

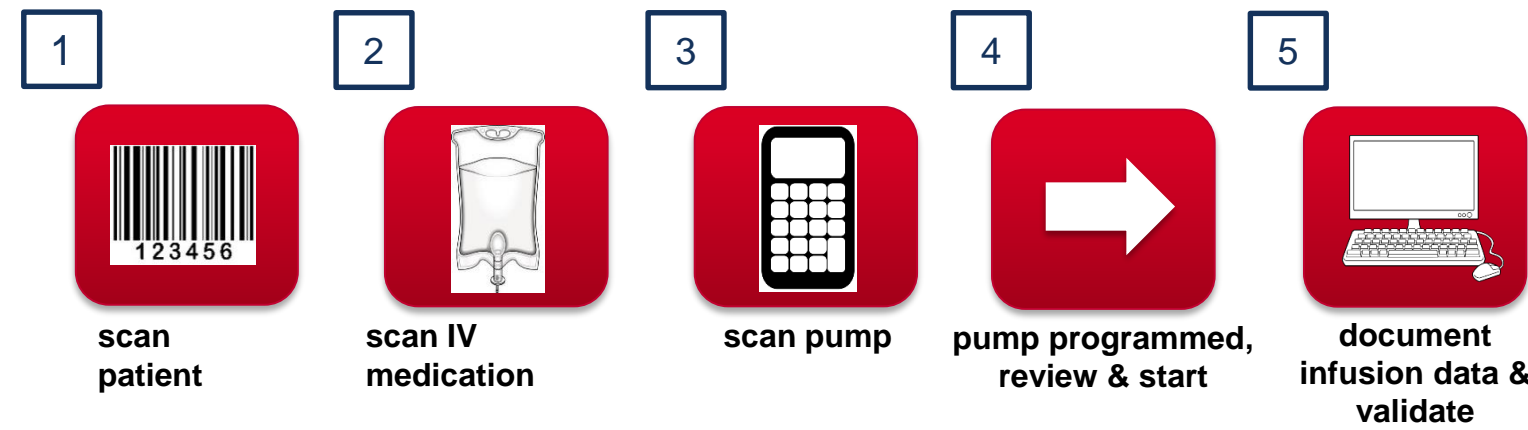
# Pump Integration and Patient Safety: Outcomes and Nurse Satisfaction



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## Background and Purpose



Pump Integration creates a closed-loop intelligent infusion system between the smart infusion pumps and the EHR to:

- Enhance Patient Safety at the point of infusion administration
- Promote Best Practices
- Capture Valuable Information
- Improve documentation

## Setting and Survey Instrument

- UCHHealth is a non-profit Colorado-owned and integrated health care system of 5 hospitals and 1,620 hospital beds
- The first UCHHealth facility went live with pump integration on November 15<sup>th</sup>, 2015 in the ED and Inpatient departments
- The Clinical Information System Implementation Evaluation Scale (CISIES 2.0) was used to measure RN satisfaction:

<http://www.gicinformatix.com/cisies>

## Data Collection and Post-Implementation Outcomes

### EHR Compliance Report Monthly Data:

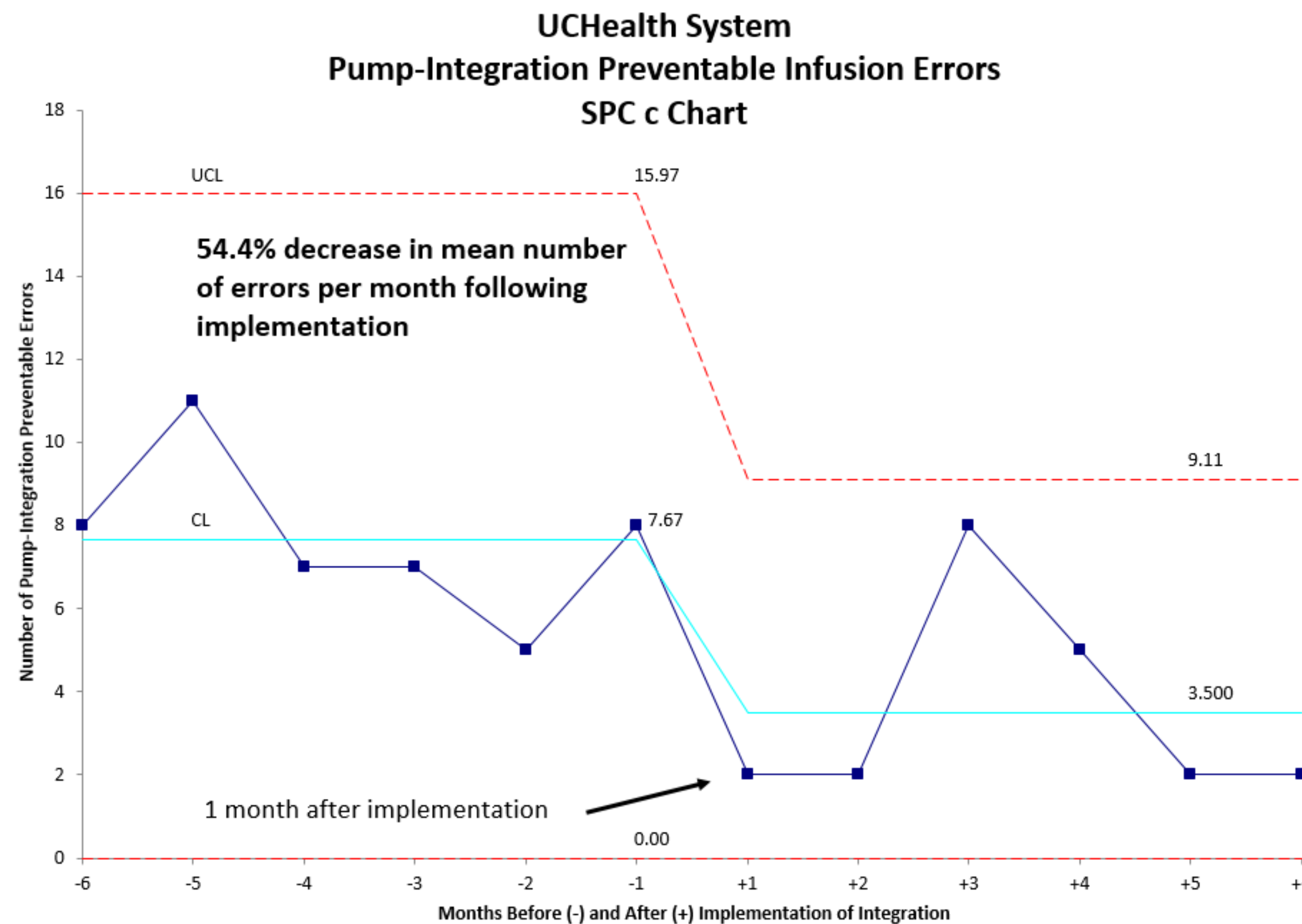
- 91% Pump integration compliance rate

### Smart Pump Knowledge Portal Monthly Data\*:

- 50.8% Reduction in mean number of basic infusions
- 18.5% Increase in infusions with patient ID recorded

### Patient Safety Event Analysis Monthly Data \*\*::

- 54.4% decrease in mean number of pump integration-preventable infusion errors



\*Includes all Smart Pump Infusions in 5 UCHHealth hospitals, inclusive of clinical areas out of scope for integration

\*\*Inclusions: Errors reported in safety event reporting system and classified as preventable with pump integration technology via adjudication by medication safety team experts using standardized definition for UCHHealth. Exclusions: Errors determined to be nonpreventable by pump integration and errors in areas out of scope for pump integration.

## Survey Results: CISIES 2.0 (n=347)\*

Subscale	Mean	SD	Median
Training (3 questions)	2.3	2.0	3.0
Teamwork (7 questions)	1.0	1.6	1.3
Dependability (6 questions)	0.6	1.9	1.0
Patient Care (4 questions)	0.5	2.5	0.8
Design and Troubleshooting (6 questions)	0.0	2.3	0.0
Workload (5 questions)	-2.0	2.4	-2.0
Overall (3 questions)	0.9	2.4	1.0

Mean (sd)	Less than 3 years	3-5 years	6-10 years	11 or more years	p
N	70	71	89	93	
Workload	-0.4 (2.2)	-1.7 (2.4)	-2.3 (2.3)	-1.9 (2.6)	<.0001
I believe the use of the new system improves the quality of patient care	1.8 (2.1)	1.3 (2.8)	1.0 (2.5)	0.9 (2.9)	0.11
I believe the use of the new system improves patient outcomes	1.5 (2.3)	0.8 (2.7)	0.6 (2.7)	0.5 (3.0)	0.11
Combined Subscales Score	1.3 (1.4)	0.6 (1.8)	0.2 (1.7)	0.2 (2.1)	0.0005

\* Voluntary, Anonymous administration in 20 select units: 90-111 days post-implementation  
higher scores reflect increased satisfaction 5=Strongly agree, 3=Agree, 1=Somewhat Agree, -1=Somewhat Disagree, -3=Disagree, -5=Strongly Disagree

## Implications for Practice

- Standardizing workflows takes time
- Input from Bedside RNs is crucial
- Future optimizations should focus on improving efficiency as well as patient safety

