

 <p>CLINICAL PRACTICE GUIDELINE</p> <p>SITE-SPECIFIC - Applies to all Shared Health staff at the site indicated in the policy name.</p>	Practice Guideline: <i>HSC - Percutaneous Kidney Biopsy</i>		
	<i>Approval Signature:</i> Shared Health Executive	Guideline Number: 350.210.119 Section: 350.210 Child Health	Page: <i>1 of 4</i>
	Approval Date: <i>March 1, 2024</i>	Supersedes: 80.210.1241	

1.0 PURPOSE:

For nursing to safely and accurately assist with a percutaneous kidney biopsy.

2.0 DEFINITIONS:

- 2.1 **Percutaneous Kidney Biopsy:** Removal and examination of kidney tissue by percutaneous technique. The procedure is performed under ultrasound guidance
- 2.2 **Kidney Biopsy:** Biopsy of the patient's own kidney, with the patient lying prone for the procedure
- 2.3 **Transplant Kidney Biopsy:** Biopsy of the transplanted kidney usually located in the lower abdomen, with the patient supine for the procedure

3.0 PATIENT PREPARATION:

- 3.1 The patient needs to fast for a minimum of 8 hours for solids and 60 minutes for clear fluids. Sips of water to take morning medications are acceptable
- 3.2 Patients may be sedated in the Pediatric Day Unit or in the Children's Hospital Operating Room. See Practice Guideline below for more information

4.0 EQUIPMENT:

- 4.1 Liver/kidney biopsy tray (available from Medical Device Reprocessing)
- 4.2 Should have sterile drape, gauze, container for chlorhexidine, 10ml sterile syringe and forceps
- 4.3 16-gauge X 16cm Biopsy needle (found in treatment room on PDU or in OR in Kidney Biopsy Bin 6195)
- 4.4 Biopsy gun (found in treatment room on PDU or in OR in Kidney Biopsy Bin 6195)
- 4.5 Sterile ultrasound sleeve (ask physician as not used for all patients)
- 4.6 Sterile gloves for physician
- 4.7 Aqueous Chlorhexidine Gluconate 2% with 4% Isopropyl alcohol solution
- 4.8 6 - 2x2 gauze
- 4.9 2 - 4x4 gauze
- 4.10 2-3 Small non-adherent sterile pads (ie. Telfa) for specimen
- 4.11 1% Xylocaine without epinephrine
- 4.12 Sodium Bicarbonate IV solution 8.4% (not used by all physicians - check before opening)
- 4.13 Spinal needle 20-gauge X3.5 inch (not used for every patient - check with physician before opening)
- 4.14 2-3 10 ml prefilled Normal Saline syringes
- 4.15 5-6 sterile urine sample containers
- 4.16 Pillow or roll
- 4.17 Povidone swabs for marking (not used for every patient – check with physician before opening)
- 4.18 18-gauge X 1.5inch blunt needle
- 4.19 25-gauge X 1.5inch injection needle
- 4.20 11 blade on a scalpel
- 4.21 Breathable, absorbent self-adhesive bandage (i.e. Mepore)

5.0 LAB REQUISITIONS:

- 5.1 Bloodwork and urine testing requisitions will be provided from Pediatric Nephrology generated through Accuro
 - 5.1.1 Pathology Services Laboratory Requisition
 - 5.1.2 Ultrasound requisition
 - 5.1.3 Biochemistry/Hematology Requisition
 - 5.1.4 Pediatric Renal Biopsy Pathology Request

6.0 PRACTICE GUIDELINES:

- 6.1 The Pediatric Nephrology Nurse Clinicians are the main contact people for booking kidney biopsies
- 6.2 Kidney biopsies will usually be booked in the Pediatric Day Unit (PDU) unless there is a contraindication. The PDU sedation contraindications are: Body Mass Index (BMI) > 97th percentile or z-score > 2, airway abnormalities, nocturnal Continuous Positive Airway Pressure (CPAP), Active Upper Respiratory Tract Infection (for urgent cases), corrected gestation age < 6 months, requirement for home oxygen (O₂), or other conditions associated with high risk for complications e.g. Trisomy 21, Achondroplasia. Refer to PDU Referral Pre-Sedation History Form # NS00682 for contraindications
 - 6.2.1 Kidney biopsies in PDU are booked on Wednesdays at 0830h and Thursdays at 0830h or per PDU directions on sedation times.
 - 6.2.2 These two biopsy times are held on the PDU sedation schedule until 1430h on Monday for the Wednesday timeslot and Tuesday for the Thursday timeslot per agreement with PDU
 - 6.2.3 Urgent biopsies may be booked into these timeslots if available. If these times are not available or a biopsy is needed on another day using PDU sedation, the Pediatric Nephrologist will contact PDU to ask for help to find a sedation physician or the medical director of PDU directly
- 6.3 If there is a contraindication or biopsy to be coordinated with other procedures, the biopsy may be booked in Children's OR
 - 6.3.1 Kidney biopsies in the OR will be booked through OR slating at 204-787-7422. The OR will try as much as possible to provide a slated time, as the pathology technologist and Ultrasonographer need to be present for the procedure. Nephrology Nurse Clinician, physician or Charge Nurse must notify the pathology technologist at 204-787-7588 and ultrasound at 204-787-4800 of the date, time and location of the biopsy
- 6.4 INR and platelet count must be performed and available on the health record prior to the procedure. This can be done up to 8 weeks prior to the biopsy
- 6.5 A time is booked for the biopsy with the Pediatric Ultrasound Department completed by the PDU staff or Nephrology Nursing Assistants or Nephrology Nurse Clinician. Once the date and time is booked, fax the ultrasound requisition to Diagnostic Imaging 204-940-8793. If the biopsy is performed outside of the ultrasound suite, confirm availability of an Ultrasonographer and portable machine. This procedure is performed under ultrasound guidance
- 6.6 The PDU staff, Nephrology Nursing Assistants, or Nephrology Nurse Clinician will notify the Pathology staff regarding the date, time and location of the procedure
- 6.7 Check the patient chart to verify that the patient/legal guardian has signed the informed consent form specifying the procedure. This form must also be signed by the responsible physician performing the procedure.

7.0 PROCEDURE:

- 7.1 Confirm patient identity with two patient identifiers per the Client Identification policy #350.150.110
- 7.2 Start an intravenous as per Pediatric Kidney Biopsy Orders PHOR 646
 - 7.2.1 For renal transplant patients having their biopsy in PDU, immunosuppressive medications will be held until after bloodwork is drawn, then ensure immunosuppressive medications are given
 - 7.2.2 Bloodwork and urine requisitions will be supplied by Nephrology
 - 7.2.3 Label all specimens
- 7.3 Have child void in order to fully empty their bladder. Save the urine
 - 7.3.1 Divide urine sample into two containers. Each container must be labeled with the patient name, hospital number, date and time of the sample. One container will be marked pre-biopsy and kept. This sample will be used to compare urine samples post kidney biopsy for visible blood. The second container will be sent for urinalysis, protein or albumin, creatinine, and for any other tests ordered by Pediatric Nephrology
 - 7.3.2 If patient is to be admitted to inpatient unit post biopsy, ensure pre-biopsy urine sent to unit with patient to compare post biopsy
- 7.4 Obtain patient weight, baseline vital signs: blood pressure (BP), pulse, respiratory rate, oxygen saturations and temperature prior to the procedure
- 7.5 Position patient:
 - 7.5.1 For kidney biopsy (see 2.2): position child prone with a roll under their abdomen
 - 7.5.2 For a transplant kidney biopsy: position child in supine position
- 7.6 Prior to the biopsy procedure, all staff and family in the biopsy room must don a surgical mask. The patient is not required to wear a mask
- 7.7 Monitor oxygen saturations and EKG continuously throughout the procedure, and blood pressure after each pass of the biopsy needle
- 7.8 Physician to cleanse the site with the Aqueous Chlorhexidine Gluconate 2% with 4% isopropyl alcohol, and then cover the patient with a sterile drape. They will then prepare and administer the injection of local anesthetic to area. This may require the use of a spinal needle depending on the depth of the kidney. They will use a scalpel to cut through the skin prior to inserting the biopsy gun to obtain the kidney samples
- 7.9 Physician will place kidney sample on non-adherent sterile pad (ie. Telfa) soaked with normal saline, then pass the sample to the pathology technologist. If the pathology technologist is not in the room, this communication and giving the samples to the technologist will take place through a circulating nurse. Two kidney samples acceptable to the pathology technologist is optimal. Pathology technologist should communicate to the Pediatric Nephrologist performing the biopsy if the specimens are an adequate sample.
- 7.10 Provide direct pressure to biopsy site for 5-10 minutes (length to be determined by attending Nephrologist) once biopsy is completed
- 7.11 Apply a dressing as required
- 7.12 The pathology technologist will take the kidney biopsy specimens properly labeled to the lab with the appropriate pathology requisition and Pediatric Renal Biopsy Pathology Request form
- 7.13 Post biopsy procedure, monitor and document blood pressure, pulse, respirations, and observations of biopsy site:
 - Every 15 minutes x 4
 - Every 30 minutes x 2
 - Every 60 minutes x 2
 - Then every 4 hours until discharge

- 7.14 Patient will be on bed rest for 1-hour post procedure. After this time, the patient may have bathroom privileges only until discharged. If patient unable to void within 2 hours post biopsy, contact Pediatric Nephrologist
- 7.15 Patient will need to void three times prior to being discharged. Collect and save post-biopsy urine samples. Mark specimen's post-biopsy # 1, 2, 3. They do not need to be sent for urinalysis unless ordered by the Pediatric Nephrologist
 - 7.15.1 Compare pre-biopsy sample to post-biopsy samples for color. Record observations on the Pediatric Day Unit record or Day Surgery record. Label specimens with date/time
 - 7.15.2 Gross hematuria may be present post-biopsy, but should lighten and clear with subsequent voids. Notify the Pediatric Nephrologist immediately if gross hematuria remains; the patient is unable to void; or if the patient passes large (greater than 1.5 cm) and/or multiple blood clots
- 7.16 Monitor patient's biopsy dressing for bleeding or pain and administer analgesia as ordered. If the dressing is saturated with blood within 15 minutes, apply pressure again and notify the Nephrologist immediately
- 7.17 The patient may eat and drink post procedure. Encourage oral fluids. Follow any dietary and fluid restrictions as ordered on the Pediatric Kidney Biopsy Orders PHOR 646
- 7.18 Prior to discharge, provide and review the discharge information pamphlet with the patient. If clarification is required, contact the Pediatric Nephrology Nurse Clinician for additional information
- 7.19 Discontinue IV prior to patient being discharged home. If patient returning to inpatient unit or being admitted post biopsy, leave IV in situ
- 7.20 Discard the urine samples after the patient is discharged or transferred back to inpatient unit

8.0 DOCUMENTATION:

- 8.1 Pediatric Day Unit Record Form # NS00667
- 8.2 Pediatric Procedural Sedation Form # NS00687
- 8.3 Pediatric Day Surgery Record (SAP #299116)

9.0 REFERENCES:

- 9.1 Ball, Oates A, Ahuja S, Lee MM, Phelps AS, Mackenzie JD, Courtier JL. **Pediatric renal transplant biopsy with ultrasound guidance: the 'core' essentials.** *Pediatric Radiology.* 2017;47(12):1572-9.
- 9.2 Pamaiahgari, P. **Renal Biopsy (Outpatient Procedure): Safety and Post Biopsy Care.** *JBI Evidence Summary.* 2022;1652(2). The JBI EBP Database. 2022.
- 9.3 Whittier, WL and Korbet, SM. **The kidney biopsy.** UpToDate, last updated April 4, 2023.

10.0 RESOURCES

- 10.1 Pediatric Nephrology
- 10.2 Pediatric Nephrology Nurse Clinicians
- 10.3 Children's Hospital Nurse Educators
- 10.4 Pediatric Day Unit Nurses
- 10.5 Pediatric OR Nurses
- 10.6 Pediatric Day Surgery Nurses