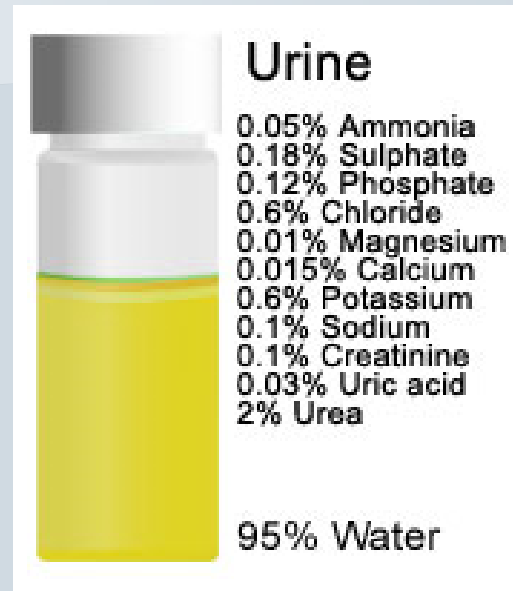


URINALYSIS (UA)



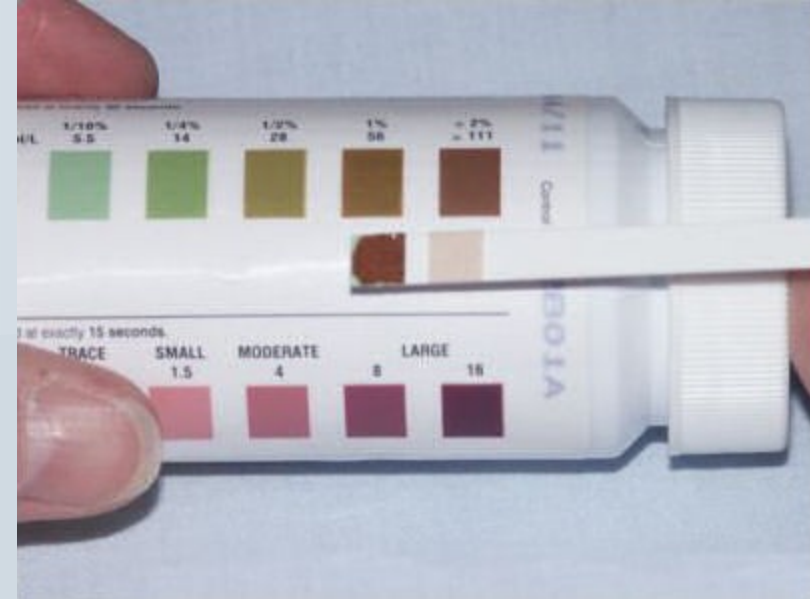
AMIT KAUSHAL

MACROSCOPIC ANALYSIS

Colour, clarity, and cloudiness may suggest conditions such as:

- dehydration
- infection
- liver disease
- muscle breakdown (rhabdomyolysis).

- http://www.emedicinehealth.com/urinalysis/page3_em.htm
- http://www.youtube.com/watch?v=_U1_TviVuls video!!
- <http://www.youtube.com/watch?v=8h3GWjeT2eo&feature=related>
- <http://www.patient.co.uk/doctor/Urine-Dipstick-Analysis.htm>
- <http://archive.student.bmj.com/issues/09/02/education/68.php>
- <http://www.ucdmc.ucdavis.edu/cne/documents/competencies/poct/Urine%20Dipstick.pdf>



DIPSTICK ANALYSIS

- Leukocytes
- Nitrite
- Urobilinogen
- Protein
- pH
- Blood
- Specific Gravity
- Ketone
- Bilirubin
- Glucose
- Ascorbic Acid



Reference ranges for urine tests

Measurement	Lower limit	Upper limit	Unit
Urinary specific gravity	1.003 ^{[1][2]}	1.030 ^{[1][2]}	g/mL
Osmolality	800 ^[3]	n/a ^[3]	mOsm/kg
Urobilinogen	0.2 ^[2]	1.0 ^[2]	Ehrlich units or mg/dL
Free catecholamines, dopamine	90 ^[4]	420 ^[4]	µg/d
Red blood cells (RBCs)	0 ^{[2][5]}	2 ^[2] - 3 ^[5]	per High Power Field (HPF)
RBC casts	n/a	0 / negative ^[2]	
White blood cells (WBCs)	0 ^[2]	2 ^[2]	
pH	5 ^[2]	7 ^[2]	(unitless)
Protein	0	trace amounts ^[2]	
Glucose	n/a	0 / negative ^[2]	
Ketones	n/a	0 / negative ^[2]	
Bilirubin	n/a	0 / negative ^[2]	
Blood	n/a	0 / negative ^[2]	
Nitrite	n/a	0 / negative ^[2]	
Leukocytes	n/a	0 / negative ^[2]	
Sodium (Na) - per day	150 ^[3]	300 ^[3]	mmol / 24hours
Potassium (K) - per day	40 ^[3]	90 ^[3]	mmol / 24hours
Calcium (Ca) - per day	2.5 ^[3]	8.0 ^[3]	mmol / 24hours
Phosphate (P) - per day	n/a ^[3]	38 ^[3]	mmol / 24hours
Creatinine - per day	4.8 ^[3]	19 ^[3]	mmol / 24hours

Ehrlich uni

Urine pH

A high urine pH (alkaline urine) may indicate:

- Gastric suction
- Renal failure
- Renal tubular acidosis
- Urinary tract infection
- Vomiting

A low urine pH (acidic urine) may indicate:

- Chronic obstructive pulmonary disease (e.g., emphysema)
- Diabetic ketoacidosis
- Diarrhea
- Starvation

The test also may be performed to investigate:

- Alkalosis
- Interstitial nephritis
- Renal tubular acidosis - distal
- Sepsis

Urobilinogen

- Low urine urobilinogen levels may result from congenital enzymatic jaundice (hyperbilirubinemia syndromes) or from treatment with drugs that acidify urine, such as ammonium chloride or ascorbic acid.
- Elevated levels may indicate hemolytic anaemia (excessive RBC breakdown), overburdening of the liver, increased urobilinogen production, re-absorption - a large hematoma, restricted liver function, hepatic infection, poisoning or liver cirrhosis.

Microscopic examination

- The numbers and types of cells and/or material such as urinary casts can yield a great deal of information and may suggest a specific diagnosis.
- Hematuria - associated with kidney stones, infections, tumors and other conditions
- Pyuria - associated with urinary infections
- Eosinophiluria - associated with allergic interstitial nephritis, athero-embolic disease
- Red blood cell casts - associated with glomerulonephritis, vasculitis, malignant hypertension
- White blood cell casts - associated with acute interstitial nephritis, exudative glomerulonephritis, severe pyelonephritis
- (Heme) granular casts - associated with acute tubular necrosis
- Crystalluria -- associated with acute urate nephropathy (or "Acute uric acid nephropathy", AUAN)

- http://www.emedicinehealth.com/urinalysis/page4_em.htm
- Colour change of dipstick?
- [http://en.wikipedia.org/wiki/Urinalysis#Medical urinalysis](http://en.wikipedia.org/wiki/Urinalysis#Medical_urinalysis)
- <http://library.med.utah.edu/WebPath/TUTORIAL/URINE/URINE.html>

THANKYOU FOR LISTENING