

Lung cancer is the leading cause of cancer deaths in both men and women in the United States, killing over 160,000 people a year. Over 170,000 people are diagnosed with the disease each year. And the vast majority of lung cancers are related to cigarette smoking. Unfortunately, lung cancer is often not detected until its later stages, making it more difficult to treat. Hello, I'm Dr. Andy Von Eschenbach, director of the National Cancer Institute. The program *Lung Cancer: Improving Survival* will show you what we can do to help prevent lung cancer and, for those with the disease, what can be done to improve the chances for survival.

OPEN

Narrator

For many people, hearing that they have lung cancer for the first time is unnerving.

Maria Malone, Patient

"I was devastated – very scared. I just couldn't believe that it had happened to me."

Abby-Jill Brauhn, Patient

"In the beginning, you're in shock and you can't believe it is you because it shouldn't be you. Nobody should have to have this disease."

Narrator

Lung cancer is the leading cancer killer among men and women alike, claiming more lives than breast, colon and prostate cancer combined. Nationally, \$10 billion is spent annually on treating lung cancer. As oncologists know all too well, the statistics for this disease are sobering indeed.

Nasser Hanna, MD/Indiana University

"One million people will die of this disease worldwide this year. 170,000 people will be diagnosed in the U.S. this year with lung cancer and nearly 160,000 people will die prematurely due to lung cancer this year in the United States alone."

Phil Bonomi, MD/Rush University Medical Center

"Basically of the 100 people that are diagnosed with it, only 15 are going to be long-term survivors. And the primary reason is that by the time they come for, and diagnosis is established, they are already in an advanced stage, which has either no chance or very low chance for cure. So the biggest thing is that we find them in the late stage – and that's the biggest problem."

James L. Mulshine, MD/Rush University Medical Center

"Lung cancer is actually what we call bronchogenic carcinoma. It is a cancer of the lining cells of the airways of the lung."

Narrator

There are two major types of lung cancer that account for most of what doctors see: what is called small cell lung cancer, which accounts for about 13 percent of all lung cancers, and the more common non-small cell. Each looks different under a microscope and grows and spreads differently.

Narrator

In its earliest and most treatable stages when the cancer is small, lung cancer rarely causes symptoms. Consequently, the disease usually isn't discovered at this point unless a suspicious spot happens to show up on a chest x-ray.

As the tumor in the lung enlarges, it's likely to be noticed by a patient because of the symptoms that it may cause:

- A persistent cough from irritation of a breathing passage is one of the early, most recognizable symptoms of lung cancer.
- The cancer may erode a nearby blood vessel, causing bleeding and coughing up blood
- Tumors may partially or completely block a breathing passage in the lung, resulting in pneumonia
- The cancer can spread to another part of the body and cause problems there.

These symptoms, the first possible indications of a lung cancer, may result in further testing such as a chest x-ray, CT scan or other imaging test. A suspicious-looking growth may not actually be lung cancer, which can only be confirmed by a biopsy - the definitive diagnostic tool to determine if a mass in the lung is definitely cancer and of what type.

A number of therapies are employed to treat lung cancer, depending on the size, type and location of the malignant tumor. Tumors are medically categorized according to the extent of a cancer in the body. This specific categorization of a tumor is called staging and is usually based on the size of the tumor, if the cancer has spread to nearby lymph nodes and whether the cancer has spread from the original site to other parts of the body.

Narrator

Smoking is far and away the leading cause of lung cancer. Fortunately, fewer and fewer people are smoking today compared to the past. Still, many find that quitting the habit is easier said than done.

James L. Mulshine, MD/Rush University Medical Center

"The average person that stops smoking has to take eight times in which they are unsuccessful before they are finally successful."

Narrator

Exposure to second-hand smoke and substances such as arsenic, asbestos, radioactive dust or radon can also increase the risk for lung cancer. These exposures particularly increase the risk when combined with cigarette smoking.

Narrator

Historically men had higher rates of lung cancer than women. However the incidence of lung cancer has been significantly decreasing among men as a consequence of their heeding the message to quit smoking. Women started smoking in larger numbers later than men, which has resulted in the lung cancer epidemic occurring later in women. It appears to be peaking as women too have gotten the message to not smoke and to quit. African-American men, even when not having smoked as heavily as others, have the highest mortality rates for lung cancer. The reason for this is unknown.

Narrator

Mystery also surrounds about 10 percent of lung cancer cases involving individuals like Abby-Jill Brauhn who have never smoked or knowingly been exposed to other hazardous substances linked to the disease. Abby-Jill was living in California when she began experiencing fatigue, weight fluctuations and swollen lymph nodes. An oncologist eventually diagnosed her with advanced stage lung cancer.

Abby-Jill Brauhn

"He said: This is serious. You have about a year to live. We suggest that you pack your bags and you get home and be with your family."

Narrator

The good news for patients like Abby-Jill, is that science is making some strides against lung cancer.

Nasser Hanna, MD/Indiana University

"There have been many important and exciting advances in lung cancer in the last couple of years...We understand this disease far greater than we did even five years ago."

Narrator

Patients are benefiting from the advent of new, targeted drug therapies that are more effective and have fewer side effects than conventional treatments. And, lung cancer survival rates have inched upward in the US and parts of Europe.

Phil Bonomi, MD/Rush University Medical Center

"We have a real chance to improve your odds to beat this completely."

Narrator

Next we'll learn more about emerging lung cancer treatments.

Narrator

If lung cancer is detected early enough, surgery can represent the best chance for a successful outcome.

Charles Vialotti, MD/Holy Name Hospital

"If a patient is diagnosed at a very early stage and if a patient has no health contraindications and they can be considered a candidate for surgery, I believe that is the best approach."

Narrator

Lung cancer patients who are not candidates for surgery often receive radiation therapy, which involves the use of a high-energy x-ray beam.

Charles Vialotti, MD/Holy Name Hospital

"Radiation therapy is used in lung cancer to shrink the primary tumor."

Narrator

Chemotherapy drugs also are used to treat lung cancer, especially when in advanced stages of the disease when cancer cells have spread to other regions of the body. Increasingly, oncologists are using a combination of radiation therapy and chemotherapy, an approach that has shown some promise. But experts acknowledge that conventional treatments like radiation therapy and chemotherapy have not been overly effective weapons against advanced stages of lung cancer.

James L. Mulshine, MD/Rush University Medical Center

"Our success in treating advanced lung cancer has not been wonderful. Over the last 20 years there has been progress in terms of improving response rates, decreasing the frequency of side effects and we've learned how to administer these things in a fashion that is more comfortable for patients. And even though there has been some progress, the progress has been modest and we need to do a better job."

Narrator

Many chemotherapy regimens cause significant side effects because the drugs can affect normal cells as well as cancer cells. Miami Beach resident Richard London has experienced numerous side effects in recent months while undergoing treatments for esophageal and lung cancer that have included surgery, radiation therapy and chemotherapy. He was diagnosed with both primary cancers.

Richard London, Patient

"Physically it's very, it takes a lot out of you. I mean there was days that I didn't get out of bed – I just stayed in bed."

Narrator

Richard smoked for 50 years but quit when he was diagnosed with cancer two years ago. His daughter Ricki has seen first hand the effect the cancer and its therapies have had on her 67-year-old father.

Ricki London

"He kind of withstood all his treatments pretty well, relatively speaking. But they do take a toll and he has lost 100 pounds and he's weak. You know, but nonetheless he still continues and has a great outlook."

Narrator

Researchers are working to devise better methods for treating lung cancer that cause fewer side effects. At Holy Name Hospital in Tea Neck New Jersey, specialists are using a process called intensity modulated radiation therapy to enhance the precision of their lung cancer treatments. By using a combination of anatomical CT images and functional Positron Emission Tomography – or PET scans – that measure the metabolic activity of cancer cells, oncologists can pinpoint the exact location of malignant tumors while sparing nearby healthy tissues, thus decreasing side effects like lung scarring that can cause respiratory problems.

Charles Vialotti, MD/Holy Name Hospital

"Intensity modulated radiation therapy is probably one of the greatest advances that we have seen in radiation in the past 25 or 30 years. What this results in is the ability to deliver a much higher dose to the tumor – a much lower dose to the normal tissue. So we get decreased toxicity, improved quality of life and a much better potential for control of the tumor."

Narrator

As a further refinement, Dr. Vialotti and his colleagues improve on the precision of radiation therapy by aligning the radiation beam with the movement of lung tumors during the breathing cycle, a technique called respiratory gating.

Charles Vialotti, MD/Holy Name Hospital

"Anything that's located within the lung is going to move as much as two or three or more centimeters with each breath...With respiratory gating, we can now synchronize the radiation beam to the breathing cycle."

Narrator

Dr. Vialotti says innovations like intensity modulated radiation therapy and respiratory gating are making a difference for lung cancer patients.

Charles Vialotti, MD/Holy Name Hospital

"We really feel that we have opportunities to help patients to a much greater extent than we ever had before."

Narrator

New targeted therapies for lung cancer also are emerging that have potential to surpass the effectiveness of conventional chemotherapy agents while causing fewer side effects. Targeted therapies attack lung cancer on a molecular level by disrupting the blood flow to tumors or blocking the ability of malignant cells to communicate with each other. These therapies appear to especially effective in treating patients who have never smoked, in women, in Asians and in individuals with certain types on non-small cell lung cancer.

Nasser Hanna, MD/Indiana University

"You can indeed shrink tumors with these agents."

Phil Bonomi, MD/Rush University Medical Center

"There is actually a paradigm shift going on right now. So we are seeing a new way of treating. And it's just very much at the beginning, but basically what we believe is going to happen is going to be a kinder and gentler treatment – less side effects – and it's going to be more targeted to the specific patient. We are going to more and more targeted therapies that are really based on what's going on in a person's tumor."

Narrator

Abby-Jill Brauhn received one of these new targeted-therapies for her lung cancer when she participated in a clinical trial at Rush University Medical Center in Chicago.

Abby-Jill Brauhn, Patient

"I think I'm doing pretty good. I've had the opportunity to travel. I've had the opportunity to spend quality time with my family and my friends."

Narrator

Coming up, we'll learn why fighting lung cancer requires more than just medicine. Patients also need support from family and friends, a positive outlook and plenty of faith.

Narrator

The London family has always been close... and Richard's illness is reinforcing those family ties. Continuing a tradition from childhood, Ricki and her brother have dinner with their father every Tuesday night.

Ricki London

"And so it's an opportunity to talk and catch up."

Narrator

Since Richard London was diagnosed with cancer, Ricki and her brother have taken time out of their busy careers to participate in fundraisers, like climbing more than 50

flights of stairs in a bank building in downtown Miami. Ricki also has taken charge of coordinating her father's medical care.

Richard London, Patient

"She'll be at the computer at 3 o'clock in the morning looking up a medication. She wants to find what the medication is."

Ricki London

"His illness has even brought us closer because I have never spent this much time with anybody. I don't think you can fight any kind of cancer on your own."

Narrator

Ricki also has prodded her father to stay active.

Ricki London

"Because if you give up emotionally or mentally then the drugs can't help you."

Richard London, Patient

"I can't worry about it today, of what's going to happen a year or two years from now. So you live for today and you enjoy your life."

Narrator

Abby-Jill Brauhn is grateful for the support that her family and friends have provided during the months that she has been receiving treatment for advanced stage lung cancer.

Abby-Jill Brauhn, Patient

"I feel very fortunate. I have never gone to an appointment without my sister or my best friend. If there has been a surgery, someone has been with me. During my first couple of rounds of chemo, my mother and family were all with me."

Narrator

For patients diagnosed with lung cancer, coping with the disease can require patience and determination. For smokers, the diagnosis may trigger feelings of guilt. And given the grim survival statistics for this disease, individuals can experience a sense of despair and hopelessness. In addition to relying on family and friends for support, experts advise lung cancer patients to consider joining a support group or seeing a therapist to help address emotional issues related to the disease.

Narrator

Abby-Jill says she's come a long way from the first few days after her diagnosis.

Abby-Jill Brauhn, Patient

"And I was angry and I was disappointed. I vowed to never have another one of those weeks and that was how this all changed. If I'm letting cancer rob my joy, then it robs

my life, then I might as well just give up... My faith has really brought me this far in trusting that I am going to be OK – that this is not my destiny.”

Narrator

In addition to making travel plans, Abby-Jill is also mulling the prospect of writing a book.

Abby-Jill Brauhn, Patient

“It might be about this woman who gets cancer but how she chooses to live her life fully with a lot of adventure – not just sitting down waiting for her life to, you know, happen.”

Narrator

Maria Malone has defied the odds when it comes to lung cancer. Today she is using her story to help inspire other patients with the same disease.

Maria Malone, Patient

“I try to reinforce their hope because there is hope out there. They have come such a long way with research.”

Narrator

A former smoker, Maria’s tale didn’t have a very happy beginning.

Maria Malone, Patient

“They used to call me the professional quitter. I kept trying to quit and then I succeeded. But I still got lung cancer.”

Narrator

After undergoing surgery and receiving rounds of radiation therapy and chemotherapy, she has been cancer-free for the past five years.

Maria Malone, Patient

“We’ve had some difficult times, sad times. But now we are rejoicing and trying to make up for lost time together...I am still here – that is very unusual for a lung cancer patient.”

Narrator

In the final segment we’ll focus on how efforts to detect lung cancer tumors earlier, continuing prevention programs and anticipated medical breakthroughs may help to lessen the impact of this deadly disease in the future.

Natural sound

Nurse: “Your doctor wanted me to start an IV for you.”

Narrator

Like most malignancies, patients with lung cancer have the best hope for beating the disease when it is detected in the earliest stages.

James L. Mulshine, MD/Rush University Medical Center

"We want to find the disease when we can still cure it."

Narrator

But unfortunately, early detection occurs in only 20 percent of cases. Experts are optimistic that helical CT scans may eventually be used as a cost-effective lung cancer screening tool for high-risk individuals such as heavy smokers.

Nasser Hanna, MD/Indiana University

"The current technology can detect tumors when they are very, very small and potentially in their earliest stages."

Narrator

One major drawback, however, is that these imaging tests also find "false positives" - abnormalities that are not cancerous. In these cases people may undergo costly and unnecessary medical treatments for something that would not become life-threatening. The National Cancer Institute is sponsoring a study, the National Lung Screening Trial, that is comparing helical CT scans to regular x-rays to see if either can detect lung cancer early enough to reduce deaths from the disease. The study is being conducted with smokers and former smokers. While this research proceeds, a great deal of emphasis will continue to be placed on programs aimed at preventing people from smoking.

Nasser Hanna, MD/Indiana University

"I think by far the way that we are going to have the largest impact on this disease is through prevention. Not smoking is the key. Never taking up the habit is the key. If you are a current smoker, stopping smoking is the key. It is not too late. You can continue to reduce your chances of developing lung cancer every year that you quit smoking."

Narrator

For patients who have already developed lung cancer, oncologists say they expect more medical breakthroughs in the near future that will further enhance treatment options.

Phil Bonomi, MD/Rush University Medical Center

"There are a lot of new things coming from many directions. And we might be treating you now and two years from now there might be some new thing that comes that is going to help you and really make a big difference."

Narrator

Dr. Mulshine also sees reason for optimism – a sentiment that he senses is lacking in recent discussions about lung cancer following the deaths of two noteworthy patients.

James L. Mulshine, MD/Rush University Medical Center

“In listening to many of the comments about Dana Reeve’s death , Peter Jennings’ death, there is a broad sense that lung cancer is immutable and nothing can be done about it. I personally think that nothing is further than the truth...Early management, early intervention is going to be the key strategy. This will be similar to what we are doing for heart disease, similar to what we are doing for Alzheimer’s. And so I think there are an enormous amount of things that are positive that we are learning about that are going to happen in our lifetimes. We would like to be in a situation where 90 percent of the people being diagnosed with lung cancer wind up being cured. That is our goal.”

Narrator

But until that day comes the patients, Richard, Maria, and Abby-Jill continue their lives and look forward to the future.

Abby-Jill Brauhn, Patient

“The best way to say it is that I have to just take one day at a time.”

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