

URINALYSIS PROTOCOL

Urine should only be tested for investigation of specific symptoms e.g. suspected urinary tract infection (UTI) or diabetes, or in those commencing and maintaining on PrEP or PEP

Please ensure that all dip sticks are within expiry date

How to use

1. Ideally use fresh sample, ensure sample is not more than 4 hours old.
2. Pipette sample for urine NAAT if indicated before urinalysis.
3. Ensure reagent strip is within date.
4. Avoid touching test areas on reagent strip.
5. Immerse test strip in urine for approximately 2 seconds, ensuring all reagent areas covered. Remove excess urine.
6. Hold the strip in horizontal position to avoid contamination.
7. Compare strip to colour chart after 2 minutes. Avoid lengthy delays in interpretation.
8. Results should be entered into near patient tests special form in NaSH

Interpretation

Reagent	Values	Interpretation	Action
Bilirubin	Negative + ++ +++	Normally undetectable in urine.	Discuss with medical staff, refer on for investigation. Consider Liver function tests
Urobilinogen	Normal 2 mg/dl (+) - 12 mg/dl (++++)	Normally undetectable in urine.	
Ketones	Negative Trace + ++ +++	Suggests acidosis <ul style="list-style-type: none"> • Fasting • Vomiting • Starvation • Pregnancy (hyperemesis) • Excessive sport • Poorly controlled diabetes 	Discuss with medical staff, refer on for investigation. Consider <ul style="list-style-type: none"> • Pregnancy test • Blood glucose
Glucose	Negative 50 mg/dl 100 mg/dl 250 mg/dl 500 mg/dl ≥ 100 mg/dl	Normally undetectable in urine - glycosuria <ul style="list-style-type: none"> • Diabetes • Possible renal toxicity • Cushing's disease • Pancreatitis • Intrinsic kidney disease • Liver disease • Pregnancy • Steroids 	Consider <ul style="list-style-type: none"> • Pregnancy test • Blood glucose <p>If patient is known to be diabetic - no further action is required</p> <p>If the patient is not known to be diabetic consider Tenofovir related toxicity and liaise with Gum Consultant for further action and investigations</p>
Protein	Negative Trace 30 mg/dl (+) 100mg/dl (++) 500mg/dl (+++)	Normally undetectable in urine- proteinuria. Albumin proteins are too large to pass through the glomerular filtrate barrier; so, a presence may indicate increased permeability (e.g. leaky). <ul style="list-style-type: none"> • Early sign of kidney disease 	If using PEP or PrEP Protein (+ or more) <ul style="list-style-type: none"> • Urinary protein creatinine ratio (uPCR), in white top universal container bottle (sent to biochemistry). <p>Protein ++ or +++ needs further investigation:</p>

		<ul style="list-style-type: none"> Contaminant e.g. vaginal secretions UTIs Renal tract calculi Inflammation, malignancy or injury of renal tract Disorders produce high amounts protein in blood e.g. Multiple myeloma Conditions which destroy red blood cells e.g. pre-eclampsia 	<ul style="list-style-type: none"> Check BP uPCR (as above) Medical history Drug history to include any over the counter drugs or supplements Add to GUM virtual review <p>If in combination (>+) with haematuria (V or NV), check U&Es & BP. If abnormal referral to nephrology.</p>
Blood	Negative +ca. 5-10 ++ca. 50 +++ ca. 300 ca.5-10 ca. 50 ca. 300	Normally undetectable in urine – haematuria: <ul style="list-style-type: none"> Non-visible haematuria (NVH) (only seen on urinalysis) Visible haematuria (VH) (visible to eye) <ul style="list-style-type: none"> Renal; glomerulonephritis, polycystic kidney disease, renal cancer Bladder cancer Prostate cancer Extra-renal: UTI, renal calculi, hypertension, sickle cell disease Menstruation Recent strenuous exercise Iatrogenic – swab trauma 	<p>If seen with leucocytes or nitrites, suggestive of UTI (see UTI protocol).</p> <p>Consider PSA with VH</p> <p>Male - consider : digital rectal prostate examination Prostate Specific Antigen blood test (PSA)</p> <p>If (VH and NVH) in combination with proteinuria (>+), check U&Es and BP. If abnormal referral to nephrology.</p> <p>Urgent urology referral ?cancer if:</p> <ul style="list-style-type: none"> Frank haematuria, raised PSA¹ Aged 45+ and: Unexplained VH without UTI Persistent VH or recurs after successful treatment of UTI Aged 60+ unexplained NVH + dysuria or raised white cell count on a blood test. <p>Non-urgent referral:</p> <ul style="list-style-type: none"> Aged 60 + with recurrent or persistent unexplained UTI.
Nitrites	Negative Positive	Normally undetectable in urine. <ul style="list-style-type: none"> UTI Some food sources 	Suggestive of UTI (see UTI protocol).
pH	5-9	Not generally a helpful test.	
Specific gravity	1.000-1.030	Not generally a helpful test. No abnormal values; indication of urine concentration.	
Leucocytes	Negative ca 25 (+) ca 75 (++) ca 500 (+++)	Normally number WCC in urine low. <ul style="list-style-type: none"> Infection Inflammation Contaminant e.g. vaginal secretions	If seen with microscopic haematuria or nitrites, suggestive of UTI (see UTI protocol).

References

1. NICE Suspected cancer: Recognition and referral. NG 12. Updated Sept 2020. Available from: [accessed March 2021]
2. Renal function guidelines. NHS GGC. Available from: <https://www.nhsggc.org.uk/media/243579/renal-function-guideline.pdf> [accessed March 2021]
3. Scottish Referral Guidelines for Suspected Cancer 2019 Available online: <http://www.cancerreferral.scot.nhs.uk/urological-cancers/?alttemplate=guideline> [Accessed October 2020]
4. The Renal association guidelines Available online: <https://renal.org/health-professionals/guidelines/guidelines-commentaries> [accessed March 2021]