

## Clinical Significance of Test Results

### Instructions

1. The data of test results were only a clue reference but not identified properly to the diagnosis of diseases.
2. The values of laboratory reference interval resulted from statistical basis originated in physiologic measurement in large cohort. When values were slightly above or beneath the reference range, the specialist will exam the clinical significance of test results.
3. Before integrating all of test results into consideration, a single abnormal value should not jump into conclusion.

### 1. Urinalyses:

|                  |                                                                                                                                                                                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Proteinuria      | Proteinuria may be caused by hypertension, kidney disorders, gout, trauma. Fever, intense exercise, extreme fatigue, excessive intake of meat and high purine diet may also cause trace amount of physiological proteinuria. |
| Glucose in urine | When there is glucose in urine, please do further check on blood glucose and renal function.                                                                                                                                 |
| Occult Blood; OB | Urinary occult blood test is usually positive in female around menstruation. However, male or female not in menstruation with positive urine OB, further urinary system examination is recommended.                          |
| WBC              | White blood cells in urine could be caused by urinary tract infection.                                                                                                                                                       |
| RBC              | Red blood cells in urine, could be due to urinary tract infection, stones, or other condition.                                                                                                                               |

Note : Make sure you drink plenty of plain water daily. Don't hold it when you need to urinate! Empty your bladder about every 3-4 hours during waking hours.

### 2. Blood routine examination:

|                   |                                                                                                                                                                                                                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RBC<br>Hgb<br>Hct | If hemoglobin level is lower than normal reference value, it could mean various kinds of anemia, such as iron deficiency anemia, pernicious anemia, thalassemia, hemophilia, etc. If hemoglobin level is higher than normal reference value, it may be hemoconcentration of various causes.                           |
| WBC               | White cell count elevates with inflammation in the body as well as abnormal hemopoietic function, tissue necrosis, usage of steroid or pregnancy. Low white cell count indicates blood disorders (for example, bone marrow depression, drug induced, radiation, splenomegaly), virus infection or immune dysfunction. |
| Platelet          | The value elevates with abnormal hematopoietic function, it may decrease due to drugs, radiation, genetics, abnormal hematopoietic function, resulting in dysfunction of blood coagulation.                                                                                                                           |

Iron Deficiency Anemia Note : intake more dark green leafy vegetables, beef, milk, liver and other iron-rich foods.

### 3. Blood biochemistry test :

#### 3.1 Liver function test :

|                                          |                                                                                                                                                                                                                                              |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AST<br>ALT                               | They are converting enzymes in liver cells and their blood levels will rise when liver cells are damaged. But problems from other organs such as muscle, heart disease, hyperthyroidism, and anemia may also increase their levels in blood. |
| Alk p-tase                               | Level will increase with liver, bile duct, bone diseases.                                                                                                                                                                                    |
| r-GT                                     | It's an index of alcoholic liver disease or biliary disease.                                                                                                                                                                                 |
| Bilirubin-T<br>Bilirubin-D               | Evaluation could be caused by biliary tract obstruction, hemolysis or biliary stone.                                                                                                                                                         |
| T-protein)<br>Albumin<br>Globulin<br>A/G | Those values could help to determine liver and renal dysfunction. Abnormally high value is common in dehydration, bleeding, infection, leukemia, liver disease, multiple myeloma, malaria, etc.                                              |

Abnormal Liver Function Note:

1. Proper exercise, do not drink alcohol or stay up late, keep balance diet and adequate rest.
2. Follow physician instructions, regular follow-up, avoid unnecessary medication.

#### 3.2 Kidney function test:

|                          |                                                                                                                                                                                                                    |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Blood urea nitrogen; BUN | It's the product of protein metabolism, excreted by the kidney. High BUN level could be caused by dehydration, renal insufficiency, nephritis, urinary tract obstruction, gastro-intestinal bleeding, uremia, etc. |
| Creatinine               | Creatinine is excreted by glomerular filtration and tubular excretion; it's level will rise when there is renal insufficiency, high body mass, excessive exercise.                                                 |
| Uric Acid                | High uric acid level may be caused by purine-rich diet, kidney failure or other problems. Long-term elevation of uric acid can cause gout, kidney failure and arthritis.                                           |

High uric acid note: Drink adequate water, avoid food with high purine.

### 3.3 Blood lipid test:

|                           |                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Total Cholesterol         | When levels of either lipid is too high, it will deposit in the vessel wall and cause atherosclerosis, which predispose to cardiovascular disease. |
| Triglyceride              |                                                                                                                                                    |
| HDL                       | This "good" cholesterol which prevent atherosclerosis.                                                                                             |
| LDL                       | The "bad" cholesterol that predispose to atherosclerosis.                                                                                          |
| Cholesterol ratio; TC/HDL | An index of the risk of atherosclerosis.                                                                                                           |

#### Dyslipidemia Note:

1. Avoid fatty meal and food with high carbohydrate.
2. Do not over eating or drinking, especially avoid fried food, quit smoking and adequate exercise.

### 3.4 Diabetes screening test:

|                               |                                                                                                                                                                                                                                             |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fasting Plasma Glucose        | Normally the body maintains the blood glucose level at a reference range for the daily needs. When it's level is too high, screening for diabetes is recommended.                                                                           |
| Postprandial Glucose          |                                                                                                                                                                                                                                             |
| Glycated hemoglobin;<br>HbA1c | Glycated hemoglobin is a substance in red blood cells that is formed when blood sugar (glucose) attaches to hemoglobin. Abnormal results mean that your blood glucose levels have been above normal over a period of weeks to three months. |

High blood sugar Note: Do not over eating and over drinking, keep proper exercise, maintain ideal body weight, abstain from sweet food and regular follow-up of blood sugar level.

### 4. Serological examination:

|          |                                                                                                                                                                                                                 |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HBs Ag   | Hepatitis B surface antigen is a marker of infectivity. Its presence indicates either acute or chronic HBV infection. Regular follow-up of liver function and ultrasound is recommended.                        |
| HBs Ab   | Antibody to hepatitis B surface antigen is a marker of immunity. Its presence indicates an immune response to HBV infection, an immune response to vaccination, or the presence of passively acquired antibody. |
| anti-HCV | Anti-HCV tests detect the presence of antibodies to the virus, indicating exposure to HCV.                                                                                                                      |
| T3       | An evaluation of thyroid function. It's level will increase in hyperthyroidism and decrease in hypothyroidism.                                                                                                  |
| T4       | An evaluation of thyroid function. It's level will increase in hyperthyroidism and decrease in hypothyroidism.                                                                                                  |
| TSH      | Thyroid stimulating hormone from pituitary that stimulates the secretion of thyroid hormone.                                                                                                                    |

#### Notes :

- \* Person with negative in both HBs Ag and HBs Ab is suggested to be vaccinated for immunization.
- \* Those who are positive HBsAg or anti-HCV:
  1. Should follow liver function periodically.
  2. Avoid unnecessary medications.
  3. Avoid blood donation or sharing dining utensils with others.

### 5. Special serological test:

|      |                                                                                        |
|------|----------------------------------------------------------------------------------------|
| VDRL | Suspect syphilis infection when positive, required TPHA test for further confirmation. |
| AIDS | Suspect HIV infection when positive, required Western Blot for reconfirmation.         |

Note: When test data is abnormal, consult specialist for further examination as soon as possible.

### 6. Tumor markers:

|     |                                                                                                                                                     |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| AFP | AFP may increase in early stage liver cancer, chronic hepatitis, cirrhosis, and with pregnancy.                                                     |
| CEA | CEA level may be increase in digestive tract disease including inflammation or neoplasm, colon cancer, breast, lung, ovarian or bladder cancer etc. |
| PSA | Prostate cancer, prostate compression or infection.                                                                                                 |

Note: When lab data is abnormal, consult specialist for further examination as soon as possible.

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Note: For consultation, please bring the physical examination report or inform the abnormal data.