

Cancer Association of South Africa (CANSA)



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Fact Sheet: a Glossary of Cancer Terminology

Introduction

Language is the most extensively used symbol system in social behaviour. It can also, of all symbol systems, be the most subject to interpretation. When one hears doctors talking amongst themselves, and sometimes even when talking to patients, they often tend to forget that they are using words and terms that are foreign to their patients. Receiving a cancer diagnosis can feel like waking up in a foreign country - like a place where one does not know the language and customs, and one has no map to find the way home.



[Picture Credit: South West Regional Cancer Program]

This concise glossary intends to demystify some of the scientific (medical) language used by doctors when talking about cancer, its treatment, and related matters. It also intends to clarify some of the terminology used in patient reports, e.g. pathology and other hospital/laboratory reports.

A

ablation: surgical removal of body tissue.

abnormal cells: cells that do not look or act like the healthy cells of the body.

abnormal growths: if one hears this term, the doctor could be talking about many things, from a polyp in the colon to a tumour. An abnormal growth can be benign, which is cancer-free; or it may be malignant, meaning it has cancer cells. It can also be "precancerous" meaning it could turn into cancer.

acral lentiginous: a kind of lentiginous skin melanoma. It is also known as subungual melanoma; acral lentiginous melanoma is observed on the palms, soles and under the nails. It occurs on non hair-bearing surfaces of the body which may or may not be exposed to sunlight; it is also found on mucous membranes. Unlike other forms of melanoma, acral lentiginous melanoma does not appear to be linked to sun exposure.

acute: a rapidly developing health condition which usually comes on quickly and which may cause severe symptoms but lasts only for a short time; transient; some side effects may be of short duration; may be sudden or severe.

adenoma: a benign tumour formed from glandular structures in epithelial tissue.

adenopathy: large or swollen lymph glands.

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adjuvant therapy: additional cancer treatment given after primary treatment to lower the risk that the cancer will come back.

aggressive cancer cells: cells that are fast-growing and have a tendency to spread beyond the area where they started.

allogeneic transplantation: a procedure where cells, tissue, or organs are transplanted from a compatible donor.

alternative cancer therapy: cancer treatment used in the place of conventional cancer treatments such as cancer drugs or radiotherapy. It may include diet, exercise, chemicals, herbs, devices, and manual procedures. The treatments are not supported by scientific evidence, either because no proper testing has been conducted, or because testing did not demonstrate statistically significant efficacy.

anaemia: levels of red blood cells that are lower than normal.

anaplastic: a term used to describe cancer cells that divide rapidly and have little or no resemblance to normal cells.

angiogenesis inhibitor: a substance that may prevent the formation of blood vessels; in cancer treatment, this type of drug stops the growth of new blood vessels that provide nutrients to tumours.

angiogenesis: growth of new blood vessels that cells need to grow.

Angiogenesis inhibitor: In order to grow and spread, cancer needs a blood supply. These specially designed drugs stop new blood vessels from forming and carrying blood to the tumour. The drugs may not kill the tumour, but they could stop the cancer from moving to other parts of your body.

angiogram: an X-ray procedure where a special dye is used to help show up blood vessels and blood flow. Sometimes used to identify certain kinds of tumours.

antibody therapy: a drug containing an antibody that is specially made to target certain cancer cells.

antibody: a protein made by white blood cells that is part of the body's immune system; each antibody binds to a certain antigen (foreign substance, such as bacteria) and helps the body fight the antigen.

antiemetic: a medicine that helps prevent or ease queasiness and vomiting, common side effects of some cancer treatments. The doctor may prescribe more than one drug. It is usually pills taken right before or after treatment. If in the hospital, the patient may get the medicine directly in a vein.

antigen: a substance that causes the body to make an immune response. This immune response often involves making antibodies

antioxidant: a substance that protects the body from damage by oxidizing agents. Oxidising agents are always present in the body and are often beneficial. However, when large amounts of oxidants are present in cells, they can cause damage, especially to DNA. This can lead to abnormal cell growth. Antioxidants include beta-carotene and vitamins A, C and E.

apoptosis: a normal cell process in which a genetically programmed series of events leads to the death of a cell. Cancer cells may block apoptosis.

astrocyte: a specific type of cell found in the brain.

astrocytoma: a tumour of the brain which originates from astrocytes.

ATM gene: inheriting one abnormal ATM gene has been linked to an increased rate of breast cancer in some families because the abnormal gene stops the cells from repairing damaged DNA.

atypical ductal hyperplasia: abnormal cells that have accumulated in a breast duct. The cells have increased in number and fill almost the entire duct. The cells can keep changing until they become DCIS. Atypical ductal hyperplasia can increase the risk of a future breast cancer.

atypical hyperplasia: a benign (not cancer) breast condition where breast cells are growing rapidly (proliferating); the proliferating cells look abnormal under a microscope; although atypical hyperplasia is not breast cancer, it increases the risk of breast cancer.

atypical lobular hyperplasia: abnormal cells that have accumulated in a breast lobule. The cells have increased in number and fill almost the entire lobule. It's possible for the cells to keep changing until they become LCIS. Atypical lobular hyperplasia can increase the risk of a future breast cancer.

B

basal-like breast cancer: basal-like is one of the four main molecular subtypes of breast cancer. Basal-like breast cancer is hormone-receptor negative and HER2-negative; also called triple-negative breast cancer.

benign phyllodes tumour: a rare benign (not cancer) breast condition similar to a fibroadenoma; a lump may be felt, but is usually painless.

benign: non-cancerous; not spreading; usually a more mild disease.

beta human chorionic gonadotrophin (beta-HCG): a hormone normally found in the blood and urine during pregnancy. It may also be produced by some tumour cells. An increased level of beta-human chorionic gonadotropin may be a sign of cancer of the uterus, ovary, liver, stomach, pancreas or lung, or gestational trophoblastic disease. Beta-human chorionic gonadotropin may also be produced in response to certain conditions that are not cancer. Also called β -hCG.

biologic therapy: a therapy that targets something specific to the biology of the cancer cell, as opposed to chemotherapy, which attacks all rapidly dividing cells; often used to describe therapies that use the immune system to fight cancer (immunotherapy). Trastuzumab (Herceptin) is an example of a biological or targeted therapy agent.

biomarker: a substance found in blood, other body fluids or tissues that can be measured and is a sign of disease or another process in the body (normal or abnormal); it also may be used to see how well the body responds to a treatment for a disease.

biopsy: the removal of a small section of the tumour, the sample will be analysed by a histopathologist in order to establish a precise diagnosis. Surgical procedure. This may be a needle biopsy, where a very fine needle is used to take a tiny sample of the tumour. Occasionally a surgeon may remove the whole tumour prior to diagnosis; a resection biopsy.

blast cell: immature cells found in bone marrow; they are not fully developed, and therefore, do not yet carry out any particular function within the body; in normal humans, up to five percent of the cells found in bone marrow are blast cells.

blastoma: a type of cancer, more common in children, that is caused by malignancies in precursor cells, often called blasts; examples are nephroblastoma, medulloblastoma and retinoblastoma.

bone marrow transplant: a procedure to replace damaged or destroyed bone marrow with healthy bone marrow stem cells; bone marrow is the soft, fatty tissue inside your bones; stem cells are immature cells in the bone marrow that give rise to all blood cells.

bone marrow: the spongy tissue inside some of one's bones, such as the hip and thigh bones; it contains stem cells; the stem cells can develop into the red blood cells that carry oxygen through the body, the white blood cells that fight infections, and the platelets that help with blood clotting.

bone marrow biopsy: in cases of abnormal blood counts, such as unexplained anaemia, high white cell count, and low platelet count, it is necessary to examine the cells of the bone marrow; in adults, the sample is usually taken from the pelvic bone, typically from the posterior superior iliac spine; this is the prominence of bone on either side of the pelvis underlying the "bikini dimples" on the lower back/upper buttocks.

bone scan: a test done to check for signs of cancer in the bones. A small amount of radioactive material is injected into the bloodstream. It collects in the bones, especially abnormal areas, and is detected by a scanner. Bone scans can show cancer as well as benign bone diseases (like arthritis).

BRCA1: an abnormal gene, known as BReast CAncer gene 1, associated with a higher risk of developing breast cancer.

BRCA2: an abnormal gene, known as BReast CAncer gene 2, associated with a higher risk of developing breast cancer.

brachytherapy: procedure in which radioactive material sealed in needles, seeds, wires or catheters is placed directly into or near a tumour; also called internal radiation, implant radiation or interstitial radiation therapy.

breast density: a measure used to describe the relative amounts of fat and tissue in the breasts as seen on a mammogram.

Breslow thickness: the depth a melanoma lesion extends below the skin surface measured in millimetres.

C

CA19-9: a cancer antigen, not sensitive of specific enough to use as a screening test for cancer, and which is not diagnostic of a specific type of cancer. It is mainly used as a tumour marker:

- To help differentiate between cancer of the pancreas and other conditions such as pancreatitis
- To monitor a person's response to pancreatic cancer treatment and/or cancer progression
- To watch for pancreatic cancer recurrence

CA125: a protein found in the blood. This protein is often higher than normal in women with ovarian cancer. High levels may also occur in women with common gynaecological conditions such as endometriosis or fibroids.

cam: abbreviation which refers to complementary and alternative medicine.

cancer: a general term used to describe a malignant tumour.

carcinogen: any substance that causes or can cause cancer.

carcinoma in situ (in situ carcinoma): a condition where abnormal cells are found in the milk ducts or lobules of the breast, but not in the surrounding breast tissue. In situ means "in place".

carcinoma: a type of cancer that starts in epithelial tissues (a layer of cells that lines the body's hollow organs and glands and makes up the outer layer of the skin).

CDH1 gene: women with an abnormal CDH1 gene have a higher risk of invasive lobular breast cancer.

CHEK2 gene: Li-Fraumeni syndrome also can be caused by an abnormal CHEK2 gene; even when it does not cause Li-Fraumeni syndrome, an abnormal CHEK2 gene can double breast cancer risk.

chemotherapy: refers to the use of medicines or drugs to treat cancer.

chromosome: a thread-like structure of nucleic acids and protein found in the nucleus of most living cells, carrying genetic information in the form of genes.

chronic: long lasting; some side effects may be long lasting, e.g. kidney damage.

Clark's level depth: a measurement of how deep the melanoma lesion extends below the skin surface based on involved skin layer (the larger the level number the deeper into the tissue it extends). Depending upon where the melanoma is located on the body, the millimetres of depth for each Clark level can vary widely, so one person's Clark's III may be 1 mm, while another person's is 2 mm.

- Clark's Level I—lesion involves the dermis
- Clark's Level II—lesion involves the papillary dermis
- Clark's Level III—lesion invades and fills the papillary dermis
- Clark's Level IV—lesion invades reticular dermis
- Clark's Level V—lesion invades sub-cutaneous tissue

clinical trial: a type of research study that tests how well new medical approaches work in people; studies test new methods of screening, prevention, diagnosis or treatment of disease.

cohort study: A study that follows a large group of people (a cohort) over time.

colloid (mucinous) carcinoma of the breast: a rare type of invasive breast cancer that contains small pools of mucous material.

colposcopic biopsy: this is a gynaecologic procedure that typically is used to evaluate a patient who has had an abnormal Pap smear; the colposcope is actually a close-focusing telescope that allows the physician to see in detail abnormal areas on the cervix of the uterus, so that a good representation of the abnormal area can be removed and sent to the pathologist.

comedo DCIS: a type of non-invasive cancer that tends to grow quickly. Comedo refers to areas of dead cancer cells that build up inside the tumour—a sign that the cancer cells are growing so quickly that some of the cells are not getting enough nourishment.

comedonecrosis: clumps of dead cancer cells, often seen in high-grade DCIS; the cells are so crowded that some of them do not get enough nourishment and die.

complete blood count: a **blood** test used to evaluate your overall health and detect a wide range of disorders, including anaemia, infection and leukaemia; a complete blood count test measures several components and features of blood, including: red blood cells, which carry oxygen.

complimentary cancer therapy: **treatments** that are used along with standard medical treatments but are not considered to be standard treatments; one example is using acupuncture to help lessen some side effects of cancer treatment; alternative medicine is treatments that are used instead of standard medical treatments.

computed tomography scan: also called CT scan or CAT scan. See CAT scan.

Computerised Axial Tomography (CAT) Scan [CAT scan]: a series of pictures created by a computer linked to an X-ray machine; the scan gives detailed internal images of the body.

consolidation therapy: if after having finished main leukaemia or lymphoma treatment and tests do not show any cancer in one's body, the doctor may recommend more treatment to kill any lingering cancer cells. Chemotherapy and radiation therapy are two examples.

core biopsy: a procedure which uses a needle to remove a small, intact sample of tissue from an identified breast mass in order to examine it and obtain a preliminary diagnosis.

cribriform carcinoma of the breast: A less common type of invasive breast cancer that invades the connective tissues of the breast and features holes between the cancer cells (like the holes in Swiss cheese).

cribriform DCIS: A type of non-invasive breast cancer that usually grows slowly. Cribriform DCIS features gaps between cancer cells in the affected ducts (like the pattern of holes in Swiss cheese).

cryosurgery: a procedure performed with an instrument that freezes and destroys abnormal tissues; used to treat some kinds of cancer as well as precancerous or noncancerous conditions.

CT scan: also called computed tomography scan or CAT scan. See CAT scan.

cycle: the time between the start of one round of treatment, like chemotherapy, and the start of the next round. The break allows the body to rest and recover.

cytology: the examination of cells or fluid under a microscope to diagnose disease.

D

debulk: the surgical removal of as much of a tumour as possible to decrease the number of tumour cells in the body.

desmoplasia: as a cancer cell invades the surrounding tissue, the host body's response attempts to keep the cancer cells in check by forming a connective tissue barrier of new collagen. This host response is termed desmoplasia and is a hallmark of invasion and malignancy.

differentiation: is where normal cells go through physical changes in order to form the different specialised tissues of the body. Malignant cells may range from *well-differentiated* (closely resembling the tissue of origin) or *undifferentiated* or *anaplastic* (bearing little similarity to the tissue of origin). In general it is the undifferentiated or anaplastic histologies which are more aggressive.

distant recurrence: the spread of cancer to parts of the body other than the place where the cancer first occurred. In breast cancer, the cancer can spread to the lungs, liver, brain or bones.

DNA repair genes: DNA repair genes, such as the mismatch repair (MMR) gene family, function normally to correct errors in cellular replication. When mutated these genes are unable to correct mutations in tumour suppressor genes or proto-oncogenes that may in turn lead to tumour formation. Mutations in the MMR genes (MSH2, MLH1 and MSH6) are known to cause familial (inherited) colorectal, breast and ovarian cancers.

ductal carcinoma in situ (DCIS, intraductal carcinoma): a non-invasive breast cancer that begins in the milk ducts of the breast, but has not invaded nearby breast tissue; also called stage 0 or pre-invasive breast carcinoma.

dysplasia: the enlargement of an organ or tissue by the proliferation of cells of an abnormal type, as a developmental disorder or an early stage in the development of cancer.

dysplastic nevi: atypical moles; moles whose appearance is different from that of common moles. Dysplastic nevi are generally larger than ordinary moles (over 5 mm in diameter) and have irregular and indistinct borders. Their colour frequently is not uniform and ranges from pink to dark brown; they are flat or have a flat part.

E

"-ectomy": a word that ends with "-ectomy" refers to surgery that takes out some or all of a body part. For example, in a mastectomy, the surgeon removes breast tissue. An oophorectomy takes out an ovary. A nephrectomy removes a kidney. As a cancer treatment, the surgeon will remove cancer cells along with the body part.

EGFR gene: a gene that controls how quickly cells divide. Also called HER1.

EGFR-negative: a breast cancer with a normal number of the EGFR gene.

EGFR-positive: a breast cancer with too many copies of the EGFR gene.

endometrial cancer: cancer of the endometrium (the lining of the uterus).

endoscopic biopsy: probably the most commonly performed type of biopsy. It is done through a fiberoptic endoscope the doctor inserts into the gastrointestinal tract (alimentary tract endoscopy), urinary bladder (cystoscopy), abdominal cavity (laparoscopy), joint cavity (arthroscopy), mid-portion of the chest (mediastinoscopy), or trachea and bronchial system (laryngoscopy and bronchoscopy), either through a natural body orifice or a small surgical incision; the endoscopist can directly visualise an abnormal area on the lining of the organ in question and pinch off tiny bits of tissue with forceps attached to a long cable that runs inside the endoscope.

eosinophil: a white blood cell containing granules that are readily stained by eosin.

ependymoma: a tumour that arises from the ependymoma, a tissue of the central nervous system; usually, in paediatric cases the location is intracranial, while in adults it is spinal; the common location of intracranial ependymoma is the fourth ventricle; rarely, ependymoma can occur in the pelvic cavity.

ER-negative: a cancer that does not have oestrogen receptors.

ER-positive: a cancer that has oestrogen receptors.

erythrocyte: blood cells that deliver oxygen from the lungs to all parts of the body and carbon dioxide from the tissues back to the lungs. Also referred to as red blood cells.

excisional biopsy: a more involved procedure where the entire abnormality or area of interest is removed. To further clarify this, there are four options for obtaining a tissue sample.

external radiation: uses a machine that directs high-energy rays from outside the body into a tumour.

extracapsular extension: when cancer has spread outside the wall of a lymph node.

F

false negative: a test result that incorrectly reports a person is disease-free when she/he actually has the disease.

false positive: a test result that incorrectly reports a person has a disease when she/he does not have the disease.

fibroadenoma: a benign (not cancer) fibrous tumour that may occur at any age, but is more common in young adulthood.

fine needle aspiration: a biopsy procedure that uses a thin, hollow needle to remove a sample of cells from the abnormal area of the breast.

first line treatment: initial treatment of choice used to treat a patient's cancer.

fluorescence in situ hybridization (FISH): a laboratory test done on breast tumour tissue to find out the number of copies of the HER2/neu gene contained in the cancer cells.

free T4: The FT4 measures the concentration of free thyroxine, the only biologically active fraction, in the serum. The free thyroxine is not affected by changes in concentrations of binding proteins such as TBG and thyroid binding prealbumin. Thus such conditions as pregnancy, or estrogen and androgen therapy do not affect the FT4.

frozen section: a thin slice of tissue that is cut from a frozen specimen and is often used for rapid microscopic diagnosis.

G

gene: a distinct sequence of nucleotides forming part of a chromosome, the order of which determines the order of monomers in a polypeptide or nucleic acid molecule which a cell (or virus) may synthesize.

gene therapy: the introduction of normal genes into cells in place of missing or defective ones in order to correct genetic disorders.

genetic counselling: the process by which the patients or relatives at risk of an inherited disorder are advised of the consequences and nature of the disorder, the probability of developing or transmitting it, and the options open to them in management and family planning.

genetic testing: the process of testing for the presence of particular genetic mutations; this form of testing is available to individuals at increased risk for inherited (familial) cancers, based on a strong family history of those cancers; the breast (and ovarian) cancer genes *BRCA1* and *BRCA2* are examples of genes with well-characterised mutations that can be 'screened' for in high-risk individuals; the presence of those mutated genes indicates an increased risk of developing breast or ovarian cancers; similar to other screening tests, individuals receiving a positive test result may be referred for further investigation, or choose to undergo regular tests for pre-cancerous cells.

genome: the total genetic information of an organism.

genomics: the study of genes and their functions.

germ cell tumour: a neoplasm derived from germ cells. Germ cell tumours can be cancerous or non-cancerous tumours. Germ cells normally occur inside the gonads (ovary and testis); germ cell tumours that originate outside the gonads may be birth defects resulting from errors during development of the embryo.

germ cell: a cell containing half the number of chromosomes of a somatic cell and able to unite with one from the opposite sex to form a new individual; a gamete.

glioblastoma: a general term for malignant form of astrocytoma. It is the most common type of primary brain tumour and is also found throughout the central nervous system.

grade: how abnormal the cancer cells look under a microscope and how quickly the tumour is likely to grow and spread; high grade tumours tend to be more aggressive than low grade tumours.

granuloma: a special type of inflammation characterised by accumulations of macrophages, some of which coalesce into "giant cells"; granulomatous inflammation is especially characteristic of tuberculosis, some deep fungal infections (like histoplasmosis and coccidioidomycosis), sarcoidosis (a disease of unknown cause), and reaction to foreign bodies.

H

haematologist: a specialist physician who specialised in the study of the blood and blood-forming tissues.

haematology: the study of the blood and blood-forming tissues; people who work in this area of healthcare science, play a major role in the diagnosis and monitoring of patients with disorders of the blood and bone marrow.

haematopoietic cell: Hematopoietic stem cells(HSCs) or hemocytoblasts are the stem cells that give rise to all the other blood cells through the process of haematopoiesis; they are derived from mesoderm and located in the red bone marrow, which is contained in the core of most bones.

haemoglobin: abbreviated Hb or Hgb, is the iron-containing oxygen-transport metalloprotein in the red blood cells of all vertebrates (with the exception of the fish family Channichthyidae) as well as the tissues of some invertebrates.

HER2 (Human Epidermal growth factor Receptor 2): a gene that helps control the growth and repair of cells.

HER2-enriched: HER2-enriched is one of the four main molecular subtypes of breast cancer; HER2-enriched breast cancer is hormone-receptor-negative and HER2-positive.

HER2 gene amplification: A situation that arises when a HER2 gene does not work correctly and makes too many copies of itself.

HER2-negative: a breast cancer with a normal number of HER2 genes and protein receptors.

HER2-positive: a breast cancer with HER2 gene amplification or HER2 protein overexpression; HER2-positive breast cancers tend to grow faster and are more likely to spread and come back compared to HER2-negative breast cancers.

HER2 protein overexpression: when the HER2 gene makes too many copies of itself, and those extra HER2 genes tell breast cells to make too many HER2 receptors.

HER2 receptors: proteins made by the HER2 gene that receive signals that stimulate cells to grow and multiply.

HER2 Test: there are 4 tests.

1. IHC test (ImmunoHistoChemistry): • The IHC test shows whether there is too much HER2-receptor protein in the cancer cells. • The results of the IHC test can be 0 (negative), 1+ (also negative), 2+ (borderline), or 3+ (positive; the HER2 protein is overexpressed).

2. FISH test (Fluorescence In Situ Hybridization): • The FISH test shows whether there are too many copies of the HER2 gene in the cancer cells. • The results of the FISH test can be positive (extra HER2 gene copies— amplified) or negative (normal number of HER2 gene copies—not amplified).

3. SPoT-Light HER2 CISH test (Subtraction Probe Technology Chromogenic In Situ Hybridization): • The SPoT-Light test shows whether there are too many copies of the HER2 gene in the cancer cells. • The results of the SPoT-Light test can be positive (extra copies— amplified) or negative (normal number of copies—not amplified). MY REPORT SAYS: HER2 status is: (check one) j Positive j Negative j Borderline 22 READING YOUR PATHOLOGY REPORT (continued) Test used: (check one) j IHC j FISH j SPoT-Light HER2 CISH j Inform HER2 Dual ISH 23.

4. Inform HER2 Dual ISH test (In Situ Hybridization): • The Inform HER2 Dual ISH test shows whether there are too many copies of the HER2 gene in the cancer cells. • The results of the Inform HER2 Dual ISH test can be positive (extra copies—amplified) or negative (normal number of copies—not amplified).

hereditary nonpolyposis colon cancer (HNPCC): an inherited cancer syndrome. Individuals with HNPCC have an increased risk of developing colon and rectal cancer, as well as other types of cancer.

hormone receptors: proteins on and in cells that respond to signals from hormones.

hormone therapy: treatment that blocks, removes or adds hormones to slow or stop the growth of certain cancers (such as prostate and breast cancer); Tamoxifen and Lupron are examples of hormonal therapies.

hyperplasia: a benign (not cancer) condition where cells are growing rapidly (proliferating); although hyperplasia is not cancer, it increases the risk of cancer; in usual hyperplasia, the proliferating cells look normal under a microscope; in atypical hyperplasia, the proliferating cells look abnormal.

hyperthermia treatment: treatment in which body tissue is exposed to high temperatures to damage and kill cancer cells or to make cancer cells more sensitive to radiation and certain anticancer drugs.

I

IHC (ImmunoHistoChemistry) test: a test used to measure proteins, including the HER2 protein.

imaging: this generic term refers to several tests that take pictures of one's body's organs and structures. One example is a mammogram, which uses X-rays to look for breast cancer. Other technologies use a magnetic field or radio waves. Tests include CT, MRI, PET scan, and ultrasound.

immunohistochemistry (IHC): a laboratory test done on tumour tissue to detect the amount of HER2/neu protein on the surface of the cancer cells.

immunosuppression: dampening the immune system making the patient prone to infections.

immunotherapy: therapies that use the immune system to fight cancer; these therapies target something specific to the biology of the cancer cell, as opposed to chemotherapy, which attacks all rapidly dividing cells.

in situ: a tumour that has not invaded surrounding tissue but in some people or conditions could undergo further change and become invasive; some individuals refer to this as non-invasive cancer while others say that it is not cancer.

incisional biopsy: a procedure in which a small area of tissue is taken to identify the composition (or make-up) of a lesion or abnormality; an excisional biopsy is a more involved procedure where the entire abnormality or area of interest is removed.

infiltrating: a cancer that has spread beyond the place where it started; also called "invasive".

inflammatory breast cancer (IBC): a rare and aggressive form of invasive breast cancer. Its main symptoms are swelling (inflammation) and redness of the breast. The skin on the breast may look dimpled, like the skin of an orange, and may be warm to the touch.

inform HER2 Dual ISH test: A test used to figure out whether breast cancer cells are HER2-positive.

Infusion: the process of giving a dose of chemotherapy, which can last hours. The drugs usually go directly into a vein. So one does not have to get stuck with needles over and over, patients will probably get a flexible tube called a catheter put through the skin, or a small disc called a port put under the skin. These hook up to an IV tube. They are usually not taken out until the treatment is done.

internal radiation: see brachytherapy.

invasive: a cancer that has spread beyond the place where it started; also called "infiltrating".

invasive breast cancer: cancer that has spread from the original location (milk ducts or lobules) into the surrounding breast tissue and possibly into the lymph nodes and other parts of the body; *invasive ductal cancer* begins in the milk ducts; *invasive lobular cancer* begins in the lobules of the breast.

invasive Ductal Carcinoma (IDC): a cancer that started in the milk duct but has grown into the normal breast tissue around it.

invasive Lobular Carcinoma (ILC): a cancer that started in the milk lobules and has grown into the normal breast tissue around it.

J

jejunostomy tube (J-tube): a soft rubber feeding tube surgically placed directly into the small intestine, maintained to allow food to bypass the mouth, oesophagus, and stomach.

joule: The **joule** (/dʒuːl/); symbol: J), is a derived unit of energy in the International System of Units. It is equal to the energy transferred to (or work done on) an object when a force of one newton acts on that object in the direction of its motion through a distance of one metre (1 newton metre or N·m).

K

Ki-67 rate: a common way to measure proliferation rate; the more cells the Ki-67 antibody attaches to on a tissue sample, the more likely the tumour cells are to grow and divide rapidly.

Ki-67 test: a test that shows how fast cancer is growing.

kilojoule: (kJ) is the Australian measure of how much energy people get from consuming a food or drink. Energy in food and drinks is measured by the number of kJ (kilojoules) it provides. kJ are similar to Calories: 1 kJ = 0.2 Calories (Cals) 1 Calorie = 4.2 kJs.

L

lentigo melanoma: a melanoma that has evolved from a lentigo malignant. They are usually found on chronically sun damaged skin such as the face and the forearms of the elderly. The nomenclature is very confusing to both patients and physicians alike.

lesion: a term used by doctors to describe virtually any physical abnormality; it may refer to a tumour, a tumour-like condition, or a finding which is not yet diagnosed.

leukaemia: a cancer that affects the blood and bone marrow where blood cells are made. There are four main types of leukaemia: Acute lymphoblastic leukaemia (ALL); acute myeloid leukaemia (AML); chronic myeloid leukaemia (CML); chronic lymphocytic leukaemia (CLL).

leukocyte: see white blood cells.

Li-Fraumeni Syndrome: a rare inherited disorder characterized by a high risk of sarcomas of bone and soft tissue, breast cancer, and other tumours.

linear accelerator: the device used during radiation therapy to direct X-rays into the body.

lobular Carcinoma In Situ (LCIS): cells that are not normal but stay inside the milk-making parts of the breast (lobules). LCIS isn't a true cancer, but a warning sign of an increased risk for developing an invasive cancer in the future in either breast.

local recurrence: a breast cancer that comes back in the breast area where it was originally diagnosed.

locally invasive: the tumour can invade the tissues surrounding it by sending out "fingers" of cancerous cells into the normal tissue; metastatic; the tumour can send cells into other tissues in the body.

locoregional recurrence: a breast cancer that comes back in the lymph nodes in the armpit or collarbone area near where the cancer was originally diagnosed; sometimes referred to as "regional" recurrence.

luminal A breast cancer: luminal A breast cancer is one of the four main molecular subtypes of breast cancer; luminal A breast cancer is hormonereceptor-positive (either oestrogen- and/ or progesterone-positive) and HER2- negative.

luminal B breast cancer: luminal B breast cancer is one of the four main molecular subtypes of breast cancer; luminal B breast cancer is hormonereceptor-positive (either oestrogen- and/ or progesterone-receptor-positive) and HER2-positive.

lumpectomy: a surgical procedure that removes a localized mass of tissue, including the breast cancer tumour and a small amount of normal, non-cancerous tissue surrounding the tumour.

lymphadenectomy: removal of the lymph glands from a part of the body.

lymphatic system: tissues, fluid and organs, including the spleen, lymph nodes and bone marrow, that produce, store and carry white blood cells that fight disease.

lymphocyte: a form of small leucocyte (white blood cell) with a single round nucleus, occurring especially in the lymphatic system.

lymphoedema: a condition in which extra lymph fluid builds up in tissues and causes swelling; often caused by damage to lymph vessels during surgery.

lymphoma: cancer that involves lymphatic system cells (lymph nodes, spleen).

Lynch syndrome: an alternative term for hereditary non-polyposis colorectal cancer (HNPCC).

M

magnetic resonance imaging: also referred to as MRI. A safe and painless test that uses a magnetic field and radio waves to produce detailed pictures of the organs and structures of the body.

malignant: cancerous. Malignant tumours can invade and destroy surrounding tissues and spread (metastasize) to other parts of the body.

mammaPrint: a test that analyses 70 genes from an early-stage breast cancer tissue sample to find out whether breast cancer has a low or high risk of coming back within 10 years after diagnosis.

mammary duct ectasia: a benign (not cancer) breast condition resulting from inflammation (swelling) and enlargement of the ducts behind the nipple; often there are no symptoms, but calcifications seen on a mammogram may point to its presence; no treatment is needed if the woman is not having symptoms (burning, pain or itching in the nipple area).

mammogram: X-ray imaging of the breast.

mammostrat: a test that measures the levels of five genes in early-stage, hormone-receptor-positive breast cancer cells; a risk index score is then calculated; the higher the score, the more likely the cancer is to come back (recur).

manoma or melanosarcomael: a benign or malignant growth of the pigmented cells of the skin and mouth, common in the dog but rare in the cat; the malignant version of this tumour, called a melanosarcoma or malignant melanoma, can spread rapidly both into lymph channels and through the bloodstream.

margins: the edge of a tumour. Margins are often biopsied and studied under a microscope to determine if the tumour has been overcome by treatment and/or surgery. This word applies to malignant as well as benign tumours.

mass: 1. a growth or tumour; a mass can be benign or malignant. 2. in physics, the property of matter that measures its resistance to acceleration. Roughly, the mass of an object is a measure of the number of atoms in it. The basic unit of measurement for mass is the kilogram. 3. anything that has weight and shape has mass. In fact, mass is the quality that gives things weight anywhere there is gravity.

mastectomy: surgical removal of the breast.

medullary carcinoma of the breast: a rare type of invasive cancer that usually presents with a soft, fleshy tumour that resembles a part of the brain called the medulla; medullary carcinoma of the breast is usually hormone-receptornegative and HER2-negative.

melanocyte: melanin-producing neural-crest derived cell located in the bottom layer (the stratum basale) of the skin's epidermis, the middle layer of the eye (the uvea), the inner ear, meninges, bones, and heart.

melanoma: also known as malignant melanoma, is a type of cancer that develops from the pigment-containing cells known as melanocytes.

melanosarcomael or manoma: a benign or malignant growth of the pigmented cells of the skin and mouth, common in the dog but rare in the cat; the malignant version of this tumour, called a melanosarcoma or malignant melanoma, can spread rapidly both into lymph channels and through the bloodstream.

meta-analysis: a method for taking the results reported in a group of studies and averaging them to come up with a single, summary result.

metaplasia: the phenomenon by which one type of tissue is replaced by another type; this often results from chronic irritation of an epithelial lining; a good example is the cervix, in which chronic irritation and inflammation causes the relatively delicate normal columnar epithelium to be replaced by tougher squamous epithelium (similar to that which normally lines the vagina, which is naturally "built tougher" for obvious reasons). This phenomenon is called "squamous metaplasia"; in its pure state, metaplasia is not harmful, but some metaplasias are markers for increased risk of more serious diseases, for instance, a type of

intestinal metaplasia of the stomach (in which columnar epithelium of the intestinal type replaces that of the gastric type) is considered a risk factor for the subsequent development of cancer of the stomach.

metastasis: a metastasis occurs when a portion of a tumour which has left the original, or primary, tumour and travelled to another portion of the body; sarcomas generally metastasise to the lungs, however, they may also travel to other locations.

microscopic invasion: a situation in which cancer cells have just started to invade the tissue outside the lining of a duct or lobule.

microscopic lymph node involvement: when only a small number of cancer cells are found in a lymph node.

moderately differentiated: cancer cells that do not look like normal cells; they grow a little faster than normal; also called "grade 2".

Monoclonal antibody: a type of protein made in the laboratory that can bind to substances in the body, including cancer cells. There are many kinds of monoclonal antibodies. A monoclonal antibody is made so that it binds to only one substance. Monoclonal antibodies are being used to treat some types of cancer. They can be used alone or to carry drugs, toxins, or radioactive substances directly to cancer cells.

Mole: a benign growth on the skin (usually tan, brown, or flesh-coloured) that contains a cluster of melanocytes and surrounding supportive tissue.

monoclonal antibody: a substance that can locate and bind to cancer cells wherever they are in the body; may be used for cancer detection or treatment.

mTOR (mammalian target of rapamycin) inhibitors: a class of targeted therapy drugs that may increase the benefit of hormone therapy; Everolimus (Afinitor) is an example of an mTOR inhibitor.

mucinous (colloid) carcinoma of the breast: a rare type of invasive cancer that contains small pools of mucous material.

multimodality therapy: use of two or more treatment methods (such as surgery, radiation therapy, chemotherapy, hormone therapy and targeted therapy) in combination or one after the other to get the best results.

mutation: a harmful change in 'normal' DNA (the molecular building blocks of all cells); some mutations are inherited and can be passed from parent to child; others are acquired during a lifetime, the result of other factors such as age, tobacco use, infection with viruses, or exposure to ultraviolet radiation (sunlight); mutations in genes that regulate cell division may lead to cancer; there are four main gene types that increase the risk of cancer when mutated: tumour suppressor genes, proto-oncogenes, DNA repair genes and programmed death genes.

myelogram: a diagnostic imaging procedure done by a radiologist; it uses a contrast dye and X-rays or computed tomography (CT) to look for problems in the spinal canal, including the spinal cord, nerve roots, and other tissues; it is also known as myelography.

myeloma: cancer that involves the plasma cells (found in bone marrow).

N

necrosis: death of tissue; necrosis may be seen in inflammatory conditions, as well as in neoplasms.

neoadjuvant therapy: treatment, such as chemotherapy or radiation, given to shrink a tumour before the main treatment, usually surgery.

neoplasia: abnormal and uncontrolled cell growth.

neoplasm: a tumour; a cancerous or non-cancerous mass of tissue that results when cells divide more than they should or do not die when they should.

neuroblastoma: a type of cancer that forms in certain types of nerve tissue; it most frequently starts from one of the adrenal glands, but can also develop in the neck, chest, abdomen, or spine.

neuropathy: this is a nerve problem that causes tingling, numbness, weakness, or swelling. It usually starts in one's arms and legs. Cancer treatment or the cancer itself can bring it on. (So can diabetes and other diseases, infections, and injuries.)

neutropenia: reduced levels of white cells in the blood; febrile neutropenia -with fever.

neutrophil: found in the blood, it is a type of immune cell that is one of the first cell types to travel to the site of an infection. Neutrophils help fight infection by ingesting microorganisms and releasing enzymes that kill the microorganisms. A neutrophil is a type of white blood cell.

nevus: a benign growth on the skin, such as a mole.

node-negative breast cancer: breast cancer that has not spread to the lymph nodes.

node-positive breast cancer: breast cancer that has spread to the lymph nodes (most commonly the axillary lymph nodes under the arms).

nodule: a small lump or growth made up of cells or tissues. Nodules can be non-cancerous (benign) or cancerous (malignant).

non-invasive: A cancer that stays inside the part of the body where it started.

nucleus: 1. the central and most important part of an object, movement, or group. 2. (in physics) the positively charged central core of an atom, consisting of protons and neutrons and containing nearly all its mass. 3. (in biology) a dense organelle present in most eukaryotic cells, typically a single rounded structure bounded by a double membrane, containing the genetic material.

O

occult: (1) Hidden; concealed; not manifest. (2) Denoting a concealed haemorrhage, the blood being so changed as not to be readily recognized. See occult blood. (3) In oncology, a clinically unidentified primary tumour with recognized metastases.

"-oma": the ending "-oma" means tumour or swelling, and the first part of the word tells one what kind of cell it is in. For example, carcinoma is a cancer that starts in the skin or the lining of the organs. Sarcomas begin in connective tissue like bone, fat, and blood vessels. Lymphoma and myeloma are cancer in the immune system. Glioblastoma is a tumour in the central nervous system.

oncogene: a mutated version of the proto-oncogene, a gene that directs cell growth; causes cells to grow and divide too rapidly.

oncologist: a specialist physician in charge of planning and overseeing cancer treatment.

oncology: the branch of medicine that focuses on the diagnosis and treatment of cancer. Cancer doctors are called oncologists. They may specialise in different ways to treat cancer.

oncotype DX: a test that provides information on how likely the breast cancer is to return and whether you are likely to benefit from chemotherapy; oncotype DX can also determine whether someone with DCIS can benefit from radiation therapy.

osteosarcoma: also called osteogenic sarcoma is a type of cancer that starts in the bones.

P

p53 gene: inheriting an abnormal p53 gene (also called the TP53 gene) causes Li-Fraumeni syndrome, a disorder that causes people to develop soft tissue cancers at a young age.

paediatric oncologist: a specialist physician in charge of planning and overseeing cancer treatment in children.

Palliative Therapy: A system of support and comfort to improve your quality of life. It brings together experts in different fields to help you with pain and symptom management, and the mental, emotional, and spiritual effects of cancer. It can begin as soon as you're diagnosed and continue throughout your treatment, as well as afterward and if the cancer comes back. It also includes end-of-life care.

palliative treatment: treatment which relieves the symptoms and pain.

papillary carcinoma of the breast: a rare type of invasive breast cancer that is made up of small, finger-like projections.

papillary DCIS: a type of non-invasive breast cancer that does not spread and tends to grow slowly; papillary DCIS features cancer cells arranged in a finger-like pattern within the ducts.

paracentesis: the drainage of excess fluid from the abdomen.

pathologist: a specialist physician who uses a microscope to tissue removed during biopsy or surgery and determines whether or not the cells contain cancer.

PET (Positron Emission Tomography) scan: unlike CT and MRI which look at structures (i.e., the architecture of the body), PET looks for cancerous activity; cancer cells often "light up" on a PET scan because they metabolise glucose differently than do normal cells; PET scans are often used to see if cancer has spread to other parts of the body.

phase I clinical trials: tests new types of treatment and aim to define a safe dose that will be used for further studies. This is usually the first testing of a treatment on humans after extensive laboratory work. Recruitment for Phase I trials are usually from patients for whom no other effective therapy is known.

phase II clinical trials: test the anti-cancer effects of the new treatment, and include very detailed toxicity investigations. If there is effective anti-tumour activity, it may be incorporated in a future phase III study.

phase III clinical trials: compare one or more treatments of proven efficacy. Often patients will be randomised between an established 'standard' treatment and a new 'experimental' treatment - it is not known which is the better treatment.

photodynamic therapy: treatment with drugs that become active and kill cancer cells when exposed to light.

poorly differentiated: cancer cells that look very different from normal cells; they are fast-growing; also called "grade 3".

port: a small medical appliance that is installed beneath the skin; a catheter connects the port to a vein.

PR-negative: a cancer that does not have progesterone receptors.

PR-positive: a cancer that has progesterone receptors.

pre-cancerous: An overgrowth of abnormal cells that shows no signs of invasion; pre-cancerous cells are a warning sign of possibly developing cancer in the future.

primary tumour: a primary tumour is located at the site where it first formed and contains cells of that same organ or tissue.

prognosis: is the expected outcome of a disease and its treatment, this may be influenced by a variety of factors such as stage, age, site etc. depending on the particular type of cancer. For example, in general a patient with localised disease may have a more favourable prognosis compared to a patient with widespread disease which may be less favourable.

programmed death genes: programmed death genes, such as the B-cell lymphoma 2(BCL2) gene, function normally to regulate cell death and maintain tissue integrity; when

mutated these genes either prevent or are unable to induce cell death, leading to the replication of faulty cells and tumour formation; mutations in the BCL2 genes are found in non-Hodgkin's Lymphomas and chronic lymphocytic leukaemias.

protocol: an action plan for a clinical trial; the plan states, step by step, what the study will do, how and why.

proto-oncogene: proto-oncogenes, such as the viral oncogene BRAF, have varying functions to stimulate cell growth and when mutated become cancer-inducing oncogenes that promote ongoing uncontrolled cellular replication and tumour formation; mutations in the BRAF gene are found in approximately 50% of malignant melanomas.

PTEN gene: an abnormal PTEN gene causes Cowden syndrome, a rare disorder that causes a higher risk of both benign and cancerous breast tumours, as well as growths in the digestive tract, thyroid, uterus, and ovaries.

punch biopsy: this technique is typically used by dermatologists to sample skin rashes and small masses; after a local anaesthetic is injected, a biopsy punch, which is basically a small (3 or 4 mm in diameter) version of a cookie cutter, is used to cut out a cylindrical piece of skin; the hole is typically closed with a suture and heals with minimal scarring.

Q

quadrantectomy: surgery where one quadrant or 25% of the breast is removed.

quality of life: a measure of a person's well-being and his/her overall enjoyment of life.

quantiles: categories of an exposure (like body weight or exercise) based on equal parts of the total number of people in the study. When the total number of people is divided into thirds, the categories are called tertiles. When the total number of people is divided into quarters, the categories are called quartiles.

quartiles: categories of an exposure (like body weight or exercise) based on four equal parts of the total number of people in the study.

R

radial growth phase (RGP): the melanoma lesion is described as either having RGP present or absent. If present, RGP indicates that the melanoma is growing horizontally or radially, within a single plane of skin layer

radiation oncologist: a specialist physician specialising in the treatment of cancer using targeted, high energy X-rays.

radiation therapy: the use of radiation from X-rays and other sources of radiation to kill cancer cells and shrink tumours.

radioactive iodine: usually administered in the form of a capsule or in water (it is odourless and tasteless), the Radioactive iodine is quickly take up by the overactive thyroid cells. The results is that the thyroid shrinks in size, the thyroid hormone production falls, and blood levels return to normal with restoration of good health. Occasionally a second treatment is given to further control the thyroid hormone output. After administration your Nuclear Medicine technician will usually monitor the amount of intake by the thyroid (scanning), and looking for hot spots or glows.

recurrence: cancer that has returned (recurred) after a period of remission; the cancer may recur at the primary site, or elsewhere in the body, as a secondary tumour.

red blood cell: See erythrocyte.

Reed-Sternberg cells: large, unusual cells that are a sign of Hodgkin's disease. These cells are detected under a microscope after a biopsy.

refractory: where the cancer is resistant to treatment, patient may never go into remission, possibly with stable or progressive disease.

regional recurrence: a breast cancer that comes back in the lymph nodes in the armpit or collarbone area near where the cancer was originally diagnosed; sometimes referred to as "locoregional" recurrence.

regimen: a prescribed course of medical treatment, diet, or exercise for the promotion or restoration of health.

relapse: when the disease reoccurs after a period in remission.

remission: is where the symptoms of cancer are no longer present. There is no longer any evidence of the disease using the available investigations.

resin T3 uptake: The resin T3 uptake is used to assess the binding capacity of the serum for thyroid hormone. This is used to help determine if the Total T4 is reflecting the free T4, or if abnormalities in binding capacity are responsible for changes in T4 values.

restaging: where the patient is staged again after a period of treatment to assess the response to therapy.

RET proto-oncogene: blood test to determine if the Medullary Thyroid Cancer is sporadic or familial (hereditary).

risk factor: any factor -from a lifestyle choice (such as diet) to genetics to an environmental exposure (such as radiation) -that increases or decreases a person's risk of developing a certain disease.

S

sarcoma: a sarcoma is a malignant tumour which arises from one or more connective tissues. These tissues include the bones, muscles, nerves, tendons, ligaments and adipose tissue (fat); sarcomas are named by the tissue from which they arose, therefore sarcomas from the bone are generally osteosarcomas.

sclerosing adenosis: a benign breast condition in which enlarged lobules form breast lumps.

second line treatment: a treatment that is started when the first-line treatment stops being effective.

second primary tumour: a second cancer that develops in a different location from the first; this is different from a local recurrence, which is the return of the first cancer.

secondary tumour: a cancer that has spread from the place in which it started to other parts of the body; made up of the same type of cells as those in the original, or primary, tumour.

sentinel node biopsy: a surgical procedure used to determine if cancer has spread beyond a primary tumour into your lymphatic system; *sentinel node biopsy* is used most commonly in evaluating breast cancer and melanoma; the *sentinel nodes* are the first few lymph nodes into which a tumour drains.

shave biopsy: a technique in which a portion of a lesion is cut off the surface of the skin using a scalpel in most cases. This is often performed by a dermatologist in the office.

solid DCIS: a type of non-invasive breast cancer; it tends to grow slowly; solid DCIS cancer cells completely fill the affected breast ducts.

S-phase fraction test: a test that shows how fast a cancer is growing.

spinal tap: see lumbar puncture.

SPoT-Light HER2 CISH test: a test used to count the number of copies of the HER2 gene.

stage: the extent of a cancer in the body; it is based on the size of the tumour and whether it has spread; It is based on things like:

- The cancer's location and size
- The type of cell affected
- The grade, or how abnormal it looks
- Whether it has spread to lymph nodes or other organs

Different cancers have different staging systems.

surgical oncologist: a physician specialising in the treatment of cancer using surgical procedures.

synchronous cancer: multiple primary cancers occurring simultaneously.

systemic therapy: treatment that travels via the bloodstream and affects all cells throughout the body; chemotherapy is a form of systemic therapy.

S-phase fraction: the S-phase fraction number tells one what percentage of cells in the tissue sample are in the process of copying their genetic information (DNA). This S-phase, short for "synthesis phase", happens just before a cell divides into two new cells. In breast cancer, a result of less than 6% is considered low, 6-10% is intermediate/borderline, and more than 10% is considered high

T

TAILORx: although the Oncotype DX test has already been approved for use, research involving the test is ongoing. The Oncotype DX test plays a key role in a current clinical trial, the **Trial Assigning Individualized Options for Treatment (Rx)**, known as TAILORx. Participants will be divided into different treatment groups depending on their Recurrence Score[®] results. Patients with Recurrence Score results of less than 11, who are at low risk for recurrence and for whom chemotherapy is expected to provide little benefit, will receive hormone therapy alone. Patients with Recurrence Score results greater than 25, who are at higher risk for recurrence and for whom chemotherapy is expected to provide substantial benefit, will receive hormonal therapy and chemotherapy. Patients with Recurrence Score results between 11 and 25, whose risk for recurrence is moderate and for whom the benefit of chemotherapy is unclear, will be randomized to treatment with hormonal therapy plus chemotherapy versus hormonal therapy alone. The primary objective of the trial is to determine whether hormonal therapy alone offers no less benefit than chemotherapy plus hormonal therapy in women whose Recurrence Score results range from 11 to 25.

targeted therapy: newer drugs that specifically target cancer cells while doing minimal damage to normal cells; Herceptin is an example of a targeted therapy.

thermography: an imaging technique that uses infrared light to measure temperature differences on the surface of the breast. The Cancer Association of South Africa (CANSA) does not view thermography as a valuable breast cancer screening method.

TNM: Tumour Node Metastasis - a staging system used by clinicians to describe how advanced a particular cancer is - which then informs the type of treatment provided.

total T3: the total T3 measures the concentration of triiodothyronine in the serum. The T3 is increased in almost all cases of hyperthyroidism and usually goes up before the T4 does. Thus the T3 is a more sensitive indicator of hyperthyroidism than the Total T4. In hypothyroidism the T3 is often normal even when the T4 is low. The T3 is decreased during acute illness and starvation, and is affected by several medications including Inderal, steroids and amiodarone. This test measures both bound and free hormone. Only the free hormone is biologically active, but is only 0.5% of the total. Anything which affects thyroid binding globulin (TBG), or albumin will affect the total Triiodothyronine but not the free.

total T4: the T4 test measures the concentration of Thyroxine in the serum. This includes both bound and free hormone. Only the free hormone, about 0.05% of the total, is biologically active. Anything which affects levels of thyroid binding globulin (TBG), albumin, or thyroid binding prealbumin will affect the total thyroxine but not the free hormone. Oestrogens and acute liver disease will increase thyroid binding, while androgens, steroids, chronic liver disease and severe illness can decrease it.

translocation: 1. transfer of part of a chromosome to a different position especially on a nonhomologous chromosome; especially the exchange of parts between nonhomologous chromosomes. 2. a chromosome or part of a chromosome that has undergone translocation.

triple negative breast cancer: a breast cancer that is oestrogen receptor-negative, progesterone receptor-negative and HER2/neu-negative. These factors limit treatment choices; most triple negative tumours are basal-like tumours; these breast cancers tend to be aggressive and are more common in African American women.

tubular carcinoma of the breast: a rare type of invasive breast cancer that is made up of tube-shaped cells and tends to grow slowly.

tumour: an abnormal mass of tissue; tumours may be benign (not cancer), or malignant (cancer).

tumour-infiltrating lymphocytes (TILs): TILs describes the patient's immune response to the melanoma. When the pathologist examines the melanoma under the microscope he/she looks for the number of lymphocytes, or white blood cells, within the lesion. This is usually

described as brisk, non-brisk, or absent, although occasionally it can be described as mild or moderate. The presence of these cells may be a sign of an immune response.

tumour markers: substance in the body that may indicate the presence of cancer. Markers may be secreted by the tumour itself or produced by the body in response to the cancer; tumour markers may aid diagnosis or give an indicator of how treatment is progressing; these markers are usually specific to certain types of cancer, for example neuron-specific enolase (NSE) is associated with a number of types of cancers, in particular neuroblastoma; also alphafetoprotein (AFP) levels are often abnormally high in patients with Germ cell tumours.

tumour profiling (Gene Expression Profiling): tests that give information about thousands of genes in cancer cells; specific genes (or combinations of genes) may give information useful in prognosis and in making treatment decisions.

tumour suppressive gene: a type of gene that helps control cell growth; tumour suppressor genes, such as the tumour protein p53 (TP53) gene, function normally to regulate cell replication and when mutated are unable to prevent uncontrolled replication and tumour formation; mutations in the TP53 gene are found in more than 50% of tumours.

U

ultrasound: also called sonography; a way in which doctors can take a look inside one's body instead of using X-rays, sound waves are bounced off body organs which then become visible on a screen.

unilateral: found only in one half of the body.

urologist: a medical doctor who specialises in disorders, diseases, and conditions of the urinary tract.

V

vascular invasion: when cancer cells are found in the blood vessels.

vertical growth phase (VGP): a melanoma is described as either having VGP present or absent. If present it is an indication that the melanoma is growing vertically or deeper into the tissues.

W

well differentiated: cancer cells that look a little bit different from normal cells; they are usually slow-growing; also called “grade 1”.

white blood cells: also called leukocytes. They form part of the germ-fighting immune system and attack invaders such as viruses and bacteria. Different types of white blood cells (neutrophils, eosinophils, basophils, monocytes, lymphocytes) each have their own role in fighting different kinds of germs.

Wilms tumour: a cancerous tumour that originates in the kidneys.

window period: In medicine, the window period for a test designed to detect a specific disease (particularly infectious disease) is the time between first infection and when the test can reliably detect that infection. In antibody-based testing, the window period is dependent on the time taken for seroconversion. The window period is important to epidemiology and safe sex strategies, and in blood and organ donation, because during this time, an infected person or animal cannot be detected as infected but may still be able to infect others. For this reason, the most effective disease-prevention strategies combine testing with a waiting period longer than the test's window period.

wire localisation biopsy: a type of biopsy performed when an abnormality can be seen on a mammogram but cannot be felt. A wire localisation biopsy utilises a mammogram to locate and identify the breast abnormality, after which a biopsy is performed.

X

X-ray: a safe procedure that uses radiation to take pictures of internal parts of the body.

Y

Yoga: a whole body philosophy that involves:

- working with breathing (pranayama)
- stretching exercises
- postures (asanas)
- meditation

As with many types of complementary therapy one of the main reasons that people with cancer use yoga is because it makes them feel good.

Yolk sac tumour: a rare, malignant tumour of cells that line the yolk sac of the embryo. These cells normally become ovaries or testes; however, the tumour can also occur in areas such as the brain or chest. The cause of a yolk sac tumour is unknown. It is most often found in children before the ages of 1 to 2.

Z

Zollinger-Ellison Syndrome: a disorder in which tumours of the pancreatic islet cells produce large amounts of gastrin (a hormone), leading to excess acid in the stomach and, possibly, a peptic ulcer (ulcer of the stomach or the upper part of the small intestine).

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