



JOHNS HOPKINS
M E D I C I N E

JOHNS HOPKINS BAYVIEW MEDICAL CENTER

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Decreasing Medical Device- Related Injuries on the Burn Unit

University of Maryland School of Nursing

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Disclosure Statement

Financial Relationships

All individuals involved in the planning and delivery of this activity have no relevant financial relationship(s) with ineligible companies.

Commercial Support

This educational activity has not received any form of commercial support.

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Introduction

- Medical device-related pressure injuries (MDRIs) account for more than 30% of all hospital-acquired pressure injuries (HAPIs) (Martel & Orgill, 2020).
- MDRIs cost healthcare organizations between \$20,900- 150,000 per event in the United States (Duerst, Clark, Hudson, & Struwe, 2022) .
- Patients with burn injuries are at an increased risk of MDRIs secondary to poor nutrition, immobility, injury, and changes in sensory function related to the degree of sustained burn injury (Johns Hopkins Hospital, 2023) .
- MDRIs occur from the improper application of devices such as splints or ace wraps that provide care for burn patients.

Problem Statement

- MDRIs are preventable injuries that creates a burden to patients by extending hospital stays and increasing infection risks.
- These injuries also create cost burden for the organization by impacting reimbursement for services at the end of the year .
- MDRIs remain recurrent on a 20-bed mixed acuity burn unit at a large academic hospital.
 - 2022: 3 MDRIs occurred
 - 2023: 4 MDRIs occurred

Purpose Statement

- **Purpose Statement:** To have zero MDRIs and to assess nursing documentation compliance by implementing an evidence-based practice (EBP) standardized guideline created by a multidisciplinary team to improve patient outcomes.
- **Proposed Intervention:** A standardized guideline based off the Braden Scale score to assist in the early detection of patients who are at high-risk of developing a pressure injury.

Literature Review



- Standardized guidelines are practice recommendations that can improve the care process and patient **outcomes** (Pereira et al., 2022; Ibrahim & Qawala , 2020; Cassidy et al., 2021).
- A collaborative team exposed to staff education could lower incidence rates, create better patient experiences, and reduce costs for the organization (Alshahrani et al., 2021; Estevam Dos Santos et al.; 2021, Sardari et al., 2019).
- When the Braden Scale score is completed consistently, it is considered an effective tool for preventing **PIs** (Alshahrani et al., 2021; Amr et al., 2017; Estevam Dos Santos et al., 2021).

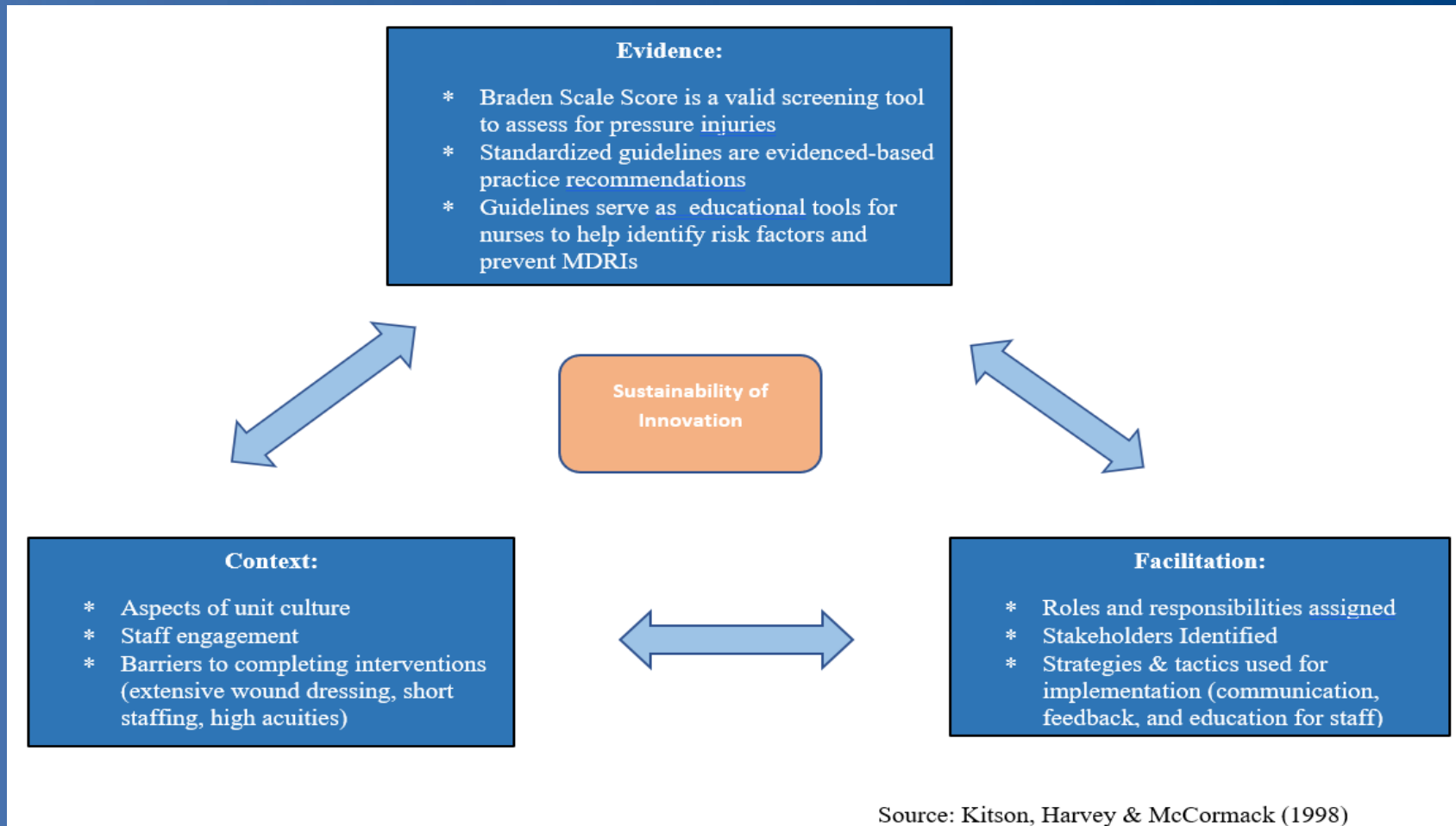
Project Goals

Structure: The development and education of the MDRI Prevention Guideline

Process: Documentation compliance of the Braden Scale and JH-HLM scores and MDRI prevention guideline

Outcome: Zero MDRIs and an increase in nursing documentation compliance

Promoting Action on Research in Health Services Model (PARIHS) - Kitson, Harvey & McCormack (1998)



Guideline Development

- **Standardized Guideline Goal:** Assign EBP interventions to low, moderate, or high-risk individuals based on the Braden Scale score.
- Created by a multidisciplinary team
- **Braden Scale Score:** Standardized, evidenced-based assessment tool used to assess and document a patient's risk of developing a pressure injury



BRADEN PRESSURE ULCER RISK ASSESSMENT

ACT TO PREVENT PRESSURE ULCERS

SENSORY PERCEPTION Ability to respond meaningfully to pressure-related discomfort 	NO IMPAIRMENT Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.	SLIGHTLY LIMITED Responds to verbal commands but cannot always communicate discomfort or ask to be moved or turned OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	VERY LIMITED Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over 1/2 of body.	COMPLETELY LIMITED Unresponsive (does not moan, flinch, or grasp) to painful stimuli due to diminished level of consciousness or sedation OR limited ability to feel pain over most of body surface.	4 3 2 1 ADD TO TOTAL SCORE
MOISTURE Degree to which skin is exposed to moisture 	RARELY MOIST Skin is usually dry; linen only requires changing at routine intervals.	OCCASIONALLY MOIST Skin is occasionally moist, requiring an extra linen change approximately once a day.	OFTEN MOIST Skin is often but not always moist. Linen must be changed at least once a shift.	CONSTANTLY MOIST Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	4 3 2 1 ADD TO TOTAL SCORE
ACTIVITY Degree of physical activity 	WALKS FREQUENTLY Walks outside the room at least twice a day and inside room at least once every 2 hours during waking hours.	WALKS OCCASIONALLY Walks occasionally during day but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	CHAIRFAST Ability to walk severely limited or nonexistent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	BEDFAST Confined to bed	4 3 2 1 ADD TO TOTAL SCORE
MOBILITY Ability to change and control body position 	NO LIMITATIONS Makes major and frequent changes in position without assistance.	SLIGHTLY LIMITED Makes frequent though slight changes in body or extremity position independently.	VERY LIMITED Makes occasional slight changes in body extremity position but unable to make frequent or significant changes independently.	COMPLETELY IMMOBILE Does not make even slight changes in body or extremity position without assistance.	4 3 2 1 ADD TO TOTAL SCORE
NUTRITION Usual food intake pattern NPO: Nothing by mouth. IV: Intravenously. TPN: Total parenteral nutrition. 	EXCELLENT Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.	ADEQUATE Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) each day. Occasionally will refuse a meal, but will usually take a supplement if offered, OR is on a tube feeding or TPN regimen, which probably meets most of nutritional needs.	PROBABLY INADEQUATE Rarely eats a complete meal and generally eats only about 1/2 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement, OR receives less than optimum amount of liquid diet or tube feeding.	VERY POOR Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement, OR is NPO and/or maintained on clear liquids or IV for more than 5 days.	4 3 2 1 ADD TO TOTAL SCORE
FRICION & SHEAR 	NO APPARENT PROBLEM Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.	POTENTIAL PROBLEM Moves feebly or requires minimum assistance. During a move, skin probably slides to some extent against sheets, chair, restraints, or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	PROBLEM Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures, or agitation leads to almost constant friction.	4 3 2 1 ADD TO TOTAL SCORE	

RISK SCALE	NONE	MILD	MODERATE	HIGH	SEVERE	TOTAL SCORE USE CHART ON LEFT TO DETERMINE YOUR PATIENTS RISK
	23 22 21 20 19	18 17 16 15	14 13	12 11 10	9 8 7 6	

EQUIPMENT	No additional pressure support required	High specification foam mattress or static air overlay. Consider cushion for chair, Bedcradle/gooseneck	Dynamic air overlay, Dynamic air cushion Dynamic mattress Replacement or Low Air Loss
PRACTICE	<ul style="list-style-type: none"> Educate Weight-shifting, Skin inspection Evaluate on change of condition 	<ul style="list-style-type: none"> Reposition Weight-shifting, Skin inspection Promote Activity Manage individual risk factors: nutrition; shear; friction; continence Educate Evaluate on change of condition 	<ul style="list-style-type: none"> ALL PLLS Supplement with small positional shifts Seating/posture assessment Nutritional assessment Educate Evaluate on change of condition

Reference: "The Braden Scale of Predicting Pressure Sore Risk" Bergstrom, N; Braden, D et al. Nursing Research 1987 Vol 36 No 4 pp205-210. Issued by Royal Adelaide Hospital Staff Development Department in conjunction with South Australian Quality Council Pressure Ulcer Prevention Practices - Integration of Evidence.

Standardized Guideline

Low risk: 15-18

- Daily head- to-toe assessment
- Daily weights
- Patient out of bed QID (JH-HLM score >6)
- If patient declines, document in patient chart

Moderate risk: 13-14

- Rotate medical devices
- Place prophylactic sacral dressing
- Ensure patient is out of bed TID (JH-HLM score <6)
- Amount of food eaten documented under nutrition in EHR

Standardized Guideline Cont.

High Risk: 10-12

- Notify charge nurse if patient is at high-risk
- If stable, perform passive movements
- Intubated ICU patient, tube feeds must be started within 4 hours of admission
- Ensure prophylactic mepilex foam boarded dressings are placed on pressure points and under medical devices.

Very High Risk:<10

- Ensure patient is on a pressure relieving surface
- If unable to complete full turns incorporate micro shifts to assist with repositioning

Standardized Guideline Cont.

- **Skin care**
 - 4 eyes in 4 hours, 2 nurse skin check
 - Remove and rotate devices
 - Incontinence care
 - Assess pressure points
- **Nutrition**
 - Daily weights
 - Admission nutrition screening
 - Collaborate with providers to order nutritional supplements
- **Repositioning & Mobilization**
 - Turn and document patient every 2 hours
 - Consider level of mobility, exposure to shear, skin moisture, perfusion, and weight when choosing support surface
- **Education**
 - Provide MDRI prevention education to patient and family

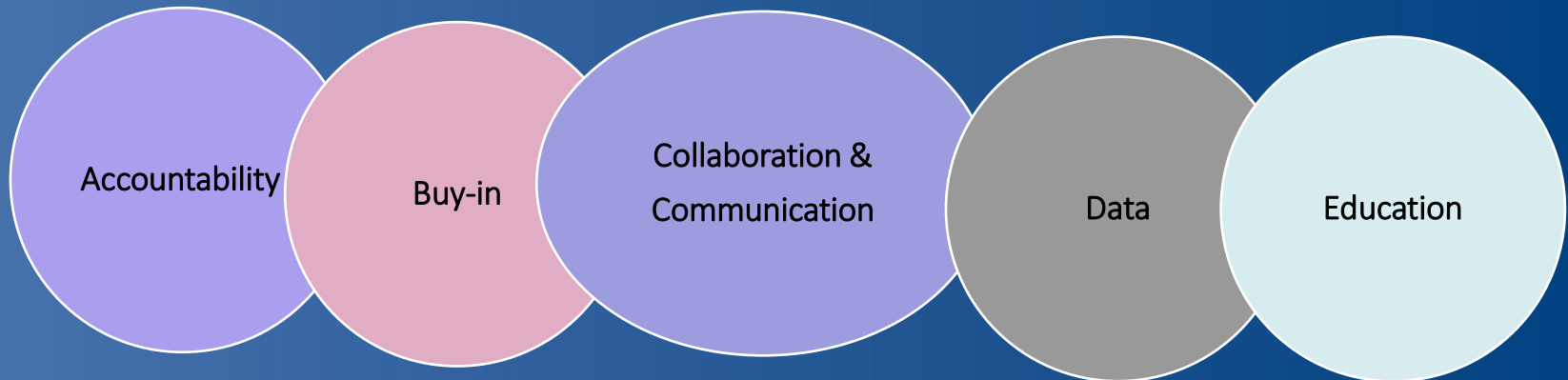
Methods

- This project is considered a quality improvement project designed to improve clinical care and patient safety.
- **Setting:** A 20-bed mixed acuity burn unit in a large academic hospital. Staff is comprised of a mix of experienced burn nurses and PCTS, new staff, and visiting staff to the unit.
- **Target population:** All patients admitted to the burn unit for >24 hours.

Implementation Plan

- **Recruitment of project champions**
- **Staff education**
 - Pre/ Post Test
- **Nursing Expectations**
 - Documentation of the Braden Scale and JH-HLM Scores, completed interventions during shift, daily weights, and 4 eyes in 4 hours
- **PCT Expectations**
 - Documentation of mobility and completed interventions during shift
- Braden Scale and JH-HLM scores added to handoff sheets

Implementation Strategies & Tactics



Debra Bingham

Data Measurement: Tracking

- Queried data from EPIC was uploaded into REDCap.
- Documentation compliance and number of pressure injuries was tracked throughout the 15-week period of implementation.
- Education and feedback given to staff.
- Monthly staff updates were given regarding project progress during monthly staff meetings.

Data Measurement: Collection

- **Data Collection Tools**
 1. Education sessions Attendance
 2. Pre/Post Test
 3. RN Documentation Chart Audit
 4. MDRI Incidence Chart Audit



- **REDCap**
 - All data collected was entered into RedCap using a HIPPA compliant password protected VPN.
 - Chart audits were completed at a private location at the clinical site.
 - Audits and all collected data were completed by the project.
 - All collected data was deidentified.

Data Measurement: Analysis

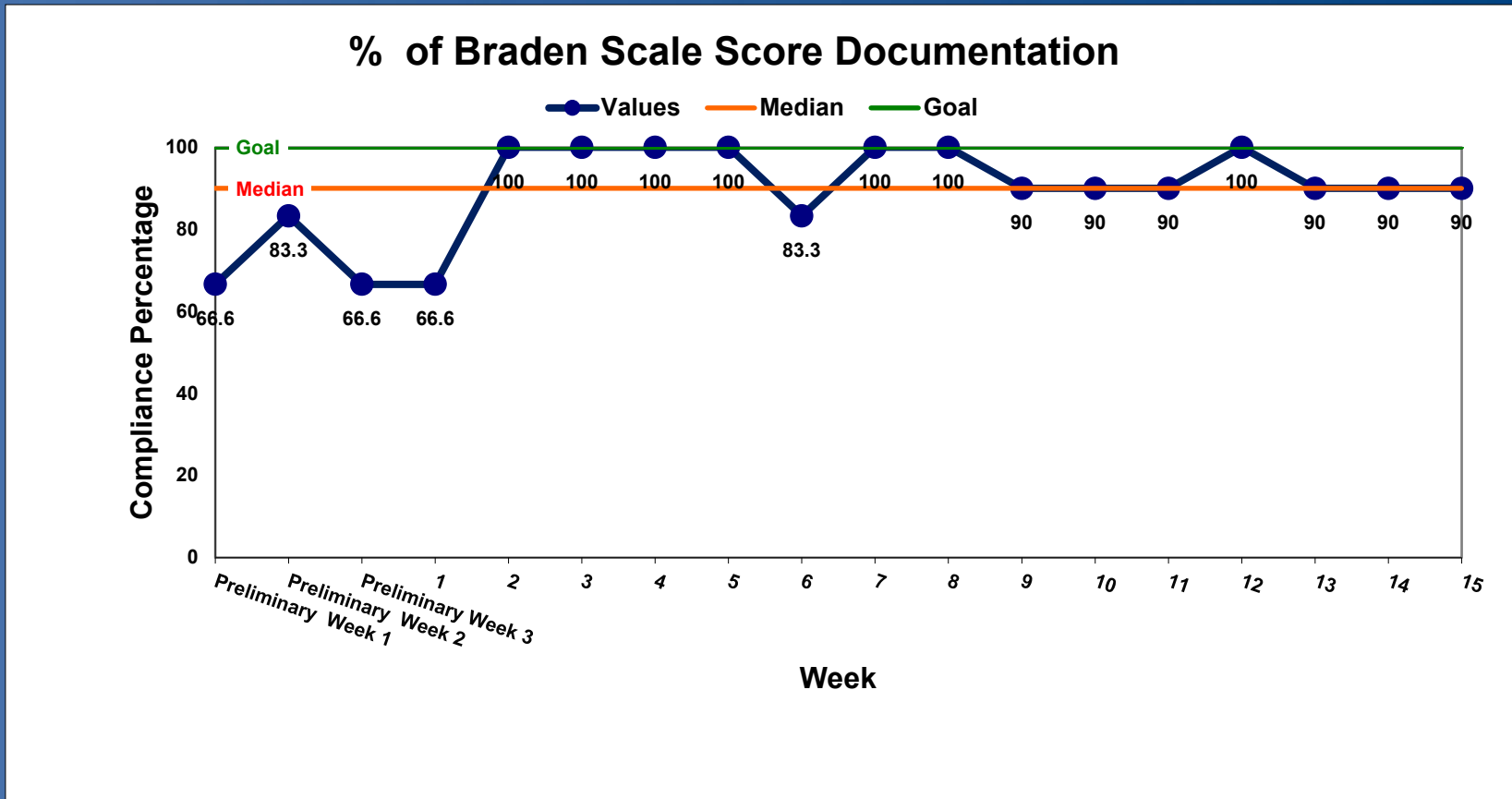
- **Structure Measure**
 - The number of individuals who completed education sessions.
- **Process Measure**
 - A run chart was used to assess documentation compliance.
- **Outcome Measure**
 - A descriptive analysis was used to assess documentation compliance of the MDRI Prevention guideline interventions and the number of new pressure injuries or MDRIs.
- **Chart audits**
 - 10 chart audits were completed weekly.

Ethical Considerations

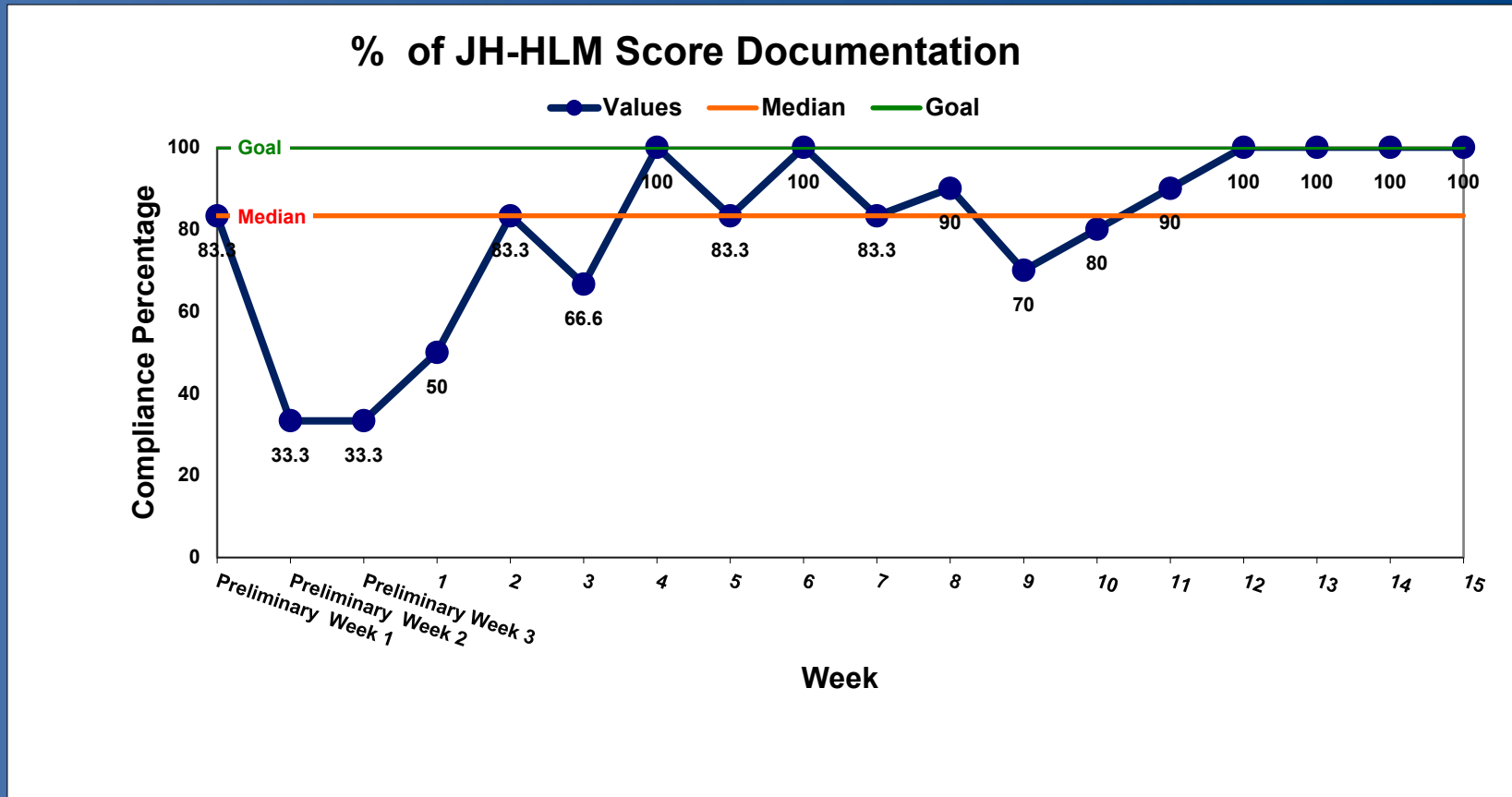
- **UMB IRB/ HRPO**
 - Non-Human Subjects Research Determination
- **Human Privacy Protection and Data Confidentiality**
 - All collected data complied with privacy and confidentiality measures.
- **Bias Risk and Inclusion**
 - All factors of known bias were removed from project.
 - Inclusion criteria is an admission for >1 day.
- **Potential Conflict of Interest**
 - Project leader is an employee of Johns Hopkins.

- The implementation of the MDRI standardized guideline resulted in **improved documentation compliance** from nursing. **Zero MDRIs occurred during the implementation** of this evidenced-based QI project.
- **Relevant Contextual Elements**
 - Workload, extensive wound dressings, time constraints, and team attitude regarding change.
- **Unintended Consequences**
 - Facilitators: supportive leaders, teamwork amongst staff, focused training, and project champions
 - Barriers: High number of float or traveling staff working on the unit
 - There were no negative consequences from the implementation of the guideline and there were no costs.

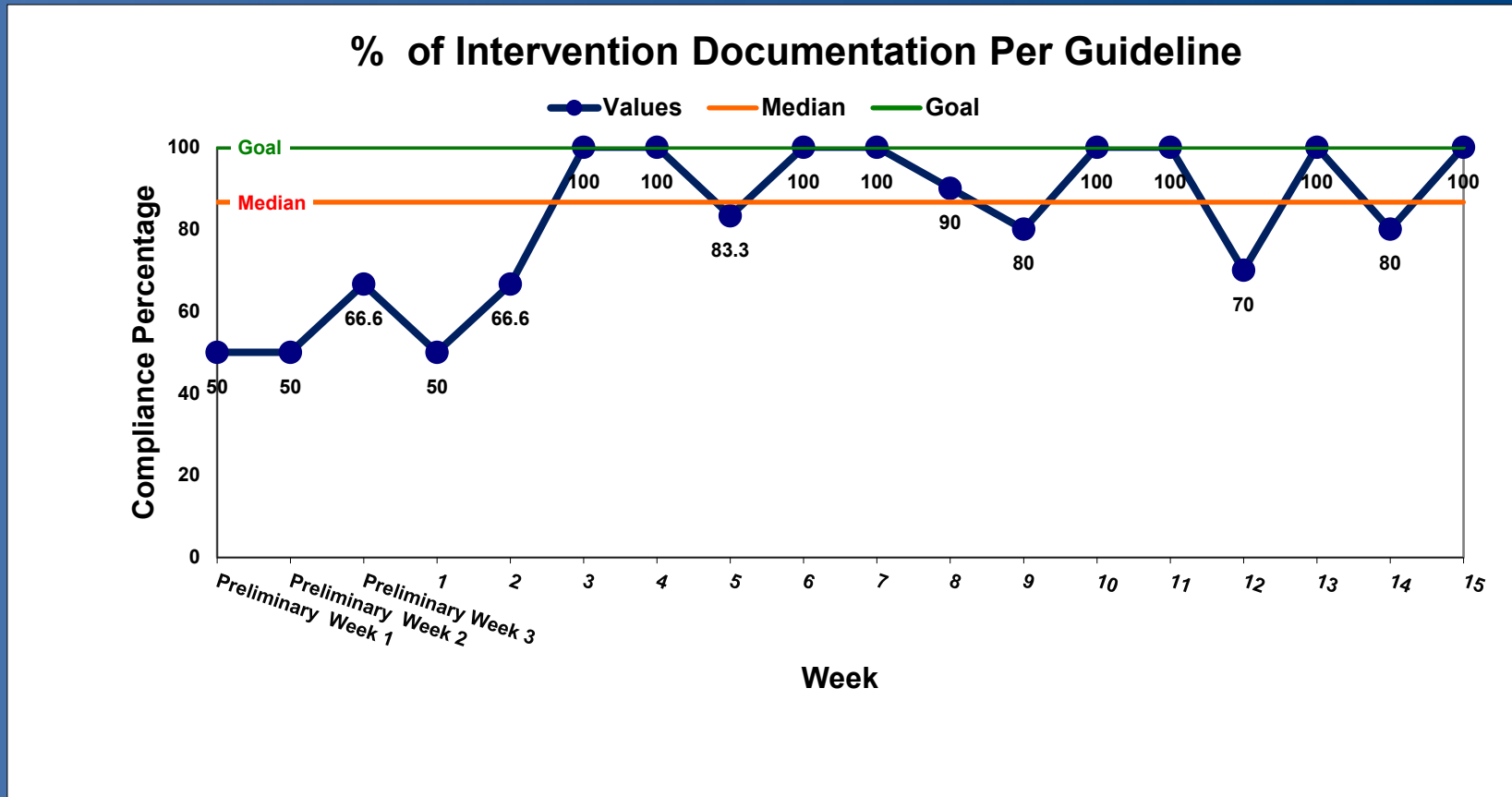
Braden Scale Score Results



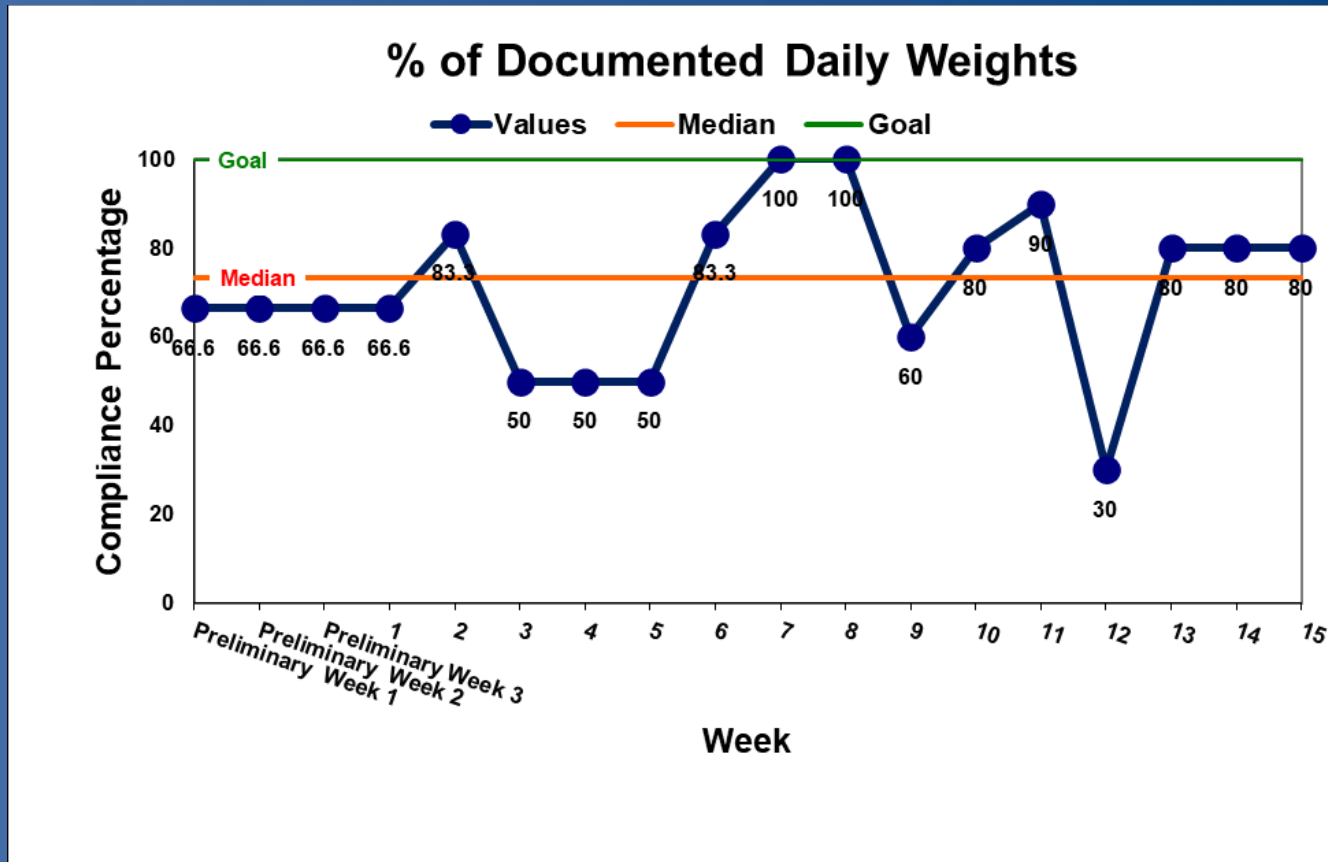
JH-HLM Score Results



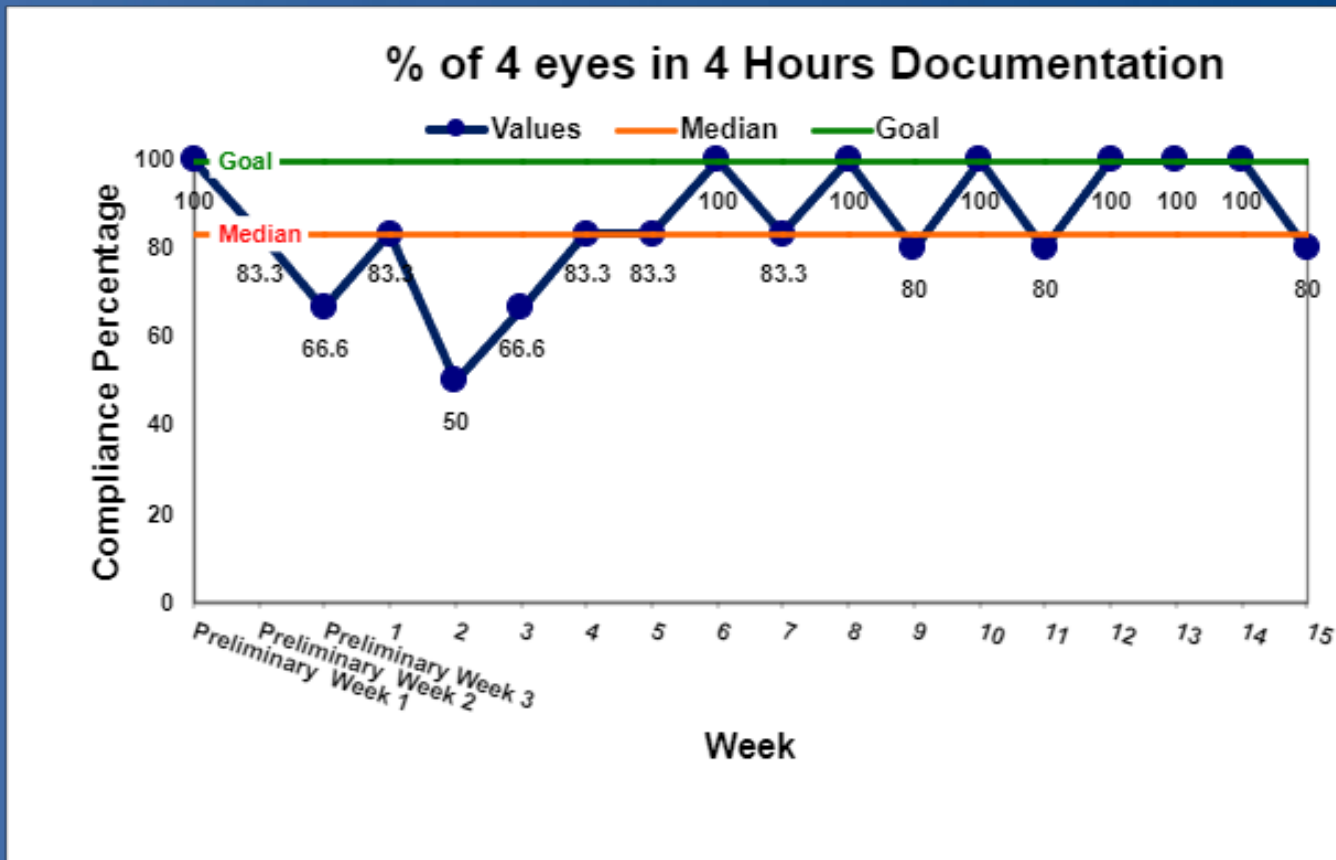
Intervention Documented Per Guideline Compliance



Daily Weights Results



4 Eyes in Hours Results



- **Association between the intervention and outcome**
 - Data suggests that the standardized guideline assisted in increasing nursing documentation and prevented MDRI from occurring.
 - Standardized guidelines are recommendations to help improve patient outcomes.
- **Limitations**
 - Short implementation period (15 weeks)
 - Staff shortages and increased number of float staff

Conclusion

- **Usefulness and relevance of work**
 - The use of a standardized guideline reduces practice variations, helps translate evidence into practice, and improve patient safety.
- **Sustainability and spread**
 - Incorporating the standardized guideline into nursing practice and chart audits can aid in sustainability.
 - The guideline could be used added to the monthly National Database of Nursing Quality Indicators (NDNQI) for pressure injuries to assess pressure injury rates and nursing processes.
- **Implications of findings for practice**
 - Outcomes supported that the implementation of a standardized guideline had a positive effect on decreasing MDRIs.

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