

When to refer to local renal service?

Request non-acute nephrology assessment if:

- eGFR declining by more than 10 within previous 12 months.
- eGFR less than 30 in a patient without diabetes.
- *eGFR less than 45 in a patient with diabetes and persistent significant albuminuria.*
- uACR >70
- uACR > 30 and haematuria
- **Diagnostic or management uncertainty**
- More than 30% increase in creatinine after starting ACE inhibitor or ARB therapy, or on dose change

What is the purpose of the referral?

- To exclude a reversible cause,
- To manage sequelae of kidneys that don't work properly,
- To discuss whether RRT would be suitable or if Conservative care is a better choice
- To prepare for dialysis and transplant work up

What to include on referral to local renal service

- What is their functional status
- Your opinion about whether they would be a dialysis candidate,
- Consider using a risk calculator [The Kidney Failure Risk Equation](#)
- **Hydration status**
- **MSU**, uACR, Blood Pressure
- Information about: prostate symptoms, systemic symptoms (weight loss, arthralgia, rash etc), excessive NSAIDs

Case Study update – 18 months later

- Recurrent admissions for fluid overload
- eGFR dropped to 12 mL/min/1.73m²
- Poor diabetes control, anaemia, bone disease
- **Symptoms:**
- Nausea, severe tiredness, pruritus
- Struggles to keep up with work



GP Shared Cares in CKD4/5

- Reinforce dietary messages– Fluid, salt, potassium restriction
- Adjust Binocrit dose
- Psycho-social support
- Immunisations *
- Help with Blood pressure medication adjustment
- Help with diuretic and fluid balance management
- Ongoing Management of CV risk (lipid control, smoking cessation support, lifestyle eg, green prescription)



Immunisation for adults pre-dialysis, on dialysis or pre-/post-kidney transplantation



Vaccine	Additional notes	Recommended schedule	Pre-dialysis	On dialysis	Pre-transplant	Post-transplant
<i>Haemophilus influenzae</i> type b Hib (Act-HIB/Hiberix)		<ul style="list-style-type: none"> Administer one dose 	Recommended NOT FUNDED	FUNDED	FUNDED	FUNDED
Hepatitis A (Havrix)	Give on the advice of renal specialist or transplant team	<ul style="list-style-type: none"> Administer two doses at least 6 months apart 	NOT FUNDED	NOT FUNDED	FUNDED	FUNDED
Hepatitis B (Engerix-B)	Give on the advice of renal specialist or transplant team Check serology 4 weeks after 3rd dose: <ul style="list-style-type: none"> if non-immune, seek advice from renal specialist or transplant team 	If pre-dialysis (20mcg) <ul style="list-style-type: none"> Administer one 20mcg dose at each visit at 0, 1, 6 month intervals If on dialysis or pre-/post-transplant (40mcg) <ul style="list-style-type: none"> Coadminister two doses of 20mcg/mL (i.e. 40 mcg) at each visit at 0, 1, 6 month intervals If accelerated schedule requested by specialist or transplant team pre-transplant e.g. active on deceased donor list(40mcg) <ul style="list-style-type: none"> Coadminister two doses of 20mcg/mL (i.e. 40mcg) at each visit Administer three doses at 0, 1, 2 months 	Recommended NOT FUNDED	FUNDED	FUNDED	FUNDED
Herpes zoster Recombinant ZV (Shingrix)	Recommended for adults from the age of 18 years.	<ul style="list-style-type: none"> Administer two doses, at least 2–6 months apart 	FUNDED <ul style="list-style-type: none"> Aged 65 years Aged 18 years+ for those with end-stage kidney disease (CKD 4 or 5) or pre- or post- solid organ transplant 			

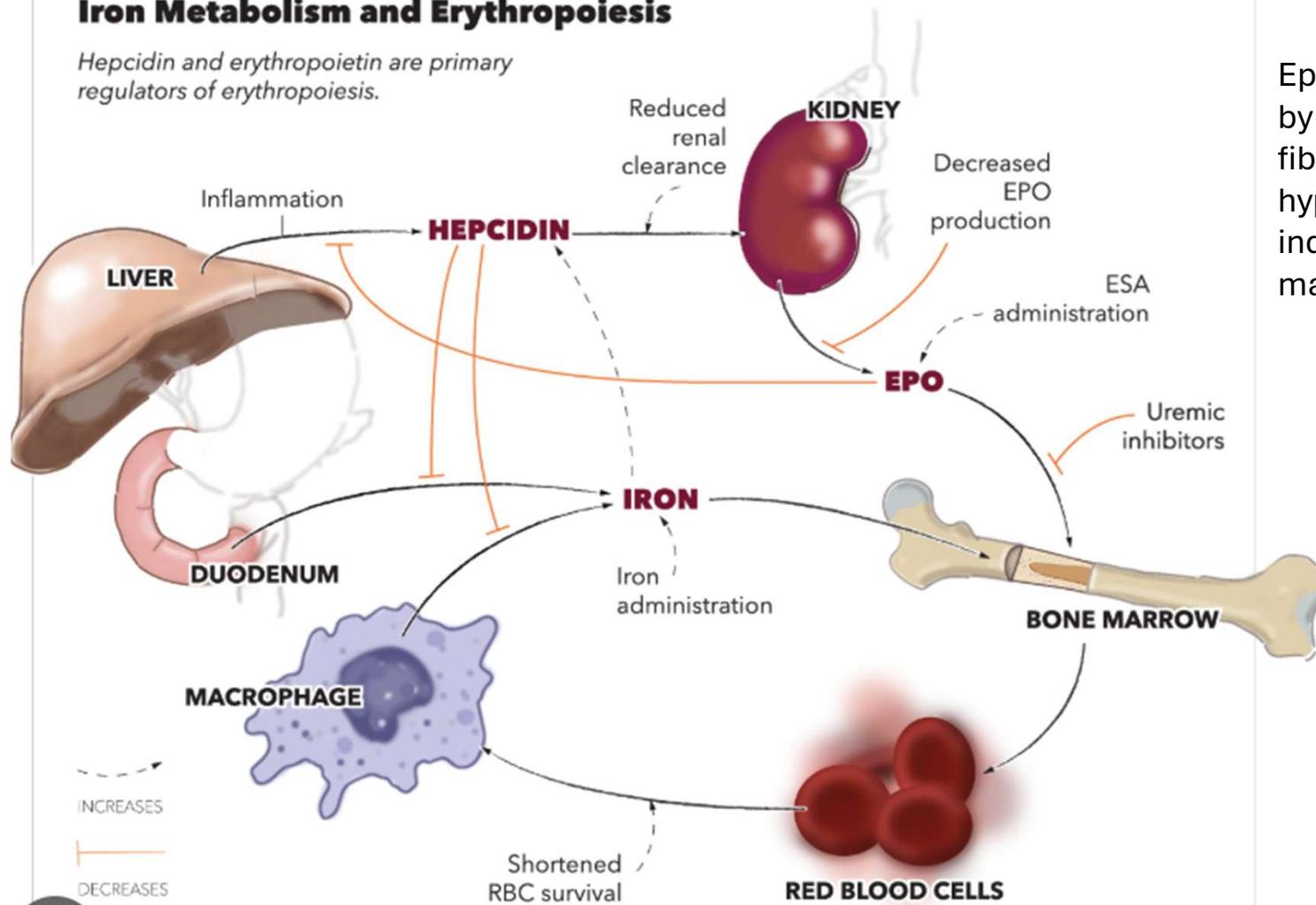
Vaccine	Additional notes	Recommended schedule	Pre-dialysis	On dialysis	Pre-transplant	Post-transplant
Human papillomavirus HPV (Gardasil 9)	Recommended for males and females 18–45 years of age inclusively	<p>If pre-dialysis, on dialysis, or pre-/post-transplant:</p> <ul style="list-style-type: none"> Administer three doses at 0, 2, and 6 month intervals <p>If accelerated schedule requested by specialist or transplant team pre-transplant (funded <27 years), e.g. active on deceased donor list:</p> <ul style="list-style-type: none"> Administer three doses at 0, 1, and 2 month intervals 	<p>FUNDED Up to 27 years of age (standard or accelerated schedule)</p> <p>Recommended NOT funded 27–45 years</p>			
Influenza	<p>Annually, during the funded Influenza Immunisation Programme</p> <p>Two doses are recommended in the first year post-transplant but only the first dose is funded</p> <p>Influenza vaccination is recommended but not funded for household and other close contacts of pre-dialysis, dialysis, pre- and post-transplant patients</p>	<p>If pre-dialysis, on dialysis, or pre-transplant:</p> <ul style="list-style-type: none"> Administer one dose annually <p>If post-transplant:</p> <ul style="list-style-type: none"> Wait until 3 months post-transplant unless at high-risk of infection: <ul style="list-style-type: none"> If at high risk of infection, e.g. during influenza epidemic, wait until 1 month post-transplant Administer one funded dose annually <ul style="list-style-type: none"> In the first-year post-transplant a second purchased influenza vaccination can be administered 4 weeks later to maximise the person's immune response to the vaccine In subsequent years only one dose is required annually 	FUNDED	FUNDED	FUNDED	FUNDED
Meningococcal A,C,W,Y (MenQuadfi)	Prescription required for second primary dose	<ul style="list-style-type: none"> Administer two doses at least 8 weeks apart Schedule a precall for a booster dose every 5 years 	NOT FUNDED unless on immunosuppressive therapy for longer than 28 days	NOT FUNDED unless on immunosuppressive therapy for longer than 28 days	FUNDED	FUNDED
Meningococcal B 4CMenB (Bexsero)	Can be co-administered with any other vaccine	<ul style="list-style-type: none"> Administer two doses 8 weeks apart Schedule a precall for a booster dose every 5 years + 	NOT FUNDED unless on immunosuppressive therapy for longer than 28 days	NOT FUNDED unless on immunosuppressive therapy for longer than 28 days	FUNDED	FUNDED
Pneumococcal PCV13 (Prevenar 13)	If Pneumovax23 has been administered before Prevenar 13, wait one year to give Prevenar 13	<ul style="list-style-type: none"> Administer one dose 	Recommended NOT FUNDED	FUNDED	FUNDED	FUNDED

Vaccine	Additional notes	Recommended schedule	Pre-dialysis	On dialysis	Pre-transplant	Post-transplant
Pneumococcal 23PPV (Pneumovax 23)	Administer Pneumovax23 a minimum of 8 weeks after Prevenar 13	<p>If aged 18 years to under 60 years:</p> <ul style="list-style-type: none"> Administer one dose Schedule a precall for the second dose in 5 years Schedule a precall for the third/final dose 5 years after second dose or at age 65 years, whichever is later <p>If aged 60 years or older:</p> <ul style="list-style-type: none"> Administer one dose Schedule a precall for second/final dose in 5 years 	Recommended NOT FUNDED	FUNDED	FUNDED	FUNDED
Polio IPV (Ipol)	Check immunisation history for a primary course of three polio containing vaccines	<p>If unsure of polio immunisation history</p> <ul style="list-style-type: none"> Administer three doses with a minimum of 4 weeks between each dose 	FUNDED	FUNDED	FUNDED	FUNDED
SARS-CoV-2 (COVID-19)	<p>A third primary dose of mRNA-CV is recommended for severely immunocompromised individuals</p> <p>Third dose should be given 8 weeks after second dose</p> <p>See Immunisation Handbook in relation to timing for current/planned immunosuppressive therapies</p>	<p>If pre-dialysis, on dialysis, or pre-transplant:</p> <ul style="list-style-type: none"> Administer vaccine doses following the recommended schedule for the available COVID-19 vaccine <p>If post-transplant:</p> <ul style="list-style-type: none"> Wait until 3 months post-transplant, unless earlier administration indicated by specialist Administer vaccine doses following the recommended schedule for the available COVID-19 vaccine 	FUNDED	FUNDED	FUNDED	FUNDED
Tetanus/diphtheria/pertussis Tdap (Boostrix)	Check immunisation history for a primary course of three tetanus/diphtheria containing vaccines	<p>If unsure of tetanus/diphtheria immunisation history</p> <ul style="list-style-type: none"> Administer three doses with a minimum of 4 weeks between each dose <p>If has a confident recollection of completed tetanus/diphtheria immunisation</p> <ul style="list-style-type: none"> Administer one Tdap at age 45 years if less than four documented tetanus containing vaccine doses Administer one Tdap at age 65 years 	FUNDED	FUNDED	FUNDED	FUNDED

Vaccine	Additional notes	Recommended schedule	Pre-dialysis	On dialysis	Pre-transplant	Post-transplant
Measles/mumps/rubella MMR (Priorix)	Individuals born in 1969 or later who do not have two documented doses of MMR vaccine, or on the Advice of renal specialist or transplant team	<p>If less than two documented doses</p> <ul style="list-style-type: none"> • Complete a documented course of two MMR doses • Administer up to two doses at least 4 weeks apart^{a,b,c} • Doses as advised by renal specialist or transplant team 	FUNDED	FUNDED	FUNDED for individuals who meet the eligibility criteria CONTRAINDICATED from 4 weeks pretransplant	CONTRAINDICATED
Varicella (chickenpox) VV (Varivax)	Give on the advice of renal specialist or transplant team	<ul style="list-style-type: none"> • Administer two doses at least 4 weeks apart^{a,b,c,d} 	Recommended NOT FUNDED	Recommended NOT FUNDED	FUNDED for individuals who meet the eligibility criteria CONTRAINDICATED from 4 weeks pretransplant	CONTRAINDICATED

Iron Metabolism and Erythropoiesis

Hepcidin and erythropoietin are primary regulators of erythropoiesis.



Epo is produced by renal interstitial fibroblasts, in a hypoxia inducible manner

Renal Anaemia



- Normocytic
- Check Iron studies, B12/Folate before initiating EPO
- Aim Ferritin >200 and POAC iv iron if not there
- Target **Hb 100-120g/L**
- Hb needs monitoring monthly and adjustment of Binocrit dose to achieve target,
- With hold if overshoot 120g/L
- Usual starting dose 4000 IU Weekly
- **Special authority criteria:** egfr<45 if DM, egfr <30 if not DM. Hb <100