

# PERCUTANEOUS RENAL BIOPSY: PATIENT MANAGEMENT - SCH

## PRACTICE GUIDELINE<sup>®</sup>

### DOCUMENT SUMMARY/KEY POINTS

- Renal biopsy is performed for diagnosis, management and monitoring of kidney disease.
- Percutaneous renal biopsies are performed under real time ultrasound guidance by the Nephrologist, or Nephrology Trainee in the Medical Imaging Department.
- Elective biopsies are generally performed as a day stay procedure.
- Microscopic haematuria is to be expected post biopsy as damage to the renal tissue has occurred. Macroscopic haematuria developing after biopsy may signify a major complication and requires urgent assessment.

### CHANGE SUMMARY

- Document due for mandatory review.
- Stress dose hydrocortisone added.

### READ ACKNOWLEDGEMENT

This document should be read by all Randwick Clinical staff that care for children who require a percutaneous renal biopsy.

Members of Department of Nephrology and nursing staff on ward caring for renal biopsy patient, including recovery ward are to read and acknowledge they understand the contents of this document.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

<b>Approved by:</b>	SCHN Policy, Procedure and Guideline Committee	
<b>Date Effective:</b>	1 <sup>st</sup> June 2019	<b>Review Period:</b> 3 years
<b>Team Leader:</b>	Clinical Nurse Consultant	<b>Area/Dept:</b> Nephrology

## Introduction

Renal biopsy is performed for the diagnosis, management and monitoring of kidney disease (1, 2, 3). The histological information gained guides treatment and informs as to prognosis for the individual patient (3, 4).

Percutaneous renal biopsies are performed by the Nephrologist or Nephrology Trainee in the Medical Imaging Department using real time ultrasound. Sedation / anaesthetic is administered by the attending Anaesthetist.

### **This guideline is to be used in conjunction with:**

- [Consent to Medical Treatment: Patient Information](#) Policy
- [Intravenous Fluid and Electrolyte Therapy – SCH](#) Practice Guideline

## Preparing Child & Parents

- Blood to be collected for UEC, FBC, coagulation studies<sup>(2)</sup>, and group and hold (cross match may be required for some patients). Where feasible these tests should be done before the day of procedure.
- Inform parents that aspirin and / or non-steroidal anti-inflammatory medications should not be given for 2 weeks prior to biopsy.
- Withhold antihypertensive medications on the morning of biopsy, give immunosuppressants with sip of water
- Obtain any previous ultrasound studies, if attended outside Sydney Children's Hospital.
- On admission attend baseline observations of height, weight, temperature, pulse, blood pressure & urinalysis.
- Give stress dose IV hydrocortisone for transplant patients, or those patients on second daily steroids.

Age	DOSE (mg)	Route
Neonate – one year	25	IV
1-5 years	50	IV
5 year - adult	100	IV

- Involve Child Life Therapy as required for distraction purposes/implementation of coping strategies.
- Consent obtained by medical officer.
- Give parents a copy of patient information sheet, found at end of guideline or [here](#) in ePolicy "For Parents" tab.

## Post Biopsy Management

### Fluid Management

- Will depend on patient's renal function and underlying disease. In general, most patients will require IVI 0.45% sodium chloride + 5 % glucose at maintenance + 25% during the procedure and until the child is drinking adequate amounts. Transplant patients may require increased fluids depending on usual fluid requirement; give 105% of usual fluid intake.

### Observations

Blood pressure/pulse/respirations & biopsy site (bleeding / haematoma) every 15 minutes for first hour <sup>(5)</sup>, then every 30 minutes for the next hour, then hourly for 4 hours, then 2nd hourly until 8 hours post biopsy<sup>(6)</sup> or discharge (if staying overnight maintain 4<sup>th</sup> hourly).

**Note:** Tachycardia or a falling blood pressure could signify occult bleeding. The renal registrar should be contacted immediately if there is a 20% change in systolic blood pressure or pulse rate.

### Urine

- Microscopic haematuria is to be expected post biopsy, as damage to the renal tissue has occurred. However new macroscopic haematuria could signify a major haemorrhage.
- Inspect all urine for macroscopic haematuria<sup>(5, 6)</sup>.
- If macroscopic/frank haematuria occurs keep specimen & subsequent specimens to enable assessment of degree of bleeding
- Document the absence of, or presence of macroscopic haematuria in progress notes.

**Note:** If macroscopic haematuria develops after biopsy, the renal registrar or on-call renal doctor after hours should be promptly informed.

### Pain / Analgesia

- Analgesia should be prescribed by the anaesthetist or renal team.
- Procedural pain is usually minor and is able to be controlled by simple analgesia.

**Note:** Please contact the renal registrar immediately if the child complains of severe loin pain, abdominal pain or pain over biopsy site.

### General care

If possible, maintain biopsy position for first hour. Position may then be changed.

- Bed rest for 6 hours post biopsy<sup>(4)</sup>.
- Gentle mobilisation thereafter.
- Encourage fluids when awake.
- Diet as tolerated.

## Discharge

The patient may be discharged after a biopsy when:

- 6 hours has passed from the time of biopsy<sup>(4, 5, 6)</sup>
- Observations have been stable and within normal range
- Pain is controlled
- Urine has been passed on at least 2 occasions
- There is no macroscopic haematuria
- The patient has been reviewed by a member of the renal team
- The renal team has approved discharge and has arranged follow-up.
- Patient and parent/carer have been given discharge information (see below)

## Possible Complications of Renal Biopsy

Complications of renal biopsy are infrequent and include the following:

- Macroscopic haematuria <sup>(1, 3, 4, 6)</sup>.
- Peri-renal haematoma <sup>(1, 3, 6)</sup>.
- Severe back/flank pain <sup>(1, 6)</sup>.
- Renal colic secondary to passage of clots <sup>(3)</sup>.
- Prolonged haematuria requiring blood transfusion <sup>(6, 7)</sup>.
- Inadvertent biopsy of other organs
- Infection <sup>(6)</sup>.
- Intra-renal arteriovenous fistula <sup>(1, 3, 6)</sup>.

## Discharge Information

- Carers/parents/child should be informed that strenuous exercise and contact sports should be avoided for at least two weeks.<sup>(5, 6)</sup>
- In most instances, return to school may take place 2 days following discharge<sup>(5)</sup>.
- The parent/carer should have contact details for renal team and understand follow up plans.
- If the child experiences severe pain or has macroscopic haematuria he/she should have a prompt medical assessment and the renal team should be alerted. <sup>(6)</sup>.
- The surgical site dressing (using only an adhesive dressing) can be removed in 24 hours.

## References:

1. Simckes, AM, et al., 2000 "Success and safety of same-day kidney biopsy in children and adolescents", *Pediatric Nephrology*, vol. 24, pp. 946-952
2. Hussain, F et al, 2003, "Standards for renal biopsies: comparison of inpatient and day care procedures" *Pediatric Nephrology*, vol. 18, pp. 53-56

3. Franke, M, et al., 2014, "Ultrasound-guided Percutaneous Renal biopsy in 295 Children and Adolescents: Role of Ultrasound and Analysis of Complications",
4. Sinha, MD, et al., 2006, "Percutaneous real-time ultrasound-guided renal biopsy by automated biopsy gun in children: Safety and complications", Journal of Nephrology, vol 19, pp. 41-44
5. White, RHR, & Poole, C, 1996, "Day care renal biopsies", Pediatric Nephrology, vol. 10, pp. 408-411
6. Tomsett, A., & Watson, A. 1996 "Renal biopsy as a day case procedure", Paediatric Nursing, vol. 8, no. 5, pp. 14-15.
7. Hussain, F et al., 2010 "Renal biopsies in children: current practice and audit of outcomes". Nephrology Dialysis Transplant, vol 25, pp 485-489

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## Kidney Biopsy, Patient Information SCH, Randwick

A biopsy may be recommended when tests show that there could be a problem with the way your child's kidneys are working. A tiny sample of kidney tissue is taken and is examined under a regular microscope as well as a highly specialised electron microscope. This can help to diagnose and monitor problems, as well as guide treatment.

A biopsy needle is used to take a couple of tiny samples of your child's kidney. The biopsy is usually done under general anaesthetic, or sedation/local anaesthetic depending on your child's circumstances, using ultrasound guidance in the radiology department at SCH.

Before a biopsy, you will be asked to sign a consent form for the procedure. We will also do a blood test to check how well your child's blood clots; this is a precaution to reduce the risks of bleeding. You will be advised of your admission time and ward and will be given a fasting time for your child; you may give medications, apart from blood pressure medications with as little water as possible at 6 am. **If your child is on aspirin or non-steroidal medications, please check with your doctor as they may need to be stopped 2 weeks prior to the biopsy. Should your child accidentally ingest any aspirin or non-steroidal medications during these 2 weeks please inform the renal team immediately as the date of the biopsy may need to be postponed.**

Risks of kidney biopsy are very small; the doctor will discuss these with you prior to signing the consent for the procedure. There is a low risk of bleeding either around the kidney, or into the urine. Generally this will go away within a few hours. Rarely further treatment may be required. Your child may experience some pain and discomfort around the area of the biopsy.

After the biopsy your child will need to rest in bed for 6 hours. Frequent observations will be performed including blood pressure and pulse as well as checking the biopsy site. Your child's urine will be checked for visible blood. Generally your child will be allowed to go home after this time, following review by the renal team so long as they have passed urine at least twice and their urine is not blood stained.

You will be informed when to return to clinic to obtain the results of the biopsy.

Discharge advice:

- The dressing on the biopsy site can be removed after 24 hours.
- Your child may return to school 2 days following the procedure.
- Strenuous exercise and contact sports should be avoided for at least two weeks.
- If your child experiences severe pain, has visible blood in the urine, or feels faint or dizzy they should be reviewed by a doctor promptly. The renal team should be notified by calling the department on 9382 1646 during working hours or the hospital switch board on 9382 1111 and asking for the paediatric nephrologist out of hours.