

Examples of Tumor Markers:

Tumor marker	Associated cancer(s)	Sample type	Use(s)	Comments	
CA-125 (Cancer antigen 125)	Ovarian	Blood	Helps diagnose, monitors treatment and for recurrence	Also elevated with other cancers (e.g., endometrial, peritoneal, fallopian tube), PID, uterine fibroids, endometriosis, pregnancy	
Calcitonin	Multiple myeloma, some leukemias, and lymphomas			Also elevated with other cancers (lung, leukemias) but not used to detect these	
hCG (Human chorionic gonadotropin, also called Beta-hCG)	Testicular and trophoblastic disease, germ cell tumors, choriocarcinoma			Elevated in pregnancy	
Lactate dehydrogenase (LD, LDH)	Pancreatic, sometimes bile ducts, gallbladder, stomach, colon			May be used for screening, helps diagnose, monitors treatment and for recurrence	Also elevated in other forms of digestive tract cancer and non-cancer, thyroid disease, pancreatitis, bile duct obstruction, inflammatory bowel disease
PSA (Prostate specific antigen)	Prostate				Also elevated in benign prostatic hyperplasia (BPH), prostatitis; may be used for screening
Thyroglobulin	Thyroid			Monitors treatment and for recurrence	Used after thyroid is removed to evaluate treatment



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Tumor Markers



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What are tumor markers?

Tumor markers are substances, often proteins, that are produced by the cancer tissue itself or sometimes by the body in response to cancer growth. Because some of these substances can be detected in body samples such as blood, urine, and tissue, these markers may be used, along with other tests and procedures, to help detect and diagnose some types of cancer, predict and monitor a person's response to certain treatments, and detect recurrence.

While quite a few tumor markers are available and have been found to be clinically useful, others are available but not ordered frequently because they have been found to be less sensitive and/or specific.

Limitations

While tumor marker tests can provide very useful information, they do have limitations:

- Many tumor markers may also be elevated in persons with conditions or diseases other than cancer.
- Some tumor markers are specific for a particular type of cancer, while others are seen in several different types of cancer.
- Not every person with a particular type of cancer will have an elevated level of the corresponding tumor marker.
- Not every cancer has a tumor marker that has been identified as associated with it.
- Consequently, tumor markers alone are not diagnostic for cancer; for some types of cancer, they provide additional information that can be considered in conjunction with a patient's medical history and physical exam as well as other laboratory and/or imaging tests.

How are tumor markers used?

Tumor markers may be used for a variety of purposes. However, they are not typically used alone. Depending on the type of cancer, they may be used in conjunction with a tissue biopsy or a bone marrow or blood smear examination.

- Screen. most tumor markers are not sensitive or specific enough, however, a few may be used to screen people who are at high risk because they have a strong family history or specific risk factors for a particular cancer.
- Help diagnose. In a person who has symptoms.
- Stage. If a person does have cancer, tumor marker elevations can be used to help determine whether the cancer has spread (metastasized) to other tissues and organs
- Determine prognosis. Some tumor markers can be used to help determine how aggressive a cancer is likely to be.
- Guide choice of treatment. A few tumor markers provide information about which treatments might be effective against a person's cancer.
- Monitor success of treatment and detect recurrence. Tumor markers can be used to monitor the effectiveness of treatment, especially in advanced cancers.

Examples of Tumor Markers:

Tumor marker	Associated cancer(s)	Sample type	Use(s)	Comments
(AFP (Alpha-feto protein	Certain liver, ovarian, testicular	Blood	Helps diagnose, monitors treatment and for recurrence	Also elevated during pregnancy and hepatitis
Beta-2 microglobulin	Multiple myeloma, some leukemias, and lymphomas		Determines prognosis, monitors treatment & for recurrence	Elevated in other conditions, such as kidney disease
CA 15-3 (Cancer antigen 15-3	Breast		Also elevated in other cancers (lung, ovarian), benign breast conditions, endometriosis, hepatitis	
CA 19-9 (Cancer antigen (19-9	Pancreatic, sometimes bile ducts, gallbladder, stomach, colon		Monitors treatment and for recurrence	Also elevated in other forms of digestive tract cancer and non-cancer, thyroid disease, pancreatitis, bile duct obstruction, inflammatory bowel disease