if reporting omissions or errors were identified

REFERENCES
1) College of American Pathologists. Resources & Publications: Cancer Protocols www.cap.org/cancerprotocols
2) College of American Pathologists. Resources & Publications: Cancer Protocols-Summary of Required Elements. http://capatholo.gy/cancerprotocols-accreditation
3) Commission on Cancer. Optimal Resources for Cancer Care 2020 Standards. Chicago, IL; American College of Surgeons; 2019.
4) Sluiter CE, van Workum F, Wiggers T, et al. Improvement of care in patients with colorectal cancer: Influence of the introduction of standardized structured reporting for pathology. *JCO Clin Cancer Inform.* 2019;3:1-12.
5) Lankshear S, et al. Standardized synoptic cancer pathology reports - so what and who cares? *Arch of Pathol Lab Med*. 2013;137:1599-1602.
6) Srigley J, et al. Closing the quality loop: facilitating improvement in oncology practice through timely access to clinical performance indicators. *J Oncol Pract.* 2013;9:e255-e261.
7) Karim RZ, et al. The advantage to using a synoptic pathology format for cutaneous melanoma. *Histopathology.* 2008;52:130-8.
8) Pignol JP, Rakovitch E, Zeppieri J, Hanna W. Accuracy and completeness of pathology reporting—Impact on partial breast irradiation eligibility. *Clin Oncol*. 2012;24:177-182.
9) Lam E, et al. Synoptic pathology reporting for thyroid cancer: a review and institutional experience. *Expert Rev Anticancer Ther.* 2013;13.9:1073-9.
10) Haugland HK, et al. Template reporting matters—a nationwide study on histopathology reporting on colorectal carcinoma resections. *Hum Pathol.* 2011;42:36-40.
11) Valenstein PN. Formatting Pathology Reports: Applying Four Design Principles to Improve Communication and Patient Safety. *Arch Pathol Lab Med.* 2008;132:84-94.

ANP.12400 Correlation of Results — Phase II

Morphologic diagnoses are correlated with the results of specialized studies (eg, immunohistochemistry, nucleic acid probes, cytogenetics, flow cytometry, electron microscopy).

NOTE: It is not in the best interests of the patient to have potentially conflicting diagnoses or interpretations rendered by different sections of the laboratory. The pathologist should issue a report reconciling potentially conflicting data, when appropriate.

REFERENCES
1) Editorial. Incorporation of immunostaining data in anatomic pathology reports. *Am J Clin Pathol.* 1993;99:1
2) Putti T, *et al*. Cost-effectiveness of immunohistochemistry in surgical pathology. *Am J Clin Pathol.* 1998;110:51
3) Raab SS. The cost-effectiveness of immunohistochemistry. *Arch Pathol Lab Med.* 2000;124:1185-1191

*****REVISED** 12/26/2024***

ANP.12500 Record and Material Retention - Surgical Pathology — Phase II

Surgical pathology records and materials are retained for an appropriate period.

NOTE 1: The retention policy must address protecting and preserving the integrity and retrieval of surgical pathology materials and records.

Policies for retention of records and materials must comply with national, federal, state (or provincial), and local laws and regulations, and with the retention periods listed in the table below, whichever is most stringent.

Type of Record/Material	Retention Period
Accession log records	2 years
Wet tissue (stock bottle)	2 weeks after final report
Paraffin blocks (including cell blocks)	10 years Refer to Note 2 below, paragraphs #2 and #3, for deceased patient material
Immunohistochemistry batch control slides	2 years
Surgical pathology glass slides	10 years - slides must remain readable for this period
Surgical pathology reports *	10 years

Reports of outside consultations on laboratory cases (whether or not requested by the laboratory)	10 years after the date that the original report was issued
Fluorochrome-stained slides	At the discretion of the laboratory director
Images or permanent slides of ISH studies	10 years for neoplastic disorders 20 years for constitutional disorders (Subject to Note 4 below)
Images for Circulating Tumor Cells	10 years
Digital images used for primary diagnosis	10 years if original glass slides are not available; may not replace glass slides
Datasets from In-Vivo Microscopy (IVM) or Ex Vivo Microscopy (EVM) systems used to aid in interpretation or diagnosis	10 years - data must be retrievable for this period (Subject to Note 5 below)

** Pathology reports may be retained in either paper or electronic format. If retained in electronic format alone, the reports must include a secure pathologist electronic signature. Images of paper reports, such as microfiche or PDF files are acceptable.*

NOTE 2: Paraffin blocks used for patient diagnostic, prognostic and/or predictive purposes must be kept for at least 10 years and be stored in a manner that preserves their identity and integrity. Tissue blocks must be stored in a temperature-controlled, pest-free environment to maintain tissue integrity. The CAP recommends (but does not require) ambient temperatures in block storage areas to be less than 27°C.

Paraffin blocks may be released for research purposes if all of the following criteria are met:

1. *For laboratories subject to US regulations, formal written authorization is obtained in accordance with the requirements of HIPAA if identifiable patient information is released.*
2. *The laboratory retains sufficient blocks to support the diagnosis for the full 10-year period. After a patient has been deceased for two years, only one block containing normal tissue (if it exists) needs to be retained for the full 10-year period.*
3. *Provision is made for retrieval by the laboratory of any blocks or material that remain after use in research, if the blocks or material are needed for diagnostic, legal, or other legitimate purposes. After a patient has been deceased for two years, only one block containing normal tissue (if it exists) must be retrievable for the full 10-year period.*
4. *In the event of limited material (eg, only one diagnostic block), tissue microarray (TMA) cores or portions of the block may be released for research or clinical trials, as long as the original lab retains control or access to the diagnostic material if clinically needed.*
5. *The laboratory meets other relevant requirements including but not limited to the requirements of the institution, the directives of any applicable institutional review board (IRB) or similar entity; and state and local laws and regulations.*

The restriction on release of blocks does not prohibit release of blocks for purposes of treatment, diagnosis, prognosis, etc., for patients on research protocols as long as release is consistent with patient privacy regulations (eg, HIPAA) and applicable state and local regulations; and there is IRB approval, as applicable.

NOTE 3: Given that patient survival rates are increasing and the continued emergence of treatment based on biomarker testing, which at times may be required on the original tissue, it is recommended that, whenever feasible, tissue block retention from patients with diagnosed malignancies be retained beyond the 10 year requirement.

NOTE 4: There is no retention requirement for images of slide preparations when the source slides remain readable for the required retention period. If slides are expected to become unreadable before the end of the required retention periods (for example, FISH slides), then images that adequately represent findings on the slides must be retained.

If representative images of chromosome ISH slides are retained, those with a normal result must include an image of at least one cell illustrating the normal probe signal pattern, and those with

an abnormal result must include images of at least two cells illustrating each relevant abnormal probe signal pattern.

NOTE 5: In Vivo Microscopy (IVM) and Ex Vivo Microscopy (EVM) systems include confocal microscopy, optical coherence tomography, multiphoton microscopy, optical spectroscopy/ spectroscopic imaging, and similar technologies. These systems may be used by physicians during procedures (IVM) or by the laboratory in the evaluation of specimens that have been removed from the patient (EVM). The dataset refers to digitized or analog video or still images or other data (eg, spectroscopic data) generated by an IVM or EVM system. If such data is used to aid in interpretation or diagnosis, record retention requirements apply. Stored data should include, at a minimum, the data used to aid in interpretation or diagnosis.

NOTE 6: Refer to GEN.20425 for record and material retention requirements for laboratories that cease operations.

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2003(Jan 24): [42CFR493.1105].
2) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(b)].
3) Pantanowitz L, Dickinson K, Evans AJ, et al. ATA guidelines for telepathology. *Telemed JE Health.* 2014;20(11):1049-56.
4) Compton CC, Robb JA, Anderson MW, et al. Preanalytics and Precision Pathology: Pathology Practices to Ensure Molecular Integrity of Cancer Patient Biospecimens for Precision Medicine. *Arch Pathol Lab Med.* 2019;143(11)1346-63.
5) National Cancer Institute. NCI Best Practices for Biospecimen Resources. B.6.6 Biospecimen Storage. March 2016.

HISTOLOGY LABORATORY

The current histochemical test menu should be made available to the inspector. The inspector should select a variety of stained slides from the menu and evaluate for quality.

Inspector Instructions:

	• Sampling of specimen preparation records • Sampling of histology QC policies and procedures • Sampling of QC records (immunologic, FISH/ISH methods, histochemical)
	• Sampling of tissue blocks • Sampling of slides (quality) • Sampling of reagents (expiration date)
	• How does your laboratory prevent cross-contamination of specimens in the histology laboratory?
	• If problems are identified during the review of histology procedures, further evaluate the laboratory's responses, corrective actions and resolutions • Select a representative specimen and follow from receipt in the department through accessioning, grossing, processing, time reported and availability in the LIS

GENERAL QUALITY CONTROL

ANP.21350 Specimen Preparation Records **Phase II**

The histology laboratory retains records of the number of blocks, slides, and stains prepared.

NOTE: Laboratories must be capable of demonstrating volumes for any given period of time.

ANP.21360 Automated Stainer **Phase II**

The laboratory changes solutions in automated stainers following a defined schedule.

NOTE: Solutions must be changed at intervals appropriate for the laboratory's workload. Changing, filtering, or adding to solutions must be recorded when performed.

Evidence of Compliance:

- ✓ Records for solution changes

ANP.21395 Special Stains/Studies **Phase II**

For special stains, including histochemical stains, and studies using immunologic and ISH methodology, positive and negative controls are verified and recorded as acceptable prior to or concurrent with the reporting of patient results and records retained.

NOTE: Controls must be verified and recorded as acceptable by a pathologist or designee (provided the designee meets high complexity testing qualifications).

Positive tissue controls must contain the component specific to the special stain that is being applied to the specimen.

Immunohistochemical tests using polymer-based detection systems (biotin-free) are sufficiently free of background reactivity to obviate the need for a negative reagent control and such controls may be omitted at the discretion of the laboratory director following appropriate validation.

If interpretation of the special stain or study is performed by a different laboratory, there must be a procedure for the laboratory performing the stain or study to verify the acceptability of the controls before transfer, if the controls are not sent with the patient slides (regardless of the outside laboratory's accrediting organization). Records of this verification must be readily available to the laboratory performing the interpretation.

Evidence of Compliance:

- ✓ Records for verification of control acceptability (prior to completion of associated cases)

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2003(Jan 24):7166 [42CFR493.1256(f)]
2) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2003(Jan 24):3708 [42CFR493.1256(d)(6)]
3) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(a),(f)].
4) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2003(Jan 24): [42CFR493.1256(e)(2)].

ANP.21397 Cross-Contamination - Histology **Phase II**

The laboratory prevents cross-contamination of specimens in the histology laboratory.

NOTE: The process must address steps to prevent cross-contamination during the various phases of tissue handling including: processing, embedding, microtomy, and slide preparation. Problems with cross-contamination must be addressed in the surgical pathology quality management system.

Instruments must be clean and well-maintained (eg, tissue processors, embedding centers, dispensers, floatation baths, staining and coverslipping equipment).

At the embedding station, cleaning or wiping of forceps between cases is required. Only one cassette should be handled at a time.

For microtomy, there must be a clear process for handling of blocks and labeling of slides to prevent specimen mix-ups. Floatation baths require periodic water changes or blotting of the water surface so that sections from one patient block are not inadvertently carried over to another case or block (so-called "floaters" or "extraneous tissue").

REFERENCES
1) Lott R, Tunnicliffe J, Sheppard E, et al. *Practical Guide to Specimen Handling in Surgical Pathology.* Northfield, IL: College of American Pathologists; 2023. 11.0. https://documents.cap.org/documents/practical-guide-specimen-handling.pdf. Published September 2023. Accessed December 21, 2023.
2) Gephardt GN, Zarbo RJ. Extraneous tissue in surgical pathology: A College of American Pathologists study of 275 laboratories. *Arch Pathol Lab Med.* 1996;120:1009-14

IMMUNOFLUORESCENCE MICROSCOPY

Inspector Instructions:

- IF QC policy or procedure
- Sampling of IF QC records

ANP.21850 QC - Immunofluorescence **Phase II**

For immunofluorescence microscopy, appropriate positive and negative controls are performed.

NOTE: Internal antigens serve as positive controls (eg, IgA in tubular casts, IgG in protein droplets and C3 in blood vessels). When internal positive controls are absent, daily external positive controls are required. Non-reactive elements in the patient specimen may serve as a negative tissue control. A negative reagent control in which the patient tissue is processed in an identical manner to the test specimen, but with the primary antibody omitted, should be performed for each patient test specimen at the discretion of the laboratory director.

Evidence of Compliance:

✓ Records of immunofluorescence QC

REFERENCES
1) Walker PD, *et al.* Practice guidelines for the renal biopsy. *Mod. Pathol.* 2004;17:1555-1563
2) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2023(Dec 28): [42CFR493.1273(a)].

IMMUNOHISTOCHEMISTRY

This section must be used to inspect immunochemistry staining performed on histology specimens. It should also be used to inspect immunostaining of cytology specimens (eg, air-dried touch imprints, air-dried and/ or alcohol fixed smears, cytocentrifuge or other liquid-based preparations, and cellular materials fixed in alcohol blends or other fixatives). However, if the laboratory has a separate section for performing cytologic

immunocytostaining, the Immunochemistry section of the Cytopathology Checklist should be used to inspect that laboratory section.

The term immunohistochemistry (IHC) used within this section also includes immunocytochemistry.

Please refer to the Definition of Terms section in the All Common (COM) Checklist for definitions of analytical validation and analytical verification.

Inspector Instructions:

	• Sampling of IHC policies and procedures • Sampling of new antibody validation/verification records • Sampling of new reagents/shipment confirmation of acceptability records • Sampling of antibody QC records • Sampling of buffer pH records • Sampling of batch control records
	• Sampling of slides (quality)
	• How does your laboratory validate/verify new antibodies? • How does your laboratory confirm the acceptability of new reagent lots? • How does your laboratory distinguish non-specific false-positive staining from endogenous biotin?

ANP.22300 Specimen Modification **Phase II**

If the laboratory performs immunohistochemical staining on specimens other than formalin-fixed, paraffin-embedded tissue, the written procedure defines appropriate modifications, if any, for other specimen types.

NOTE: Such specimens include frozen sections, air-dried imprints, cytocentrifuge or other liquid-based preparations, decalcified tissue, and tissues fixed in alcohol blends or other fixatives.

REFERENCES
1) Perkins SL, Kjeldsberg CR. Immunophenotyping of lymphomas and leukemias in paraffin-embedded tissues. *Am J Clin Pathol* 1993:99(4):362-373
2) Clinical and Laboratory Standards Institute (CLSI). *Quality Assurance for Design Control and Implementation of Immunohistochemistry Assays; Approved Guideline - Second Edition.* CLSI document I/LA28. Clinical and Laboratory Standards Institute, Wayne, PA; 2011.

ANP.22500 Buffer pH **Phase II**

The pH of the buffers used in immunohistochemistry is routinely monitored.

NOTE: pH must be tested when a new batch is prepared or received.

Evidence of Compliance:

✓ Records of initial and subsequent QC on each buffer

*****REVISED** 12/26/2024***

ANP.22550 QC - Antibodies **Phase II**

Positive controls are used for each antibody.

NOTE: Positive controls assess the performance of the immunohistochemistry assay (including impact of fixation and antigen retrieval) and can assess the sensitivity of the assay. They should, whenever possible, be subjected to the same processing, antigen retrieval, and immunostaining protocol as patient tissue.

Results of controls must be recorded, either in internal laboratory records, or in the patient report. A statement in the report such as, "All controls show appropriate reactivity" is sufficient.

For tissue-based positive controls, the ideal control is of the same specimen type as the patient test specimen (eg, small biopsy, large tissue section, cell block), and is processed and fixed in the same manner (eg, formalin-fixed, alcohol-fixed, decalcified) as the patient specimen. However, for most laboratories, it is not practical to maintain separate positive control samples to cover every possible combination of fixation, processing and specimen type. Thus, it is reasonable for a laboratory to maintain a bank of formalin-fixed tissue samples as its positive controls; these controls can be used for patient specimens that are of different type, or fixed/ processed differently, providing that the laboratory can show that these patient specimens exhibit equivalent immunoreactivity. This can be accomplished by parallel testing a small panel of common markers to show that specimens of different type, or processed in a different way (eg, alcohol-fixed cytology specimens, decalcified tissue) have equivalent immunoreactivity to routinely processed, formalin-fixed tissue.

A separate tissue section may be used as a positive control, but test sections often contain normal elements that express the antigen of interest (internal controls). Internal positive controls are acceptable for these antigens, but the laboratory manual must clearly state the manner in which internal positive controls are used.

A positive control included on the same slide as the patient tissue is optimal practice because it helps identify failure to apply primary antibody or other critical reagents to the patient test slide; however, one separate positive control per staining run for each antibody in the run (ie, batch control) may be sufficient provided that the control slide is closely scrutinized by a qualified reviewer.

Ideally, positive controls have low levels of antigen expression, as is often seen in neoplasms. Different expression level controls are suggested if related to companion diagnostic clinical decision points (ie, HER2; 0, 1+, 2+, 3+). Exclusive use of normal tissues that have high levels of antigen expression may result in failure to identify assays of insufficient sensitivity, leading to false-negative results.

Synthetic materials (eg, microbeads) and cell lines containing IHC analytes of interest may be run as controls in addition to positive tissue controls. Synthetic controls and cell lines should contain the target epitope of the IHC assay. Controls that assess the IHC protocol should be sensitive to the antigen retrieval step.

Synthetic and cell line-based controls can be particularly useful to assess assay performance at low expression levels, such as detecting low levels of expression in breast cancer. Synthetic and cell line-based controls are not ideal for optimizing digital pathology algorithms, which are optimally tuned to IHC expression in human tumors.

Evidence of Compliance:

- ✓ Patient reports or worksheet with control results **AND**
- ✓ Immunohistochemical-stained slides with positive controls

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2023(Dec 28): [42CFR493.1273(a)].
2) Cheung CC, D'Arrigo C, Dietel M, et al; From the International Society for Immunohistochemistry and Molecular Morphology (ISIMM) and International Quality Network for Pathology (IQN Path). Evolution of Quality Assurance for Clinical Immunohistochemistry in the Era of Precision Medicine: Part 4: Tissue Tools for Quality Assurance in Immunohistochemistry. *Appl Immunohistochem Mol Morphol.* 2017;25(4):227-230.
3) Cheung CC, Taylor CR, Torlakovic EE. An Audit of Failed Immunohistochemical Slides in a Clinical Laboratory: The Role of On-Side Controls. *Appl Immunohistochem Mol Morphol.* 2017;25(5):308-312.

4) Torlakovic EE, Nielsen S, Francis G, et al. Standardization of positive controls in diagnostic immunohistochemistry: recommendations from the International Ad Hoc Expert Committee. *Appl Immunohistochem Mol Morphol.* 2015;23(1):1-18.
5) Clinical and Laboratory Standards Institute (CLSI). *Quality Assurance for Design Control and Implementation of Immunohistochemistry Assays.* 2nd ed. CLSI document I/LA28. Clinical and Laboratory Standards Institute, Wayne, PA; 2011.
6) ISO 20166-4:2020 Molecular in vitro diagnostic examinations. Specifications for pre-examination processes for formalin-fixed and paraffin-embedded (FFPE) tissue. Part 4: In situ detection techniques. International Organization for Standardization. 2020.

*****NEW** 12/26/2024***

ANP.22560 Synthetic and Commercial Control Range Establishment or Verification **Phase II**

If synthetic or commercial controls are used for quantitative testing, the laboratory establishes or verifies an acceptable control range for each lot of synthetic or commercial control material.

NOTE: The laboratory must verify control ranges supplied by the manufacturer if provided and establish an acceptable range by repetitive analysis if control ranges are not provided by the manufacturer.

Control values supplied by the manufacturer may be used without verification for qualitative (eg, positive or negative) testing.

Evidence of Compliance:

✓ Records for control range establishment or verification of each lot, as applicable

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). *Evaluation of Precision of Quantitative Measurement Procedures. Approved Guideline.* 3rd ed. CLSI document EP05-A3. Clinical and Laboratory Standards Institute, Wayne, PA; 2014.
2) Clinical and Laboratory Standards Institute (CLSI). *Statistical Quality Control for Quantitative Measurement Procedures, Principles and Definitions.* 4th ed. CLSI guideline C24. Clinical and Laboratory Standards Institute, Wayne, PA; 2016.

ANP.22570 QC - Antibodies **Phase II**

Appropriate negative controls are used.

NOTE: Negative controls must assess the presence of nonspecific staining in patient tissue as well as the specificity of each antibody with the exception listed below. Results of controls must be recorded, either in internal laboratory records, or in the patient report. A statement in the report such as, "All controls show appropriate reactivity" is sufficient.

For laboratories using older biotin-based detection systems, it is important to use a negative reagent control to assess nonspecific or aberrant staining in patient tissue related to the antigen retrieval conditions and/or detection system used. A separate section of patient tissue is processed using the same reagent and epitope retrieval protocol as the patient test slide, except that the primary antibody is omitted, and replaced by any one of the following:

- *An unrelated antibody of the same isotype as the primary antibody (for monoclonal primary antibodies)*
- *An unrelated antibody from the same animal species as the primary antibody (for polyclonal primary antibodies)*
- *The negative control reagent included in the staining kit*
- *The diluent/buffer solution in which the primary antibody is diluted*

In general, a separate negative reagent control should be run for each block of patient tissue being immunostained; however, for cases in which there is simultaneous staining of multiple blocks from the same specimen with the same antibody (eg, cytokeratin staining of multiple axillary sentinel lymph nodes), performing a single negative control on one of the blocks may be sufficient provided that all such blocks are fixed and processed identically. This exception does not apply to stains on different types of tissues or those using different antigen retrieval protocols or antibody detection systems. The laboratory director must determine which cases will have only one negative reagent control, and this must be specified in the department's procedure manual.

The negative reagent control would ideally control for each reagent protocol and antibody retrieval condition; however, large antibody panels often employ multiple antigen retrieval

procedures. In such cases, a reasonable minimum control would be to perform the negative reagent control using the most aggressive retrieval procedure in the particular antibody panel. Aggressiveness of antigen retrieval (in decreasing order) is as follows: pressure cooker; enzyme digestion; boiling; microwave; steamer; water bath. High pH retrieval should be considered more aggressive than comparable retrieval in citrate buffer at pH 6.0.

Immunohistochemical tests using polymer-based detection systems (biotin-free) are sufficiently free of background reactivity to obviate the need for a negative reagent control and such controls may be omitted at the discretion of the laboratory director following appropriate validation.

It is also important to assess the specificity of each antibody by a negative tissue control, which must show no staining of tissues known to lack the antigen. The negative tissue control is processed using the same fixation, epitope retrieval and immunostaining protocols as the patient tissue. Unexpected positive staining of such tissues indicates that the test has lost specificity, perhaps because of improper antibody concentration or excessive antigen retrieval. Intrinsic properties of the test tissue may also be the cause of "non-specific" staining. For example, tissues with high endogenous biotin activity such as liver or renal tubules may simulate positive staining when using a detection method based on biotin labeling.

A negative tissue control must be processed for each antibody in a given run. Any of the following can serve as a negative tissue control:

1. *Multitissue blocks. These can provide simultaneous positive and negative tissue controls, and are considered “good practice” (see below).*
2. *The positive control slide or patient test slides, if these slides contain tissue elements that should not react with the antibody.*
3. *A separate negative tissue control slide.*

The type of negative tissue control used (ie, separate sections, internal controls or multitissue blocks) must be specified in the laboratory manual.

Multitissue blocks or tissue microarrays (TMAs) can have a major role in maintaining quality. When used as a combined positive and negative tissue control as mentioned above, they can serve as a permanent record of the sensitivity and specificity of every stain, particularly when mounted on the same slide as the patient tissue. When the components are chosen appropriately, multitissue blocks may be used for many different primary antibodies, decreasing the number of different control blocks needed by the laboratory. Multitissue blocks are also ideal for determining optimal titers of primary antibodies since they allow simultaneous evaluation of many different pieces of tissue. Finally, they are a useful and efficient means to screen new antibodies for sensitivity and specificity or new lots of antibody for consistency, which should be done before putting any antibody into diagnostic use.

Evidence of Compliance:

- ✓ Patient reports or worksheet with control results **AND**
- ✓ Immunohistochemical-stained slides with appropriate negative controls

REFERENCES

1) Leong AS-Y, Cooper K, Leong FJW-M. Manual of Diagnostic Antibodies for Immunohistology. 2nd ed. London: Greenwich Medical Media; 2003
2) Dabbs DJ, ed. Diagnostic Immunohistochemistry: Theranostic and Genomic Applications. Philadelphia: Saunders/Elsevier; 2010
3) Burry RW. Specificity controls for immunocytochemical methods. *J Histochem Cytochem* 2000;48:163-166
4) Weirauch M. Multitissue control block for immunohistochemistry. *Lab Med.* 1999;30:448-449
5) Miller RT. Multitumor “sandwich” blocks in immunohistochemistry. Simplified method and preparation and practical uses. *Appl Immunohistochem* 1993;1: 156-159
6) Chan JKC, Wong CSC, Ku WT, Kwan MY. Reflections on the use of controls in immunohistochemistry and proposal for application of a multitissue spring-roll control block. *Ann Diagn Pathol* 2000;4: 329-336
7) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(a)].
8) Allen M. Gown, MD. Diagnostic Immunohistochemistry: What Can Go Wrong and How to Prevent it. *Arch Pathol Lab Med*. 2016;140(9):893-898.
9) Torlakovic EE, Francis G, Garratt J, et al. International Ad Hoc Expert Panel. Standardization of negative controls in diagnostic immunohistochemistry recommendations from the international ad hoc expert panel. *Appl Immunohistochem Mol Morphol.* 2014;22(4):241-52.

If the laboratory uses an avidin-biotin complex (ABC) detection system (or a related system such as streptavidin-biotin or neutravidin-biotin), nonspecific false-positive staining from endogenous biotin is addressed.

NOTE: Biotin is a coenzyme present in mitochondria, and cells that have abundant mitochondria such as hepatocytes, kidney tubules and many tumors (particularly carcinomas) are rich in endogenous biotin. Biotin-rich intranuclear inclusions are also seen in gestational endometrium and in some tumors that form morules. If steps are not included in the immunostaining method to block endogenous biotin before applying the ABC detection complex, nonspecific false-positive staining may occur, particularly when using heat-induced epitope retrieval (which markedly increases the detectability of endogenous biotin). This artifact is often localized to tumor cells and may be easily misinterpreted as true immunoreactivity.

Blocking endogenous biotin involves incubating the slides with a solution of free avidin (which binds to endogenous biotin), followed by incubation with a biotin solution (which saturates any empty biotin-binding sites remaining on the avidin). Biotin-blocking steps should be performed immediately after epitope retrieval and before incubation with primary antibody.

REFERENCES
1) Miller RT, Kubier P. Blocking of endogenous avidin-binding activity in immunohistochemistry: the use of egg whites. *Appl Immunohistochem* 1997; 5: 63-66
2) Miller RT, Kubier P, Reynolds B, Henry T. Blocking of endogenous avidin-binding activity in immunohistochemistry: the use of skim milk as an economical and effective substitute for commercial biotin solutions. *Appl Immunohistochem & Molec Morphol* 1999;7:63-65
3) Allen M. Gown, MD. Diagnostic Immunohistochemistry: What Can Go Wrong and How to Prevent it. *Arch Pathol Lab Med*. 2016;140(9):893-898.

ANP.22660 Control Slide Review — Phase II

The laboratory director or designee reviews batch control slides for acceptability before reporting results.

NOTE: Records of this daily review must be retained and clearly show that positive and negative controls for all antibodies stain appropriately. Batch control records must be retained for two years.

Immunohistochemical tests using polymer-based detection systems (biotin-free) are sufficiently free of background reactivity to obviate the need for a negative reagent control and such controls may be omitted at the discretion of the laboratory director following appropriate validation.

The batch control slides must be readily available to pathologists who are signing out cases. The location of the slides should be stated in the procedure manual.

Evidence of Compliance:

- ✓ Patient reports or worksheet with control results

REFERENCES
1) Shellhorn N. IHC troubleshooting tips. Advance/Lab. 2000;9(1):33-37
2) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28): [42CFR493.1273(f)].

*****REVISED** 12/26/2024***

ANP.22750 Validation/Verification - Non-Predictive Antibody Marker Testing — Phase II

The laboratory has records of validation/verification of new antibodies, including introduction of a new clone, prior to use for patient diagnosis or treatment.

NOTE: The performance characteristics of each assay must be appropriately validated/verified before being placed into clinical use. The initial goal is to establish the optimal antibody titration, detection system, and antigen retrieval protocol. Once optimized, a panel of tissues must be tested to determine the assay's sensitivity and specificity. The scope of the validation/verification is at the discretion of the laboratory director and will vary with the antibody.

Means of validation/verification may include, but are not limited to: 1) correlating the results using the new antibody with the morphology and expected results; 2) comparing the results using the new antibody with the results of prior testing of the same tissues with a validated/verified assay in the same laboratory; 3) comparing the results using the new antibody with the results of testing the same tissue in another laboratory with a validated/verified assay; or 4) comparing the results using the new antibody with previously validated/verified non-IHC tests or testing previously graded tissue challenges from a formal proficiency testing program.

For an initial validation/verification, laboratories should achieve at least 90% overall concordance between the new test and the comparator test or expected results.

*For validation of **laboratory-developed or modified FDA-cleared/approved nonpredictive assays**, the validation must be performed on a minimum of 10 positive and 10 negative tissues.*

*For verification of **unmodified FDA-cleared/approved nonpredictive assays**, the laboratory must follow the instructions provided by the manufacturer. If the instructions do not list a minimum number of samples for assay verification, the verification must be performed on a minimum of 10 positive and 10 negative tissues.*

If the laboratory director determines that fewer validation/verification cases are sufficient for a specific marker (eg, a rare antigen or tissue), the rationale for that decision needs to be recorded. Positive cases in the validation/verification set should span the expected range of clinical results (expression level), especially for those markers that are reported quantitatively.

For p16/Ki67 dual stain testing performed on gynecologic cytopathology specimens using FDA cleared/approved kits, the laboratory must verify that test performance is consistent with the manufacturer's validation data.

When possible, laboratories should use tissues that have been processed using the same fixative and processing methods as cases that will be tested clinically. If IHC is regularly done on specimens that are not fixed or processed in the same manner as the tissues used for validation/verification (eg, alcohol fixed cell blocks, cytologic smears, formalin post fixed tissue, or decalcified tissue), the laboratory should test a sufficient number of such tissues to ensure that assays consistently achieve expected results. The laboratory director is responsible for determining the number of positive and negative cases and the number of markers to test.

Refer to the subsection "Predictive Markers" for specific validation/verification requirements for tests that provide independent predictive information (eg, HER2 and ER testing in breast carcinoma).

Evidence of Compliance:

✓ Records of validation/verification, if applicable

REFERENCES

1) Hsi ED. A practical approach for evaluating new antibodies in the clinical immunohistochemistry laboratory. *Arch Pathol Lab Med.* 2001;125:289-294
2) Clinical and Laboratory Standards Institute (CLSI). *Quality Assurance for Design Control and Implementation of Immunohistochemistry Assays; Approved Guideline - Second Edition.* CLSI document I/LA28. Clinical and Laboratory Standards Institute, Wayne, PA; 2011.
3) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2003(Jan 24): [42CFR493.1256(e)(2)].
4) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2023(Dec 28): [42CFR493.1273(a)].
5) Allen M. Gown, MD. Diagnostic Immunohistochemistry: What Can Go Wrong and How to Prevent it. *Arch Pathol Lab Med*. 2016;140(9):893-898.
6) Uhlen M, Bandrowski A, Carr S, et al. A proposal for validation of antibodies. *Nat Methods.* 2016; 13(10):838-7.
7) Goldsmith JD, Troxell M, Roy-Chowdhuri S, et al. Principles of analytic validation of immunohistochemical assays: guideline update. *Arch Pathol Lab Med.* 2024. https://doi.org/10.5858/arpa.2023-0483-CP

ANP.22760 New Reagent Lot Confirmation of Acceptability **Phase II**

The performance of new lots of antibody and detection system reagents is compared with old lots before or concurrently with being placed into service.

NOTE: Parallel staining is required to control for variables such as disparity in the lots of detection reagents or instrument function. New lots of primary antibody and detection system reagents must be compared to the previous lot using at least one known positive control and one known negative control tissue. This comparison should be made on slides cut from the same control block.

Evidence of Compliance:

✓ Records of confirmation of new reagent lots

ANP.22780 IHC Assay Performance **Phase I**

Laboratories confirm assay performance when conditions change that may affect performance.

NOTE: A change in antibody clone requires full revalidation/verification of the assay (equivalent to initial analytic validation/verification - see ANP.22750).

Laboratories must confirm assay performance with at least two known positive and two known negative cases when an existing validated/verified assay has changed in any of the following ways: antibody dilution, antibody vendor (same clone), or the incubation or retrieval times (same method).

A more extensive study to confirm acceptable assay performance in accordance with published guidelines must be performed when any of the following have changed: fixative type, antigen retrieval protocol (eg, change in pH, different buffer, different heat platform), antigen detection system, tissue processing or testing equipment, environmental conditions of testing (eg, laboratory relocation), or laboratory water supply. This study must include a representative sampling of the assays affected by the change and an appropriate number of positive and negative cases per assay, sufficient to confirm acceptable assay performance. The laboratory director is responsible for determining the extent of the study. The rationale for the assays selected and number of positive and negative cases checked per assay must be recorded.

For specific validation/verification requirements for tests that provide independent predictive information (eg, HER2 and ER testing in breast carcinoma), refer to the subsection "Predictive Markers."

REFERENCES
1) Goldsmith JD, Troxell M, Roy-Chowdhuri S, et al. Principles of analytic validation of immunohistochemical assays: guideline update. *Arch Pathol Lab Med.* 2024. https://doi.org/10.5858/arpa.2023-0483-CP

ANP.22900 Slide Quality **Phase II**

The immunohistochemical stains produced are of acceptable technical quality.

NOTE: The inspector must examine examples of the immunohistochemical preparations offered by the laboratory. A reasonable sample might include 5-10 diagnostic antibody panels.

REFERENCES
1) Shellhorn N. IHC troubleshooting tips. *Advance/Lab*. 2000;9(1):33-37

IN SITU HYBRIDIZATION (ISH)

The use of the term in situ hybridization (ISH) in this section applies to all ISH methods, including fluorescence (FISH), chromogenic (CISH), silver (SISH), and brightfield (BRISH) in situ hybridization.

Please refer to the Definition of Terms section in the All Common (COM) Checklist for definitions of analytical validation and analytical verification.

Inspector Instructions:

	• Sampling of ISH policies and procedures • Sampling of probe validation records • Sampling of QC records • Sampling of patient test reports
	• How are ISH cut-off values established? • How does your laboratory validate assay performance prior to test implementation? • What is your course of action when a probe does not produce an internal control signal?

ANP.22956 ISH Probe Validation/Verification — Phase II

All in situ hybridization (ISH) probes are validated/verified.

NOTE: Refer to ANP.22978 for specific validation/verification requirements for tests that provide independent predictive information (eg, HER2 in breast carcinoma). Additional requirements for test method validation/verification are in the All Common Checklist.

Evidence of Compliance:

✓ Records of ISH probe validation/verification

REFERENCES
1) American College of Medical Genetics, Standards and Guidelines for Clinical Genetics Laboratories, 2021 edition.
2) Clinical and Laboratory Standards Institute (CLSI). *Fluorescence In Situ Hybridization Methods for Clinical Laboratories; Approved Guideline—Second Edition*. CLSI document MM07-A2 (ISBN 1-56238-885-1] Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 2500, Wayne, Pennsylvania 19087-1898 USA, 2013.
3) Lawrence Jennings, Vivianna M. Van Deerlin, Margaret L. Gulley (2009) Recommended Principles and Practices for Validating Clinical Molecular Pathology Tests. *Archives of Pathology & Laboratory Medicine*: Vol. 133, No. 5, pp. 743-755
4) Wiktor AE, Van Dyke DL, Stupca PJ, et al. Preclinical validation of fluorescence in situ hybridization assays for clinical practice. *Genetics in Medicine* 8:16-23, 2006.
5) Weremowicz S, Sandstrom DJ, Morton CC, Miron PM. Validation of DNA probes for preimplantation genetic diagnosis (PGD) by fluorescence in situ hybridization (FISH) R1. *Prenat Diagn.* 2006 Nov;26(11):1042-50.
6) Saxe DF, Persons DL, Wolff DJ, Theil, KS; Cytogenetics Resource Committee of the College of American Pathologists. Validation of fluorescence in situ hybridization using an analyte-specific reagent for detection of abnormalities involving the mixed lineage leukemia gene. *Arch Pathol Lab Med.* 2012; 138(1):47-52.

ANP.22957 Interphase ISH - Cut-off Value — Phase II

For interphase in situ hybridization (ISH), the laboratory establishes a normal cut-off value for results for each probe used, when applicable.

NOTE: Refer to the All Common Checklist for specific test method validation requirements. Cut-off values are usually required when ISH testing uses locus-specific probes against nuclear DNA.

Evidence of Compliance:

✓ Records from cut-off value studies

REFERENCES
1) American College of Medical Genetics, Standards and Guidelines for Clinical Genetics Laboratories, 2021 edition.
2) Clinical and Laboratory Standards Institute. *Fluorescence In Situ Hybridization Methods for Clinical Laboratories; Approved Guideline.* 2nd ed. CLSI Document MM07-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2013.

ANP.22959 ISH Assay Performance — Phase I

There are records of in situ hybridization (ISH) performance for each assay.

NOTE: Assay performance should include monitoring hybridization efficiency, probe signal intensity and overall assay results, including controls, as applicable.

Evidence of Compliance:
- ✓ Records of QC monitoring of ISH assay performance at defined frequency

ANP.22960 ISH Probe Intended Target **Phase I**

A system is used to ensure that the in situ hybridization (ISH) probe used is for the intended target.

NOTE: Examples can include (but may not be limited to): 1) concurrent analysis of any available metaphase cells in an interphase cell analysis; 2) inclusion of an internal or external target that results in a positive signal for each hybridization; 3) written protocols that ensure the respective probe is applied to the intended specimen.

Evidence of Compliance:
- ✓ Records confirming intended target

ANP.22963 ISH Scoring **Phase II**

Scoring of in situ hybridization (ISH) assays, including the number of cells scored, is performed as defined in a written procedure.

NOTE: For predictive marker testing, refer to ANP.22969 for requirements on reporting of the scoring method used.

REFERENCES
1) American College of Medical Genetics Laboratory. Standards and guidelines for clinical genetics laboratories, 2021 edition.
2) Clinical and Laboratory Standards Institute (CLSI). *Fluorescence In Situ Hybridization Methods for Clinical Laboratories; Approved Guideline—Second Edition*. CLSI document MM07-A2 (ISBN 1-56238-885-1] Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 2500, Wayne, Pennsylvania 19087-1898 USA, 2013.

ANP.22964 ISH Controls **Phase II**

The laboratory performs and records controls (internal and/or external) for each in situ hybridization (ISH) analysis.

NOTE: What functions as a control depends on the specific assay, signal pattern present, and sample type. For example, assays designed to detect deletions may use internal controls that include both the probe of interest and a control locus probe, both of which map to the same chromosome. In this situation, there are two internal controls, the signal for the probe of interest on the normal homolog and the control locus signals on both the normal and deleted homolog. For a dual fusion assay, the probe signals on each of the normal homologs function as internal controls. If a probe is used that does not produce an internal control signal (eg, a Y chromosome probe in a female), another sample that is known to have the probe target must be run in parallel as an external control with the patient sample. In addition, many ISH assays use an external control(s). For FDA-cleared or approved ISH assays, laboratories must follow manufacturer's instructions for quality control at minimum.

Evidence of Compliance:
- ✓ Records of QC results

REFERENCES
1) American College of Medical Genetics. Standards and Guidelines for Clinical Genetics Laboratories, 2021 edition.
2) Clinical and Laboratory Standards Institute (CLSI). *Fluorescence In Situ Hybridization Methods for Clinical Laboratories; Approved Guideline—Second Edition*. CLSI document MM07-A2 (ISBN 1-56238-885-1] Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 2500, Wayne, Pennsylvania 19087-1898 USA, 2013.
3) Stupca P, Meyer RG, Dewald GW. Using controls for molecular cytogenetic testing in clinical practice. *J Assoc Genet Tech.* 2005;31:4-8.

*****REVISED** 12/26/2024***
ANP.22965 Image and Slide Retention - ISH **Phase II**

Photographic or digitized images or permanent slides are retained of all in situ hybridization (ISH) assays for an appropriate period.

NOTE: Images or permanent slides of ISH assays for neoplastic disorders must be retained for 10 years; images or permanent slides of ISH assays for constitutional disorders must be retained for 20 years.

There is no retention requirement for retaining images of slide preparations when the source slides remain readable for the required retention period. If slides are expected to become unreadable before the end of the required retention periods (for example, FISH slides), then images of the slides must be retained.

If representative images of chromosome ISH slides are retained, those with a normal result must include an image of at least one cell illustrating the normal probe signal pattern, and those with an abnormal result must include images of at least two cells illustrating each relevant abnormal probe signal pattern.

REFERENCES
1) American College of Medical Genetics Laboratory. Standards and guidelines for clinical genetics laboratories, 2021 edition.

ANP.22966 ISH Interpretation **Phase II**

If an in situ hybridization (ISH) study requires consultation with a qualified pathologist and/or a cytogeneticist for an accurate interpretation, the appropriate expert is consulted and their involvement is recorded.

REFERENCES
1) Clinical and Laboratory Standards Institute. *Fluorescence In Situ Hybridization Methods for Clinical Laboratories; Approved Guideline*. 2nd ed. CLSI Document MM07-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2013.

PREDICTIVE MARKERS

The term predictive marker as used in this section refers to immunohistochemical (IHC), immunocytochemical, and in situ hybridization (ISH) biomarkers used independent of histologic findings to identify individuals who are more likely to experience a favorable or unfavorable effect from a specific (targeted) therapy, compared to individuals with the same diagnosis lacking the biomarker. Rather than confirming a specific diagnosis (such as B-cell lymphoma or gastrointestinal stromal tumor), these biomarkers predict responsiveness to a specific treatment among cases of the same diagnosis. For example, this section applies to estrogen receptor testing used to determine eligibility for hormonal treatment of breast carcinoma, but does not apply to estrogen receptor testing used solely to assist in determining the primary site of origin of a metastatic neoplasm.

The current CAP guidelines (https://www.cap.org/protocols-and-guidelines/current-cap-guidelines) relating to predictive marker testing (eg, ASCO/CAP HER2 and ER testing in breast cancer) may be found at http://www.cap.org in the Protocols and Guidelines section. The guidelines are periodically updated based on new evidence. Laboratories should review updated predictive marker guidelines and promptly implement changes for items relating to requirements in the checklists (eg, validation, fixation, scoring criteria).

If digital image analysis is used (eg, quantitative image analysis for HER2 by immunohistochemistry), additional requirements in the Digital Image Analysis section also apply.

Inspector Instructions:

READ

- Predictive markers policies and procedures
- Sampling of patient reports for completeness, including ASCO/CAP scoring when applicable
- Records of annual benchmark comparison for breast predictive markers
- Records of annual analyte-specific quality assessment, as applicable

	• Sampling of predictive marker assay validation, verification, and revalidation/verification studies
	• What is your laboratory's course of action when negative HER2 and/or negative ER by IHC results are obtained and the fixation was not appropriate? • How did you validate/verify the most recently added predictive marker on your test menu?

***REVISED** 08/24/2023*

ANP.22969 Report Elements **Phase II**

For immunohistochemical (IHC) and in situ hybridization (ISH) tests that provide independent predictive information, the patient report includes information on specimen processing, the antibody clone/probe, and the scoring method used.

NOTE: The laboratory performing the gross examination of the specimen must record the cold ischemia time and the length of time in fixative. If the grossing laboratory refers IHC or ISH studies, this information must be provided to the laboratory(ies) performing these studies.

For IHC and ISH studies used to provide predictive information independent of diagnosis or other histopathologic findings (eg, estrogen receptors and HER2 in breast carcinoma, PD-L1 and lung adenocarcinoma predictive immunostains), the laboratory must include the following information in the patient report:

1. *The type of specimen fixation and processing (eg, formalin-fixed paraffin-embedded sections, air-dried imprints, etc.)*
2. *For IHC studies, the antibody clone and general form of detection system used (eg, LSAB, polymer, proprietary kit, vendor name, etc.; information on the type of equipment used is not necessary)*
3. *For ISH studies, the probe and, if applicable, the detection system used (ie, LSAB, polymer, proprietary kit, vendor name, etc.; information on the type of equipment used is not necessary)*
4. *Criteria used to determine a positive vs. negative result, and/or scoring system (eg, percent of stained cells, staining pattern)*
5. *Laboratory interpretation of predictive marker testing (IHC or ISH) is reported according to the manufacturer's instructions, or when available, following the structure, format, and criteria set forth in the current CAP guidelines relating to predictive marker testing (eg, ASCO/CAP HER2 and ER testing in breast cancer and CAP/ASCP/ASCO HER2 in gastroesophageal carcinoma)*
6. *Limitations relating to suboptimal preanalytical factors that may impact results, such as prolonged cold ischemia time, unknown ischemia time, or over- or under-fixation.*

Evidence of Compliance:

- ✓ Report template containing all required elements **AND**
- ✓ Copies of patient reports confirming inclusion of the required elements **AND**
- ✓ Established guidelines used by the laboratory

REFERENCES

1) Fisher ER, *et al.* Solving the dilemma of the immunohistochemical and other methods used for scoring ER and PR receptors in patients with invasive breast cancer. *Cancer.* 2005;103:164-73
2) Collins LC, *et al*. Bimodal frequency distribution of estrogen receptor immunohistochemical staining results in breast cancer: an analysis of 825 cases. *Am J Clin Pathol.* 2005;123:16-20
3) Allred DC, *et al.* ER expression is not bimodal in breast cancer. *Am J Clin Pathol.* 2005;124:474-5
4) Wolff AC, Somerfield MR, Dowsett M, et al. Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologist Guideline Update. *Arch Pathol Lab Med.* Published online June 7, 2023. doi: 10.5858/arpa.2023-0905-SA
5) Allison KH, Hammond EH, Dowsett M, et al. Estrogen and Progesterone Receptor Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologists Guideline Update *Arch Pathol Lab Med.* 2020; 144(5):545-63.
6) Bartley AN, Washington MK, Ventura CB, et al. HER2 Testing and Clinical Decision Making in Gastroesophageal Adenocarcinoma: Guideline from the College of American Pathologists, American Society for Clinical Pathology, and American Society of Clinical Oncology. *Arch Pathol Lab Med.* 2016:140(12):1345-1363.

7) Bui MM, Riben MW, Allison KH, et al. Quantitative Image Analysis of Human Epidermal Growth Factor Receptor 2 Immunohistochemistry for Breast Cancer Guideline from the College of American Pathologists. 2018. *Arch Pathol Lab Med.* doi: 10.5858/arpa.2018-0378-CP.

***REVISED** 12/26/2024*

ANP.22970 Annual Result Comparison - Breast Carcinoma **Phase II**

For HER2 and ER immunohistochemical (IHC) tests performed on breast carcinoma that provide independent predictive information, the laboratory at least annually compares its patient results with published benchmarks.

NOTE: For estrogen receptor studies: in general, the overall proportion of ER-negative breast cancers (invasive and DCIS) should not exceed 30%. The proportion is somewhat lower in postmenopausal than premenopausal women (approximately 20% vs. 35%). The proportion of ER-negative cases is considerably lower in well-differentiated carcinomas (<10%) and certain special types of invasive carcinomas (<10% in lobular, tubular, and mucinous types). Investigation is warranted if the proportion of ER-negative cases varies significantly from the published benchmarks.

For HER2 studies, the overall proportion of HER2 positive breast cancers is 10-25%. Laboratories must monitor their results. Investigation is warranted if the proportion of HER2 positive cases varies significantly from published data.

Evidence of Compliance:

✓ Records of annual result comparison

REFERENCES

1) Wolff AC, Somerfield MR, Dowsett M, et al. Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologist Guideline Update. *Arch Pathol Lab Med.* Published online June 7, 2023. doi: 10.5858/arpa.2023-0905-SA
2) Allison KH, Hammond ME, Dowsett M, et al. Estrogen and progesterone receptors in breast cancer: American Society of Clinical Oncology/College of American Pathologists Guideline update [published online ahead of print January 2020] *Arch Pathol Lab Med.* doi: 10.5858/arpa.2019-0904-SA.
3) Fitzgibbons PL, Murphy DA, Hammond ME, *et al.* Recommendations for validating estrogen and progesterone receptor immunohistochemistry assays. *Arch Pathol Lab Med* 2010;134:930-935
4) Dunnwald LK, Rossing MA, Li CI. Hormone receptor status, tumor characteristics, and prognosis: a prospective cohort of breast cancer patients. *Breast Cancer Research* 2007;9:R6
5) Rüschoff J, Lebeau A, Kreipe H, et al. Assessing HER2 testing quality in breast cancer: variables that influence HER2 positivity rate from a large, multicenter, observational study in Germany. *Mod Pathol.* 2017;30:217-26.

***NEW** 12/26/2024*

ANP.22975 Immunohistochemical (IHC) Predictive Marker Interpretation **Phase I**

Each pathologist interpreting IHC predictive markers participates in an annual analyte-specific quality assessment for each of the following predictive markers, as applicable:

- **Breast HER2**
- **Breast ER**
- **Gastric HER2**
- **Lung highly sensitive ALK**
- **Lung PD-L1 tumor proportion score (TPS)**

NOTE: This requirement applies to all pathologists in the laboratory that interpret one or more of these markers, whether in laboratories that perform both staining and interpretation or interpretation only. An individual pathologist need participate only once for each predictive marker used by that pathologist in patient care evaluation, regardless of the number of locations where the pathologist performs interpretations.

The quality assessment for each predictive marker must include a comparison of each pathologist's interpretation against the intended results. The laboratory director must define criteria for acceptable results and ensure follow up on each unacceptable result.

Examples of how this requirement can be met include the use of:

- *IHC proficiency testing (PT) stained slides or images used **after** the deadline for submission of results to the PT provider*
- *Educational, peer-based, interpretation-based programs that provide stained slides or images (eg, CAP HER2 and ER Immunohistochemistry Interpretation Only Program [HER1])*
- *Laboratory-developed programs for sharing stained slides or images.*

Evidence of Compliance:

✓ Records of annual assessment of each pathologist for predictive marker interpretation (performed on site or at another laboratory), where applicable

*****REVISED** 12/26/2024***

ANP.22978 Validation/Verification - Predictive Marker Testing **Phase II**

Predictive marker testing by immunohistochemistry (IHC) and/or in situ hybridization (eg, FISH, CISH, SISH) is validated/verified and records of validation/verification are retained.

*NOTE: For validation of **laboratory-developed or modified FDA-cleared/approved predictive assays**, the validation must be performed on a minimum of 40 cases (20 positive and 20 negative samples).*

*For verification of **unmodified FDA-cleared/approved predictive assays**, the laboratory must follow the instructions provided by the manufacturer. If the instructions do not list a minimum number of samples for assay verification, the verification must be performed on a minimum of 20 positive and 20 negative tissues.*

If the laboratory director determines that fewer validation/verification cases are sufficient for a specific marker (eg, a rare antigen, tissue, gene, or probe), the rationale for that decision must be recorded. Positive cases in the validation/verification set should span the expected range of clinical results (expression levels). Only definitively positive and negative cases may be used for validation/verification.

The validation/verification data must clearly show the degree of concordance between assays or methods. Minimum acceptable concordance levels for IHC tests are 90% for positive and negative results.

The characteristics of the cases used for validation/verification should be similar to those seen in the laboratory's patient population (ie, core biopsy vs. open biopsy, primary vs. metastatic tumor, etc.).

Samples used for validation/verification must be handled in conformance with the guidelines in this checklist. Laboratories should use tissues that have been processed using the same fixative and methods as cases that will be tested clinically.

If significant changes are made to the testing methods (eg, antibody clone, antigen retrieval protocol or detection system, probe or pretreatment protocol), revalidation/verification is required.

This requirement is applicable to both new and existing assays. If review of the initial validation/ verification does not meet the current standard, it must be supplemented and brought into compliance. It is possible to do this retroactively by review and documentation of past proficiency testing challenges or by sending unstained slides from recent cases to a referral laboratory for correlation. If no records exist from the initial validation/verification, the assay must be fully revalidated/verified.

Evidence of Compliance:

✓ Records of validation/verification data including criteria for concordance

REFERENCES

1) Wolff AC, Somerfield MR, Dowsett M, et al. Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologist Guideline Update. *Arch Pathol Lab Med.* Published online June 7, 2023. doi: 10.5858/arpa.2023-0905-SA
2) Fitzgibbons PL, Murphy DA, Hammond ME, Allred DC, Valenstein P. Recommendations for validating estrogen and progesterone receptor immunohistochemistry assays. *Arch Pathol Lab Med* 2010; 134:930-935.
3) Wolff AC, Hammond ME, Hicks DG, *et al.* Recommendations for human epidermal growth factor receptor 2 testing in breast cancer; American Society of Clinical Oncology/College of American Pathologists. *Arch Pathol Lab Med* 2014;138(2):241-256

4) Goldsmith JD, Troxell M, Roy-Chowdhuri S, et al. Principles of analytic validation of immunohistochemical assays: guideline update. *Arch Pathol Lab Med.* 2024. https://doi.org/10.5858/arpa.2023-0483-CP

ANP.22979 Estrogen Receptor and HER2 Testing in Breast Cancer Samples — Phase I

At least one tumor sample from all patients with invasive breast cancer (newly diagnosed, recurrent, or metastatic disease) is tested for estrogen receptors and HER2 (by IHC or ISH) if tissue is available.

REFERENCES

1) Wolff AC, Somerfield MR, Dowsett M, et al. Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologist Guideline Update. *Arch Pathol Lab Med.* Published online June 7, 2023. doi: 10.5858/arpa.2023-0905-SA

ANP.22983 Fixation - HER2 and ER Breast Cancer Predictive Marker Testing — Phase I

If the laboratory assesses HER2 protein over-expression by immunohistochemistry, HER2 (ERBB2) gene amplification by in situ hybridization, or estrogen receptor expression by immunohistochemistry for breast cancer predictive marker testing, the laboratory monitors cold ischemia time (one hour or less) and appropriate specimen fixation time.

NOTE: The CAP strongly recommends that specimens subject to these tests be fixed in 10% neutral buffered formalin for at least six hours and up to 72 hours at room temperature. Specimens must be fully submerged in the optimal volume of formalin to achieve a formalin to specimen volume of 10:1 or higher, or if not feasible (eg, large specimens) at least 4:1. For cases with negative HER2 results by IHC that were fixed outside these limits, confirmatory analysis by in-situ hybridization is strongly recommended.

Laboratories must communicate the following fixation guidelines to clinical services:

1. *Rapid immersion of specimens in fixative is critical, and must occur within one hour of the biopsy or resection*
2. *If delivery of a resection specimen to the pathology department is delayed (eg, specimens from remote sites), the tumor must be bisected prior to immersion in fixative. In such cases, it is important that the surgeon ensure that the identity of the resection margins is retained in the bisected specimen; alternatively, the margins may be separately submitted.*

Both the time of removal of the tissue and the time of immersion of the tissue in fixative must be recorded and communicated from the submitting service to the processing laboratory.

Communication to clinical services of the need for appropriate information on cold ischemia time, fixative, and fixation time may be through memoranda, website, phone, face-to-face meetings, or other means. Information about fixative, fixation time, and cold ischemia time for each specimen must be recorded as part of the permanent specimen record in the pathology report. The laboratory must monitor for compliance and take corrective action as needed.

If specimens are fixed in a solution other than 10% neutral buffered formalin, the laboratory must perform a validation study showing that HER2 and ER results are concordant with results from formalin-fixed tissues.

Laboratories testing specimens obtained from another institution must have a policy that addresses cold ischemia time and time of fixation. Information on time of fixation may be obtained by appropriate questions on the laboratory's requisition form. If specimens have undergone any deviation from processing that may interfere with result interpretation, such as the use of specimens that previously were used for frozen section diagnosis, this must be annotated on the final report.

Evidence of Compliance:

- ✓ Records of communication of cold ischemia and fixation guidelines to clinical services **AND**
- ✓ Records of action taken when cold ischemia and fixation times are consistently outside of required parameters or are not available to the laboratory

REFERENCES

1) Wolff AC, Somerfield MR, Dowsett M, et al. Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologist Guideline Update. *Arch Pathol Lab Med.* Published online June 7, 2023. doi: 10.5858/arpa.2023-0905-SA.
2) Compton CC, Robb JA, Anderson MW, et al. Preanalytics and Precision Pathology: Pathology Practices to Ensure Molecular Integrity of Cancer Patient Biospecimens for Precision Medicine. *Arch Pathol Lab Med.* 2019;143(11)1346-63.
3) Allison KH, Hammond EH, Dowsett M, et al. Estrogen and Progesterone Receptor Testing in Breast Cancer: American Society of Clinical Oncology/College of American Pathologists Guideline Update *Arch Pathol Lab Med.* 2020; 144(5):545-63.

ANP.22985 Predictive Marker Testing - Decalcified Specimens **Phase I**

If the laboratory performs in situ hybridization (ISH) and/or immunohistochemistry for predictive markers on decalcified specimens, the assay was validated for decalcified specimens or the results include a disclaimer noting that these assays have not been validated on decalcified specimens.

NOTE: Decalcification may adversely affect patient results. If the assay has not been validated for decalcified specimens, a disclaimer must be included in the patient report, such as, "This assay has not been validated on decalcified tissues. Results should be interpreted with caution given the possibility of false negative results on decalcified specimens."

Use of decalcification solutions with strong acids is not recommended.

REFERENCES

1) Darvishian F et al. Impact of decalcification on receptor status in breast cancer. *The Breast Journal* 2011. 17:689-91.
2) Hanna W et al. Testing for HER2 in breast cancer: current pathology challenges faced in Canada. *Curr Oncol* 2012. 19:315-323.
3) Gertych A et al. Effects of tissue decalcification on the quantification of breast cancer biomarkers by digital image analysis. *Diag Pathol* 2014. 9:213.

DIGITAL IMAGE ANALYSIS

This section applies to laboratories using digital image analysis to evaluate specific features in a tissue section image following enhancement and processing of that image, including but not limited to, IHC (eg, HER2 and ER), morphometric analysis, and ISH. This checklist section does not apply to laboratories that are imaging slides for manual scoring or review by an individual.

If predictive marker testing is performed, additional requirements in the Predictive Markers section also apply.

VALIDATION AND CALIBRATION

Inspector Instructions:

READ	• Sampling of validation and calibration policies and procedures • Sampling of validation/calibration records
ASK	• What is your course of action if calibration is unacceptable?

ANP.23004 Preanalytic Testing Phase Validation **Phase II**

There are records showing that the preanalytic phase of the test system has been validated for each assay, including fixation and processing.

NOTE: Applicable requirements under the "Test Method Validation and Verification-Nonwaived Tests" section of the All Common Checklist must be followed.

REFERENCES
1) Hipp J, Bauer TW, Bui MM, et al. *CAP Pathology Resource Guide: Digital Pathology.* Version 7.0(2). Northfield, IL: College of American Pathologists; 2017.

ANP.23009 Calibration **Phase II**

Each instrument is calibrated in accordance with the specifications of the instrument.

REFERENCES
1) Hipp J, Bauer TW, Bui MM, et al. *CAP Pathology Resource Guide: Digital Pathology.* Version 7.0(2). Northfield, IL: College of American Pathologists; 2017.

QUALITY CONTROL

Inspector Instructions:

READ	• Sampling of QC policies and procedures • Sampling of QC records
ASK	• How do you determine when QC is unacceptable and corrective actions are needed?
DISCOVER	• Select several occurrences in which QC is out of range and follow records to determine if the steps taken follow the laboratory procedure for corrective action

ANP.23018 Quality Control - Digital Image Analysis **Phase II**

Control materials are run concurrently with patient specimens to ensure appropriate functionality of the digital image system.

NOTE: Controls are samples that act as surrogates for patient/client specimens. They are periodically processed like a patient/client sample to monitor the ongoing performance of the analytic process. Controls should check test performance at relevant decision points for the digital image analysis system.

For qualitative tests, a positive and a negative control may be sufficient. For quantitative or semiquantitative tests, controls at more than one level should be used.

Evidence of Compliance:
✓ Records of QC results

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Medicare, Medicaid and CLIA programs; CLIA fee collection; correction and final rule. *Fed Register.* 2003(Jan 24):5232 [42CFR493.1256(d)(3)(i)]
2) Clinical and Laboratory Standards Institute (CLSI). *Statistical Quality Control for Quantitative Measurement Procedures: Principles and Definitions.* 4th ed. CLSI guideline C24. Clinical and Laboratory Standards Institute, Wayne, PA, 2016.

ANP.23020 QC Handling **Phase II**

The laboratory tests control specimens in the same manner and by the same personnel as patient/client samples.

NOTE: Personnel who routinely perform patient/client testing must analyze QC specimens; however, this does not imply that each operator must perform QC daily. Personnel must participate in QC on a regular basis. To the extent possible, all steps of the testing process must be controlled.

Evidence of Compliance:
- ✓ Records reflecting that QC is run by the same personnel performing patient testing

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2003(Jan 24):7166 [42CFR493.1256(d)(8)]; 2) *ibid*, 2003(Jan 24):3708[42CFR493.1256(d)(7-8)

ANP.23022 QC Confirmation of Acceptability **Phase II**

Personnel review control results for acceptability before reporting patient/client results.

Evidence of Compliance:
- ✓ Records of control result approval

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2003(Jan 24):7166 [42CFR493.1256(f)]
2) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2003(Jan 24):3708 [42CFR493.1256(d)(6)]

ANP.23025 Monthly QC Review **Phase II**

The laboratory director or designee reviews and assesses quality control data at least monthly.

NOTE: The reviewer must record follow-up for outliers, trends, or omissions that were not previously addressed.

The QC data for tests performed less frequently than once per month may be reviewed when the tests are performed.

Evidence of Compliance:
- ✓ Records of QC review **AND**
- ✓ Records of corrective action taken when acceptability criteria are not met

SPECIMEN ANALYSIS

Inspector Instructions:

READ

- Sampling of specimen analysis policies and procedures

ANP.23027 Area of Analysis **Phase II**

A qualified pathologist selects or confirms the appropriate areas for analysis prior to reporting the results, as applicable.

NOTE: Specimens that do not represent "in situ" samples embedded in paraffin may not require pathologist review. Examples include cultured preparations and direct preparations of liquid specimens including blood, urine, pleural fluid, etc.

ANP.23028 Analysis Guidelines **Phase II**

There are written guidelines for identification of appropriate areas and cells for analysis.

NOTE: Evaluation of heterogeneous cell populations requires use of specific guidelines and procedures to ensure analysis of the appropriate areas and/or cells, particularly if there is background or nonspecific staining, or if there is cell debris, endogenous pigment, and/or artifacts of aging, sectioning or preparation.

Test results may be affected by fixation parameters, including time of fixation, type of fixative used, hemorrhage, necrosis, and autolysis of tissue.

REPORTS

Inspector Instructions:

READ

- Sampling of patient reports for completeness

ANP.23036 Final Report Interpretation **Phase II**

The final report includes an interpretation by the responsible pathologist.

NOTE: Interpretation requires correlation with the light microscopic features such as routine histology, immunohistochemistry, cytologic material, cytogenetic and molecular studies, and/or clinical information.

ANP.23038 Final Report Elements - Digital Image Analysis **Phase II**

The final report includes the specimen source, name of the vendor and imaging system used, the antibody clone or probe, and the detection method, as well as any limitations of the test result, if applicable.

PERSONNEL

Inspector Instructions:

READ

- Records of personnel education and experience

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ANP.23041 Testing Personnel Qualifications **Phase II**

Personnel who are responsible for evaluating the imaging system data are qualified as high-complexity testing personnel.

NOTE: Evaluation of imaging system data includes review of images and data to ensure that they met the quality standards to be readable/accessible for a pathologist to effectively use the images/data to render an interpretation/diagnosis. Refer to the Laboratory General Checklist for high complexity testing personnel (GEN.54750) and general supervisor (GEN.53600) qualifications. Detailed information on personnel qualifications can be found in the CAP Personnel Guidance Document located in e-LAB Solutions Suite on cap.org (log-in required) under Accreditation Resources - Accreditation Checklists.

Evidence of Compliance:

- ✓ Records of qualifications including diploma, transcript(s), primary source verification report, equivalency evaluation, or current license (if required) **AND**
- ✓ Work history in related field

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28):[42CFR493.1489]

INSTRUMENTS AND EQUIPMENT

The checklist requirements in this section should be used in conjunction with the requirements in the All Common Checklist relating to instruments and equipment.

Inspector Instructions:

READ

- Sampling of tissue processor procedures and records
- Sampling of paraffin bath and dispenser records
- Sampling of microtome records
- Sampling of cryostat decontamination records
- Records of Ex Vivo Microscopy system validation
- Sampling of Ex Vivo Microscopy equipment function checks

	• Instruments/equipment (clean and well-maintained)
	• How does your laboratory prevent cross-contamination between specimens or cases at the processing, embedding, and microtomy stations? • Please explain your process for refilling tissue processor solutions
	• If problems are identified during the review of instruments and equipment, or when asking questions, further evaluate the laboratory's responses, corrective actions and resolutions • Select a representative assay and follow the entire process from specimen receipt to final result reporting

ANP.23100 Tissue Processor Solutions **Phase I**

Tissue processor solutions are changed at intervals appropriate for the workload.

NOTE: When solutions are changed, they must be entirely replaced with new solution and not just "topped off."

Evidence of Compliance:

✓ Records of solution changes at the defined frequency

REFERENCES
1) Baunoch DA, *et al*. Troubleshooting problems in processing, staining. *Advance/Lab*. 1999(Oct));8(10):59-64
2) Compton CC, Robb JA, Anderson MW, et al. Preanalytics and Precision Pathology: Pathology Practices to Ensure Molecular Integrity of Cancer Patient Biospecimens for Precision Medicine. *Arch Pathol Lab Med.* 2019;143(11)1346-63.

ANP.23120 Tissue Processing Programs - Validation **Phase II**

Tissue processing programs are validated.

NOTE: To validate new processing programs, laboratories should run tissue samples of the same size, thickness and fixation in duplicate. Reagents on the processor(s) should be comparable, eg, all fresh reagents. Process, embed, cut, and stain slides at the same time and evaluate the quality of the blocks, eg, firmness, ease of cutting. The slides should be evaluated by the pathologist without knowledge of which processing program was used and graded on quality of section and staining. The new processing program must be of adequate quality before being put into use.

This method may also be used to verify a routine processing program before putting a new processor into clinical service.

For tissue programs in place prior to July 31, 2012, ongoing records of acceptable tissue processing may be used to demonstrate compliance with this requirement.

Evidence of Compliance:

✓ Validation records of processing program changes

ANP.23130 Tissue Processing Programs **Phase I**

Specific tissue processing programs are available for different types and sizes of specimens.

NOTE: To achieve acceptable results for diagnostic purposes, processing programs may be needed for different sizes and types of specimens. Biopsy specimens may be processed on a shorter schedule than larger specimens; large, dense or fatty specimens and brain specimens will not process adequately on a shorter schedule. A variety of processing programs should be defined and used to achieve good processing results.

Evidence of Compliance:

✓ Defined processing programs for various types and sizes of specimen tissues

ANP.23350 Paraffin Baths, Flotation Baths, and Embedding Stations Phase II

Paraffin baths, flotation baths, and embedding stations are clean and well-maintained.

NOTE: Instruments must be clean and well-maintained (eg, tissue processors, embedding centers, dispensers, flotation baths, stain lines, coverslipping equipment). The temperature of the paraffin dispenser and paraffin baths must be correct for the type of paraffin used. At a minimum, the equipment must be maintained according to the manufacturer's instructions and paraffin temperatures recorded.

The CAP recommends the use of high-quality paraffin with a melting point <60°C. The benefit of low-melt paraffin is that it is removed more efficiently during de-paraffinization and/or antigen retrieval. Efficient paraffin removal is essential for all molecular analyses.

REFERENCES
1) Gephardt GN, Zarbo RJ. Extraneous tissue in surgical pathology. A College of American Pathologists Q-Probes study of 275 laboratories. *Arch Pathol Lab Med.* 1996;120:1009-1014
2) Compton CC, Robb JA, Anderson MW, et al. Preanalytics and Precision Pathology: Pathology Practices to Ensure Molecular Integrity of Cancer Patient Biospecimens for Precision Medicine. *Arch Pathol Lab Med.* 2019;143(11)1346-63.

ANP.23400 Microtome Maintenance Phase I

Microtomes and microtome knives are clean and well-maintained.

NOTE:

1. *Microtomes must be clean, properly lubricated, and without excessive play in the advance mechanism*
2. *Knives must be sharp and free of nicks*

ANP.23410 Cryostat Decontamination Phase II

The cryostat is decontaminated at defined intervals and under defined circumstances.

NOTE: The cryostat must be defrosted and decontaminated by wiping all exposed surfaces with tuberculocidal disinfectant. The cryostat should be at room temperature during decontamination unless otherwise specified by the manufacturer. Decontamination must be done at an interval appropriate for the institution; this must be weekly for instruments used daily. Trimmings and sections of tissue that accumulate inside the cryostat must be removed during decontamination. Although not a requirement, cut-resistant gloves should be worn when changing knife blades.

Evidence of Compliance:

✓ Records of cryostat decontamination

REFERENCES
1) Clinical and Laboratory Standards Institute. *Protection of Laboratory Workers From Occupationally Acquired Infections; Approved Guideline.* 4th ed. CLSI Document M29-A4. Clinical and Laboratory Standards Institute, Wayne, PA; 2014.
2) US Environmental Protection Agency: Antimicrobials Products Tested or Pending Testing. https://www.epa.gov/pesticide-registration/antimicrobials-products-tested-or-pending-testing Accessed April 19, 2018.

ANP.23420 ISH Slide Processing System Temperature Checks Phase II

Individual slide slots (or a representative sample thereof) of in situ hybridization (ISH) temperature controlled slide processing systems are checked for temperature accuracy before being placed in service and at least annually thereafter.

Evidence of Compliance:
- ✓ Records of equipment verification

EX VIVO MICROSCOPY

Ex Vivo Microscopy (EVM) refers exclusively to the use of imaging systems such as confocal microscopy, optical coherence tomography, multiphoton microscopy, optical spectroscopy/spectroscopic imaging and similar imaging technologies for evaluation of specimens that have been removed from the patient. The In Vivo Microscopy section of this checklist should be used for in vivo applications of these systems.

ANP.23560 System Validation - EVM **Phase I**

The laboratory validates Ex Vivo Microscopy (EVM) technology before it is used for the intended purpose(s).

NOTE: The specific components of the validation study are left to the discretion of the laboratory. However, studies should be performed using an adequate number of cases, data should be evaluated, and a summary statement provided prior to implementation. Records of how discordant data or unacceptable variations from the expected were resolved are required.

As general guiding principles, the validation process should:
- *Closely emulate the real-world environment and involve tissue types and clinical settings relevant to the intended use(s)*
- *Be carried out by or under the supervision of a pathologist adequately trained to use the EVM system*
- *Encompass the entire EVM system, with reevaluation if a significant change is made to a previously validated system.*

Evidence of Compliance:
- ✓ Records of completed validation study with supporting validation data, review and approval

ANP.23570 Function Checks - EVM **Phase II**

The laboratory performs and records regular function checks on the Ex Vivo Microscopy (EVM) system/instrument.

NOTE: Function checks include confirmation that an instrument or item of equipment operates according to manufacturer's specifications before routine use, at prescribed intervals, or after minor adjustment. Depending on the type of system, function checks may include calibration.

Evidence of Compliance:
- ✓ Records of function checks and calibration, as applicable

ANP.23580 Method Performance Specifications Availability - EVM **Phase II**

The current Ex Vivo Microscopy (EVM) methods and all significant changes to analytical methodology, including performance specifications and supporting validation data, are retained by the laboratory.

NOTE: Records should include, but are not limited to, components of EVM equipment, software systems, and image viewing systems.

Evidence of Compliance:

✓ Records of changes to analytical methodology

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register.* 2003(Jan 24):7163 [42CFR493.1291(e)].

PHYSICAL FACILITIES

STORAGE AND SUPPLY

Inspector Instructions:

	• Sampling of storage temperature records or records confirming storage conditions at off-site facilities
	• On-site storage areas for slides and paraffin blocks (organized, temperature-controlled, pest-free)
	• Review a sampling of storage temperature records. If corrective actions are not taken to address out of range temperatures, cite COM.30800.

ANP.23700 Slide and Block Storage **Phase I**

Slides and paraffin blocks are properly stored in a temperature-controlled, pest-free, organized manner (ie, accessible for retrieval and properly identified).

NOTE: Slides and blocks must be stored in a manner to prevent contamination from blood or other fluids or tissues and be readily accessible for retrieval.

The storage area for blocks must be cool and dry to prevent blocks from melting together and to maintain tissue integrity. The CAP recommends (but does not require) ambient temperatures in block storage areas to be less than 27°C (as lower storage temperatures slow down DNA, RNA, and protein degradation).

For laboratories using off-site storage facilities, the laboratory director or designee must confirm that storage requirements are met.

Evidence of Compliance:

✓ Records of storage temperature monitoring (on-site and off-site locations), including deviations

REFERENCES

1) Compton CC, Robb JA, Anderson MW, et al. Preanalytics and Precision Pathology: Pathology Practices to Ensure Molecular Integrity of Cancer Patient Biospecimens for Precision Medicine. *Arch Pathol Lab Med.* 2019;143(11)1346-63.
2) National Cancer Institute. NCI Best Practices for Biospecimen Resources. B.6.6 Biospecimen Storage. March 2016.

HISTOLOGY LABORATORY SAFETY

NOTE TO THE INSPECTOR: The inspector should review relevant requirements from the Safety section of the Laboratory General Checklist, to assure that the histology laboratory is in compliance.

The following requirements pertain specifically to the histology laboratory.

Inspector Instructions:

READ	• Sampling of histology safety policies and procedures • Sampling of microwave reproducibility and ventilation checks
ASK	• How does your laboratory ensure the safe handling of suspected CJD tissues?

ANP.24050 Automated Tissue Processor **Phase II**

Each open (ie, generative of flammable vapors into the ambient workspace) automated tissue processor is operated at least five feet (1.5 m) from the storage of combustible materials and from the paraffin dispenser.

NOTE: Tissue processors that operate as a closed system confine ignitable vapor hazards within the processor and thus do not pose a hazard requiring five feet of separation.

Each open (ie, generative of flammable vapors into the ambient workspace) automated tissue processor must be located at least five feet from the storage of combustible materials unless separated by one-hour fire-resistive construction. Flammable and combustible liquids must not be positioned near sources of heat or ignition. At least five feet must separate each open system tissue processor from the paraffin dispenser.

ANP.24100 Microtome Knife Storage **Phase II**

Microtome knives are stored in original containers or by some other means to avoid personnel injury or equipment damage.

*****REVISED** 08/24/2023***

ANP.24200 Infectious Waste Disposal **Phase II**

Potentially infectious biologic materials (eg, organs, tissues, body fluids) and other contaminated materials (eg, prostheses, pacemakers) are safely stored and disposed of in compliance with national, federal, state (or provincial), and local laws and regulations as well as hospital/organizational guidelines.

REFERENCES
1) Clinical and Laboratory Standards Institute. *Protection of Laboratory Workers From Occupationally Acquired Infections; Approved Guideline.* 4th ed. CLSI document M29-A4. Clinical and Laboratory Standards Institute, Wayne, PA; 2014.
2) Clinical and Laboratory Standards Institute (CLSI). *Clinical Laboratory Waste Management; Approved Guideline—Third Edition*. CLSI document GP05-A3 (ISBN 1-56238-744-8). CLSI, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898, USA 2011.

ANP.24300 Special Handling of Transmissible Spongiform Encephalopathies (TSE) Phase II

The laboratory handles tissues from cases of suspected transmissible spongiform encephalopathies (TSE), including Creutzfeldt-Jakob disease (CJD), using procedures that minimize the risk of transmission.

NOTE: Specialized handling instructions and an appropriate process for intra-laboratory communication must be addressed in the written procedure.

Neuropathology tissues from suspected cases of Creutzfeldt-Jakob disease should be treated with formic acid. Paraffin blocks and slides prepared from formic-acid-treated tissue may be handled routinely.

If tissue has not been treated with formic acid, it must be hand-processed and treated as containing potentially transmissible prions. Double gloves must be worn at all times when handling such tissue. All solutions, including water washes, must be collected and treated with equal volumes of fresh undiluted household bleach for 60 minutes before disposal. Disposables, glassware, tools, etc. must be handled according to the procedures employed in the autopsy room described elsewhere in this checklist. All scraps of paraffin and unused sections should be collected on a disposable sheet. The microtome may be wiped with bleach or NaOH solution. No special precautions are needed in handling intact glass slides once they have been coverslipped. Broken slides should be decontaminated and discarded. Paraffin blocks should be stored in a bag or box and labeled as infectious. Alternatively, the laboratory may reseal the cut surface of the blocks with paraffin. Additional information may be found in the Autopsy section of this checklist.

REFERENCES

1) Brown W, *et al*. A simple and effective method for inactivating virus activity in formalin-fixed tissue samples from patients with Creutzfeldt-Jakob disease. *Neurology*. 1990;40:887-890
2) Brown P. Guidelines for high risk autopsy cases: special precautions for Creutzfeldt-Jakob disease. In: Hutchins G, ed. Autopsy performance and reporting. Northfield, IL: College of American Pathologists, 1990:68-74
3) Greenblatt, M. Q&A. Northfield, IL: College of American Pathologists, CAP Today 1993(March);7(3):69-70
4) Crain BJ. Safety tips for anatomic studies of possible CJD. Northfield, IL: College of American Pathologists, *CAP Today*. 1996(Jan);10(1):56
5) Rank JP. How can histotechnologists protect themselves from Creutzfeldt-Jakob disease. *Lab Med.* 1999;30:305
6) Nixon RR. Prions and prion diseases. *Lab Med.* 1999;30:335-338
7) Collins KA, ed. *Autopsy Performance and Reporting.* 3rd ed. Northfield, IL: CAP Press: 2017.

ANP.27150 Glass Slide/Block Disposal Phase I

The laboratory safely disposes of used glass slides and paraffin blocks.

NOTE: The laboratory must follow CAP retention requirements for slides and blocks (refer to checklist requirement in the Surgical Pathology Reports section of this checklist).

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). Clinical Laboratory Waste Management; Approved Guideline—Third Edition. CLSI document GP05-A3 (ISBN 1-56238-744-8). CLSI, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898, USA 2011.
2) Title 45, CFR; parts 160, 162, And 164, Health Insurance Reform: Security Standards; Final Rule, Federal Register, Published Feb. 20, 2003. Health Insurance Reform].

NOTE: The following four requirements apply to microwave devices used in the histology laboratory.

ANP.27170 Microwave Usage Phase I

Microwave devices are used in accordance with manufacturer's instructions.

ANP.28290 Microwave Monitoring Phase I

Microwave devices are monitored for reproducibility at least annually.

NOTE: "Reproducibility" is defined as consistency in diagnostic quality obtained from microwave equipment and procedures. For some devices, reproducibility may be evaluated by monitoring

the temperatures of identical samples after microwave processing. For those microwave devices (particularly those incorporated into histology processing equipment) that use temperature-independent methods to evaluate reproducibility, the reproducibility must be assessed following instrument manufacturer's instructions.

The microwave device must be tested for radiation leakage if there is visible damage to the device. A description of the specific damage along with the result of the test must be recorded.

Evidence of Compliance:

- ✓ Records of monitoring the diagnostic quality of specimens processed using microwaves

ANP.28860 Microwave Container Venting **Phase I**

All containers used in microwave devices are vented or are used in compliance with manufacturer's instructions for the microwave instrumentation used.

NOTE: Venting of containers is necessary so that processing occurs at atmospheric pressure, to prevent explosion. For procedures using pressure above that of the atmosphere, specialized containers must be used, with strict adherence to manufacturer's instructions.

ANP.29430 Microwave Venting **Phase I**

Microwave devices are properly vented and the effectiveness of ventilation is monitored at least annually.

NOTE: Some types of microwave devices need to be operated in an appropriate ventilation hood to contain airborne chemical contaminants and potentially infectious agents. Before operation of the microwave device, flammable and corrosive reagents must be removed from the hood to prevent fire or chemical damage to the electronic components of the device. Microwave devices used outside a fume hood must have an integral fume extractor certified by the manufacturer for use in a clinical laboratory.

This checklist item does not apply to microwave devices that are designed by the manufacturer to operate without venting. It also does not apply if only non-hazardous reagents (as defined in the safety data sheets) and non-infectious specimens (eg, paraffin specimens) are used in the device.

Evidence of Compliance:

- ✓ Records of annual evaluation of ventilation effectiveness

CIRCULATING TUMOR CELL ANALYSIS (CTC)

This section applies to laboratories using a test system to prepare, analyze, and quantify circulating tumor cells in whole blood, including immunomagnetic separation and labeling using antibodies and fluorescent stain.

VALIDATION AND CALIBRATION

Inspector Instructions:

READ

- Sampling of validation and calibration policies and procedures
- Sampling of validation/calibration records

	• Sampling of calibration materials (labeling) • Sampling of calibration slides (labeling)
	• What is your course of action if calibration is unacceptable?

ANP.29500 Calibration **Phase II**

The test system is verified/calibrated, as appropriate, to check performance prior to testing.

NOTE: An appropriate process is used to check the optical and mechanical performance of the system. This may be accomplished using the manufacturer's provided material. Manufacturer's instructions must be followed regarding when and how often the verification/calibration is performed.

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. Fed Register. 2003(Jan 24): [42CFR493.1255]

ANP.29510 Recalibration **Phase II**

The test system is recalibrated when calibration verification fails to meet the established criteria provided by the manufacturer.

Evidence of Compliance:

✓ Records of recalibration, if calibration or calibration verification has failed

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. Fed Register. 2003(Jan 24): [42CFR493.1255(a)(3)]

QUALITY CONTROL

Controls are samples that act as surrogates for patient/client specimens. They are periodically processed like a patient/client sample to monitor the ongoing performance of the analytic process.

Inspector Instructions:

	• Sampling of QC policies and procedures • Sampling of QC records
	• How do you determine when QC is unacceptable and corrective action is needed?

DISCOVER

- Select several occurrences in which QC is out of range and follow documentation to determine if the steps taken follow the laboratory procedure for corrective action

ANP.29520 Daily QC **Phase II**

Control materials at more than one level are run each day of patient testing.

Evidence of Compliance:
- ✓ Records of QC results

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. Fed Register. 2003(Jan 24):5232 [42CFR493.1256(d)(3)(i)]
2) Clinical and Laboratory Standards Institute (CLSI). *Statistical Quality Control for Quantitative Measurement Procedures: Principles and Definitions.* 4th ed. CLSI guideline C24. Clinical and Laboratory Standards Institute, Wayne, PA, 2016.

ANP.29530 QC Handling **Phase II**

The laboratory tests control specimens in the same manner and by the same personnel as patient/client samples.

NOTE: Personnel who routinely perform patient/client testing must analyze QC specimens; however, this does not imply that each operator must perform QC daily. Personnel must participate in QC on a regular basis. To the extent possible, all steps of the testing process must be controlled.

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. Fed Register. 2003(Jan 24): 7166[42CFR493.1256(d)(8)]; 2)ibid 2003(Jan 24):3708[42CFR493.1256(d)(7-8)]

ANP.29540 QC Confirmation of Acceptability **Phase II**

Personnel review control results for acceptability before reporting patient/client results.

Evidence of Compliance:
- ✓ Records of control result approval

REFERENCES
1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. Fed Register. 2003(Jan 24):7166[42CFR493.1256(f)]
2) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. Fed Register. 2003(Jan 24):3708[42CFR493.1256(d)(6)]

ANP.29550 Monthly QC Review **Phase II**

The laboratory director or designee reviews and assesses quality control data at least monthly.

NOTE: The reviewer must record follow-up for outliers, trends, or omissions that were not previously addressed.

The QC data for tests performed less frequently than once per month may be reviewed when the tests are performed.

Evidence of Compliance:
- ✓ Records of QC review **AND**
- ✓ Records of corrective action taken when acceptability criteria are not met

SPECIMEN ANALYSIS

Inspector Instructions:

- *Sampling of specimen analysis policies and procedures*

ANP.29570 Carryover Detection **Phase II**

The laboratory has a process to detect and evaluate potential carryover.

NOTE: The process must address criteria for the evaluation of potential carryover from a preceding elevated (high concentration) sample to the following sample in each analytical batch analysis and appropriate actions (eg, wash cycle) to be taken.

Evidence of Compliance:

✓ Records of reassessment of samples with potential carryover

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). *Preliminary Evaluation of Quantitative Medical Laboratory Measurement Procedures.* 4th ed. CLSI guideline EP10. Clinical and Laboratory Standards Institute, Wayne, PA; 2024.

ANP.29580 Analysis Guidelines **Phase II**

Written guidelines are available for differentiating circulating tumor cells from other nucleated circulating cells, such as leukocytes, as well as other artifacts.

NOTE: Evaluation of circulating tumor cells requires the use of specific guidelines and procedures to distinguish circulating tumor cells from white blood cells and artifacts.

REPORTS

Inspector Instructions:

- Sampling of patient reports for completeness

ANP.29590 Report Review **Phase II**

All reports are reviewed and signed by a pathologist or other qualified physician.

NOTE: The individual who signs the final report must be a pathologist or other physician who qualifies as high complexity laboratory director/technical supervisor and has at least one year of training and experience in the specific area of testing.

The inspector must review a sampling of reports issued since the previous on-site inspection, representing at least the most common types of specimens seen in the laboratory. When diagnostic reports are generated by computer or telecommunications equipment, the actual signature or initials of the pathologist or other qualified physician may not appear on the report. The laboratory must have a procedure that ensures and provides a record that the responsible

physician has reviewed and approved the completed report before its release. In the occasional situation when the diagnosing physician is not available for timely review and approval of the completed report, the laboratory may have a policy and procedure for review and approval of that report by another qualified individual. In that circumstance, the names and responsibilities of both the individual who made the diagnosis and the individual who performs final verification must appear on the report.

ANP.29600 Final Report Elements **Phase II**

The final report includes the criteria for favorable and unfavorable results.

NOTE: The range determining favorable and unfavorable results may be determined by the laboratory's validation of the test system, or through evaluation of manufacturer's or other published information.

REFERENCES
1) Henry, Cannon, Winkleman, Eds., Clinical Chemistry-Principles and Technique, 2nd Ed., 1974:343-371
2) Clinical and Laboratory Standards Institute (CLSI). *Defining, Establishing, and Verifying Reference Intervals in the Clinical Laboratory - Approved Guideline-Third Edition.* CLSI Document EP28-A3c. Clinical and Laboratory Standards Institute, Wayne, PA; 2010.

ANP.29610 Final Report Elements **Phase II**

The final report includes the specimen source, name of the vendor and analyzer used, as well as any limitations of the test result, if applicable.

PERSONNEL

Inspector Instructions:

READ

- Records of personnel education and experience

ANP.29620 Morphologic Observation Assessment **Phase II**

The laboratory at least annually assesses morphologic observations among non-pathologist personnel performing CTC analysis, to ensure consistency.

NOTE: Suggested methods to accomplish this include:
1. *Circulation of images with specific qualitative abnormalities for the different cell populations evaluated*
2. *Use of digital images*

Evidence of Compliance:
✓ Employee records documenting morphologic assessment

*****REVISED** 12/26/2024***
ANP.29630 Testing Personnel Qualifications **Phase II**

Personnel who operate the analyzer are qualified as high-complexity testing personnel.

NOTE: Refer to the Laboratory General Checklist for high complexity testing personnel (GEN.54750) and general supervisor (GEN.53600) qualifications. Detailed information on personnel qualifications can be found in the CAP Personnel Guidance Document located in e-

LAB Solutions Suite on cap.org (log-in required) under Accreditation Resources - Accreditation Checklists.

Evidence of Compliance:

- ✓ Records of qualifications including diploma, transcript(s), primary source verification report, equivalency evaluation, or current license (if required)
- ✓ Work history in related field

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2023(Dec 28):[42CFR493.1489].

FLOW CYTOMETRY DATA INTERPRETATION

This section applies to laboratories that perform the interpretation component of flow cytometry data where the flow cytometry technical component is performed at another laboratory (different CAP or CLIA number).

Inspector Instructions:

READ	• Sampling of flow cytometry immunophenotyping interpretation policies and procedures • Sampling of peer education records • Sampling of patient reports and histograms (to include abnormal cell immunophenotypes, interpretive comments, disclaimer when Class I ASRs are used, lower level of enumeration for rare event flow cytometric assays, etc.) • Record retention policy (gated dot plots/histograms)
ASK	• Under what circumstances does your laboratory evaluate the percentage of viable cells? • How does your laboratory ensure that the testing is sufficiently comprehensive to facilitate accurate diagnosis, with appropriate gating and retention of records? • How does your laboratory distinguish neoplastic from non-neoplastic cells?

ANP.29650 Peer Education Program **Phase II**

For laboratories that perform only interpretations of flow immunophenotyping data, the laboratory participates in a peer education program in interpretive flow cytometry.

NOTE: This checklist item applies to laboratories that do not perform staining and acquisition of flow cytometry data, but which receive list mode files and/or representative dot plots from an outside laboratory for interpretation.

Programs dealing with analysis of flow data from hematolymphoid neoplasias and related benign conditions provide valuable educational opportunities for peer-performance comparisons. While not completely emulating the clinical setting involved in flow immunophenotyping, the peer data developed by these programs can provide a useful benchmark against which laboratory performance can be evaluated.

Evidence of Compliance:

- ✓ Records of enrollment/participation in an educational peer-comparison program for interpretive flow cytometry **OR** records for participation in a laboratory-developed program circulating cases with other laboratories or within the laboratory's own practice with records of peer review

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). *Clinical Flow Cytometric Analysis of Neoplastic Hematolymphoid Cells; Approved Guideline—Second Edition*. CLSI document H43-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2007.

ANP.29670 Record Retention - Flow Cytometry **Phase II**

Flow cytometry data for evaluation of hematolymphoid neoplasia, PNH, and congenital immunodeficiency evaluations are retained for at least 10 years. Routine lymphocyte subset and CD34+ enumeration data are retained for at least two years.

NOTE: Stored data must include raw listmode data and final interpretation. Storage of gated data is encouraged but not required.

If the laboratory responsible for the interpretation component (interpretation only flow cytometry) does not retain the data locally, it must ensure that the data are being retained for the full retention period, such as with an agreement with the laboratory performing the flow cytometry technical component (see FLO.23706).

Evidence of Compliance:

- ✓ Data files with or without gated dot plots and histograms **OR**
- ✓ Written agreement with laboratory performing technical component for data storage

*****NEW** 12/26/2024***

ANP.29680 Cellular Viability **Phase II**

The laboratory ensures that the percentage of viable cells in each test specimen is provided by the laboratory performing the flow technical component, when applicable.

NOTE: Selective loss of cell subpopulations and/or the presence of dead cells may lead to spurious results. This does not mean that all specimens with low viability must be rejected. Finding an abnormal population in a specimen with poor viability may be valuable but the failure to find an abnormality should be interpreted with caution. If specimen viability is below the established laboratory minimum, test results may not be reliable and this should be noted in the test report. Routine viability testing may not be necessary. However, viability testing of specimens with a high risk of loss of viability, such as disaggregated lymph node specimens, is required.

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). *Clinical Flow Cytometric Analysis of Neoplastic Hematolymphoid Cells; Approved Guideline—Second Edition*. CLSI document H43-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2007.

ANP.29690 Appropriate Antibodies **Phase II**

The panel of antibodies used is sufficiently comprehensive to address the clinical problem under consideration.

NOTE: Knowledge of the clinical situation and/or the morphologic appearance of the abnormal cells may help to guide antibody selection. Because antibodies vary in their degree of lineage specificity, and because many leukemias lack one or more antigens expected to be present on normal cells of a particular lineage, it is recommended that a certain degree of redundancy be built into a panel used for leukemia phenotyping.

Laboratories interpreting immunophenotyping data from an outside facility (ie, technical flow laboratory) must ensure that antibody panels used for interpretation are appropriate. There must be a process by which individuals interpreting the results can provide feedback on the appropriateness of the antibody panels used. Records of such feedback and corrective action taken when problems are identified may be incorporated into the laboratory's quality management system.

Evidence of Compliance:

- ✓ Gated data plots, histograms, and patient reports

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). *Clinical Flow Cytometric Analysis of Neoplastic Hematolymphoid Cells; Approved Guideline—Second Edition*. CLSI document H43-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2007.

2) Rimsza LM, *et al*. The presence of CD34+ cell clusters predicts impending relapse in children with acute lymphoblastic leukemia receiving maintenance chemotherapy. *Am J Clin Pathol.* 1998;110:313-320
3) Siebert JD, *et al*. Flow cytometry utility in subtyping components of composite and sequential lymphomas. *Am J Clin Pathol.* 1998;110:536
4) Kampalath B, *et al*. CD19 on T cells in follicular lymphocytic leukemia/small lymphocytic lymphoma, and T-cell-rich B-cell lymphoma: an enigma. *Am J Clin Pathol.* 1998;110:536
5) Krasinskas AM, *et al*. The usefulness of CD64, other monocyte-associated antigens, and CD45 gating in the subclassification of acute myeloid leukemias with monocytic differentiation. *Am J Clin Pathol.* 1998;110:797-805
6) Wood BL, *et al*. 2006 Bethesda International Consensus Recommendations on the Immunophenotypic Analysis of Hematolymphoid Neoplasia by Flow Cytometry: Optimal Reagents and Reporting for the Flow Cytometric Diagnosis of Hematopoietic Neoplasia. Cytometry Part B (Clinical Cytometry) 2007;72B:S12-S22

ANP.29710 Gating Technique **Phase II**

The laboratory interpreting flow cytometry immunophenotyping data ensures that appropriate gating techniques are used.

NOTE: There must be a process by which individuals interpreting the results can provide feedback on the appropriateness of the gating techniques used. Records of such feedback and corrective action taken when problems are identified may be incorporated into the laboratory's quality management system.

*****NEW** 12/26/2024***

ANP.29720 Rare Event Flow Cytometric Assays **Phase I**

For rare event flow cytometric assays, the lower limit of enumeration is included in the diagnostic report.

NOTE: When performing rare event flow cytometric assays (such as minimal residual disease (MRD) and/or high sensitivity PNH testing) on low cellularity samples, the number of events needed to achieve the laboratory's validated lower limit of enumeration/sensitivity may not be able to be collected. In these cases, laboratories must clearly state in the flow cytometric assay report that the sample was paucicellular and may thus have reduced analytical sensitivity.

ANP.29730 Final Report **Phase II**

The final report includes information about the immunophenotype of the abnormal cells, if identified, and comments necessary to facilitate the interpretation.

NOTE: Clinical information and available pathologic material should be reviewed to select appropriate antibodies. In cases of suspected hematolymphoid neoplasia direct morphologic correlation of all applicable sample types should be performed when possible and clinically appropriate. In cases involving leukemia and lymphoma phenotyping, correlation should be made between the immunologic and pathologic results. The flow histograms, rather than just the percentage of positive cells, should be reviewed by the interpreting pathologist in difficult cases. The peak channel and shapes of the curves may be helpful in identifying clonal populations.

Reporting requirements for use of analyte-specific reagents and other reagents used in laboratory-developed tests are included in the All Common Checklist (COM.40850).

REFERENCES

1) Clinical and Laboratory Standards Institute (CLSI). *Clinical Flow Cytometric Analysis of Neoplastic Hematolymphoid Cells; Approved Guideline—Second Edition*. CLSI document H43-A2. Clinical and Laboratory Standards Institute, Wayne, PA; 2007.
2) Nguyen AND, *et al*. A relational database for diagnosis of hematopoietic neoplasms using immunophenotyping by flow cytometry. *Am J Clin Pathol.* 2000;113:95-106
3) Wood BL, *et al*. 2006 Bethesda International Consensus Recommendations on the Immunophenotypic Analysis of Hematolymphoid Neoplasia by Flow Cytometry: Optimal Reagents and Reporting for the Flow Cytometric Diagnosis of Hematopoietic Neoplasia. Cytometry Part B (Clinical Cytometry) 2007;72B:S12-S22

AUTOPSY PATHOLOGY

QUALITY MANAGEMENT

The purpose of this section is to determine if there is an active program of surveillance of the quality of autopsy diagnostic reports and utilization of the information obtained to enhance the quality of patient care.

The requirements in this section are intended to apply to general autopsies, as well as forensic autopsies performed at hospital laboratories by pathologists. Forensic autopsies are defined as those authorized and ordered by the medical examiner or coroner; family consent is not required in these cases.

For forensic autopsy services, the Forensic Autopsy section of this checklist must also be used for inspection.

Inspector Instructions:

	• Sampling of autopsy quality management records and autopsy teaching activities • Annual appraisal of effectiveness of the autopsy QM system
	• How does your laboratory communicate important autopsy findings that were undetected clinically? • How does your laboratory incorporate autopsy findings into the institution's QM system?
	• Select a representative case and follow the entire process from receipt to final reporting

ANP.30080 Autopsy Quality Management System **Phase II**

The quality manual defines adequate processes to monitor autopsy services.

NOTE: The QMS must include processes to review autopsy performance and the quality of associated reports.

Evidence of Compliance:

✓ Records of quality monitoring (eg, random case peer review, autopsy pathologist consensus conference)

REFERENCES
1) Cooley M, et al. Quality Management in Autopsy Pathology. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists. 2017; chap 38.
2) Siebert JM. Increasing the Efficiency of Autopsy Reporting. *Arch Pathol Lab Med.* 2009; 133:1932-7.

ANP.30100 Postmortem Clinicopathological Correlations **Phase II**

The findings of the postmortem examination are used for correlative clinicopathological teaching purposes that are designed to enhance the quality of patient care.

NOTE: The autopsy has an important role in medical education and quality improvement. The value of the final autopsy report is enhanced when the findings are used for teaching that emphasizes clinicopathological correlations. This teaching activity should be recorded and may take any of several forms, including a correlative note in the autopsy report, interdepartmental note or summary, or a clinical teaching conference.

Autopsy findings that were clinically unapparent but important should be specifically recorded in the report. Inter-departmental communication of such findings may, in addition, also be accomplished via presentation at an inter-departmental conference.

Evidence of Compliance:

- ✓ Representative report containing clinical pathological correlation **OR**
- ✓ Evidence of presentation at interdepartmental conference

REFERENCES

1) Bayer-Garner IB, *et al*. Pathologists in a teaching institution assess the value of the autopsy. *Arch Pathol Lab Med.* 2002;126:442-447
2) Sinard J, Blood D. Quality Improvement on an academic autopsy service. *Arch Pathol Lab Med.* 2001;125:237-245
3) Caruso JL. Communication of Autopsy Results. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 36.
4) Frost BE, et al. The Autopsy in Medical Education. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 7.
5) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.
6) Bombi JA, Ramirez J, Sole M, et al. Clinical and autopsy correlation evaluated in a university hospital in Spain (1991-2000). *Pathol Res Pract.* 2003l 199(1):9-14.

ANP.30150 Autopsy QM — Phase I

The findings from autopsies are incorporated into the institutional quality management system.

NOTE: Some examples of this include:

- *Reporting newly diagnosed infectious diseases to the hospital infection prevention committee*
- *Presentation and/or review by institutional quality assurance committees*
- *Reporting issues related to quality of care to risk management or sentinel event review committees.*

REFERENCES

1) Cooley M, et al. Quality Management in Autopsy Pathology. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists. 2017; chap 38.
2) Rastan AJ, Gummert JF, Lachmann N, et al. Significant value of autopsy for quality management in cardiac surgery. *J Thorac Cardiovasc Surg.* 2005; 129(6):1292-300.
3) Tavora F, Crowder DC, Sun CC, Burke AP. Discrepancies between clinical and autopsy diagnoses; a comparison of university, community, and private autopsy practices. *Am J Clin Pathol.* 2008; 129:102-9.
4) Scordi-Ballo IA, Kalb TH, Lento PA. Clinical setting and extent of premortem evaluation do not predict autopsy discrepancy rates. *Mod pathol.* 2010; 23:1225-30.

ANP.30160 Significant and Unexpected Findings - Autopsy — Phase II

Significant and unexpected autopsy findings are communicated to the responsible clinician and records of those communications are retained.

NOTE: Certain unexpected autopsy findings may be considered significant. Examples include: reportable infectious diseases, heritable genetic abnormalities, procedural complications, and unexpected, potentially fatal malignancy.

There must be a reasonable effort to ensure that the appropriate health care provider and/ or medical examiners/coroners, where appropriate, receive the communications by means of telephone, pager, conference presentation to relevant clinicians, or other system of notification. Laboratories should note that significant/unexpected findings may result in a jurisdiction change to the medical examiner/coroner system (eg, trauma, therapeutic misadventure, overdose). The records must include the following:

- *Date of communication*
- *Time of communication (if required by laboratory policy)*

- *Responsible individual communicating the result*
- *Person notified using identifiers traceable to that person (a first name alone is inadequate)*
- *Findings communicated.*

An appropriate notification includes a direct dialog with the responsible individual or an electronic communication (secure email or fax) with confirmation of receipt by the responsible individual.

This communication must be recorded; it may be included directly on the patient report or in a separate location. It is not necessary to separately summarize the findings communicated if the record of the communication is on the patient report. For communications recorded in a separate location, the findings communicated may be summarized or reference the case number.

This requirement takes the place of critical result notification in the All Common Checklist (COM.30000 and COM.30100) for autopsy findings.

Evidence of Compliance:

✓ Records of communications of significant/unexpected findings

REFERENCES

1) Caruso JL. Communication of Autopsy Results. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 36.

AUTOPSY CONSENT PROCEDURES

Inspector Instructions:

	• Sampling of autopsy consent policies and procedures
	• How does your laboratory identify cases that are subject to medical examiner and/or coroner jurisdiction? • What procedures would you follow if record review or other information identified a case that could be subject to medical examiner and/or coroner jurisdiction (for example, a pulmonary embolism following trauma)?

ANP.31070 Autopsy Consent — Phase II

There is a defined process for obtaining autopsy consent, including who may give consent and how consent may be given.

Evidence of Compliance:

✓ Records of autopsy consent

REFERENCES

1) College of American Pathologists. CAP Policies and Documents Pertaining to the Autopsy. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 36125. Northfield, IL: College of American Pathologists: 2017; chap 5
2) McDermott MB. Obtaining consent for autopsy. *BMJ.* 2003; 327(7418):804-6.
3) Rosenbaum GE, Burns J, Johnson J, Mitchell C, Robinson M, Truog RD. Autopsy Consent Practice at US Teaching Hospitals: Results of a National Survey. *Arch Intern Med.* 2000; 160(3):374-80.

ANP.31100 Medical Examiner Jurisdiction — Phase II

There are guidelines covering possible medical examiner or coroner jurisdiction over hospital deaths to assess the appropriateness of performing a hospital autopsy.

NOTE: To assess the appropriateness of performing a hospital autopsy, the department must be familiar with applicable statutes and/or regulations that identify hospital deaths subject to medical examiner or coroner jurisdiction. The department should maintain a copy of applicable statute(s) and/or regulation(s) that identify those deaths that are in the jurisdiction of the medical examiner and/or coroner.

REFERENCES
1) Schandl CA, et al. Forensic Pathology. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap. 24.

AUTOPSY ROOM

Inspector Instructions:

	• Sampling of temperature checks/logs • Sampling of scale/balance calibration records
	• Autopsy room and facilities (clean, sufficient lighting and space) • Photographic facilities • Access to the morgue

ANP.32180 Limited Access **Phase II**

Access to the morgue or body receiving and handling areas and autopsy suite is limited and controlled.

NOTE: Family viewing areas, if applicable, must be separate to prevent visual and biohazard exposure to autopsy.

REFERENCES
1) Hanzlick RL, et al. Autopsy Facility Design. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 9.

ANP.32200 Adequate Space and Lighting **Phase I**

There is sufficient space and the autopsy room is clean and well-maintained, with adequate lighting.

NOTE: The space should be sufficient for the workload requirements of the service. The autopsy room should be dedicated to the performance of autopsies. Other functions (eg, storage teaching, tissue procurement) should not interfere with the safe performance of the autopsy and the cleaning of the facility.

REFERENCES
1) Hazlett SO. Perspectives in pathology. The newly designed morgue. *Advance/Lab.* 2000;9(1):10-11
2) Hanzlick RL, et al. Autopsy Facility Design. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 9.

ANP.32400 Adequate Storage **Phase II**

Provisions are available for satisfactory storage of bodies (refrigeration or embalming).

NOTE: For refrigeration, the temperature should be in the range of 34-40º F (1.1-4.4º C).

Evidence of Compliance:

✓ Records of temperature checks

REFERENCES

1) Hanzlick RL, et al. Autopsy Facility Design. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 9.

ANP.32450 Scale/Balance — Phase I

A scale and/or balance are provided for reliable weighing of organs.

NOTE: If infants or fetuses are autopsied at the institution, accuracy of balances to 1.0 gm for infants and 0.1 gm for fetuses must be verified by periodic calibration.

Evidence of Compliance:

✓ Record of scale calibration checks and scale in use is appropriate for the types of cases performed

REFERENCES

1) Hanzlick RL, et al. Autopsy Facility Design. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 9.
2) Tan CD, et al. Autopsy Performance. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 15.
3) Conran RM, et al. The Pediatric Autopsy. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 17.

ANP.32500 Temperature and Ventilation — Phase I

Ambient temperature and ventilation control are adequate.

NOTE: Airborne infectious agent control requires appropriate ventilation.

REFERENCES

1) Hazlett SO. Perspectives in pathology. The newly designed morgue. *Advance/Lab*. 2000;9(1):10-11
2) Hanzlick RL, et al. Autopsy Facility Design. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 9.

ANP.32550 Photographic Equipment — Phase I

Photographic equipment is available, convenient, and functional.

REFERENCES

1) Belanger AJ, *et al*. Implementation of a practical digital imaging system for routine gross photography in an autopsy environment. *Arch Pathol Lab Med.* 2000;124:160-165
2) Hanzlick RL, et al. Autopsy Facility Design. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 9.
3) Oliver WR. Considerations for Gross Autopsy Photography. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 30.
4) Schoppe C. Photomicrography. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 31.

AUTOPSY PERFORMANCE AND RECORDS

Inspector Instructions:

READ

- Sampling of policies and procedures for autopsy performance, intra- and extra-departmental consultations, reporting, and record retention
- Sampling of records of case review/pre-autopsy discussion
- Specimen collection records (as applicable)
- Sampling of final autopsy reports for completeness and pathology review

	• Autopsy records (organized, readily available) • Sampling of autopsy slides (quality) • Labeling and storage of photographs
	• How does your laboratory ensure prompt retrieval of cases according to diagnosis? • How are autopsy services supervised? • Explain how personal effects found on the body are handled
	• If problems are identified during the review of autopsy records, or when asking questions, further evaluate the laboratory's responses, corrective actions and resolutions

ANP.33000 Clinical Record Review **Phase II**

Pertinent available clinical records are reviewed and/or clinical information obtained from the following individuals before conducting the autopsy:

- **Attending/consulting physician OR**
- **Clinical house staff/fellows OR**
- **Person/agency authorizing the autopsy.**

NOTE: Ideally the case is discussed with relevant clinicians; however, if this is not possible, medical record review satisfies this requirement. Attempts to contact clinicians should be recorded.

Evidence of Compliance:

✓ Records of clinical history in the autopsy report **OR**

✓ Records of clinician communication either in the autopsy report or separate record

REFERENCES

1) Caruso JL. Communication of Autopsy Results. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 36.
2) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.

ANP.33025 Patient Identity Confirmation **Phase I**

The identity of deceased patients is confirmed, using two identifiers, prior to beginning the autopsy.

Evidence of Compliance:

✓ Records of patient identity confirmation

REFERENCES

1) Campbell K, et al. Improving Quality and Safety through Positive Patient Identification. *Healthc Q.* 2015; 18(3):56-60.

ANP.33050 Autopsy Performance **Phase II**

All autopsies are performed or supervised by a pathologist who is board certified in anatomic pathology, or possesses qualifications equivalent to those required for certification in anatomic pathology.

NOTE: For autopsies performed for non-forensic purposes, "supervised by a pathologist" means that if the pathologist is not directly performing the autopsy he/she must be available to directly observe the entire autopsy or parts of the autopsy as needed.

For forensic autopsies, the pathologist must be physically present and directly observe activities by the pathology assistant or other non-pathologist personnel assisting with the dissections. The autopsy physician is responsible for examining the unclothed body, the diagnosis made, the opinions formed, and any other subsequent opinion testimony.

REFERENCES
1) Bortesi M, et al. Pathologist's assistant (PathA) and his/her role in the surgical pathology department: a systematic review and a narrative synthesis. *Virchows Arch.* 2018 Jun; 472(6):1041-1054.
2) Vitale J, Brooks R, Sovocool M, Rader WR. Value-added benefits and utilization of pathologists' assistants. *Arch Pathol Lab Med.* 2012 Dec; 136(12):1565-70.

ANP.33070 Handling of Personal Effects **Phase II**

The laboratory follows a defined process for handling personal effects. The process includes the recording, safekeeping, handling and disposition of money and personal items, prescription drugs, illicit drugs, and evidence, as applicable.

NOTE: When appropriate, legal chain-of-custody procedures must be followed.

REFERENCES
1) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.
2) Schandl CA, et al. Forensic Pathology. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap. 24.

ANP.33100 Preliminary Reports **Phase I**

A written preliminary report of the gross pathologic diagnoses is submitted to the attending physician and the institutional record in 90% of the cases within a reasonable time.

NOTE: For preliminary reports based on gross examination only, two working days is the recommended TAT. For cases with complicated dissections or rush histology, up to 4 working days is recommended. For some cases such as single organ only examination or slide consults, a Provisional Report may not be appropriate or required. Preliminary reports may not be applicable for forensic cases.

Evidence of Compliance:
- ✓ Review of turnaround time data

REFERENCES
1) Caruso JL. Communication of Autopsy Results. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 36.
2) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.
3) Cromwell S, et al. Improving Autopsy Report Turnaround Times by Implementing Lean Management Principles. *Pediatr Dev Pathol.* 2018; 21(1):41-47.
4) Siebert JR. Increasing the efficiency of autopsy reporting. *Arch Pathol Lab Med.* 2009 Dec; 133(12):1932-7.

*****NEW** 12/26/2024***

ANP.33110 Intra- and Extra-Departmental Consultations **Phase I**

The laboratory has a defined process for handling information from intra- and extra-departmental consultations in the deceased patient's final autopsy report.

NOTE: Intra-departmental consultations may be included in the deceased patient's final autopsy report or filed separately. The pathologist in charge of the autopsy must decide whether the results of intra-departmental consultations provide relevant information for inclusion in some manner in the autopsy report.

Records of extra-departmental consultations must be readily accessible within the pathology department. The method used to satisfy this requirement is at the discretion of the laboratory director and can be expected to vary according to the organization of the department. These consultations can be retained with the official autopsy reports or kept separately, so long as they can be readily linked.

Evidence of Compliance:

- ✓ Records of consultations included in the final report **OR**
- ✓ Records of consultations readily accessible within the pathology department

REFERENCES

1) Leslie KO, *et al*. Second opinions in surgical pathology. *Am J Clin Pathol.* 1996;106(suppl 1):S58-S64.
2) Tomaszewski JE, *et al*. Consensus conference on second opinions in diagnostic anatomic pathology. Who, what, and when. *Am J Clin Pathol.* 2000;114:329-335.
3) Hahm GK, *et al*. Quality assurance of second opinion in gastrointestinal and liver pathology. *Am J Clin Pathol.* 2000;114:631.
4) Renshaw AA, *et al*. Blinded review as a method of quality improvement in surgical pathology. *Arch Pathol Lab Med.* 2002;126:961-963.
5) Azam M, Nakhleh RE. Surgical pathology extradepartmental consultation practices. A College of American Pathologists Q-probes study of 2746 consultations from 180 laboratories. *Arch Pathol Lab Med.* 2002;126:405-412.
6) Cooper K, *et al.* Institutional consultations in surgical pathology. How should diagnostic disagreements be handled? *Arch Pathol Lab Med.* 2002;126:650-651.

*****REVISED** 12/26/2024***

ANP.33120 Final Report TAT — Phase I

The final autopsy report is produced within three months from the date the autopsy is performed in 90% of the cases.

NOTE: The 90% threshold is used in recognition of the fact that occasional unusual cases may require additional time for completion, particularly when external consultation is required.

If cases exceed three months, the reason for the delay should be recorded and records of ongoing review of this information by the director of the service retained.

Evidence of Compliance:

- ✓ Review of turnaround time data

REFERENCES

1) Caruso JL. Communication of Autopsy Results. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 36.
2) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.
3) Cromwell S, et al. Improving Autopsy Report Turnaround Times by Implementing Lean Management Principles. *Pediatr Dev Pathol.* 2018; 21(1):41-47.
4) Siebert JR. Increasing the efficiency of autopsy reporting. Arch Pathol Lab Med. 2009 Dec; 133(12):1932-7.

ANP.33200 Gross and Microscopic Descriptions — Phase II

Gross descriptions are clear and pertinent findings are adequately described. If microscopy is performed, microscopic descriptions are included in the report and a key of block and/or slide designations is included to identify the source of specific microscopic sections.

NOTE: The nature of the final autopsy report is fundamentally different from surgical pathology reports and documentation of microscopic examination is an integral and essential part. The microscopic descriptions need not be lengthy or detailed, but must be included if sections for microscopy were taken and reviewed. At a minimum, the slide/block key must include information on laterality and on specific lesions sampled. Annotated drawings and photographs are valuable tools for recording the autopsy findings, but are not adequate replacements for a text description.

REFERENCES

1) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.
2) Hanzlick RL, et al. The Autopsy Lexicon. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 34.

ANP.33240 Ancillary Testing **Phase I**

If specimens are collected for ancillary testing, including toxicology, the anatomical site is recorded.

Evidence of Compliance:

✓ Records of anatomical collection site used for ancillary testing

REFERENCES

1) Bell M, et al. Postmortem Microbiologic Testing. In: Collins KA, ed. *Autopsy Pathology and Reporting*. 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 29.
2) Collins KA, et al. Getting the Most Out of the Autopsy: Ancillary Studies. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 28.

ANP.33350 Final Report Content **Phase II**

The final autopsy report is reviewed and signed by a pathologist. It contains sufficient information in an appropriate format so that a physician may ascertain the patient's major disease processes and probable cause of death.

Evidence of Compliance:

✓ Review of representative autopsy report(s)

REFERENCES

1) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.
2) Hanzlick RL, et al. The Autopsy Lexicon. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 34.
3) Hanzlick, et al. Medical Certification of Death Statements. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 35.

ANP.33380 Photograph/Digital Image Labeling and Storage **Phase II**

Autopsy photographs and/or digital images are labeled and stored in an appropriate manner, using a system to prevent loss (eg, electronic storage system to back up data).

NOTE: If an identification photo is taken, the label must be placed in a location that does not obscure the identifying features of the decedent. The record system must allow for the photographs to be easily retrieved.

REFERENCES

1) Oliver WR. Considerations for Gross Autopsy Photography. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 30.

ANP.33400 Autopsy Records **Phase I**

Autopsy records are organized and readily available for review and are entered into a database to allow for retrieval of cases by diagnosis.

NOTE: At the facility's discretion, the database may be a card file, log book, or an electronic record, depending on the size of the database.

REFERENCES

1) Koponen MA. Autopsy Reporting. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 33.
2) Cooley M, et al. Quality Management in Autopsy Pathology. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists. 2017; chap 38.

ANP.33500 Record and Material Retention - Autopsy Pathology **Phase II**

Autopsy pathology records and materials are retained for an appropriate period.

NOTE 1: There must be a written policy for protecting and preserving the integrity and retrieval of autopsy service materials and records. The retention period shall be sufficient for use of the materials in the institution's quality improvement activities (eg, morbidity and mortality

conferences). Policies for retention of records and materials must comply with national, federal, state (or provincial), and local laws and regulations, and with the retention periods listed in the table below, whichever is most stringent.

Non-Forensic Autopsies

Type of Record/Material	Retention Period
Accession log records	2 years
Wet tissue (stock bottle)	3 months after final report
Paraffin blocks	10 years
Glass slides	10 years
Autopsy reports	10 years
Autopsy consent	Per institutional medical record retention policy (minimum 10 years)

NOTE 2: For autopsy paraffin blocks, the CAP recommends extending the required retention period to indefinitely or for at least a generation (approximately 20 years); however, it is not a requirement of accreditation. These blocks represent the last opportunity for tissue-based biomarker, genetic, and other testing in the interest of family members and public health. Strategies, such as retaining even a select number of blocks from each case permanently or partnering with a regional biorepository for permanent storage may be considered.

NOTE 3: Paraffin blocks used for patient diagnostic purposes must be kept for at least 10 years. Such blocks may be released for research purposes if all of the following criteria are met:

1. *For a laboratory subject to U.S. law, formal written authorization is obtained in accordance with the requirements of HIPAA if identifiable patient information is released unless, in accordance with 45CFR164.512(i), the laboratory obtains from the researcher a representation that use of the blocks protects the health information of decedents*
2. *The laboratory retains sufficient blocks to support the diagnosis for the full 10-year period.*
3. *Provision is made for retrieval by the laboratory of any blocks or material that remain after use in research, if the blocks or material are needed for diagnostic, legal, or other legitimate purposes.*
4. *In the event of limited material (eg, only one diagnostic block), tissue microarray (TMA) cores or portions of the block may be released for research or clinical trials, as long as the original lab retains control or access to the diagnostic material if clinically needed.*
5. *The laboratory meets other relevant requirements including but not limited to the requirements of the institution, the directives of any applicable institutional review board (IRB) or similar entity; and state and local laws and regulations.*

NOTE 4: The wet tissue (stock bottle) refers to small portions of organs that are saved in a small container. There is no CAP requirement or recommendation for retention of whole or large portions of organs.

REFERENCES

1) College of American Pathologists. Guidelines for the retention of laboratory records and materials. Northfield, IL: CAP, current edition.
2) College of American Pathologists. CAP Policies and Documents Pertaining to the Autopsy. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 5.

AUTOPSY SAFETY

NOTE TO THE INSPECTOR: This section applies to the on-site autopsy laboratory. The inspector should review relevant requirements from the safety section of the Laboratory General Checklist, to assure that the autopsy laboratory is in compliance.

The following requirements pertain specifically to the autopsy laboratory.

Inspector Instructions:

	• Sampling of autopsy safety policies and procedures
	• Posting of autopsy safety policies
	• How does your laboratory ensure inactivation of hepatitis B virus when disinfecting tables, reusable instruments and aprons?

ANP.33650 Autopsy Facilities **Phase II**

Appropriate facilities, equipment and instruments are available to meet safety policies and procedures.

NOTE: Containers must be available for contaminated waste and hazardous chemicals and policies must be in place for their disposal. Equipment and apparel must be available to provide protection to eyes, hands, and skin surfaces from direct and aerosolized exposures during autopsy performance. Procedures must be in place for the disposition or cleaning of these items for re-use upon completion of the autopsy.

REFERENCES
1) Wetli CV. Autopsy safety. *Lab Med.* 2001;32:451-453
2) Hanzlick RL, et al. Autopsy Facility Design. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 9.
3) Aurelius MB. Autopsy safety. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 12.
4) Burton JL. Health and safety at necropsy. *J Clin Pathol.* 2003; 56(4):254-60.

ANP.34000 Safety - Autopsy **Phase II**

There is appropriate signage at entries to the autopsy laboratory warning of the potential presence of hazardous chemicals and biologic materials, and the need for standard precautions. Policies and procedures for contaminated cases/specimens, hazardous chemicals, etc. are posted in the autopsy suite.

NOTE: It is important that persons entering the autopsy laboratory be aware of potential hazards and take appropriate protective measures. Postings may include information such as details of personal protective equipment and emergency contact information.

REFERENCES
1) Wetli CV. Autopsy safety. *Lab Med.* 2001;32:451-453
2) Aurelius MB. Autopsy safety. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 12.
3) Burton JL. Health and safety at necropsy. *J Clin Pathol.* 2003; 56(4):254-60.

ANP.34050 Decontamination **Phase II**

Instructions for cleaning after an autopsy, proper handling of highly infectious cases, and disposal of tissues are available.

NOTE: Tables and reusable instruments and aprons must be adequately disinfected after use. Either autoclaving or chemical disinfection of instruments is acceptable, but the method chosen must be adequate to inactivate the hepatitis B virus.

REFERENCES
1) Aurelius MB. Autopsy safety. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 12.
2) Nine JS. High-risk autopsy cases. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 13
3) Wetli CV. Autopsy safety. *Lab Med.* 2001;32:451-453
4) Burton JL. Health and safety at necropsy. *J Clin Pathol.* 2003; 56(4):254-60.

ANP.34150 Special Handling of Transmissible Spongiform Encephalopathies (TSE) Phase II

The laboratory handles cases of suspected transmissible spongiform encephalopathies (TSE), including Creutzfeldt-Jakob disease (CJD), using procedures that minimize the risk of transmission.

NOTE: In addition to practicing standard precautions during the autopsy, procedures must be written for the special precautions to be taken for autopsies on patients in whom the diagnosis of TSE is suspected. Pathologists should consider taking these special precautions as well in cases of (a) rapidly progressive dementia, (b) dementia with seizures, especially myoclonic seizures, and (c) dementia associated with cerebellar or lower motor neuron signs. The recommended method for handling these brains to reduce infectivity is immersion of tissue blocks in 95% formic acid. Aerosol formation must be avoided during removal of the brain.

If there is any suspicion of TSE, the autopsy should be limited to the brain, and the tissue treated as outlined below. There should be very few exceptions to this rule.

Autopsy brain tissues should be handled as follows:

The intact brain is fixed in formalin for 1-2 weeks before cutting. Tissue blocks (representative regions of neocortex, basal ganglia, and cerebellum) are taken, agitated in at least 50-100 mL of 95-100% formic acid for one hour, and then returned to formalin for two days before embedding. Alternatively, one may take the necessary diagnostic sections from the fresh brain, fix them in formalin for 2-7 days, treat with formic acid for one hour, fix again in formalin for two days, and then embed in paraffin. This method significantly reduces infectivity.

At the conclusion of the autopsy, the area of incision and other contaminated skin surfaces are washed with freshly opened undiluted commercial household bleach (sodium hypochlorite). As sodium hypochlorite deteriorates after several months, a newly opened container should be used for each autopsy. After 10 minutes, the skin may be washed with water. All gowns, gloves, plastic sheets, and other disposable supplies are placed in a red or orange biohazard bag and incinerated. Alternatively, they may be autoclaved (132º C steam) and discarded. Hard surfaces are decontaminated with freshly opened undiluted bleach or NaOH. 1N NaOH is adequate unless there will be dilution by surface liquid, in which case 2N NaOH should be used. Bleach and NaOH are equally effective, but NaOH is preferred for steel instruments and surfaces because it is less corrosive than bleach. The disinfectant should remain in contact with the surface for at least 15 and preferably 60 minutes. Autopsy instruments should have any visible blood removed, then decontaminated with undiluted bleach or 1-2N NaOH as above. Alternatively, they may be autoclaved for one hour at 132º C and 20 psi (140 kPa).

For information on handling slides and blocks, refer to the checklist requirement in the Histology Laboratory Safety section of this checklist.

REFERENCES
1) Nine JS. High-Risk Autopsy Cases. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 13.
2) Wetli CV. Autopsy safety. *Lab Med.* 2001;32:451-453
3) Burton JL. Health and safety at necropsy. *J Clin Pathol.* 2003; 56(4):254-60.

ANP.34160 Safe Handling of Bariatric Patients Phase II

The laboratory has a process for the special handling of autopsies on bariatric patients where the patient size could represent an occupational hazard to autopsy staff.

NOTE: Individual institutions may set their own specific weight or BMI limits for application of the occupational health policy. Institutions may also choose whether to use special equipment for such patients and what type(s) of equipment to use.

REFERENCES
1) Aurelius MB. Autopsy safety. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 12.
2) Wetli CV. Autopsy safety. *Lab Med.* 2001;32:451-453

FORENSIC AUTOPSY PATHOLOGY

The Forensic Autopsy section is to be used in conjunction with the Autopsy Pathology section and Chain-of-Custody section in the Laboratory General Checklist for inspections of forensic autopsy services rendered in a hospital setting.

GENERAL ISSUES - FORENSIC AUTOPSY

Inspector Instructions:

READ	• Policies for access to expert forensic consultants • Policies for the use of laboratory and radiology services
ASK	• How do you access the services of a forensic pathologist and expert consultants as needed? • Where is post-mortem clinical laboratory testing performed?

ANP.35000 Forensic Pathologist and Expert Consultants **Phase II**

The laboratory has access to a forensic pathologist and expert consultants, as appropriate for the following types of services:

- **Forensic neuropathology**
- **Forensic dentistry/odontology**
- **Forensic anthropology**
- **Radiology**

NOTE: References for specialties may be found on the following websites:

- *American Board of Forensic Anthropology: https://www.theabfa.org/active-diplomates-by-name*
- *American Board of Pathology: http://www.abpath.org/verify-certification/*
- *American Board of Forensic Odontology: https://abfo.org/resources/member-directory/*
- *American Academy of Forensic Sciences: https://www.aafs.org/*
- *National Association of Medical Examiners: http://www.thename.org/*

ANP.35025 Forensic Toxicology and Clinical Laboratory Services **Phase II**

Appropriate forensic toxicology and clinical laboratory services are available for analysis of post-mortem specimens as needed.

NOTE: Testing services must be available on-site or through a referral laboratory for the following tests, where applicable: ethanol, volatiles, carbon monoxide, major drugs of abuse, major acidic drugs, and major basic drugs. Results for carbon monoxide testing must be available in a timely manner. Toxicology testing must be performed in compliance with the guidelines of the Society of Forensic Toxicologists (SOFT) and be accredited by the American Board of Forensic Toxicology (ABFT) or the College of American Pathologists or be a state reference laboratory.

If toxicology testing is requested, information should be provided to the toxicology laboratory for the circumstances surrounding the death and medications taken by the decedent.

Evidence of Compliance:

✓ Records of referral laboratory selection

ANP.35050 Radiology and Imaging Services **Phase II**

Adequate radiology and imaging services are available to allow for radiographs or imaging of the body to be performed and viewed by the pathologists before and during the autopsy as needed.

FORENSIC AUTOPSY PERFORMANCE AND RECORDS

Inspector Instructions:

READ	• Sampling of policies and procedures for forensic autopsies • Specimen handling policies and procedures for laboratory testing (toxicology, histology, and DNA analysis) and evidence collection • Chain-of-custody procedures (as applicable) • Sampling of final autopsy reports and records
OBSERVE	• Autopsy records (organized, readily available) • Copies of national, state, or local guidelines for autopsy performance • Photographic records (as applicable)
ASK	• How does your laboratory ensure prompt retrieval of specimens in cases of delayed death in hospitalized victims? • How are cases with unidentified bodies handled?
DISCOVER	• If problems are identified during the review of autopsy records, or when asking questions, further evaluate the laboratory's responses, corrective actions and resolutions

ANP.36000 Trace Evidence Collection **Phase II**

In cases that involve the collection of trace evidence (eg, sexual assault, pedestrian struck by motor vehicle, strangulation) appropriate evidence is collected.

NOTE: Appropriate hair samples, swabs, nail clippings/scrapings, and trace evidence are collected for the decedent. Bite marks must be processed according to the procedure consistent with current forensic odontology practice.

REFERENCES

1) National Association of Medical Examiners. NAME Inspection and Accreditation Checklist for Autopsy Services. February 2013.

ANP.36025 Specimen Collection — Phase II

Specimens are routinely collected and retained for toxicology, potential DNA analysis, and histological examination, as applicable.

NOTE: In cases of delayed death in hospitalized victims, the earliest available appropriate specimens should be obtained from the hospital, as applicable.

ANP.36050 Unidentified Bodies — Phase II

The laboratory has defined actions to be taken prior to the disposition of unidentified bodies (eg, finger printing, photographs/images, radiographs, dentition, DNA sample storage, medical history/devices) to allow for potential future identification.

ANP.36075 Photographs — Phase II

Photographs are taken, as appropriate, to include:

- **Evidence, foreign material, blood patterns, injuries, and other items pertinent to determining the cause and manner of death or necessary for medicolegal interpretation or presentation**
- **Orientation photographs and close-ups of injuries with measurement scales**
- **Identification photographs of decedent.**

NOTE: The identifying label must be placed in a location that does not obscure the identifying features of the decedent.

ANP.36100 Autopsy Notes and Photographs — Phase I

Written notes and photographs are taken to an extent that would allow reconstruction of the autopsy report if dictations are lost or damaged.

ANP.36125 Record and Material Retention - Forensic Autopsy — Phase II

Forensic autopsy pathology records and materials are retained for an appropriate period.

NOTE 1: There must be a written policy for protecting and preserving the integrity and retrieval of forensic autopsy service materials and records. The retention period shall be sufficient for use of the materials in the institution's quality improvement activities (eg, morbidity and mortality conferences). Policies for retention of records and materials must comply with federal, state (or provincial), and local laws and regulations, and with the retention periods listed in the table below, whichever is most stringent.

Forensic Autopsies

Type of Record/Material	Retention Period
Body transfer and disposition records	Indefinitely
Wet tissue (stock bottle)	1 year
Paraffin blocks	10 years
Glass slides	50 years or 30 years if a DNA sample is available
Autopsy reports	Indefinitely
Gross photographs/images	Indefinitely
Body fluids and tissues for toxicology	1 year
Sample suitable for DNA analysis	Indefinitely

NOTE 2: For autopsy paraffin blocks, the CAP recommends extending the required retention period to indefinitely or for at least a generation (approximately 20 years); however, it is not a requirement of accreditation. These blocks represent the last opportunity for tissue-based biomarker, genetic, and other testing in the interest of family members and public health. Strategies, such as retaining even a select number of blocks from each case permanently or partnering with a regional biorepository for permanent storage may be considered.

NOTE 3: The wet tissue (stock bottle) refers to small portions of organs that are saved in a small container. There is no CAP requirement or recommendation for retention of whole or large portions of organs.

REFERENCES
1) College of American Pathologists. Guidelines for the retention of laboratory records and materials. Northfield, IL: CAP, current edition
2) National Association of Medical Examiners. NAME Inspection and Accreditation Checklist for Autopsy Services. February 2013.
3) College of American Pathologists. CAP Policies and Documents Pertaining to the Autopsy. In: Collins KA, ed. *Autopsy Pathology and Reporting.* 3rd ed. Northfield, IL: College of American Pathologists: 2017; chap 5

ELECTRON MICROSCOPY

If the electron microscopy service is a separate and distinct laboratory in the Anatomic Pathology section, the inspector may find it more convenient to use an additional copy of the Anatomic Pathology Checklist for the inspection, answering all applicable requirements.

Inspector Instructions:

READ	• Sampling of EM policies and procedures
DISCOVER	• Select a representative EM sample and follow the entire process from specimen receipt to final result reporting

QUALITY CONTROL

ELECTRON MICROSCOPY SAMPLE PREPARATION

Inspector Instructions:

	• Sampling of blocks (adequately identified) • Sampling of slides and electron micrographs (quality, adequately identified)
	• How does your laboratory ensure specimen identity throughout testing? • How does your laboratory ensure appropriate tissue areas are selected for EM examination?

ANP.52100 Tissue Section Review **Phase II**

Sections of embedded tissue (face sections) are reviewed by the pathologist to ensure that appropriate areas are selected for electron microscopic examination.

ANP.52150 Tissue Section Review **Phase I**

Where appropriate, one micron sections (prepared after trimming or ultra-thin sectioning) are also reviewed by the pathologist to ensure that appropriate areas have been selected.

NOTE: An example might be a mesenchymal neoplasm where confusion between tumor cells and admixed stromal elements could occur.

ANP.52300 Slide/Electron Micrograph Quality **Phase II**

Slides and electron photomicrographs are of sufficient quality for proper interpretation of ultrastructural changes.

INSTRUMENTS AND EQUIPMENT

Inspector Instructions:

	• Sampling of EM maintenance and repair records • Sampling of EM calibration records

- Sampling of ultramicrotomes (condition)
- Instrument/equipment records (promptly retrievable)

ANP.53000 Adequate Ultramicrotome **Phase II**

Ultramicrotomes are adequate and in good repair.

ANP.53100 EM Maintenance **Phase II**

The electron microscope is under a regular, documented maintenance and repair system.

ANP.53150 Magnification Calibration **Phase I**

The magnification is calibrated after major maintenance, as appropriate.

Evidence of Compliance:

✓ Records of calibration

REPORTS

Inspector Instructions:

- Sampling of EM reports (signed, appropriate correlations)

ANP.54000 Report Format **Phase II**

The report format provides for correlation with routine light microscope and other (eg, immunohistochemical and immunofluorescent) studies.

ANP.54050 Report Signature **Phase II**

All reports are signed by the pathologist.

NOTE: Where diagnostic reports are generated by computer or telecommunications equipment, the actual signature or initials of the pathologist may not appear. It is nevertheless essential that the laboratory have a procedure that ensures and provides a record that the responsible pathologist has reviewed and approved the completed report before its release.

RECORDS, FILES AND PHOTOGRAPHS

Inspector Instructions:

READ	• Specimen retention policies and procedures
OBSERVE	• Tissue storage (readily retrievable)

ANP.55100 Record and Material Retention - Electron Microscopy **Phase II**

Electron microscopy records and materials are retained for an appropriate period of time.

NOTE: Policies for retention of records and materials must comply with federal, state, and local laws and regulations, and with the retention periods listed in the table below, whichever is most stringent.

Type of Record/Material	Retention Period
Accession log records	2 years
Wet tissue	2 weeks after the final report
Resin blocks	10 years
Pictures and reports	10 years

LABORATORY SAFETY

NOTE TO THE INSPECTOR: The inspector should review relevant requirements from the Safety section of the Laboratory General Checklist, to assure that the electron microscopy laboratory is in compliance.

The following requirements pertain specifically to the electron microscopy laboratory.

Inspector Instructions:

READ	• Sampling of EM safety policies and procedures • Sampling of radiation leakage check records

ANP.57000 Safety - EM **Phase II**

Electron microscopy sample preparations and instrument operation are performed in a manner that minimizes risk to personnel.

ANP.57070 Hazardous Chemicals **Phase II**

The laboratory safely handles and disposes of osmium tetroxide, epoxy resins, and other hazardous chemicals.

NOTE: Osmium tetroxide is volatile and toxic. Exposure to its vapor can lead to blindness and serious respiratory complications. There must be a clearly stated and posted procedure addressing accidental spillage. Material for dealing with such a spill should be readily available, eg, corn oil and an absorbent such as saw dust. For US laboratories, disposal of osmium tetroxide must be according to OSHA regulations for toxic compounds. Epoxy resins are highly allergenic, and direct contact should be avoided. The laboratory must have documentation that personnel have been trained in the handling of these materials.

REFERENCES
1) Cooper K. Neutralization of osmium tetroxide in case of accidental spillage and for disposal. *Micros Soc Canada Bull.* 1988;8(3):24-28
2) Wenk PA. Disposal of histology stains. *Lab Med.* 1998;29:337-338
3) Clinical and Laboratory Standards Institute. *Clinical Laboratory Waste Management; Approved Guideline.* 3rd ed. CLSI Document GP05-A3. Clinical and Laboratory Standards Institute, Wayne, PA; 2011.

ANP.57100 X-Ray Leakage **Phase II**

The electron microscope is checked for x-ray leakage at the time of installation and after major repair.

NOTE: Periodic monitoring is also required for devices operating at 70,000 volts or above. Records of radiation leakage checks must be retained.

IN VIVO MICROSCOPY (IVM)

This section applies to In Vivo Microscopy (IVM) technologies for clinical practice, in which a physician views digitized or analog video or still image(s) or other data, and renders an interpretation that is included in a formal diagnostic report or in the patient record. The Ex Vivo Microscopy section of this checklist should be used for in vitro applications of these systems.

This checklist section applies to the application of IVM technologies for:
- *Intra-procedural guidance of biopsy or tissue excision*
- *Surgical (intraoperative) guidance*
- *Primary evaluation and/or diagnosis*
- *Screening*
- *Intra- or extra-institutional consultation*
- *Post-procedural evaluation and/or diagnosis*

Examples of IVM technologies include:
- *Confocal microscopy*
- *Optical coherence tomography (OCT)*
- *Multiphoton microscopy*
- *Optical spectroscopy and spectroscopic imaging*

This checklist section is NOT applicable to:
- *Informal reviews without formal reporting*

- *Educational or research-only use of these systems*

The providers of IVM services (acquisition and interpretation of IVM datasets) may be located entirely within a clinical department, the pathology department (laboratory), or may represent collaboration between a clinical department and the laboratory. The responsibility for checklist requirements rests with the IVM service. The IVM service must ensure that records to demonstrate compliance are available for review by the CAP inspection team, whether the records are located within a clinical department, the laboratory, or both.

DEFINITION OF TERMS

In vivo microscopy (IVM) dataset — Digitized or analog video or still images or other data (eg, spectroscopic data) generated by an IVM system that is utilized to render a diagnostic interpretation or to guide procedures.

Confocal microscopy — A non-invasive, high-resolution optical imaging technique that excludes out-of-focus light, enabling 'optical sectioning' and tomographic imaging of specimens that are thicker than the focal plane. Confocal microscopy can be performed directly on tissue or through an endoscope (confocal laser endomicroscopy or CLE). The latter may be either endoscopy-based (eCLE device built into the endoscope) or probe-based (pCLE device in a probe with fiber-optic cable for image transmission that can be inserted into the accessory port of a standard endoscope). Injection or topical application of a contrast is usually required.

Optical coherence tomography (OCT) — A non-invasive, high-resolution optical imaging technique that provides real-time 2-D and 3-D images of tissue architecture in vivo by mapping reflectivity of light waves focused onto the tissue. Variants of OCT technology include: Optical Frequency Domain Imaging (OFDI) and Full Field OCT (ff-OCT). Contrast agents are usually not required.

Multiphoton microscopy — A high-resolution fluorescence imaging technique that provides 2-D and 3-D tomographic images based on non-linear optical effects. It is also known as 2-photon, 3-photon, or nonlinear microscopy. Contrast agents are usually not required.

Optical spectroscopy — An optical technique that assesses the way in which the spectrum of light is changed by interaction with tissue. Examples include diffuse reflectance spectroscopy, fluorescence spectroscopy, and Raman spectroscopy. Measurements made with any of these techniques can be translated into false color spectroscopic images (optical spectroscopic imaging). Contrast agents are usually not required.

Additional information on IVM may be obtained using the CAP Pathology Resource Guide: In Vivo Microscopy.

Reference: Fitzmaurice M, Crawford JM, Fine JL, et al. *CAP Pathology Resource Guide: In Vivo Microscopy.* Version 8.0(1). Northfield, IL: College of American Pathologists; 2018.

Inspector Instructions:

	• IVM policies and procedures • Sampling of reports generated from reviews of datasets obtained by IVM • Sampling of records for personnel training • Sampling of records of rejected IVM datasets and notification of clinical personnel • Sampling of records documenting verbal reports • Completed validation study(ies) with review and approval • Quality management system including IVM
	• Review summary statements and supporting validation data to confirm that studies were performed using an adequate number of cases, data was evaluated, and summary statement was approved prior to implementation. If the data showed discordances or unacceptable variations, investigate how they were resolved.

QUALITY MANAGEMENT - IVM

ANP.57150 IVM Quality Manual **Phase I**

The quality manual defines adequate processes to monitor IVM services.

NOTE: The specific components of the quality management system are left to the discretion of the IVM service. Examples include monitoring the quality of clinical information provided to ensure it is adequate for the intended use of the system, and monitoring disparities between initial IVM dataset interpretation and final pathology diagnosis.

ANP.57200 IVM Appropriate Use **Phase I**

The laboratory ensures that the systems used for IVM are appropriate for the intended clinical use.

NOTE: The procedure manual must identify the appropriate use cases for IVM.

ANP.57250 System Validation - IVM **Phase I**

The IVM service validates IVM technology before it is used for the intended diagnostic purpose(s).

NOTE: The specific components of the validation study are left to the discretion of the IVM service. However, studies should be performed using an adequate number of cases, data should be evaluated, and a summary statement provided prior to implementation. Records of how discordant data or unacceptable variations from the expected were resolved are required.

As general guiding principles, the validation process should:

- *Closely emulate the real-world clinical environment and involve tissue types and clinical settings relevant to the intended use(s)*
- *Be carried out by or under the supervision of a physician(s) adequately trained to use the IVM system*
- *Encompass the entire IVM system, with reevaluation if a significant change is made to a previously validated system.*

Evidence of Compliance:

✓ Records of completed validation study with supporting validation data, review and approval

ANP.57300 User Training - IVM **Phase I**

There are training records for all users of the IVM system.

NOTE: Users of the IVM system include individuals responsible for IVM dataset interpretation. Training may be a coordinated process between a clinical department and the laboratory, depending on the individual needs of the organization. Training records may be part of the credentialing process at a hospital or other health care facility or may be part of the pathology department's records. Because the field is rapidly evolving, consideration should be given to continuous learning opportunities.

Evidence of Compliance:

✓ Records for training of personnel on the use of the IVM system for diagnostic purposes

ANP.57350 Function Checks - IVM **Phase II**

The IVM service performs and records regular function checks on the IVM system/ instrument.

NOTE: Function checks include confirmation that an instrument or item of equipment operates according to manufacturer's specifications before routine use, at prescribed intervals, or after minor adjustment. Depending on the type of system, function checks may include calibration.

Evidence of Compliance:

✓ Records of function checks and calibration, as applicable

ANP.57400 Method Performance Specifications Availability - IVM **Phase II**

The current IVM methods and all significant changes to analytical methodology, including performance specifications and supporting validation data, are retained by the IVM service.

NOTE: Records should include, but are not limited to, components of IVM equipment, software systems, image viewing systems, and digital image analysis systems. The IVM service must also provide data on clinical performance claims to clients upon request, if clinical performance claims are made. The IVM service may at its option require clients to agree to treat such data as confidential and not to share such data with any other party except as required by law.

Evidence of Compliance:

✓ Records of changes to analytical methodology

REFERENCES

1) Department of Health and Human Services, Centers for Medicare and Medicaid Services. Clinical laboratory improvement amendments of 1988; final rule. *Fed Register*. 2003(Jan 24): 7163[42CFR493.1291(e)].

IVM ANALYSIS

ANP.57450 Clinical Information Access **Phase I**

The individual reviewing cases has access to pertinent clinical information at the time of IVM dataset review.

NOTE: In addition to the usual demographic and clinical information, the individual reviewing cases should have access to information on any special patient preparation and the type of imaging or contrast agent used, if any.

ANP.57500 Confidentiality and Security - IVM **Phase II**

The laboratory ensures that sites engaging in IVM provide reasonable confidentiality and security.

NOTE: Procedures might include message security, system and user authentication, activity logs, encryption, and access restrictions.

For laboratories subject to US regulations, the procedures must be in conformance with HIPAA requirements.

ANP.57550 IVM Dataset Identification **Phase II**

The laboratory ensures correct patient and IVM dataset identification.

NOTE: There are multiple ways to accomplish positive patient identification, including verbal communications, images of identifiers, etc.

ANP.57600 IVM Dataset Acceptability Criteria **Phase II**

There are defined criteria for acceptability of IVM datasets for the intended clinical application.

NOTE: IVM datasets must be of adequate quality for the intended clinical application. This requirement does not imply that all "unsuitable" datasets are discarded or not interpreted. However, there must be a mechanism to notify clinical personnel responsible for patient care when dataset quality is unacceptable for interpretation or if sub-optimal dataset quality impacts the quality of interpretation, with records of notification retained.

IVM REPORTS

ANP.57650 Report Review - IVM **Phase II**

IVM reports are reviewed and signed by the physician who interprets the IVM datasets.

NOTE: The inspector must review a sampling of reports issued since the previous on-site inspection, representing at least the most common types of IVM datasets interpreted in the IVM service. When diagnostic reports are generated by computer or telecommunications equipment, the actual signature or initials of the physician may not appear on the report. It is nevertheless essential that the IVM service have a procedure that ensures and records that the responsible physician has reviewed and approved the completed report before its release. In the occasional situation when the diagnosing physician is not available for timely review and approval of the completed report, there may be a procedure for review and approval of that report by another physician. In that circumstance, the names and responsibilities of both the physician who made the diagnosis and the physician who performed final verification must appear on the report.

Evidence of Compliance:

✓ Signed IVM reports

ANP.57700 Final Report Elements - IVM **Phase II**

The final report includes the dataset source, the imaging technology, as well as any limitations of the result, if applicable.

NOTE: In addition to the requirements above, the IVM system used and name of the vendor may be included in the report to provide users of the report with access to more information about the IVM system. For locally developed IVM systems, this may be in the form of a link to more information about the system on the internet. If a scoring system is used in interpretation, it should be referenced in the report.

The format of the final report is up to the medical director. The IVM report may be part of an encompassing surgical pathology report or stand on its own. Because the discipline is so visually-based, consideration should be given to including IVM images in the final report that reflect the final interpretation or pertinent findings.

Evidence of Compliance:

✓ IVM reports containing appropriate report elements

ANP.57750 Verbal Reports - IVM **Phase II**

If verbal reports are given, the physician speaks directly with medical/surgical personnel performing the IVM procedure and retains a record of the verbal report.

ANP.57800 Verbal Report Patient ID - IVM **Phase II**

The patient's identification is checked and confirmed before delivery of a verbal report.

ANP.57850 IVM Dataset Retention **Phase II**

IVM datasets used for interpretation or diagnosis are retained in accordance with policy.

NOTE: IVM datasets must be retained for 10 years (data must be retrievable for this period). IVM datasets are stored as digital files. Storage of the entire original data is not required. Stored data should include, at a minimum, the data (original data or derived data) used for interpretation or diagnosis.