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 - AM Session					
7:30AM - 8:30AM	1	Caitlin Costanzo, PT, DPT, NCS, CSRS	Caitlin Costanzo PT, DPT, NCS, CSRS, Aubrey Schmidt MS OTR/L, CSRS, Chelsea Shade OTD, OTR/L, CNS, CBIS	Sensory Stimulation Protocol for the Complex Acute CVA Patient: A Case Report	Lehigh Valley Health Network, Allentown,USA
	2	Bailey Petersen, DPT, PhD	Petersen BA, Heinsberg LW, Conley YP, Fink EL, Treble-Barna A.	Epigenetic associations of ABCC8 and NfL with outcomes in pediatric cardiac arrest.	University of Pittsburgh, Pittsburgh, USA
	3	Karina Knutsen, RN, CCN, MSN	Karina Knutsen, CCN, MsN Rita Solbakken, CCN, PhD Britt Normann, PT, PhD	Patient participation in early rehabilitation in the intensive care unit: The necessary invitations. A qualitative study.	Nord University, Bodoe, Norway
	4	Susan Whitworth, MOT, OTR/L, CRSR	Susan E Whitworth, MOT, OTR/L, CRSR Krista Garrison, MSOT, OTR/L	Enhancing Sleep Hygiene in the MICU: Developing and Implementing an Interdisciplinary Protocol for Improved Patient Outcomes	Good Shepherd Penn Partners at Pennsylvania Hospital,Philadelphia, USA
	5	Vanessa Lima, PhD	Caio Henrique V. da Costa, PT; Marcelo V. M. Ferreira, PT; Andrey W. de Souza, PT PhD; Paulo José A. L. de Oliveira, PT; Vanessa C. B. F. de Lima, PT PhD	Functional reconciliation rate in ICU patients: a retrospective multicenter study	United Health Group, Sao Paulo, Brazil
	6	Nicole Illesca, BA	Nicole Illesca, BA, Bhavna Seth, MD, MHS, Tejaswi Kalva, MBBS, Michelle N. Eakin PhD, MA, Somnath Bose, MD, MPH, Mustafa Mir-Kasimov, MD, Carla M. Sevin, MD, James C. Jackson, PsyD., Samuel Brown, MD, MS, Dale M. Needham, FCPA, MD, PhD, Victor D. Dinglas, MPH	Core Outcome Set for Phone-Based Research Follow-up – Feedback from Acute Respiratory Failure Survivors in APICS-01 Study	Johns Hopkins University, Baltimore, USA
	7	Patricia Mesa, MD	P. Mesa, C. Lecor, C. Leyes, A. Banchero, J. Da Luz, L. Pereira. V. Somma, S. De Mattos, T. Cugliari, C. Peretti, S. Favretto, M. Orellano, M. Barros, J. Pontet	Delirium a determining factor of long term cognitive dysfunction in the context of post intensive care syndrome. Prospective study in a Latin American Unit	Pasteur Hospital ICU, Montevideo, Uruguay

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Sensory Stimulation Protocol for the Complex Acute CVA Patient: A Case report

Caitlin Costanzo, PT, DPT, NCS, CSRS, Aubrey Schmidt, MS OTR/L, CSRS, Chelsea Shade, OTD, OTR/L, CNS, CBIS

Lehigh Valley Health Network, Allentown, PA

Background/Purpose

Oftentimes, medically complex patients in the acute hospital setting are cancelled by rehab services or discontinued based on prognosis, due to perceived lack of ability to participate and interventions to utilize. This case report describes interventions and functional gains achieved by a patient in a vegetative state after initial intervention was discontinued based on the patient's prognosis. Therapy was reinitiated in hopes to show any functional gain and assist with discharge planning. Upon re-initiation, the patient was 2 months post-CVA with decerebrate posturing and little to no response to external stimuli.

Case report

The patient was 45-year-old Spanish speaking female admitted with right posterior communicating artery aneurysm. She had a failed clipping, suffering aneurysmal rupture with significant blood loss (Hunt Hess score 5) and severe cerebral edema, requiring ventriculostomy and hemicraniectomy. She was hospitalized for 5 months. The patient's progress was measured using the JFK Coma Recovery Scale (JFK-CRS).

Sequence of Sensory stimulation:

1. Visual

4 inches in front of each eye

Time frame: 2 seconds at a time, Every 5 seconds

Total time: 1 minute duration each eye

2. Auditory

4 inches from each ear

Time frame: 1 clap, Every 5 seconds

Total time: 1 minute duration each ear

3. Tactile

Dorsum of each hand

Time frame: 1 second each time, Every 3 seconds

Total time: 1 minute duration each hand

4. Olfactory

Familiar scent, 1 inch from nose

Timing: 10 seconds at a time, Every 10 seconds

Total time: 1 minute duration

5. Gustatory

Tip of tongue via swab

Timing: Every 15 seconds

Total time: 1 minute duration

Hospital course

12/30	Admit date
2/15-3/8	PT saw 1x/week no improvement in condition noted, signed off
3/13	Multi sensory stimulation protocol initiated: 2 x daily for ~3 weeks with JFK scored 2 x week, JFK 4/23
3/28	JFK 7/23, reflexive responses, EOB/OHL tilt space w/c
4/16	Transferred to MICU 2/2 respiratory distress/mucous plugging
4/17-4/18	JFK 9/23 visually fixating denoting minimally conscious state minus (MCS-) Disposition: changed from LTC to BIRU
4/24	S/P right ventricular peritoneal shunt
4/28	Consult to orthopedics to assist with severe ankle contractures – declined to intervene
5/1	SLP severe receptive/expressive aphasia, minimal command following
5/3	Trialed semi partial occlusion taping
5/4	Pt following >90% 1 step commands. Communication established pushing L foot down. Noted decrease posturing.
5/10	Initiated tilt table- able to achieve 40 degrees upright tolerance
5/19	SLP moderate-severe receptive, severe expressive aphasia, following commands 70% of time, communication via head nods improved
Final visit 5/22	JFK 14/23, denotes minimal conscious state plus. Following 90% of commands this session with increased time/delayed response; m outhing of "no" noted this session with head shake. Tolerated Tilt table to 40 degrees. Tolerating OOB for >3 hours, no skin breakdown throughout hospital stay
Discharged to SNF 5/26	Despite rehab staff advocating for BIRU

Discussion

Evidence shows that sensory stimulation can be beneficial when administered multiple times per day, with some articles reporting up to five times per day. Multidisciplinary staff education regarding the importance of sensory stimulation protocols could aid in regular administration of these protocols for patients in a vegetative state and/or an ICU setting. Therapy services are often underutilized in ICU settings due to lack of provider understanding of services to be rendered, as well as lack of therapist understanding of interventions to utilize. Thus, sensory stimulation utilization can be of significant value for patients, providers and therapy colleagues. Multidisciplinary understanding and implementation earlier in our patient's recovery can improve outcomes and prevent further complications.

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EPIGENETIC ASSOCIATIONS OF *ABCC8* AND *NfL* WITH OUTCOMES IN PEDIATRIC CARDIAC ARREST

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INTRODUCTION

- Pediatric cardiac arrest has devastating consequences
  - Mortality rates range from 50-80%, depending on the location of the arrest
  - Survivors experience brain injury with highly variable neurological outcomes
- Identifying children at the highest risk for poor outcomes is a significant challenge
- DNA methylation (DNAm), an epigenetic regulator of gene expression, shows promise as a biomarker for long-term outcomes in pediatric brain injury; however, research in this population remains limited
- Several genes play pivotal roles in neurological recovery, with two of particular interest in this study:
  - ***ABCC8***: produces sulfonylurea receptor-1(SUR-1) protein, a marker positively associated with cerebral edema in adult traumatic brain injury
  - ***NfL***: responsible for neurofilament light (NfL) protein production, a marker of white matter damage in adults with traumatic brain injury and in children with cardiac arrest

OBJECTIVE

- **We explored associations between DNA methylation (DNAm) of *ABCC8* and *NfL* with outcomes in children with pediatric cardiac arrest**

METHODS

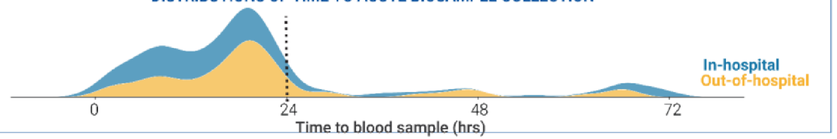
- Exploratory analysis in a subset of children from Personalzing Outcomes after Child Cardiac Arrest (POCCA) cohort
- Children ages 48 h-17 yr admitted to the ICU were recruited from 14 US hospitals (n=163)
- DNA was isolated from coagulated blood samples collected acutely (n=127)
- DNAm data were generated using pyrosequencing and analyzed as M-values
  - 7 CpG sites on ***ABCC8*** and 3 CpG sites on ***NfL***
- Primary Outcome: Unfavorable outcome (death or Vineland Adaptive Behavior Scale [VABS] <70) at 1 year
- In the survivors with complete DNAm and 1-year outcomes, we completed a secondary analysis to determine associations with:
  - Continuous adaptive behavior (VABS)
  - Continuous health-related quality of life (HRQOL, Pediatrics Quality of Life Inventory)
  - Dichotomized functional outcome (Pediatric Glasgow Outcome Score Extended [GOSE Peds], >2 unfavorable)
- Multiple linear regression (continuous) or logistic regression (dichotomized) models were performed
  - Adjusting for age and cardiac arrest location (in-hospital vs. out of hospital arrest)

PARTICIPANT DEMOGRAPHICS

- Only children with complete DNAm data and outcomes at 1 year were included (n=52)
  - Of these children, 51 survived and were included in secondary analysis

VARIABLE	LOCATION OF CARDIAC ARREST	
	IN-HOSPITAL (n=32)	OUT OF HOSPITAL (n=20)
Age at injury in years (median (IQR))	0.77 (0.11, 2.57)	8.13 (2.94, 14.57)
Sex (M/F)	21/12	13/7
Duration of CPR in minutes (median(IQR))	5.0 (2.0, 9.5)	6.0 (2.0, 21.5)
Survival at one year (n)	31	20

DISTRIBUTIONS OF TIME TO ACUTE BIOSAMPLE COLLECTION



EPIGENETIC MARKERS AND OUTCOMES

KEY FINDINGS

- Suggestive association of higher ***ABCC8*** site 4 DNAm with more favorable outcomes (OR=0.006, p=0.059)
  - Unfavorable Outcome: Decreased risk of death or poor adaptive behavior (VABS <70) at 12 months
- Higher ***ABCC8*** DNAm on site 3 was significantly associated with better functional outcome at 1 year (OR=0.07, p=0.004)
- Suggestive association of higher ***ABCC8*** DNAm at site 2 with increased health-related quality of life at 12 months (β=10.26, p=0.053)
- Suggestive association of higher ***ABCC8*** DNAm on site 3 with better function at 12 months (OR=0.45, p=0.091)
- The direction of the effects of DNAm at most ***ABCC8*** sites was positive (except site 1 for adaptive behavior), suggesting a protective effect of ***ABCC8*** DNAm
- No significant associations of ***NfL*** DNAm with outcomes

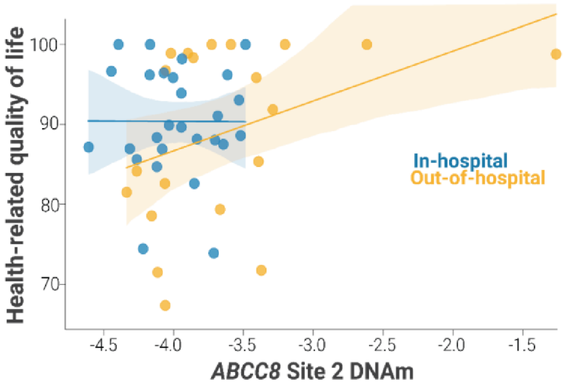
DNAm AND UNFAVORABLE OUTCOME

DNAm sites		Unfavorable Outcome		
Gene	Site	OR	95% CI	p
ABCC8	Site 1	0.29	[0.03, 2.85]	0.29
	Site 2	0.48	[0.08, 2.71]	0.40
	Site 3	2.06	[0.29, 14.83]	0.32
	Site 4	0.006	[3.5e-5, 1.22]	0.059
NfL	Site 1	0.28	[-1.81, 2.37]	0.79
	Site 2	0.61	[0.06, 5.76]	0.67

DNAm AND SECONDARY OUTCOMES

DNAm sites		Adaptive Behavior (VABS)			Health-related Quality of Life			Poor Functional Outcome (GOSE Peds)		
Gene	Site	β	95% CI	p	β	95% CI	p	OR	95% CI	p
ABCC8	Site 1	-5.73	[-16.75, 5.28]	0.30	8.53	[-3.64, 20.70]	0.17	0.76	[0.20, 2.84]	0.69
	Site 2	0.88	[-8.95,10.70]	0.86	10.26	[-0.12, 20.63]	0.053	0.38	[0.11, 1.36]	0.14
	Site 3	0.21	[-10.41, 10.82]	0.97	7.11	[-4.41,18.63]	0.22	0.07	[0.01, 0.42]	0.004*
	Site 4	5.98	[-2.35,14.30]	0.16	4.96	[-3.53,13.44]	0.25	0.45	[0.18, 1.13]	0.091
NfL	Site 1	6.58	[-4.28, 17.43]	0.23	3.75	[-8.69, 16.20]	0.55	1.43	[0.40, 5.12]	0.58
	Site 2	7.29	[-4.01, 18.58]	0.20	-4.53	[-17.28, 8.22]	0.48	0.78	[0.20, 2.99]	0.71

All regression models were adjusted for age and location of cardiac arrest (in-hospital vs out-of-hospital).



Statistical model adjusted for age (not shown) and location of cardiac arrest.

DISCUSSION

- Higher ***ABCC8*** DNAm was associated with better long-term outcomes
  - Theoretically indicates decreased SUR1 protein
  - Consistent with the role of SUR1 protein as a biomarker of cerebral edema in adults
- No significant findings with ***NfL*** DNAm
  - Follow-up in larger sample size
  - Inconsistent with previous studies depicting NfL as a marker of white matter damage
- For many models, age and location of cardiac arrest were significantly associated with outcomes (p<0.05)
- Survival rates were high for this group (51 of 52 children with complete outcomes survived at 1 year post-injury)
- Not representative of other pediatric cardiac arrest samples
  - Small sample size

***ABCC8* DNAm may be a prospective epigenetic biomarker of recovery from pediatric cardiac arrest**

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The diverse invitations to participate in early rehabilitation: a qualitative study of nurse-patient interactions in the intensive care unit.

BACKGROUND

- Early rehabilitation reduces the occurrence of ICUAW and delirium, improving functional mobility and decreasing the length of high-cost ICU stays
- The role of critical care nurses allows for integrating evidence-based rehabilitation into routine care
- Real-life nurse-patient interactions have not been studied with a focus on professional actions and how they impact patient participation in early rehabilitation.

OBJECTIVE

To gain insight into the interaction between nurses and patients in early rehabilitation, and the role of patient participation in this context

METHODS

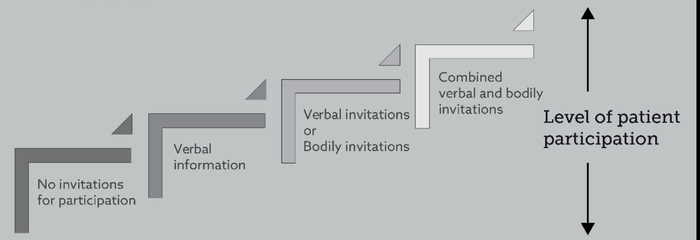
Design: qualitative, utilizing observations and video recordings combined with postobservation interviews

Setting: Two general Norwegian ICUs

Participants: Eight nurse/patient dyads

Analysis: Video analysis combined with systematic text condensation, informed by interaction theory

FINDINGS



CONCLUSION

- Interactions that combine verbal and bodily invitations appear crucial for patient participation in early rehabilitation in the intensive care unit, emphasizing the importance of integrated tailored bodily communication
- The nurses' lack of insight into and attention to the patient's bodily potential for active movement combined with a paternalistic approach to the patient's situation may hinder patients' active participation

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Enhancing Sleep Hygiene in the MICU:
Developing and Implementing an Interdisciplinary Protocol for Improved Patient Outcomes

GoodShepherd Penn Partners
Official Therapy Provider for Penn Medicine

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Penn Medicine

BACKGROUND

- In the medical intensive care unit (MICU), critically ill patients frequently encounter poor sleep quality due to a combination of various factors and barriers that hinder their ability to attain restorative sleep (Kamdar et al., 2013). Occupational therapists are trained and well versed in promoting rest and sleep practice/quality.
- Inadequate sleep in the ICU not only poses challenges to patients' comfort but also increases the risk of developing delirium and adversely affects their recovery outcomes.
- Currently, the MICU at Pennsylvania Hospital (PAH) lacks any established sleep hygiene protocols, despite the evident necessity for such measures.

METHODS

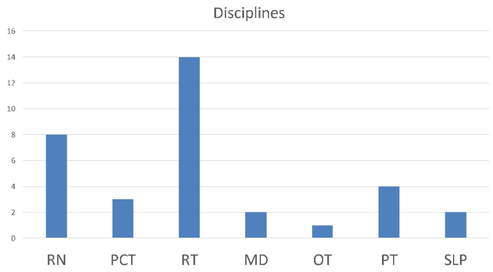
- To gain insight into the interdisciplinary team's knowledge of and current practices on sleep hygiene, a 10- question survey consisting of quantitative and qualitative data was distributed.
- Over a 1-month period (May 2023) a survey was distributed to MICU staff via email, attending rounds, and signage placed in staff lounges.

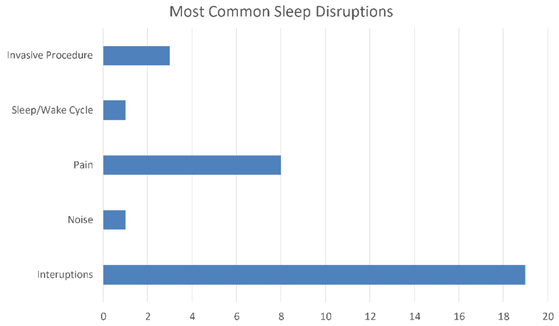
1. Do you work on the Medical Intensive Care Unit (MICU)?
2. What is your discipline in the MICU?
3. In your professional opinion, how significant of a role does getting adequate sleep play in promoting patient recovery? On average, how many hours of sleep do patients under your care in the MICU get each day?
4. In your experience, what are some of the **most common** sleep disruptions that patients in the ICU face?
5. Could you elaborate on any measures you take to facilitate better sleep for patients in the MICU?
6. What training or education have you received related to promoting good sleep hygiene in the ICU?
7. Have you observed any relationships between patients' sleep quality and their likelihood of experiencing delirium or other adverse outcomes?
8. What do you think are the **most impactful** barriers that exist when it comes to facilitating adequate sleep for patients in the MICU?
9. In your opinion, do you believe that the development of interdisciplinary resources, tools and clinical guideline for promoting good sleep hygiene practices in the MICU would be valuable?
10. In your opinion, do you believe that the development of interdisciplinary resources, tools and clinical guideline for promoting good sleep hygiene practices in the MICU would be valuable?

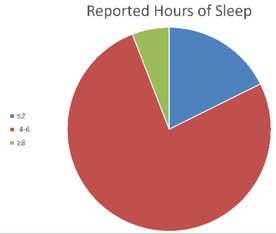
RESULTS

Results highlighted:

- 34 members of the interdisciplinary team completed the survey
- When asked the significance of the role sleep plays on promoting patient recovery, on a scale of 1-5, (5 being most important and 1 being least important) results indicated 4.71 for significance.
- The most common sleep disruptions were due to medical interventions (59%).
- A majority of respondents observed a relationship between poor sleep quality and likelihood of experiencing delirium (63%).
- Top 3 most impactful barriers: noise, frequent monitoring, pain/discomfort.
- There is a lack of formal education on sleep practices (72%).
- Respondents believe a formalized protocol would be valuable (97%).







DISCUSSION/CONCLUSION

- In conclusion, the survey results reveal the need for implementing an interdisciplinary sleep hygiene protocol to enhance patient outcomes in the MICU, considering the common sleep disruptions, the association with poor sleep quality and delirium, and the lack of formal education on sleep practices.
- The findings of this study highlight the potential impact of environmental supports, cognitive intervention strategies, and the creation of practice guidelines for sleep practices in the MICU, all of which have the potential to enhance patients overall occupational participation in sleep.

CLINICAL RELEVANCE

- The next steps involve comprehensive literature review, interdisciplinary protocol design, and pilot implementation to address poor sleep quality's impact on the MICU.
- A tailored sleep hygiene protocol will be developed informed by the survey, and qualitative insights. The interdisciplinary team will be educated on protocol and a pilot phase with be started with patient and staff feedback. Patient outcomes will be rigorously assessed post-implementation, tracking improvements in delirium rates, recovery times, and well-being.
- Continuous evaluation and knowledge dissemination will ensure sustained enhancements in sleep quality and patient outcomes within the MICU setting.

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Functional reconciliation rate in ICU patients: a retrospective multicenter study

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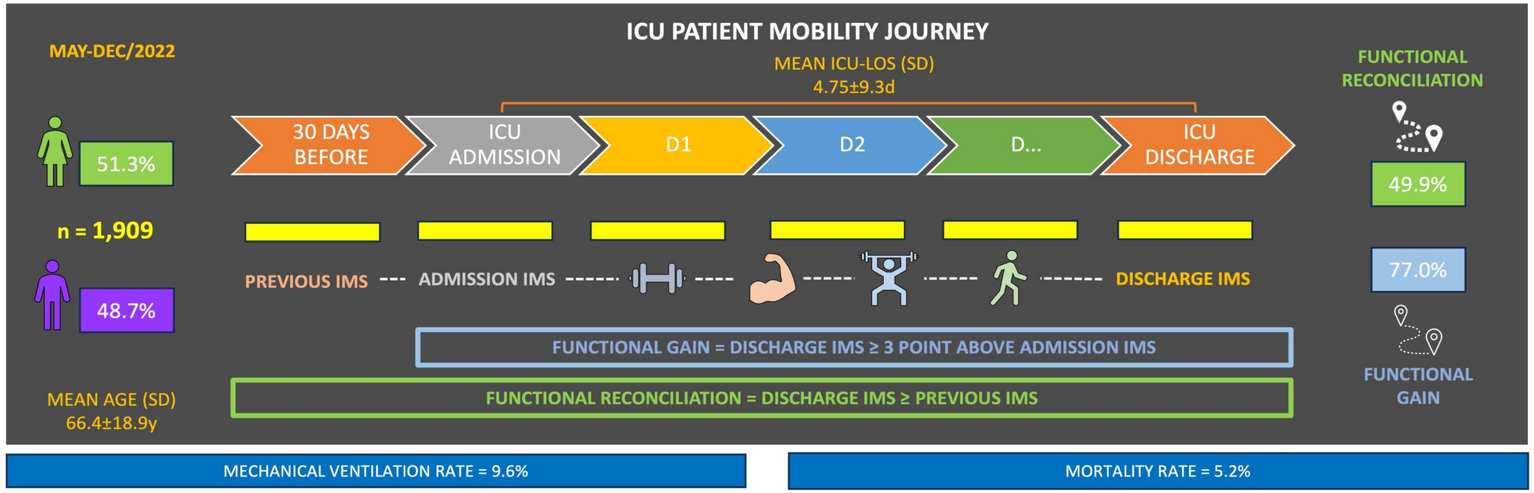
BACKGROUND

Structured mobility programs are associated with better outcomes such as shorter mechanical ventilation time and shorter intensive care unit lenght of stay (ICU-LOS). Hospital-Acquired Disability (HAD) is linked to the functional trajectory of the patient after discharge.

OBJECTIVES

The aim of this study was to verify the Functional Reconciliation Rate for mobility of patients who were admitted to our ICUs.

METHODOLOGY AND RESULTS



CONCLUSIONS

The functional reconciliation rate appears to be an important indicator that will allow us to monitor the results of our mobility program and its impact on the patient's return to society, considering their level of mobility and consequent autonomy.

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TAKE-HOME MESSAGE:

FUNCTIONAL RECONCILIATION RATE MAY BE A **KEY PERFORMANCE INDICATOR** IN A QUALITY IMPROVEMENT PROJECTS TO **DECREASE HOSPITAL-ACQUIRED DISABILITY** OF THE PATIENTS AFTER ICU DISCHARGE.

12th Annual Johns Hopkins Critical Care Rehabilitation Conference
November 8th - 11th, 2023

Core Outcome Set for Phone-Based Research Follow-up – Feedback from Acute Respiratory Failure Survivors in APICS-01 Study

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Background

- Acute respiratory failure (ARF) survivors often face new or worsened physical, mental, and/or cognitive impairments, called "post-intensive care syndrome."
- Prior studies evaluated different post-ARF patient outcomes, using different measures, preventing data comparisons across studies.
- A core outcome set (COS) is a minimum set of recommended outcomes/measures.
- APICS-01 (Addressing Post-Intensive Care Syndrome) Study assessed unmet healthcare needs of ARF survivors after hospital discharge, utilizing the ARF COS and COS feedback survey at 3-months follow-up.

Objective

- Evaluate ARF survivors' feedback on post-ARF COS to establish a reliable COS appropriate for data comparison across future studies

Methods

- Minimum COS for post-ARF research included assessment of:
  - **Quality of life** (EQ-5D)
  - **Pain** (EQ-5D pain item)
  - **Mental health** (Hospital Anxiety and Depression Scale and Impact of Event Scale–Revised)
  - **Cognition** (Montreal Cognitive Assessment–Blind (MoCA-Blind) (recommended but not required)
- COS feedback survey focused on 3 questions, allowing free text comments after each question:
  - Perceived COS importance
  - Emotions evoked during COS
  - Perceived COS length

Results

Of 154 participants who completed the COS at 3 months (138 also completed MoCA-Blind), **140 (91%)** provided feedback.

Patient Characteristic	Value (N = 140)
Age, yr, median (IQR)	55 (43-66)
Male, n (%)	76 (54)
White race, n (%)	96 (69)
BMI, kg/m^2, median (IQR)	30 (25-37)
APACHE II score, median (IQR)	20 (15-26)
Acute respiratory distress syndrome, n (%)	17 (12)
ICU/Hospital length of stay, d, median (IQR)	6 (4-10) / 14 (9-21)

Emotions evoked during COS

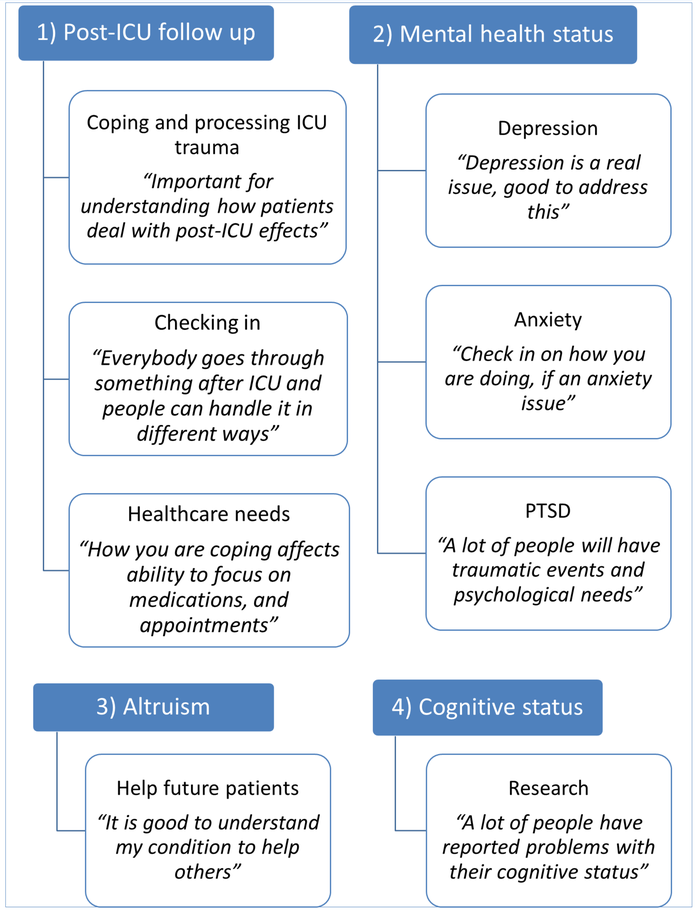
- Most common emotions were positive
  - optimism (59%)
  - happiness (58%)
- Negative emotions less frequent
  - boredom (22%)
  - frustration (17%)
  - discouragement (9%)

Perceived COS Length

- 59% said COS was "just the right" duration
- 32% said "a little long"

Perceived COS Importance

- 82% agreed that COS was important, 2% did not agree and 16% were unsure
- 4 major themes



Conclusion

- A majority of ARF survivors perceived the COS to be important, take an appropriate amount of time, and evoke few negative emotions; many reported positive emotions.
- Future studies evaluating ARF survivorship should use this recommended COS.

Reference: Seth B, Kalva T, Eakin MN, Bose S, Mir-Kasimov M, Sevin CM, Jackson JC, Brown SM, Needham DM, Dinglas VD, for the Addressing Post-Intensive Care Syndrome (APICS-01) research group. Acute respiratory failure survivors' feedback on a phone-based follow-up using a core outcome set. *Ann Am Thorac Soc*. 2023;20(5):763-765.

Delirium as a determining factor of long-term cognitive impairment in the Post Intensive Care Unite Syndrome. Prospective study in a latin american unit.

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INTRODUCTION

Cognition is one of the most relevant health concerns of XXI century.

Long term cognitive impairment in patients admitted to an intensive care unit (ICU) is highly frequent, along with psychological and physical disorders are the components of the post intensive care syndrome (PICS).

Delirium, characterized as an acute change in attention and cognition, exhibits high incidence in the ICU and is associated with higher mortality, long-lasting periods of invasive mechanical ventilation, longer ICU and Hospital stay and long term cognitive impairment.

In Uruguay, a cohort prospective study showed that the prevalence of delirium in patients with mechanical ventilation is 80% .

OBJECTIVES

To evaluate the incidence of the cognitive and psychological sequels that is part of the PICS.

To study the relationship betweenthe development of delirium during ICU stay and the development of cognitive and psychological disorders that are part of the PICS.

METHODS

Prospective cohort study, through an after one-year follows up of patients who were hospitalized in the Pasteur Hospital ICU between March 1st, 2017 and May 31st, 2017.

2 interviews were conducted

A first phone interview was made to the 43 patients, in which they were invited to participate in the study and several scales were applied.

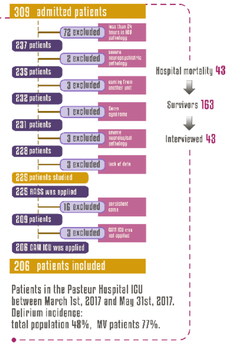
Additionally, they were invited to a second face to face interview (14/43) where other scales were applied.

The conditions of the patients before ICU admission were considered.

The following scales were applied:

- HAMILTON: to assess anxiety (on the phone).
- DE BECK II: to assess depression (face to face).
- PFEIFFER: to assess cognitive impairment (on the phone).
- MINI MENTAL: to assess cognitive state (face to face).
- BARTHEL: to assess physical disability for the daily basic activities (DBA) (on the phone).

FIGURE 1 Flowchart



Patients in the Pasteur Hospital ICU between March 1st, 2017 and May 31st, 2017.
Delirium incidence:
total population 48%. MV patients 77%.

RESULTS

TABLE 1 General features of PICS population regarding delirium during ICU stay

Variables		All the patients N=43	Non - Delirium N=28	Delirium N=15	p value
Age (SD)			53 (16)	58 (16)	0.38*
Gender					
Male (%)		27 (61.3 %)	17 (61 %)	10 (67 %)	0.75***
Female (%)		16 (38.7 %)	11 (39 %)	5 (33 %)	
Background					
Tobacco	NO	14 (35 %)	11 (39 %)	3 (20 %)	0.31***
	YES	29 (65 %)	17 (61 %)	12 (80 %)	
Drug abuse	NO	38 (86 %)	24 (85 %)	14 (93 %)	0.64***
	YES	5 (12 %)	4 (14 %)	1 (7 %)	
Psychiatric pathology	NO	33 (78 %)	23 (82 %)	10 (67 %)	0.26***
	YES	10 (28 %)	5 (18 %)	5 (33 %)	
Disease severity					
APACHE II score (SD)			15 (6)	24 (11)	0.003*
Mechanical Ventilation					
(MV)	NO	22 (51 %)	20 (71 %)	2 (13 %)	< 0.001
	YES	21 (49 %)	8 (29 %)	13 (87 %)	
Stratification pathology					
Medical		28 (63 %)	18 (64 %)	10 (67 %)	1.00***
Surgical		15 (35 %)	10 (36 %)	5 (33 %)	
ICU Days (SD)			5 (6)	7 (4)	0.42
Length of Hospital Stay					
LOS (SD)			16 (11)	28 (14)	0.33*
MV Days (SD)		1 (14)	1 (2)	3 (3)	< 0.01**
Analgesia Days (SD)			1 (1)	2 (1)	0.011**
Sedation (SD)			0(1)	1 (1)	0.003**

(*) test of students for independent samples. (**) Mann Whitney per independent samples. (***: X2. OR Standard Deviation.

In the Univariate analysis when we compared delirious patients with non-delirious patients, we found significant differences in the following variables: APACHE II, MV, MV days, Analgesia and Sedation days.

TABLE 2

MINI MENTAL SCALE — Relationship between delirium and cognitive impairment through Mini Mental Scale - face to face interview.

Number of patients total (N=14)	Non - Delirium (N=8)	Delirium (N=6)	p value
Normal Mini Mental Scale	7 (87 %)	1 (17 %)	
Mild cognitive impairment	1 (13 %)	3 (50 %)	0.036
Dementia	0 (0 %)	2 (33 %)	0.16

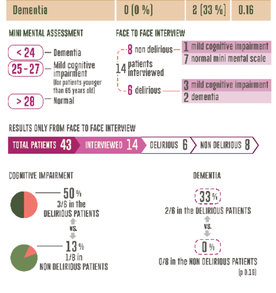


TABLE 3

PFEIFFER SCALE — Relationship between Delirium and Cognitive Impairment through Pfeiffer Scale - on phone interview.

Number of patients total (N=43)	Non - Delirium (N=28)	Delirium (N=13)	p value
Mild cognitive impairment	0 (0 %)	3 (23 %)	<0.001***
Moderate cognitive impairment	0 (0 %)	4 (30 %)	
Normal	29 (100 %)	6 (46 %)	

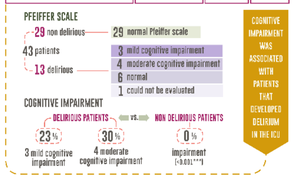


TABLE 4 Relationship between Delirium and other aspects of Post UCI Syndrome. Depression - DE BECK SCALE. Dependence for DBA - BARTHEL SCALE.

Scales		Non - Delirium N=28	Delirium N=15	p value
Type of interview	Face to face (14)	8 (23 %)	6 (47 %)	0.18
	On the phone (28)	21 (75 %)	8 (53 %)	
Barthel Classification Pre ICU - N=43	Mild dependence	3 (11 %)	1 (7 %)	0.78
	Moderate dependence	1 (4 %)	0 (0 %)	
	Severe dependence	1 (4 %)	2 (13 %)	
	Total dependence	0 (0 %)	0 (0 %)	
	Independent	23 (82 %)	12 (82 %)	
Barthel Classification Post ICU - N=43	Mild dependence	5 (18 %)	1 (7 %)	0.83
	Moderate dependence	2 (7 %)	2 (13 %)	
	Severe dependence	2 (7 %)	0 (0 %)	
	Total dependence	0 (0 %)	2 (13 %)	
	Independent	19 (68 %)	10 (67 %)	
De Beck II Classification N=14	Minimum depression	4 (50 %)	4 (72 %)	0.57
	Mild depression	2 (25 %)	1 (14 %)	
	Moderate depression	0 (0 %)	0 (0 %)	
	Severe depression	2 (25 %)	1 (14 %)	

Barthel scale was applied pre and post ICU

BARTHEL PRE ICU (Family details and medical register)		NON DELIRIUM	DELIRIUM
Mild dependence	4	3	1
Moderate dependence	1	1	
Severe dependence	3	1	2
Independent patients	35	23	12

BARTHEL POST ICU		NON DELIRIUM	DELIRIUM
Mild dependence	6	5	1
Moderate dependence	4	2	2
Severe dependence	2	2	
Total dependence	2		2
Independent patients	29	19	10

DE BECK II Scale for depression Only face to face interview		NON DELIRIUM	DELIRIUM
Mild depression	8	4	4
Medium depression	3	2	1
Moderate depression	0		
Severe depression	3	2	1

DISCUSSION

Until now, there are no published studies about the relationship between PICS and ICU delirium in Uruguay.

In our research, the entirety of the patients evaluated after one year of ICU discharge, exhibited at least one PICS symptom.

Cognitive impairment was associated with delirium both in the scales done by phone or in person, through two Pfeiffer scales and the Mini-Mental scale .

Depression was found in the totality of the patients, with delirium or not.

Anxiety was detected in 30% of the patients who had delirium and in 67% of those who did not.
No relation was found between anxiety and delirium

CONCLUSIONS

Cognitive impairment was associated with ICU delirium and with a longer duration of the latter.

Even though BADL dependence was higher in delirious patients, there were no significant differences between both groups, neither for anxiety nor for post ICU depression

The most important risk factor on which we can contribute to avoid cognitive dysfunction after discharge is the presence of delirium during ICU stay.

Early identification, monitoring and the application of the set of multicomponent measures, have to be utilized in a standardized manner with the aim of reducing delirium onset, shortening its duration as one of the known tools created to prevent long term cognitive impairment in the patients who are survivors of a critical disease.

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