# MEDICAL ROBOTS





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Cheryl Mehrkar with her surgeon, Dr. Stephanie H. Chang

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#### CHAPTER 1

## ROBOTS IN MEDICINE

Cheryl Mehrkar was adventurous. Scuba diving was her favorite activity. She loved motorcycle riding too. But Cheryl started to get sick. In 2010, she saw doctors. They **diagnosed** her with COPD. That is Chronic Obstructive Pulmonary Disease. This affects the lungs. It makes breathing difficult.

Years passed. Cheryl's condition grew worse. She couldn't walk across a room. Breathing was too hard.

Doctors said Cheryl needed a lung **transplant**. She was placed on the **organ donor** waiting list. But one lung was not enough. Cheryl needed two. Both of hers were in bad shape. Her transplant chances were slim. The waiting list is long. Finding a match isn't easy.



Then a call came. It was 2024. Cheryl's life was about to change. A donor had been found. They were a match. Cheryl rushed to the hospital. Her **surgeon** laid out a plan. A **robot** was set up in the operating room. It would help perform the transplant. This could be historic. Would Cheryl agree to its use? She said yes.



The surgery lasted seven hours. Cheryl's damaged lungs were removed. The donor lungs were sewn in. A robot did the work. It was guided by the surgeon. This was the first fully robotic double lung transplant. Cheryl woke up after the surgery. She could take a deep breath. The operation was a success.

Robots were once just science fiction. Authors wrote stories. Some saw robots as helpful tools. Others worried they could take over. Many of these robots looked human. They rolled along. Some walked on legs. But they were all imaginary.



Today robots are real. They are made to work. Their shapes are based on tasks. What can they do? Some lift heavy boxes in warehouses. Others dive deep into the ocean. They gather samples. Small robots even vacuum homes.

Doctors find robots helpful too. These machines can do tough tasks. They don't get tired. Robots don't shake like humans do. The da Vinci Robotic System is a well-known model. In 2024, it helped with more than 2.6 million surgeries.

The da Vinci is just one example. Use of medical robots is on the rise. In 2025, global spending on them approached \$12.7 billion. Medical robots fall into three main categories. The first are active. These robots work on their own. Next are semi-active robots. A semi-active robot is guided. One may mimic a surgeon's hands. Passive robots are the third type. Their role is to help doctors. They don't act on their own. Instead they provide support. One may guide a needle.

Another may help doctors' hands shake less. All of these robots are **precise**. This helps with healing. People feel better sooner.

#### **Fast Fact**

As of 2025, there are more than 2,100 medical robots in use worldwide.

A robotic arm assisting a surgeon in the operating room

### SCIENCE MEDICAL ROBOTS

In the medical field, lives are at stake every day. Diseases must be diagnosed. Surgeons have to make precise cuts. Finding reliable ways to avoid mistakes is key. That's where medical robots come in. Working side by side with doctors, robots are improving patients' outcomes and changing medicine as we know it.



