



## The Healthcare Space

Studies have shown that an inadequate quantity of skilled nurses and technicians in clinical settings has a significant negative impact on patient outcomes, including mortality. The nursing shortage alone is literally taking lives and impairing the health and well-being of many millions of the world's people. Nursing and technician shortages that exist today are forecasted to worsen for the next two decades.

A survey found that 75% of nurses said the quality of nursing care at their medical centers had declined in the prior two years in a report released by the Institute of Medicine of the National Academies. This survey found that nurses' working conditions were contributing significantly to medical errors. High patient to nurse ratios, fatigue on long shifts and mandatory overtime, a lack of experienced staff and inadequate time to monitor patients have been associated with poor medical results and higher death rates for patients. Nursing and technician shortages present a major problem for the quality of their work life, the quality of patient care and the amount of time nurses can spend with patients. Some hospitals are experiencing emergency department overcrowding and ambulance diversions as a result of this shortage. It is forecasted that within the next two decades, 44 states plus the District of Columbia will have nursing shortages

Technology will play a key part in assisting hospitals in coping with future personnel shortage issues.

Advancements in area networks allowing faster access to patient records and communications between departments and doctors.

Robotic devices are being successfully used to retrieve drugs at hospital pharmacies for dispensing to patients. Nationwide they are used at approximately 3,000 locations and are reportedly faster and more accurate than humans.

There is current a move in the direction for the use of robots to perform routine hospital tasks. Robots are currently being utilized at numerous medical facilities across the nation to perform tasks such as shuttling supplies, medical specimens, records and materials between various departments and locations. In certain applications, robots perform redundant tasks previously assigned to people at a tireless and much more cost efficient rate. In some application, it is a cost saving application. In other applications robots assist the hospital staff in such a way that it allows nurses and nurse assistants to dedicate their time to their professional duties. Robots are being used to run errands in the hospital setting that were being performed by nurses as additional duties. Estimates indicate that nurses spend as much as 25% of their time performing these additional duties, taking them away from their primary responsibilities, the care and welfare of the patient. With the use of autonomous robot technology, nurses and other personnel are free to direct a robot to any location within the facility or accessible part of a building complex for movement of materials. The size and type of materials moved by a robot is only limited by the design of the robot, carrying or towing capacity and the course of travel that must be traversed to arrive at the destination.

Robots are dedicated to performing assigned tasks without complaint, as many times as may be required. An automatically performed periodic charging of the batteries and minor preventive maintenance is all

## Report on the viability of service robots in the healthcare space

that is required to keep the robot going 24 hours a day, 365 days a year. Through the use of wireless technology, robots can be requested from or sent to any location, or scheduled to perform certain tasks at specific times. Unlike people, they don't stop to chat along the way or forget their scheduled task. If a robot is trapped or disabled in such a manner that it cannot proceed for any reason, it can transmit a call for help. The software installed at the location of use will indicate the location of the robot, to aid in resolving the problem.

Robots can perform security and safety functions either separately or in conjunction with other duties. Robots can be equipped with surveillance cameras, thermal imaging devices and sensors of various kinds. Robots can look for and report missing safety equipment.

Robots can also be used to patrol restricted access areas, verbally challenging anyone that it encounters for proper identification and verifying authorization. Even if a robot were dedicated to this function the cost would be considerably less than that of a security guard hired for patrol purposes.

For more information contact CCS Robotics • [www.ccsrobotics.com](http://www.ccsrobotics.com)

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