

Urinalysis

Property	Normal
Color	Pale straw to amber
Clarity	Clear to slightly turbid
Specific gravity	1.005—1.030 (no unit)
pH	5.5—8
24-hour volume	800—2,000 mL
Protein, glucose, ketone, bilirubin, blood, nitrite, WBC	Negative
Urobilinogen	0.1—1 Ehrlich units

- ✓ **Minimum volume** 10—12 mL. Distilled water reads 1.000: calibrate the refractometer with it daily
- ✓ **Leukocyte esterase** needs a full 2 minutes before reading
- ✓ **Nitrite**: any pink is positive. *E. coli* is the most common cause of UTI
- ✓ **Glucose renal threshold** is under 160 mg/dL
- ✓ **Vitamin C interferes** with nitrite, glucose, bilirubin and blood
- ✓ **Odor**: fruity means ketones; ammonia or putrid means infection or a specimen left standing; mousy means PKU
- ✓ **Foam**: white suggests protein, greenish-yellow suggests bilirubin

Cast	Means
Hyaline	Diminished nephron flow: kidney disease or heavy exercise
WBC	Pyelonephritis
RBC	Always pathologic : glomerulonephritis
Renal tubular epithelial	Severe kidney damage
Waxy	Severe renal disease, rarely seen

Casts are read at **low power**, cells at **high power**.

CLIA, blood typing and the microscope

Category	Who may do it
Waived	Medical assistants: all of them
Moderate complexity	Medical assistants with added training
High complexity	Not medical assistants

Not waived: urine microscopic exam (needs PPMP), cast identification, ABO/Rh blood typing.

Type	Antibodies	Can receive
O	Anti-A and anti-B	O: universal donor
A	Anti-B	O, A
B	Anti-A	O, B
AB	None	O, A, B, AB: universal recipient

Objective	Magnification
Scanning	4×
Low power	10×
High dry	40× or 45×
Oil immersion	100×

Ocular is 10×; total is objective × ocular. **Coarse adjustment on scanning and low power only**; fine adjustment on high power and oil immersion. Balance the centrifuge with an even number of equal tubes, capped, placed opposite each other.