



# Using **Robotic IV Preparation Devices** to Improve Patient Safety and Workflow Efficiency

USING A ROBOTIC DEVICE TO AUTOMATE THE PRODUCTION OF IV SYRINGES and bags, your facility is able to produce syringes and bags in a sterile environment, reduce the possibility of human errors in compounding and labeling, ensure that labels and bar codes are affixed to each of the robot-prepared syringes or bags, improve the efficiency of your facility's IV syringe and bag production, and, ultimately, decrease the costs associated with IV products.

Currently available from three manufacturers (ForHealth Technologies, Health Robotics, and Intelligent Hospital Systems), robotic IV preparation devices consist of computer hardware and software and sophisticated mechanics and can compound batches of standardized doses or patient-specific doses of IV medications. The robot should be stocked by a staff member garbed to meet all USP <797> standards, to maintain the sterility of the device's interior.

At the outset of the fill process, a pharmacist verifies the list of ingredients to ensure the accuracy of the syringe(s) or bag(s) to be prepared. The robots can perform batch and individual fills, and for most adult preparations, it makes sense to use the batch mode to achieve efficiencies in volume. Batch-filled syringes or bags are labeled with information specific to that drug. Robots can also fill patient-specific doses using information from orders contained in the pharmacy information system, which can interface with the robot's onboard software. The device then selects the appropriate drug from its storage cabinet, dilutes the drug, and withdraws the appropriate amounts. The filled syringe is affixed with a patient-specific label and then dispensed. Once the syringes are dispensed from the robot, a pharmacist verifies the label information and performs a visual check of the syringe's contents.

### Staffing and Inventory Concerns

It may be necessary to dedicate one FTE to the robot during and immediately following the implementation period. Designate an employee who is self-motivated and who will "own" the device and its processes. With one person, versus many, running the device, you can more easily achieve consistency in your processes and ensure the staff dedicated the machine is meeting all applicable rules and regulations.

The robot can and should be easily incorporated into your compounding workflow, as it is relatively easy to operate and requires little oversight during operation. To ensure appropriate inventory levels for batch-filled syringes and bags, compare your production volume to hospital-wide drug usage data and then set appropriate inventory par levels. Perform periodic inventory checks as necessary to assure your par levels are met.

At Forrest General Hospital, we have designated one employee to take responsibility for all of our robot's supplies. She performs inventory counts and ensures that a sufficient supply of syringes and compounding components are available for the continuous operation of our robot by running a weekly inventory report. This same employee is responsible for ensuring an adequate inventory of completed syringes to meet our patients' needs. Once your robot has been successfully implemented, this dedicated staff member will



Photo courtesy of ForHealth Technologies, Inc.

likely be able to take on other tasks, in addition to his or her robot-related responsibilities.

### Quality Assurance

It is necessary to take several quality assurance measures to ensure the sterility of robot-produced compounded preparations. To make certain the environment within the robot meets USP <797> standards and the preparations are free from contamination, perform twice-weekly sterility tests with tryptic soy broth syringes filled by the robot. Also obtain surface samples using contact plates to ensure the robot's surfaces are free from microbial bioburden, pursuant to the recommendations set forth in USP <797>. Your robot should also be subject to a rigorous daily cleaning protocol.

At Forrest General, we use the following protocol for our robotic IV preparation device: Two technicians share the responsibility for cleaning the robot, and alternate on a week-by-week basis. Dressed in surgical gowns, masks, hair covers, and gloves to meet <797> standards, the technicians perform the cleaning regimen. We use 99% and 70% alcohol and sterile wipes to clean the walls, moving parts, and packaging deck, and place a dry wiper over the robot's printer to keep it from getting wet during spraying. We clean from the back of the robot to the front, using a new wiping surface with each stroke to prevent cross contamination. After cleaning, we allow the interior of the machine to dry for 15 minutes before performing a packaging run. We repeat this process every 24 hours to ensure the robot's sterile environment and typically perform the cleaning protocol between 3:00 and 4:00AM, a low traffic time. Twice a week, the technicians perform surface testing inside the robot, taking samples from the walls, syringe dial, doors, and vial holding area. In order to ensure the accuracy of all information printed on the robot-filled syringe or bag labels, a pharmacist should verify each product before it is released for patient care.



## Automated Compounding



Photo courtesy of Intelligent Hospital Systems

### Return on Investment

Implementing a robotic IV preparation device makes the most financial sense for high-volume pharmacies. It may be of further benefit to your institution to implement a robot if your IV pumps support the use of syringes.

For those institutions in which it makes financial sense to implement such a device, a robot for IV preparation can be very economical. For instance, at Forrest General Hospital, we estimate a complete return on investment (ROI) within 42 months. However, that period could be shorter, as we continue to expand our use of the device. Robotic IV preparation devices also pay patient safety and Joint Commission compliance dividends; by using these devices, you can ensure that each of your IV syringes and bags is sterile and properly labeled. ■

*Steve Albritton, RPh, has worked for Forrest General Hospital, in Hattiesburg, Mississippi, for 27 years and has served as director of pharmacy for the past six years. He earned his BS in pharmacy from the University of Mississippi.*



WHERE TO FIND  
Robotic IV Preparation Devices:

[www.findit.pppmag.com](http://www.findit.pppmag.com)

Vendor	Website	Reader Service Number
ForHealth Technologies, Inc.	<a href="http://www.fhtinc.com">www.fhtinc.com</a>	81
Health Robotics	<a href="http://www.healthrobotics.net">www.healthrobotics.net</a>	82
Intelligent Hospital Systems	<a href="http://www.rivasystem.com">www.rivasystem.com</a>	83



# PhaSeal®: The definition of closed.

## Online CE Now Available

Visit [PhaSeal.com](http://PhaSeal.com) to view the latest evidence-based research on the proper handling of hazardous drugs and earn up to **3 FREE credit hours** of continuing education.

Any questions, please call 1-866-487-9250.

For more information, circle #12 on the Reader Service Card.



SW 344 2007-06 US