

Documenting Acute Kidney Injury (AKI)

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- A) Acute kidney injury may be present with relative rise in serum creatinine ≥ 1.5 x baseline within 7 days or absolute rise in serum creatinine ≥ 0.3 mg/dL (or ≥ 0.5 if serum creatinine ≥ 2.0 mg/dL) within 2 days or urine output < 0.5 ml/kg/hour for 6-12 hours**

Use these codes to document AKI:

NONTRAUMATIC ACUTE KIDNEY INJURY	N17.9
ACUTE ON CHRONIC RENAL FAILURE (aka KIDNEY)	N17.9, N18.9
ACUTE RENAL FAILURE (aka KIDNEY)	N17.9

*If is not yet clear that abnormal creatinine or urine indicates AKI, then use R79.89 'ELEVATED CREATININE (ABNORMAL)' OR N99.0 'LOW URINE OUTPUT to document and track. If patient has a current CKD diagnosis on the Problem List, keep it. Resolve any previous AKI diagnoses from Problem List. Reactivate existing problem if prompted rather than adding a new entry.

- B) When renal function has stabilized or returned to baseline evolve 'Hx of Acute Kidney Injury'**

Evolve diagnosis on problem list to 'Hx of Acute Kidney Injury' by clicking 'Details' and changing diagnosis. This will alert providers that kidneys may be vulnerable to repeated insults and will also serve as reminder to evolve diagnosis to a chronic kidney disease code if appropriate after 3-6 months. It has been increasingly recognized in the nephrology literature that acute kidney injury is often not followed up appropriately (not necessarily needing nephrology visit) and that an important subset do not achieve full recovery so we need a code to stay on the problem list until this is determined.

HX OF ACUTE KIDNEY INJURY

Z87.448

 Details

 Overview

Peak creatinine 4 on 2/1/2019 in context of sulfamethoxazole-trimethoprim (Bactrim)

- C) After 3-6 months, add/update CKD stage if appropriate and resolve 'Hx of Acute Kidney Injury'**

After evaluation for development of chronic kidney disease or new CKD stage has been completed with repeat creatinine (GFR) and microalbumin (ACR = albumin/creatinine ratio), resolve 'Hx of Acute Kidney Injury' from problem list (will automatically file episode to history) and add or update the relevant CKD code if applicable.

In summary the 3 stages of **PROBLEM LIST evolution** to consider in renal disease are

AKI → H/o AKI → CKD stage...

Acute Kidney Injury (AKI)

AKI STAGE ¹	Relative serum creatinine (sCR) rise known or presumed ² within 7 days ³	Absolute sCR rise observed within 48 hours	Possible diagnosis ⁴
Stage 1	1.5-1.9x baseline	>=+0.3 mg/dL if sCR <2 >=+0.5 mg/dL if sCR >=2 ⁵	ICD10 R79.89 'ELEVATED CREATININE (ABNORMAL)' or N99.0 'LOW URINE OUTPUT' or ICD10 N17.9 'Non-traumatic acute kidney injury' ⁷
Stage 2	2.0-2.9x baseline		ICD10 N17.9 'Non-traumatic acute kidney injury'
Stage 3	>=3x baseline or dialysis start ⁶		ICD10 N17.9 'Non-traumatic acute kidney injury' ICD N17.9, Z99.2 'Acute Kidney Renal Failure ON dialysis'

¹ Based on Kidney Disease: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group: KDIGO Clinical Practice Guideline for Acute Kidney Injury. Kidney International 2012. Supplement 2 with modifications as noted.

² Last creatinine used for baseline. If last creatinine more than 8-365 days ago, presume acute kidney injury. If no last creatinine exists, impute baseline creatinine using back calculation via eGFR estimating equation using age, sex and presumed baseline GFR of 75 ml/min per 1.72 m2 body surface area.

³ Or urine output for stage 1 <0.5 ml/kg/hour for 6-12 hours, for stage 2 <0.5 ml/kg/hour >= 12 hours, for stage 3 <0.3 ml/kg/hour >= 24 hours or anuria for 12 hours per KDIGO AKI Classification.

⁴ There is no agreement on how to map this classification of acute kidney risk, injury and failure to available codes in ICD9 (see Coding Clinics 3rd Quarter 2011 and 2nd Quarter 2003 and situation is no different in ICD10. Add diagnosis indicating etiology if known for example ICD10 R39.2 'pre-renal' if appears to be due to volume depletion. If no last creatinine available or last creatinine >=365 days, use terminology 'Kidney Injury-unknown acuity' stage 1, 2 or 3.

⁵ See table 2 of Thomas et, The definition of acute kidney injury and its use in practice, *Kidney International* 2015 Jan;87(1):62-73 for justification for departure from KDIGO requiring higher absolute change when serum creatinine >=2 mg/dl.

⁶ KDIGO allows absolute rise to level >4 mg/dL as criteria for stage 3 but in opinion of SCAL AKI workgroup this criteria is does not necessarily represent AKI.

⁷ If is not yet clear to clinician that abnormal creatinine or urine indicates AKI, then use ICD 479.89 'ELEVATED CREATININE (ABNORMAL)' OR N99.0 'LOW URINE OUTPUT'.

CHRONIC KIDNEY DISEASE (CKD) CATEGORIZATION

		ALBUMINURIA LEVELS			
		Urine Albumin-Creatinine Ratio (ACR) mcg/mg creatinine	A1	A2	A3
			<30	30-<300	300+
Chronic (>3 months) estimated Glomerular Filtration Rate (eGFR)	ml/min/1.73 m2 BSA	description	normal	moderately increased	severely increased
G1	>=90	normal or increased	***	CKD 1 (G1,A2)	CKD 1 (G1,A3)
G2	60-<90	mildly decreased	***	CKD 2 (G2,A2)	CKD 2 (G2,A3)
G3a	45-<59	mild to moderately decreased	CKD 3 (G3a,A1)	CKD 3 (G3a,A2)	CKD 3 (G3a,A3)
G3b	30-<45	moderately to severely decreased	CKD 3 (G3b,A1)	CKD 3 (G3b,A2)	CKD 3 (G3b,A3)
G4	15-<30	severely decreased	CKD 4 (G4,A1)	CKD 4 (G4,A2)	CKD 4 (G4,A3)
G5	<15	kidney failure	CKD 5 (G5,A1)	CKD 5 (G5,A2)	CKD 5 (G5,A3)

Diagnosis of 'CKD' requires G3,G4, or G5 persisting chronically (by definition >3 months) or A2 or A3 (confirmed >2 weeks from first and excluding results during pregnancy) or other marker of kidney damage (such as renal biopsy or imaging abnormality consistent with kidney damage). Use maximum ACR level in past even if later improves with treatment such as renin angiotensin blockade. ACR >=2200 nephrotic range. *** in green boxes means G1,A1 and G2,A1 could have CKD based on renal biopsy or imaging abnormality consistent with kidney damage (example: polycystic kidney disease). Use appropriate codes for CKD 1-5 (ICD10 N18.1-N18.5) or those linked with diabetes mellitus if appropriate. Add additional diagnoses on problem list for nephrotic syndrome or for specific kidney disease. Speckled boxes indicate possible candidate for 'CKD diagnosis' or may use non-specific code 'abnormal kidney function' (ICD10 R94.4) or 'proteinuria' (ICD10 R80.9) as appropriate to document issue was addressed and discussed with patient and keep on problem list.