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| **Processing Routine Surgical Specimens** | | | | | | |
| **Purpose** | This process describes how to handle specimens including collection, clerical, technical processing, instrumentation and quality control. | | | | | |
| **Policy Statements** | * Histology personnel are responsible for the preparation and staining of tissue sections from surgical or autopsy material for microscopic study and interpretation by the Pathologist. * Fresh specimens are examined and processed immediately for any special collections for specialized testing. Specimens are then placed immediately into a fixative that will prevent decomposition and preserve the tissue. | | | | | |
| **Specimen** | Fresh tissue, tissue fixed in 10% Formalin or B+ fixatives.  **Requisition Forms:**  Each specimen sent to the laboratory must be accompanied by a hardcopy Surgical Pathology Requisition Form. All requisitions are prepared and specimens labeled in the operating room or other location where biopsy or surgical procedure was performed.  *Note: Test requests ordered electronically or requests for special studies by the surgeon or consulting physicians should be printed and submitted with the specimen or written directly on the pathology requisition form. Verbal requests for special testing may also be made by consultation directly with the Pathologist on-service or on-call. We encourage advance communication to ensure that all biologic studies required for diagnosis and research are collected appropriately at the time of specimen receipt.*  The request slip is labeled with the following information:   * Patient's full name * Medical record number and billing number * Date of birth and date of admission * Admitting physician   Requisition must also include:   * The source of tissue * Pertinent clinical history * Pre- and/or postoperative diagnosis * Ordering physician * Any special requests such as photographs, cultures, etc.   **NOTE:** If the requisition information is inadequate, Histology personnel will document this in Copath as a preanalytic variance and call the submitting location to obtain the information needed. | | | | | |
|  | **Specimen labeling:**  The container label must contain the following informa­tion.   * Patient’s full name. * Age or date of birth. * Medical record number/billing number. * Tissue site.   The following information should be on either the container label or the requisition.   * Date and time specimen is collected. * Initials of person labeling the container. | | | | | |
| Specimen | **CAUSES FOR REJECTION:**  Laboratory Specimen Labeling, policy 630.00  **CONTAINERS:**  Plastic containers of assorted sizes are available in surgical pathology. Once the tissue is placed in the container, the container should be considered contaminated and handled with gloves. The cap should be secured tightly or by "one-click" for click caps to prevent leakage. The primary plastic container should then be placed in a biohazard bag to minimize personnel contact with blood, body fluids, and chemicals during specimen transport. Once placed in a sealed biohazard bag, the specimen can be handled without gloves. If a specimen is in a container or bag with a contaminated outside surface or a leaking container, this occurence should be documented in Copath as a pre-analytic variance.  **FRESH SPECIMENS FOR SPECIAL STUDIES:**  Tissue that requires special studies (intraoperative consultation, microbiology cultures, cytogenetics, flow cytometry, molecular diagnostics) must be submitted fresh and should be handed off directly to Histology staff or refrigerated in Histology. Fresh tissue specimens should be submitted on a sterile telfa pad moistened with sterile saline to prevent drying of the tissue. **Do not float or immerse specimens in saline** since this distorts the tissue. Any requests for special studies and the differential diagnoses being considered should be indicated on the requisition form. Microbiology cultures should be requested from Pathology, in which case the specimen will be divided by a Pathologist or Histology personnel and a portion will be submitted for culture and ordered in Copath. After tissues for special studies are collected, Histology and pathology personnel will place remaining tissue in the appropriate fixative.  **FIXATIVE:**  Fixation is important for optimal cell preservation and to prevent drying, especially for small biopsy specimens. Small biopsy specimens are to be placed immediately in the appropriate fixative. For 10% neutral buffered Formalin, use at least 10 times as much Formalin solution as the bulk of the tissue. Specimen containers should be placed in a biohazard bag for transport to the laboratory. Specimens submitted without fixative require refrigeration. Specimens without formalin or refrigeration for over an hour must have their condition documented in the gross description, as well as a pre-analytic variance in CoPath. Document that the surgeon was notified.  NOTE: Operating room personnel should consult the operating physician before placing any specimen in Formalin in order to be sure that microbiology studies, genetic studies, or other special examinations will not be required. When in doubt, submit the tissue fresh. If there a question regarding specimen submission, hospital staff are encouraged to contact Histol­ogy or consult with a Pathologist. | | | | | |
| **Process** |  | | | | | |
| **Specimen Pick-Up (Collection)** | **Step** | **Activity** | | | **Related Document** | |
|  | 1 | **Monday through Friday**, Surgical Pathology staff will pick up specimens from the designated post-operative area: scheduled 08:30, 11:00, 14:00 and 16:00. (Unscheduled pick-up may be performed depending upon surgery schedule and necessity for tissue processing.) The Histology department is covered by on-call staff on weekends and holidays.  Fresh specimens received after hours, on weekends or holidays will be brought to the clinical laboratory triage area by the OR staff and lab staff will notify the on-call Pathologist. The Pathologist may choose to contact on-call Histology staff, handle the specimen themselves or instruct the main lab staff in handling the specimen. | | |  | |
|  | 2 | Specimens obtained at the bedside or other locations should be transported directly to the Surgical Pathology depart­ment during regular working hours. After hours, or weekends and holidays, these specimens will be submitted to the clinical laboratory triage area and the on-call Pathologist (and/or on-call Histology staff) will be notified. | | |  | |
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| **Logging**  **Procedure** | **Step**  **1** | **Activity**  Upon arrival in Surgical Pathology, the specimen is given a unique accession number when entered into anatomic pathology laboratory information system (AP-LIS), CoPath Plus. The identity of every specimen is maintained at all times during the processing and examination steps. | | | **Related Document** | |
|  |  | **In Minneapolis** - Surgical cases are given the prefix **MS**, Hematology- **MH**, Cytology- **MC**, Placentas- **MP**, material for consult- **MCO**, and Autopsies- **MA**.  **In St. Paul** - Surgical cases are given the prefix**- SS**, Hematology- **SH**, Cytologies- **SC**, Placentas- **SP**, material for consult- **SCO**, and Autopsies- **SA**.  **Cardiac Registry** case numbers are assigned by the Cardiovascular Registry. Request forms are brought to STP Histology with the tissue cassettes by CVREG staff.  CVREG cases are registered into SUNQUEST and are then accessioned into CoPath (**CR-**). | | |  | |
|  | 2 | Record patient information, billing and any other pertinent specimen information. | | |  | |
|  | 3 | CoPath will generate container labels with the:   * Specimen number * Patient's full name * Medical record number | | |  | |
|  | 4 | Label the specimen container and the request slip. | | |  | |
| **Gross Examination** | **Step** | **Activity** | | | **Related Document** | |
|  | 1 | Prior to grossing, each specimen is matched with the cassettes to ensure that you are placing the appropriate tissue in the correct cassette. Then each specimen is carefully examined by a Pathologist, Pathology Assistantor qualified Histology personnel. | | |  | |
|  | 2 | The gross must include:   * Pertinent clinical history * Information regarding type, size and/or weight of speci­mens, measurements and extent of gross lesions. * A key or summary noting block and slide designations for special section (e.g. margins or resection, deepest penetration of tumor, etc.). * Any special collection by Pathologist, such as electron microscopy, cultures, imprints or immunofluorescent studies. * Results from frozen sections, if applicable.   There are Dragon templates available for standard grossing of routine specimens. | | |  | |
|  | 3 | The specimen is dissected and representative blocks are submitted by placing in numbered cassettes and immediately placing in fixative. Cleaning of instruments and cutting surfaces must be performed between cases. At a minimum, wiping or rinsing of forceps between cases is a requirement. Plastic/ disposable pipettes are disposed of after a single GI case to avoid cross contamination. Similiar tissue types should not be grossed in succession, if possible, to avoid tissue mix ups. | | | See user guide for Leica Cassette Labeler | |
|  | 4 | The original request is given to the Pathology Secretaries to match with the gross. They will hold this request until the final report is completed. It is then filed in Pathology and retained for a minimum of two years per CAP guidelines. | | |  | |
|  | 5 | The number of blocks, additional slides, any special handling at embedding or other request is recorded in the AP-LIS (Co-Path Histology Data Entry/ Edit function). | | |  | |
|  | 6 | The Leica processor will prompt for a *block count* prior to starting.  **In St. Paul** - Routine tissues in cassettes must be ready to be transported by courier which departs at 15:45 in order to ensure loading on the overnight tissue processing run. A 17:00 courier is also available for late surgery cases; any tissue to be transported on this late courier cannot be guaranteed to be on the routine overnight tissue processing run.  GI Biopsy cases should be transported on the 10:45, 12:45 and/or 14:45 couriers; if possible to ensure timely processing.  Communication from personnel covering the St.Paul campus to the afternoon MPLS staff regarding specimens and couriers is essential. | | |  | |
|  | 7 | After cassettes are loaded and processors started,   * Review and Verify Stain Process Log. * Fill out Histology Requests Forms and/or Immunhistochemistry Request Forms if needed. | | |  | |
| **Specimen Processing (Minneapolis Campus Only)** | **Step** | **Activity** | | | **Related Document** | |
|  | 1 | Place the rack with cassettes in the processing chamber of the Tissue Tek VIP 5 for large specimens and the Leica ASP300 for small specimens to be processed. | | | [Checklist for Preventative Maintenance](file://Dax/data/Dept/LAB/Quality/Lab%20QM%20Drafts/Process%20Drafts/VIP%205%20Maintenance%20sheets.doc) | |
|  | 2 | Be sure to scan the process program selected. Close and lock the processor. Double check the End Time for correct completion.  NOTE: Current process programs are posted on the proces­sor and in the VIP 5/ ASP300 manual. | | |  | |
|  | 3 | The processing cycle will be completed the next morning. | | |  | |
|  | 4 | Remove specimens from processor following the checklist for Preventive Maintenance. | | | [Checklist for Preventative Maintenance](file://Dax/data/Dept/LAB/Quality/Lab%20QM%20Drafts/Process%20Drafts/VIP%205%20Maintenance%20sheets.doc) | |
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| **Embedding** | **Step** | **Activity** | | | **Related Document** | |
|  | 1 | Place cassettes into the Leica Embedding Center. Standard embedding techniques are used. Melt wax off of molds in the embedding center and place molds into the retort on the tissue processor. Press the CLEAN CYCLE on the tissue processor to ready the equipment for the next processing cycle. | | |  | |
|  | 2 | Embed the tissue using the number of blocks listed on the Accession Log as a quality control measure. Place initials next to each case you embed. Always embed cases together.. If you find a descrepancy, stop and wait for PA or Pathologist to clarify. Any discrepancies may be documented in CoPath as analytic variances if appropriate. This is to ensure follow-up on possible errors or inaccuracies and document trends. | | |  | |
|  | 3 | After paraffin has solidified, remove cassettes from molds, trim excess paraffin from blocks and arrange blocks by the priority assigned. | | |  | |
|  | 4 | The embedding center should be kept clean and well maintained daily. Temperatures of the work surface, mold tray and paraffin tank are monitored and recorded daily.. | | | Embedding Log | |
| **Microtomy** | **Step** | **Activity** | | | **Related Document** | |
|  | 1 | Shave in all the blocks to full face and place on ice, with faced side down. | | |  | |
|  | 2 | Cut routine blocks at 4 microns\*\*; float sections on water bathand mount on slides identified with its unique accession number. Clean floating sections from water bath between each block to prevent cross-contamination of paraffin sections. Keep microtome clean and well maintained. Record water bath temp and that microtome was cleaned daily.  \*\* Sections for kidney biopsies, lymph nodes and bone marrow cores are cut at 3 microns. | | | Microtomy Log | |
|  | 3 | Make sure any special information such asmultiple levels, serial sections or special stains are in­cluded on the slide. Slides must include the uniqueaccession number as well as the patient's name. Refer to the working guidelines for the Leica Slide Printer. | | | Working Guidelines for the Leica Slide Printer | |
|  | 4 | Make any changes or additions to CoPath at this time. | | |  | |
|  | 5 | Place slides in appropriate slide rack and place into the Leica H&E Stainer. (Slides may also be manually dried in slide dryer for 20-30 minutes at 60-65°C.) | | |  | |
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| **Staining and Labeling** | **Step** | **Activity** | | | **Related Document** | |
|  | 1 | Stain slides with the routine Hematoxylin and Eosin (H & E) staining method on the Leica automated stainer. Refer to the Leica automated stainer guide or the posted bench references if need­ed. | | | Leica Automated Stainer Guide  Posted Bench References | |
|  | 2 | Coverslip slides either with the automated Leica Coverslipper or manually with a synthetic mounting media. | | |  | |
|  | 3 | Check at least one slide from each rack to monitor the acceptability of the stain. A QC slide is run daily to monitor staining quality. This is documented on the Daily Staining QC Form. | | | HistologyQuality Control Form | |
|  | 4 | A block check, matching the cut block with the stained slide, is performed and documented on all specimens along with the time slides were ready. | | |  | |
|  | 5 | Stained slides are placed into slide folders, leaving a space in the folder between cases. Printed gross descriptions are matched with the slides in each folder and are distributed to the designated Pathologist. | | |  | |
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| **Clerical** | **Step** | **Activity** | | | **Related Document** | |
|  | 1 | The Pathology secretaries will check the gross descriptions entered into Copath using the Dragon system and print the history of the patient which enables the Pathologist to correlate previous diagnosis with current cases. | | |  | |
|  | 2 | Match reports by patient names and specimen numbers with the stained slides.  Some cases may not have the typed report available at time of slide review. Notify the case Pathologist. | | |  | |
|  | 3 | Check cases for any changes or additional work done and update CoPath. Accurate recording of workload is critical for specimen documentation and billing. | | |  | |
|  | 4 | It is the responsibility of the Pathologist reading slides to indicate to the Histology staff if the technical quality is insufficient for diagnosis (using Quality half sheets).  Histology staff documents daily the adequacy of histologic and cytologic preparations on the Histology Quality Control Form. | | | Histology Quality Control Form | |
| **Maintenance/ Trouble Shooting** | Complete maintenance on the VIP 5/ ASP300. Check and initial when completed. Complete maintenance on all other equipment and record temperatures.  [Checklist for Preventative Maintenance](file://Dax/data/Dept/LAB/Quality/Lab%20QM%20Drafts/Process%20Drafts/VIP%205%20Maintenance%20sheets.doc)  Each piece of equipment used in the processing of specimens has troubleshooting information and operating instruc­tions outlined in the Equipment Manual. Refer to this when additional information is needed. | | | | | |
| **Authorization** |  | | | **Signature** | | **Date** |
|  | **Medical Director** | | | Dennis Drehner,DO | | 2/18/09 |
|  | | | Peter Helseth, MD | | 5/1/12 |
| **Medical Director** | | | Megan K. Dishop MD | | 6/27/15 |
|  | | | Megan K. Dishop MD | | 6/28/17 |
|  |  | | | | | |
| **Annual Review** | **Designee** | | **Signature** | | | **Date** |
| **Technical Specialist** | | Dave Slinger | | | 4/16/09 |
|  | | Dave Slinger | | | 4/15/10 |
|  | | Dave Slinger | | | 2/11/11 |
|  | **Pathologist Assistant** | | Melissa Turner, PA | | | 5/21/12 |
|  |  | | Melissa Turner, PA | | | 7/2015 |
|  | **Histology Supervisor** | | Prabha Chintapalli | | | 6/19/17 |
|  | **Revision**  **Revised** | | Meliss Turner PA  Angela Dubbelde | | | 9/18/18  5/16/2019 |