CONDITION

Metastasis

Metastasis is the spread of cancer cells from their original site to another part of the body.

WHAT IT IS
Cancer spread from its original site to distant tissues

BODY SYSTEM
Any body system

MAIN SYMPTOMS
Pain, fatigue, weight loss, site-specific problems

WHAT CAUSES IT
Cancer cells spreading through blood or lymph

HOW IT IS DIAGNOSED
Imaging and biopsy of suspicious tissue

MAIN TREATMENT
Systemic cancer therapy, sometimes with local treatment

CAN IT BE CURED?
Sometimes - mainly when spread is limited

IS IT AN EMERGENCY?
Sometimes - especially spinal cord or brain symptoms

LONG-TERM OUTLOOK
Often treatable, but usually requires ongoing care

Overview

Metastasis means that cancer cells have spread from where the cancer began to another part of the body. The original cancer is called the primary cancer . A new area of cancer formed elsewhere is called a metastasis , metastatic tumour , or secondary cancer .

The metastatic cancer remains the same type as the original cancer. For example, breast cancer that spreads to a bone is metastatic breast cancer, not bone cancer. Under a microscope, the cells usually resemble cells from the original breast tumour.

Cancer can spread through the bloodstream, through the lymphatic system, or across nearby body spaces. The lymphatic system is a network of vessels and glands involved in fluid balance and immune defence.

Metastasis matters because it can affect how an organ works and usually changes the goals

and choices of treatment. Many metastatic cancers cannot be completely removed, but treatment may shrink or control them, ease symptoms, and help people live longer. In some situations, especially when there are only a few areas of spread, long-term control or cure may be possible.

Metastasis is often associated with stage 4 cancer, but staging systems differ by cancer type. Some cancers use different names or categories, and spread to nearby lymph nodes is not always considered distant metastasis.

Symptoms

Metastasis does not always cause symptoms. It may be found during routine follow-up imaging or tests performed for another reason.

Symptoms are influenced by where the cancer has spread, how much tissue is affected, and whether it is pressing on nearby structures. General symptoms can include tiredness, reduced appetite, unexplained weight loss, or a decline in usual strength.

Possible site-specific symptoms include:

These symptoms do not prove that cancer has spread. Infections, injuries, medication effects, and many other conditions can cause similar problems. New symptoms should be assessed in the context of your medical history.

- Bone: ongoing pain, pain that is worse at night, or a broken bone after minor injury
- Spine: back or neck pain, limb weakness, numbness, or problems controlling the bladder or bowel
- Brain: headaches, seizures, weakness, balance problems, confusion, or changes in speech or vision
- Lungs or the lining around them: breathlessness, cough, chest discomfort, or fluid around a lung
- Liver: discomfort in the upper abdomen, swelling, itching, nausea, or yellow skin and eyes
- Abdomen: swelling, pain, feeling full quickly, constipation, or vomiting
- Lymph nodes: a new or enlarging lump, although enlarged nodes have many non-cancerous causes

Causes and risk factors

Metastasis happens when cancer cells acquire the ability to leave the original tumour. They may enter blood or lymph vessels, survive while travelling, enter another tissue, and begin growing there. Most cancer cells do not complete all these steps.

Some organs are more common destinations for certain cancers. This is partly because of blood and lymph flow, but cancer cells also interact differently with the environment inside each organ.

The likelihood of metastasis is affected by features of the primary cancer, including:

Metastasis is not caused by ordinary movement, touch, emotional stress, or a particular personality. It is also not something a person brings on by failing to think positively.

In uncommon cases, metastatic cancer is found before the original tumour can be identified. This is called cancer of unknown primary . The cancer is still investigated and treated according to its cell type, molecular features, and pattern of spread.

- Its type and biological characteristics
- How abnormal or fast-growing its cells appear
- Its size and whether it has entered nearby tissues
- Whether cancer is present in nearby lymph nodes
- Particular genetic or molecular changes within the cancer
- How it responds to initial treatment

Diagnosis

Imaging is often the first step in investigating possible metastasis. The choice of scan depends on the original cancer, the symptoms, and the body area being examined. Tests may include CT, MRI, ultrasound, PET-CT, or a bone scan.

Imaging can show areas that look suspicious, but not every abnormal area is cancer. Scarring, inflammation, infection, and harmless growths may look similar.

A biopsy removes cells or a small tissue sample for examination in a laboratory. When it is safe and useful, biopsy can confirm that an abnormal area contains cancer and help identify where the cancer began. Laboratory tests may also look for proteins, gene changes, or other markers that could guide treatment.

Blood tests can assess blood cell counts and how organs such as the liver and kidneys are working. Some cancers produce measurable substances called tumour markers. These may support monitoring in selected cancers, but a tumour marker alone usually cannot confirm or

rule out metastasis.

Once metastasis is identified, further tests may determine how widely the cancer has spread. This process is called staging. Not everyone needs every available scan, especially when an additional test would not change treatment.

Treatment and management

Treatment is based on the original type of cancer, not only on the organ where it has spread. Other important factors include the number and location of metastases, previous treatment, molecular test results, symptoms, general health, and personal priorities.

Systemic treatment travels through the bloodstream and can reach cancer in several places. Depending on the cancer, it may include chemotherapy, hormone therapy, targeted therapy, or immunotherapy. Targeted treatments act on particular changes or proteins in cancer cells. Immunotherapy helps the immune system recognise or attack cancer.

Local treatments focus on a particular area. They may include surgery, radiotherapy, thermal ablation, or other image-guided procedures. These treatments may be used to control pain, protect an organ, or treat a small number of metastases. A limited pattern of spread is sometimes called oligometastatic disease , although definitions differ.

Treatment may also address the effects of metastasis. Examples include treatment to strengthen bones, reduce brain swelling, drain fluid around a lung or in the abdomen, or relieve a blocked airway or digestive tract.

Palliative care focuses on comfort, function, and quality of life. It can be provided alongside cancer treatment and is not limited to the last days or weeks of life. It can help with pain, nausea, breathlessness, sleep, mood, practical concerns, and support for family members.

Follow-up usually includes symptom reviews, physical examinations, blood tests, and imaging at intervals suited to the cancer and treatment. A scan that shows stable disease means the cancer has not clearly grown during that period; it does not mean the cancer has disappeared.

Complications

Complications depend on the organs involved. Some develop slowly, while others need prompt treatment.

Bone metastases can weaken bone and increase the risk of fracture. They can also raise the calcium level in the blood. High calcium may cause thirst, constipation, weakness, drowsiness,

or confusion.

A tumour in or near the spine can compress the spinal cord or nerves. Without prompt treatment, this may cause lasting weakness or loss of bladder and bowel control.

Brain metastases may cause seizures, swelling, or problems with movement, speech, memory, or behaviour. Liver metastases can eventually reduce liver function. Metastases involving the lungs or their lining may make breathing difficult.

Cancer and some cancer treatments also increase the risk of blood clots, infection, bleeding, poor nutrition, and treatment-related organ problems. Many of these complications can be managed more effectively when reported early.

Prevention

Metastasis cannot always be prevented. Some cancers spread before they are found, and effective treatment does not remove every risk of later spread.

Reducing the chance of developing certain primary cancers can also reduce the chance of later metastasis. This may include avoiding tobacco, limiting ultraviolet exposure, receiving recommended vaccines, and taking part in established cancer screening when eligible. Screening does not prevent every cancer and is not available for every cancer type.

After a cancer diagnosis, recommended treatment and follow-up may lower the risk of recurrence or identify changes earlier. No diet, supplement, exercise plan, or complementary therapy can guarantee that cancer will not spread. Healthy habits may still support strength, recovery, and general health during and after treatment.

Living with it and what to expect

The course of metastatic cancer differs greatly between cancer types and between people with the same type. Some cancers grow quickly. Others can remain stable for months or years, sometimes through several lines of treatment.

Treatment may continue as long as it is helping and side effects remain acceptable. If a treatment stops working, testing may show whether another option is suitable. Some people have breaks from treatment, while others need continuous therapy.

Scans and appointments can bring uncertainty. It may help to know what a scan is meant to measure, when results are expected, and which symptoms should be reported between visits. Emotional support, counselling, peer groups, rehabilitation, and practical or financial advice can

also be useful.

Many people continue work, family life, travel, exercise, and everyday activities, although plans may need to change around fatigue, symptoms, or treatment. Rehabilitation can help maintain mobility, independence, and safety.

Outlook is shaped by the primary cancer, sites and amount of spread, response to treatment, and overall health. Population survival figures cannot predict exactly what will happen to one person. Your care team can explain what is known about your specific cancer while acknowledging uncertainty.

When to get medical help

Contact your cancer team promptly for a new lump, persistent pain, worsening fatigue, unexplained weight loss, new breathlessness, jaundice, or a symptom that is steadily changing. Also report treatment side effects that interfere with eating, drinking, sleep, movement, or usual activities. These concerns usually need timely assessment, but they are not always emergencies.

Seek urgent medical assessment for:

Call emergency services if symptoms are severe, sudden, or make it unsafe to travel. These signs can have causes other than metastasis, but they should not wait for a routine appointment.

- New or severe back or neck pain with weakness, numbness, or difficulty walking
- New loss of bladder or bowel control
- A first seizure, sudden confusion, or new weakness on one side
- A severe or rapidly worsening headache with vomiting or neurological changes
- Sudden breathlessness, chest pain, coughing blood, or collapse
- A painful limb that cannot bear weight after a minor injury
- Marked drowsiness, confusion, or repeated vomiting

Common questions

Is metastasis the same as stage 4 cancer?

Metastasis to a distant organ is classed as stage 4 in many common cancers. However, staging systems are specific to each cancer. Spread to nearby tissue or regional lymph nodes may be

an earlier stage rather than distant metastasis.

Can metastatic cancer be cured?

Sometimes. Cure is more likely when there are very few areas of spread that can all be treated effectively, or when the cancer is highly sensitive to treatment. For many people, the aim is long-term control, symptom relief, and maintaining quality of life.

How fast does metastasis spread?

There is no single speed. Some metastatic cancers change over weeks or months, while others remain stable for long periods. Scans, symptoms, blood tests, and the cancer's known biology help show its pace over time.

Does metastasis always hurt?

No. Some metastases cause pain, particularly in bone or when pressing on nerves, but others cause no pain. The absence of pain does not show whether cancer is present or absent.

Where does cancer usually spread?

Common sites include bones, liver, lungs, brain, and distant lymph nodes. The likely pattern depends strongly on where the primary cancer began. A cancer can also spread to less common sites.

Can a biopsy make cancer spread?

Spread along a biopsy needle path is very rare. Biopsies are planned using techniques that minimise this risk. When a biopsy is recommended, the information it provides usually has an important role in confirming the diagnosis or choosing treatment.

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