

### Appendix 3. Correlation Between Urinary Patterns and Renal Disease

URINARY PATTERN						ASSOCIATED RENAL DISEASES
RBCs	WBCs	Casts	Protein	ACR	Other	
++ (dysmorphic RBCs ↑ likelihood of glomerular disease)	–	RBC casts	often heavy			Glomerular disease (proliferative glomerulonephritis, hereditary nephritis) [Note: Combination of RBC casts and proteinuria >2 gm/day are virtually diagnostic]
+	–	granular; <b>no</b> RBC casts			tubular cells	Hereditary nephritis Microangiopathy or vasculitis
+	–	none	none or mild		<b>no</b> tubular cells	Cystic kidney disease Renal or bladder neoplasm IgA nephropathy Idiopathic microhematuria; benign familial hematuria or thin membrane disease
±	+ Pyuria	white cell ± granular	mild to heavy	200-1000 mg/g		Suggestive of tubulointerstitial disease
–	±	none	none or mild	<200 mg/g		Urinary tract obstruction or other non-kidney disease
+	+	none or variable <b>no</b> RBC casts				Hematuria and pyuria may be observed in acute interstitial nephritis, glomerular disease, vasculitis, obstruction and renal infarction
–	–	few or none	none or mild	200-1000 mg/g		Non-inflammatory glomerular disease, Non-inflammatory tubulointerstitial disease, Diseases affecting medium arteries, nephrosclerosis
–	–	may be fatty casts	usually heavy	>1000mg/g	oval fat bodies	Diabetic kidney disease Non-inflammatory glomerular diseases
–	+ Pyuria alone					Usually infection; sterile pyuria suggests urinary tract tuberculosis or tubulointerstitial disease
		Multiple granular and epithelial cell			free epithelial or tubular cells	Strongly suggestive of acute tubular necrosis, most common cause of acute renal failure

Sources:

Post TW, Rose BD. Diagnostic approach to the patient with acute or chronic kidney disease. *UpToDate* 2005; 13.2(April).

Kidney Foundation at [www.kidney.org/professionals/doqi/kdoqi/Gif\\_File/kck\\_t62.gif](http://www.kidney.org/professionals/doqi/kdoqi/Gif_File/kck_t62.gif) (Accessed June 2006)

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