Northern Health

Term Description – Handbook – ROVER

1. Term details:			
Health Service:	Northern Health	**Term duration:**	Maximum: 13 weeks
Location/Site:	Northern Hospital Epping	**Clinical experience - Primary**:	C: Acute and critical illness patient care
Parent Health Service:	Northern Health	**Clinical experience - Secondary**:	B: Chronic illness patient care
Speciality/Dept.:	Renal Medicine	**Non-clinical experience:**	*(PGY2 only)*
PGY Level:	PGY2	**Prerequisite learning:**	*(if relevant)*
Term Descriptor:	*The Northern Health Renal Unit comprises one inpatient unit at Northern Hospital, with one in-centre dialysis unit as well as a large ambulatory service that includes outpatient clinics, satellite dialysis units and home dialysis services. Satellite dialysis units are at The Northern Hospital (Epping Clinic E Dialysis and Carpark dialysis units), Broadmeadows Hospital (that will also manages subacute rehab/GEM patients at BH) and Craigieburn Health Service. The term includes ward-based management of acute and chronic renal conditions, liaising with the multi-disciplinary team and presentation at unit meetings.*		

2. Learning objectives:		
EPA1: Clinical Assessment	Domain 1	Performs an accurate, appropriate and person centred physical and/or mental state examination.
	Domain 2	Recognises their own limitations and seeks help when required in an appropriate way.
	Domain 3	Incorporates disease prevention, health promotion and health surveillance into interactions with individual patients.
	Domain 4	Makes use of local service protocols and guidelines to inform clinical decision-making.
EPA2: Recognition and care of the acutely unwell patient	Domain 1	Identifies deteriorating or acutely unwell patients
	Domain 2	Seeks guidance and feedback from the health. care team to reflect on the encounter and improve future patient care.
	Domain 3	Recognises the importance of self-determined decision-making, partnership and collaboration in healthcare which is driven by the individual, family and community.
	Domain 4	Complies with escalation protocols and maintains up-to-date certification in advanced life support appropriate to the level of training.
EPA3: Prescribing	Domain 1	Appropriately, safely & accurately prescribes therapies (drugs, fluids, blood products, oxygen), & demonstrates an understanding of the rationale, risks & benefits, contraindications, adverse effects, drug interactions, dosage & routes of administration
	Domain 2	Demonstrates an understanding of the regulatory and legal requirements and limitations regarding prescribing. Subpoints
	Domain 3	Acknowledges and respects patients' cultural and religious background, attitude and beliefs, and how these might influence the acceptability of pharmacological and non-pharmacological management approaches.
	Domain 4	Makes use of local service protocols and guidelines to ensure decision-making is evidence-based and applies guidelines to individual patients appropriately
EPA4: Team communication – documentation,	Domain 1	Produces medical record entries that are timely, accurate, concise and understandable.
	Domain 2	Maintains respect for patients, families, carers, and other health professionals, including respecting privacy and confidentiality.

handover and referrals	Domain 3	Recognises the importance of self-determined decision-making, partnership and collaboration in healthcare which is driven by the individual, family and community.
	Domain 4	Ensures all outstanding investigations, results or procedures will be followed up by receiving units and clinicians.

3. Outcome statements:

Domain 1: *The prevocational doctor as practitioner*	**Domain 2:** *The prevocational doctor as professional and leader*	**Domain 3:** *The prevocational doctor as a health advocate*	**Domain 4:** *The prevocational doctor as a scientist and scholar*
☒ 1.1 Place the needs and safety at the centre of the care process, working within statutory and regulatory requirements and guidelines. Demonstrate skills including effective handover, graded assertiveness, delegation and escalation, infection control, and adverse event reporting. *☒ 1.2 Communicate sensitively and effectively with patients, their family and carers, and health professionals, applying the principles of shared decision-making and informed consent.* *☒ 1.3 Demonstrate effective, culturally safe interpersonal skills, empathetic communication, and respect within an ethical framework inclusive of indigenous knowledges of wellbeing and health models to support Aboriginal and Torres Strait Islander patient care* *☒ 1.4 Perform and document patient assessments, incorporating a problem-focused medical history with a relevant physical examination, and generate a valid differential diagnosis and/or summary of the patient's health and other relevant issues* *☒ 1.5 Request and accurately interpret common and relevant investigations using evidence-informed knowledge and principles of sustainability and cost-effectiveness* *☒ 1.6 Safely perform a range of common procedural skills required for work as a PGY1 and PGY2 doctor.* *☒ 1.7 Make evidence-informed management decisions and referrals using principles of shared decision-making with patients, carers and health care team* *☒ 1.8 Prescribe therapies and other products including drugs, fluids, electrolytes, and blood products safely, effectively and economically* *☒ 1.9 Recognise, assess, communicate and escalate as required, and provide immediate management to deteriorating and critically unwell patients.* *☒ 1.10 Appropriately use and adapt to dynamic systems and technology to facilitate practice, including for documentation, communication, information management and supporting decision-making*	*☒ 2.1 Demonstrate ethical behaviours and professional values including integrity, compassion, self-awareness, empathy, patient confidentiality and respect for all.* *☒ 2.2 Identify factors and optimise personal wellbeing and professional practice, including responding to fatigue, and recognising and respecting one's own limitations to mitigate risks associated with professional practice.* *☒ 2.3 Demonstrate lifelong learning behaviours and participate in, and contribute to, teaching, supervision and feedback.* *☒ 2.4 Take increasing responsibility for patient care, while recognising the limits of their expertise and involving other professionals as needed to contribute to patient care.* *☒ 2.5 Respect the roles and expertise of healthcare professionals, and learn and work collaboratively as a member of an inter-personal team.* *☒ 2.6 Contribute to safe and supportive work environments, including being aware of professional standards and institutional policies and processes regarding bullying, harassment and discrimination for themselves and others.* *☒ 2.7 Critically evaluate cultural safety and clinical competencies to improve culturally safe practice and create culturally safe environments for Aboriginal and Torres Strait Islander communities. Incorporate into the learning plan strategies to address any identified gaps in knowledge, skills, or behaviours that impact Aboriginal and Torres Strait Islander patient care.* *☒ 2.8 Effectively manage time and workload demands, be punctual, and show ability to prioritise workload to manage patient outcomes and health service functions.*	*☒ 3.1 Incorporate disease prevention, relevant health promotion and health surveillance into interactions with individual patients, including screening for common diseases, chronic conditions, and discussions of healthcare behaviours with patients* *☒ 3.2 Apply whole-of-person care principles to clinical practice, including consideration of a patients physical, emotional, social, economic, cultural and spiritual needs and their geographical location, acknowledging that these factors can influence a patient's description of symptoms, presentation of illness, healthcare behaviours and access to health services or resources.* *☒ 3.3 Demonstrate culturally safe practice with ongoing critical reflection of the impact of health practitioner's knowledge, skills, attitudes, practising behaviours and power differentials in delivering safe, accessible and responsive healthcare free of racism and discrimination.* *☒ 3.4 Demonstrate knowledge of the systemic and clinician biases in the health system that impact on the service delivery for Aboriginal and Torres Strait Islander peoples. This includes understanding current evidence around systemic racism as a determinant of health and how racism maintains health inequity.* *☒ 3.5 Demonstrate knowledge of the ongoing impact of colonisation, intergenerational trauma and racism on the health and wellbeing of Aboriginal and Torres Strait Islander peoples.* *☒ 3.6 Partner with the patient in their healthcare journey, recognising the importance of interaction with and connection to the broader healthcare system. Where relevant, this should include culturally appropriate communication with caregivers and extended family members while also including and working collaboratively with other health professionals*	*☒ 4.1 Consolidate, expand and apply knowledge of the aetiology, pathology, clinical features, natural history and prognosis of common and important presentations in a variety of stages of life and settings.* *☒ 4.2 Access, critically appraise and apply evidence form the medical and scientific literature to clinical and professional practice.* *☒ 4.3 Participate in quality assurance and quality improvement activities such as peer review of performance, clinical audit, risk management, incident reporting and reflective practice.* *☒ 4.4 Demonstrate a knowledge of evidence-informed medicine and models of care that support and advance Aboriginal and Torres Strait Islander health.*

		(including Aboriginal Health Workers, practitioners and Liaison Officers).	

4. Supervision details:			
Supervision Role	***Name***	***Position***	***Contact***
DCT/SIT	***Dr Chiu Kang***	Supervisor of HMO Training	Chiu.Kang@nh.org.au
Term Supervisor	***Dr David Barit***	Head of Unit	David.Barit@nh.org.au
Clinical Supervisor (primary)	***Dr David Barit***	Head of Unit	David.Barit@nh.org.au
Cinical Supervisor (day to day)	***Allocated Registrar on ward service***	Renal Medicine Advanced Trainee/ General Medicine AT or Registrar	Click or tap here to enter text.
EPA Assessors *Health Professional that may assess EPAs*	• All Consultants • Click or tap here to enter name and role • Click or tap here to enter name and role		

Team Structure **- Key Staff**		
Name	**Role**	**Contact**
Dr David Barit	Head of Unit	David.Barit@nh.org.au
Click or tap here to enter text.	Ward 4 NUM	Click or tap here to enter text
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text

5. Attachments:	
R-over document	See below
Unit orientation guide	See below
Timetable (sample in appendix)	See below

6. Accreditation details *(PMCV use only)*	
Accreditation body:	Click or tap here to enter text.
Accreditation status:	Click or tap here to enter text.
Accreditation ID:	Click or tap here to enter text.

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Number of accredited posts:	PGY1: number	PGY2: number
Accredited dates:	Approved date: date.	Review date: date.

7. Approval		
Reviewed by:	Click or tap here to enter text.	Date:Click or tap to enter a date.
Delegated authority:	Click or tap here to enter text.	Date:Click or tap to enter a date.
Approved by:	Click or tap here to enter text.	Date:Click or tap to enter a date.

Appendix

Timetable example

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**	**Sunday**
Morning	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time
	Renal ward round	Renal ward round	Renal ward round	Division of Medicine Grand round 8:00 – 9:00 Renal ward round	Renal Ward Round	Renal Ward Round	Renal Ward Round
Afternoon	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time
	Junior renal staff teaching 12.30-2pm	Radiology meeting 1:30-2pm	Ward work (reg on half day)	12:30 – 13:30 HMO Education	Renal meeting 1230-1.30pm	Click or tap here to enter text.	Click or tap here to enter text.
Evening	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time	Enter Time
	Ward Work and Renal Admissions 5-8.30pm	Cover Gastroenterology Unit in addition to Renal Unit 5-8.30	Finish 5pm Handover to Gastroenterology HMO Renal ward tasks	Ward Work and Renal Admissions 5-8.30pm	Ward Work and Renal Admissions 5-8.30pm	Cover Gastroenterology Unit in addition to Renal Unit 4-8.30	Finish 4pm Handover to Gastroenterology HMO Renal ward tasks
Hours	Total	Total	Total	Total	Total	Total	Total

Renal Advanced Trainee	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun
Reg	0800-1700	PL CarLve 9.00	PL CarLve 9.00	0800-1300	0800-1700			0800-1700	0800-1700	0800-1700	0800-1300	0800-1700		
				RegTraining				OnC PoC Renal Oncall Night			RegTraining			
											OnC PoC Renal Oncall Night			
Renal Registrar														
Reg 1	0800-1700	0800-1300	0800-1700	0800-1700	0800-1700			0800-1700	0800-1300	0800-1700	0800-1700	0800-1700		
		RegTraining							RegTraining	OnC PoC Renal Oncall Night				
Reg 2	0800-1700	0800-1700	0800-1300	0800-1700	0800-1700			0800-1700	0800-1700	0800-1300	0800-1700	0800-1700	0800-1300	0800-1300
		OnC PoC Renal Oncall Night	RegTraining							RegTraining		OnC PoC Renal Oncall Night	OnC PoC Renal Oncall Weekend	OnC PoC Renal Oncall Weekend
Renal HMO2														
HMO 1	0800-2030	0800-2030	0800-1700								0800-2030	0800-2030	0800-2030	0800-1600
HMO 2				0800-2030	0800-2030	0800-2030	0800-1600	0800-2030	0800-2030	0800-1700				

9. Hospital Orientation

Hospital orientation occurs at the beginning of each term. Attendance is mandatory and paid non-clinical time. This is separate to the unit orientation. Follow the link for details, password: NorthernDoctors		
Location	NCHER, Northern Hospital – Epping	185 Cooper Street, Epping 3076
Facilitator	Medical Education Unit	Email: MedicalEducationUnit@nh.org.au
Date	First day of each term	
Start	08:00	

10. Unit Orientation	
Unit Orientation occurs at the beginning of each term. Attendance is mandatory and paid time. Orientation that occurs outside of your rostered hours should be submitted as overtime on the overtime reporting portal.	
Location	Renal Office – located in corridor walking towards Wards 3 and 4
Facilitator	Renal Supervisor/Consultant Nephrologist (A. Lecamwasam), Inpatient Renal Registrar, NUM and HOU
Date	1st or 2nd day of rotation HOU or A. Lecamwasam will meet in 1st week of term
Start	8.00 Renal office

11. Unit Overview	
Department	Nephrology
Location	Renal Office located in corridor walking towards Wards 3 and 4, Ward 4 (Renal Ward) + Outliers Clinic E Dialysis Unit – IDU (in-incentre dialysis unit)
Inpatient Beds	10-15
Outpatients Clinics	Nil to attend
Day Procedures	Renal Biopsy – Radiology (to support Renal Registrar), patients start in Day Procedure Unit
Virtual Unit	Nil

12. Safety

Unit Specific Safety & Risks

Safe Prescribing

- Ensure all new patients' usual medications are charted and refer to 'Pharmacy Admission Note' to check all medications are correctly charted
- seek help from registrar or pharmacist if uncertain.
- Look up all medications you are not familiar with
- Special consideration for the APINCH Medications; Antimicrobials, Potassium, Insulin, Narcotics (opioids) and sedative medications, heparin and other anticoagulants (chemotherapy *not routinely prescribed in medicine)*
- Ensure you use antibiotic guidance system for all restricted antibiotics
- Review safety and doses of medications in CKD/End Stage Kidney disease

Infection prevention – ensure you follow all guidelines regarding isolation and wear appropriate PPE

13. Communication

Medtasker	Intern role, BPT role, Renal Registrar roles x3 Inpatients, Outpatients and Consults/Admissions Med tasks will come up through the day, please acknowledge the task as soon as you can and send message back to nurses with ETA's if you are busy and cant get the task done quickly
WhatsApp	No formal use
Pager	Renal BPT HMO only for Urgent Medtasker requests, unanswered Medtasker calls MET calls and CODE BLUE only
MS Teams	For Grand Rounds, Renal Unit Meetings and Renal Unit Meetings (these also can be attended in person) Radiology Meetings (Teams only, no in-person)

14. Handover Process	
Morning	Nil, night staff handover via Medtasker and on occasion will provide face to face handover in Renal Office
Afternoon	Handover to Renal BPT1 and Wednesday 5pm – Handover to Gastro BPT covering Renal Unit
Night	N/A

15. Shift Structure			
	Intern	HMO	Registrar
Day	8am start	8am start	8am start
Afternoon	Finish 12.30 for afternoon off Wednesdays, otherwise finish at 5pm other weekdays	20.30 finish except Wednesday (17.00 finish)	17.00 finish Rostered afternoon off Wed 13.00, covered by Consults/Admission Renal Registrar
Night	No evening or overnight work	See above, no overnight work	On-call Renal and Medical Obstetrics
Weekend	No weekend work	08.00 start Obstetric Medicine Handover until 08.30, finish 20.30 (Saturday) finish 16.00 (Sunday)	1:4 weekends for Renal and Medical Obstetric Unit admitted patients and consultations Ward Rounds paid 08.00-12.00

16. Shift Roles & Responsibilities			
	Intern	HMO	Registrar
Day	8:00 Logon to Medtasker 8:00 Handover from night ward cover calls if issues overnight. Update patient list and bed- cards (EMR). Custom Ward List Custom Consults List	8:00 Logon to Medtasker 8:00 Handover from night ward cover calls if issues overnight. Update patient list and bed-cards (EMR). Custom Ward List Custom Consults List	8:00 Logon to Medtasker 8:00 Handover from night teams 08.30 – Clinic E inpatient review of patients in the dialysis unit 09.00 – Join Intern and BPT for Renal inpatient Ward Round All referrals should be seen by

	8.00-8.30 Renal biopsy support with Renal Advanced trainee when required 8:30 - See sick and early discharges with registrar 9.00 – complete/finalise discharge summaries and prescriptions for early discharges Renal inpatient ward round with registrar 11.00 Multidisciplinary Ward 4 Renal Team meeting	8:30 - See sick and early discharges with registrar 9.00 – complete/finalise discharge summaries and prescriptions for early discharges Renal inpatient ward round with registrar 11.00 Multidisciplinary Ward 4 Renal Team meeting	either the renal consultation registrar within 24 hours. There is no formal consultation process at TNH – it as an over-the-phone, MEDTASKER or, hallway referral system. ISABAR format must still be used. All referrals should be discussed with the ward duty consultant either immediately (if the clinical problem is one of the following) or by the end of the day for other conditions. 1. Acute renal failure 2. Rapidly progressive glomerulonephritis 3. Provision of dialysis (either new or established on dialysis) 4. Patients with a renal transplant
Afternoon	Ward duties Referrals, radiology Chase results Teaching as per roster Preparation for following day – Pathology ordering for inpatients Dialysis orders for subsequent day Discharge summary and prescription preparation	Ward duties Referrals, radiology Chase results Teaching as per roster Preparation for following day – Pathology ordering for inpatients Dialysis orders for subsequent day Discharge summary and prescription preparation	Ward duties Complex referrals, update families, detailed review of complex patients
Night	Nil	As per afternoon Cover Gastroenterology Tuesday 17.00-20.30	Nil
Weekend	Nil	08.30 – Medical Obstetrics inpatient reviews/discharges 09.30 – Renal inpatient reviews/discharges and consults Gastroenterology cover 16.00-20.30 (Saturday) Handover to Gastroenterology HMO at shift finish 16.00 (Sunday)	08.30 – Medical Obstetrics inpatient reviews/discharges 09.30 – Renal inpatient reviews/discharges and consults Complete work 13.00 Saturday and Sunday

17. Common Conditions

End Stage Renal Disease on dialysis (haemodialysis or peritoneal dialysis) with General Medicine Issues (non-renal problems) including:
IHD, CCF, Cerebrovascular Disease, Peripheral Vascular Disease (and associated complications), system infections
Respiratory conditions
Renal Specific Conditions including:
Acute Renal Failure
CKD/ESRD on dialysis complicated by fluid overload or hyperkalaemia
Peritoneal Dialysis Related Peritonitis
Fistula Thrombosis
Renal transplant recipients with General Medical issues (as per ESRD on dialysis patients)
Renal transplant recipients with Transplant related issues including:
Renal transplant rejection

18. Common Procedures

Venepuncture/ IVC
IDC
ABG
By Registrar – Renal Biopsy, Removal of tunnelled, cuffed Dialysis CVC

19. Clinical Guidelines

The My Favourite Links page on the intranet contains the links to a number of useful clinical guidelines
https://intranet.nh.org.au/applications/
ETG- Electronic Therapeutic Guidelines
AMH- Australian Medicines Handbook
Up to Date

PROMPT- This site contains the hospital policy and procedure manuals. It can only be accessed from the intranet - https://intranet.nh.org.au/departments-and-services/prompt-policy-procedures-guidelines/prompt-policies-procedures-and-forms/

Either search directly for the policy by entering key word, or by using advanced search department: COO - GM - BHS & CHS; Section: Renal

Topics covered relate to:

a. Temporary dialysis catheters
b. Initiation of chronic haemodialysis
c. Maintenance haemodialysis practices
   Including common management processes such as:
   i. Hypotension management

ii. Anticoagulation
iii. Iron Supplementation
iv. Vaccination (Hepatitis B)

d. Peritoneal dialysis
Including common management processes such as:
i. Prescription for acute start peritoneal dialysis
ii. Exit site care and infection treatment
iii. Peritoneal dialysis contamination management
iv. Peritoneal Dialysis related Peritonitis management

e. Parathyroidectomy (tertiary hyperparathyroidism)
f. Renal Biopsy

20. Routine Orders	
Pathology	Patients receiving haemodialysis should mostly have pathology testing restricted to dialysis days to be taken by the dialysis nursing staff at the time of connection of the patient to the dialysis machine Pathology should include U/E, Cr, Ca/Mg/PO4, LFT's and FBE as routine (at least weekly) AKI/Glomerulonephritis screen (once only) – ANA/ENA/dsDNA/C3/4/ANCA (MPO/PR-3)/anti-GBM Ab's/SPEP/Serum free light chains/MSU M/C/S, Urine Pr/Cr or Urine Alb/Cr In the setting of nephrotic syndrome – anti PLA2R Ab's in addition to the above
Radiology	Renal US or CT KUB in the setting of new renal impairment/renal failure to exclude renal tract obstruction
Pharmacology	Enoxaparin 20mg for DVT prophylaxis

21. IT Programs	
EMR	The EMR is in use for documentation, medication ordering and radiology/pathology requests. It is being used for all inpatients, as well as maternity clinics and pre-anaesthetic clinics. Located in the intranet > My Favourite Links > EMR Live Environment EMR Training courses are located on the LMS- https://mylearning.nh.org.au/login/start.php Training is compulsory; you will need to complete the elearning within the first week of commencing. Please contact medical workforce, or check the EMR website for more information on how to complete EMR training https://emr.nh.org.au/ When starting a new rotation, please reach out to Term Supervisor to ensure you are oriented to the EMR specific workflows for that unit as well. EMR is NOT a primary communication system. Please use Medtasker and phones for referrals and communication.
CPF	The source of information for all outpatients' clinics, investigations, GP referrals and scanned admission notes prior to September 2023. Located in the intranet > My Favourite Links > CPF https://cpf.nh.org.au/udr/

PACS	XERO Viewer Pacs- https://nivimages.ssg.org.au/ or located in My Favourite Links, look for the CXR icon This is where you can find radiology images
My Health Record	Centralised health record https://shrdhipsviewer.prod.services/nhcn
Safe Script	Monitoring system for restricted prescription medications https://www.safescript.vic.gov.au/

22. Documentation	
Admission	EMR either via the Admission/Consult Workflow in the Doctor view or via the Documentation tab in the menu and Admission Note or free text note It is expected that the following patients are admitted under Nephrology: • all haemodialysis and peritoneal dialysis patients with an acute medical problem • all renal transplant patients with an acute medical problem • all acute renal failure patients requiring renal replacement therapy with an acute medical problem • all patients with glomerulonephritis on immunosuppression presenting with an acute medical problem If the primary problem that requires admission is surgical, the renal service will provide daily consultation if required.
Ward Rounds	EMR ward round note or progress note. Can use ward round template with progress note to save time – can be saved as Auto text

Discharge Summary	EMR discharge summary workflow – please use this format as this will generate upload to Myhealth record and fax to GP when completed
	Discharge summaries need to be completed by the time of patient discharge.
	
	Key components in a discharge summary include:
	• Discharge diagnosis
	• Presenting complaint
	• Other medical issues discovered/complications during inpatient stay
	• Procedures performed (including dates)
	• Treatment
	• Items requiring follow-up post discharge (including whom follow-up has been denoted to (ie Nephrology services/LMO)
	• Medication list upon discharge
	
	For haemodialysis patients it is also important to include within the discharge summary:
	• Last haemodialysis prescription
	  ○ Discharge Ideal Body Weight
	  ○ Na, K, HCO3 dialysate concentration and temperature
	  ○ ESA type, dose and frequency
	  ○ Anticoagulant type and dose

	For Peritoneal Dialysis patients it is also important to include within the discharge summary: • Discharge ideal body weight • PD prescription ○ APD – number of cycles/volume per cycle/tidal volume/treatment duration/bag strength mix ○ CAPD – number of exchanges per 24 hours, bag strengths and fluid types
Outpatient Clinics	General Medical Outpatients referrals ***via referral on CPF*** (no EMR option for referrals) Outpatient notes are all documented on CPF under the outpatient tabs
CDI Queries	Will be sent via Medtasker Good documentation is critical to provide an accurate record of the patient's stay in hospital, decision making processes and rationale and handover between the multiple clinicians engaged in the patient's care. Remember - "if it is not documented, it didn't happen". Your documentation is also vital for 'clinical coding', which is necessary for Department of Health data reporting and hospital financial reimbursement.
Death Certificates	Discus with your registrar / consultant re if coroners' case and if not then cause of death before completing, Link is direct via Births Deaths and Marriages. Link – Death Certificates on the Favourite links page. https://www.bdm.vic.gov.au/medical-practitioners
Coroners	Discuss every death with your reg/ consultant to check if it should be coroners. If uncertain then call to speak to a delegate from the coroner's office and document your conversation in EMR notes. Coroner deposition is done via - E Medical Deposition Form https://coronerscourt.vic.gov.au/report-death-or-fire/how-report-death

23. Referrals	
Internal	Inpatient consults Via Medtasker, some teams will use phone – AGSU some surgical specialties. Please make referrals as early as possible in the day and know what question your unit is asking of them (if uncertain speak to your unit registrar) Outpatient referrals – CPF – Summary tab – bottom right of the page is 'Submit internal referral' link
External	Ad hoc no frequently used pathways

24. Clinical Deterioration	
Escalation Process	Interns have access to a BPT and registrar at all times so can always call for help. Intern or Reg should call then consultant if further escalation is required. Your ward consultant will take calls in hours and after hours. However, if afterhours they are not available call the on-call AMT consultant for time critical or urgent queries (daily roster and number via switch board) Call MET call or code if patient meets these criteria and needs urgent review
PreMet	Intern/BPT 1 will answer these but seek advice from unit registrar
Code	Attended by home team registrar and wider hospital code teams

25. Night Shift Support	
Unit	Night Ward cover is allocated to cover your team Night ward cover will flag issues from overnight with team Sick unstable patients from overnight will be flagged at the morning handover

26. Assessments: PGY1 & PGY2	
All forms are located on the Northern Doctors website under the Assessments tab	
Beginning of Term	Meet with Term Supervisor to set learning goals for the term using the Term Description Learning Objectives as a basis for the discussion
Mid-Term & End of Term	To be completed at the mid and end of term meetings
EPAs	Minimum of x2 EPA assessments to be completed per term

27. Mandatory Training

- Mandatory Training is located on the LMS- https://mylearning.nh.org.au/login/start.php
- Mandatory training is compulsory and part of your contract with Northern Health and needs to be completed by the first month of your start date. If not completed you will come of the floor to complete.
- Hand Hygiene needs to be completed by the end of your first week.
- If you have completed the mandatory training elsewhere you may be able to apply for recognition of prior learning

28. Unit Education

Renal Unit Meeting
Teams and in person (Conference Room 4) Friday 12.30-13.30

Please note there is also the Northern Health PGY1 (Intern) education program which the Renal Unit encourages the Intern to attend

29. Unit Meetings

Junior Medical teaching- In person (Renal Office) - Monday 14.00-15.30
Radiology Unit Meeting (Shared with General Medicine – Medicine Unit 3) - Teams meeting Tuesday 13.30-14.00
Renal Unit Meeting - Teams and in person (Conference Room 4) Friday 12.30-13.30
Morbidity and Mortality

30. Research and Quality Improvement

Discuss with Renal Educational co-ordinator (Ashani Lecamwasam)

31. Career Support

Head of Unit (David Barit) or ward consultant or Renal Educational Co-ordinator (Ashani Lecamwasam)
Director of intern training – Dr Carol Chong
Basic Physician training - Directors of Physician Training – Edwina Holbeach, Yana Sunderland, Mueed Main, Vinita Rane
Basic Physician training - Consortium Manager – Laura Ivins

32. Medical Students on the Unit

Medical students rotate through the unit please make them welcome

33. Rostering

Shift Swap	The doctor initiating the roster swap is responsible for arranging with an appropriate colleague. Once you have arranged a colleague to perform the swap, please email your MWU coordinator and cc in the colleague. All swaps should be kept to within the pay period fortnight where possible. In exceptional circumstances where this cannot be achieved, please discuss with the MWU coordinator prior. All shift swaps should be like hours for like hours. Proposed shift swaps must be emailed to your MWU coordinator for approval.
Unplanned Leave- Notification and documentation process	**Personal Leave documentation required:** For 3 single absences per year, the doctor will not be required to provide any supporting evidence to substantiate their personal leave. For other days absent due to personal illness or injury the doctor is required to provide evidence of illness. To be eligible for payment, the doctor is required to notify the Health Service **two hours** before the start of their shift, or as soon as practicable.

<table>
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<table>
<tr><td>In hours Monday to Friday
0730 - 1630</td><td>Step 1:
Medical Workforce Reception
8405 8276</td><td>Step 2:
Notify unit</td><td>Please ensure you notify both MWU & your unit</td></tr>
<tr><td>After hours Monday to Friday
Between 1630 – 2200

After hours Monday to Friday
Between 2200-0730</td><td>Step 1:
Between 1630 – 2200
Medical Workforce On-call Phone
0438 201 362

Between 2200-0730
Hospital / After Hours Coordinator
(8405 8110 or via switch)</td><td>Step 2:
Notify unit (at a suitable time)</td><td>Please ensure you notify both MWU or After Hours (depending on the time) & your unit at a suitable time.</td></tr>
<tr><td>In hours Weekends & Public Holidays
0700 - 2200</td><td>Step 1:
Medical Workforce On-call Phone
0438 201 362</td><td>Step 2:
Notify</td><td>Please ensure you notify both MWU & your unit</td></tr>
<tr><td>After hours Weekends & Public Holidays
2200-0700</td><td>Step 1:
Hospital / After Hours Coordinator
(8405 8110 or via switch)</td><td>Step 2:
Notify unit</td><td>Please ensure you notify both MWU & your unit</td></tr>
</table>
</td></tr>
<tr><td>Overtime</td><td>All overtime should be submitted into the Overtime Portal
This can be accessed via the intranet whilst onsite at Northern Health
Please include the reason for your overtime- i.e. ward workload, delayed handover, include UR where relevant.</td></tr>
</table>

34. JMO Rover

Tips & Tricks

Haemodialysis sites within TNH inpatient services

Clinic E Dialysis Unit -11 plumbed beds (including 2 single room isolation beds)

Ward 4 - 10 plumbed beds (4 plumbed beds room 5, 4 plumbed beds room 6, isolation plumbed rooms 2 and 4)

Ward 22 - 4 plumbed beds (isolation – COVID positive dialysis)
Ward 21 - 4 plumbed beds (single rooms, 2 with airlocks)
Ward 20 - 4 plumbed beds (single rooms, 2 with airlocks)
ICU/HDU - 3 plumbed beds (single rooms)
CCU - 2 plumbed bed (Ward 5, Room 2)
Emergency - 1 plumbed bed in Resus 5

Inpatient Haemodialysis Planning

- Ideally dialysis planning should be made the day prior.
- New admissions through emergency should have a dialysis plan formulated as soon as possible.
- Day to day inpatient dialysis organization can be made by discussion with the in-centre dialysis staff

Dialysis Prescription for admitted patients

- TNH renal dialysis nurses will NOT perform dialysis on patients without a correctly written dialysis prescription.
- This is required for all inpatients.
- The documentation necessary are available in Clinic E Dialysis Unit.
- Dialysis prescriptions must be completed before the commencement of every dialysis.
- For patients on established haemodialysis it is recommended the dialysis prescription is written on the day prior to dialysis (or Friday before the weekend) to prevent a delay in dialysis commencement by the dialysis nursing staff.

I.After Hours On-call Haemodialysis

Deciding the need for on-call after hours dialysis is a Consultant Nephrologist on-call decision.

The registrar MUST call the on-call consultant to agree that after hours on-call dialysis is necessary and the patient cannot wait for dialysis during normal working hours.

The on-call registrar will notify the Hospital Coordinator to notify the On call Dialysis Nurse.

The After-Hours Coordinator (TNH) is contactable on 58110 (8405 8110)

The after hours co-ordinator will then facilitate/co-ordinate the provision of dialysis for the patient.

Registrar requirements before initiating on-call after hours dialysis

- Patient must be assessed by Nephrology medical staff on call (Registrar). Assessment is in-person under almost all circumstances
- Medical staff must ensure a working vascular access is in place before calling in the on call staff.
    - If new access is required such as a vascath, confirmation of catheter position (Internal jugular vascath) and patency must be confirmed prior to calling the After-Hours co-ordinator.
- Dialysis or ultrafiltration orders must be written by the Nephrology medical staff on call for each treatment which include:
    - The Renal Replacement Therapy orders (IP524B) including fluid removal, anticoagulant, hours of treatment, dialysate composition and dialyser. The order must be signed and name clearly designated.
    - The Medication Chart for heparin and lignocaine. For Permcaths/vascaths saline and heparin locks must also be written on this chart.
    - Any solutions (e.g. blood, albumin) must be documented on the Blood Components Administration Chart (365700).

V. Inpatient Peritoneal Dialysis

Peritoneal dialysis (PD) patients manage their own treatment at home. There are two forms of PD:

A. Continuous Ambulatory Peritoneal Dialysis (CAPD) which involves performing a manual exchange of dialysis fluid four times a day.
B. Automated Peritoneal Dialysis (APD) which is an automated system in which the patient connects to a machine at night (usually 8 hours) and the machine controls the inflow and outflow of the dialysis fluid.

PD patients admitted to the hospital will require support from the Nephrology (renal medical staff, Unit B nurses, home dialysis nurses) team, regardless of their primary problem.

In all circumstances:

- The Nurse In Charge (ANUM/ NUM) of Unit B should be informed immediately any patient presents to the Emergency Department or Wards to assist in maintenance PD and
- The Renal Registrar or Consultant-On-Call should be made aware of the presence of PD patients.

It is vital that communication is immediate – even if attention to dialysis is not imminently required since

- Planning and allocation of busy ward nursing staff to assist/ perform dialysis can be difficult
- The presentation, diagnosis (e.g. abdominal CTs) and management (e.g. antibiotic doses) of common medical problems in PD patients may be significantly different to routine.

The home dialysis training unit provides support to outpatient patients on PD and home haemodialysis during operating hours – Monday to Friday, 0900 to 1600.

Ward 4 (Nurse-in-Charge) is the primary contact for after-hours PD support, including weekends and public holidays.

Management of PD patients during hospital admission

- Daily weight:
- Attention should be paid to whether measurements are “wet” ie with PD fluid in situ or “dry” i.e. after draining.
- Dry weights are preferable, but for continuity serial wet weights may be acceptable provided there is a known volume of PD fluid in situ.
- Daily prescription of dialysis (i.e. “orders”) using the dedicated form.
- As with any other medical treatments for patients in hospital this requires daily review and medical supervision
- Fluid balance and recording. Ascertain if patient has a fluid restriction
- Bowel management and recording (constipation reduces the effectiveness of peritoneal dialysis – in particular the ability to drain out appropriate amounts of peritoneal dialysis fluid and reduces the ability for fluid removal)

Peritoneal Dialysis Prescription

- Written daily whilst a peritoneal dialysis remains an inpatient

Specifies the following:

Dialysis modality (CAPD or APD)

CAPD

- Number of exchanges required in 24 hours/or frequency of exchanges
- Type of fluid (Balance or Icodextran)
- Concentration of fluid (1.5%/2.3%/4.25% or Icodextran)
- Volume instilled per exchange (usually 2L, some smaller individuals may have volumes as low as 1500ml)
- Icodextran is used only for longer dwells of > 6 hours – usually overnight in the setting of CAPD

APD

- Number of exchanges per total APD treatment time (which will determine dwell time per cycle)
- Or
- Total number of exchanges and dwell time per cycle (which will determine total treatment time)
- Fill volume
- Complete drain or tidal drain (and tidal drain percentage/volume drain minimum)
- Strength of dextrose concentration during the treatment (a combination of dextrose concentrations can be used)
- Dry or wet day (and fluid to be used for the wet day – usually icodextran)

If junior renal staff are uncertain of how to prescribe peritoneal dialysis, they should discuss the case with a consultant Nephrologist

Peritoneal Dialysis Tips/Common Problems encountered on the ward:

1) Should we drain PD fluid prior to abdominal imaging and before surgery?

Generally yes. Removal of PD fluid usually assists in the routine interpretation of abdominal imaging, but if in doubt discuss with the radiologist and – as usual - always ensure a good history is present on the radiology request. Pneumoperitoneum and "ascites" are common CT findings in patients on peritoneal dialysis and may not indicate pathology (but don't assume!). Draining abdominal fluid optimises thoracic function for anaesthesia. A dose of prophylactic antibiotics is recommended for invasive procedures such as colonoscopy.

2) Why is there poor fluid clearance in this patient?

Patients admitted to hospital may have reduced fluid clearance – manifest by reduced ultrafiltration (UF) volumes on PD, weight gain, tissue oedema (pulmonary or peripheral) or increased intravascular volume (e.g. elevated JVP, hypertension) despite routine PD fluid prescription.

Important reasons for this include:

- (Relative) Constipation. Even if not overt reduced bowel function reduces PD efficiency. Review
  - The bowel chart and patient history
  - the role of aperients, opiates or antiemetics which can promote constipation and anticipate their likely effect before problems arise
  - use of aperients
  - physical activity (sitting out of bed, ambulation)
  - abdominal imaging (AXR, rarely CT) to assess for the presence of stool and catheter position
- Hyperglycaemia
  - Hyperglycaemia reduces the osmotic gradient for fluid transfer from the peritoneal (and hence systemic) circulation to PD fluid. Optimising glycaemic control is particularly important in PD patients.
- The effect of dwell times. If changes are made to the routine dialysis regimen – in particular the dwell time - this may affect the efficiency of fluid transfer including reabsorption
- Infection and inflammation
  - Local inflammation (e.g. peritonitis) and systemic inflammation (e.g. pneumonia) can adversely influence peritoneal membrane and therefore PD function

3) How do I treat acute pulmonary oedema (or evidence of fluid overload) in PD patients?

As with all patients with **pulmonary or peripheral oedema** it is important to consider and understand the:

- Underlying causes of and contributions to heart failure (ischaemic cardiomyopathy, hypertension, chronic arrhythmia post-partum cardiomyopathy, alcohol, etc.)
- Potential acute precipitants of decompensation (acute ischaemia, arrhythmia, infection, anaemia, thyroidal illness, other causes of hypoxia, etc.).

As for patients not on PD **for patients who are acutely decompensated** management options include

- reversing or correcting the acute precipitant
- vasodilators e.g. nitrates
- oxygen
- positive pressure ventilation and
- loop diuretics (frusemide)
- (potentially) opiates
- But for PD patients in whom diuresis may be suboptimal due to poor renal function
  - Patients may be functionally anuric and respond poorly if at all to diuretics.
  - Patients with residual renal function may – ought - be already using on maximal diuretic doses to promote fluid clearance.

Dialysis is usually the most effective method of correcting volume overload

Options to increase fluid removal -

i) Increase dialysis frequency / number of exchanges.
   a. This can be performed by CAPD (manual exchanges) or APD
   b. Frequency of exchanges can be increased to hourly – this is easiest accommodated by APD whereby the machine can be programmed to cycle PD fluid removal and re-instillation with fresh PD fluid.

ii) Increase concentration of dialysate glucose.
   b. Increase dialysis glucose from 1.5% to 2.3% in existing some or all exchanges
   c. Increase dialysis glucose to 4.5% for 24 hours for maximal fluid removal in the setting of life-threatening fluid overload such as hypoxia/Acute pulmonary oedema

iii) Perform a combination of i) and ii)

Prescription of 5 or more exchanges on CAPD or transition to APD requires discussion between senior medical and nursing staff and patient to ensure the regimen is sensible, possible and tolerable

Acute-start Peritoneal Dialysis
Acute use of Tenckhoff catheters may occur 24-48 hours post insertion. The dialysis prescription should be discussed with the treating nephrologist. The peritoneal dialysis protocol (found in PROMPT) includes guidelines for prescription of peritoneal dialysis in such cases.

Ambulatory Haemodialysis:

Satellite dialysis units operated by the Northern Hospital include:

The Northern carpark Dialysis Unit (onsite) – 12 chairs Mon-Sat
Broadmeadows dialysis unit – 12 chairs Mon-Sat
Craigieburn dialysis unit – 6 chairs Mon-Sat
Clinic E Dialysis Unit – 11 chairs Mon-Sat (combination of ambulatory dialysis patients and admitted dialysis patients)

Patient care is provided by a professional nursing staff experienced in provision and care of patients requiring haemodialysis.

Contact details for all staff members are found through the Renal Department Contact List.

Austin units:
Epping dialysis unit – 12 chairs (situated across the road on Cooper St)
Patients that attend the Austin haemodialysis unit are seen through Austin services, NOT TNH renal services.

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Prescription of maintenance haemodialysis

All inpatients require maintenance haemodialysis orders to be written with each dialysis session, prior to the commencement of dialysis

Ambulatory dialysis patients require a standing dialysis prescription for each treatment which remains valid for 6 months, unless modified earlier.

Considerations/guides for chronic or established haemodialysis prescription:

Duration of dialysis treatment – standard therapy time 4 hours

Fluid removal during a dialysis session (ultra-filtration – UF) – aimed at rendering a patient euvolaemic.

- Ultrafiltration volume should generally not exceed 10-13ml/kg/hour, or as a rough guide, 1L/hour aimed at preventing hypotension and myocardial stunning.
- Previous episodes of hypotension should prompt the need for evaluation of UF rates in subsequent dialysis treatments.

Dialysate Potassium Concentration – Hyperkalaemia is a potential problem for patients suffering from ESRD secondary to their inability to renally excrete potassium.

- For patients with a pre-dialysis K > 4, a dialysis K of 2 is considered acceptable practice.
- Dialysis K prescription of 1 are sometimes utilised in hyperkalaemic patients (K > 6), but there is no evidence to support a benefit above K 2 dialysate prescriptions, and there is theoretical harm due to the significant K gradient between serum and dialysate K.
- For patients with a pre-dialysis K < 3, a dialysis K of 3 should be prescribed

Dialysate Sodium – generally prescribed at 140mmol/L, with deviations from this usually authorised by a Consultant Nephrologist for circumstances relating to either:

- High inter-dialytic fluid gains/excessive thirst
- Haemodynamic instability

Dialysate Bicarbonate – generally 35mmol/L

Dialysate Temperature – Either set at 36 or 36.5C

Dialysate Calcium – usually set at 1.25mmol/L, with deviations from this usually due to

- Hypocalcaemia – Ca 1.50mmol/L
- Hypercalcaemia – Ca 1.00mmol/L
- Haemodynamic instability (repeated hypotension during dialysis) – Ca 1.50mmol/L

Blood flow rate – standard blood flow for a chronic dialysis patient is considered 300-350ml/min. Issues achieving these flow rates warrant consideration into the potential causes and liaison with Nephrology Consultants.

Needle size – Determines flow rate (for a set pressure).

- 17G New AVF, Small AVF, New cannulation sites
- 16G Routine dialysis
- 15G Routine dialysis where flows > 350 desired

Dialysis Related Medications

Prescriptions are required for a number of these agents and can be discussed with the renal pharmacist. All medications to be administered during dialysis must be charted on a drug chart and will generally include:

Anticoagulation

Minimum amount necessary to prevent thrombosis within the dialysis circuit

Enoxaparin as a bolus dose at the commencement of dialysis (preferred in patients with an AVF)

- Commencement dose 0.7mg/kg rounded down to the nearest pre-filled syringe dose

Or

Heparin as a bolus dose with a subsequent infusion

- Commencement dose 500IU bolus with a continuous infusion of 500IU/hour, usually ceasing 30 minutes prior to completion of dialysis
    - No cessation time required if using a CVC for dialysis

Patients already on anticoagulation (warfarin) should initially have dialysis attempted without addition dialysis related anticoagulation

Heparin-induced thrombocytopenic thrombosis syndrome (HITTS)

- In the event this has been identified or a concern – discuss with a consultant nephrologist relating to anticoagulation techniques for the patient

Iron therapy

Intravenous Iron is customary in dialysis patients and in general, a pre-designed protocol for iron administration during haemodialysis is followed by staff

Lignocaine 1% injection
Local anaesthetic sc for staff to administer to the patient to reduce fistula cannulation pain

Heparin 5,000IU/5ml (in patients undergoing dialysis via a permacath)
Locking solution currently used

Bactroban nasal ointment 2%
For staff to apply to permacath exit sites each dialysis session

Dextrose 50% 50mls
For diabetic patients PRN in the event of hypoglycaemia whilst under the clinical care of the dialysis service

There is a dialysis patient medication checklist describing standard medications used for haemodialysis patients.
It is required for

- all new start haemodialysis patients
- any chronic haemodialysis patient that has been admitted with discharge to home (with ongoing ambulatory dialysis) subacute care

It is important that all medications are prescribed with the checklist printed and attached to a prescription (please see next page).

Home Dialysis Unit

Located: 230 Cooper Street
Priscilla Angeles (NUM)
Contact: 8405 8297
Mobile: 0439 090 101

The Home Dialysis Team/Unit are responsible for liaising with patients prior to commencement of home dialysis therapies and then responsible for subsequent training of patients in home therapies. They are also responsible for monitoring chronic patients and discussing with renal staff any issues surrounding dialysis effectiveness or access issues.

The HDU also provide support for peritoneal dialysis patients when admitted as inpatients. This includes providing nursing support and technical support for all staff regarding APD and appropriate discharge planning and support.

Erythropoeitin use in CKD and ESRD

Commonly used agents within the service include

- Aranesp (administered fortnightly or 4 weekly)
- Mircera (administered 4 weekly)

Discuss with a consultant concerning a commencement dose in an ESA naïve patient

These guidelines (in conjunction with iron replacement guidelines) apply to the management of anaemia in all CKD and ESRD patients.

I. Anemia is Hb < 130g/L in males, and Hb < 115g/L in females
II. When using ESA, the target Hb range is 100-115g/L
III. The lowest ESA dosage to achieve a Hb in the acceptable range should be used
IV. Either darbopoeitin (Aranesp) or methoxy polyethylene glycol epoetin-beta (Mircera) can be used. Mircera may be preferred in stable CKD and supportive care patients due to monthly dosing recommendations.
V. All patients must be assessed for, and maintain, adequate iron and other hematinic stores
VI. The recommendations included may be inappropriate for specific clinical situations (eg: patients with hemochromatosis, thalassemia, pure red cell aplasia, history of stroke, malignancy, uncontrolled hypertension, allergy to IV iron or an ESA or who have recently received a blood transfusion
VII. Monitoring: monthly FBC to ensure Hb targets

Recommendations/Suggestions for ESA dosing

Hb	CURRENTLY ON ESA	NEVER ON ESA
Hb <80g/L	Clinical review/discussion required	Clinical review/discussion required
Hb has fallen >=15g/L	Clinical review/discussion required	Clinical review/discussion required
Hb 80-100	Increase dose if not increased in last 4 weeks	Commence ESA
Hb 100-120	Maintain ESA dose	No ESA required
Hb 120-130	Decrease dose if not decreased in the last 4 weeks Cease ESA if on low dose or low frequency ESA	No ESA required
Hb 130+	Cease ESA and repeat FBE every 2 weeks Recommencement of ESA requires clinician consideration of multiple factors including: Previous dose and frequency Speed of subsequent Hb decline after ESA cessation	No ESA required

ARANESP DOSAGE - GIVEN FORTNIGHTLY or MONTHLY/4 WEEKLY

CURRENT DOSE	IF NEED TO INCREASE DOSE	IF NEED TO DECREASE DOSE
Nil	start at 0.75ugm/kg fortnightly or 1.5mcg/kg monthly/4 weekly	-
	25% dose increase (to the nearest dose available)	25% dose reduction (to the nearest dose available)

MIRCERA DOSAGE - GIVEN MONTHLY/4 WEEKLY

CURRENT DOSE	IF NEED TO INCREASE DOSE	IF NEED TO DECREASE DOSE
Nil	start at 1.2ugm/kg monthly	-
	25-50% dose increase (to the nearest dose available)	25-50% dose reduction (to the nearest dose available)

CONVERSION

ARANESP (weekly dose)	MIRCERA (Monthly/4 weekly dose)
< 40	120
40-80	200
>80	360

Hyperkalaemia and Management (additional Policy on PROMPT)

Definition

Serum K+ > 6.0mmol/l

Medical emergency if plasma K+ > 6.5 mmol/l or ECG changes associated with hyperkalaemia or symptomatic.

ECG and Clinical features of hyperkalaemia

- ECG – peaked T waves, prolonged PR interval, widened QRS
- Paraesthesia, areflexia
- Muscle weakness, paralysis and constipation

Management focuses upon treatment (initial and preventative)

Treatment

For short term treatment of acute K+ >6.5 mmol/L and/or any hyperkalemia with ECG changes. These are temporising measures and do not preclude the use of haemodialysis.

(If K+ 6.0 - 6.5mmol/L and no ECG changes can skip step 1):

1. Ca gluconate 10 ml (10%) IV over 5 mins
2. Glucose (50 ml of 50% Dextrose) stat followed immediately by Actrapid insulin 10 units IV. Check finger prick BSL every 30mins for 2 hours
3. Salbutamol 10mg nebulized
   Caution- in patients with ischaemic heart disease, history of cardiac arrhythmias (increased risk of arrhythmias) and patients on b-blockers and digoxin (response attenuated).
4. Resonium A 30g orally
5. NaHCO3 100 mmol IV over 30 mins (if no response to insulin or if severely acidotic and not fluid overloaded)

These measures should lower K+ within 45 minutes so check serum K+ 1 hr after treatment is given.

Emergency haemodialysis may be required – discuss with the duty consultant

For chronic dialysis patients

1. Discuss with Consultant as dialysis is usually required immediately
2. Check K+ each 4 hrs until stable
3. Continuous ECG monitoring (if available) until K+ and ECG return to normal.
4. Give a 2nd dose of IV Calcium if ECG still abnormal after 45 mins
5. Cease K+ intake and K+ retaining drugs

Causes to consider initially for hyperkalaemia:

- Factitious hyperkalaemia – hyperkalaemaia due to blood sample haemolysis, sample taken from IV 'drip' arm, thrombocytosis or leukocytosis
- Renal - acute/chronic renal failure
- Drugs – Spironolactone/amiloride/ACEI/AII Receptor Blockers/digoxin toxicity
- Acidosis
- Intravenous K infusion (oral KCl (slow-K or chlorvescent) usually only causes hyperkalemia if there is renal insufficiency or other K retaining drugs administered)
- Mineralcorticoid deficiency
- Endogenous (tumour-lysis syndrome, rhabdomyolysis, trauma, burns)

Management of Blocked Haemodialysis Access (Fistula or Graft)

This is usually discovered when a patient presents for routine haemodialysis
This is considered an acute medical/surgical issue that warrants patient admission to acute hospital services upon discovery of the blocked access.

The patient requires assessment of their acute need for dialysis including

- Clinical assessment of volume status
- Assessment of potassium status
- Imaging (ultrasound) to confirm and identify the extent of the thrombosis

- Preparation for possible theatre if immediate dialysis is not necessary
- Remain fasted, commence slow IV dextrose infusion (12-18 hourly) to prevent hyperkalaemia associated with the fasting state
- Discussion with vascular surgery +/- anaesthetics relating to the possibility for emergency embolectomy, access revision

If the patient requires optimisation prior to GOR – a vascath is warranted

Radiology currently lacks equipment necessary for thrombo-aspiration/clot lysis.

Procedures

I. Percutaneous Renal Biopsy

This is usually performed as a day case procedure.

Initially, biopsies must be supervised by a renal consultant, until deemed competent. The biopsy should be taken from the lateral lower pole by real-time ultrasound technique.

A log book should be kept of all biopsy procedures, detailing indication for biopsy, needle gauge used, number of passes, number of glomeruli obtained, histological result and complications.

This PC – shared(\\tnhoffice) (S:) – Renal

Procedures

Renal Biopsies – folder

Excel spreadsheet

Tab 1 Renal biopsies

Tab 2 Other procedures (CVC insertions and tunnelled-cuffed CVC removals)

Indications for pre-arranged overnight stay include:

- Regional patient – length of travel time to TNH > 1 hour
- Lack of other individuals to stay with patient night of the biopsy
- Lack of accompanied transport home post-biopsy.

Renal biopsies are conducted in the radiology department as they are performed under ultrasound guidance.

RENAL BIOPSY PROTOCOL

This protocol pertains real time ultrasound guided percutaneous renal biopsies conducted by the nephrology team for the purpose of obtaining renal tissue for histological diagnosis. It does not pertain to the biopsies conducted for renal masses or other macroscopic lesions.

INDICATIONS

Acute kidney injury for investigation

Nephrotic syndrome for investigation

Post management of kidney disease follow up biopsy

Renal transplant rejection or protocol

Other as directed by nephrologist

SAFETY CONSIDERATIONS

The decision to perform a renal biopsy is to be taken by a nephrologist. It is the responsibility of the nephrologist requesting the biopsy and the nephrologist or registrar completing the biopsy to ensure that the patient is safe to proceed to have a renal biopsy.

The risks of a renal biopsy include:

- Peri-renal or subcapsular hematoma
- Macroscopic hematuria
- Arteriovenous malformation creation
- Anaemia secondary to intravascular blood loss
- Damage to surrounding structures, such as bowel, liver or spleen
- Sepsis

These outcomes may be managed conservatively, or may require blood transfusion, angiography, nephrectomy, other surgical procedures or antibiotics.
Several factors increase the risk of a complication from renal biopsy. These include: eGFR < 30ml/min, thin renal cortex, hypertension, haematological or medication related factors that affect hemostasis.

Taking the above into account, the risks that can be quoted to patients include:

Nephrectomy or death: Less than 1 in 1000 biopsies

Arteriovenous malformation creation: 1 in 500 to 1 in 1000 biopsies

Hematoma that requires blood transfusion or angiography: 1 in 50 to 1 in 200 biopsies

Macroscopic hematuria: 1 in 20 biopsies

Uncomplicated hematoma that may or may not be associated with localised pain lasting less than 1-2 days: 1 in 10 to 9 in 10 biopsies

The requesting nephrologist and the procedural nephrology team are responsible for ensuring patient safety. Specifically:

Blood pressure must be controlled to persistently less than 160/90.

Any personal or family history of bleeding diathesis must be taken into account

Plans must be made for antiplatelet or anticoagulant agents (see below):

Coagulation profile should be confirmed to be normal

Platelet count must be greater 100. If 50-100 the biopsy must be discussed with the procedural team and/or hematology when indicated.

Ideally, if the patient is dialysis dependent, the patient has received adequate dialysis prior to the biopsy. If the dialysis is within 6-8 hours prior to the biopsy no anticoagulant should be used on dialysis.

BOOKING *A RENAL* BIOPSY

Nephrology team to:

Consult with DPU ward clerk to organise a date. Provide the ward clerk with a notice of admission form with consent completed

Once DPU date is organised, book the date with radiology liaison nurse and provide a radiology booking form

Call patient to provide information about the biopsy. This should include:

The date, time and place of biopsy. The patient should be instructed to arrive at DPU by 730am on the day of biopsy.

Have blood tests including FBE, UEC and coagulation studies, performed at least 3 working days prior to biopsy.

They can have breakfast and take all their normal morning medications, especially including all anti-hypertensive agents the patient usually takes in the morning. However, this EXCLUDES anti-platelet and anti-coagulant medications (see below).

Confirm normal coagulation profile, adequate platelet count and whether there is a need for ddAVP (see below) prior to biopsy day.

REDUCING BLEEDING RISK PRIOR TO BIOPSY

ANTIPLATELET AGENTS

Biopsies can be conducted on aspirin. The decision to do so is to be made by the treating nephrologist and procedural team. The risk of bleeding is increased, however, if there ***is a need for a his***tological diagnosis within 5-7 days (the period of time required to reduce the risk of aspirin) or a clinical reason as to why aspirin cannot be ceased, a renal biopsy can be performed.

If the patient is on aspirin, consideration could be given to ddAVP infusion (see below) prior to biopsy to reduce bleeding risk.

Clopidogrel, ticagrelor MUST be CEASED for 7-10 days prior to biopsy.

The timing of re-introduction of anti-platelet agents is a clinical decision. However, if clinically safe to do so, the reintroduction should be delayed for 1 week post biops***y.***

DDAVP

An infusion of ddAVP can be administered prior to biopsy to reduce the risk of bleeding.

The indications are:

Patient remains on aspirin;

eGFR < 30ml/min, or sCr > 200umol/L, or urea > 20umol/L

The dose is 0.3ugm/kg up to a maximum of 20ugm. It is administered in 100mls of 0.9% saline over 30-60 minutes PRIOR to biopsy. Pharmacy must be requested to make up the infusion the day prior to the biopsy.

The duration of action of ddAVP is 4-6 hours. The potential complications include hyponatremia and theoretically a risk of thrombosis (although this has not been reported) in high risk patients.

ANTICOAGULANT AGENTS

All anti-coagulant agents must be ceased prior to biopsy. The timing of cessation will depend on the clinical need for anti-coagulation. Some patients may require bridging with enoxaparin or intravenous heparin infusion. In those cases in which therapeutic drug monitoring is possible this must be conducted prior to biopsy and the procedural team must confirm that the relevant tests are normal and safe for biopsy. In those cases where therapeutic drug monitoring is not possible, haematology opinion should be sort with regard to timing of cessation of the anticoagulant agent.

The timing of the re-introduction of the anticoagulant agent depends on the assessment of post-procedural risk of bleeding and the indication for anticoagulation. However, no anticoagulant should be re-commenced within 6 hours post biopsy. If anticoagulation is required within 48 hours, a readily reversible agent should be used.

HYPERTENSION ON DAY OF BIOPSY

Blood pressure must be below 160/90 consistently before the biopsy can proceed. If on the day of biopsy the patient's blood pressure is greater than 160/90, it should be confirmed that patient has taken their usual medications and if so a 5mg or 10mg GTN patch can applied. If after 20-30 minutes the blood pressure remains greater than 160/90 the biopsy cannot proceed.

PERFORMING *A RENAL* BIOPSY

> The patient is admitted by DPU nursing staff, has blood pressure checked by 8:15am. An IV cannula is not routinely required. DPU staff to notify nephrology team if BP > 160/90. Nephrology staff to

check patient's blood pressure is safe for biopsy and antiplatelet and anticoagulant medications have been appropriately withheld by 8.15am. The Nephrology team are required to transport the patient (on a bed) to the Radiology US procedure room. The Nephrology resident is required to support the proceduralist in transporting the patient, performance of the renal biopsy and transporting the patient back to DPU. Clinical handover to DPU is required.

The US procedure room is available for use by the Nephrology team until 9.30am, afterwards other procedures are performed in this room.

Nephrology staff to obtain 14G biopsy needle from CSSD; 16G can be used at the direction of nephrologist.

Consumable Equipment

Consumables for the renal biopsy are obtained from the Ward 4 NUM.

The Ward 4 NUM needs to be informed to order in advance

- CVC procedure pack

- Renal biopsy gun (14G and 16G)
- Lumbar puncture needle 9cm length
- US probe cover

It is the responsibility of the Renal Advanced Trainee team to monitor stock of these items

There is a time lag of up to 3 weeks for stock delivery.

Other small consumables such as needles, syringes, gauze, tegaderm dressings and local anaesthetic are used from Ward 4 supplies

Formalin jars for the renal biopsy specimens are located in the cupboard of the US procedure room.

Perform 'time out' procedure **before commencing (stamp available in room)**

PROCEDURE

APPROACH

NATIVE RENAL BIOPSY STANDARD APPROACH

Ultrasound machine - set to abdomen profile with abdominal probe and set at appropriate depth

The aim is to biopsy the lateral lower pole of either kidney. The lateral lower pole is typically found in the posterior axillary line.

The patient is placed prone and a pillow can be placed under the patient's pelvis in order to aid in flattening the patient's back. The kidney is identified on ultrasound in a sagittal (longitudinal) plane. The most lateral aspect of the lower pole is visualised on ultrasound the position of other organs, in particular bowel, is noted. If the lower pole is surrounded by bowel consideration could be given to: biopsy of the contralateral kidney; biopsy of the ipsilateral kidney after placing the patient in a slight lateral position on the contralateral side. The position of the probe is marked.

Perform surgical scrub of hands and adorn surgical sterile gown and gloves. The patient's skin is cleansed and an aseptic field prepared. The ultrasound probe is covered with the sterile ultrasound probe cover and the lower lateral pole of the kidney re-visualised. An incision site is chosen distal and along the sagittal plane of the ultrasound probe. 5ml of lignocaine is administered subcutaneously at this site. A further 10ml of 1% lignocaine is administered to the perinephric tissues under ultrasound guidance. An incision is made at the chosen site. The core biopsy needle is inserted and progressed to the lower lateral pole of the kidney under ultrasound guidance. The tip of the needle should be well visualised adjacent to the kidney. The patient may be requested to hold their breath on inspiration or expiration to improve the accessibility of the lower pole and ensure safety. A core of tissue is taken and the needle should be visualised to enter the renal cortex.

If there is no or insufficient core of tissue obtained, a further attempt under ultrasound guidance can be conducted. If a third attempt is required, a consultant nephrologist should be informed and consideration given to abandoning the procedure.

VARIATIONS

NATIVE RENAL BIOPSY – Patient in Left Lateral Position

Useful in certain clinical situations, including those with severe respiratory conditions, morbid obesity, intubated patients and occasionally thin patients in whom there is little room between the ribs and the posterior pelvis.

The procedure is the same as above, except:

The patient is placed in the left lateral position with right should flexed and slight flexion at the pelvis. The right kidney is visualised in the sagittal plane. The lateral lower pole is visualised in the middle of the ultrasound image and the probe then turned 90 degrees, giving a 'donut-shaped' appearance of the lateral lower pole. The position of the probe can be marked at this time as this is the likely point of incision. The probe is then manoeuvred anteriorly, whilst maintaining vision of the lower pole, until reaching the patient's flank. The needles (spinal and core biopsy) are inserted at 90 degrees to the patient's skin and should be seen progressing from the side of the ultrasound screen directly across to the 'donut-shaped' lateral lower pole.

TRANSPLANT RENAL BIOPSY – Lateral Insertion of Needle

The aim of the biopsy is to obtain tissue from the superior pole. The procedure is the same as described above, except:

The patient is placed supine and a pillow can be placed under the patient's pelvis in order to encourage any visualised bowel to move to the contralateral side. The kidney should be visualised in a longitudinal plane and the superior pole is then visualised in the middle of the ultrasound image. The probe is turned 90 degrees so that a 'donut-shaped' image of the superior pole is obtained. The incision is to be made posterior to the probe, ie, at the patient's flank, so that the needle can be guided under the ultrasound probe towards the superior pole of the kidney.

POST PROCEDURE

The procedural team escorts the patient back to DPU and is responsible for delivering the specimen to pathology, where it is viewed under the dissecting microscope and sent urgently to *the Alfred Hospital* for histopathology.

DPU OBSERVATION

Post procedure the patient remains on their back (in particular for a native renal biopsy) – but can sit at 30 degrees head up.

Observations post biopsy:

Nursing observations should occur every 30 minutes for 4 hours.

The procedural team (outpatient renal registrar available on pager 244) is to be called if:

The patient complains of pain; All complaints of pain must be reviewed by a doctor.

BP > 160/90mmHg or < 100/60mmHg

HR > 100bpm

Presence of macroscopic haematuria

The patient should produce a urine specimen post procedure and the DPU staff are to confirm there is no MACROSCOPIC hematuria. If there is MACROSCOPIC hematuria a doctor should be notified.

The patient can be discharged from DPU if all the above observations have remained within these limits for the duration of observation.

POST-PROCEDURE PATIENT INSTRUCTIONS

The most common time for complications following renal biopsy is the first 4-6 hours, however they do occur at 24-48 hours and sometimes even 1 week post biopsy.

The patient must refrain from heavy lifting or vigorous activity (such as gym, physical activity beyond walking) for 1 week. They must ensure they continue to take all their antihypertensive agents and re-commence their antiplatelet or anticoagulant agent as directed by the nephrology team.

There is likely to be pain at the site of the incision and bandage for 1-2 days; however, the patient should not develop pain elsewhere in their abdomen. Any complaints of abdominal pain that develop over the week post biopsy should be reviewed by a doctor and the patient should present to the hospital for review. Similarly, should the patient feel unwell or syncopal, the patient should represent to the hospital for review.

DOCUMENTATION

Routine documentation for a renal biopsy should contain:

Amount and strength of lignocaine administered

Which kidney was biopsied

Needle size used

Number of passes

Number of kidney samples obtained

Complications

Instructions to nursing staff for post-biopsy observations

ALL biopsies, any complications and the results of the biopsy must be recorded in a dedicated spreadsheet for routine audit processes.

PROCESSING

The sample is taken in a formalin filled specimen container with a pathology slip to pathology department and handed directly to the pathologist/scientist responsible for biopsy processing.

Processing of sample is performed by Alfred Anatomical pathology.

If the sample is to be processed on the same day (better for tissue integrity), the sample must be delivered to Northern Health pathology by 9.45am.

Electron microscopy is not routinely performed – it must be specifically requested and the pathologist informed.

If urgent, the renal pathologist (at Alfred Health) should be contacted regarding the need for a preliminary report within 24 hours.

I.Vascath Insertions

Please review the policy on PROMPT relating to vascath insertions
Real-time ultrasound guided insertions should be supervised by a nephrologist until the trainee/renal junior medical staff are deemed competent for independent procedure performance.
The decision to place a vascath must be made in conjunction with the treating nephrologist.

EQUIPMENT

All equipment is sourced from Ward 4 and the Ward 4 NUM orders stock at request

CVC insertion pack.

Syringes 3ml, 5ml and 10ml

Local anaesthetic 5-10ml 1% lignocaine

Saline

Heparin 5000U/5ml (for CVC heparin lock)

Sutures

Gloves

Vascath – Bard Niagra 15cm for R IJV insertion, 20cm for L IJV insertion and 24cm for femoral vein insertion

Ultrasound with vascular probe (Clinic E dialysis)

PROCEDURE

Currently CVC insertions are performed in Clinic E dialysis

An alternate site for CVC insertions is ICU/HDU for bedspace for insertion of the line, if a bedspace is available. They may be able to provide some nursing assistance, however, this cannot be assumed to be possible.

If inserting an internal jugular line, consideration should be given to use of continuous ECG monitoring. This can be performed in Clinic E dialysis as they have within the unit the ability to perform cardiac monitoring.

It is preferable to insert a vascath in the right internal jugular vein. If this is not possible, for example the bleeding risk in a non-compressible site is judged to be too great, the line can be placed in the femoral vein. The left internal jugular is the final vein to be considered.

For internal jugular vein insertion the patient should be in a slight Trendelberg position. The patient's anatomy should be assessed by ultrasound and a site of insertion chosen before commencing the cleaning and draping. The proceduralist should ensure they are aware of the position and calibre of the internal jugular vein and its relationship to the carotid artery.

The patient's neck and upper torso is cleaned, the patient is draped and probe is placed in sterile probe cover. Lignocaine is infiltrated at the insertion site. The introducer needle is used to puncture the internal jugular vein under ultrasound guidance (in a cross sectional view). The tip of the needle should be visualised in the vein before the guidewire is

introduced.

If resistance is experienced when introducing the guidewire, the wire must not be advanced any further and should be withdrawn. Further attempts can be made to introduce the guidewire, however, if it cannot be introduced without resistance the procedure should be ceased and consultant assistance sought.

Once the guidewire has been inserted it should be confirmed to be in the vein by ultrasound. If using a Niagara vascath a small incision at the base of the wire will need to be made before dilating the tract (as the Niagara vascath is more flexible than the Arrow catheter).

The purpose of dilation is to dilate the subcutaneous tract, not the vein. Hence deeper dilation may be required for femoral vein vascath and shallower for internal jugular vascaths. When inserting the dilator, do not let go of the wire and ensure the wire remains mobile whislt dilating the tract.

If using a Niagara vascath, when inserting the vascath do not remove the stiffner from the venous lumen until the vascath is inserted. Ensure that the guidewire can be seen at all times when inserting the vascath.

For all vascaths, ensure each lumen aspirates and flushes. If not dialysis will not occur within 2 hours, the line should be heparin locked with 5000units/5ml heparin. Ensure the line is well sutured and secured.

All internal jugular vascaths must be followed by CXR to ensure correct placement of the line before it is used.

I.Permacath (Tunnelled-cuffed dialysis CVC) insertion

Inserted by interventional radiology (multiple proceduralists)
Organise with radiology bookings (for both inpatient and outpatients).

V.Tenckhoff Catheter (PD catheter) insertion

This is performed by surgical laparoscopic insertion.

Laparoscopic Tenckhoff insertion can be obtained following surgical review in Thursday pm outpatient surgical clinic (surgical 3, Mr Chek Tog).

It is the responsibility of the renal medical staff to ensure that correct procedures are followed prior to admission. This includes, but is not limited to, adequate bowel preparation, appropriate management of anti-coagulant and anti-platelet agents, administration of prophylactic antibiotics and confirmation of adequate placement of catheter. The peritoneal dialysis protocol should be consulted for further information.

The Tenckhoff will be flushed prior to discharge and the renal medical staff should be made aware of any complications prior to discharge.

V.Permacath (Tunnelled-cuffed dialysis CVC) removal

Permacath removals are currently performed in the Clinic E Dialysis Unit.

It is the responsibility of the TNH renal service to remove any permacath not being used in a patient.

Use of anti-coagulants and anti-platelets agents must be reviewed before removal of permacath.

Equipment for permacath line removals should be available through the day procedure unit and post-removal instructions require documentation for the caring nursing staff.

All equipment is held within Clinic E Dialysis
Equipment specifically required include:

- Suture pack
- Chlorhexidine
- lignocaine + adrenaline vials
- Artery forceps x 2
- Scissors
- Sutures (3-0 nylon)
- Scalpel and blade
- Gauze pads
- Sterile gloves
- Sterile gown
- Large tegaderm dressing

l.Tenckhoff Catheter (PD catheter) removal

The removal of Tenckhoff catheters inserted surgically should be discussed with the relevant surgical team
Use of anti-coagulants and anti-platelet agents must be reviewed prior to booking procedure

Outpatient Clinics with Registrar attendance

Tuesdays

Renal-Vascular clinic (for AVF creation and maintenance)

Every Tuesday morning 9.30-12pm Clinic Area B

Supernumerary role for learning/supervised patient review with a Consultant Nephrologist present

Home Dialysis Clinic

Every Tuesday 2-5pm at 230 Cooper St Epping

Supernumerary role for learning/supervised patient review with a Consultant Nephrologist present

General Nephrology/Dialysis Clinic Epping

Every Wednesday afternoon 2-5.30pm Northern Renal outpatient and dialysis clinic

Epping Campus – Clinic Area B

Other nephrologists attending: Tim Pianta, David Langsford, Parvinder Chaal, Adam Hedley, Pek Ghe Tan

Other medical staff attending: Leonie Griffiths (General Practitioner with a renal/chronic disease interest)

Patient type: new/GN/CKD/ESRD on dialysis/Transplant

Craigieburn Renal Clinic

Thursday afternoons 2-5.30pm Craigieburn renal outpatient clinic Craigieburn campus

Other nephrologists attending: David Barit, Tim Pianta

Patient type: all (new/GN/CRI/ESRD on RRT/Transplant)

Chronic Renal Failure/Transplant/Transplant Assessment Clinic

Every Friday Morning 8.30am-12.00pm Northern Chronic renal failure/transplant/transplant assessment clinics – Epping Campus - outpatient Clinic Area B

Other nephrologists attending: Tim Pianta, David Langsford, Adam Hedley, Parvinder Chaal, Niroj Obeyesekere, Ashani Lecamwasam

Other Staff present: Dietitian, Chronic renal failure nurse/CKD educator

Patient type: new/GN/CKD/ESRD on dialysis/Transplant

Northern Hospital Vascular Service

This is an integral component of a renal service regarding creation and maintenance of vascular access for haemodialysis patients and CKD 4/5 patients with a plan to enter the haemodialysis program when they reach ESRD.

The vascular surgeons operate a weekly outpatient clinic (Clinic B) each Tuesday morning 9am -1pm.

Patients that require access or review of access are referred and attend this clinic.

Prior to the clinic there is a vascular-radiology multidisciplinary meeting beginning at 8am that allows for problematic access to be reviewed and generate management plans.

It is expected that the Nephrology registrar attend the outpatient clinic when patients attend so that discussion between surgeon and Nephrologist leads to creation of a management plan to improve functionality of the vascular access.

The Nephrology registrar will attend the multi-disciplinary radiology meeting when access imaging requires discussion. Images that Nephrology wish to have reviewed must be given to the Vascular registrar prior to the meeting.

Offsite commitments (Ambulatory Renal Registrar)

The Northern dialysis unit (on the grounds of TNH but outside of the acute hospital)

For the purpose of patient assessment **for dialysis related problems only.**

This encompasses

Fluid assessment/IBW assessment

Blood pressure management

Access assessment

Infections

Poor flows/bleeding/blockages

Prescriptions for **CRF medications only**

ESA agents

Phosphate binders

PTH axis agents

Renal Transplantation

Transplant Co-ordinators- Henry Tran/Leigh Kisielewski

TNH renal transplantation is performed by Royal Melbourne Hospital.

TNH pancreas/renal transplantation is performed by Monash Hospital.

All prospective patients need to receive appropriate transplant education and assessment at the relevant centre. The transplant co-ordinator will assist staff in ensuring that additional investigations are conducted or followed up in a timely manner in order to achieve timely listing for transplant

We aim to have all deceased donor recipients on the transplant waiting list within 3-6 months of commencing dialysis or by time of eGFR < 15ml/min if eligible for simultaneous pancreas and kidney transplant. As such, the workup for these patients should commence pre-dialysis commencement.

We expect that simultaneous pancreas and renal transplant recipients will return to TNH care upon discharge from Monash Hospital and renal transplant alone recipients will return to TNH care at approximately 2-4 weeks post-transplant from Royal Melbourne Hospital.

Each transplanting hospital has separate transplant guidelines. These can be provided by TNH nephrologists. These provide a guideline for therapeutic drug monitoring and schedule for testing including BK virus.

It is possible to see transplant patients daily through the numerous Renal Clinics conducted through Epping, Broadmeadows and Craigieburn. There is a renal clinic every day of the week across these 3 campuses.

Changes to therapies, need for investigations beyond standard investigations should be discussed with treating nephrologists at TNH in the first instance.

Pathology requests typically include: FBC, UEC, LFT, urine prot:cr and urine MCS (and liapse and BSL if SPK). They also typically include tacrolimus trough levels. This test must be requested to be drawn into a separate tube and to be sent urgently to Austin. If the TNH laboratory receives the specimen before 10am, we should be able to obtain a result in the late afternoon. Requests for mycophenolate AUC are done rarely and require further documentation and planning and should be discussed with a consultant. Requests for BK virus serum PCR may be done 2-4 weekly initially and should also be requested to be drawn into a dedicated tube and to be sent to VIDRL for processing.

Renal transplant biopsies are conducted at TNH. Standardly they are done at 3 and 12 months post biopsy or if clinically indicated. See the renal biopsy protocol for further information.

Adjustment of immunosuppression should be discussed with the treating nephrologist; this is particularly necessary in the setting of management of rejection or BK viremia or nephropathy.

Patients who have had a renal transplant for greater than 1 year need to be considered for dermatological malignancy screening and general population based malignancy screening.

As many of our patients wish to travel overseas, it is important that their vaccination schedule is reviewed and any appropriate (and safe to administer) vaccinations are provided in a timely fashion.

35. Document Status		
Updated by	Dr David Barit	05/01/2024
Reviewed by	Dr Natina Monteleone	01/02/2024
Next review date		April 2024