MesotheliomaHub

WE'RE HERE FOR YOU, SO YOU CAN BE THERE FOR THEM.

INFORMATION, RESOURCES, AND GUIDANCE

YOUR MESOTHELIOMA GUIDE

ABOUT
MESOTHELIOMA HUB

Mesothelioma Hub is your ultimate source for the latest information about mesothelioma and other asbestos-related illnesses. Our mission is simple: to connect patients and their families with the educational, medical, and legal resources they need.

Since 2003, our leadership team has strived to provide patients and their families with information and resources to deal with debilitating asbestos-related diseases. We have partnered with one of the country's most experienced mesothelioma law firms and have established relationships with some of the nation's most renowned treatment specialists.

All content included in this guide and on our website **MesotheliomaHub.com** is created by our team of researchers and journalists. All of our articles are fact-based and sourced from relevant publications, government agencies, and medical journals.

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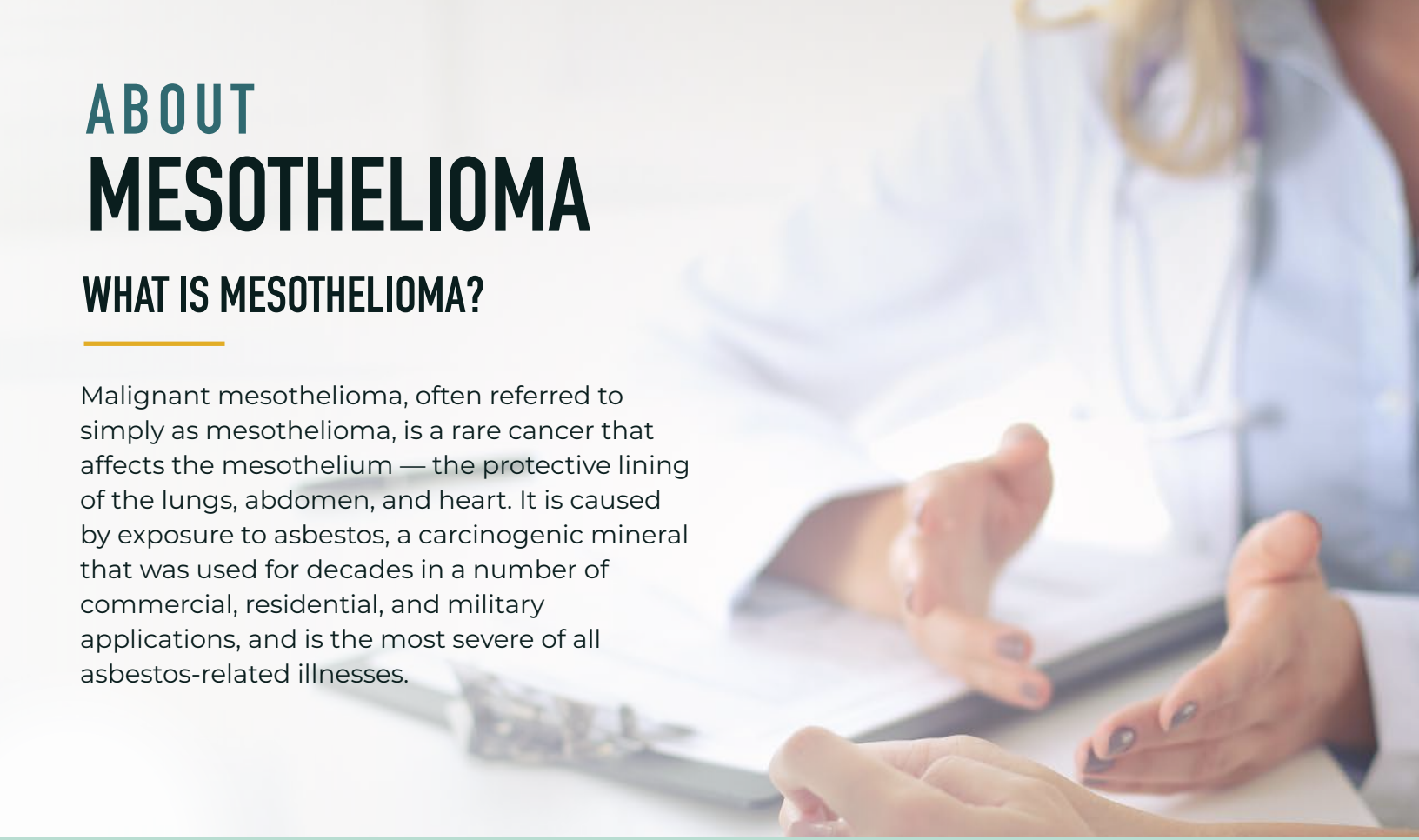


WHAT IS MESOTHELIOMA?

Malignant mesothelioma, often referred to simply as mesothelioma, is a rare cancer that affects the mesothelium — the protective lining of the lungs, abdomen, and heart. It is caused by exposure to asbestos, a carcinogenic mineral that was used for decades in a number of commercial, residential, and military applications, and is the most severe of all asbestos-related illnesses.

TYPES OF MESOTHELIOMA

PLEURAL

affects the lining of the lungs and chest cavity (the pleura). Between **70 and 90 percent** of patients are diagnosed with pleural mesothelioma.

PERITONEAL

affects the lining of the abdomen (the peritoneum). Between **10 and 30 percent** of patients are diagnosed with peritoneal mesothelioma.

PERICARDIAL

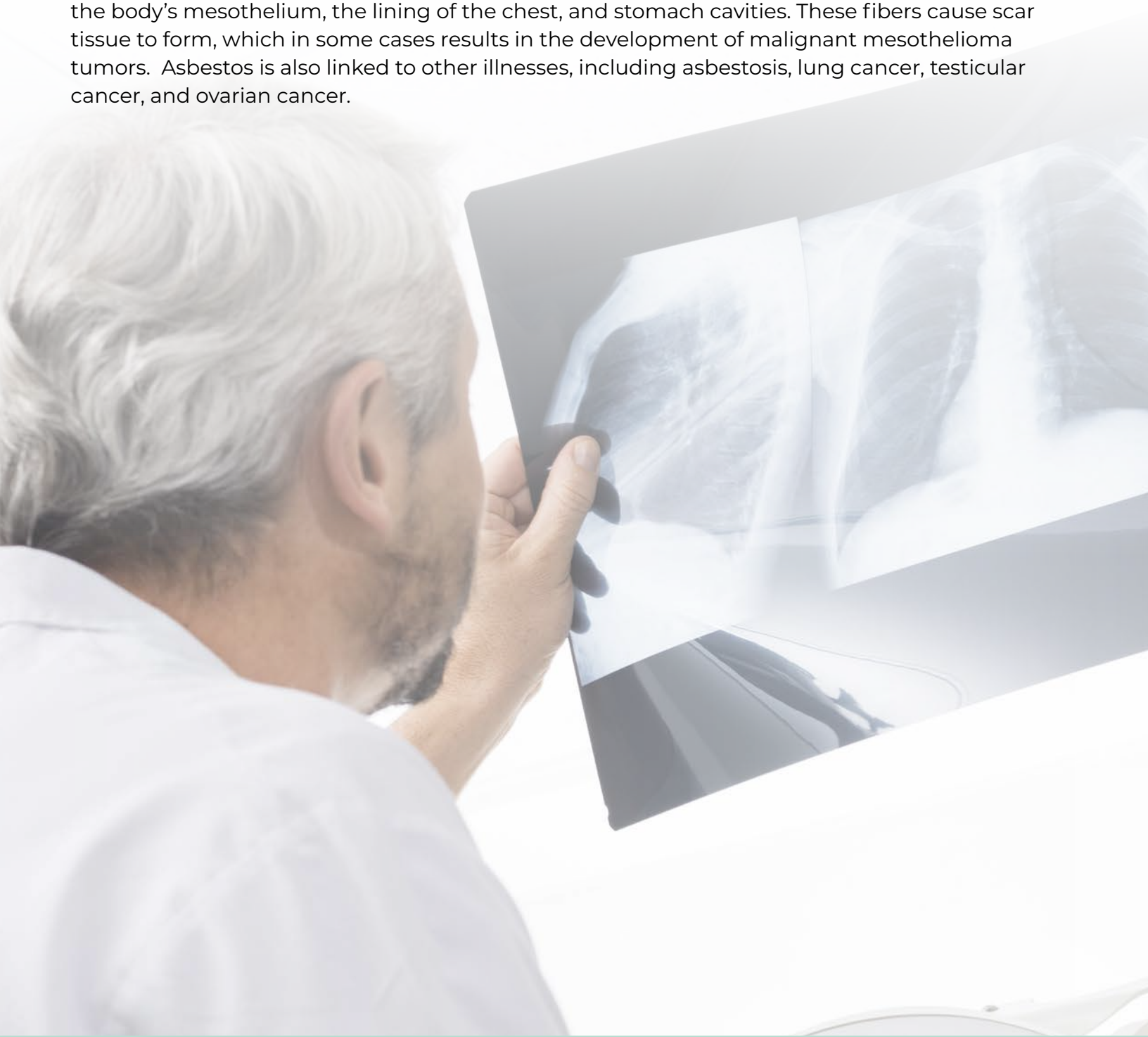
affects the lining of the heart (the pericardium). **Less than 5 percent** of patients are diagnosed with pericardial mesothelioma.

Mesothelioma is most often caused by exposure to asbestos — a group of naturally occurring, fibrous minerals. Due to its durable, fire-resistant nature, asbestos was used throughout the 20th century in a number of industrial and residential applications, including insulation, flooring, paint, adhesives, brake pads, fireproof clothing and blankets, and talcum powder. Asbestos was also used extensively in U.S. military facilities and bases and especially in Navy shipyards.

In 1977, the International Agency for Research on Cancer concluded that asbestos is a human carcinogen. Since then, most asbestos use has been phased out in the U.S., but mesothelioma is still a concern because of its long latency period, or the time between exposure to the carcinogen and the onset of symptoms. It often takes 20-50 years for mesothelioma to appear. Those who were exposed decades ago are still at risk. Many buildings were constructed using asbestos, so it's also possible to become exposed during demolitions, renovations, or natural disasters.

HOW ASBESTOS CAUSES MESOTHELIOMA

When asbestos is disturbed, its fibers become airborne and can enter the body in two ways: inhalation or ingestion. Similar to getting a splinter in your skin, the asbestos fibers weave into the body's mesothelium, the lining of the chest, and stomach cavities. These fibers cause scar tissue to form, which in some cases results in the development of malignant mesothelioma tumors. Asbestos is also linked to other illnesses, including asbestosis, lung cancer, testicular cancer, and ovarian cancer.



DID YOU KNOW?

Your doctor will usually start with the lowest resolution scans and work up to higher resolution imaging tests if needed. The doctor will then move on to biopsies to reach a conclusive diagnosis.

DIAGNOSING MESOTHELIOMA

Because mesothelioma is so rare and often takes years to develop, it can be difficult to diagnose. You should see your primary care doctor as soon as you begin to show symptoms. These symptoms could include chest or abdominal pain, trouble breathing, or a painful and persistent cough. When it comes to mesothelioma, early detection and treatment can lead to a better outcome. If you suspect you may have been exposed to asbestos in the past, inform your doctor immediately.

If your doctor believes your symptoms could be related to mesothelioma, you will need to undergo a series of diagnostic tests, including imaging tests, blood tests, and biopsies.

ASBESTOS IS STILL FOUND IN MANY OLDER HOMES, SCHOOLS, HOSPITALS, AND OTHER COMMERCIAL BUILDINGS.

IMAGING TESTS

The mesothelioma diagnosis process generally begins with a series of imaging tests.

X-RAY

X-rays are low-resolution, low-radiation images that give doctors a two-dimensional glimpse into the body. Irregularities that may indicate the presence of mesothelioma, such as fluid buildup, pleural thickening, tumors, and irregularities in lung size are usually visible with an x-ray. Abnormal scans may prompt doctors to move on to higher-resolution imaging tests.

CT SCAN

Computed tomography scans (also referred to as CT or CAT scans) combine rotating x-rays with computers to create multi-angled images of the body. They show if abnormalities are present and give doctors a deeper understanding of the extent and exact location of the abnormality, making them particularly helpful in diagnosing mesothelioma.

PET SCAN

Positron emission tomography scans, or PET scans, use small dosage of radiotracer, a radioactive chemical, to produce three-dimensional images. PET scans can show changes in an organ or tissue at a cellular level, where most diseases begin. This technology allows doctors to stage mesothelioma based on how it has spread throughout the patient's body.

MRI

Magnetic resonance imaging, or MRIs, use powerful magnetic fields and a computer rather than radiation to create high-resolution, three-dimensional images of affected areas in a patient's body. They are used to identify areas that may require a biopsy and are often used for staging mesothelioma.

BIOPSIES

Because mesothelioma can mirror other conditions, a biopsy is required to achieve a conclusive mesothelioma diagnosis. A biopsy involves the removal of fluid or tissue to determine the presence or scope of the disease. Biopsies also allow doctors to determine if and how much the cancer has spread.

NEEDLE BIOPSIES

Sometimes called a closed biopsy, needle biopsies are the least invasive type of biopsy available for a mesothelioma diagnosis. They are generally outpatient procedures.

PLEURAL BIOPSY

The most common needle biopsy, pleural biopsies are done on patients experiencing fluid buildup between their lungs and chest. An anesthetic is first injected to numb the area. Then, a needle is inserted to collect a sample of the fluid and pleural tissue to check for the presence and extent of mesothelioma. The procedure usually lasts about 30 minutes to an hour.

PARACENTESIS

During paracentesis, a needle is inserted into the patient's peritoneal cavity to retrieve a sample of the fluid buildup in the abdomen. This procedure allows doctors to test for the presence of mesothelioma as well as relieve discomfort. Depending on the level of fluid buildup being drained, this procedure usually takes about 30 minutes.

THORACENTESIS

Thoracentesis involves the draining of fluid in the pleural cavity. It is done for diagnostic purposes as well as to reduce patient pain and discomfort. The procedure is fast, usually around 15 minutes in total.

PERICARDIOCENTESIS

For patients experiencing fluid buildup around the heart sac (pericardial effusion), pericardiocentesis may be done to drain the fluid and prevent future buildup. This procedure can help with diagnosis as well as alleviating pain. The procedure usually takes between 20 minutes to an hour.

CAMERA ASSISTED BIOPSIES

Camera-assisted biopsies are less invasive procedures. Generally, these are used after needle biopsies and before surgical options.

THORACOSCOPY

During this procedure, a surgeon makes a small incision into the chest cavity. The surgeon then uses a tiny camera to guide them as they retrieve a diagnostic sample from the tumor. They may also drain any excess fluid to relieve the patient of discomfort. The procedure ranges from 45 to 90 minutes.

LAPAROSCOPY

Sometimes called peritoneoscopy, this involves making a small incision that allows doctors to insert a viewing tube into the abdomen. Doctors then examine the affected abdominal organs and take diagnostic samples. This procedure usually lasts around 75 minutes.

MEDIASTINOSCOPY

This camera-assisted biopsy procedure allows doctors to examine the lymph nodes and see if the mesothelioma has spread. It generally takes about 60 to 90 minutes.

SURGICAL BIOPSIES

Surgical biopsies are used when less invasive biopsies are unable to provide definitive results. They are the most involved type of biopsy and are performed as inpatient procedures.

THORACOTOMY

When a tumor is detected in the chest, a thoracotomy may be performed. During this surgical procedure, the surgeon makes an incision in the chest to take a tissue biopsy. When possible, this procedure is also used as a treatment to remove as much of the tumor as possible.

LAPAROTOMY

When a tumor is detected in the abdomen, a laparotomy may be performed. During this surgical procedure, the surgeon makes an incision in the abdomen to take a tissue biopsy. When possible, this procedure is also used as a treatment to remove as much of the tumor as possible.

TYPES OF MESOTHELIOMA

PLEURAL MESOTHELIOMA

Pleural mesothelioma is the most common form of mesothelioma. It occurs when microscopic asbestos fibers are inhaled and become lodged in the lining of the lungs and chest, called the pleura. Over time, these fibers cause inflammation and scarring. Eventually, these scar tissue cells of the mesothelium can mutate and form malignant tumors.

PLEURAL MESOTHELIOMA SYMPTOMS

- Anemia
- Back pain
- Blood clots
- Body aches
- Breathing difficulty
- Coughing up blood (hemoptysis)
- Difficulty speaking
- Difficulty swallowing (dysphagia)
- Fatigue
- Fever/night sweats
- Fluid buildup around the lungs (pleural effusion)
- Hoarseness
- Loss of appetite
- Persistent dry cough
- Shortness of breath (dypnea)
- Weight loss
- Wheezing

THE SYMPTOMS OF PLEURAL MESOTHELIOMA OFTEN MIRROR THOSE OF OTHER RESPIRATORY AILMENTS, SUCH AS:

- Adenocarcinoma
- Asthma
- Chronic obstructive pulmonary disease (COPD)
- Emphysema
- Influenza
- Laryngitis
- Lung cancer
- Malignant neoplasm
- Mesothelial hyperplasia
- Pneumonia
- Pulmonary fibrosis
- Synovial sarcomatoid carcinoma
- Tuberculosis

THE AVERAGE LIFE EXPECTANCY FOR PLEURAL MESOTHELIOMA PATIENTS IS BETWEEN 8 AND 21 MONTHS.

STAGING PLEURAL MESOTHELIOMA

Like most cancers, pleural mesothelioma is staged from I to IV. There are three recognized staging systems for pleural mesothelioma: the TNM staging system, the Butchart staging system, and the Brigham staging system.

Many doctors stage pleural mesothelioma using the TNM system, which stands for Tumor - Node - Metastasis. This system stages the cancer based on the size and extent of the tumor (T), whether the cancer has reached the lymph nodes (N), and the presence and extent of metastasis to other parts of the body (M). Metastasis is the spread of cancer cells from the original tumor site to other parts of the body.

STAGES OF MESOTHELIOMA

STAGE 1	STAGE 2	STAGE 3	STAGE 4
The tumor is localized to the site of origin. The lymph nodes are unaffected and there is no metastasis to other parts of the body.	The tumor is localized to one side of the body but extends deeper into the pleura as well as the diaphragm and/or lung. Nearby lymph nodes may be affected but there is no metastasis.	The tumor is localized to one side of the body but extends deep into all or some of the pleura, diaphragm, lung, chest wall, thoracic fascia, heart sac, and/or mediastinal fat. Nearby lymph nodes are affected and there is potential metastasis to nearby organs.	The tumor is no longer localized and is not resectable (removable) by surgery. The cancer may have spread to distant lymph nodes and there may be metastasis to organs in other areas of the body.

BUTCHART AND BRIGHAM STAGING SYSTEMS

The Butchart and Brigham staging systems are older than the TNM system but are both still used for staging pleural mesothelioma in some cases. The Butchart system is based mainly on the site of the primary tumor, while the Brigham system stages the cancer based on whether it has spread to the lymph nodes and whether the tumor can be removed via surgery.

PLEURAL MESOTHELIOMA PROGNOSIS

The prognosis for pleural mesothelioma depends on a number of factors, such as stage and cell type, as well as the patient's age and overall health. Patients with early-stage pleural mesothelioma may undergo surgery, chemotherapy, radiation, and other treatment procedures in an effort to eradicate the cancer and significantly extend life expectancy. However, because this type of mesothelioma is usually diagnosed at a later stage, these curative treatments may not be an option for every patient. In these cases, palliative care is deployed to maintain the patient's quality of life.

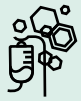
TREATING PLEURAL MESOTHELIOMA

Treatment options for pleural mesothelioma usually involve a combination of treatments, referred to as a multimodal treatment plan, including:

Surgery
Learn more on page 18

Chemotherapy
Learn more on page 19

Radiation
Learn more on page 21



Immunotherapy
Learn more on page 23

PERITONEAL MESOTHELIOMA

Peritoneal mesothelioma affects approximately 30 percent of mesothelioma patients. It occurs when microscopic asbestos fibers are ingested and become lodged in the lining of the abdominal cavity, called the peritoneum. Over time, these fibers cause inflammation and scarring.

Eventually, the scar tissue cells of the mesothelium can mutate and form malignant tumors. This form of mesothelioma is treatable, especially in early stages. Identifying the symptoms, and talking with your doctor about your possible exposure history, is the best way to ensure the best possible prognosis.

PLEURAL MESOTHELIOMA SYMPTOMS

- Abominal pain
- Abdominal swelling
- Anemia
- Bloating
- Body ache
- Bowel obstruction
- Constipation
- Diarrhea
- Fatigue
- Fever/night sweats
- Fluid buildup in the abdomen (ascites)
- Hernia
- Loss of appetite
- Nausea
- Seizures
- Vomiting
- Weight loss

THE SYMPTOMS OF PERITONEAL MESOTHELIOMA OFTEN MIRROR THOSE OF OTHER CONDITIONS, SUCH AS:

- Colorectal adenocarcinoma
- Inguinal hernia
- Irritable bowel syndrome (IBS)
- Ovarian cancer
- Primary peritoneal carcinoma
- Stomach cancer

THE AVERAGE LIFE EXPECTANCY FOR PERITONEAL MESOTHELIOMA PATIENTS IS BETWEEN 53 AND 92 MONTHS.

STAGING PERITONEAL MESOTHELIOMA

Since peritoneal mesothelioma is still a very rare condition, there is no formal staging system in place. However, oncologists often use the American Joint Committee on Cancer (AJCC) 1–4 staging scale to estimate the progression. Your doctor may also use the Peritoneal Cancer Index (PCI) to assess the extent of cancer present, as well as account for any spread to the lymph system or other parts of the body. The PCI score, a range from 0–39, helps determine eligibility for various treatments. A low score generally indicates minimal tumors or spread, equating to a better possible prognosis.

PERITONEAL MESOTHELIOMA PROGNOSIS

Location, stage, cell type, patient age, and overall health all contribute to a patient's prognosis. Due to the treatment options available, peritoneal mesothelioma tends to carry a better prognosis than other forms of the cancer, such as pleural or pericardial.

Treatment advances, such as HIPEC (hyperthermic intraperitoneal chemotherapy) and cytoreductive surgery, give peritoneal patients an improved chance of survival.

TREATING PERITONEAL MESOTHELIOMA

Treatment options for pleural mesothelioma usually involve a combination of treatments, referred to as a multimodal treatment plan, including:

Surgery
Learn more on page 18

Chemotherapy
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Radiation
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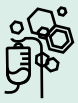

Immunotherapy
Learn more on page 23

PERICARDIAL MESOTHELIOMA

The exact causes of pericardial mesothelioma are unknown, although specialists usually attribute it to the inhalation or ingestion of asbestos fibers. The microscopic fibers end up lodged in the lining of the heart, called the pericardium, where they create scar tissue, which later develops into cancerous tumors.

Pericardial mesothelioma is extremely rare and the most dangerous form of mesothelioma. Due to its low occurrence — less than one percent of mesothelioma cases, there isn't a large pool of data to pull from. If you or a loved one believe you may have prolonged exposure to asbestos, speak with a specialist about the possibility of pericardial mesothelioma.

PERICARDIAL MESOTHELIOMA SYMPTOMS

- Arrhythmia
- Chest pain
- Fatigue
- Fever
- Fluid buildup around the heart
- Heart murmur
- Heart palpitations
- Shortness of breath (dyspnea)

THE SYMPTOMS OF PERICARDIAL MESOTHELIOMA OFTEN MIRROR THOSE OF OTHER CARDIAC ISSUES, SUCH AS:

- Coronary Heart Disease
- Heart Failure
- Myocarditis
- Pericarditis

BECAUSE PERICARDIAL MESOTHELIOMA IS SO RARE, LIFE EXPECTANCY IS DIFFICULT TO ESTIMATE.

STAGING PERICARDIAL MESOTHELIOMA

Since pericardial mesothelioma is still a very rare condition, there is no formal staging system in place. However, oncologists often use the American Joint Committee on Cancer (AJCC) 1–4 staging scale to better estimate the cancer's progression and help the patient.

PERICARDIAL MESOTHELIOMA PROGNOSIS

Less than one percent of mesothelioma patients are diagnosed with pericardial mesothelioma, and the prognosis is generally poor. In most cases, this cancer is discovered while the patient is on the operating table or posthumously, after the patient's death. In patients who do receive a pericardial mesothelioma diagnosis, the prognosis is determined by a variety of factors, including stage, cell type, patient age, and overall health.

TREATING PERICARDIAL MESOTHELIOMA

Treatment options for pleural mesothelioma usually involve a combination of treatments, referred to as a multimodal treatment plan, including:

Surgery
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Chemotherapy
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Radiation
Learn more on page 21

Immunotherapy
Learn more on page 23

STAGES OF MESOTHELIOMA

Like most cancers, there are four stages of mesothelioma. The staging process is used by oncologists to determine how far the cancer has spread throughout the body. Starting at stage 1 with little to no progression, the further the cancer has spread is classified by the number of the stage.

STAGE 1
- Localized to one side of the body
- No spread to lymph nodes or other organs
- No or few symptoms
- Curative treatment options

STAGE 2
- Localized to one side of the body
- No spread to lymph nodes or other organs
- Worsening symptoms
- Palliative treatment options

STAGE 3
- Localized to one side of the body
- Some metastasis to lymph nodes or other organs
- Mild symptoms are easily mistaken for other illnesses
- Curative treatment options

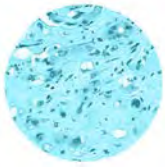
STAGE 4
- Spread to both sides of the body
- Metastasis to lymph nodes and organs in other areas
- Worse symptoms
- Palliative treatment options

MESOTHELIOMA CELL TYPES

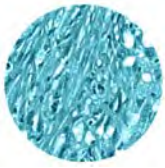
Beyond the primary types of mesothelioma (pleural, peritoneal, and pericardial) and the stage at which the disease is diagnosed, the cell types present in the tumor(s) will also affect a patient's prognosis and treatment plan. There are two types of malignant mesothelioma cells: epithelioid and sarcomatoid. Tumors may also be biphasic, which is a combination of the two. A biphasic diagnosis means at least ten percent of each cell type is present in the tumor.

Epithelioid tumors originate in the cells that line an organ, whereas sarcomatoid tumors start growing in the bone or soft tissues. Sarcomatoid cells tend to metastasize faster than epithelioid cells, making epithelioid cases generally more treatable.

TYPES OF MESOTHELIOMA CELLS



Epithelioid
- 60% of cases
- 18-24 month median survival



Sarcomatoid
- 10-25% of cases
- 4-6 month median survival

Biphasic (mixed)
- 30-40% of cases
- 10-15 month median survival

BENIGN MESOTHELIOMA

In rare cases, mesothelial tumors can be benign. These masses tend to spread slower than malignant mesothelioma tumors. Due to its rarity, doctors and researchers still do not fully understand benign mesothelioma. However, if you are diagnosed with benign mesothelioma, you should still seek treatment to have the tumor(s) removed.

A biopsy is the only definitive way to confirm a mesothelioma diagnosis and will inform your doctor of what cell type you have. It can also prevent misdiagnosis, as the cell type helps doctors rule out other potential malignancies.

PROGNOSIS AND LIFE EXPECTANCY

WHAT IS THE PROGNOSIS FOR MESOTHELIOMA?

Prognosis refers to the anticipated progression of a disease. The prognosis for mesothelioma is generally poor. However, new treatments offer patients hope of extended lifespans and improved quality of life.

Because mesothelioma has a long latency period and symptoms are slow to appear, it is usually not diagnosed until it has reached later stages. Once developed, it is an aggressive cancer that advances quickly. For this reason, patients with mesothelioma typically have a poor prognosis. However, stage, location, cell type, extent of spread, and your overall health will all factor into your prognosis.

WHAT IS THE LIFE EXPECTANCY FOR MESOTHELIOMA?

Life expectancy provides an estimation of the amount of time a patient is likely to live after a diagnosis. It factors in potential treatment options and their success rates, but ultimately relies on the statistics, averages, and historical data for all previously reported cases rather than the circumstances of each individual patient.

Because mesothelioma is extremely rare — accounting for less than one percent of all cancer diagnoses — it can be difficult for doctors to accurately determine a patient's life expectancy. Like prognosis, life expectancy is determined by a number of factors, and each mesothelioma case is different.

While your doctors will do their best to help prepare you and your family for what is to come, it's important to remember that life expectancy is not an exact science. Many patients live well beyond their initial estimations, while others do not. Any conversation about life expectancy should be an open discussion between you and your doctor.

AVERAGE LIFE EXPECTANCY BY STAGE

STAGE 1	STAGE 2	STAGE 3	STAGE 4
21+ months	19 months	16 months	12 months

9 FACTORS THAT AFFECT

PROGNOSIS AND LIFE EXPECTANCY

#1 TYPE AND LOCATION

Where the mesothelioma is located in the body can have a big impact on your prognosis. There are more treatments available for pleural and peritoneal mesothelioma than for pericardial.

#2 HISTOLOGY

Histology refers to the cell type present in your tumor(s). Tumors composed of epithelioid cells are often more treatable than the sarcomatoid type.

#3 STAGE

Oncologists use a process called 'staging' to categorize mesothelioma. There are four stages. In general, progression of the disease, type of mesotheliomas, and the patient's overall health determine the stage. As the disease progresses the stage moves to a higher number. Staging affects the recommended course of treatment.

#4 TREATMENT OPTIONS

Not all patients are candidates to receive curative treatment, and some elect not to pursue it. Typically, when doctors are able to treat mesothelioma with a multimodal plan combining surgery, radiation, chemotherapy, immunotherapy, or emerging drugs available through clinical trials, patients experience increased lifespans and improved quality of life.

#5 GENERAL HEALTH

Your overall health plays a significant role in your prognosis. Healthier patients may be eligible for more impactful, curative treatment options. They will also likely have a stronger immune system, making them more receptive to treatment. It's important to note that smoking should be avoided, as it can worsen the mesothelioma prognosis.

#6 GENETICS

Studies have found a connection between a patient's genetics and the development of mesothelioma. More research is being done to better understand the link and how it could be used to prevent and treat mesothelioma.

#7 AGE

Patients diagnosed at a younger age generally have a better prognosis than those diagnosed later in life. This is mainly because they are able to undergo more intensive treatments, such as surgery and chemotherapy. Younger patients also typically have a shorter recovery time.

#8 RACE

Interestingly, black patients have been shown to have a better prognosis than white patients with mesothelioma. However, because so few cases of the disease are diagnosed each year, more research is needed to confirm this finding.

#9 GENDER

Women tend to have a better prognosis than men. Researchers are unsure of why this is the case, but they believe hormones may be a factor. Research shows it could also be that women are more likely than men to see a doctor as soon as symptoms appear.

IMPROVING YOUR PROGNOSIS

When battling a terminal illness, lifestyle changes, complementary therapies, seeking support, and keeping a positive outlook can improve your prognosis.

CHANGING YOUR DIET

A healthy diet can significantly impact your mesothelioma prognosis by keeping your body nourished during treatment and recovery.

FOODS TO EAT

- Fruits & vegetables
- Whole grains, legumes, & nuts
- Green tea
- Olive oil
- Fatty fish
- Vitamins & supplements

FOODS TO LIMIT

- Red meat
- Processed meat
- Refined sugar and high fructose corn syrup

** Speak with your doctor before modifying your diet or adding any vitamins and supplements.*

EXCERCISE

A number of studies have highlighted the positive impact of exercise on cancer patients. Many of the common symptoms cancer patients experience — decreased energy levels, weakness, and weight loss — can be combated by adding in low-intensity aerobic exercise or low-impact activities like walking, yoga, or cycling.

Exercise has been shown to reduce fatigue, stress, and blood pressure, as well as decrease pain. It keeps your muscles working properly and prevents deterioration due to inactivity. Exercise promotes healthy blood flow, lowering the risk of developing harmful blood clots, especially after surgery. Studies have also validated the benefits exercise has on oxygen intake, sleep patterns, and overall cognition. Beyond these benefits, regular exercise can help boost your self-confidence, making you less dependent on caregivers. It can also help keep anxiety and depression at bay (especially when done outdoors), offering a way to improve your overall quality of life and happiness.

COMPLEMENTARY THERAPIES

Complementary therapies are those used to supplement traditional treatments like surgery, chemotherapy, and radiation. They can help with pain management and alleviate symptoms caused by the disease or treatment. Acupuncture, hypnosis, massage, and ozone therapy can all be used as complementary therapies. Consult with your cancer care team before undergoing any complementary treatments.

NURTURING YOUR MIND

Cancer takes a toll on more than just your physical body. Relaxation techniques, breathing exercises, meditation, visualization and prayer can all help calm your mind and relieve stress. Many also find reading uplifting books and joining support groups to be beneficial.

Scientists like Candace Pert, Ph.D., a prominent neuroscientist who The New York Times called the “Explorer of the Brain,” have legitimized the healing power that hope and positive emotions can have on an ailing body. While a positive attitude is not a cure for cancer, it can certainly improve a patient’s emotional well-being.

ALCOHOL AND CIGARETTES SHOULD BE AVOIDED WHEN UNDERGOING TREATMENT, AS THEY ARE BOTH PROVEN CANCER-CAUSING SUBSTANCES.

TREATING MESOTHELIOMA

HOW IS MESOTHELIOMA TREATED?

There are many treatment options available that can prolong your life expectancy and improve your quality of life. Treatment is largely dependent on the type of mesothelioma you have, the histology (cell type present in the tumors), the stage and extent of spread, as well as your general state of health.

Because of its rarity, you should consider working with a doctor who has experience in treating mesothelioma. Together, you will be able to craft a custom treatment plan. Mesothelioma is often treated with a multimodal plan, which involves a combination of multiple therapies.

Every case of mesothelioma is unique. There isn't one treatment that will work for every individual, so doctors recommend a multimodal treatment plan. Surgery, chemotherapy, radiation, immunotherapy, and clinical trials may all factor into a multimodal treatment plan. Palliative care may also be an option for pain and symptom relief.

PHASES OF TREATMENT

Treatment is usually broken into three parts — neoadjuvant (before the main treatment), primary (the main treatment), and adjuvant (after the main treatment) therapies.

NEOADJUVANT THERAPY

Your doctor may start with neoadjuvant therapies such as radiation or chemotherapy to help boost the effectiveness of your primary treatment.

PRIMARY THERAPY

For patients who are healthy enough, surgery is often your primary therapy. Primary therapy, also known as first-line therapy, is whatever you and your doctor choose as your main treatment.

ADJUVANT THERAPY

This treatment occurs after your primary therapy. It is used to improve the results of your primary treatment as well as prevent the growth of new cancer cells and relieve pain or discomfort.

SURGERY

Surgery is a common form of treatment for mesothelioma. It can be used as a diagnostic tool or as a potentially curative or palliative treatment option. Surgery is often part of a multimodal treatment plan, meaning it is combined with other therapies like chemotherapy or radiation.

You and your doctor will be able to decide together if surgery is right for you. Surgery is largely dependent on factors like the type of mesothelioma you have, the cell type present in the tumors, the extent of spread, and your overall health.

SURGERY FOR PLEURAL MESOTHELIOMA

The most common procedures for treating pleural mesothelioma are extrapleural pneumonectomy (EPP) and pleurectomy with decortication (P/D). EPP involves the complete removal of the affected lung, whereas P/D only removes the lining of the affected lung. Surgeons sometimes specialize in one of the two procedures.

EXTRAPLEURAL PNEUMONECTOMY (EPP)

Extrapleural pneumonectomy was the first potentially curative surgical treatment option for mesothelioma. EPP is the most radical surgical procedure available to patients with pleural mesothelioma. Typically it is only available to patients with resectable (removable) epithelioid mesothelioma that has not spread to the lymphatic system.

During this procedure, the surgeon removes the cancerous lung, as well as the pleural lining and diaphragm on the affected side of the body, part of the pericardium (lining of the heart sac), and the nearby lymph nodes. The doctor then replaces the removed diaphragm and heart sac with synthetic replicas.

PLEURECTOMY WITH DECORTICATION (P/D)

This procedure involves a smaller resection than EPP but is still a major operation. During P/D, doctors remove the pleural lining in the chest cavity, as well as the pleura coating and part of the diaphragm. The lung itself is not removed. This surgery may also be used as a palliative therapy to drain fluid buildup and relieve breathing difficulties.

SURGERY FOR PERITONEAL MESOTHELIOMA

The most common therapeutic plan for treating peritoneal mesothelioma is a multimodal plan that combines cytoreductive surgery and a heated chemotherapy wash. Doctors remove as much of the cancer as possible during the surgery and follow it with an intraoperative chemotherapy wash to prevent the growth of new cancer cells. By applying the chemotherapy directly to the affected area, doctors can administer a higher, better-targeted dosage. For eligible patients, this plan has proven successful in extending life spans and improving quality of life.

SURGERY FOR PERICARDIAL MESOTHELIOMA

Patients who receive a formal diagnosis of pericardial mesothelioma may have some treatment options to explore. Pericardiectomy is a commonly used procedure in which a portion of the heart lining is removed. It is often followed by a course of chemotherapy, usually with a drug called cisplatin.

WHILE THE PROGNOSIS FOR MESOTHELIOMA HAS BEEN HISTORICALLY POOR, ADVANCEMENTS IN TREATMENT OPTIONS OFFER PATIENTS NEWFOUND HOPE FOR LONGER SURVIVAL AND A BETTER QUALITY OF LIFE.

CHEMOTHERAPY

Chemotherapy relies on a combination of drugs to kill cancer cells and prevent them from growing and spreading throughout the body. After a mesothelioma diagnosis, chemotherapy is part of the standard treatment plan for patients, also called 'first-line therapy.'

Oncologists prescribe a combination of drugs for each individual case. The goal: to find an effective dose that kills cancer cells and prevents new ones from developing, while balancing the potentially serious side effects.

In 2004, after reviewing the results of several studies, the Food and Drug Administration approved the combination of ALIMTA® (pemetrexed) and cisplatin for the treatment of mesothelioma. Patients who received this combination of drugs lived several months longer than those who received cisplatin alone. This treatment is administered intravenously, and the dose and number of treatments will vary depending on the patient's needs. Pemetrexed may also be combined with carboplatin, while cisplatin complements gemcitabine. You will work directly with your oncologist to determine what drugs are right for you.

DRUGS USED TO TREAT MESOTHELIOMA

- Pemetrexed (ALIMTA®)
- Cisplatin (Platinol®)
- Carboplatin
- Gemcitabine
- Methotrexate
- Vinorelbine (Navelbine®)
- Mitomycin
- Doxorubicin
- Bevacizumab (Avastin®)

Oncologists may use combinations of these medications or administer single doses for patients who have trouble tolerating more than one drug.

ADMINISTERING CHEMOTHERAPY

The human body is made up of billions of cells. Cancer cells divide and replicate much faster than normal cells, creating growths or tumors. Chemotherapy drugs are used to dramatically slow or stop cancer cells from dividing. Some types of chemotherapy destroy individual cells, while others disrupt the cell-dividing process. Chemotherapy drugs may be administered as a standalone treatment but are generally used as part of a multimodal treatment program, combined with radiation and, if necessary, surgery. Chemotherapy treatments can be administered in two ways: systemically (throughout the entire body) or intraoperatively (during surgery).

- ### SYSTEMICALLY
  Patients either receive chemotherapy intravenously or in pill form. This allows the drugs to enter the bloodstream and kill cancer cells throughout the body. Systemic treatment causes the most side effects because it also damages healthy cells.

- ### INTRAOPERATIVE
  After removing any visible tumors, a surgeon delivers chemotherapy drugs directly to the affected part of the body. In some cases, this method helps negate some of the side effect patients experience. Intrapleural chemotherapy and heated intraperitoneal chemotherapy — also called HIPEC — are the two most common examples of intraoperative chemotherapy.

HIPEC PROCEDURE

Hyperthermic intraperitoneal chemotherapy is a targeted treatment for peritoneal mesothelioma. Patients receive a dose of heated chemotherapy drugs directly into the abdomen to destroy any microscopic cancer cells that may remain after surgery. This procedure, often called "hot chemotherapy," is used after a surgeon has removed all visible lesions and tumors.

Compared to traditional chemotherapy, HIPEC has several benefits: it's a single course of treatment instead of one that lasts several weeks; it allows for a more concentrated dose of chemotherapy; and because the drugs remain within the abdominal walls, patients report fewer overall side effects.

CHEMOTHERAPY TREATMENTS: HOW TO PREPARE

Your oncologist will determine the length of treatment and type of chemotherapy drugs based on your diagnosis. When it comes to treating mesothelioma, each patient has a different path and faces different challenges, but preparing for treatment can reduce stress and help improve recovery time. Here are some general guidelines to ensure the body and mind are ready.

- ### SCHEDULE SCREENINGS
  Your doctor will run a series of tests before treatment, assessing heart, lung, and kidney function to ensure that you are healthy enough to begin chemotherapy. These screenings also help determine the type and appropriate dosage of drugs.

- ### SEE THE DENTIST
  A dental exam will ensure your teeth and gums are healthy and don't have any signs of infection. Chemotherapy drugs are used to kill cancer cells, but they can also damage healthy cells in the mouth. Side effects include a swollen or blistered tongue, pain in the gums, and decreased saliva. These symptoms can worsen if there is a preexisting oral infection. A dentist will not only examine and clean your teeth, but he or she can also provide tips to keep your mouth healthy during treatment.

- ### REST AND RELAX
  Arrive at the doctor's office as rested and relaxed as possible. While the idea of chemotherapy is stressful for many patients, consider it a positive part of the healing process.

- ### ASK FOR HELP
  Certain side effects, like nausea and vomiting, may mean patients will have to stay close to home or in bed during recovery. It can be helpful to have a few family members or close friends around to run errands and assist with basic household chores. There are also companies that offer services such as dog walking and grocery and meal delivery for a fee.

RADIATION

Radiation therapy utilizes doses of high-particle energy to eradicate cancer cells within a targeted area and prevent them from spreading throughout the body. It can be used alone or as part of a multimodal treatment program in combination with chemotherapy or surgery.

Radiation has been shown to shrink tumors, relieving associated pressure and pain. Oncologists administer targeted therapy, only exposing specific areas of the body to minimize damage to healthy cells. As a result, patients report fewer side effects.

3 WAYS RADIATION THERAPY CAN BENEFIT MESOTHELIOMA PATIENTS

#1 IMPROVING OVERALL SURVIVAL

A 2018 meta-analysis published in the International Journal of Radiation Oncology compiled nine years of studies from the National Cancer Database on patients with malignant pleural mesothelioma. The results: patients who underwent adjuvant radiation therapy — or radiation after surgery — survived longer than those who had surgery alone.

#2 SEEDING PREVENTION

Some studies indicate that it is possible for microscopic cancer cells to metastasize (or spread) to other areas of the body during surgery. This is called “seeding.” To combat this, oncologists may deliver radiation therapy to prevent new tumor growth.

#3 EASING DISCOMFORT

As the cancer progresses, tumors grow larger and press against internal organs, leading to pain, discomfort, and breathing difficulties. Radiation therapy is often used to shrink those tumors, especially for patients who can’t undergo surgery to remove them.

EXTERNAL BEAM RADIATION THERAPY

External beam radiation therapy (EBRT) is the most common form of radiation for mesothelioma. It involves using an external machine to direct high-energy radiation beams into specific areas of the body. The procedure is non-invasive and normally done on an outpatient basis. Typically, patients will receive radiation five times a week over several weeks. Appointments last between 10 to 30 minutes. Patients may notice relief from certain symptoms after just one or two visits.

Studies have shown radiation therapy can benefit mesothelioma patients by shrinking tumors and destroying microscopic cancer cells left behind after surgery. According to a 2009 study, patients who received a combination of surgery and radiation lived six months to a year longer than those who only underwent surgery.

WHAT TO EXPECT

Shortly before your first appointment, you'll meet with your oncologist and a radiation therapist. Together, they'll design a treatment plan that works specifically for you. This process may be referred to as "radiation simulation" and involves taking images and making small marks around the treatment area to ensure your body is in the ideal position.

Radiation therapy is not invasive, and the process is similar to having an X-ray. Patients lie down on a table in the exact same position each time to ensure the radiation reaches the correct area of the body. In some cases, a radiation therapist will use an immobilization device — like a head or neck cradle — to prevent excess movement.

Once your body is correctly placed, the therapist will move into a control room where he or she can administer the radiation and watch the treatment from a television monitor. You may hear the machine click or make soft whirring sounds as it moves around the table. There is a microphone in the treatment room, so you may ask questions or talk at any time.

The radiation therapist will work with your oncologist to monitor your treatments. This monitoring will help the medical team see how your body is responding to the treatment and determine if any changes need to be made during therapy. For example, if any tumors shrink significantly, your therapist may decide to adjust the treatment area, making it smaller to avoid damaging nearby healthy cells.

RADIATION SIDE EFFECTS

As with any treatment, patients may experience both short-term and long-term side effects from radiation therapy. These vary depending on the type of mesothelioma the patient is fighting, the size of the area that is exposed, and the length of treatment. Radiation isn't painful, but side effects can worsen over time. It's important to keep track of any symptoms you are experiencing and talk to your doctor if you're feeling uncomfortable. There are medications that can provide relief both during and after treatment.

COMMON RADIATION SIDE EFFECTS INCLUDE

- ### HAIR LOSS
  Hair follicles are sensitive and don't respond well to radiation therapy. Two to three weeks after treatment, patients may experience temporary or even permanent hair loss in and around the targeted treatment areas.

- ### SKIN IRRITATION
  Red, irritated skin is a common symptom for more than 80 percent of patients receiving radiation. This type of high-particle energy often causes the skin to peel away faster than it grows, leading to blisters and, in severe cases, ulcers. Radiation-induced dermatitis usually heals within two to four weeks after therapy. Talk to your doctor if your reaction is severe.

- ### FATIGUE
  Radiation therapy destroys both healthy and cancerous cells, which can stress your immune system and cause mild to extreme exhaustion. This tiredness often increases as treatment progresses, so it's important to get plenty of rest during therapy.

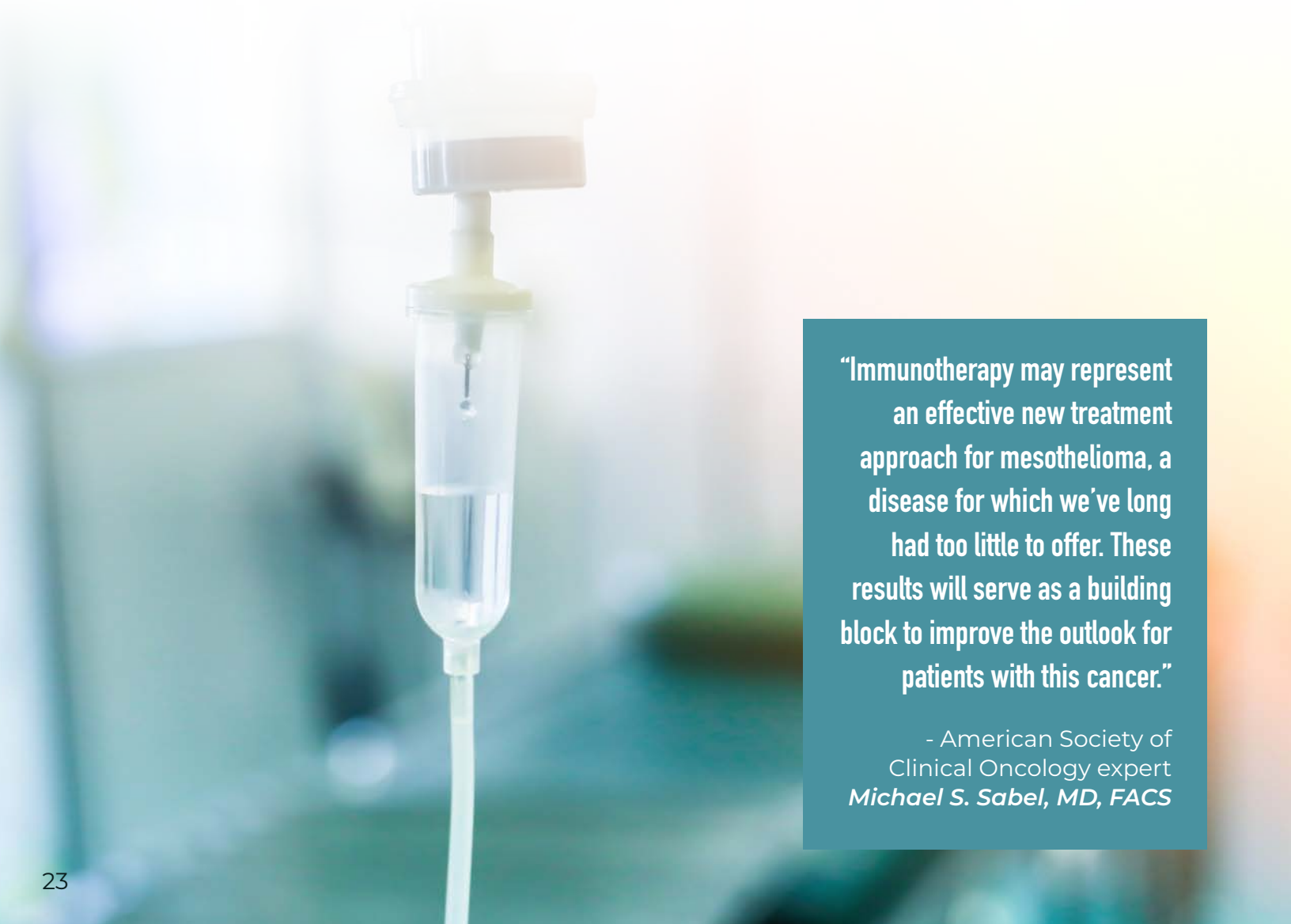
IMMUNOTHERAPY

Immunotherapy, a treatment that emerged in 2010, helps patients fight off the spread or recurrence of mesothelioma by boosting their own immune systems. This form of treatment works by artificially activating or suppressing the immune system, creating an altered immune response to fight cancerous cells in the body.

Because immunotherapy enhances the immune system instead of attacking cancer cells, it has fewer side effects than many traditional treatments, such as chemotherapy. While mainly available in clinical trials, immunotherapy, when combined with standard treatments such as surgery and chemotherapy, has proven to be effective for alleviating symptoms and improving survival rates.

BENEFITS OF IMMUNOTHERAPY FOR MESOTHELIOMA

Immunotherapy is a growing field in cancer research and is regarded by some as the future of cancer treatment. Immunotherapy helps to limit the growth and spread of cancer cells, all while boosting the body's own defenses. The side effects are usually less severe than traditional cancer treatments, and it is one of the only targeted treatments, unlike chemotherapy, which attacks both good and bad cells in the body. While more research is needed before immunotherapy becomes a standard treatment option, it has the potential to usher in a new era of cancer care.



"Immunotherapy may represent an effective new treatment approach for mesothelioma, a disease for which we've long had too little to offer. These results will serve as a building block to improve the outlook for patients with this cancer."

- American Society of Clinical Oncology expert ***Michael S. Sabel, MD, FACS***

CLINICAL TRIALS

In addition to the standard treatment plan for mesothelioma, researchers are constantly exploring new ways of extending and improving the lives of patients. Before these new diagnostic and treatment options can be offered to the public, they must undergo clinical trials. Clinical trials are experimental studies conducted with groups of patient volunteers. The goal of these studies is to determine if the new procedure or treatment is safe and effective for humans, before it is approved by the FDA and becomes available to the public.

Clinical trials are conducted in a variety of settings, including hospitals, doctors' offices, community clinics, and even universities. The location depends on who is conducting the study. Every clinical trial is led by a principal investigator (often a medical doctor). They usually also include a team of additional doctors, nurses, and other healthcare professionals.

CLINICAL TRIALS FOR MESOTHELIOMA PATIENTS

There are usually dozens of current and upcoming clinical trials available to mesothelioma patients across the United States.

- Visit ***ClinicalTrials.gov*** to find the most up-to-date list of mesothelioma clinical trials and speak with your doctor to find out whether any of them may be the right course of treatment for you.
- It's important to note that not every mesothelioma patient may be eligible to participate in a particular clinical trial. Each study has its own standards determining who can participate.

QUESTIONS TO ASK BEFORE CONSENTING TO A CLINICAL TRIAL

You should always feel free to ask questions before, during, and after the clinical trial. Here is a list of questions that you may want to ask before deciding to participate in a clinical trial for mesothelioma:

- What are the possible treatments that I might receive during the trial?
- Has the treatment been tested before?
- Why do researchers believe the treatment being tested might be effective?
- How will it be determined which treatments I receive?
- Who will know which treatment I receive during the trial?
- What will I have to do?
- How long will the clinical trial last?
- What tests and procedures are involved?
- How do the possible risks, side effects, and benefits of this trial compare with those of my current treatment?
- How often will I have to visit the hospital or clinic?
- Who will pay for my participation?
- Will I be reimbursed for other expenses, such as travel and accommodations?
- If I benefit from the treatment, will I be allowed to continue receiving it after the trial ends?
- Who will oversee my medical care while I am participating in the trial?
- What type of long-term follow-up care is part of this trial?
- Will the results of the study be provided to me?

ARE CLINICAL TRIALS SAFE?

Clinical trials do involve a certain amount of risk. These are, after all, the first tests of new drugs or therapies on human subjects. However, all federally funded or conducted clinical trials are reviewed, approved, and monitored by an institutional review board. These boards are made up of doctors, researchers, and members of the medical community. Their role is to ensure that the clinical trial is conducted in an ethical manner and that the rights and well-being of participants are protected. This includes making sure that the risk to participants is minimized.

If you decide you'd like to participate in a clinical trial, the lead researcher will explain the details about the trial and have you complete a form indicating your desire to join the trial. This is called informed consent, and it is intended to protect participants. The researcher should provide enough information for you to understand the risks of, potential benefits of, and alternatives to the clinical trial. However, signing an informed consent document is not a contract. Clinical trial participants may withdraw at any time, even if the trial is not over.

WHAT IF I'M NOT ELIGIBLE FOR A CLINICAL TRIALS?

Although drugs that are not yet approved by the FDA are usually only available to clinical trial participants, there are some exceptions. Compassionate drug use is the use of new, unapproved drugs to treat seriously ill patients when no other treatments are available. These patients may live too far from available clinical trial locations, or they may not be eligible for some reason, such as gender, age, stage, etc. Talk with your mesothelioma specialist about whether compassionate use might be an option for you.

Clinical trials can be extremely beneficial, especially for mesothelioma patients who haven't responded favorably to conventional treatments. They can also lead to major breakthroughs in diagnostic procedures and treatment options for mesothelioma patients in the future.

WHAT'S THE DIFFERENCE BETWEEN CURATIVE AND PALLIATIVE CARE?

Curative treatment aims to remove as much of the cancer as possible and extend the patient's life expectancy. Palliative care focuses on providing pain and symptom relief.

PALLIATIVE CARE

In patients with advanced mesothelioma or elderly patients whose bodies are not strong enough to undergo invasive, potentially curative treatments, palliative care is often the only available option. This type of treatment is designed to relieve pain caused by the disease and its accompanying symptoms. Palliative care can also be combined with curative treatment to provide relief from both the symptoms of mesothelioma and the side effects of treatment.

The symptoms of mesothelioma can range from uncomfortable, to painful, to life-threatening. However, there are things you and your doctors can do to relieve pain and mitigate these symptoms. Some of these options include surgical procedures, chemotherapy, radiation, steroids, pain medicine, and complementary therapies.

PALLIATIVE PROCEDURES

- Thoracentesis
- Pleurodesis surgery
- Paracentesis
- Shunts
- Pericardiocentesis
- Chemotherapy
- Radiation
- Steroids
- Acupuncture

PALLIATIVE CARE OPTIONS

SURGERY

Surgery can be used curatively or palliatively. When possible, surgery is performed in an effort to remove the cancer in its entirety. Unfortunately, by stage 3 or 4, eradication becomes nearly impossible due to extensive spreading. However, surgical procedures may still be performed as part of palliative care.

One of the most painful symptoms of mesothelioma is the pressure caused by the buildup of fluid around the affected organs. Your doctor may perform surgical procedures to relieve the pressure around the lungs, heart, and abdomen.

CHEMOTHERAPY

Oncologists often use a combination of chemotherapy drugs to treat mesothelioma. Chemotherapy can be used as a stand alone treatment or in conjunction with other forms of curative and palliative care. Though chemotherapy may be used as a curative treatment, it can also keep the tumor from growing and causing additional pain in patients with advanced mesothelioma.

RADIATION

Radiation, sometimes called radiotherapy, is often used as a palliative form of care for patients who are in poor health and cannot undergo more intrusive treatments. It can also be used as a curative form of care, to shrink tumors and alleviate pain caused by pressure in the chest or abdominal cavities. Radiation is administered in two ways: externally or internally. These are known as external beam radiation therapy (EBRT) and brachytherapy.

STEROIDS

Many mesothelioma patients experience fatigue, weakness, loss of appetite, and weight loss, both as symptoms of the disease itself and as side effects of treatment. Steroids can help increase energy and appetite, helping patients maintain active lives before, during, and after treatment. Steroids can also be effective to reduce inflammation, especially after surgery.

PAIN MEDICINE

Your doctor may recommend over-the-counter pain medicine, such as acetaminophen or ibuprofen, for mild symptom relief. They may prescribe stronger pain relievers, such as morphine, hydrocodone, or oxycodone, to address worsening symptoms or the effects of treatment. Nerve blocks may also be used to target pain in specific areas of the body.

COMPLEMENTARY THERAPIES

Complementary therapies such as acupuncture, massage, and hypnosis can help with pain and symptom management. Practices like yoga, meditation, and prayer can ease mental strain and emotional tension. Many mesothelioma patients (as well as friends and family members) also find it helpful to seek counseling or join a support group. You can find a list of mesothelioma patient resources on pages 31-32.

MY CANCER CARE TEAM – WHO'S WHO?

When facing a cancer diagnosis, you will interact with a number of different doctors, in addition to nurse practitioners, physician assistants, nurses, medical assistants, and more. We've created a cheat sheet to help you keep them all straight.

Anesthesiologist
Anesthesiologists administer anesthesia (drugs that allow patients to sleep or not feel pain during surgical and medical procedures). This type of doctor helps ensure the safety of patients undergoing surgery.

Cardiologist
Cardiologists specialize in treating heart-related issues. Patients with pericardial mesothelioma or those with prior or existing heart conditions may be referred to see a cardiologist for further treatment.

Dietitian
Dietitians are experts in human nutrition and diet. They are regulated healthcare professionals licensed to assess and treat nutritional issues, especially in patients battling medical conditions such as cancer. Be sure to see a dietitian or certified nutritionist. Non-certified nutritionists are not required to receive any formal training and may not provide patients with accurate dietary information.

Gastroenterologist
Gastroenterologists specialize in the treatment of diseases of the stomach and liver. Patients with peritoneal mesothelioma may be sent to a gastroenterologist for further treatment.

General Practitioner
General practitioners, also called primary care physicians, treat patients of all ages and with varying health conditions. They are often seen for annual check-ups and preventive medicine and will provide referrals to patients in need of a specialist.

General Surgeon
General surgery is, in fact, a surgical specialty. General surgeons are trained to perform surgery for a number of common conditions and are responsible for patient care before, during, and after surgery.

Histopathologist
Histopathologists, sometimes simply called pathologists, specialize in the study of diseased cells. Their primary role is to analyze biopsies and identify the type of mesothelioma cells present in tumor(s). Pathologists work with a cancer care team, but patients are unlikely to meet with them directly.

Medical Oncologist
Medical oncologists are doctors who specialize in treating cancer with medicines such as chemotherapy. Patients work with an oncologist to determine their course of treatment.

Mental Health Professionals
Psychiatrists, psychologists, therapists, and counselors may also be part of a patient's cancer care team. These healthcare professionals specialize in treating the emotional well-being of patients and their families.

Nurse Practitioner
Nurse practitioners (NPs) are advanced practice registered nurses. They are able to assess patient needs and help craft treatment plans.

Palliative Care Specialist
Palliative care specialists are doctors and nurses who help with patient pain management. They can also help patients and their families make important medical decisions and connect them with support resources.

Physician Assistant
Physician assistants (PAs) are healthcare professionals practicing medicine under a supervising physician. They are licensed to diagnose and treat patients.

Primary Care Physician
A primary care physician is a doctor who specializes in family or internal medicine. They are often a patient's first point of contact when medical issues arise. As stated above, these can also be called general practitioners.

Pulmonologist
Pulmonologists specialize in treating lung and respiratory diseases. This type of doctor is often the first to diagnose pleural mesothelioma and can help pleural mesothelioma patients establish a pulmonary rehabilitation regimen of exercise, diet, and breathing techniques.

Radiation Oncologist
Radiation oncologists specialize in treating cancer with radiation therapy. If radiation is part of the treatment plan, the patient will work with a radiation oncologist to prepare, receive, and recover from radiation therapy.

Radiologist
Radiologists oversee the imaging tests used to diagnose mesothelioma, such as X-rays, CT scans, MRIs, and PET scans. These tests are also used to help monitor the progress of treatment to see if the tumors are getting larger or smaller.

Rehabilitation Therapists
These are occupational and physical therapists who help you regain strength and skills after treatment or surgery. Respiratory therapists assist with breathing problems.

Surgical Oncologist
Surgical oncologists are doctors who treat cancer with surgery, specifically through surgical tumor resections (removals). If a patient and their doctor decide to pursue surgery as a course of treatment, the surgical oncologist is responsible for performing the surgery.

Thoracic Surgeon
Thoracic surgeons are specialized surgeons who treat the organs of the chest, such as the lungs and heart. Thoracic surgeons who further specialize in treating the heart are also referred to as cardiothoracic surgeons. Patients with pleural mesothelioma typically receive diagnostic tests and treatment from thoracic surgeons.

PATIENT RESOURCES AND SUPPORT

When you receive a cancer diagnosis, you're likely to feel overwhelmed and afraid — both completely valid emotions. Support groups are a great way to connect with people who are also going through what you are experiencing and can offer emotional support and advice. You can connect with mesothelioma support groups in person, online, or even over the phone.

Studies show that support group participants feel less hopeless and more empowered to manage their diagnosis. Talking to people who understand what you're going through can help eliminate the isolation you may be feeling as well as boost your overall outlook.

BENEFITS OF JOINING A SUPPORT GROUP

- Support groups provide a safe space to share fears and frustrations you may not feel comfortable confiding in friends or loved ones.
- Because mesothelioma is so rare, hearing personal stories can help you feel less alone and make your diagnosis feel more manageable.
- Meeting other people who have already been through a mesothelioma diagnosis gives you the opportunity to learn from their experiences and share coping mechanisms.
- Interacting with other patients and families can make you feel more educated and empowered.
- Participating in a support group can reduce stress and feelings of depression, anxiety, and helplessness.
- Support groups can be a forum to learn about new treatments or clinical trials as well as gain insight into what you can expect if you're undertaking similar treatments.

FINDING MESOTHELIOMA SUPPORT GROUPS

There are many organizations and nonprofits that offer support groups. Your cancer care team can serve as an additional resource to help you find the right support group to fit your needs. You may want to share, or maybe you just want to listen. Whatever your needs, a few great resources are listed below.

American Cancer Society

- 800-227-2345
- cancer.org

Cancer Care

- 800-813-4673
- cancercare.org

Cancer Hope Network

- 877-467-3638
- cancerhopenetwork.org

Cancer Support Community

- 888-793-9355
- cancersupportcommunity.org

Mesothelioma Applied Research Foundation

- 877-363-6376
- curemeso.org

A CANCER DIAGNOSIS CAN FEEL ISOLATING, BUT YOU DON'T HAVE TO FACE IT ALONE.

VETERANS

Each year, an estimated 3,300 people are diagnosed with malignant mesothelioma. Of those patients, nearly a third are veterans who were exposed to high levels of toxic dust containing asbestos fibers while serving on military bases, ships, or working in shipyards.

Asbestos is durable, light, and fire resistant. These characteristics made it seem like perfect material to use on U.S. military bases. From the 1930s until the late 1970s, asbestos was used for a number of military purposes. As a result, service members were exposed to varying levels of toxic asbestos dust and fibers for more than four decades.

VETERANS MAKE UP ABOUT 30% OF MESOTHELIOMA DIAGNOSES.

At first, asbestos was used with the best of intentions: to protect the men and women serving our country. However, asbestos wasn't restricted until the mid to late 1970s — long after scientists and researchers discovered the material was toxic to humans.

ASBESTOS EXPOSURE BY MILITARY BRANCH

NAVY AND COAST GUARD

Within the five military branches, Navy and Coast Guard veterans faced the highest levels of exposure and have the highest risk of developing mesothelioma. Poor ventilation systems on ships and submarines often meant larger concentrations of airborne asbestos below deck and in sleeping quarters. Vessels were covered in asbestos-containing materials, like insulation and paint.

HIGH-RISK OCCUPATIONS

- Boatswain's Mate
- Damage Controlman
- Electrician's Mate
- Fire Control Technician
- Gunner's Mate
- Hull Maintenance Technician
- Machinist's Mate
- Machinery Repairman
- Marine Inspectors
- Metalsmith
- Pipefitter
- Radioman
- Seabee
- Water Tender
- Welder

ARMY

For a time, the majority of buildings and military vehicles on U.S. Army bases contained asbestos. The material was used as insulation and was incorporated into cement flooring, roof tiles, and plumbing. The military closed many of these buildings in the 1990s. However, the structures that remained open underwent repairs — exposing a new generation of service members to toxic fibers and dust.

HIGH-RISK OCCUPATIONS

- Aircraft Mechanic
- Artilleryman
- Infantryman
- Vehicle Mechanic

MARINE CORPS

Marines were most likely exposed to asbestos while working on Navy ships and in military shipyards. Sailors and Marines worked in close quarters above and below deck, surrounded by asbestos-containing products.

HIGH-RISK OCCUPATIONS

- Mechanics
- Marines Working on Navy Ships

AIR FORCE

During the First and Second World Wars, the Air Force was a part of the U.S. Army. The organization expanded rapidly during World War II and was named as a separate military branch in 1947 — a time when asbestos use on bases, military vehicles, and aircraft was widespread. Airmen, especially mechanics, were repeatedly exposed to high levels of the toxic mineral, putting them at risk for future asbestos-related illnesses.

HIGH-RISK OCCUPATIONS

- Aircraft Mechanic
- Artilleryman
- Infantryman
- Vehicle Mechanic

These claims can be somewhat complicated — one small mistake can lead to a denial of coverage. This is where a VA claims attorney can help. Call 833-997-1947 to connect with a qualified mesothelioma attorney.

FILING A CLAIM WITH THE DEPARTMENT OF VETERANS AFFAIRS

All service members who were honorably discharged from the U.S. military are eligible for VA benefits, which include monthly disability payments, medical expenses, and survivor benefits (referred to as dependency or indemnity compensation) for family members. Veterans who developed mesothelioma or a related illness as a result of asbestos exposure can apply for compensation directly through the VA, which will determine individual eligibility.

IN ORDER TO START THE VA CLAIMS PROCESS, A VETERAN MUST HAVE THREE THINGS:

- A current diagnosis of an asbestos-related illness recognized by the VA
- Proof the service member worked with or was exposed to asbestos during the time they served
- A 'NEXUS letter' from a doctor to prove the current disease diagnosis is a result of asbestos exposure

3 WAYS TO FILE A VA CLAIM

#1

Apply online at **ebenefits.va.gov**.

#2

Contact a qualified attorney, Veterans Service Organization, or claims agent for help. Find one at **va.gov/ogc/apps/accreditation**

#3

Visit a VA regional benefit office. Find one near you at **benefits.va.gov/benefits/offices.asp**

FREQUENTLY ASKED QUESTIONS

WHAT IS MESOTHELIOMA? WHAT CAUSES IT?

Mesothelioma is a cancer that affects the body's mesothelium (the thin tissue lining the chest and abdominal cavities). Mesothelioma is most commonly caused by exposure to asbestos, a carcinogenic mineral historically used in commercial and household applications like insulation and automobile parts.

Asbestos poses little health threat to humans unless it is disturbed. When this happens, the tiny fibers become airborne and can be swallowed or inhaled. Similar to a splinter, these fibers weave into your body's mesothelium with no way of being expelled. Over time, this can cause scarring, impaired lung function, or the eventual development of malignant mesothelioma.

WHAT OCCUPATIONS ARE AT HIGH RISK OF DEVELOPING MESOTHELIOMA?

About half of all occupational cancer deaths are a result of asbestos exposure. The disease typically affects blue-collar workers who were exposed to asbestos earlier in their lives and don't learn until many years later that they have mesothelioma. Firefighters, construction workers, mechanics, and veterans are more likely to be exposed to asbestos. For this reason, they have a higher risk of developing cancers like mesothelioma.

HOW COMMON IS MESOTHELIOMA?

Only 3,300 cases of mesothelioma are diagnosed in the United States each year, making it a rare form of cancer. The National Cancer Institute defines a cancer as "rare" when there are fewer than 15 diagnosed cases per 100,000 people per year.

WHAT IS A VA CLAIM? HOW IS IT FILED?

VA claims can be filed in three different ways:

- Online through eBenefits
- At a VA regional benefit office
- With the help of a qualified attorney, Veterans Service Organization, or claims agent

The process of making a claim can be complicated and one mistake can lead to a denial of coverage. For this reason, we recommend working with an experienced VA claims attorney. Most veterans also qualify for additional compensation from asbestos trust funds, personal injury cases, and wrongful death lawsuits. These are considered very strong cases with potentially large settlements against asbestos manufacturers.

WHAT IS A LATENCY PERIOD

Latency period refers to the time between initial exposure to a toxic substance and the onset of symptoms. Mesothelioma is known for having a very long latency period, ranging from 20 to 50 years. This is the main reason mesothelioma tends to affect older people. While they may have been exposed to asbestos in their early life, the disease can take decades to develop or show any sign of symptoms.

HOW IS MESOTHELIOMA TREATED?

Approximately 30 percent of all mesothelioma victims are veterans. This is primarily due to the rampant asbestos usage during World War II. Young soldiers, especially those serving in the Navy and working in shipyards, were negligently exposed to the carcinogenic mineral. Many years later, they may discover they have an asbestos-caused disease stemming from their exposure during their time in the service. In this case, veterans are usually entitled to financial compensation. Mesothelioma Hub is here to provide the support and resources veterans need to provide the support and resources veterans need.

HOW IS MESOTHELIOMA DIAGNOSED?

Mesothelioma is extremely rare and its symptoms can often be mistaken for less severe conditions. For these reasons, doctors sometimes struggle to accurately diagnose mesothelioma in a timely manner. The only definitive way to diagnose mesothelioma is through a biopsy.

However, doctors also rely on imaging tests and blood tests to identify the presence of mesothelioma. It's beneficial to partner with an experienced mesothelioma doctor to avoid misdiagnosis and ensure you receive optimal treatment.

WHAT IS SECOND-HAND EXPOSURE?

Asbestos fibers can be transported away from the initial site of exposure on clothing, skin, and even hair, which can result in second-hand exposure (also referred to as indirect exposure). Family members are especially at risk, as the transferred asbestos fibers often end up in the home, where they can be inhaled or ingested.

IF I HAVE A KNOWN HISTORY OF POTENTIAL ASBESTOS EXPOSURE, CAN I GET TESTED FOR MESOTHELIOMA EARLY?

Although most people who come into contact with asbestos do not develop mesothelioma, for those who do, early detection can have a notable impact on their prognosis. This is because the cancer has not spread yet and there are more treatment options available.

If you think you may have been exposed to asbestos, inform your doctor right away. While mesothelioma can take decades to develop, it is wise to put the disease on your doctor's radar, as it can be difficult to initially recognize and diagnose.

THE MAJORITY OF MESOTHELIOMA PATIENTS ARE MEN. HOW MANY WOMEN ARE DIAGNOSED AND HOW ARE THEY EXPOSED?

About 25 percent of mesothelioma patients are women. However, that number is expected to rise as more women who entered into roles with higher risks of exposure (manufacturing, the military, and firefighters) are reaching the end of their latency period. Women have historically also been at a higher risk for second-hand exposure to asbestos.

DOES GENDER AFFECT MESOTHELIOMA TREATMENT?

Treatment is usually the same regardless of sex. However, due to hormonal differences the outcomes are often better in women, as natural estrogen receptors may be influential in the fight against mesothelioma.

HOW IS MESOTHELIOMA TREATED?

Mesothelioma is typically treated with a multimodal plan combining surgery, chemotherapy, and radiation. Emerging treatments, such as immunotherapy, are also being used in conjunction with traditional treatments to improve patient survival times and overall quality of life.

HOW LONG DO PEOPLE USUALLY LIVE WITH MESOTHELIOMA?

The life expectancy for patients diagnosed with mesothelioma can range from months to years. This is dependent on a number of factors, including the type of mesothelioma (pleural, peritoneal, pericardial), the cell type (epithelioid, sarcomatoid, biphasic), stage (1–4), etc. Emerging treatments offer patients hope of longer survival times and improved quality of life while living with the disease.

WHEN WAS ASBESTOS BANNED?

Many people think that the use of asbestos has been banned. However, the truth is asbestos usage is still legal in some cases in the United States. The Environmental Protection Agency (EPA) and other government agencies are still working to get the material banned entirely. Visit **MesotheliomaHub.com/legal-help/ban-asbestos**

HOW DO I FILE A LEGAL CLAIM?

There are two kinds of asbestos lawsuits: personal injury and wrongful death. Personal injury lawsuits are filed while the claimant is still alive. Wrongful death lawsuits are filed by the family after a victim has passed away. Call the number below to connect with an experienced asbestos lawyer who can help get you and your family the compensation you deserve.

WILL A LAWSUIT AGAINST AN ASBESTOS COMPANY OR OTHER RELATED CLAIM AFFECT MY VA BENEFITS?

No. The VA does not consider any additional compensation you may receive from a lawsuit or bankruptcy trust fund when assessing your eligibility for VA benefits.

HOW LONG DO PEOPLE USUALLY LIVE WITH MESOTHELIOMA?

Clinical trials provide researchers with the opportunity to test and observe potential new treatment options on consenting participants. While there is a certain level of risk when participating in clinical trials since the drugs in question are not yet FDA-approved, when successful, patients have found improved prognoses and better overall quality of life.

Clinical trials can lead to significant breakthroughs in medical research, in turn offering better treatment options for future patients. Visit **MesotheliomaHub.com/treatment/clinical-trials** for an active list of mesothelioma clinical trials and speak with your doctor to find out if qualifying trials may be the right course of treatment for you.

WHAT IS A STATUTE OF LIMITATIONS?

Each state has a set time frame, called a statute of limitations, in which legal claims must be filed. The range is about one to five years, but the time period varies from state to state, so it's important to speak with a qualified attorney as soon as possible. Personal injury lawsuits and wrongful death lawsuits can have different statutes of limitations.

Visit **MesotheliomaHub.com/legal-help/statute-of-limitations** for a full list of statutes of limitations by state.

WHAT IS THE AVERAGE AMOUT OF LEGAL SETTLEMENTS?

The average mesothelioma case settles for between $250,000 and $2,000,000; however, there are many factors that weigh into each case. This financial compensation can be used to cover costs like travel and treatment when necessary, recover lost wages, and help support family members.

It's highly recommended that you work with an experienced asbestos attorney when taking legal action. Your lawyer will ensure you and your family are protected and your chances of successfully pursuing a lawsuit and compensation from asbestos trust funds are significantly increased.

WHAT IS AN ASBESTOS TRUST FUND?

Asbestos trust funds are set up when an asbestos company files for bankruptcy to ensure future claimants receive compensation. In the United States, there are about 60 asbestos trusts, valued at an estimated $37 billion.

Mesothelioma victims should consult with a specialized asbestos attorney to seek compensation from these trusts.

Speak with an Experienced
Mesothelioma Lawyer
(833) 997-1947

DOES FILING A LAWSUIT COST MONEY?

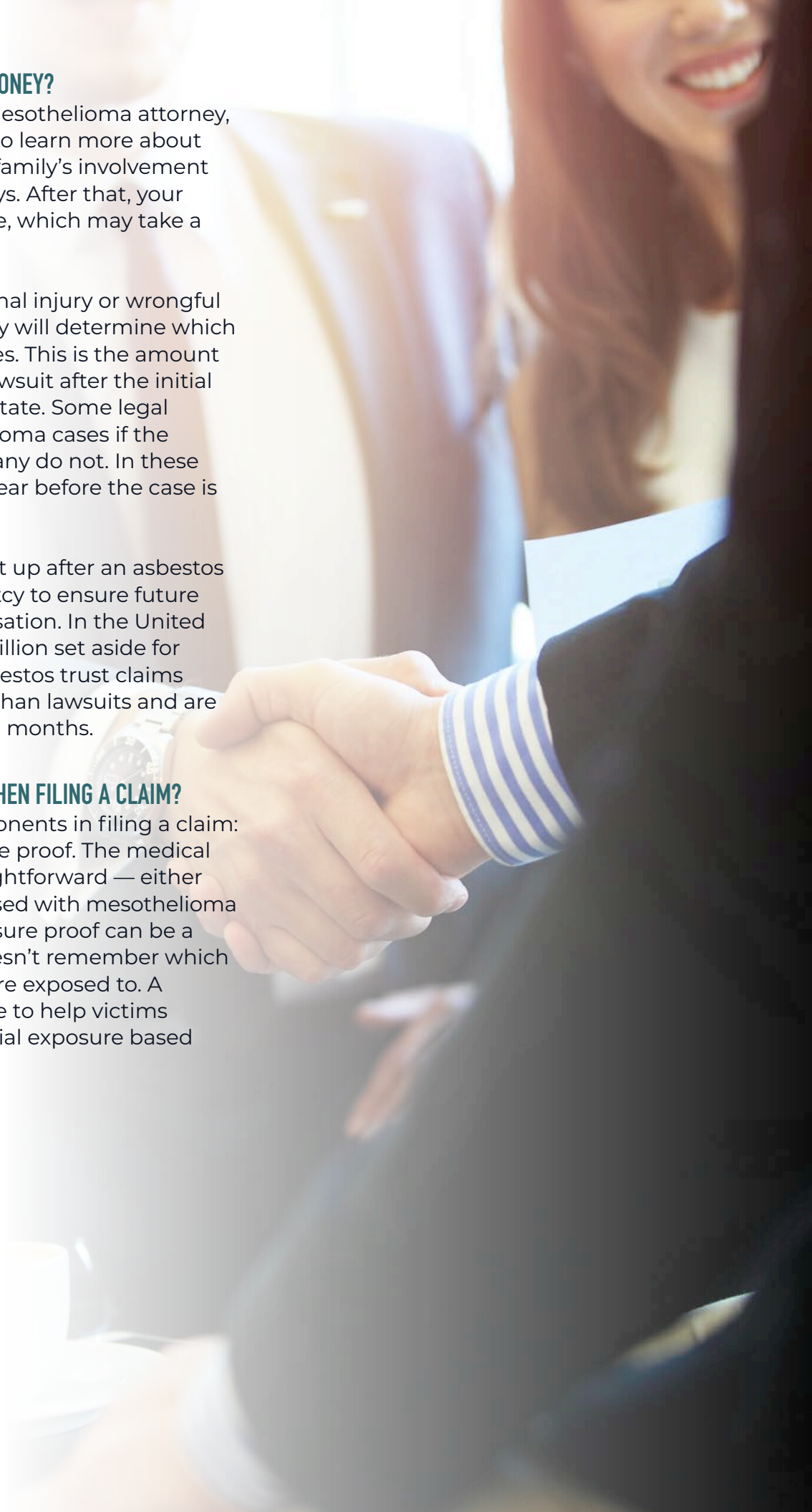
After you connect with a mesothelioma attorney, they will typically visit you to learn more about your case. The patient's or family's involvement usually only takes a few days. After that, your lawyer will prepare the case, which may take a few weeks or months.

If you are pursuing a personal injury or wrongful death lawsuit, your attorney will determine which statute of limitations applies. This is the amount of time you have to file a lawsuit after the initial diagnosis, and it varies by state. Some legal venues expedite mesothelioma cases if the patient is still living, but many do not. In these cases, it may take up to a year before the case is brought to trial.

Asbestos trust funds are set up after an asbestos company files for bankruptcy to ensure future claimants receive compensation. In the United States, there is about $37 billion set aside for mesothelioma victims. Asbestos trust claims are usually resolved faster than lawsuits and are typically paid out over 5–18 months.

WHAT EVIDENCE IS REQUIRED WHEN FILING A CLAIM?

There are two major components in filing a claim: medical proof and exposure proof. The medical diagnosis is the most straightforward — either someone has been diagnosed with mesothelioma or they have not. The exposure proof can be a challenge if the worker doesn't remember which asbestos products they were exposed to. A qualified lawyer will be able to help victims identify products of potential exposure based on their job history.



GLOSSARY

A

ADJUVANT THERAPY
An additional or 'add-on' therapy is given after the original mesothelioma treatment to improve results, prevent recurrence, and relieve pain or other symptoms. These therapies are designed to make the main treatment more effective and are especially helpful for patients diagnosed in the early stages of the disease. Adjuvant therapy for mesothelioma often includes radiation and/or chemotherapy.

ASBESTOS
A natural mineral mined for its durable, fire-resistant properties. There are six types, and most can be found in soil and rock. At the height of its use, asbestos was mined around the globe and used in a variety of commercial and industrial applications. It is a known human carcinogen, or cancer-causing substance.

ASBESTOSIS
A chronic lung disease caused by inhaling or ingesting asbestos fibers. It is not cancer but can lead to scarring of the mesothelium — the tissue that lines the lungs, stomach, and heart. The most common symptoms associated with asbestosis are a persistent cough and shortness of breath.

B

BIOPSY
A medical procedure used to examine cells or pieces of tissue to determine the presence or scope of a disease. Doctors who suspect mesothelioma will biopsy a patient's cells using a needle, a small camera, or even surgery. A biopsy is the only definitive way to diagnose mesothelioma.

C

CARCINOGEN
A cancer-causing substance. Asbestos is the carcinogenic mineral that causes mesothelioma.

CHEMOTHERAPY
A type of cancer treatment that utilizes a combination of specific drugs to eliminate cancerous cells and prevent them from dividing and spreading to other parts of the body. Mesothelioma patients typically receive pemetrexed and cisplatin. These drugs can be administered in different ways — systemically or intraoperatively — depending on the type of mesothelioma the patient is fighting and the course of treatment decided by the patient and their doctor.

CURATIVE CARE
Treatments designed to remove as many tumors or affected cells as possible and significantly extend a patient's life.

D

DIAGNOSIS

The identification of a health-related condition or disease based on specific symptoms. In most cases, a doctor or specialist performs a physical examination followed by a series of tests, including imaging tests, blood tests and biopsies.

L

LATENCY PERIOD

The time between exposure to asbestos and a cancer diagnosis. In the case of mesothelioma, it can take decades for the asbestos fibers to create scar tissue in the mesothelium and form cancerous tumors. The average latency period for mesothelioma is between 20 and 50 years.

LIFE EXPECTANCY

The length of time a patient can expect to live after a diagnosis of a terminal illness.

M

MESOTHELIOMA

A rare and malignant cancer of the mesothelium — a thin layer of tissue that lines the chest and abdominal cavities. The only known cause is exposure to asbestos fibers that have been inhaled or ingested. These fibers create scar tissue and inflammation, which can later damage DNA and develop into cancerous tumors. There are three primary types of mesothelioma:

PLEURAL

This form of mesothelioma affects the pleura, or lining of the lungs and chest. It's the most common form of mesothelioma, comprising 70–90 percent of all diagnoses.

PERITONEAL

This type of mesothelioma affects the lining of the stomach or abdominal, known as the peritoneum.

PERICARDIAL

The rarest form of mesothelioma. Tumors develop in the pericardium — the protective tissue surrounding the heart.

MESOTHELIOMA CELL TYPES

There are two types of mesothelioma cells, epithelioid and sarcomatoid. Tumors may also be biphasic, which is a combination of the two.

EPITHELIOID

Around 60 percent of all mesothelioma cases are diagnosed as epithelioid. This cell type has a more favorable prognosis than sarcomatoid and may respond better to treatment.

SARCOMATOID

These cells tend to metastasize (spread) more quickly. This cell type accounts for about 25 percent of mesothelioma cases.

BIPHASIC

A combination of both epithelioid and sarcomatoid cells. A biphasic diagnosis means at least 10 percent of each cell pattern is present in the tumor. Approximately 15 percent of mesothelioma diagnoses are biphasic.

MESOTHELIOMA

A thin layer of cells and tissue that lines the chest cavity (pleura), abdominal cavity (peritoneum), and heart sac (pericardium). This membrane protects and lubricates the internal organs in these areas of the body.

METASTASIS

The spread of cancerous cells from the original tumor site to another part of the body. Metastasis indicates the disease is progressing.

MRI

Short for “Magnetic Resonance Imaging,” this device utilizes a large magnet and radio waves to produce a 3-D image. Most MRIs are tube-shaped, and patients lie down on a flat table in the center, allowing the medical staff to slide them in and out of the machine. The resulting image is a cross section of the body’s internal organs.

N

NEOADJUVANT THERAPY

A procedure or medication administered before the main treatment to increase the chances of a favorable outcome. For example, a mesothelioma patient may undergo a few courses of radiation to shrink a tumor before having surgery to remove it.

O

OCCUPATIONAL EXPOSURE

Asbestos is a known carcinogen. Although many uses have been banned, people working in certain industries may still inhale or ingest asbestos fibers or dust while on the job. In most cases, occupational exposure is a form of employer negligence, and the patient may be entitled to some form of compensation.

ONCOLOGIST

A doctor specifically trained in diagnosing and treating cancer. An oncologist explains the nature of the disease, offers different treatments, delivers care, and assists with symptom and pain management.

P

PALLIATIVE CARE

Doctors offer this type of care to provide relief from mesothelioma symptoms and improve quality of life. Palliative care is usually directed towards patients who are diagnosed in the later stages of the disease, when surgery or other treatments may not be an option.

PLEURAL EFFUSION

A condition where fluid collects between the layers of the pleura. In mesothelioma patients, it may be due to inflammation from a growing tumor and can lead to shortness of breath, wheezing, or discomfort from the pressure of built-up fluid. Pleural effusion can be mistaken for pneumonia in X-rays.

PROGNOSIS

Predicted or expected outcome of a specific disease at the time of diagnosis. The survival rate or life expectancy of a patient often depends on how far the cancer has progressed. The prognosis for mesothelioma depends on a number of factors, including the location of the cancer, cell type, patient demographics, and overall patient health.

R

RADIATION

A type of treatment that utilizes targeted doses of high energy particle waves to shrink tumors and eradicate cancer cells.

RESECTABLE

Able to be removed (resected) by surgery.

S

STAGES OF MESOTHELIOMA

A mesothelioma diagnosis is divided into four stages. Oncologists use this staging process to determine how far cancer cells have metastasized (or spread) and to identify the best treatment options.

STAGE 1

Localized to one side of the body, has not spread to lymph nodes or other organs, few to no symptoms, curative treatment options available.

STAGE 2

Localized to one side of the body, some spread to lymph nodes or nearby organs, mild symptoms, curative treatment options potentially available.

STAGE 3

Localized to one side of the body, has spread to the lymph system and possibly to nearby other organs, worsening symptoms, palliative treatment options available.

STAGE 4

Cancer on both sides of the body, has spread to lymph nodes and other organs, strong and heavily pronounced symptoms, palliative treatment options available.

STATUTE OF LIMITATIONS

The length of time a party has to initiate legal proceedings after a diagnosis. In terms of mesothelioma, it varies by state.

SURVIVAL RATE

The length of time the average patient lives after being diagnosed with a disease. Cancer survival rates are usually calculated within a five-year time span.

SYMPTOMS OF MESOTHELIOMA

Mesothelioma patients diagnosed at stages 1 or 2 may not have any symptoms or may notice symptoms that are consistent with other common illnesses, like the flu. Those with a more advanced form of mesothelioma, at stages 3 and 4, will show more symptoms.

PLEURAL MESOTHELIOMA SYMPTOMS

Pain in the chest and lower back, shortness of breath, pleural effusion (excessive fluid in the lungs), constant cough, fatigue, and unexplained weight loss.

PERITONEAL MESOTHELIOMA SYMPTOMS

Stomach pain, fluid in the abdomen, constant nausea and vomiting, and unexplained weight loss.

PERICARDIAL MESOTHELIOMA SYMPTOMS

Chest pain, arrhythmia (irregular heartbeat), fluid buildup around the heart, shortness of breath, persistent cough, and fatigue.

T

TUMOR

An overgrowth of cells in one part of the body, often referred to as a ‘mass.’ A tumor can be benign (non-cancerous) or malignant (cancerous).

V

VETERANS BENEFITS

A special set of government benefits administered through the Department of Veterans Affairs that provide compensation for medical bills, disability claims, and dependents. Veterans who were exposed to asbestos during military service and who developed mesothelioma as a result are eligible for veterans benefits.

NOTES

Mesothelioma Hub

WE'RE HERE FOR YOU, SO YOU CAN BE THERE FOR THEM.

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