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### Post-Implementation Analysis of the Impact of Intravenous Automation Systems on Health-System Pharmacy Operations

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# Post-implementation Analysis of Impact of Intravenous Automation Systems on Health-system Pharmacy Operations

Presented By:

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Marshall University School of Pharmacy

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SCHOOL OF PHARMACY

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# Background

- Many health systems have implemented some form of IV automation or compounding systems in their clean rooms.
- IV admixture automation is one of the most recent areas where technology has been added to pharmacy workflow.
- Manufacturers tout that automated systems reduce the number of errors making it all the way to the patient.
- Goals prior to automation implementation typically include: reducing pharmacy errors, improving accuracy, and improving productivity and workflow.
- IV errors may lead to severe consequences up to and including death of the patient.
- Currently, there is limited published literature or reports addressing the outcomes from this area of automation.

# Types of IV Room Automation

**RIVA® IV Room Automation**



**Health Robotics IV Station®**



# Objectives

- Review key areas assessed by pharmacies prior to implementation and experiences realized following intravenous automation system implementation.
- Analyze whether health systems achieved goals of improved quality, safety, productivity, and a projected financial impact post implementation.

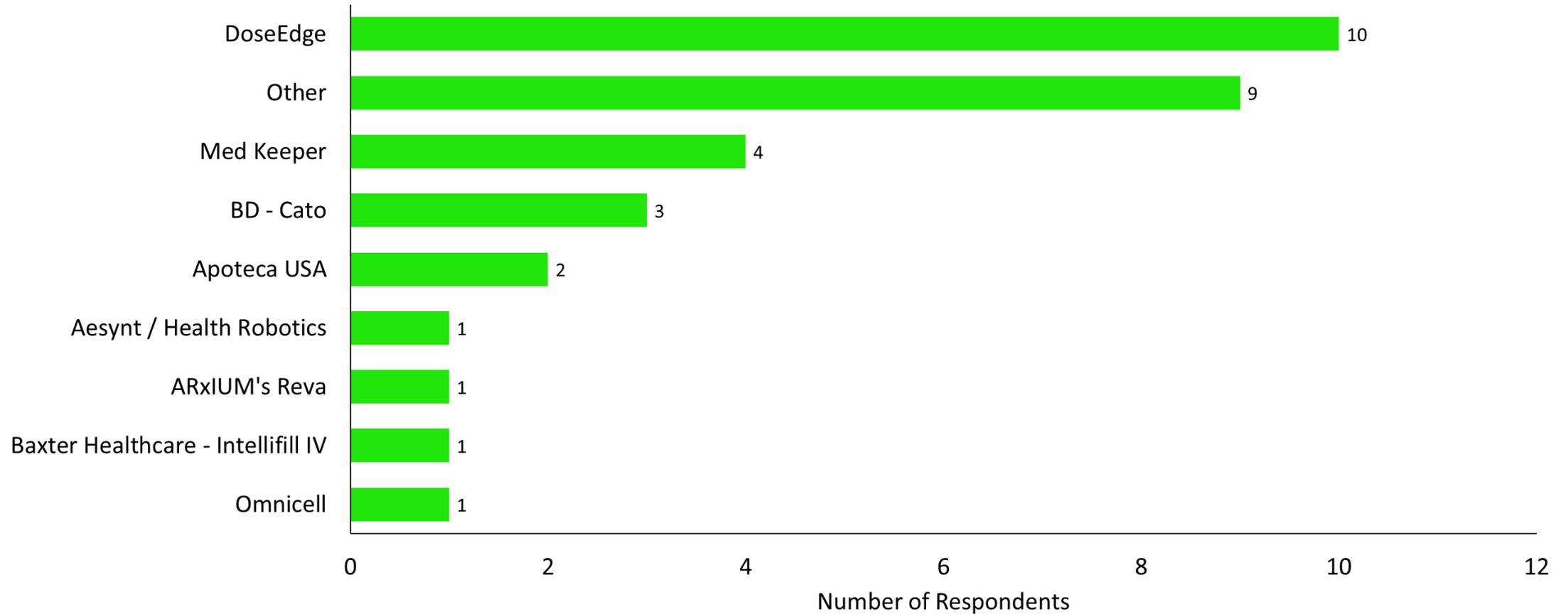
# Methodology

- A questionnaire was developed and deployed anonymously using the Qualtrics® online survey platform.
- The questionnaire consisted of 45 questions in 4 key areas: quality; medication safety; productivity; and financial impact.
- The questionnaire was sent via direct email to approximately 200 targeted facilities across the United States.
- Respondents were also solicited using the ASHP Practice management discussion board and databases that contain pharmacy management information in mid to large size health-systems.
- Screening questions were used to eliminate participants that had no automation in their IV rooms.
- *Approved by Marshall University IRB (IRBNet ID# 1045531-1).*

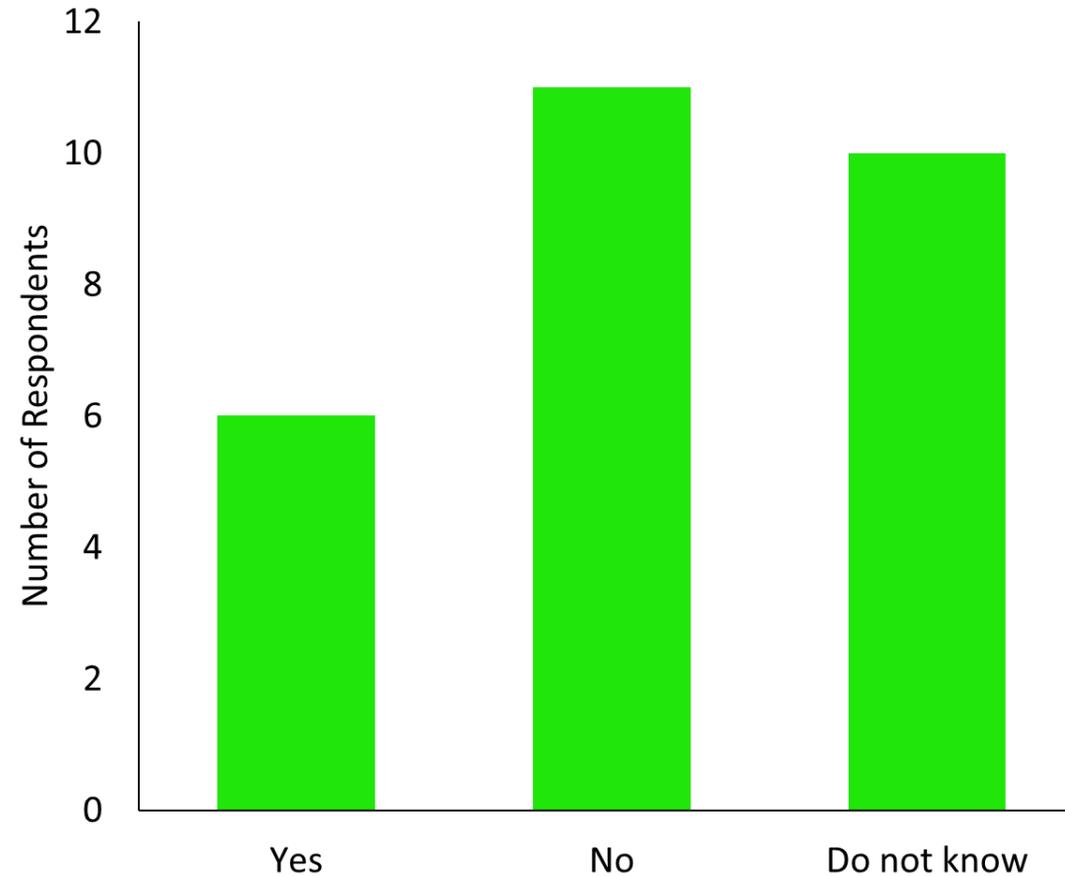
# Results

- 39 of 82 respondents (48%) met inclusion criteria.
- 20 of 34 respondents (59%) have had automation installed in the IV room for at least 3 years.
- 6 of 27 respondents (22%) were able to provide feedback related to break-even costs or fiscal return
- 5 of 11 (45%) indicated no savings were realized related to IV room automation.
- 9 of 38 (24%) respondents indicated the systems helped automate dispensing of more than 300 IV products per day.
- 9 of 15 (60%) respondents indicated that no staffing changes were made, and 1 reported a decrease in staffing as a result of the automation.
- 10 of 15 (67%) respondents indicated IV automation increased the time to perform IV admixture tasks.

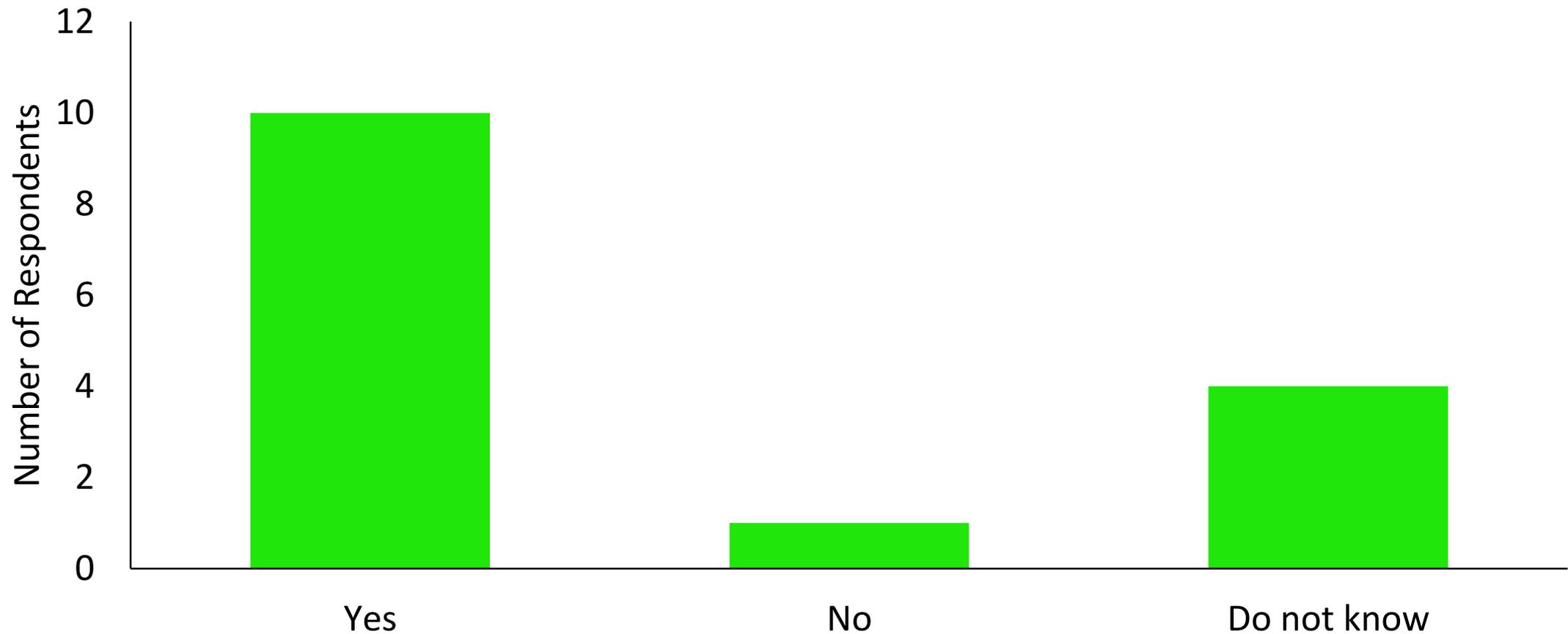
# Which IV automation product(s) did you implement?



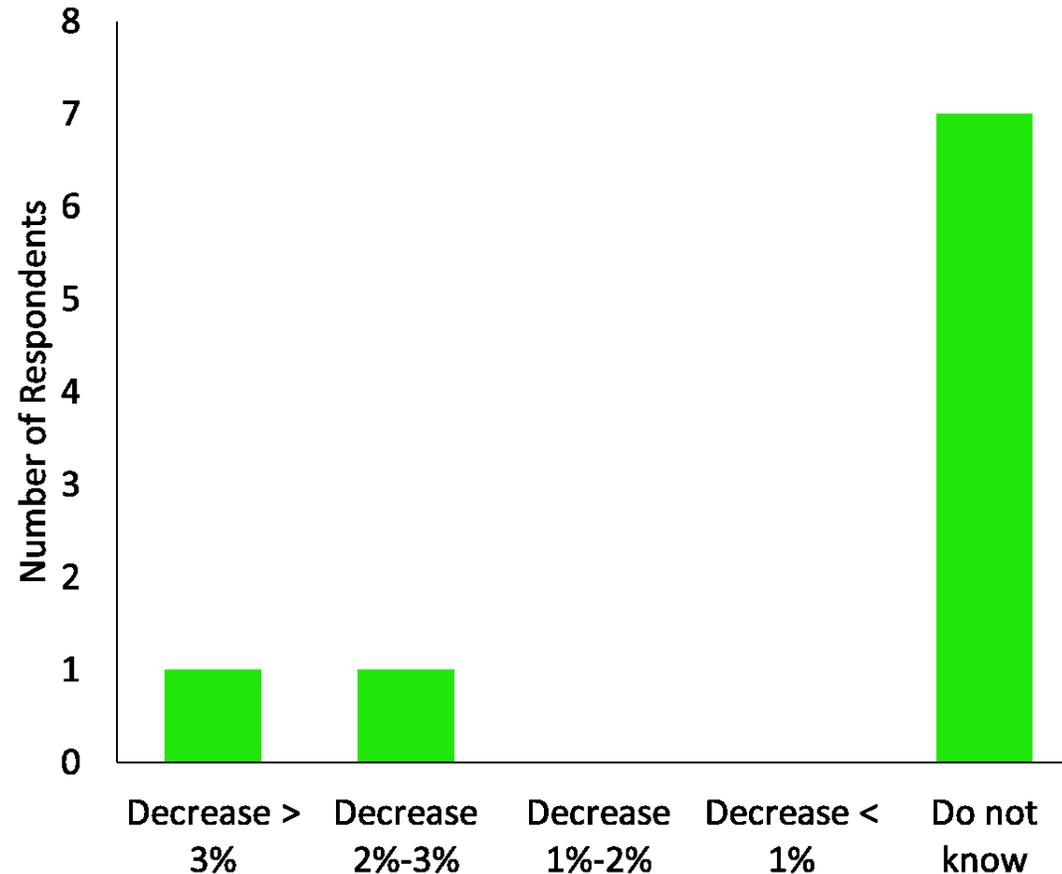
# Did the IV automation technology go through a formal ROI prior to purchase and implementation at your site?



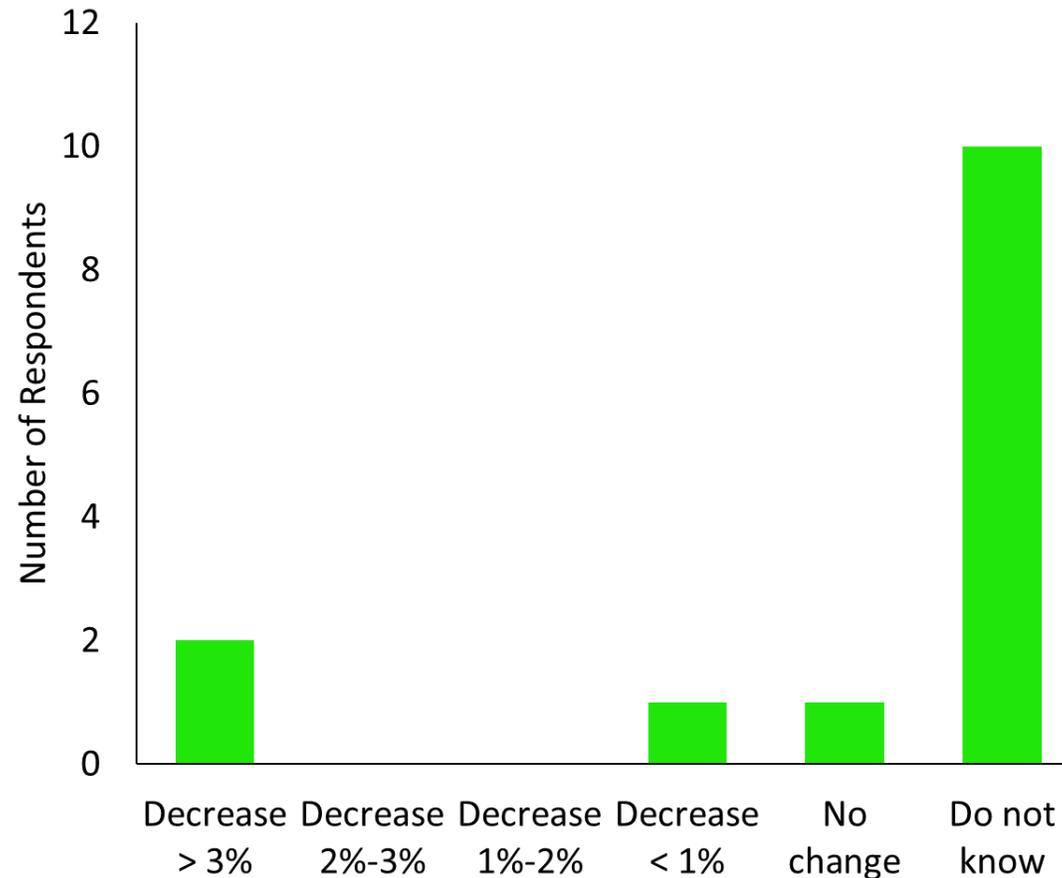
# Did the Pro Forma predict any decrease in medication errors during routine preparation of IV medications?



# What was the predicted decrease in medication errors during routine preparation of IV medication following implementation of IV automation?



# What was the change, if any, in the actual rate of medication errors following IV admixture automation?



# Discussion and Implications

- Most respondents were unaware or their site did not use a formal ROI analysis or on-going assessment of fiscal impact associated with IV room automation.
- Lack of an ROI process may indicate direct cost savings is not a primary consideration and opportunity exists to better quantify savings associated with IV automation.
- Most respondents indicated projected medication error reduction pre-implementation but few knew the projected or actual reduction post-implementation
- Lack of staff changes indicate this technology may have aided in meeting higher volumes and expansion goals.
- A limitation to this survey was the low number of respondents.

# Follow-Up on Pilot Survey (Future Research)

- Identify challenges to getting an IV automation project approved / funded
- Identify strategies that helped overcome challenges in implementation
- Identify observable measured outcomes to assess financial impact and patient safety impact of automated IV devices
- Develop best practice recommendations

# Questions and Discussion

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