

Health Screening Handbook

Thank you for choosing our clinic for your health screening.

We hope that this handbook will aid in the understanding of your examination results and facilitate discussions regarding your health with your physician.

We recommend you take annual check-ups.

PHYSICAL MEASUREMENTS

BMI and Obesity Levels

BMI	ASSESSMENT	
	Japan	International*
<18.5	Underweight	——
18.5 ~ 24.9	Healthy weight	Healthy weight
25 ~ 29.9	Class I obesity	Overweight
30 ~ 34.9	Class II obesity	Class I obesity
35 ~ 39.9	Class III obesity	Class II obesity
40 or above	Class IV obesity	Class III obesity

*As proposed by the International Obesity Task Force

ABDOMINAL GIRTH

For men, waist circumference of more than 85 cm is a component of metabolic syndrome. For women, the cut point for waist circumference is more than 90 cm by Japan Society for the Study of Obesity. However, in other female Asian populations, it appears as though using a lower waist circumference cut point (more than 80 cm) is appropriate.

BLOOD PRESSURE

Adult Blood Pressure Classifications

Japan	Systolic Blood Pressure (mmHg)		Diastolic Blood Pressure (mmHg)
Optimal	< 120	and	< 80
Normal	< 130	and	< 85
Elevated	130 ~ 139	or	85 ~ 89
Mild hypertension	140 ~ 159	or	90 ~ 99
Moderate hypertension	160 ~ 179	or	100 ~ 109
Severe hypertension	180 or above	or	110 or above
Systolic hypertension	> 140	and	< 90

JNC7 (USA)*	Systolic Blood Pressure (mmHg)		Diastolic Blood Pressure (mmHg)
Normal	< 120	and	< 80
Prehypertension	120 ~ 139	or	80 ~ 89
Hypertension, Stage 1	140 ~ 159	or	90 ~ 99
Hypertension, Stage 2	160 or above	or	100 or above

*Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure, United States Department of Health and Human Services

COMPLETE BLOOD COUNT

HEMOGLOBIN (Hb)

Hemoglobin is a protein found in red blood cells whose function is to carry oxygen from the lungs to the body's cells. Low hemoglobin levels may indicate anemia, which may cause fatigue and weakness. Anemia has many causes and the most common one is iron deficiency anemia. If you have abnormal level, we suggest that you see your physician.

RED BLOOD CELLS (RBC)

Red blood cells (RBCs), also called erythrocytes, are the most common type of blood cell, and are involved in the transport of oxygen to cells. Low values may indicate anemia, which may be due to decreased production or increased destruction of red blood cells, or from blood loss. Elevated levels may be seen with dehydration, lung disease, in persons who smoke, or from over production in diseases such as polycythemia vera.

HEMATOCRIT (Ht)

The hematocrit is a measurement of the proportion of blood that is made up of red blood cells, expressed as a percentage. This value may increase in dehydration or when the number and/or the size of red blood cells increases, as in smokers or people with polycythemia vera. Low levels are typically seen with anemia.

PLATELETS

Platelets are component of blood involved in blood clotting. Low platelet counts may be seen in conditions such as bruises, bleeding from gums. Increased counts may often be seen in people with myocardial infarction and stroke due to excessive clottings.

WHITE BLOOD CELLS (WBC)

The white blood cell count is the number of white blood cells in a sample of blood. White blood cells are involved in the immune response and help the body fight infections. Elevated counts are seen with infections, inflammation, drug reaction, allergies, and blood disorders. Decreased counts may be seen after viral infections, medications, and blood disorders. It sometimes shows out of range values without any causes.

WHITE BLOOD CELL DIFFERENTIATION

(Neutrophil, Eosinophil, Basophil, Monocyte)

White blood cell differentiation determines percentages of each type of white blood cell present in your blood. You have five type of white blood cells, and each of these can be affected in different ways if you have a particular condition or disease. It is beneficial to diagnose infections, blood disorders, and allergies.

RED BLOOD CELL INDICES (MCV MCH MCHC)

Your RBC indices are used to diagnose different types of anemia.

SERUM IRON (Fe)

This test measures the amount of iron in serum, the liquid part of blood. Iron is essential for proper function of red blood cells in oxygen transport. Serum iron values vary throughout the day. Low levels may be the result of bleeding, period, an iron-poor diet or malabsorption, loss of trace ferine due to proteinuria.

LIVER FUNCTION TESTS

TOTAL SERUM PROTEIN

Total serum protein is a total amount of more than 100 types of proteins contained in a serum.

ALBUMIN (ALB)

Albumin is a protein produced in the liver and is the most abundant protein found in the blood. It has a variety of important roles, including transport of nutrients, hormones and drugs. It is also crucial to maintaining a normal amount of fluid within the blood vessels. Low levels are often seen in liver disease, but may also be seen in kidney disease or malnutrition. Increased levels typically indicate dehydration.

A/G RATIO

This is the ratio of albumin (see above) to globulin (proteins other than albumin in the blood). A low A/G ratio may be due to overproduction of globulins (such as in multiple myeloma or autoimmune diseases), or an underproduction of albumin (e.g. liver disease). A high A/G ratio reflects underproduction of globulins, which may be seen in genetic deficiencies or blood diseases.

GLUTAMIC OXALOACETIC TRANSAMINASE (GOT)

Also known as aspartate aminotransferase or AST

GOT is an enzyme found mostly in the heart, liver and muscle. Elevated levels are seen in hepatitis, liver damage from alcohol, fatty infiltration of the liver, or from prescription or herbal medication side effects. Increases may also be seen in heart attacks or muscle injury. Pregnancy, intramuscular injections, and strenuous exercise may increase GOT levels.

GLUTAMIC PYRUVIC TRANSAMINASE (GPT)

Also known as alanine aminotransferase or ALT

GPT is an enzyme found mostly in the liver, with small amounts in the kidneys, heart, and muscle. Similar to GOT above, elevated levels are seen in hepatitis, liver damage from alcohol, fatty infiltration of the liver, or from prescription or herbal medication side effects.

GAMMA GLUTAMYL TRANSPEPTIDASE (γ -GTP)

Also known as gamma glutamyl transferase

γ -GTP is an enzyme which is related to the liver and common bile duct diseases. High level of γ -GTP is seen specifically in alcohol-caused liver diseases. Medication, fatty liver and bile duct diseases may also raise γ -GTP level.

ALKALINE PHOSPHATASE (ALP)

Alkaline phosphatase is an enzyme found in high concentrations in bone and liver. Elevated levels may indicate blockage of the bile ducts (often by gallstones), or bone disease. More detailed analysis (measuring ALP isozymes) may help distinguish the two. Levels tend to be higher in children and adolescents due to active bone growth.

TOTAL BILIRUBIN

(Direct bilirubin. Indirect bilirubin)

Total bilirubin level is examined to check for liver function and the presence of jaundice. Total bilirubin consists of direct bilirubin and indirect bilirubin. Indirect bilirubin, mainly a breakdown product of the hemoglobin in red blood cells, binds to albumin as it is sent to the liver. In the liver, indirect bilirubin turns into direct bilirubin by the enzyme and be excreted into bile. Bilirubin level may rise in the situation when excessive amount of red blood cells are destroyed, or by liver diseases (e.g. hepatitis) or the blockage of bile ducts (e.g. gallstone or bile duct tumor) which may lead to jaundice. It may also rise by inherited problems.

LACTIC DEHYDROGENASE (LDH)

Lactic dehydrogenase is an enzyme widely distributed in body tissues. Damage to these tissues results in release of this enzyme into the blood stream and a rise in the measured level. LDH levels may be elevated in a variety of situations, including strokes, heart attacks, hemolytic anemias, liver disease, kidney disease and some cancers.

CHOLINESTERASE (Ch-E)

This is an enzyme primarily contained in the liver and is measured to assess liver function. Elevated levels may be seen in fatty infiltration of the liver, diabetes, hyperthyroidism, or obesity. Decreased levels may be seen in advanced liver disease.

LAP (LEUCINE AMINO PEPTIDASE)

Elevated LAP level is the result of the blockage of a bile flow caused by common bile duct stone or bile duct tumor.

SERUM AMYLASE

Amylase is a digestive enzyme produced by the pancreas and salivary glands. Levels may be elevated in inflammation of the pancreas (pancreatitis), obstruction of the pancreatic duct (e.g. by gallstones), or pancreatic cancer. As it is present in saliva, conditions such as mumps may also lead to high levels. More detailed tests (isozymes) can distinguish between pancreatic and salivary forms of amylase.

GLUCOSE METABOLISM

FASTING BLOOD GLUCOSE • HbA1c (HEMOGLOBIN A1c)

Diabetes causes the elevation of fasting blood glucose and HbA1c levels. Foods that you take in affect the fasting blood glucose level. HbA1c level is used to study the fasting blood glucose fluctuations during past 1~2 months.

URINE GLUCOSE TEST

High glucose levels often indicate diabetes. If the test results are abnormal, your doctor will perform additional tests, such as BS, HbA1c to determine the cause.

LIPID TESTS

HDL CHOLESTEROL

HDL cholesterol is also known as the “good” cholesterol, as it removes excess cholesterol and carries it to the liver for disposal. Low levels of HDL cholesterol are associated with an increased risk of heart disease and is one of the criteria used to diagnose metabolic syndrome. Smoking and lack of exercise can decrease HDL levels. The ratio of LDL cholesterol to HDL cholesterol of 2:1 or less is considered desirable.

LDL CHOLESTEROL

LDL cholesterol is also known as the “bad” cholesterol as it is associated with deposits of cholesterol in the walls of blood vessels, contributing to atherosclerosis. Elevated levels of LDL cholesterol indicate an increased risk of cardiovascular disease. Desirable levels vary depending on the presence of other risk factors, such as smoking, age, high blood pressure, preexisting heart disease or diabetes, family history, and low HDL levels.

TRIGLYCERIDES

Triglycerides are a form of fat storage for the body and the majority of triglycerides are found in fat tissues. Elevated triglycerides may contribute to the risk of cardiovascular disease. Extremely high levels (> 1000 mg/dl) may cause inflammation of the pancreas. High caloric intake, especially from carbohydrates, alcohol, and lack of exercise lead to elevated triglycerides.

RENAL FUNCTION • URINALYSIS • ELECTROLYTES • URIC ACID

URINE SPECIFIC GRAVITY

Specific gravity measures urine density, or the ability of the kidney to concentrate or dilute the urine from plasma. Measurements below/over the reference range indicate dehydration, DM, kidney disease, fluid overload.

URINE PH

The average urine sample tests at about 6.0. If your urine sample is lower, this could indicate diabetic ketoacidosis and dehydration, especially, an environment conducive to kidney stones, whereas higher, could do kidney failure and UTI.

PROTEINURIA

Normally, healthy people do not have protein in their urine, however, protein may be excreted in the urine when the kidneys are not working properly. A slight excess of protein may be seen in post strenuous exercise or pre/post menstrual period with healthy people.

HEMATURIA

Blood in the urine may be due to bleeding along the urine tract, such as kidneys, bladder, or urethra.

MACROSCOPIC URINALYSIS OF URINARY SEDIMENT

(RBC, WBC, Squamous epithelium, Granular casts)

Microscopic Examination of Urine Sediment is direct visual observation of solid matter which is produced by the kidney or bladder. This test is often used to confirm the findings such as kidney and urologic disease.

CREATININE

Creatinine is produced from a molecule in muscles and its level is an indicator of renal excretory capacity. Levels are dependent on muscle mass, so that men generally having higher values than women. Renal dysfunction or renal failure may be suspected if the level is high.

BUN: BLOOD UREA NITROGEN

BUN is a breakdown product of protein which is excreted in the urine. The BUN level is used to assess renal function. Dehydration, renal dysfunction, or gastrointestinal bleeding may be suspected if the level is high.

URIC ACID

Uric acid is a breakdown product of purines, which come from nucleic acids (DNA). They enter the blood from digested foods or from normal body cell turnover. Most uric acid is excreted via the urine. Elevated levels occur as a result of overproduction or underexcretion. Increased uric acid levels can lead to the formation of crystals in joints, leading to the inflammation and pain characteristic of gout. High uric acid may also be involved in kidney stone formation and kidney damage.

NA AND CL

It is stable in urine of healthy people. When imbalance occur, we recommend to discuss it with your physician.

K

A low or high level of potassium in your body system may induce arrhythmia. A low level of potassium in your urine may be caused by certain medicines such as diuretics.

CA AND P

Calcium and phosphate are deeply related. Bone is composed of minerals. They will be imbalanced by a metabolic disorder.

THYROID FUNCTION

THYROID-STIMULATING HORMONE (TSH)

TSH is produced by the pituitary gland and stimulates the production and release of thyroid hormones from the thyroid gland. High TSH levels indicate that the thyroid is not responding properly to the stimulation and is not releasing adequate amounts of hormone. Low levels of TSH generally indicate an overactive thyroid gland, but may also rarely be due to pituitary disease.

FREE T3 and FREE T4 (FT3, FT4)

T3, or triiodothyronine, is one of the two major hormones produced by the thyroid. T4, or thyroxine, is the other major hormone. FT3 and FT4 measure the amounts of these hormones that are not bound to proteins in the blood, and are thus, "free". T4 becomes active when it is converted into T3 in the liver. Changes in these levels, together with TSH measurements, can help detect thyroid gland dysfunction.

INFLAMMATORY REACTION

CRP

CRP, or C-reactive protein, is a substance produced by the liver which increases with inflammation or infection. It has recently gained attention as a possible marker of cardiovascular disease in those at moderate or high risk. Interpretation must be in the context of other known cardiovascular risk factors.

RHEUMATOID FACTOR (RF)

Rheumatoid factor is an antibody produced by the body and is associated most closely with rheumatoid arthritis, but may also be present in other autoimmune diseases, as well as infections and may be found in otherwise healthy people. Interpretation must be in conjunction with clinical symptoms and other tests.

A BLOOD SEDIMENTATION RATE

The sedimentation rate (sed rate) blood test measures how quickly red blood cells (erythrocytes) settle in a test tube in one hour. It is vary depending on person.

EXAMINATION OF VIRAL HEPATITIS

HEPATITIS B SURFACE ANTIGEN (HBsAg)

The hepatitis B surface antigen is a protein produced by the hepatitis B virus and is an indicator of hepatitis B infection. It is present early in the disease and disappears with recovery. In some cases, the body cannot eliminate the virus and the antigen persists. This is known as a carrier state.

HEPATITIS B SURFACE ANTIBODY (HBsAb)

The presence of hepatitis B surface antibody indicates immunity to the hepatitis B virus through either previous exposure and recovery, or through vaccination.

ANTI-HCV ANTIBODY

This is an antibody produced by the body and directed against the hepatitis C virus. A positive result indicates exposure to the virus, and further tests are necessary to determine if there is active infection.

TUMOR MARKERS

ALPHA FETOPROTEIN (AFP)

AFP is elevated in 80% of individuals with hepatocarcinoma and metastatic liver cancer, however, it can also elevate with non-cancerous conditions, such as cirrhosis, hepatitis, and late gestation.

CARBOHYDRATE ANTIGEN 19-9 (CA19-9)

CA19-9 is a protein which may be elevated in advanced pancreatic cancer. It may also be detectable in other cancers, in the presence of gallstones or bile duct obstruction, pancreatitis, or liver disease.

CANCER ANTIGEN 125 (CA-125)

CA125 is a tumor marker of ovarian cancer. Ovarian cancer or uterine cancer may be present when CA125 level rises. The level may also rise by fallopian tube cancer, pancreatic cancer, lung cancer or bowel cancer, or by non-cancerous conditions such as endometriosis, uterine myoma, peritonitis or acute pancreatitis.

CARCINOEMBRYONIC ANTIGEN (CEA)

CEA is one of tumor markers and its level may rise by pathologically so-called "adenocarcinoma", such as bowel cancer, stomach cancer, lung cancer or other gastrointestinal cancers.

PROTEIN INDUCED BY VITAMIN K ABSENCE OR ANTAGONISTS-II (PIVKA-II)

PIVKA-II is a protein which arises in the blood by liver diseases or the deficiency of vitamin K. It particularly shows high level in people with liver cancer.

PRO-GRP (Pro-gastrin-releasing peptide)

It is a tumor marker for diagnosis, treatment and monitoring of patients with small cell lung cancer (SCLC).

PROSTATE SPECIFIC ANTIGEN (PSA)

Prostate specific antigen is a protein produced mainly by cells in the prostate gland in men and was developed as a tumor marker to screen for and monitor prostate cancer. Elevated levels are associated with prostate cancer, but may also be due to inflammation of the prostate (prostatitis) or benign enlargement of the prostate.

P53

P53 is a tumor suppressor protein that is mutated or inactivated in over 50% of human cancers. Mutation in this gene are frequently documented in cancers of colon, stomach, breast, lung, brain and esophagus.

ELASTASE 1

This is a maker for useful of detecting pancreatitis and pancreatic cancer.

OTHER TESTS

SERUM PEPSINOGEN (PG) I/II

Serum pepsinogen (PG) I/II are used for the screening of atrophic gastritis (GA) and mucosal secretion as well as gastric cancer (GC).

HELICOBACTER PYLORI (H. pylori)

Helicobacter pylori (H. pylori) are checked by the blood test whether your body has made antibodies to H. pylori bacteria. Its high level is a high risk factor for peptic or stomach ulcers as well as cancer. If it is positive, we recommend you take eradication treatment.

HOMOCYSTEINE

Its high level is a strong risk factor for coronary heart diseases.

NT-proBNP

Increased levels may indicate increasing risk for heart disease, as well as arteriosclerosis.

Moderately or highly elevated NT-proBNP levels are prognostic of future cardiovascular events, so we recommend you to see your cardiologist.

LH/FSH/E2/P4

LH/FSH/E2/P4 are the hormones, Pituitary and Ovarian hormones, which influence on a woman's reproductive health.

PRL

Increased level may indicate pituitary neoplasm, irregular menstruations, side effect of medications, and lactating terms.

CHLAMYDIA

Chlamydia is caused by the bacterium "Chlamydia trachomatis" and it is a major STD in women become infected. Increased vaginal discharge, pain during urination or lower abdominal pain may occur when infected. On the other hand, it is often asymptomatic and may lead to infertility or ectopic pregnancy. As for IgG antibody, it may be persistently detected for few years even after treatment.

RUBELLA

Rubella is a contagious viral exanthema which causes fever, a rash or lymph node swelling. Infection during early pregnancy may results in a child born with congenital rubella syndrome (CRS). Rubella blood test is used to detect rubella antibodies in the blood. Vaccination is recommended if the result is negative.

MEASLES

Measles is a highly contagious virus infection which causes fever, a cough or runny nose, following a rash. It may result in serious complications such as pneumonia or encephalitis. Measles blood test is used to detect measles antibodies in the blood. Vaccination is recommended if the result is negative.

HIV

HUMAN IMMUNODEFICIENCY VIRUS ANTIGEN / ANTIBODY (HIV ANTIGEN / ANTIBODY)

HIV antigen /antibody test is used to screen HIV virus infection which cause AIDS (Acquired Immune Deficiency Syndrome). If the result is positive, a confirmatory testing is required as it may be a false positive (a condition which the result being recognized as positive, when, in fact, it is just caused by non-specific response and is not actually infected by HIV.). It takes 22 days from the day infected, for HIV antibody to be detected in the blood and 99 percentages of patient's HIV antibody become positive after 3 month of infection. If the test is conducted within the mentioned periods, the result may become negative even if it is infected. Therefore, it is recommended to take a HIV test again after 3 months, if the test was taken within a month since possible exposure to HIV and the result was negative.

TESTS for SYPHILIS

These tests look for the presence of *Treponema pallidum*, the bacterium which causes syphilis, a sexually transmitted disease. TPHA (treponema pallidum hemagglutination assay) is performed to screen.

FECAL OCCULT BLOOD TESTING (FOBT)

Fecal occult blood testing checks for blood in the stool. A positive result suggests the presence of bleeding somewhere along the gastrointestinal tract. Ulcers, diverticulosis, intestinal polyps, inflammatory bowel disease, hemorrhoids, or tumors may cause bleeding and positive FOBT results. This test is used as a screening test for colon cancer. Positive results usually require further testing to determine the source of bleeding. False positive and negative results can occur and several samples are typically obtained to increase the accuracy of the test.

BONE DENSITY MEASUREMENT

Bone density may be measured either by ultrasound or dual energy X-ray absorptiometry (DEXA) scanning. This is primarily done to assess bone strength and determine the presence of osteoporosis. Results are reported as %YAM, which refers to the relative density of the bone in comparison to that of an average young adult male, aged 20 to 44 years.

%YAM	CATEGORY
> 80%	NORMAL
70 ~ 80%	OSTEOPENIA
< 70%	OSTEOPROSIS

ANKLE BRACHIAL PRESSURE INDEX (ABI)

ABI is the ratio of blood pressure in the arms to that in the ankles. Abnormal levels (< 0.9) suggests the presence of occlusive peripheral vascular disease in the lower limbs. Values above 1.3 may indicate the presence of severe hardening of the arterial walls.

PULSE WAVE VELOCITY (PWV)

The pulse wave velocity measures the propagation velocity of the arterial pulse wave from the arm to the ankle. High values indicate hardening of the arterial walls.

PULMONARY FUNCTION TESTS

These tests measure lung volumes and function and may reveal the presence of emphysema, asthma, chronic bronchitis or other obstructive or restrictive lung diseases.

BREAST CANCER SCREENING

CATEGORY OF MAMMOGRAPHY

CATEGORY	DESCRIPTION
CATEGORY 1	No abnormalities
CATEGORY 2	Benign
CATEGORY 3	Needs to rule out : Benign or Malignant
CATEGORY 4	Malignant suspected
CATEGORY 5	Malignant

HPV

HPV infection is caused by a human papillomavirus of which over 100 types are known and they are transmitted through sexual contact. HPV cause genital warts and cervical cancer.

VAGINAL CULTURE INSPECTION

A Vaginal Culture Test involves growing cells that have been taken from a woman's vagina, to identify the microorganisms such as candiditis, gonorrhea, and trichomonas. Often, cases of STD do not show any signs or symptoms of infection, present in them.

GONORRHEA SWAB TEST

Often, cases of gonorrhea do not show any signs or symptoms of infection, which is why it is so important to get tested for this infection. A burning sensation and a white, yellow, or green discharge is the sign and symptom of Gonorrhea infection.

Information on Tumor Marker Testing

Tumor marker tests have proven effective in cancer patients. They are used to monitor treatment progress and are covered by insurance for this purpose.

When used for screening in healthy individuals, however, these markers may yield false-positive results because non-cancerous conditions can also elevate their levels.

In health screenings, the likelihood of a positive result varies by marker but can be as high as about 8%, and is typically around 2–3%.

The positive predictive value—the probability that cancer is actually present when the test result is positive—is approximately 8% for PSA (used for prostate cancer), 2–4% for commonly used markers such as CEA and CA19-9, and less than 2% for other markers. Nonetheless, these tests are considered meaningful as they offer a chance—however small—to detect cancer.

A positive tumor marker result alone does not definitively indicate cancer. It is critical to interpret the result in conjunction with imaging studies. When no abnormalities are found on imaging, it is essential to repeat the tumor marker test after an appropriate interval to monitor for any changes over time. If other tests show no abnormalities and only the tumor marker is slightly elevated—and remains stable or decreases over time—continued observation is typically sufficient, and excessive concern is generally considered unnecessary.

The negative predictive value—the probability that a negative result truly indicates the absence of cancer—is over 99.5%. Therefore, if tumor marker tests and other examinations including imaging studies are negative, you can be highly reassured. Still, we recommend undergoing an annual health checkup.

CERVICAL CANCER SCREENING CATEGORIES

BETHESDA SYSTEM	ASSUMED PATHOLOGICAL DIAGNOSIS	CLASS
NILM	No evidence of carcinoma, dysplasia, or Human Papilloma Virus. Additional qualifiers may be added as appropriate. This includes Benign Cellular Changes (BCC), reactive/reparative changes, and changes due to inflammation, radiation/chemotherapy and the use of an intrauterine device.	I II
ASC-US	It is indicative of cytological changes that are suggestive of Low Grade Squamous Intraepithelial Lesion (LSIL) or SIL of indeterminate grade, but the changes fall qualitatively or quantitatively short for a definitive diagnosis, therefore, it is required to take re-examination of a Pap smear or HPV-DNA.	II III a
ASCH	It indicates cytological changes that are suggestive of High Grade Squamous Intraepithelial Lesion (HSIL), but the changes fall qualitatively or quantitatively short for a definitive diagnosis, therefore, it is required to take a histological tissue examination	III III b
LSIL	LSIL usually indicates mild dysplasia, more than likely caused by a human papillomavirus infection. It is usually diagnosed following a histological tissue examination.	III a
HSIL	It indicates moderate or severe cervical intraepithelial neoplasia or carcinoma in situ. In some cases these lesions can lead to invasive cervical cancer. It is usually followed by a colposcopy with biopsy to sample or remove the dysplastic tissue and is sent for pathology testing to assign a histologic classification. Its treatment involves the removal or destruction of the affected cells, usually by LEEP, or cryotherapy, cautery, or laser ablation.	III a III b IV
SCC	It indicates obvious squamous cell carcinoma that lead to invasive cervical cancer. It is followed by a colposcopy with tissue biopsy and treatments.	V
AGC	AGC is an acronym for atypical glandular cells of undetermined significance. The management of AGC is colposcopy with or without an endometrial biopsy.	III

BETHESDA SYSTEM	ASSUMED PATHOLOGICAL DIAGNOSIS	CLASS
AIS	It indicates intraepithelial carcinoma. It is usually followed by a colposcopy with biopsy to sample or remove the tissue and is sent for pathology testing to assign a histologic classification. Its treatment involves the removal or destruction of the affected cells.	IV
Adenocarcinoma	It indicates Adenocarcinoma. It is followed by a colposcopy with tissue biopsy and treatments.	V
Other malignancies	It indicates the presence of definitive malignant cells. It is followed by a colposcopy with tissue biopsy and treatments.	V

UTERINE CANCER SCREENING CATEGORIES

ASSESSMENT	DESCRIPTION
NEGATIVE	Abnormal cells were not found. Annual checkup is recommended.
BORDERLINE	Normal cells changed to benign abnormal cells, pre-cancerous cells or cells with mild abnormalities but have a potentiality to be pre-cancerous are indicated. Further examination by biopsy, following periodical checkup is recommended.
POSITIVE	Cancer is suspected. Further examination by tissue biopsy and treatment are required.
UNSATISFACTORY FOR EVALUATION	Too few cells were collected, no target cell, due to cell degeneration

*Please note that the above categorization schemes are based on the system currently in use in Japan and may not correspond directly to categories utilized in other countries. Please consult your physician if you have any questions or concerns.

CRITERIA for METABOLIC SYNDROME

A variety of diagnostic criteria for metabolic syndrome have been proposed. This is a continually evolving field, with some controversy regarding diagnosis and management. Below are the criteria currently in use in Japan, the United States and that of which has been proposed by the International Diabetes Federation.

JAPAN

WAIST CIRCUMFERENCE of > 85 cm in men, > 90 cm in women PLUS <u>ANY TWO</u> OF THE FOLLOWING:	
LIPIDS	Triglycerides ≥ 150 mg/dl or HDL cholesterol < 40 mg/dl
BLOOD PRESSURE	Systolic ≥ 130 mmHg or Diastolic ≥ 85 mmHg
GLUCOSE	Fasting blood glucose ≥ 110 mg/dl

USA

<u>ANY THREE</u> OF THE FOLLOWING	
WAIST CIRCUMFERENCE	≥ 102 cm for men ≥ 88 cm for women
LIPIDS	Triglycerides $\geq$ mg/dl or HDL cholesterol < 40mg/dl in men, < 50mg/dl in women
BLOOD PRESSURE	Systolic ≥ 130 mmHg or Diastolic ≥ 85 mmHg (or on treatment for hypertension)
GLUCOSE	Fasting blood glucose ≥ 100 mg/dl (or on drug treatment for elevated glucose)

METABOLIC SYNDROME CRITERIA

Abdominal girth: male ≥ 85 cm female ≥ 90 cm		+	Any two of the following
BLOOD PRESSURE	Systolic BP ≥ 130 mmHg Diastolic BP ≥ 85 mmHg		
GLUCOSE	Fasting blood glucose ≥ 110 mg/dl		
LIPIDS	Triglycerides ≥ 150 mg/dl and / or HDL cholesterol < 40mg/dl		

INTERNATIONAL DIABETES FOUNDATION

CENTRAL OBESITY (as defined by ethnicity specific waist circumference - see below) PLUS <u>ANY TWO</u> OF THE FOLLOWING	
LIPIDS	Triglycerides ≥ 150 mg/dl or HDL cholesterol < 40 mg/dl in men, < 50 mg/dl in women
BLOOD PRESSURE	Systolic ≥ 130 mmHg or Diastolic ≥ 85 mmHg (or on treatment for hypertension)
GLUCOSE	Fasting blood glucose ≥ 110 mg/dl (or on drug treatment for elevated glucose)

ETHNIC SPECIFIC WAIST CIRCUMFERENCE VALUES (INTERNATIONAL DIABETES FOUNDATION)

Country / Ethnic Group		Waist Circumference
Europeids	Male	≥ 94 cm
	Female	≥ 80 cm
South Asians, Chinese, Japanese*	Male	≥ 90 cm
	Female	≥ 80 cm
Ethnic South and Central Americans	Use South Asian criteria until more specific data available	
Sub-Saharan Africans	Use European criteria until more specific data available	
Eastern Mediterranean and Middle East (Arab) populations	Use European criteria until more specific data available	

*Note that this differs from the criteria proposed within Japan.

Frequently asked questions

(Most frequently asked terms and the name of findings are listed below with explanations.)

Imaging Tests

• Scar	A scar is a mark left after the wound is healed. "The gastric ulcer scar" means the mark that remained after a gastric ulcer is healed.
• Nodule	It is a small node that is seen on a radiographic imaging. There are benign and malignant nodules; and periodic observation and further precise investigations are required to differentiate between these two conditions.
• Polyp	It is a small growth or mass, protruding into the lumen of cylindrical or sac-like structures such as gastrointestinal tract, vocal cord and uterus. A polyp is usually benign; however, the gastric or colonic polyp may have a possibility of malignancy.
• Old / previous	The term "old" or "previous" is used on the findings when more than a month has passed by since the diseases or symptoms first appeared.
• Interstitial	"Interstitial" is the area or part of tissue apart from the "parenchyma", which is the core functioning part of an organ or a structure. As for the lungs, the parenchyma is the part where gaseous exchange takes place and interstitium is the connective tissue framework that supports the lung parenchyma. "Interstitial" is the adjective form of "interstitium", meaning "that of interstitium" or "occurring at the interstitium".
• Calcification	It is the deposition of calcium. Calcium builds up in many parts of the body due to a variety of causes. Most of them are benign. However, it can also be seen in the breast at a relatively early stage of cancer.

Brain Findings

• White matter lesions (WMLs)	WMLs are changes in the imaging scan of the brain that represent the functional impairment of the neurons or chronic ischemia, thought to be related to the development of dementia and stroke as well as arteriosclerosis. It is usually detected or increasingly found together with aging process; however, there is individual variation in the incidence of aging-related WMLs, such that it could be found in people as early as in their 30s. It is said to be commonly detected in people with hypertension, dyslipidemia and diabetes.
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• Funnel-shaped dilatation	It is one of vascular malformations which could be easily mistaken with a brain aneurysm in which the site where the vessel divides is dilated like a funnel, which could be incorrectly interpreted as a brain aneurysm. Therefore, a funnel-shaped dilation itself is not a disease and needs no concern; however, regular follow-up by health screening and/or further examinations by a neurosurgeon will be necessary when it is difficult to distinguish from the brain aneurysm.
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Ophthalmologic Findings

• Enlarged optic nerve cupping	This is the loss of retinal nerve fibers; in other words, there is a possibility of glaucoma. Therefore, precise examinations by an ophthalmologist are necessary. The incidence of glaucoma increases with advancing age and even it was diagnosed as no abnormality during the previous examinations; we do recommend consultation with an ophthalmologist if this condition was detected again.
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Chest Findings

• Pleural thickening	The pleural membrane is the membrane wrapping the lungs and can become thickened as a result of inflammation and/or malignancy. Pleural thickening due to malignancy requires further precise examinations.
• Pulmonary cyst	It is a round, sac-like structure filled with air, developed in the lungs. It is usually benign and needs no concern but when it is formed on the edge of the lungs; it may rupture and cause pneumothorax.
• Coronary artery calcification	Coronary artery is the blood vessel which supplies nutrients to the heart and can become calcified as arteriosclerosis progresses. Calcification does not always mean a narrowing blood vessel. However, when the coronary artery becomes narrow, it can be a risk of causing angina, such as chest pain during exercise. To prevent arteriosclerosis from further progression, be attentive to your weight, physical activity, blood pressure, serum lipids, blood sugar, and quit smoking if you smoke. If you have symptoms suggestive of angina, please have a detailed examination at the department of cardiology.

Abdominal Findings

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|----------------------|---|
| • Hepatic cyst | It is a round, fluid-filled sac that occurs in the liver. It is usually benign and needs no concern. However, rarely, the cyst with solid components inside may have a possibility of malignancy and needs to be followed up regularly. |
| • Renal cyst | It is a round, fluid-filled sac in the kidney. It is usually benign and needs no concern. However, rarely, the cyst with solid components inside may have a possibility of malignancy and needs to be followed up regularly. |
| • Gallbladder polyp | It is an elevated growth on the mucosal surface of the gallbladder. Most gall bladder polyps are benign, but may have possibilities of malignancy and need further evaluation if their size is over 10 mm. |
| • Hepatic hemangioma | It is a noncancerous mass in the liver. It is a type of malformation of blood vessels. |
| • Lipoma | It is a tumor of proliferated fat cells and is mostly benign. |
| • Fatty liver | It is a condition where fat is accumulated over 10 % of the total liver cell population. Fatty liver is caused by obesity, alcohol intake, dyslipidemia or diabetes. You need to modify your life style and take periodic regular follow-ups, since fatty liver can sometimes lead to more advanced disease conditions such as hepatitis and cirrhosis. |

Upper Gastrointestinal Findings

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| • Reflux esophagitis | It is the inflammation of the esophagus due to regurgitation of gastric acid. You may experience symptoms such as heart burn. You need to avoid overeating, high-calorie and high-fat diets, and sleeping right after the meal. We would recommend consultation with a physician if the symptoms become worse. Since obese people have high internal abdominal pressure which could be the cause of gastric acid reflux, we would recommend weight control as well. |
| • Hiatus hernia | It is the herniation of the junction of esophagus and stomach. Burp or acid regurgitation may occur. |

Breast Findings

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|-------------------------|---|
| • Mastopathy | This is the changes in the mammary glands such as development of a swelling or a lump and/or a cyst due to the effects of female hormones. It may be accompanied by pain in the breast and the pain tends to become more severe before menstruation. Mastopathy is seen as a part of physiological changes and is not usually considered as a disease. |
| • Fibroadenoma | It is the most common benign breast tumor in young women. Benign changes are developed due to the proliferation of some of the mammary glands. It is generally palpated as an elastic hard lump. Regular observation is enough for a small fibroadenoma. Resection is indicated for big or rapidly progressive lumps but the frequency of such occurrence is quite low. |
| • Breast cyst | It is one of the benign changes of the mammary glands, in which the mammary duct becomes enlarged in the form of a sac and filled with transparent or yellowish fluid, or concentrated breast milk. It can frequently occur in one or both breasts, as either single or multiple lesions. For a large painful breast cyst, it could be made smaller by drawing out the liquid inside through needle aspiration. |
| • Breast calcifications | Generally, those calcifications are usually physiological and developed due to changes in the secreted substance in the mammary gland or benign changes, and therefore, and it is also called benign calcifications. Benign calcifications can be developed as a result of foreign bodies in breast augmentation surgeries such as breast implants. Among breast calcifications associated with cancer, those clearly identified as malignancy are called malignant calcifications. When it is difficult to distinguish benign calcifications from malignant ones, more precise and/or regular examinations will be required to observe the characteristics and course of the calcifications. |

To those tested for “Vitamin D deficiency”

Vitamin D: The nutrient inadequate in modern society

Vitamin D is widely known as the essential nutrient for bone and muscular health. Recently, it has been reported to booster immunity as well as prevent from certain diseases. It is estimated that half the population in the modern society might be in a state of chronic vitamin D insufficiency.

If we have adequate sun exposure even our diets are vitamin D insufficient, our body could produce enough vitamin D necessary for our health. But vitamin D insufficiency become prevalent in these days due to overly restrictive sun exposure and unhealthy dieting behavior.

Its deficiency might be associated with increased risks of “**cancer**” and “**life-style related diseases**”, as well as “**infertility**”, especially in women. So awareness of vitamin D deficiency is quite important.

- Recommended daily amount for adults ▶ 10~25 µg (microgram) ※Maximum tolerable amount 100µg/day
- Vitamin D deficiency ▶ Blood level of 25-OH vitamin D3 less than 20ng/ml ※20-29 ng/ml→insufficient

Ref: “Health Care Manual for UV 2015” by Japanese Ministry of Environment , “Dietary Reference Intakes for Japanese 2015”

— How to obtain sufficient amount of “Vitamin D” effectively —

Sun exposure*

For a Japanese with an ordinary complexion (skin type), daily recommended dose of vitamin D (about 10µg) for adult could be produced by 3-minute sun exposure to 25% of body surface (face and both arms) during summer time.

In winter, for the same amount of vitamin D to be produced, 50 minutes of sun exposure to 12% of body surface (face and hands) will be required

※Estimated for those residing in Tokyo and exposed to the sun without sunscreen



Diets

- **Fish**
Salmon (33µg) • Sardine (50µg) • Tuna (18µg) • Eel (18µg)
- **Mushrooms**
Cloud ear (440µg) • Dry shiitake (17µg) • Maitake (3µg) etc.
- **Egg yolk** (6µg)



Supplements

If it is difficult to expose to sunlight or take vitamin D containing food, taking vitamin D supplement is another option.

At Health Care Shop TMMC Plus on the same floor as Tokyo Midtown Clinic, vitamin D supplement is available. The nutritionist is always there for any consultation you may have. Feel free to visit there!



*For production of vitamin D, adequate sun exposure without sunscreen is required. The amount of vitamin D produced in the skin will vary among individuals depending on various factors such as residing areas, seasons, time, weather, clothing, skin types, etc. Therefore, no definite description in minutes can be made and the recommendations in minutes are just an estimation. It is necessary to follow to the recommendations by your health institutions in respective countries.
Ref: “World Health Organization”, “Health Care Manual for UV 2015” by Japanese Ministry of Environment

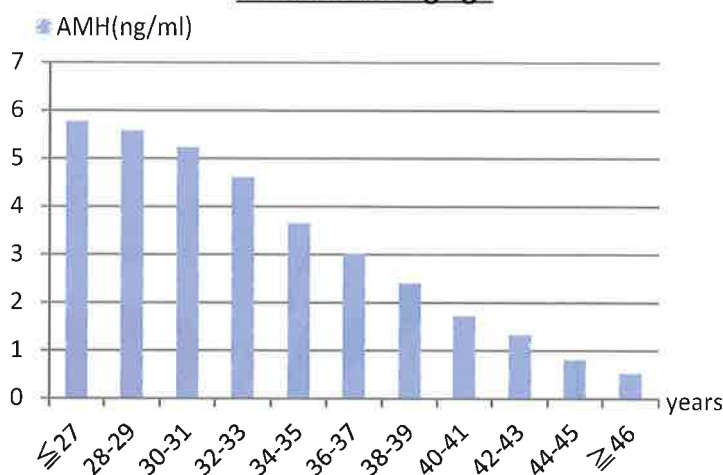
To those tested for ovarian reserve (Anti-Müllerian Hormone)

● Knowing your time limit for remaining reproductive life

The number of ovarian follicles are determined since birth and there is no formation of new follicles thereafter. The follicles get fewer with advancing age and ovulation; and their quality can also be affected. In general, ovarian function starts to decline at the age of 35 and beyond, and falls sharply after the age of 40. But there is a wide individual variation.

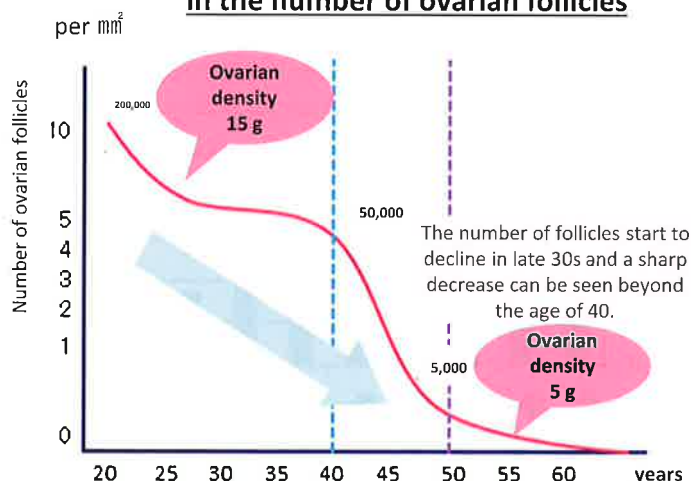
AMH test is to assess the blood level of Anti-Müllerian Hormone secreted by the granulosa cells of growing ovarian follicles. It can indicate the quantity of ovarian follicles for ovulation to occur, letting us know our own ovarian reserve. Check the bar graph below to know which age range you are according to your AMH level. It can help you assess your time limit for chance of childbearing and years of remaining reproductive life.

**Changes in AMH levels
with advancing age**



Ref: Dr. Remi Yoshikata (Published in the book "The Bible for conception")

**Age-related changes
in the number of ovarian follicles**



Ref: Dr. Remi Yoshikata (Academic presentation)

● Various measures for promoting fertility

There are a lot of medical options to assist conception. Whenever we encounter a patient who has been exhausted from a long-term fertility treatment, we feel that easier options should have been tried in the beginning. First, please come visit our outpatient clinic for counseling your concerns.

You can integrate the following habits in your daily life.

Check
your daily
habits

Keep yourself warm!

If you are planning for conception, it is better to keep your womb warm. Warm drinks are recommended even in the summer time. Hot water baths may also be helpful.

Restrict sugar intake!

Excessive sugar intake is enemy of your conception plan. If it is difficult to be self-controlled, we would recommend trying expensive sweets so that the amount of intake would be limited, while making you happy and satisfied.

Tips at the convenience store!

Be careful of processed foods that could affect the body immunity. Avoid zero-calorie soft drinks with artificial sweeteners as much as possible.



It is our pleasure to provide useful information in preparing yourself for pregnancy.