SWISSLOG
CASE STUDY

CHILDREN'S MERCY HOSPITALS AND CLINICS - KANSAS CITY, MO

Scooter, the autonomous mobile robot, transports lab specimens between testing stations 24/7, keeping staff at their workstations by reducing manual transport tasks, shortening turnaround time and enhancing efficiency.

The Hospital

Children's Mercy Hospitals and Clinics is a comprehensive pediatric medical center that is the only free-standing children's hospital between St. Louis and Denver. Children's Mercy is consistently ranked among the leading children's hospitals in the nation, and was the first hospital in Missouri or Kansas to receive the prestigious Magnet designation for excellence in patient care from the American Nurses Credentialing Center.

Children's Mercy provides state-of-the-art care for children from birth to age 18 who come from throughout Missouri and Kansas and beyond. In addition to the clinical expertise provided by the staff of more than 600 pediatric specialists, Children's Mercy is a leader in providing pediatric medical education to the physicians and nurses of the future and in conducting cutting-edge pediatric medical research to discover the treatments and cures of tomorrow. Children's Mercy is also nationally recognized for innovation in creating a family-centered environment that is focused on the unique needs of hospitalized children and their families.

Children's Mercy HOSPITALS & CLINICS Kansas City

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The Challenge

Each year, Children's Mercy Hospital conducts hundreds of thousands of laboratory tests that require rapid turnaround time and accuracy. Within the central lab, a Swisslog pneumatic tube system delivers specimens to the receiving station where staff members are responsible for documenting arrival and preparing samples for testing at any number of workstations, including microbiology, immunology, hematology or chemistry.

Like most hospitals, staff members manually moved specimens throughout the lab. Senior managers, however, recognized the disadvantages of using lab technicians for this function. Turnaround time was inconsistent and not easily tracked. If staff members called in sick or were unexpectedly absent, the manpower reduction created a strain for on-duty workers to keep samples moving through the process, to meet turnaround time obligations and to ensure smooth lab operations at all times, especially during peak hours when surges occur. The lab needed an automated solution that would relieve the materials transport function from technicians and establish a consistent and traceable method to reduce turnaround time and increase operational efficiency.

The Solution

Children's Mercy Hospital selected a SpeciMinder Autonomous Mobile Robot (AMR), which its staff named Scooter, to automatically transport specimens among several testing departments within the hospital's central laboratory. With a payload capacity of 50 lbs, Scooter dispatches and delivers specimens, tissues and other items to the lab's testing departments, including receiving, chemistry, immunology, hematology, and microbiology.

"We were looking for an automated system that was designed to transport work within the hospital laboratory," said Cynthia Kelley, laboratory operations manager at Children's Mercy Hospital. "The robot we found was designed for the work that we needed to have done. We needed a solution that was small, easy to maintain, easy to program and use, and that was highly reliable."

The installation of Scooter involved mapping the route between workstations and creating a virtual floor plan that enables the mobile robot to navigate its surroundings with great accuracy and flexibility. With the use of a drive-around mapping tool, walls, corridors and permanent objects are plotted as well as the precise location of each destination. The robot's route and destinations can be easily modified. Because the robot is autonomous, it does not require central computer control. Users have a choice of up to 12 clearly marked destination buttons located on the robot for easy use, along with buttons for pausing, stopping, resuming, and docking/recharging.

The robot has a collision avoidance system that features laser and 3D detection to assure that the vehicle travels around people and moving objects. It is highly-maneuverable, capable of passing through congested hallways and door opening as narrow as 27 inches. It can also turn on its axis.

The lab staff quickly became accustomed to the sight and sounds of the robot delivering specimens, tissues and other items. Scooter has voice commands, which can be programmed as male or female, that alert staff members of its presence. Throughout the day, Scooter transports specimens from receiving to other locations within the central laboratory. When not in use, Scooter automatically re-docks at its charging station located near the receiving area in the lab. The charging dock plugs into a standard wall outlet.

The Results

Scooter has become indispensable for automatically transporting specimens, a chore that once required human couriers. These staffers can now spend their time accessioning specimens, performing tests and other activities specific to patient care. An analysis of Scooter's daily log files demonstrate that the robot is in use 24 hours a day, taking breaks only to recharge between deliveries. Scooter makes an average of 280 daily deliveries to microbiology, hematology, immunology, and chemistry. In total, including return and charging trips, Scooter makes an average of 622 trips each day. Scooter spends an average of 6.3 minutes recharging between tasks.

"Scooter has allowed our staff to remain focused on clinical work without the distraction of moving specimens," Kelley said. "My observation is that the movement of tests is rapid and consistent since we introduced Scooter."

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