I am Doctor Robot. What can I do for you?

Robotics is moving from the realm of science fiction to palpable reality and, although they are unlikely to replace health professionals any time soon, robots already have many uses in medicine and healthcare. The use and development of robots come with new challenges, some ethical. The European Parliament has taken a stance and asked the European Commission to come up with rules.

Opportunities and challenges of robotics

Robots and cyber-physical systems – intelligent robots linked to the Internet of Things – offer manifold new solutions in the area of health: surgical assistance robots can help surgeons perform exacting operations, with patients benefiting from less aggressive interventions and faster recovery times, while care robots are used for prevention, assistance, monitoring and companionship for the elderly and people with disabilities. Assistive technologies and therapeutic robotic devices can increase a person's capacity to rehabilitate (for instance, after a stroke), while tools for analysing large sets of patient data can help provide better diagnosis and more insights into options for treatment and care. Robotic applications in health also come with a number of issues, however, such as the need to protect medical professional secrecy and personal data; possible safety concerns if the system malfunctions or is hacked; and questions relating to liability and legal responsibility. Also, as such systems become more advanced and able to act more autonomously, what power should they have in decision-making? Observers argue that there must always be a human element to add evaluation and control, and that these solutions will only revolutionise medicine and healthcare if they are accessible to mainstream professional users – in other words, affordable and not too difficult to use.

EU-funded research into robotics in healthcare

The EU promotes robotics research and has funded a number of projects. A few recent and ongoing examples include: the ReMeDi project (from 2013 to 2017) involved designing a robotic device for remote diagnostics that allowed a doctor to physically examine a patient from a distant location. SMARTsurg aims to develop novel technology in order to expand robot-assisted minimally invasive surgery (that is, surgery carried out through a tiny incision in the body) to more procedures, including urological, vascular and soft tissue orthopaedic surgeries. BabyRobot seeks to support child-robot communication, focusing both on children developing typically and on those with autism spectrum disorders, while PAL is about developing a personal assistant that provides personalised and context-sensitive support for young patients aged from 7 to 14 with type 1 diabetes. Finally, the CARESSES project aims to build culturally competent care robots for the elderly – robots that are capable of reconfiguring the way they act and speak to match a user's needs more closely, offering them an intuitive system to foster their autonomy and independence.

European Parliament position on robotics

Parliament's resolution of February 2017 deals with questions of liability and ethics, while also focusing on robots in healthcare and medicine. It calls on the Commission to submit a legislative proposal with civil law rules on robotics. Parliament recognises that robots could perform automated care tasks and facilitate the work of care assistants, but believes that replacing the human factor with robots could dehumanise caring practices. Despite the potential of robotics, humans will still be needed in caregiving and continue to provide an important source of social interaction. Parliament stresses the need for appropriate preparation, education and training of health professionals, considering it vital to respect the 'supervised autonomy' of robots, whereby the final decision will always remain with a human. The use of robots should not impair the doctor-patient relationship, but rather assist doctors in diagnosis and treatment with a view to reducing the risk of human error and increasing life expectancy and quality of life.

This note has been prepared for the European Youth Event, taking place in Strasbourg in June 2018.

EPRS | European Parliamentary Research Service

Author: Nicole Scholz, Members' Research Service

PE 614.747 – May 2018