

Impact of Integrated, Automated, Traveling Cobot Assistance on Time and Motion of Nursing Care Delivery

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Abstract

Background: Studies have produced results shouting that nurses are spending only a third of their day performing direct patient care with between 15-35% of their time away from the patient completing activities labeled non-nursing, miscellaneous, or waste. These time and motion analytics however are not placing the nurses in a chair staring at a screen. They are placing the nurses in the supply room looking for a tube feeding pump, walking patient belongings to the stepdown unit, running a broken equipment down to clinical engineering, and walking to the front desk retrieving glasses just dropped off. Every second a provider spends clicking an order, a nurse spends half an hour gathering the supplies necessary to complete that task.

Methods: An innovation trial, turned into a grant from the American Nurses Foundation Reimaging Nursing Initiative, placed highly intelligent robots next to nurses in a large Magnet designated health care facility of over 1000 beds. The informatician who usually deals in pop-ups, required fields, intuitive flowsheets, and workflows, now has a robotic arm, safety sensors, locking storage, several electronic motorized wheels, and artificial intelligence behind blinking eyes standing four feet off the ground.

Results: Nurses, when asked, describe items such as sequential compression devices, patient-controlled analgesia pumps, cryotherapy pumps, tube feeding delivery devices, insulin pens, large volume specialized IV fluids and other various items not kept on units undergo a telephone game of go-fish and then a subsequent period of waiting for these items to deliver care and treat patients. These items are brought to the nursing unit from staff juggling many other priorities and availability. Subsequently, nurses provided examples of item movement between nursing units and from smaller volume areas whose support hinged on the patient transportation department. Increasing the priority of this item movement would impact patient operations and transfer, thus leaving the sender and receiver waiting extensive periods of time for a simple item needed for nursing operations.

Conclusions: The ideal department energized to interface with a cobot can break up batch rounding workflows with more trips using a cobot to traverse the corridors. This evolution changes the delivery person into an air traffic controller, managing job creation software to manage multiple cobots from inside their department. The outcome is felt by nursing staff having what they need faster, and therefore the patient receives their medication or treatment quicker. Integration with the electronic medical record is becoming the highest priority in search of a remedy to buy back the nurse's time. Removing the mental bandwidth and effort spent obtaining items is beyond time and motion. Acting independently of the nurse to recognize order entry and documentation to anticipate the nurse's and patient's needs is the cornerstone of getting the nurse back to the patient where positive outcomes follow.