POSTER PRESENTATION SCHEDULE

12th Annual Johns Hopkins Critical Care Rehabilitation Conference

Time	Presentation Order	Presenter	Author(s)	Title	Institution
Facilitator - Annette Lavezza, Co-Moderator - Mark Hudson					
Friday, November 10th, 2023 - PM Session					
11:30AM - 12:30PM	1	Aimee Miguel, PT, DPT, PCS, CPST	Aimee Miguel, PT, DPT, PCS, CPST; Christopher J Babbitt, MD; Paulina Zale, MSN, RN, PNP, CCRN	Implementation of the Pediatric ICU Move! Early Mobility Scale: A Tool for Maximizing Mobility	Miller Children and Women's Hospital Long Beach, Huntington Beach, USA
	2	Arooj Fatima, MD	Arooj Fatima MD, Michael Toth, PhD, Matthew Poynter, PhD, D. Clark Files, MD, Kevin W. Gibbs MD, Lina D. Purcell, Dale Needham MD, PhD, Renee Stapleton MD, PhD	NEXIS FLAME Study Protocol for Understanding Mechanisms of Early ICU Rehab & Protein Supplementation	Johns Hopkins University, Baltimore, USA
	3	Kate Tantam, RN, BSc	Gen Conquest, Susie Wolstenholme, Kate Tantam, Jude Fewings, Jonny Scott	Weaning in the Face of Adversity - A complex case study	University Hospitals Plymouth, Plymouth, United Kingdom
	4	Kathleen Riley, PT, DPT	Atara Sheinson, OTR/L, BCP, CIMT, CPMT Kathleen Riley, PT, DPT, Schroth Therapist	Rehabilitation considerations for a pediatric patient with a Total Artificial Heart	New York Presbyterian, New York, USA
	5	Niall McDermott, MSc OT	Marianne Clayton (BSc OT) and Niall McDermott (MSc OT)	To identify barriers and facilitators of the completion of outcome measures (OM) by Occupational Therapists within critical care (single site)	Kings College Hospital, London, England
	6	Vanessa Lima, PhD	Caio Henrique V. da Costa, PT; Camila N. Coelho, PT; Livia R. M. Zego, PT; Luana Talita D. Ferreira, PT PhD; Vanessa C. B. F. de Lima, PT PhD	Intensive Care Unit Ambulation Rate: Quality Improvement Project	United Health Group, Sao Paulo, Brazil

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Implementation of the Pediatric ICU Move! Early Mobility Scale: A Tool for Maximizing Mobility

Aimee Miguel, PT, DPT, PCS, CPST; Christopher J Babbitt, MD, FCCP; Paulina Zale, MSN, RN, PNP, CCRN

MemorialCare™ Miller Children's & Women's Hospital Long Beach

Objectives

To develop a reliable tool that can be utilized to track and promote optimal early mobility (EM) and minimize atrogenic complications in the Pediatric Intensive Care Unit (PICU).

Methods

The implementation involved revising a prior version of the PICU Early Mobility Scale. In response to audit findings, the EM team identified scoring methodology errors and implementation discrepancies, and a new tool was developed.

Figure 1. The initial Early Mobility Scale engaged a model where scoring was completed first, followed mobilizing a patient based on the score.

Figure 2. The new Early Mobility Scale prioritizes mobilizing and progressing the patient first, followed by providing a score.

Methods (Continued)

This new tool focuses on the spectrum of disease progression/regression and recommends activities for mobility throughout the severity of illness from most severe to least severe (1 - 4) encouraging scoring based on a flowchart progression of mobility. After staff education, the new tool was implemented, and a retrospective chart review was undertaken.

Results

This pilot study involved a total of 32 patients that were randomly selected for chart review, including 13 intubated patients. The average age of the patients was 80 ± 69 months and PICU LOS was 5.8 ± 8.1 days. Overall, the correct EM score was given 84% of the time. The observed EM activity equaled the expected activity 81% of the time audited. Patients with the most severe disease achieved expected EM 100% of the time compared to those with less severe disease that achieved it 63 - 88% of the time.

Conclusions

- The Pediatric ICU Move Early Mobility Scale enhances RN decision making and patient optimal mobility by following an algorithm and involving rehabilitation therapists as needed for patient progression.
- The implementation of the Early Mobility Scale was associated with a high-rate of correct scoring and observed activity nearly equal to the expected activity.
- The staff believed that the tool was easier to follow than the prior iteration.
- Future research directions include prospectively collecting data to assist in identifying missed opportunities with EM and potentially revising the tool to help the PICU best care for patients.

NEXIS FLAME Study Protocol for Understanding Mechanisms of Early ICU Rehab & Protein Supplementation

Arooj Fatima MD, D. Clark Files, MD, Michael Toth, PhD, Matthew Poynter, PhD, Kevin W. Gibbs MD, Lina D. Purcell, Dale Needham MD, PhD, Renee Stapleton MD, PhD.

Background

- NEXIS is an NIH-funded (R01HL132887, NCT03021902) multicenter phase II RCT in ICU patients with acute respiratory failure.
- NEXIS FLAME is an ancillary study to measure mechanistic outcomes.

Objectives

- The aim of the parent NEXIS intervention is to evaluate the efficacy of intravenous amino acid supplementation in combination with early exercise intervention (via cycle ergometry) vs usual care to improve critically ill patients' physical outcomes.
- NEXIS FLAME aims to determine if the NEXIS intervention reduces inflammation at local (skeletal muscle), lung, and systemic (cytokine) levels and explore the effect of the NEXIS intervention on body composition and protein synthesis.

Methods

Assessments listed below are conducted as a part of the sub-study.

- Body composition analysis via 350cc of deuterium water (D_2O) administered enterally on day 1 with serial blood draws from study day 1 to day 8
- Whole body DXA scan before hospital discharge
- Quadriceps muscle ultrasound: Day 1, at ICU discharge, and hospital discharge
- Bronchoalveolar lavage: Day 1 and 5
- Percutaneous Muscle Biopsy: Day 1 and 5 ± 2
- Blood samples: Day 1, 3, 5 and 8

Results

Participants enrolled in NEXIS RCT	**106**
Survived until hosp. d/c	**90 (85%)**
Enrolled into any NEXIS FLAME component	**52 (49%)**
Had at least 1 muscle ultrasound of the upper thigh	**90 (85%)**
Had a whole-body DXA scan before hosp. d/c	**17 (16%)**
Muscle Biopsy	
Total pts. consented for biopsy	**15 (29%)**
Total pts. underwent biopsy	**11 (21%)**
Pts. underwent 1 biopsy	**3 (6%)**
Pts. underwent both biopsies	**8 (15%)**

Bronchoalveolar Lavage	
Total pts. consented for BAL	**27 (52%)**
Underwent one BAL	**13 (25%)**
Underwent both BALs	**14 (27%)**

*One patient withdrew consent for BAL

Blood Samples	
Pt. consented for blood draws	**51 (98%)**
≥ 2 blood samples collected	**46 (88%)**
Consented to receive enteral heavy water (D_2O water)	**43 (83%)**
≥ 2 blood samples collected after D_2O administration	**37 (71%)**

Conclusion

- The NEXIS RCT and NEXIS FLAME ancillary studies collect body composition and biological samples to systematically understand the NEXIS intervention's mechanisms.
- The NEXIS studies include participants broadly from nine study sites in the United States, with results anticipated in 2025. These results will help expand scientific knowledge about how combined early exercise and protein supplementation affects patient outcomes and related mechanisms.

Funding Source: This work is funded by the National Institutes of Health (NIH) with additional support from Baxter International Inc. and EnableMe/RECK MOTOMed

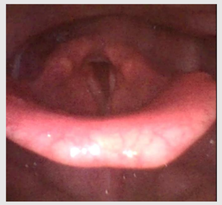
Weaning in the Face of Adversity – A Case Study

Gen Conquest, Jude Fewings, Kate Tantam, Jonny Scott and Susie Wolstenholme, ICU and Neurosurgery Rehabilitation Team

NHS University Hospitals Plymouth NHS Trust

Day 0	Day 49	Day 98	Day 128	Day 160
6 weeks in a non-UK hospital	7 weeks in a UK ICU	Transfer to neurosurgical ward	Drop in GCS return to ICU	Awaiting a level 1 regional neuro-rehab unit
09/22 Subarachnoid Haemorrhage (SAH) from Right vertebral artery aneurysm Extra-venticular Drain (EVD) Coiled aneurysm Antibiotic resistant infections Tracheostomy No rehabilitation	Commenced MDT rehab Decannulated after 4/52 Re-cannulated 2/7 later – secs Failed ward discharge Percutaneous Endoscopic Gastrostomy	Issues with agitation Multiple sedatives 1:1 care Rehab challenges – environment/ staffing/IPC restrictions Nerve Conduction Studies	Increased issues with agitation Multiple sedatives MDT with pharmacy 2:1 care Garden rehab Decannulated day 152	Engaging well with rehab Garden/plinth rehab sessions Eating and drinking 1:1 care

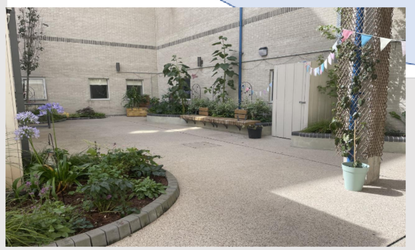
FEES on return to ICU following increased sedative agents



2 weeks following laryngeal rehabilitation on ICU

MDT Interventions

- Regular Multidisciplinary Teams (MDT) meetings
- Total communication approach for capacity and mood support
- Qualified nursing 2:1 /1:1 vs non-qualified
- Night vs day – natural light in ICU
- Fibreoptic Endoscopic Evaluation of Swallowing (FEES) guided weaning and laryngeal rehab
- Joint sessions with Speech and Language Therapy/Physiotherapy/Occupational Therapy (OT) and Nursing
- ICU rehab garden therapy sessions
- Engagement with family (online)
- Wider MDT engagement from pharmacy and psychiatric liaison



Influencing Factors

- 3 x ICU admissions
- Infection control policies and restrictions
- Environmental changes/ challenges
- Continuity of care (or lack of it)
- Fluctuating capacity/ behavioural presentation
- Delirium and medication management
- Communication difficulties – ataxic dysarthria

Conclusions

- Non-UK admissions bring new and complex challenges to rehabilitation – lack of rehab provision, family centred care, infection, mood and behaviourally
- MDT teams are fundamental to rehabilitation of the "unweanable"
- Behavioural management and pharmacological management of acquired brain injury needs a holistic and broad MDT approach
- Fresh air spaces away from clinical stimulus are a useful intervention to assess behavioural challenges and treat delirium.

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Rehabilitation Considerations for a Pediatric Patient with a Total Artificial Heart

Columbia University
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NewYork-Presbyterian Kids
Morgan Stanley Children's Hospital

Atara Sheinson, OTR/L, BCP
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Abstract

Discuss rehabilitation considerations with the pediatric population recovering from Total Artificial Heart implantation (TAH), bridge to transplant, and recovery post-transplant. This case study will focus on a repeat transplant recipient due to rejection with limited medical options. Cohesive team approach optimized rehabilitation potential and was crucial to listing for transplant. This was the first TAH in the Northeast on a teenager and novel device at our facility. There is limited research regarding pediatric TAH's. Therapists were ambassadors to progress mobility and functional skill sets as well as address ICU delirium, create protocols to progress mobility, monitor vital signs, and assist with provider training.

Introduction

Our patient was a 15 yo female with past medical history (PMH) of dilated cardiomyopathy, readmitted in biventricular rejection after prior transplant 6 years prior. PMH notable for frontal CVA on prior admission.

The TAH was a novel device for our facility and therapists worked hand in hand with hospital staff for training and coordinating patient care.

Safe mobility required 5 people initially and closer to transplant required 2. From the outset, therapists met with the Heart Failure team to outline goals and expectations. Therapists allocated 1-1.5 hours daily to her care.

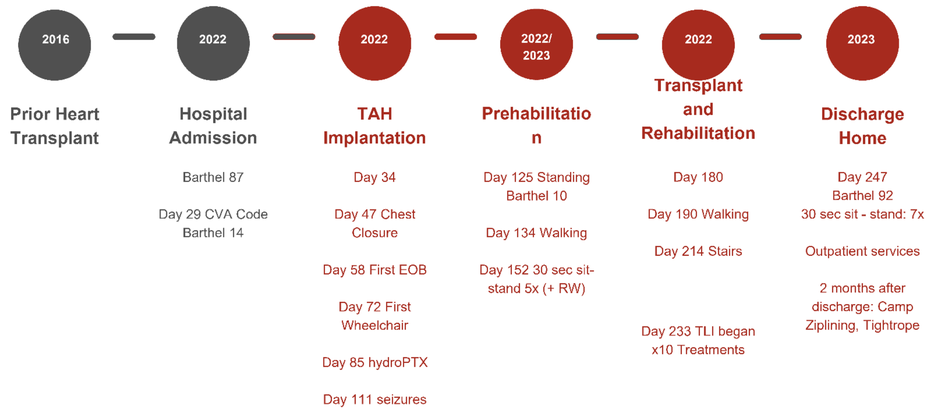
Pediatric patients waiting for transplant pose different issues than adults and often cause caregivers to stop working, increased financial and logistical concerns and children are often alone for prolonged periods of time.

Complex social background and Post Traumatic Stress Disorder (PTSD) will be discussed as they directly impacted her course.

Methodology

Case study discussion performed at NY Presbyterian Children's Hospital including TAH implantation pre-transplant rehabilitation and post Open Heart Transplant recovery. Therapists attended ICU and VAD rounds, Heart failure team meetings, and closely communicated with extensive multi-disciplinary team members with regards to treatment progression and therapeutic considerations.

Occupational Profile included use of the following:
Canadian Occupational Performance Measure
Goal Attainment Scales
Cognitive/ Neurological Measures
Hospital Anxiety and Depression Scale



Interventions

- Delirium screening
- Positioning during critical illness: adjunct with wound care team, hand splints and multi podus boots
- Hemiparetic upper extremity positioning: taping and transfer techniques as well as joint protection
- Abdominal binder & ted stockings - poor vascular tone
- Mindfulness, anxiety management, breathing techniques
- Trauma informed approach
- Self care, clothing modifications to normalize ADLS and aid with body dysmorphia
- Pelvic floor training as part of resuming bladder control
- Leisure interests directed mobility progress (IADL, community re-integration, surprise family reunion, karaoke parties, yoga, pilates, barre)

Recommendations

- Incorporate adolescent interests and goals into all stages of the rehabilitation process for best outcomes
- Mobilizing patients with TAH require numerous trained staff to be present and emergency contingency plans particularly in early stages of rehabilitation
- A cohesive team approach and consistent communication is essential as is delirium and anxiety management

Results

- Early therapy consult and team approach are beneficial
- Importance of early detection of ICU delirium and PTSD
- Safety maintained throughout mobility, no adverse events occurred during rehab process
- Daily therapy was vital to listing for heart transplant and recovery via Acute Care "Inpatient Rehabilitation Model"
- Importance of cognitive evaluation with regards to behavioral and respiratory fluctuations
- Aspiration risk correlated with functional progression and respiratory status - limits to daily physical assessment due to internal volume of device
- Action plans based on TAH adjustments and sensitivity
- Consistent therapy schedules, clinicians and expectations were crucial

Functional outcomes of hospital stay:

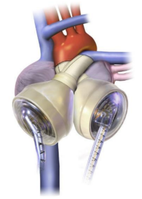
- Discharged home with outpatient services
- Slight limp due to preexisting leg injury
- Able to get up from the floor 10+ trials in a row
- Participated in barre, pilates based workouts and stair climbing with supervision
- Day time urine continentence
- Supervision for laundry, grooming and making bed
- Returned to entrepreneur mind set and sassy personality
- Independent with coping and breathing strategies

Conclusion

- Medical management for pediatric heart failure is constantly evolving and implementing new support options are essential due to limited donor availability. Regaining functional mobility, mental health, and cognitive acuity were essential for our patients ability to be listed for transplant.
- Post device implantation involved extensive complications and novel monitoring methods
- There is limited research on rehabilitation of patients on pediatric TAH, particularly exercise tolerance and metrics
- TAH prehab is time consuming compared to other ventricular assistive devices however it is crucial.
- Establishing a consistent therapy team was essential. Therapists trained numerous providers and partnered with medical teams. Intensive therapy was crucial to recovery and direct discharge to home.

Patient quotes:
"I was able to detect when I was becoming delirious because we had discussed what could happen and how important it was to get help early"

"I didn't believe in myself like you guys did and I never thought I could get dressed or walk again on my own. I finally believe you."



Courtesy of Syncardia.com

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To identify barriers and facilitators of the completion of outcome measures (OM) by Occupational Therapists within critical care (single site)

Heidi Bendall, Marianne Clayton and Niall McDermott

Introduction / Background

Rationale

- There continues to be no validated evidence based outcome measure specific to the role of occupational therapy (OT) practice within critical care.

Aim

- To identify barriers that inhibit the use, and enabling factors to support the use of OT outcome measures within critical care Occupational Therapy.

Methodology

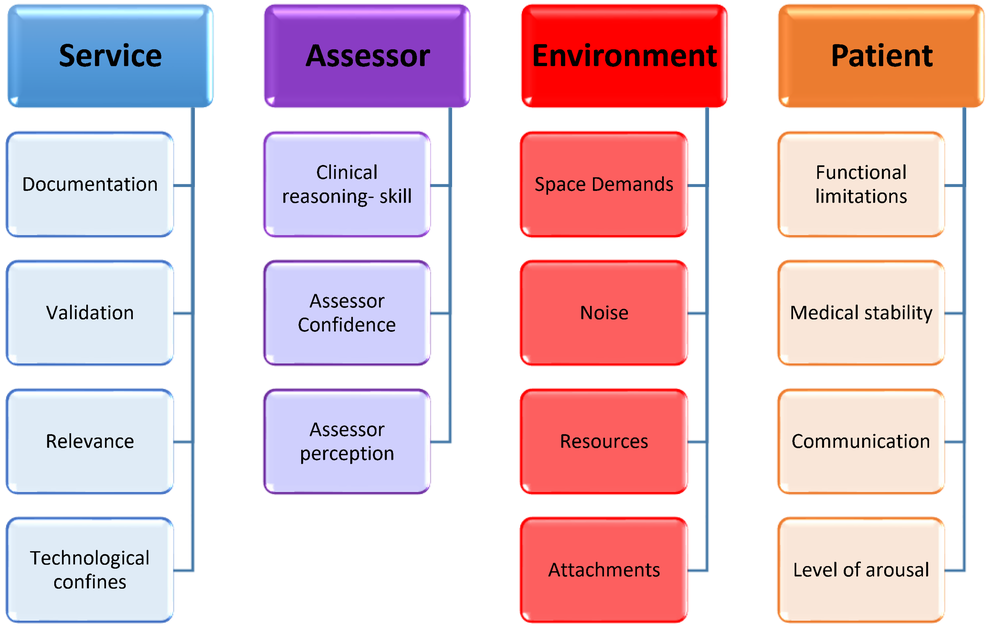
Qualitative prospective approach

- Designed a ***9*** item questionnaire (peer reviewed by non participants).
- Reponses collected anonymously over ***8*** weeks
- Participants: Band ***5 to 8*** **critical care OT's.**
- ***85%*** response rate. ***6*** out of ***7*** responses returned.
- Answers were analysed in a thematic approach to identify themes and sub themes.

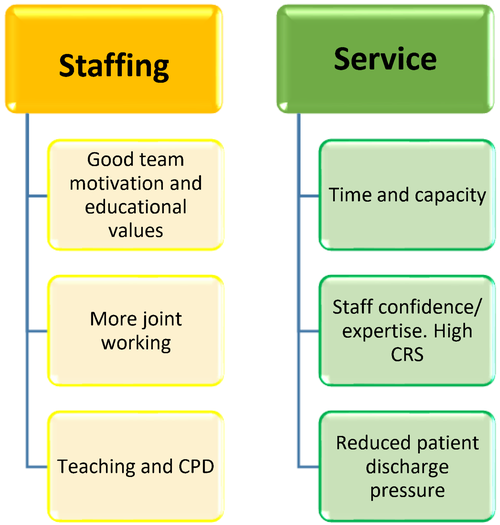
Findings

- ***100 %*** of participants were familiar with and valued the use of OT outcome measures in practice generically.
- ***47*** outcome measures identified from a background of 7 clinical specialties in OT. ***49%*** of these outcome measures were identified as *commonly used* within their current critical care OT practice at Kings.
- ***6.7/10*** was the mean average confidence score (*on 0-10 confidence rating scale (CRS)*) with outcome measure use in general in critical care.

Barriers



Facilitators



Barriers

4 main barriers with ***15*** sub themes were captured.

This highlighted complex critical care specific factors such as significant medical instability which impact on the appropriateness, validity and reliability of non critical care specific Occupational Therapy outcome measures.

Facilitators

2 main enablers with **6 subthemes** were identified.

A central theme highlighted the Kings Critical care Occupational Therapy team fosters an emphasis on evidence based practice, learning opportunities to broaden outcome measure use and educational time.

Limitations

- Small and varied sample size + staffing/ participants.

Conclusion

Complex but unavoidable critical care features e.g. the environment, attachments etc. impacted on the appropriateness and reliability of non critical care specific OT outcome measures.

Further work and feasibility trails are required to ascertain the best measurement of functional performance for critically ill patients holistically.

OT must continue to overcome barriers of the critical care service provision and validation of outcome measure, whilst considering the barriers as components only. Almost 50% of Kings OT used OM in current practice but 5/6 agreed they should use them more, if OM's were '*sensitive*', '*reliable*' and '*relevant*' to the CCU patient cohort.

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Intensive Care Unit Ambulation Rate: Quality Improvement Project

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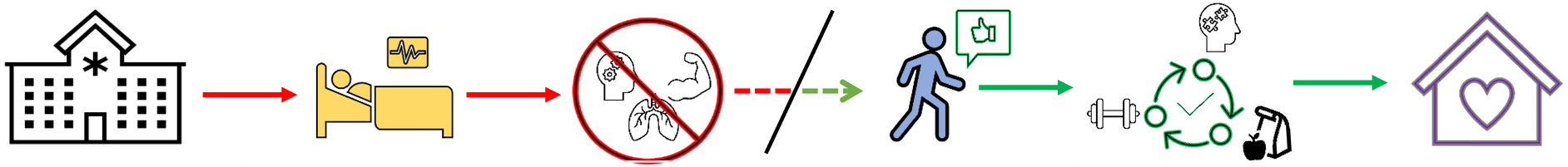
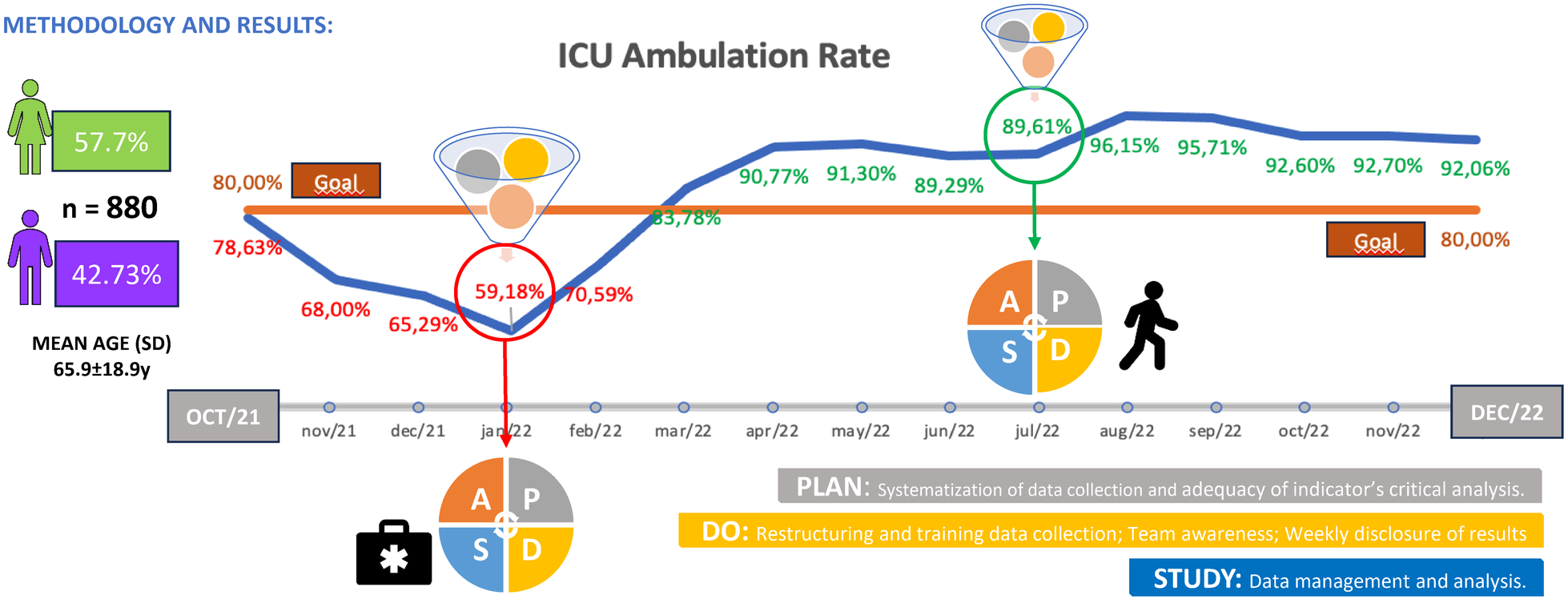
BACKGROUND: Ambulation in intensive care unit (ICU) is an important mobility milestone to be achieved by critically ill patients, Its execution is associated with better outcomes such as shorter duration of mechanical ventilation, ICU and hospital lenght of stay.



OBJECTIVE: The aim of this study was to increase the ambulation rate in ICU, reaching organization's goal of 80%.

METHODOLOGY AND RESULTS:



PLAN: Systematization of data collection and adequacy of indicator's critical analysis.

DO: Restructuring and training data collection; Team awareness; Weekly disclosure of results

STUDY: Data management and analysis.

ACT: Standardization and team training in the ICU Mobility Scale tool; clinical and data collection audits, directing individualized guidelines.

CONCLUSIONS

PDSA is a simple and effective approach to improving processes. Its emphasis on continuous learning and adaptation makes it a valuable tool for achieving operational excellence and improving performance.

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