

Devetiyarova M., Zueva E., Ostreiko S.

Medical robots

Belarusian National Technical University
Minsk, Belarus

According to the third episode of Star Wars, The Revenge of the Sith Anakin Skywalker was seriously burnt and lost his legs. And robot surgeons did the best they could to save him. In the very near future, similarly amazing robots might come to healthcare to save our lives, too.

Medical robots do not only exist in sci-fi movies and the distant future, they are coming to healthcare and all stakeholders must prepare for them. Robots can support, assist and extend the service health workers are offering. In jobs with repetitive and monotonous functions they might even obtain the capacity to completely replace humans.

Thus, medical professionals and caretakers would do well to learn more about medical robots: what they are capable of and in what way they might complement the tasks they perform daily. Otherwise human medical workers might get replaced or grow frustrated if they cannot change their previous tasks into something irreplaceable [1].

Types:

Xenex Robot.

The Xenex Robot might constitute the next level of hygiene. It allows for fast and effective systematic disinfection of any space within a healthcare facility. This helpful automatic tool destroys deadly microorganisms causing healthcare-associated infections by utilizing special UV disinfection methodologies. The Xenex Robot is more effective in causing

cellular damage to microorganisms than other devices for disinfection.

“Hired” Pepper Robots.

Pepper can recognize the human voice in 20 languages and can detect whether it is talking to a man, woman or child. Its skills enable Pepper to “work” as a receptionist in huge hospitals and to accompany visitors to the correct department so they do not get lost while trying to see their loved ones. “Social robots” such as Pepper or the smaller Nao might also be used as assistance in exercise sessions and help children overcome their fears of surgery.

The da Vinci Surgical System.

This robotic system features a magnified 3D high-definition vision system and tiny wristed instruments that bend and rotate far greater than the human hand. With the da Vinci Surgical System, surgeons operate through just a few small incisions. The surgeon is 100% in control of the robotic system at all times, and he or she is able to carry out more precise operations than previously thought possible [2].

TUG Robot.

The TUG robot is the robust and muscular big brother of Pepper, who is able to carry around a multitude of racks, carts or bins up to 453 kilograms in the form of medications, laboratory specimens or other sensitive materials. The TUG is sent or requested using a touch screen interface and upon completing its “mission”, it returns to the charging dock for a sip of energy while it is loaded for the next job. These robots work around the clock, so fewer employees are necessary for the burdening nightshifts. Staff can spend more time with patients or assist nursing instead of transporting goods through the hospital.

Bear-Shaped Robot.

Riba or Robot for Interactive Body Assistance is somewhat similar to the TUG robot; however it is rather used

at homes with care patients who need assistance. Its Japanese version, the Robear is shaped as a giant, gentle bear with a cartoonish head. They both can lift and move patients in and out of bed into a wheelchair, help patients to stand, and to turn them to prevent bed sores as many times as you want. These robots not only promise to make up for the shortage of carers, but to save human personnel from having to carry out strenuous tasks, such as lifting patients out of bed 40 times a day.

Veebot.

There is hardly any adult in the developed world who has never been the subject of a blood draw. Many have serious fears about it. On the one hand, it might be pretty scary that it is carried out with a needle. On the other hand, sometimes it takes a lot of time and more than one attempts until the nurse or the phlebotomist finds the appropriate vein to carry out the procedure. Veebot, a blood-drawing robot helps with the latter and allows for speeding up of the unpleasant experience [3].

Clearly, although the element of human touch is vital in the medical industry, some areas seem better left to machines. The goal of these robots, after all, is to improve the health and lives of us humans.

References:

1. Exciting Facts about Medical Robots [Electronic resource]. – 2016. – Mode of access: <http://medicalfuturist.com/9-exciting-medical-robot-facts/>. – Date of access: 26.02.2017.
2. Medical Robot [Electronic resource]. – Mode of access: https://en.wikipedia.org/wiki/Medical_robot. – Date of access: 01.03.2017.
3. Robotics in Healthcare [Electronic resource]. – Mode of access: <http://medicalfuturist.com/robotics-healthcare/>. – Date of access: 02.03.2017.