HealthManagement.org
The Journal
LEADERSHIP • CROSS-COLLABORATION • WINNING PRACTICES
VOLUME 18 • ISSUE 2 • 2018 • € 22
ISSN = 1377-7629

Branding/ Reputation

A robotic companion on ward

Fighting hospital patient isolation is the aim of a talkative robot

Looking ahead to increased elderly patient care, researchers have trialled a robot that creates a more social ward environment.

Marianna Keen
Staff Editor,
HealthManagement.org, Cyprus

mk@healthmanagement.org

@ehealthmgmt

healthmanagement.org

"What do snowmen have for breakfast?" asks Junior, the hospital's assistive robotic technology, as he stands in front of a bed-bound patient. It's not easy to keep your spirits high in hospital, but the ill lady is distracted by the peculiar creature that stands at half a metre tall on her table. "I don't know; what do snowmen have for breakfast?" she asks. "Snowflakes!" Junior beams back in his mechanical yet affable voice. "Hah, I can't laugh; it hurts," the patient reacts.

It can be so simple to keep a patient company, distract them from their worries and help them with their exercises; but often, hospital staff, family and friends are not available, so patients are left bored, lonely and even depressed. Sadly, this can have profound effects on patients' psychological well-being and can subsequently impair their recovery. This concern with regard to the overall hospital experience compelled a group of doctors and researchers to collaborate and search for an answer. The outcome was that they envisaged and developed a robot that could dedicate its time to combating social isolation and improving patients' lives.

The robot's birth

Drs. Marcela P. Vizcaychipi and Yiannis Demiris conceived the idea and in collaboration with the Personal Robotics Laboratory, Imperial College London and the Department of Psychology, University of Westminster, NAO robots were employed to accompany patients in a trial at Chelsea and Westminster Hospital in London.

NAO is an autonomous, programmable humanoid robot developed by Aldebaran Robotics, a French robotics company which was acquired by SoftBank Group in 2015 and rebranded as SoftBank Robotics. The robot's development began with the launch of Project NAO in 2004, and since 2008, several versions of the robot have been released, with the NAO Academics Edition developed for universities and laboratories for research and education purposes. It was released to institutions in 2008, and was made publicly available by 2011.

A new hospital experience

"As far as we know, nobody has done this sort of thing in the hospital before," said Miguel Sarabia, Phd Researcher at the Personal Robotics Laboratory. "Robotics has not yet found the killer app – the thing that robots really do well with the capabilities they have and they haven't. Everybody dreams of a robotic partner, but that's very difficult. We need something more modest. There must be something, and maybe this is it – to give company to patients and make life a little better," he added.

The humanoid robot was introduced to a selection of inpatients and responses were varied. "We have had some people who just ignored the robot and wouldn't look at it and would pretend it wasn't there, to people who found it scary, to people who really liked it, to people that wanted to push the limits of what it could do," Sarabia said.

Supporting all walks of life

Developers hope that the compact robot, which is a combination of technologies that enable him to understand, interpret and act in autonomy, will appeal to patients from different cultures, diverse backgrounds, both sexes, spanning all age groups. "Maybe some will like them and some not. We need to look into all of these environments to ascertain whether the robot is the right technology to introduce at this stage in hospitals," said Dr. Vizcaychipi.

Since Junior is impassive and always positive, researchers believe he can be constructively applied to a range of different situations within the hospital. The assistive technology was used to encourage a patient on the trial to carry out his exercises, making

the process more engaging. "It's a revelation really. It does help strengthen the patient. At least you attempt to do a few exercises, which you wouldn't otherwise do if you were a bit depressed," expressed the elderly man who was clearly fascinated by the charming automated fellow. When asked if the robot cheered him up, the patient was enthusiastic that it had, as it broke the silence, and they had developed a form of camaraderie.

Approximately 10, 000 NAO have been sold and are in use in more than 50 countries for various purposes. The robot is being increasingly used for research and education purposes in academic institutions worldwide, and was previously employed as a companion to people with autism at the specialised centre, Autistes sans Frontière, in France. The robot forged a special bond with a participant in the trial, Lucas, encouraging him without judging him. Observers noticed that since his encounter with the humanoid, Lucas was calmer and his contact with adults became easier.

Dr. Vizcaychipi, one of the originators of the project in London, emphasised the benefit that the technology offers to elderly and critically ill patients: "My main area of interest in this research is memory – cognitive problems after surgery, after anaesthesia, and after critical illness. And the population is ageing; that is a fact. So we know that by 2020 we will be operating on more people over 65.

"They will be alone, isolated from their own environment. We will be there supporting them from the clinical point of view, but from the social point of view, what are we doing for them? We are isolating them. We are condemning them to an empty room with no memories. So by bringing artificial intelligence, I think we can actually help them to remember the past and look forward to something."

An eye to the future

The robot may not yet have the capacity for deep conversation, but it can search for news and information on the Internet in response to patient requests, and further complexity can be delivered in time. "This is an embryonic phase of our project. If the patients show that they love it, then we need to make it better, and tailor it to the patients," highlighted Dr. Vizcaychipi. "If the patient speaks Spanish, then the robot will answer in Spanish. Not only that, but the robot will interact with real timing; because at the moment, we play the answers back, so it may not seem real, but it's real enough to feel that someone is there," she added. NAO is a character made up of a multitude of sensors, motors and software piloted by a made-to-measure operating system: NAOqi OS.

Winning over staff and patients

The interactive companion robot has not only attracted positive feedback, however. Some hospital staff in the trial were initially opposed to the technology, fearing that it threatened their employment, expressed Sarabia: "Many people fear it's going to take their jobs, but we suggest that these people just watch what the robots do before they come to a conclusion. Many people only know robots from films and science fiction, which is great, but this is not what real robots are about."

Throughout the trial, any apprehension among hospital employees tended to dissolve over time, as they experienced Junior's potential to engage patients on the wards. "After seeing what is was actually about, I haven't had a single nurse say 'oh it's going to take my job' or worry. Most nurses have been very positive about it," said Sarabia.

"Many of the patients may not engage 100 percent. We need to think about why they don't engage and work on that," said Dr. Vizcaychipi, before concluding that the research team will now need to analyse the results of the trial. If they prove it can have a real impact on patients' lives, and is cost effective, their next step is to raise funding to assess the feasibility of introducing this type of technology throughout hospitals. "We have to use technology in hospitals and this is a way of using it in our favour and in our patients' favour," believes Dr. Vizcaychipi. ■

KEY POINTS

- ✓ Patient isolation in hospitals can cause boredom, loneliness and depression
- ✓ To reduce isolation, researchers have created and trialled 'Junior', a NAO robot, in a London hospital
- ✓ 'Junior' can search for conversation topics, play music and have basic conversations
- ✓ Patient response has varied but there was marked overall enthusiasm for the presence of 'Junior'
- ✓ Initially, nursing staff felt 'Junior' would mark the start of robotics takeover of their jobs. After the trial they understood that NAO implementation was not a threat to their jobs and were more supportive
- ✓ Developers are analysing any unfavourable patient and staff response to improve robots like 'Junior'
- ✓ About 10,000 NAO are in use in more than 50 countries for various purposes