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Write a short note on Urinalysis

A urinalysis (UA), also known as routine and microscopy (R&M), is an array of tests performed on urine, and one of the most common methods of medical diagnosis. Urinalysis means the analysis of urine, and it is used to diagnose several diseases. A urinalysis is a test of your urine. A urinalysis is used to detect and manage a wide range of disorders, such as urinary tract infections, kidney disease and diabetes.

A urinalysis involves checking the appearance, concentration and content of urine. Abnormal urinalysis results may point to a disease or illness. For example, a urinary tract infection can make urine look cloudy instead of clear. Increased levels of protein in urine can be a sign of kidney disease. Unusual urinalysis results often require more testing to uncover the source of the problem.

The target parameters that are measured or quantified in urinalysis include many substances and cells, as well as other properties, such as specific gravity. A part of a urinalysis can be performed by using urine test strips, in which the test results can be read as the strip's color changes. Another method is light microscopy of urine samples. When doctors order a urinalysis, they will request either a routine urinalysis or a routine and microscopy (R&M) urinalysis; the difference being that a routine urinalysis does not include microscopy or culture. R&M is used

specifically for culturing bacteria found in urine, which can make it an important tool for diagnosing specific urinary tract infections.

Importance of urinalysis

A urinalysis is a common test that's done for several reasons:

To check your overall health. Your doctor may recommend a urinalysis as part of a routine medical exam, pregnancy checkup, pre-surgery preparation, or on hospital admission to screen for a variety of disorders, such as diabetes, kidney disease and liver disease.

To diagnose a medical condition. Your doctor may suggest a urinalysis if you're experiencing abdominal pain, back pain, frequent or painful urination, blood in your urine, or other urinary problems. A urinalysis may help diagnose the cause of these symptoms.

To monitor a medical condition. If you've been diagnosed with a medical condition, such as kidney disease or a urinary tract disease, your doctor may recommend a urinalysis on a regular basis to monitor your condition and treatment.

Other tests, such as pregnancy testing and drug screenings, also may rely on a urine sample, but these tests look for substances that aren't included in a typical urinalysis. For example, pregnancy testing measures a hormone called human chorionic gonadotropin (HCG). Drug screenings detect specific drugs or their metabolic products, depending on the purpose of the testing.

Test Strip Urinalysis

Test strip urinalysis exposes urine to strips that react if the urine contains certain cells or molecules. Test strip urinalysis is the most common technique used in routine urinalysis. A urine test strip can identify:

Leukocytes—their presence in urine is known as leukocyturia.

Nitrites—their presence in urine is known as nitrituria.

Proteins —their presence in urine is known as proteinuria, albuminuria, or microalbuminuria.

Blood—its presence in urine is known as hematuria.

pH—the acidity of urine is easily quantified by test strips, which can identify cases of metabolic acidosis or alkalosis.

Preparations

If your urine is being tested only for a urinalysis, you can eat and drink normally before the test. If you're having other tests at the same time, you may need to fast for a certain amount of time before the test. Your doctor will give you specific instructions.

Many drugs, including nonprescription medications and supplements, can affect the results of a urinalysis. Before a urinalysis, tell your doctor about any medications, vitamins or other supplements you're taking.

Expectations

Depending on your situation, you may collect a urine sample at home or at your doctor's office. Your doctor will provide a container for the urine sample. You may be asked to collect the sample first thing in the

morning because at that time your urine is more concentrated, and abnormal results may be more obvious.

To get the most accurate results, the sample may need to be collected midstream, using a clean-catch method. This method involves the following steps:

Cleanse the urinary opening. Women should spread their labia and clean from front to back. Men should wipe the tip of the penis.

Begin to urinate into the toilet.

Pass the collection container into your urine stream.

Urinate at least 1 to 2 ounces (30 to 59 milliliters) into the collection container.

Finish urinating into the toilet.

Deliver the sample as directed by your doctor.

If you can't deliver the sample to the designated area within 60 minutes of collection, refrigerate the sample, unless you've been instructed otherwise by your doctor.

In some cases, your doctor may insert a thin, flexible tube (catheter) through the urinary tract opening and into the bladder to collect the urine sample.

The urine sample is sent to a lab for analysis. You can return to your usual activities immediately.

Results

For a urinalysis, your urine sample is evaluated in three ways: visual exam, dipstick test and microscopic exam.

Visual exam

A lab technician examines the urine's appearance. Urine is typically clear. Cloudiness or an unusual odor may indicate a problem, such as an infection. Blood in the urine may make it look red or brown. Urine color can be influenced by what you've just eaten. For example, beets or rhubarb may add a red tint to your urine.

Dipstick test

A dipstick — a thin, plastic stick with strips of chemicals on it — is placed in the urine to detect abnormalities. The chemical strips change color if certain substances are present or if their levels are above normal. A dipstick test checks for:

Acidity (pH). The pH level indicates the amount of acid in urine. Abnormal pH levels may indicate a kidney or urinary tract disorder.

Concentration. A measure of concentration, or specific gravity, shows how concentrated particles are in your urine. A higher than normal concentration often is a result of not drinking enough fluids.

Protein. Low levels of protein in urine are normal. Small increases in protein in urine usually aren't a cause for concern, but larger amounts may indicate a kidney problem.

Sugar. Normally the amount of sugar (glucose) in urine is too low to be detected. Any detection of sugar on this test usually calls for follow-up testing for diabetes.

Ketones. As with sugar, any amount of ketones detected in your urine could be a sign of diabetes and requires follow-up testing.

Bilirubin. Bilirubin is a product of red blood cell breakdown. Normally, bilirubin is carried in the blood and passes into your liver, where it's removed and becomes part of bile. Bilirubin in your urine may indicate liver damage or disease.

Evidence of infection. If either nitrites or leukocyte esterase — a product of white blood cells — is detected in your urine, it may be a sign of a urinary tract infection.

Blood. Blood in your urine requires additional testing — it may be a sign of kidney damage, infection, kidney or bladder stones, kidney or bladder cancer, or blood disorders.

Microscopic exam

During this exam, several drops of urine are viewed with a microscope. If any of the following are observed in above-average levels, additional testing may be necessary:

White blood cells (leukocytes) may be a sign of an infection.

Red blood cells (erythrocytes) may be a sign of kidney disease, a blood disorder or another underlying medical condition, such as bladder cancer.

Bacteria or yeasts may indicate an infection.

Casts — tube-shaped proteins — may form as a result of kidney disorders.

Crystals that form from chemicals in urine may be a sign of kidney stones.

A urinalysis alone usually doesn't provide a definite diagnosis. Depending on the reason your doctor recommended this test, abnormal results may or may not require follow-up.

Your doctor may evaluate the urinalysis results along with those of other tests — or order additional tests — to determine next steps.

For example, if you are otherwise healthy and have no signs or symptoms of illness, results slightly above normal on a urinalysis may not be a cause for concern and follow-up may not be needed. However, if you've been diagnosed with a kidney or urinary tract disease, elevated levels may indicate a need to change your treatment plan. For specifics about what your urinalysis results mean, talk with your doctor.