

The background features a photograph of a building entrance with a large, arched doorway. The entrance is framed by stone arches and has the words "ODD CHAUX HALL" visible above the door. A large, dark silhouette of a hand is overlaid on the left side of the image, with the fingers pointing towards the building. The right side of the image is a solid dark green color where the text is located.

# Improving Skin Assessment Using Visual Reminders

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# Hospital Acquired Pressure Injuries are a National Problem

2.5 Million Patients  
Impacted per year &

60,000 HAPI Deaths  
(AHRQ, 2014)

HAPI Treatment Costs  
\$500- \$150000 per case  
(Padula, 2017)



0\$ in treatment cost  
reimbursement for HAPIs  
(CMS, 2017)

+

Additional financial  
penalties possible under  
CMS HACRP (CMS, 2020)

HAPIs result in significant  
patient pain & suffering  
(Gorecki et al., 2009)





**PROBLEM STATEMENT, AIM/OBJECTIVES,  
BACKGROUND, CONCEPTS, & FRAMEWORK**



# Problem Statement

- ▶ 13 HAPIs attributed to The Heart Hospital ICU (THH-ICU) FY 2020
  - Staged as deep tissue pressure injuries (DTPI)
- ▶ Contributing to the HAPIs –Incomplete documentation of 4 Eyes in 4 Hours (4E4H) admission skin assessments
  - Identified by the nurse clinician during chart audits, 9/22/2020- 50% of the charts reviewed were missing the second nurse’s documentation
  - Hospital organizational policy & pressure injury prevention protocol require 2 registered nurses (RNs) examine the patient’s skin and document skin assessment findings within four hours of admission and on transfers.
- ▶ Several barriers exist to completion of 4E4H admission skin assessments reported by THH-ICU nursing staff including:
  - Staffing vs heavy workloads
  - Time constraints
  - Forgetting to complete the documentation

# Aim & Objectives

▶ **Aim:**

- To increase the completion rate of the 4E4H admission skin assessments by RNs in THH-ICU from 50% to 100% by implementing 4E4H visual reminders placed near the computers used for documentation and in staff breakroom areas.

▶ **Objectives:**

- 1. Establish 4E4H Task Force by August 23, 2021.
- 2. Design the 4E4H visual reminders by September 1, 2021.
- 3. Deliver 4E4H education sessions to THH-ICU staff on September 6 and September 10, 2021.
- 4. Conduct weekly 4E4H chart audits between September 10, 2021-October 8, 2021.
- 5. Communicate results of the weekly 4E4H chart audits to staff weekly and during unit meeting on September 9, 2021.
- 6. Analyze 4 weeks of the 4E4H chart audit data before and after implementation of visual reminders by October 10, 2021.
- 7. Disseminate the project's results via to THH-ICU nursing leadership and nursing staff on October 14, 2021.
- 8. Present the project's results to Deaconess' organizational leadership on October 14, 2021.



# Background

- ▶ **Data to Support the Need for Improvement:**
  - 4E4H Chart audit, September 2020
    - Missing documentation in 50% of charts audited
  - Informal Survey nursing staff, December 2020
    - Staffing vs. heavy workloads, time constraints, and forgetting
  
- ▶ **Project Site Characteristics:**
  - 24-bed adult cardiovascular ICU
    - 1500 discharges per year
    - ALOS- 4 days
    - Top Diagnoses: CAD, AMI, and Respiratory Failure
    - 1:2 Nurse patient ratio

# Concepts

## ▶ **Hospital Acquired Pressure Injuries (HAPIs)**

- Pressure injuries are defined as “localized damage to the skin and/or underlying tissue, as a result of pressure or pressure in combination with shear. Pressure injuries typically occur over bony prominences but may also be associated with a medical device or other object” (NPIAP, 2019, p.16)

## ▶ **Four Eyes in Fours Hours (4E4H) Admission Skin Assessment**

- Defined as the process of two RNs jointly examining the patient’s skin from head to toe within fours of admission and on transfer.
- Both nurses document skin assessment findings in a nursing note in the electronic medical record along with a written attestation that the second admission skin assessment was completed.



# Framework

## John Kotter's 8- Step Organizational Change Model

- ▶ John Kotter, DBA
  - Harvard Business School
  - International change leadership expert
  - *Leading Change* 1996
  - *Heart of Change* 2002
- ▶ Creating urgency
  - Successful change
    - Buy-in needed from 75% Management



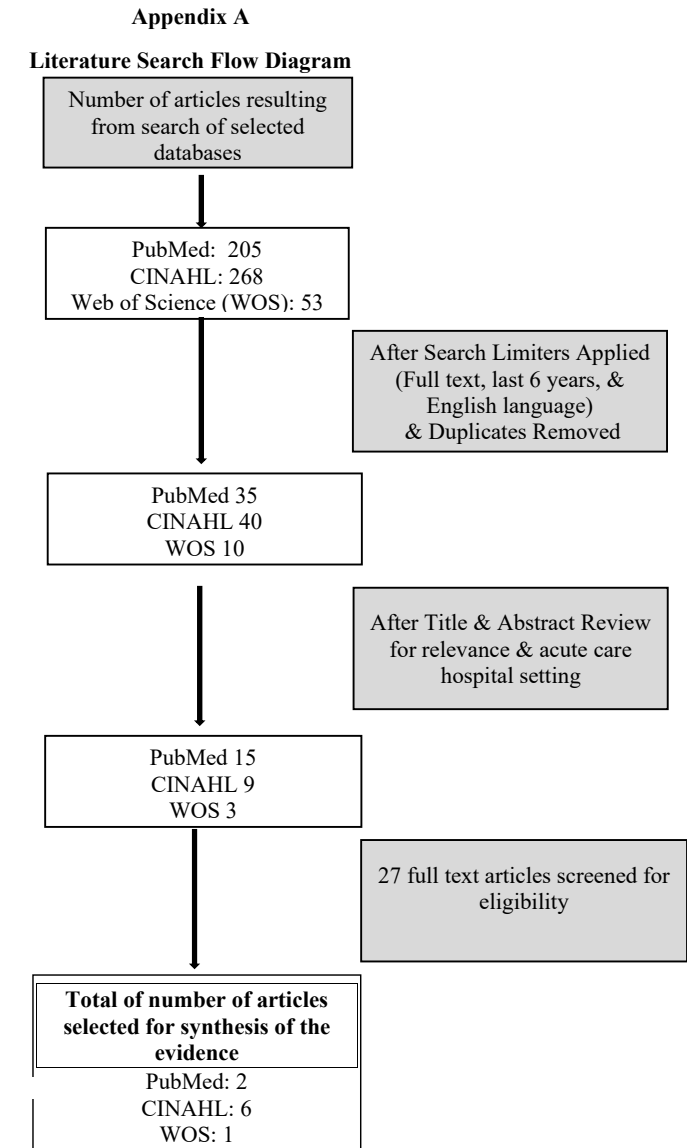




**SYNTHESIS OF THE EVIDENCE:  
EVIDENCE SEARCH & SYNTHESIS**

# Evidence Search

- ▶ **Search Terms:** visual reminder or reminder or reminder system or reminder systems or system reminder and documentation or nursing records
- ▶ **Databases:** PubMed, CINAHL, & Web of Science
- ▶ **Inclusion Criteria:**
  - ✓ Published between 2015 and 2021
  - ✓ Peer-reviewed journals
  - ✓ Full text available
  - ✓ English language
  - ✓ Acute care hospital settings
  - ✓ Using reminders (e.g., stickers, posters, postcards, checklists, signs, labels)
  - ✓ Improvement in documentation as an outcome



# Synthesis: Level of Evidence

## ► Level of Evidence

### — (7) Level VI studies (quality improvement design)

- Hassan, Rajamani, & Fitzsimons, 2017
- Jones et al. 2020
- Sahota et al., 2020
- Singh, Assaf, Bayley, & Gillespie, 2020
- Sivertsen, Graverholt, & Espehaug, 2017
- Sparks et al., 2015
- Turner, Feeney, & Dodds, 2020

### — (1) Level III study (prospective, non-randomized comparative)

- Morrison, Laney, Fogelsong, & Brennaman, 2016

Level of evidence	Study design
I	Systematic reviews and meta-analysis of RCT
II	RCT
III	Non-randomised controlled trial (quasi-experiment)
IV	Case-control or cohort studies
V	Systematic reviews of qualitative or descriptive studies
VI	Qualitative or descriptive studies
VII	Opinion of authorities and/or reports of expert committees

RCT, randomised controlled trials.

# Synthesis: Themes

- ▶ Types of Visual Reminders:
  - Electronic point-of-care computerized reminders (e.g., alerts, reminders or prompts) which deliver critical clinical information on a computer screen to the clinician at the precise time the clinician is engaged in the specific task of interest (Pantoja et al., 2019).
  - Paper reminders (e.g., preprinted stickers, posters, postcards, labels, and pocket-sized reminder cards) which provide written information to prompt recall and influence action on specific clinical tasks (Pantoja et al., 2019).
    - Paper reminders may be affixed to patient charts, placed on patient equipment or computer workstations, given directly to staff as a badge size cheat sheet, or posted in patient areas where the necessary clinical task will take place.
- ▶ Effectiveness of Visual Reminders
  - Impact on practice and/or documentation



# Synthesis: Similarities & Differences

Author	Study Design	Purpose	Type of visual reminder
Hassan et al., (2017)	Quality improvement	To increase nurse-led mobilizations of ventilated patients	Postcard
Jones et al., (2020)	Quality Improvement	To increase code status documentation by nursing staff in pediatric ICU patients	Poster
Morrison et al., (2016)	Prospective, nonrandomized, comparative	To improve central line connector changes and documentation by nursing staff	Label
Sahota et al., (2020)	Quality Improvement	To improve 48-hour antibiotic reviews and documentation by physicians	Posters and pre-printed sticker
Sing et al., (2020)	Quality Improvement	To improve surgical consent form documentation by surgeons	Pre-printed sticker
Siversten et al., (2017)	Quality Improvement	To improve dysphagia screening in stroke patients and documentation	Checklist and postcard
Sparks et al., (2015)	Quality Improvement	To improve documentation of 6 high-yield comorbidities present on admission by hospitalist staff	Pocket card
Turner et al., (2020)	Quality Improvement	To improve endotracheal tube cuff pressure management by anesthesiology providers	Computer reminder and preprinted sticker

# Synthesis: Variation in Outcomes

- ▶ Two studies used postcard reminders which were effective in increasing nurse led mobilizations of ventilated patients (Hassan et al., 2017) and in improving dysphagia screening and documentation (Sivertsen et al., 2017).
  - Sivertsen et al., 2017 also used a checklist
- ▶ One study used a pocket card reminder which was effective in increasing physician documentation of comorbidities on admission (Sparks et al., 2015)
- ▶ Two studies used posters (Jones et al., 2020 and Sahota et al., 2020) which were effective in documentation of code status and 48-hour antibiotic reviews
- ▶ One study used labels which resulted in statistically significant differences in documentation of central line connector changes (Morrison et al., 2016)
- ▶ Three studies used preprinted informational stickers (Sahota et al., 2020, Singh et al., 2020, and Turner et al., 2020).
  - Outcomes: Effective in improving documentation of ET cuff pressures (Turner et al., 2020); Not effective in improving surgical consent documentation (Sahota et al., 2020) and 48-hour antibiotic review (Singh et al., 2020) due to supply and deployment issues with preprinted stickers.

# Synthesis: Summary Current Evidence

- ▶ Current evidence: Visual reminders are effective as a single intervention (Morrison et al., 2016) or in combination with other interventions to improve practice and/or documentation in various patient care settings (Hassan et al., 2017; Jones et al., 2020; Sahota et al., 2020; Sivertsen et al., 2017; Sparks et al., 2015; Turner et al., 2020).
- ▶ Visual reminders in the form of preprinted stickers were not effective in two studies because of deployment and supply issues (Sahota et al., 2020; Singh et al., 2020).

## Synthesis: Gaps

- ▶ The use of visual reminders to improve documentation of 4E4H admission skin assessments in intensive care does not exist.
- ▶ Future research: Long term effectiveness and impact on patient outcomes



# Synthesis: Strengths & Weaknesses

## ► Strengths:

- Multi-faceted (two or more) approaches to improvement
- Simplicity of study designs
- Variety of visual reminders used in the studies
  - Inexpensive and not labor-intensive to create
- Morrison et al., (2016) used a prospective, nonrandomized comparative design

## ► Weaknesses

- Nonrandomization studies with no comparators
- Small sample sizes
- Before and after study methods
- Interventions implemented at different time points during study
- Impossible to establish cause and effect



# Methods

## ► Project Design

- Quality improvement design using the Model for Improvement planning and implementation framework (Institute for Health Improvement, [IHI], 2017).
- Three fundamental questions
- Plan-Do-Study- Act (PDSA) cycles

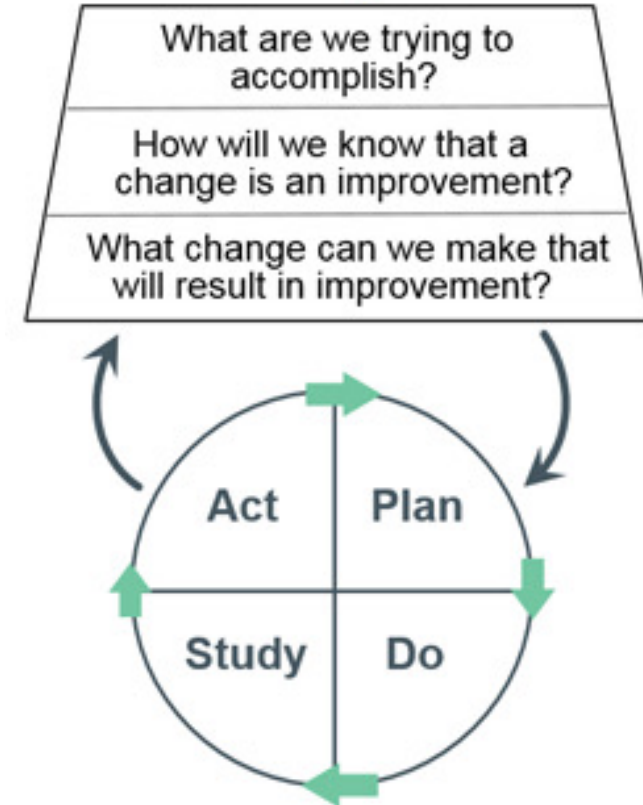
## ► Setting

- The Heart Hospital ICU (THH-ICU)
  - 24-bed adult intensive care unit in southwest Indiana
  - Top diagnoses include coronary artery disease, acute myocardial infarction, and respiratory failure.
  - 1500 discharges per year
  - Three to five new admissions per day

## ► Participants

- 60 Registered Nurses
  - 12-hour shifts
  - Clinical experience 1 year to 20 years
  - Leadership team: nurse manager, nurse clinician, nurse educator, team leaders, and unit-based champion

## Model for Improvement





# Methods

## Model for Improvement: Three Fundamental Questions

- ▶ **What are we trying to accomplish?**
  - The aim was to increase the completion rate of the 4E4H admission skin assessments by nursing staff in the THH-ICU from 50% to 100% by implementing 4E4H visual reminders placed near the computers used for documentation, and in staff breakroom areas.
- ▶ **How will we know that a change is an improvement?**
  - When the completion rate of 4E4H admission skin assessments by RNs increases above 50%.
- ▶ **What change can we make that will result in improvement?**
  - Implement visual reminders.



# Methods

## Model for Improvement: PDSA (Intervention)

### ► PDSA

#### — Plan

- 4E4H Task Force meeting (8/23/2021)
- Reviewed project aim/objectives/predictions
- Planned 4E4H educational in-services
- Created/Finalized 4E4H visual reminders
- Reviewed 4E4H data collection tool
- Finalized 4E4H data collection process
- Printed 4E4H visual reminders

#### — Do

- Conducted 4E4H educational in-services 9/6/2021 & 9/10/2021
- Placed visual reminders on computers and in staff breakrooms
- Completed 4E4H Chart audits 9/10/2021-10/8/2021

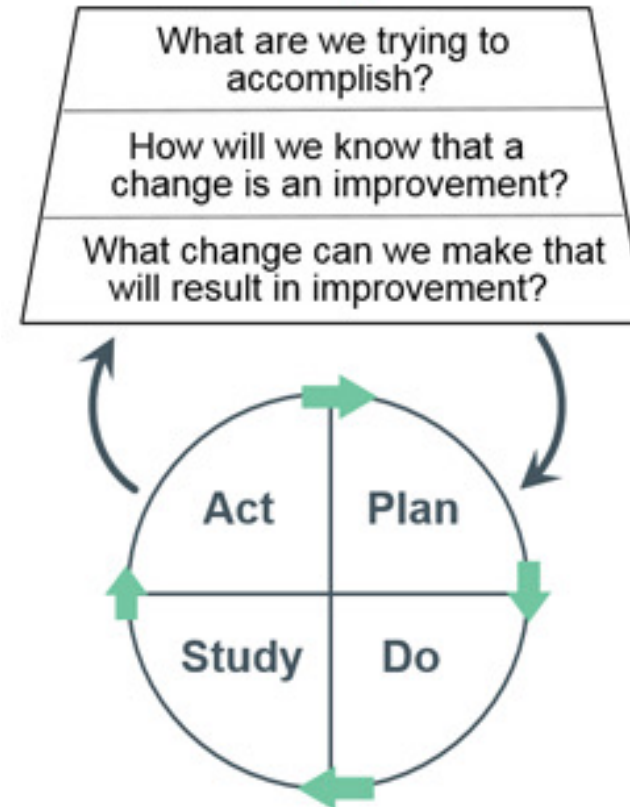
#### — Study

- Entered 4 weeks of 4E4H chart audit data into Excel & calculated overall and weekly 4E4H completion rates

#### — Act

- Adopted 4E4H visual reminders

### Model for Improvement





# Data Collection

- ▶ Concept Measured: 4E4H Admission Skin Assessment Completion Rate
- ▶ 4E4H Admission Skin Assessment Audit Tool
  - Created by the nurse clinician & DNP project manager
- ▶ Weekly 4E4H Chart Audit process
  - Nurse clinician randomly selected new direct or emergency department admissions from admission log September 10, 2021-October 8, 2021
  - Nurse clinician reviewed patient’s admission record to determine whether the assigned nurse and the second nurse completed the admission skin assessment within four hours of admission, and recorded findings on the 4E4H admission skin assessment chart audit tool
- ▶ 4E4H chart audit data excel file stored on password protected computer and external hard drive. 4E4H data collection forms stored in locked file cabinet.

4E4H Admission Skin Assessment Audit Tool

Full body skin assessment completed ON ADMISSION by assigned nurse  YES OR NO	Assessment completed within 4 hours ON ADMISSION YES OR NO	Full body skin assessment completed ON ADMISSION and cosigned by second nurse  YES OR NO	Assessment completed within 4 hours ON ADMISSION  YES OR NO

# Analysis

- ▶ 4E4H chart audit data collected for 40 patients (9/10/2021-10/8/2021)
  - Excel software used to calculate overall and weekly 4E4H completion rates:
    - 100% completion rate if assigned and second nurse completed within the 4-hour organizational policy time frame
    - 0% completion rate if either the assigned nurse or second nurse did not complete within the 4-hour organizational policy time frame

A collage of healthcare scenes framed by a large, dark brown hand silhouette. The scenes include: a group of people sitting on a blue couch; a doctor examining a patient's abdomen; two doctors looking at a tablet; a doctor at a computer workstation; a doctor examining a patient's blood pressure; a doctor looking at a patient's chart; a doctor examining a baby; and a doctor in a red suit standing next to a computer monitor. The word "RESULTS" is centered in white text on a dark horizontal band.

# RESULTS



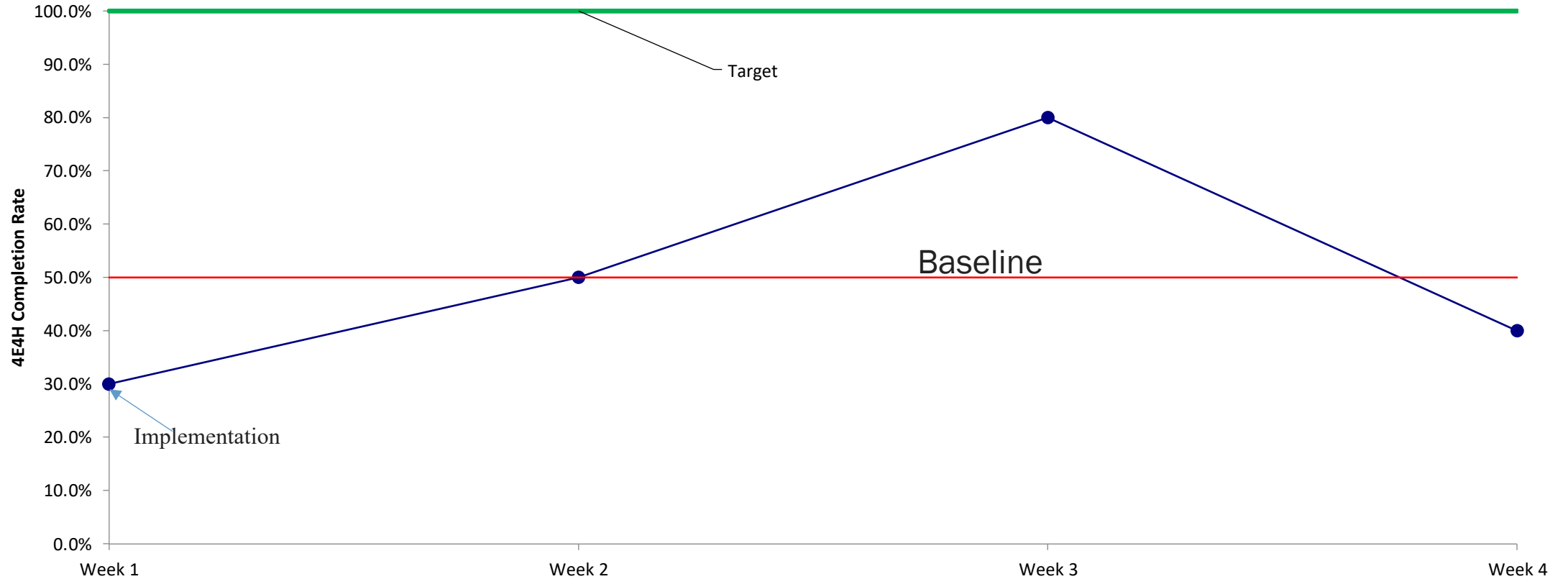
# Results

- ▶ Aim: To increase the completion rate of the 4E4H admission skin assessments by RNs in THH-ICU from 50% to 100% by implementing 4E4H visual reminders placed near the computers used for documentation and in staff breakroom areas.
  - Project timeframe: 9/10/2021-10/8/2021
  - 4E4H Chart Audits completed for 40 patients
  - All RN's working on THH-ICU participated
- ▶ Results:
  - 4E4H Completion Rate 50%
    - Assigned RNs – 100% documented and 97.5% documented within 4 hours
    - Second RNs – 67.5% documented and 50% documented within 4 hours



# Results: 4E4H Skin Assessments Completion Rate By Week

9/10/2021-10/8/2021 (N=40 Charts audited)

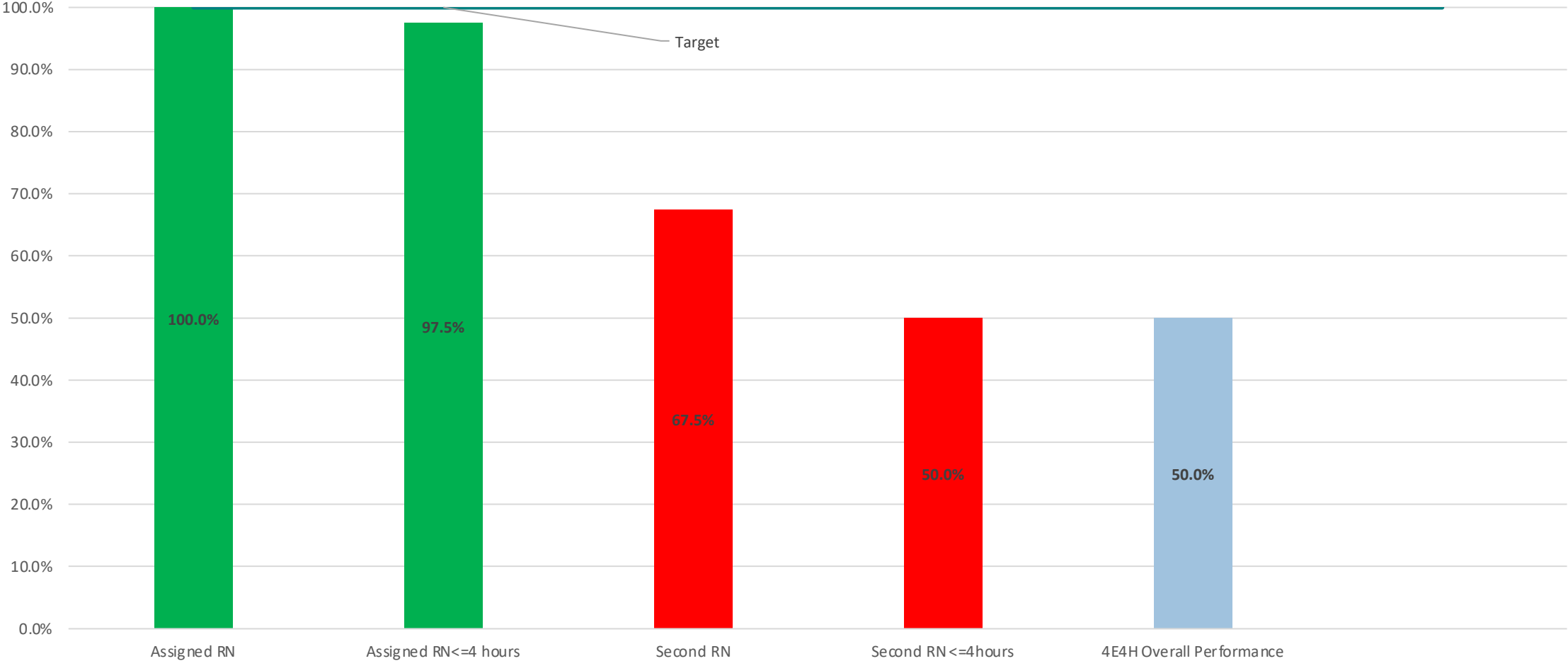


# Results: 4E4H Skin Assessments Completion Rates:



## Assigned RN vs. Second RN

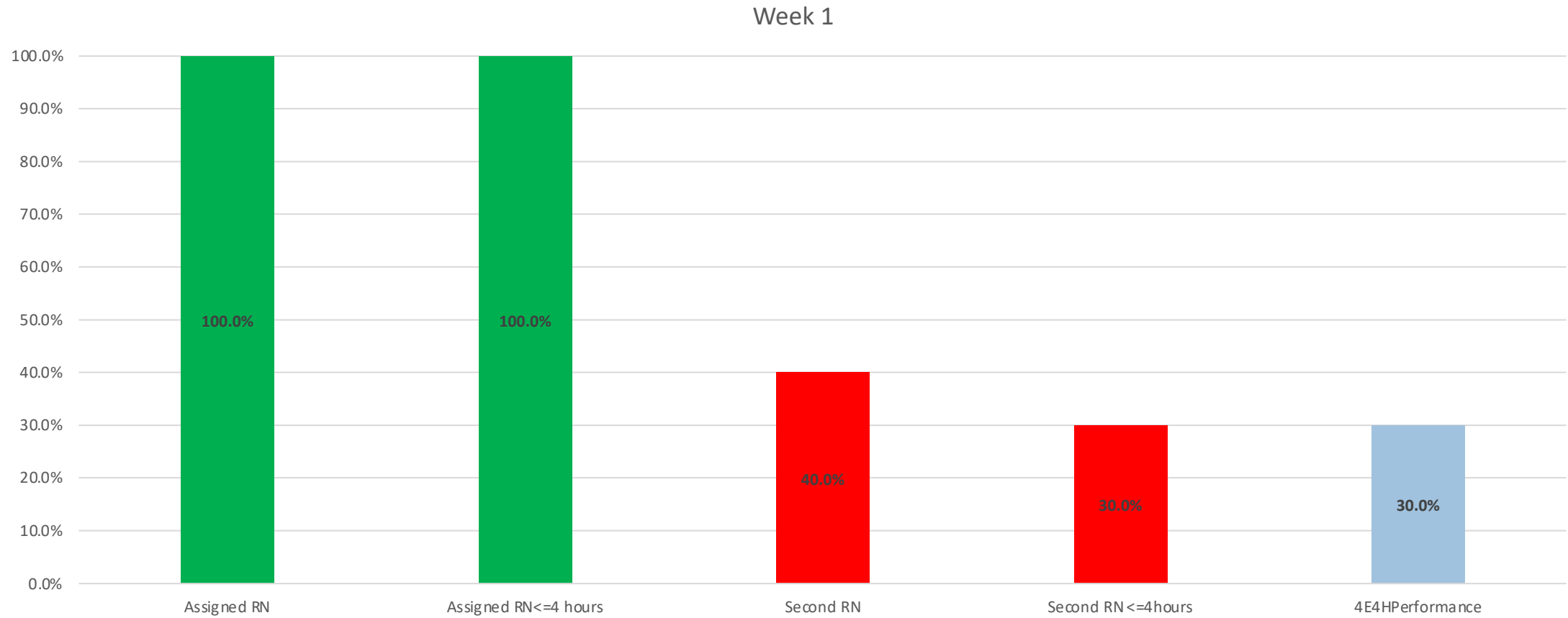
9/10/2021-10/8/2021 (N=40 Charts audited)



# Results: 4E4H Completion Rates- Week 1



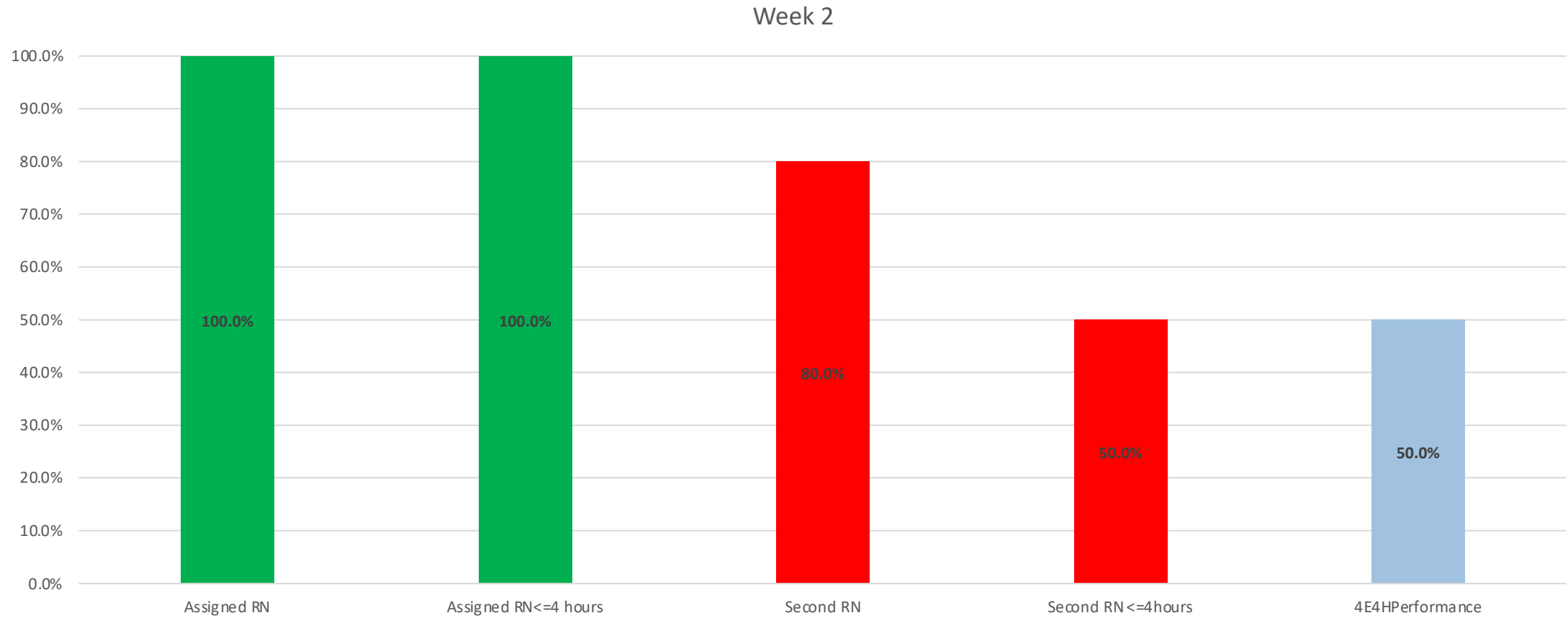
9/17/2021 (N=10 Charts Audited)



# Results: 4E4H Completion Rates- Week 2



9/22/2021 (N=10 Charts Audited)

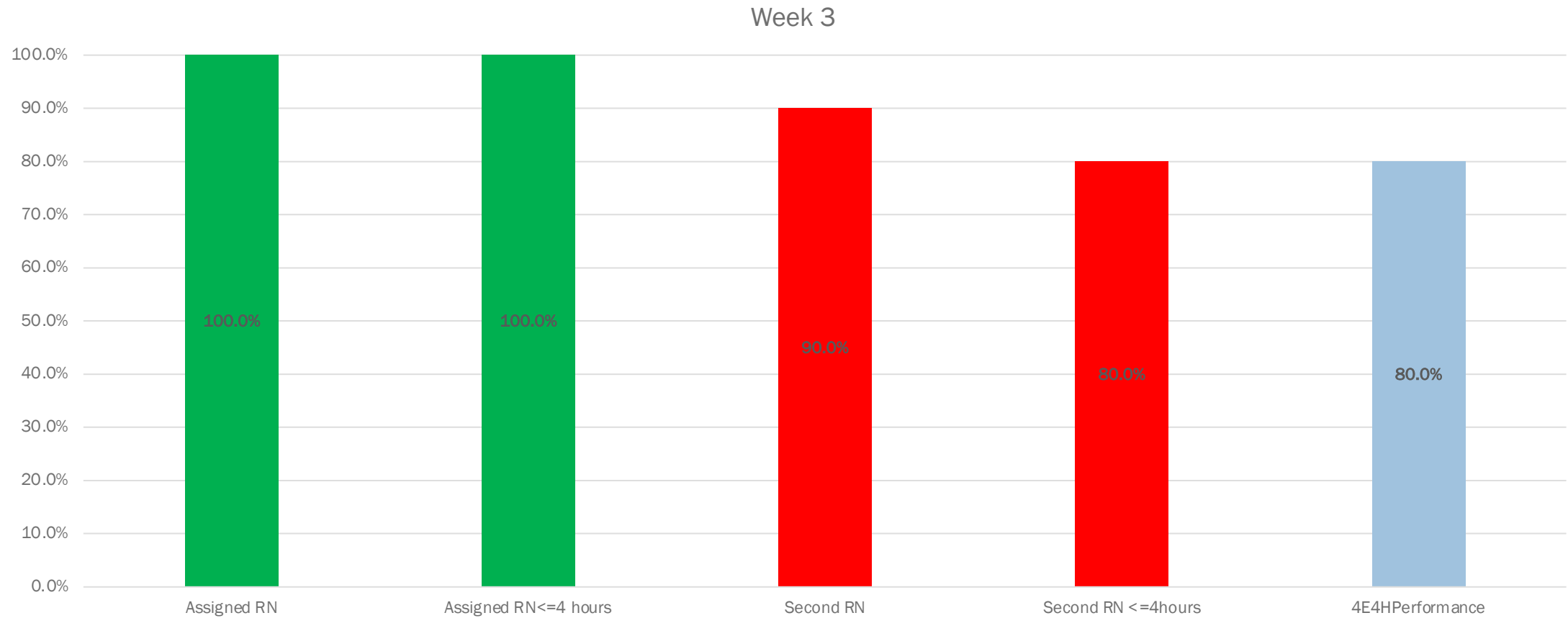




# Results: 4E4H Completion Rates- Week 3



9/30/2021 (N=10 Charts Audited)

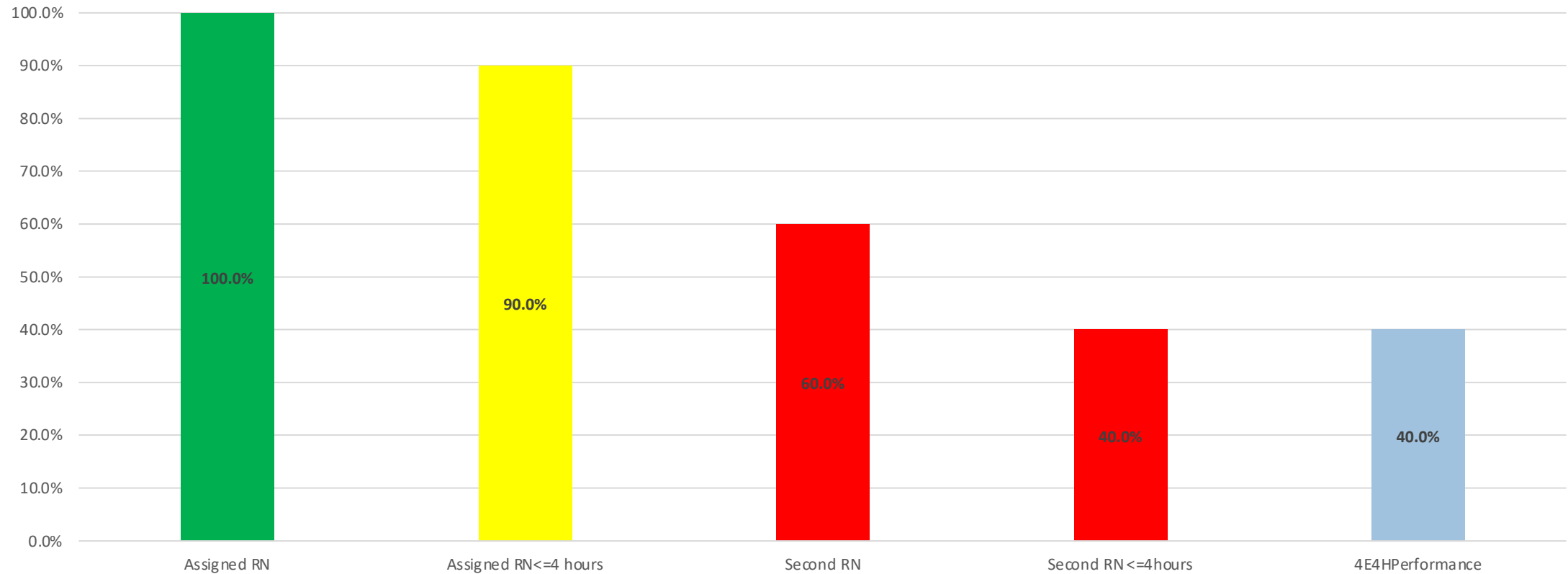




# Results: 4E4H Completion Rates- Week 4

10/4/2021 (n=10 Charts Audited)

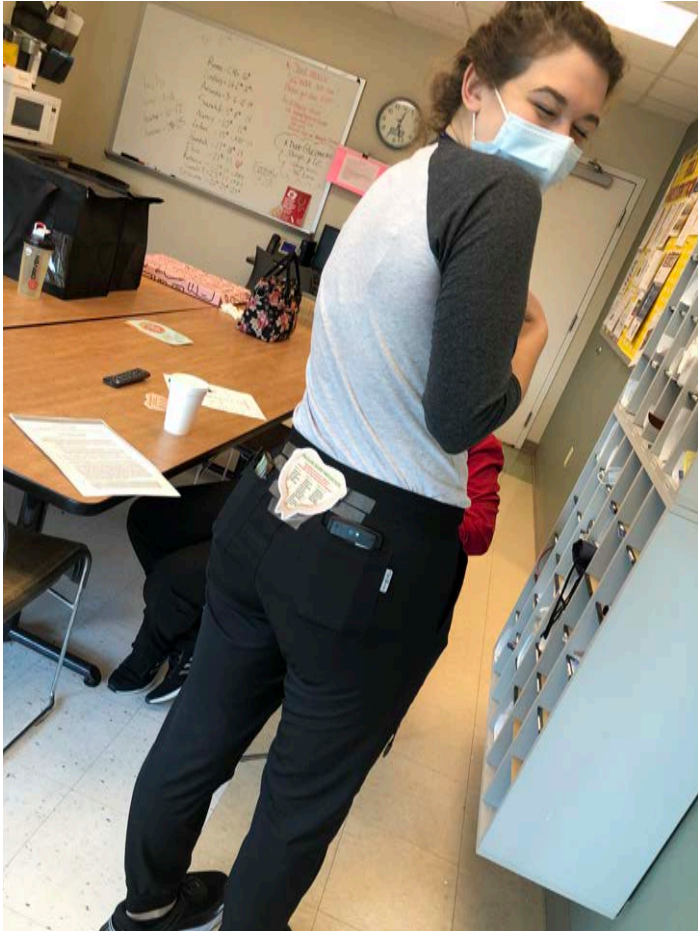
Week 4



A collage of healthcare scenes framed by a large, dark brown hand silhouette. The scenes include: a group of people sitting on a blue couch in a waiting area; a doctor in a white coat examining a pregnant woman's abdomen; two doctors in white coats looking at a tablet; a doctor and a man in a blue shirt looking at a computer monitor; a doctor in a white coat talking to a woman; a doctor in a white coat examining a woman's blood pressure; a doctor in a white coat looking at a patient's chart; a doctor in a white coat examining a baby; and a doctor in a white coat talking to a woman. The word "DISCUSSION" is written in white capital letters across the center of the hand silhouette.

# DISCUSSION

## Relate Findings to Project Aim

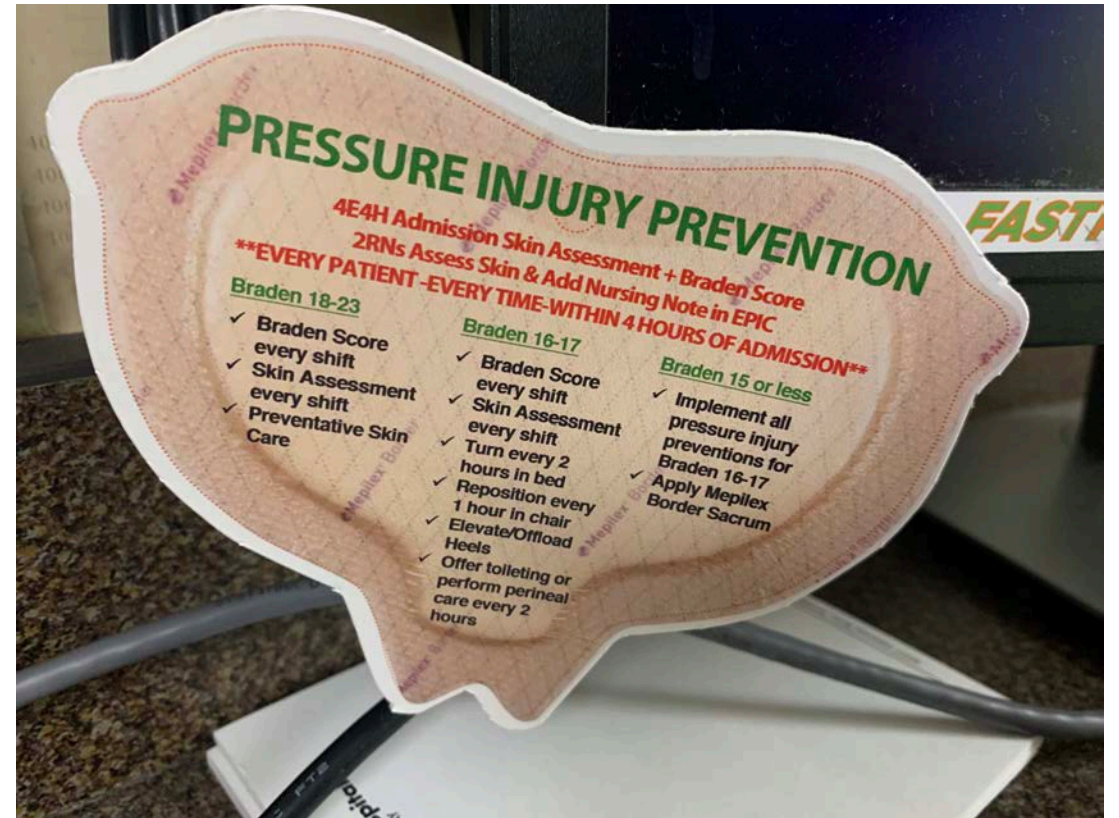


- ▶ **Aim:** To increase the completion rate of the 4E4H admission skin assessments by RNs in THH-ICU from 50% to 100% by implementing 4E4H visual reminders was partially met
  - Assigned Nurses 4E4H documentation was nearly 100% every week
  - Second Nurses documentation improved each week except for 4<sup>th</sup> week.
  - Visual reminders positively received and adopted by nursing staff



# Relate Findings to Initial Literature Review

- ▶ Visual reminders are an effective intervention to improve practice and/or documentation in a variety of patient settings (Hassan et al., 2017; Jones et al., 2020; Morrison et al., 2016; Sahota et al., 2020; Sivertsen et al., 2017; Sparks et al., 2015; Turner et al., 2020).







# Relate Findings to Initial Literature Review

- ▶ Creating a climate for change (Kotter & Cohen, 2002)
  - Competing priorities of COVID-19 and CLABSI initiative
    - Literature Theme: Link of staff engagement to project outcomes (Hassan et al., 2017; Jones et al., 2020; Sahota et al., 2020; Sparks et al., 2015; ).
  - Lack of unit-based champions
    - Literature Theme: Value of unit-based champions in project outcomes ((Hassan et al., 2017; Jones et al., 2020; Sivertsen et al., 2017).
- ▶ Engaging & Enabling the Organization (Kotter & Cohen, 2002)
  - Educational sessions & visual reminder pocket card (Sparks et al., 2015)
  - Not all nursing staff received initial education sessions
    - Literature Theme: Link of initial and ongoing education to successful project implementation/outcomes (Hassan et al., 2017; Jones et al., 2020; Morrison et al., 2016; Sahota et al., 2020; Singh et al., 2020; Sivertsen et al., 2017; Sparks et al., 2015; Turner et al., 2020)



# Relate Findings to Initial Literature Review

- ▶ Engaging & Enabling the Organization (Kotter & Cohen, 2002)
  - Educational sessions & visual reminder pocket card (Sparks et al., 2015)
    - Positive feedback from staff about visual reminders and how it prompted memory to double check completion of second nurse's 4E4H skin assessment documentation (Grundgeiger et al., 2013).
  - Communicating Quick Wins
    - Informal feedback provided by nurse clinician to management & staff
    - Literature Theme: Link of performance feedback/positive reinforcement in project outcomes (Hassan et al., 2017; Jones et al., 2020; Sahota et al., 2020; Sivertsen et al., 2017; Sparks et al., 2015).
- ▶ Implementing & Sustaining Change (Kotter & Cohen, 2002)
  - Nurse Manager & Unit leadership Positive Reinforcement
    - Literature Theme: Value of nursing leadership feedback in outcomes of project and making change stick/nurturing a new culture (Hassan et al., 2017).

# Discussion: Strengths & Limitations

## ► Strengths

- Visual Reminders
- Project alignment to organizational goal of zero patient harm

## ► Limitations

- COVID-19 Resurgence
- CLABSI initiative
- Short project duration
- Not all staff received project education
- DNP project manager not an employee on THH-ICU
- Project conducted in one unit in one hospital limits generalizability of results

# Implications of Findings & Next Steps for Future Innovation

- ▶ Assessment 1<sup>st</sup> step to ALL nursing interventions
  - Importance of prompt and thorough admission skin assessments
    - PIP
    - Capture POA pressure injuries
- ▶ 4E4H DNP Project Impact
  - Raised awareness
  - Illuminated barriers
  - Created momentum for future innovation
- ▶ Future innovations
  - Buddy System
  - Electronic reminder in EPIC
    - The Brain reminder system



A collage of healthcare scenes framed by a large, dark brown hand silhouette. The scenes include: a group of people sitting on a blue couch in a waiting area; a pregnant woman lying on a table being examined by medical staff; two women in white lab coats looking at a tablet; a woman in a white lab coat working at a computer terminal with a male colleague; a woman in a white lab coat checking a patient's blood pressure; a woman in a white lab coat looking at a large medical monitor; a woman in a white lab coat examining a baby; and a woman in a red blazer standing next to a medical device. The background is a dark brown color with a subtle grid pattern.

# CONCLUSION & REFERENCES

# Conclusion

- ▶ Visual reminders (paper) are simple to create and easy to implement
- ▶ Positively embraced and adopted by nursing staff
  - May provide a lasting impact on 4E4H skin assessment documentation & reducing pressure injuries
  - Future research needed
- ▶ Important bridge until electronic computer reminder can be implemented

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