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'Dr R2D2 will see you now...'

By Caroline Ryan
BBC News Online health staff

A patient lies in a hospital bed, waiting to hear if her operation has been a success.

But in the hospitals of tomorrow, it may not be a doctor who brings her the news.

Instead, a robot could glide between the beds, allowing doctors to talk to their patients from home - or even from another country.

And this isn't a high-tech fantasy - doctors in the US are already using a robot as part of their team.

Dr Louis Kavoussi is one of those at the forefront of robot medicine.



The robot on its ward round

The doctor, based at the Johns Hopkins Hospital, Baltimore, Maryland, uses the ward-round robot to talk to patients from home.

He envisages a time where patients lie in airline-style seat beds, with monitors on which they can watch TV and log on to the Internet, and via which doctors can assess them at any time of the day or night.

“ When patients saw something like this roll into their room, it was something of a surprise ”

Dr Louis Kavoussi, Johns Hopkins Hospital

Doctors may even be less involved in operations. Patients could be scanned, and the information sent directly to the "surgeon" robot, which could make an incision in exactly the right spot.

Touch-sensitive robots

Robots are already being used to perform keyhole surgery, where precision is crucial.

Using robots eliminates the natural tremor that all surgeons - however good - have.

Last week, surgeons at St Thomas's Hospital in London operated the controls of a robot carrying out an operation on a kidney model in the US.

The RCM-PAKY robot is used to make the initial incision in operations to remove kidney stones.

Trials of the robot have shown it was slower than human surgeons - but more accurate.

It has already been successfully used in operations on over 30 patients.



Robots are used to make precise incisions in operations

Dr Kavoussi said: "There is still a tremendous way to go. Robotics is still a field in its infancy."

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But he said there were some fascinating developments - such as steady-hand robots which can restrict the area doctors can work in on highly-delicate operations.

Other robots have already been developed which have a kind of "claw" of a thumb and two fingers.

In the future, there are likely to be five-fingered robots which could carry out precision operations inside patients' bodies instead of a surgeon.

Researchers also hope to find a way to transmit what the robot is "feeling" to the surgeon.

Patient preference

But Dr Kavoussi is particularly excited by the concept of the robotic ward-round.

"Ward-rounds haven't changed since the 1930s - but our hospitals have," he says.

"They are bigger now, we have to look after more patients, and sometimes doctors have to cover more than one hospital."

So instead of going to see patients in person - Dr Kavoussi sent his robot.

And - in what may come as a blow to some doctors' egos - the patients really didn't mind.

In some cases, they even preferred it.

Through a monitor on the robot, via a modem link-up, Dr Kavoussi was able to see and talk to his patients from his office at home.

He said: "It had a novelty value. When patients saw something like this roll into their room, it was something of a surprise.

"Even if a patient wasn't feeling well, it caught their attention.

"And when you are working using telecommunications, you have to speak more slowly, and you have to wait for the patient to stop speaking before you start.

"I think patients appreciate the increase in time you spend with them."

And he said he believed robot care was something patients would be happy to accept - even if it meant a loss of the "human touch".

He said: "Patient expectations are changing.

"In some ways, it will improve things, as there can be instant interaction at any time.

"There is going to be a different type of human contact between doctor and patient."

But some doctors are less certain robots will be so involved in hospital care.

Mr Prokar Dasgupta is pioneering the use of the RCM-PAKY at Guy's.

But he said: "I like to have some face-to-face contact with my patients."