

## Problem

Communication failures during patient handoff can negatively impact the quality and safety of patient care.<sup>1, 4</sup>

- **World Health Organization:** Communication breakdown is a major catalyst to patient harm
- **The Joint Commission:** 80% of serious medical errors involve miscommunication between caregivers during patient transfer
- **National Academy of Medicine:** Treatise on medical errors identified communication breakdown as a key source of error
- **Penn Presbyterian Medical Center:** 110,000 patient days = 220,000 change-of-shift patient handoffs

## Available Knowledge

### Structured Handoff Tools<sup>2</sup>

- Prompts Critical Information
  - Mitigates Fatigue
  - Usually on Paper
- Bedside Report<sup>4</sup>**
- Patient Centered
  - Promotes Quality & Safety

### Smart Phone Technology in Nursing<sup>3</sup>

- Improves Communication
- Fosters Efficiency

## Methods

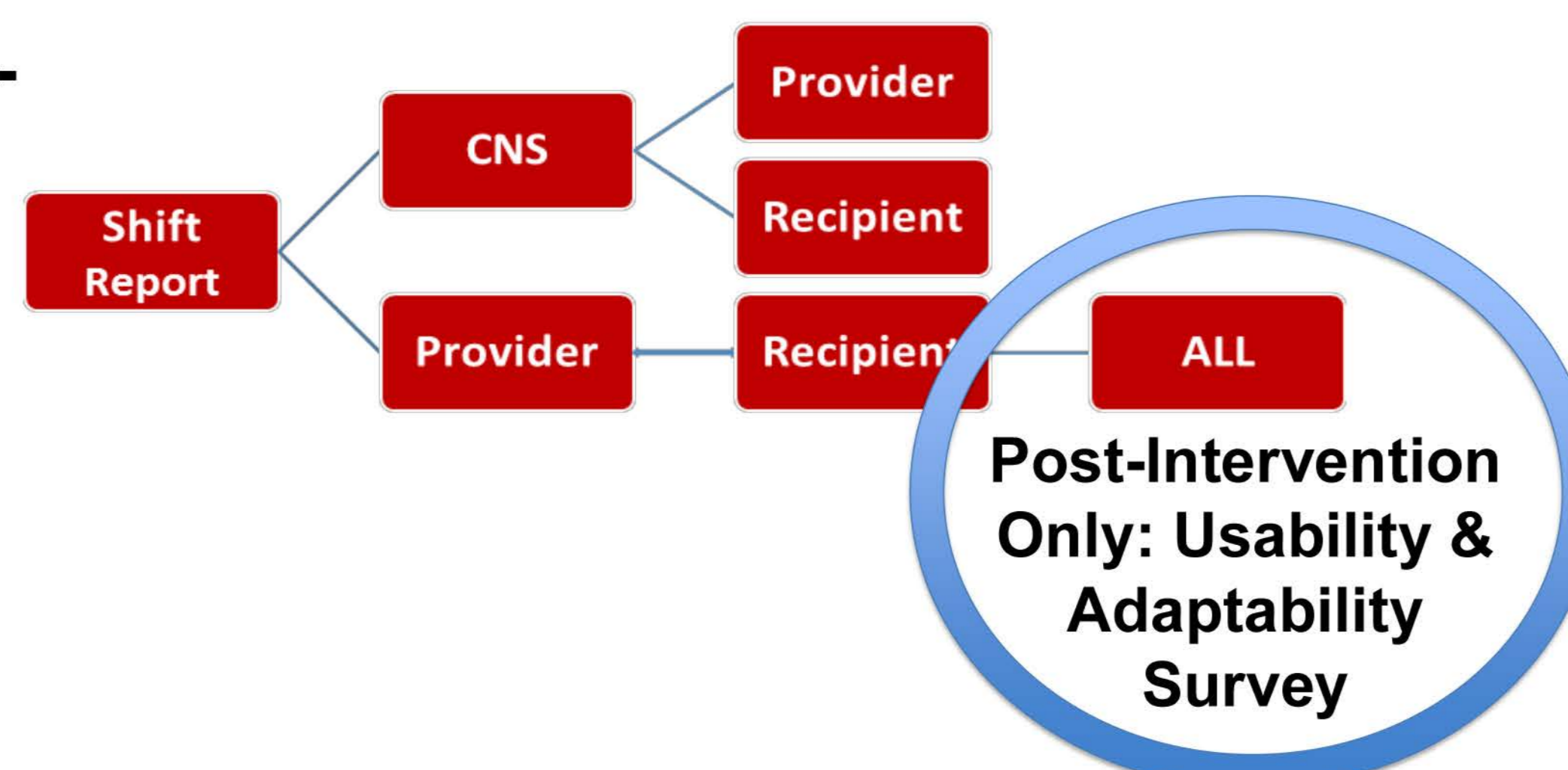
### Project Design:

- Prospective Independent Samples Design

### Procedures:

- Pre- and Post-Intervention: Five Masters prepared CNS/CNE conducted handoff observations using Handoff CEX tool<sup>5</sup>
- Interrater Reliability established: (Provider .98 Recipient .97)
- Pre- and Post-Intervention: Handoff report Provider and Recipient evaluated each other using Handoff CEX tool<sup>5</sup>
- Clinical Nurses educated and trained on Carelign™ smartphone app intervention over an 8 week period
- Post-intervention all Clinical Nurses took the QDACT survey to evaluate usability and adaptability of technology<sup>6</sup>

### Pre- and Post-Intervention 75 Observations Each



## Intervention

### Features of the Smartphone App

- Interface with Electronic Health Record
- Prompts Systems Review
- Trends Vital Signs and Lab Data
- Updated Medication Administration List
- Identifies Multidisciplinary Care Team
- Access to Diagnostic Reports



## Results

Domain Scores	Pre-Mean	Post-Mean	P Value
Setting	7.39	7.78	0.052
Organization	7.58	7.82	0.127
Communication	7.75	8.18	0.003*
Content	7.43	7.76	0.080
Clinical Judgement	7.62	7.97	0.008*
Humanistic Qualities	7.89	8.15	0.066
Overall	7.53	7.93	0.002*

## Results

Will Carelign™ help improve the quality of patient handoff	Experience < 10 Years	Experience > 10 Years	P Value
	#(%)	#(%)	
Not at All	1(7.1)	2(9.5)	
Somewhat	5(35.7)	6(28.6)	
Moderately	3(21.4)	8(38.1)	
Very	5(35.7)	5(23.8)	
Experience Difference			0.717

## Study of the Intervention

- **Intraclass correlation coefficient** (>.8) was used to measure interrater reliability between observers
  - Provider Observations (.98) Recipient Observations (.97)
- **Kruskal Wallis test** compared differences in domain scores
  - Both Providers and Recipients rated the handoff statistically significantly higher than their respective Observers
- **Wilcoxon rank sum test** evaluated differences in scores between pre- and post-intervention
  - Overall handoff scores statistically significantly higher from pre- to post-intervention
- **Spearman's rho correlation coefficients** were calculated to describe the relationship
  - Positive monotonic correlation between handoff providers and their observers (rho=0.24, p=0.041)
- **Fisher exact test** compared participant's experience after using the intervention
  - Participants reported the intervention was easy to use and non-burdensome to patients

## Conclusion

### Utilizing technology for an effective patient handoff:

- Improved communication between Nurses at change-of-shift
- Improved Nurse perceptions of the overall quality of patient handoff

### Nurses reported that the technology:

- Was easy to use
- Was non-burdensome to patients
- Will help improve clinical care
- Can be easily incorporated into bedside report

## References

1. Pronovost, P.J., Sutcliffe, K.M., Basu, L., & Dixon-Woods, M. (2017). Changing the narratives for patient safety. *Bulletin of the World Health Organization*, 95, 478-480
2. Haig, K. M., Sutton, S., & Whittington, J. (2006). SBAR: A shared mental model for improving communication between clinicians. *Joint Commission Journal on Quality and Patient Safety/Joint Commission Resources*, 32(3), 167
3. Farrell, M. (2016). Use of iPhones by nurses in an acute care setting to improve communication and decision-making processes: Qualitative analysis of nurses' perspectives on iPhone use. *JMIR mHealth and uHealth*, 4(2), e43.
4. Anderson, J., Malone, L., Shanahan, K., & Manning, J. (2015). Nursing bedside clinical handover – an integrated review of issues and tools. *Journal of Clinical Nursing*, 24(5)
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6. Kamal, A.H., Kavalieratos, D., Bull, J., Stinson, C.S., Nicolla, J., & Abernethy, A.P. (2015). Usability and acceptability of the QDACT-PC, an electronic point-of-care system for standardized quality monitoring in palliative care. *Journal of Pain and Symptom Management*, 50(5), 615-621.