

Lung Cancer

A plain-English guide for you and your family

WHAT IS HAPPENING

Your lungs are made of millions of tiny air sacs surrounded by a thin lining. Normally, those lining cells divide just enough to patch small wear-and-tear, then stop and do their job — moving oxygen into your blood and carbon dioxide out. But when cigarette smoke (or radon, asbestos, or diesel fumes) hits those cells year after year, the toxic chemicals crack the DNA inside. Most damaged cells either fix themselves or die. But if the damage piles up in the wrong genes — the ones that tell a cell when to stop dividing or when to self-destruct — one cell can lose its brakes entirely. That cell starts copying itself over and over, forming a lump (tumor) that crowds the airway, steals your body's fuel, bleeds, and eventually breaks off pieces that travel through blood or lymph to bones, brain, liver, and adrenal glands. You might first notice a cough that won't quit, coughing up blood, weight falling off without trying, getting winded with less effort, or chest pain. Some tumors make extra hormones or chemicals that throw off your calcium, sodium, or nerve signals — so doctors also watch for confusion, muscle weakness, or seizures that seem to come out of nowhere. The good news: we now test every tumor for specific gene mutations (like EGFR, ALK, ROS1, KRAS G12C) and can often use targeted pills or immunotherapy (drugs that wake up your immune system to recognize and kill cancer cells) alongside — or instead of — older chemotherapy. Catching it early, quitting smoking the day you hear the news, and working with a lung-cancer team gives you the best shot at beating it or living well longer.

What you might feel

- A cough that won't go away or gets worse over weeks
- Coughing up blood or rust-colored spit
- Chest pain that feels deep and aches, especially when you breathe in or cough
- Shortness of breath or wheezing
- Hoarse voice that doesn't get better
- Losing weight without trying, and feeling very tired
- Bone pain, especially in the back or hips
- New headaches, confusion, or trouble with balance

- Swelling in the face, neck, or arms with bulging veins

Call the doctor right away if...

- Coughing up blood
- Severe chest pain or trouble breathing at rest
- Sudden confusion, seizure, or one-sided weakness (signs of brain spread)
- Swelling of the face and neck with visible bulging veins (superior vena cava syndrome)
- New bone pain that won't go away, especially in the spine

What the care team will do

- Monitor oxygen saturation continuously and keep SpO2 above 90 percent with supplemental oxygen as needed
- Assess respiratory rate, work of breathing, and lung sounds every four hours, watching for a high-pitched noise on breathing in (stridor) or new wheezing
- Position patient sitting upright at 45 to 90 degrees and encourage slow deep breathing or incentive spirometry every hour while awake
- Check for superior vena cava syndrome signs: facial swelling, neck vein distention, arm swelling, or new confusion
- Administer scheduled pain medication around the clock and assess pain every two hours using a zero-to-ten scale
- Monitor daily weights and calorie intake, offering high-protein snacks every two hours if patient is losing weight
- Teach and document smoking cessation at every visit, offering nicotine replacement patches or gum and referral to quit programs
- Screen for depression and anxiety using a two-question screen and notify the provider if patient expresses hopelessness or suicide thoughts

Medicines you may be given — and why

Osimertinib

Blocks the mutated EGFR protein—a broken switch on lung cancer cells that tells them to grow nonstop—so the cells can no longer multiply out of control.

Alectinib

Blocks the abnormal ALK protein—a scrambled gene product that drives relentless growth in some lung cancers—so those cancer cells lose their main fuel and shrink.

Pembrolizumab

Releases the brake on your own immune T cells so they can recognize and attack lung cancer cells that were hiding by flipping a 'don't eat me' switch.

Carboplatin

Crosslinks the DNA strands inside rapidly dividing cells—both cancer and some normal cells—so they can't copy their genetic instructions and die when they try to split.

Pemetrexed

Blocks three enzymes that cells need to build the DNA and RNA letters (nucleotides), so fast-dividing cancer cells can't copy their genetic code and die.

Etoposide

Freezes topoisomerase II—the enzyme that untangles twisted DNA strands—in a broken state, so the DNA snaps and the cell dies; used mainly in small cell lung cancer combined with a platinum drug.

Atezolizumab

Blocks PD-L1 on cancer cells and immune cells so they can't turn off T cells, freeing your immune system to recognize and destroy the tumor.

Durvalumab

Binds to PD-L1 on cancer and immune cells, preventing it from silencing T cells, so the immune system continues to hunt and kill lingering cancer cells after chemoradiation.

Nivolumab

Blocks the PD-1 receptor on T cells so cancer cells can't use their PD-L1 disguise to escape immune attack, reawakening the body's ability to fight the tumor.

Crizotinib

Jams the abnormal ALK or ROS1 protein—mutant switches that drive uncontrolled growth in certain lung cancers—so cancer cells lose their main growth engine and shrink.

Dabrafenib plus Trametinib

Dabrafenib blocks the mutant BRAF protein and trametinib blocks MEK, the next protein in the same growth pathway, shutting down a hyperactive signaling chain that drives cancer cell division.

Sotorasib

Locks the mutant KRAS G12C protein in its 'off' state, preventing it from sending grow signals that drive cancer cell division in tumors with this specific mutation.

Where this information comes from

- NCCN Clinical Practice Guidelines in Oncology: Non-Small Cell Lung Cancer 2024
- American Cancer Society Lung Cancer Guidelines
- CHEST Guideline and Expert Panel Report on Lung Cancer Screening 2021
- ASCO Clinical Practice Guideline on Systemic Therapy for Stage IV Non-Small Cell Lung Cancer

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