

# Renal system

ملاحظة: هذا الملخص لا يشمل الجزء الأول من المحاضرة (Cases)

## Normal urine

<b>Blood</b>	Negative	<b>Cells</b>	Rare red cells, squamous cells
<b>Ketones</b>	Negative	<b>Cast hyaline</b>	
<b>Glucose</b>	Negative	<b>Crystals</b>	Calcium oxalate
<b>Protein</b>	Negative or trace		
<b>pH</b>	5 to 8		

## Abnormal urine

<b>Blood</b>	Trace - large	<b>Cells</b>	Red/white cells, yeast
<b>Protein</b>	0.3 - 20 g/L	<b>Cast</b>	Granular, RBC,..
<b>Glucose</b>	Positive	<b>Crystals</b>	Urate, cysteine, triple phosphate, drugs
<b>Ketone</b>	Positive	<b>Others</b>	Oval fat bodies, lipid droplets, debris(ATN)

## Cast, Crystals,....

<b>Dysmorphic cells</b>	Glomerular disease
<b>Yeast</b>	Diabetics, steroids, antidepressants
<b>Squamous cells</b>	TCC, tumor around the meatus
<b>Hyaline cast</b>	No significance / Tamm protein
<b>Granular cast</b>	Abnormal/ Not specific
<b>Waxy cast</b>	Advanced CKD
<b>Heme granular cast</b>	ATN (m/c) / PGN (similar to RBC)
<b>Lipid cast</b>	Nephrotic syndrome
<b>RBC cast</b>	PGN / Proliferative lupus / IgA nephropathy / vasculitis
<b>WBC cast</b>	Pyelonephritis / Allergic interstitial nephritis / Proliferative GN / Granulomatous interstitial nephritis (sarcoidosis, tb)
<b>Bacteria</b>	UTIs

<b>Calcium oxalate crystals</b>	- Seen in normal urine, rarely pathogenic  - Look for them in suspected ethylene glycol poisoning
<b>Triple phosphate crystals</b>	Chronic UTIs
<b>Cysteine</b>	AR genetic disorder of children, teens (cause of stones)

→ Hematuria: RBCs cast and/or dysmorphic RBC = glomerular disease

→ AKI: blood, protein, debris and HG casts = ATN

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