

Overview

Useful For

Evaluating and managing patients with kidney disease

Following the progression of known renal disease or response to therapy

Determining the cause of dysfunction in the transplanted kidney (allograft)

Testing Algorithm

The Renal Pathology Consultation is performed by a Mayo Clinic renal pathologist and entails the performance of appropriate procedures and stains based on the material received, patient information and specific findings on the case in order to determine a diagnosis. Optimal/standard diagnostic interpretation of a medical kidney biopsy requires integration of the light microscopy, immunofluorescence, and electron microscopy findings together with the clinical and laboratory data for the patient. Published standards by the Renal Pathology Society are followed for the diagnostic evaluation and reporting of non-neoplastic renal disease.(1)

Light Microscopy:

Wet/unprocessed tissue submitted for light microscopy routinely includes the preparation of stains, which include hematoxylin and eosin (H and E), periodic acid Schiff (PAS), Masson trichrome, and Jones methenamine silver stains.

Immunofluorescence:

Wet/unprocessed tissue submitted for immunofluorescence may include the following stains in order to render an accurate diagnosis. These stains include: IgA, IgG, IgM, C1q, C3, albumin, fibrinogen, kappa light chain, and lambda light chain stains with C4d added if the biopsy is an allograft.

The IgG subtypes (IgG1, IgG2, IgG3, IgG4) are typically only utilized if the biopsy shows features suspicious for a monoclonal/monotypic deposition process involving IgG.

Alport (collagen IV, alpha 2 and alpha 5) staining is performed in the setting of biopsy findings that are consistent with

hereditary nephritis/Alport syndrome.

Phospholipase A2 Receptor (PLA2R) staining is performed in the setting of membranous nephropathy/glomerulonephritis to aid in determining whether it is most likely primary/idiopathic or secondary.

Paraffin-Based Immunofluorescence Stains:

The paraffin-based immunofluorescence stains listed above would only be utilized in the special circumstance when there is no tissue or inadequate tissue available for standard immunofluorescence or if there are findings that raise concern for so-called "masked deposits"

Electron Microscopy:

Wet/unprocessed tissue submitted for electron microscopy will be processed for transmission electron microscopy. A formal interpretive report is issued, incorporating the findings from all tests performed for diagnostic purposes.

See [Pathology Consultation Ordering Algorithm](#)

Special Instructions

- [Renal Biopsy Patient Information](#)
- [Renal Biopsy Procedure for Handling Tissue for Light Microscopy \(LM\), Immunofluorescent Histology \(IH\), and Electron Microscopy \(EM\)](#)
- [Pathology Consultation Ordering Algorithm](#)

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
LV4RP	Level 4 Gross and Microscopic, RB	No	No
EMR	EM, Renal Biopsy	No	No
SS2PC	SpecStain, Grp II, other	No	No
IFPCI	IF Initial	No	No
IFPCA	IF Additional	No	No

Method Name

Pathology Consultation

NY State Available

Yes

Specimen

Specimen Type

Kidney Biopsy

Shipping Instructions

1. Advise shipping specimens in Styrofoam transportation coolers to avoid extreme hot or cold temperatures to ensure specimens are received at required specimen stability temperature.
2. Attach the green pathology address label included in the kit to the outside of the transport container.

Necessary Information

Note: Requisitions for this procedure cannot be processed unless the listed necessary information is supplied.

1. All requisitions must be labeled with:

-Patient name

-Date of birth

-Medical record number

-Ordering physician

-Anatomic site

-Collection date

2. All specimens must be labeled with:

-Two patient identifiers (first and last name, date of birth or medical record number).

-Anatomic site

Specimen Required

Specimen Type: Tissue

Supplies: Renal Biopsy Kit (T231)

Source: Kidney

Specimen Volume: Entire specimen

Collection Instructions: Collect specimens according to the instructions in [Renal Biopsy Procedures for Handling Tissue](#)

[for Light Microscopy, Immunohistology, and Electron Microscopy](#)

Forms

1. [Renal Biopsy Patient Information](#) in Special Instructions
2. [Renal Biopsy Procedures for Handling Tissue for Light Microscopy, Immunohistology, and Electron Microscopy](#)
3. If not ordering electronically, complete, print, and send a [Renal Diagnostics Test Request](#) (T830) with the specimen.

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Minimum Volume

See Specimen Required

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Kidney Biopsy	Ambient (preferred)		
	Refrigerated		

Clinical & Interpretive**Clinical Information**

The Mayo Renal Pathology service is staffed by board-certified pathologists who have a special interest in non-neoplastic diseases of the kidney.

Kidney biopsy has proven to be of value in the clinical evaluation and management of patients with kidney disease, including acute and chronic renal insufficiency, nephrotic syndrome, nephritic syndrome, proteinuria and hematuria, and in the overall management of renal transplant recipients.

Optimal interpretation of a kidney biopsy requires integration of clinical and laboratory results with light microscopic, immunofluorescent histology, and electron microscopy findings.

Reference Values

An interpretive report will be provided.

Interpretation

Both a verbal report and a faxed report are provided to nephrologists for Mayo Clinic Laboratories cases.

Representative electron microscopy images and significant positive immunofluorescent stain findings can be provided on a CD upon request.

In most cases, the electron microscopy results are reported as an addendum and a final report is issued including these findings. This final report is again faxed to the submitting nephrologist and mailed to the submitting pathology laboratory, along with a representative set of the light microscopy slides.

Cautions

Accurate and timely interpretation of a kidney biopsy requires integration of light microscopic, immunofluorescent histology, and electron microscopic findings with clinical and laboratory data. Failure to provide the relevant clinical history and laboratory results may result in a delay in the interpretation or the inability to adequately correlate the biopsy findings with the clinical picture.

Clinical Reference

1. Chang A, Gibson IW, Cohen AH, et al: A position paper on standardizing the nonneoplastic kidney biopsy report. Clin J Am Soc Nephrol 2012;7:1365-1368
2. Heptinstall RH: Heptinstall's Pathology of the Kidney. Edited by JC Jennette. Lippincott Williams and Wilkins, 2007

Performance**Method Description**

Gross and microscopic examination of tissue. Ancillary testing is ordered at the discretion of the Mayo pathologist. The results of all testing will be provided in the context of the final pathology report.(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

Dependent on sample type

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

Not Applicable

CPT Code Information

88305 (If appropriate)

88348 (If appropriate)

88313 (If appropriate)

88346 (If appropriate)

88350 (If appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
RPCWT	Renal Pathology	65757-7

Result ID	Reporting Name	LOINC®
71219	Interpretation	60570-9
71220	Participated in the Interpretation	No LOINC Needed
71221	Report electronically signed by	19139-5
71222	Addendum	35265-8
71223	Gross Description	22634-0
71224	Material Received	85298-8
71615	Disclaimer	62364-5
71846	Case Number	80398-1