ACADEMY OF ACUTE CARE PHYSICAL THERAPY

Fostering excellence in acute care practice, in all settings, in order to enhance the health and functioning of patients and clients.

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American Physical Therapy Association
WHO WE ARE
The Academy of Acute Care Physical Therapy is composed of more than 3,000 physical therapists, physical therapist assistants, and physical therapy students who are members of the American Physical Therapy Association.

MISSION
The mission of the Academy of Acute Care Physical Therapy is to foster excellence in acute care practice, in all settings, in order to enhance the health and functioning of patients and clients.

VISION
Acute care physical therapy is provided by physical therapists who:
• as integral members of the healthcare team, are consulted for their expertise in patient management and clinical decision making for patients with acute healthcare needs.
• may be board-certified specialists in acute care physical therapy.
• may be assisted, in a team relationship, by physical therapist assistants, who may be recognized for advanced proficiency.

The Academy of Acute Care Physical Therapy is recognized as the expert resource for the provision of evidence-based acute care physical therapy.
Implementing a Transitional Care Model between Healthcare Settings for Patients with Complex Burn Injuries

PRESENTED BY
Alyssa Paige Herzog

BACKGROUND/PURPOSE
The purpose of this report is to describe a transitional care model between therapists in an acute care burn center and an inpatient rehabilitation center with goals to improve patient outcomes.

DESCRIPTION
Continued advancements in healthcare have resulted in increased survival of persons with burns and heighten the need for improved communication during the transition from acute care to inpatient rehabilitation. Patients with burn injuries have unique challenges that include hypertrophic scarring, contractures, amputation, neuropathies, itching, heterotopic ossification, pain, and difficulty with psychological adjustment. These complex rehabilitation needs require an interdisciplinary team encompassing professionals from multiple levels of care to ensure optimal patient outcomes and experience. Often there is limited communication beyond a review of the medical record when a patient transfers from an acute care hospital to an inpatient rehabilitation setting. Limited handoff communication may lead to inaccuracies in information, decreased continuity of care, decreased patient safety, decreased patient and clinician satisfaction, increased use of resources, and increased re-hospitalization rates. Errors related to discontinuity of care occur in 50% of all patient cases. This special interest report describes an enhanced pre-admission communication process between an acute care burn unit and inpatient rehabilitation program. This hand off process includes: verbal handoff between treating therapists, face-to-face interaction with patient prior to transfer, written patient specific hand off form to be placed in medical chart, a traditional review of the medical chart and discharge summary, and weekly follow up with the acute care burn team throughout inpatient stay and post discharge.

SUMMARY OF USE
This enhanced transitional process has led to improved patient/clinician satisfaction, patient education, patient psychological adjustment, and patient/clinician consistency with wound dressings, compression garment and splint wearing across levels of care. It is well understood that improved communication between settings is directly linked to improved patient outcomes and decreased hospital readmissions. Importance to Members: It is well documented that one of the most challenging points in healthcare is the transition and communication between providers in different healthcare settings. Insufficient communication during transitional care can lead to unnecessarily high rates of health service use, increased healthcare spending, lapses in quality and safety, medication discrepancies, adverse clinical events, patients’ reporting unmet needs, and decreased satisfaction with care.

IMPORTANCE TO MEMBERS
This protocol aspires to address these issues in a complex burn population to improve the overall quality of care across the healthcare continuum. This model has the potential to be applied to various patient populations across multiple levels of care.
Years Experience and Opinions on Prone Positioning of Infants Following Cardiac Surgery: A Nationwide Survey

PRESENTED BY
Amanda Jo Clifton

PURPOSE/HYPOTHESIS
Evidence has suggested that years of experience, along with education, and external contexts can influence clinical decision making (CDM). The purpose of this study was to describe if years of clinical practice (YCP) influenced opinion on pediatric sternal precautions (PSP) as related to prone positioning restrictions (PPR) in infants post cardiac surgery and if respondent opinion on duration of PPR differed from hospital practice.

NUMBER OF SUBJECTS
68

MATERIALS/METHODS
A web-based survey was developed from a review of current literature and consultation with cardiopulmonary and pediatric clinical specialists with acute care experience. Snowball sampling resulted in 68 respondents: cardiologists (25%), registered nurses (5.9%), advanced registered nurse practitioners (22.1%), physical therapists (38.2%), occupational therapists (5.9%), and physician assistants (2.9%). Respondent YCP: 0-5 years (14.71%), 6-10 years (26.47%), 11-15 years (14.71%), 16-20 years (13.24%), and 21+ years (30.88%).

RESULTS
In regards to PPR, the majority of respondents in each YCP group supported modified PPR: 0-5 (70%), 6-10 (64.7%), 11-15 (70%), 16-20 (77.8%), and 21+ (51.7%). The majority opinion for ideal length of PPR varied among YCP groups: 0-5 (40%) 1-2 weeks; 6-11 (47.1%) patient stability; 11-15 (20%) no PPR, 1-2 weeks, 3-4 weeks, 5-6 weeks, and patient stability; 16-20 (33.3%) 1-2 weeks and no PPR; and 21+ (31.6%) no PPR and patient stability. The majority opinion of PPR duration mandated by institutions among YCP groups was identified as appropriate except for the 0-5 group (40%) who responded it was too long. In addition, there was no consensus as to which time frame for PPR was most appropriate in each group. Most respondents agreed with institutional preferences of PPR except for the YCP 21+ group. When combining YCP to 0-15 and 16-21+, 51.3% and 56.7% respectively, reported opinions that did not support a specific time frame for PPR.

CONCLUSION
There was a consensus across groups for a modified PPR protocol. However, respondent opinion of ideal duration of PPR varied across groups. The respondents with less YCP (0-5) reported the mandated PPR was too long. The remaining YCP groups reported that the mandated PPR was appropriate, but no consensus for optimal PPR duration was identified.

CLINICAL RELEVANCE
CDM has been reported as multifactorial including personal characteristics and external contexts. This study demonstrated that across YCP, there was support for modified PPR protocol despite unknown and varied modifications of PPR. Duration of PPR was unclear and when YCP were combined (0-15 and 16-21+) a specific time frame for PPR was not supported. Instead, majority opinions were no PPR or PPR should be based on patient stability. These opinions contrast with previous research that PPR are often implemented based on institutional preferences. This research brings into question how clinicians can critically decide when to place an infant in prone and objectively assess patient stability after cardiac surgery.
Using Debriefing in Simulation to Improve Student Confidence: Does the Timing and Method Matter?

PRESENTED BY
Amy Jennifer Bayliss

PURPOSE/HYPOTHESIS
The purpose of this project was to assess the impact of two different debrief procedures following HFHS sessions on DPT student’s acute care confidence and therefore clinical readiness. Patient is a 47 year old male admitted with cardiogenic shock and severe acute kidney injury. Hospital course included CVVHD via temporary femoral catheter, intra-aortic balloon pump (IABP), intubation, veno-arterial (VA) ECMO, and eventual transition to BiVAD Centrimag with VA-ECMO central cannulation configuration. As his course progressed IABP was removed, he was extubated, oxygenator/ECMO removed, and he was eventually transitioned from CVVHD to intermittent hemodialysis. The patient required BiVAD CentriMag support for 83 days before receiving a transplant; prior to being listed for a combined heart/kidney transplant, the medical team required the patient to be physically optimized.

NUMBER OF SUBJECTS
79 DPT students participated, with 41 students in Cohort A and 38 students in Cohort B.

MATERIALS/METHODS
Both cohorts participated in two HFHS sessions in teams of 3 students, all students were given objectives and a case history one week prior to each HFHS experience. The HFHS used the Laerdal’s SimMan™ 3G mannequin which was equipped with an oxygen delivery system, lines and tubes typically seen in an ICU setting, and a telemetry unit displaying vitals. The format for each simulation lab included a 15 minute pre-brief session and orientation to the simulation area. This included a review of case history and learning objectives, student task assignment, and instruction to rotate the lead PT role during the experience. The student-SimMan™ encounter was 20 minutes and required the team to assess readiness to mobilize, perform range of motion, and then mobilize the SimMan™ to sitting. Both cohorts participated in a 15-minute debriefing session following completion of their initial encounter and then also completed a second simulation session 4 weeks after the first. In addition, cohort B completed a second debrief procedure one week prior to the second simulation which required them to watch the video of their previous HFHS session and reflect upon their performance.

RESULTS
This patient was able to participate in a progressive mobility program initiated on day 3 after BiVAD placement while requiring mechanical ventilator support, ECMO, and CVVHD without adverse effects. Waiting for the discontinuation of these devices would have delayed progression of mobility and potentially transplant. This case supports, with input from a multidisciplinary team, select patients on BiVAD Centrimag with and without other support devices may participate in PT led mobilization without adverse events.

CONCLUSION
Students significantly improved their self-confidence in an acute care environment regardless of the debrief procedure used after simulation. However, students in Cohort A experienced a significantly greater improvement in some areas of self-confidence, which may indicate an immediate debrief is better for student confidence than a delayed second session. It is possible that the additional video debrief undermined student confidence and even increased stress for the second HFHS session.

CLINICAL RELEVANCE
The HFHS learning experience with a debrief conducted immediately after the simulation enhanced student self-confidence which has been linked to clinical readiness and performance, where confident students are more likely to be more effective physical therapists.
Development of the Critical Illness Recovery Center (CIRC) at UPMC: Role of PT

PRESENTED BY
Amy Ruth Cassidy

PURPOSE/HYPOTHESIS
Post Intensive Care Syndrome (PICS) was identified in 2012 as a syndrome consisting of new or worsening impairments in physical, mental and/or cognitive abilities in individuals who survive critical illness. UPMC Centers for Rehab Services (CRS) was invited to participate in a new outpatient interdisciplinary clinic with a comprehensive rehabilitation arm, the Critical Illness Recovery Center (CIRC), whose goals include identifying patients at risk for developing PICS and appropriately guiding referrals to rehabilitation services.

NUMBER OF SUBJECTS
100 patients (pre-study group) and 100 patients (post-study group).

MATERIALS/METHODS
CHF patients with PT orders will be included in the study if they meet the following criteria: CHF diagnosis, age 21 - 100 years, follows simple commands, ambulates with minimal assistance or less, hemodynamically stable, agreeable to participate, and tolerates leg ergometer/Nu-Step positioning. Patients will be excluded from the study if they are on hospice. The post-study group intervention will differ from our current standard of care by: Use of the Nu-Step (5 times per week) while the patient is in the hospital under non-skilled restorative services. A Leg Ergometer will be issued to those patients who are discharging home for continued use. Assessment measures: 2 minute walk test, 5 times sit to stand test, ambulation distance, quality of life questionnaire (follow-up phone call 30 days post hospital discharge), discharge disposition, number of PT sessions, and home exercise program compliance. Educational materials will include “how to monitor myself during exercise” with the perceived exertion scale, specific instructions for home exercise program (including ambulation and leg ergometer recommendations), and an exercise log.

RESULTS
In one year, the CIRC program screened 114 patients following hospital discharge. 70% (n=79) were identified with needs for interdisciplinary outpatient rehabilitative services: 52% (n=59) speech/cognitive, 39% (n=44) OT, 63% (n=72) PT. 22% (n=17) were still in skilled nursing facilities at the time of referral and 9% (n=7) were already enrolled in outpatient therapy programs within the system. For the 55 remaining patients who were residing at home and not currently engaged in a rehabilitation program, 33% (n=18) followed up within the UPMC CRS system for a total of 375 visits (76 SLP, 106 OT and 193 PT). We are unable at this time to account for patients who may have received therapy outside of the system.

CONCLUSIONS
Rehabilitation professionals are uniquely qualified to address impairments associated with PICS and the consequent activity limitations and participation restrictions. Collaborative development of an interdisciplinary clinic can facilitate the identification of patients who may be at risk for, or already have developed PICS.

CONCLUSIONS
Within the UPMC CIRC, a substantial number of patients have been identified to have comprehensive rehabilitation needs. Future goals aim to improve the follow up rate after referral and track patients who receive services outside of the UPMC CRS system.
Impact on Mobilization Level from Full-Time Staffing of Physical Therapists in the ICU

PRESENTED BY
Andrew Henney

PURPOSE/HYPOTHESIS
Immobility in patients admitted to the intensive care unit (ICU) after suffering a traumatic injury increases risk for secondary injuries and complications. Physical therapy (PT) services provided in the ICU and throughout the length of stay in the hospital may be effective in improving patient functional status. The objective of our study was to determine if full-time staffing of PTs in the ICU increases the number of patients that are mobilized and/or the level of mobilization attained prior to discharge as compared to an ICU with a rotating-staff model.

NUMBER OF SUBJECTS
The study evaluated the medical records of all motor vehicle accident victims (n=2634) in 2011-2015 that were admitted to the ICU at Grady Memorial Hospital, a level-1 trauma center in Atlanta, GA. The types of accidents included automobile, motorcycle, and ATV collisions plus bicycle/pedestrian vs. motor vehicle collisions.

MATERIALS/METHODS
Patients were divided into two groups, i.e., those admitted before (n=1373) and after (n=1261) June 2013, the month in which the full-time staffing of two PTs and one rehab aide in the ICU began. Patient records were examined to determine if he/she was mobilized and if so, further categorized based on his/her highest level of mobility attained prior to discharge. The levels of mobilization were defined as: 1) patient was never mobilized by PT, 2) patient only had bed mobility or was dependent/required maximum assist during general mobility (including sit-to-stand transfers), 3) patient used wheeled assistive device for mobility with any level of assist or ambulated with minimum assist or more, and 4) patient was independent with walking (including with handheld assist or supervision) unless wheeled mobility was used. Patient mobilization levels were compared before and after the staffing change using Chi-square tests.

RESULTS
The percentage of patients mobilized by a PT increased from 72.8% before the staffing change to 85.2% after the staffing change (p<0.001). However, the highest level of mobilization attained by a patient was not affected by the staffing change (p<0.893), e.g., the percentages of patients achieving the most independent level of mobilization before and after the staffing change were nearly identical (i.e., 63.5% vs. 64.3%, respectively). The staffing change’s effect on mobilization was similar for patients with severe injuries (i.e., Injury Severity Scale ≥ 15) compared to patients with less severe injuries.

CONCLUSIONS
After the initiation of full-time PT staffing in the ICU, more traumatically-injured patients were mobilized. However, the staffing change did not improve the percentage of patients achieving higher levels of mobilizations. The addition of PTs to the ICU likely explains the greater number of mobilizations.

CLINICAL RELEVANCE
Staffing PTs full time in the ICU can lead to more mobilizations for patients prior to discharge. This increase in mobilizations can potentially lead to a decrease in secondary injuries/complications and decreased length of stay, presumably reducing the resultant cost of care and improving quality of life.
A Novel Approach to Monitoring Response to High-Intensity PT in a Patient Undergoing Lung Transplant

PRESENTED BY
Angela Nottingham Henning

BACKGROUND/PURPOSE
Patients with progressive lung disease frequently develop frailty, a common clinical syndrome with a recognized state of increased vulnerability. Frailty is associated with poor health outcomes including falls, disability, and mortality; in addition, it is being used to predict post-surgical outcomes. Currently, there is not a gold-standard tool for frailty in patients with end-stage lung disease waiting for lung transplantation. Measurements of muscle size and quality assessed through diagnostic ultrasound may improve the classification of frailty in this population. The primary purpose of this poster is describe a novel approach to physical therapy interventions and assessment in a complex patient in the pre- and post-lung transplantation phase.

DESCRIPTION
The patient is a 64 year old male with end-stage lung-disease secondary to Coal Worker’s Pneumoconiosis and Interstitial Lung Disease. In fall of 2018, he completed a series of medical, physical, and cognitive pre-lung transplant testing. He was subsequently placed on the waiting list. During the pre-transplantation phase, he was admitted to the intensive care unit due to respiratory failure. At that time, he engaged in high level exercises with physical therapy. On Jan. 4, 2019, he underwent a bilateral lung transplant that included a complicated post-op course due to graft dehiscence, esophageal tunneling, post-op pneumonia, acute rejection, and diaphragm myopathy resulting in ventilator weaning difficulty. In the post-transplantation phase, the physical therapist implemented a progressive exercise program with initial focus on tolerance to upright and anti-gravity muscle strengthening. After months of an undulating medical status and poor tolerance to interventions, the patient’s recovery started to gradually improve. During these sessions, physical therapy focused on maximizing cardiorespiratory function while slowly re-introducing components of high-intensity and high-velocity exercise training. Patient discharged home from hospital on day 121 after completing 98 days in the ICU.

OUTCOMES
The patient performed a series of functional outcomes (Short-Performance Physical Battery and Six-Minute Walk Test), muscle strength, muscle power during lower-extremity leg press, and muscle ultrasound assessments pre- and post-transplantation. Data has been collected and currently ongoing analyzation. Final outcomes will be ready for presentation at CSM.

DISCUSSION
Although this patient participated in self-directed, high intensity exercises daily pre-transplant, he demonstrated steady decline in muscle power, muscle size, and functional measures after bilateral lung transplantation. Through continued emphasis on a multi-modal training regimen, the patient did begin to recover, but never fully regain prior hospital status on function and independence. Preliminary data analysis of functional outcomes demonstrate significant relationship between measures on muscle ultrasound to scores on functional outcomes suggesting ultrasound is valid and sensitive as a tool to track muscle size and quality in this patient.
Developing an Activity Monitor for Acute Care Patients

PRESENTED BY
Ann Elizabeth Tuzson

PURPOSE/HYPOTHESIS
The purpose of this project was to design and test an activity monitor appropriate for use with acutely ill individuals. Current fitness-activity monitors (e.g. Fitbit or Runtastic) are not designed to measure physical activity in hospitalized patients with severely limited mobility.

NUMBER OF SUBJECTS
10 healthy active older adults (>60 yo) and 10 hospital patients (>50 yo).

MATERIALS/METHODS
The prototype Patient Resident Mobility Tracker (PREEMPT): to assess accuracy, 10 healthy community dwelling older participants performed simulated patient activities for approximately 45 minutes while wearing both the PREEMPT device and a comparison device (ActivPal). In addition to 10 healthy participants, 10 acute care patients were recruited to wear both activity monitors during physical therapy sessions at a large acute care teaching hospital. For privacy reasons, video data were recorded for the healthy participants only.

RESULTS
For accuracy computations, the data were averaged across all participants. In an average session, the PREEMPT measured 315 steps at an average speed of 0.8636 m/s, with an upright time of 361 seconds, a stepping time of 275 seconds, a sedentary time of 1610 seconds and an average of 16 transitions per session. The PREEMPT results were analyzed via statistical equivalence tests using the two one-sided (paired) t-test (TOST) criterion. For accuracy, the PREEMPT was compared to the ActivPAL device and the video data. Video data were required to determine gait speed accuracy, hence gait speed accuracy could only be determined using the healthy participant gait data. For each quantity, an equivalence margin of 5% was used, except for transitions, where an equivalence margin of 1 transition (7.5%) was used. All outcome measures were statistically equivalent to the criterion measure at a significance level of 0.05.

CONCLUSION
With current technology a mobility monitor appropriate for use in the acute care patient population was developed and used to accurately measure objective mobility parameters in 10 healthy and 10 acutely ill participants.

CLINICAL RELEVANCE
The metrics from such a device can determine the effectiveness of therapy treatments and identify patients who would benefit most from therapy intervention.
Relationship of Gait Speed to Physical Function Following TAVR Procedure

PRESENTED BY
Ann Fick

PURPOSE/HYPOTHESIS
Individuals who are candidates for Transcatheter Aortic Valve Replacement (TAVR) often exhibit signs of frailty placing them at increased risk for post-procedure complications and affecting their ability to recover from surgery. Gait speed is one measure used to screen for frailty. The association between prior gait speed and functional outcomes immediately following the TAVR procedure is unknown. Therefore, the purpose of this study was to examine the relationship between pre-procedure gait speeds and post-procedure physical therapy functional measures.

NUMBER OF SUBJECTS
100 patients who underwent TAVR procedure.

MATERIALS/METHODS
A retrospective chart review was performed. Data extracted included: general demographic information, pre-procedure frailty assessments (Katz ADL scale, grip strength and gait speed), post-procedure functional measures (Functional Status Score for the ICU (FSS-ICU), AM-PAC Inpatient Short Form (AM-PAC IMSF) score and ambulation distances) and 30 day post-procedure gait speed. Patients were divided into two groups based on pre-procedure gait speed (slower gait speed (SGS) <0.83 m/s, n=48 vs usual gait speed (UGS) >0.83 m/s, n=52). A cut score of 0.83 m/sec was previously used to define slow walkers for patients undergoing cardiac surgery. Pre-procedure comparisons were made between the two gait speed groups and the results of the pre-procedure frailty assessments. Post-procedure comparisons used the results of the post-procedure functional measures. Mean gait speed of the groups before and 30 days after procedure were also compared. ANOVA and Pearson Chi-Square statistics were used to determine differences between groups.

RESULTS
No statistical differences were found between gait speed groups regarding: gender, hospital length of stay or percent of patients discharged home. Patients in the SGS group were older and had weaker grip strength, a higher percentage requiring ambulatory assistive devices, and more ADL impairments prior to surgery. All patients were evaluated by a physical therapist following TAVR with the SGS group requiring approximately one more visit (2.65±1.82 vs. 1.96±1.64, p=0.051). This group also had lower initial FSS-ICU (21.5+4.6 vs 24.33+6.2, p=0.01) and AM-PAC IMSF (17.8+3.1 vs 19.3+3.5, p=0.03) scores along with shorter ambulation distances (172.5+156.5 feet vs 299.4+162.9 feet, p=0.001). At 30 days post-procedure, gait speed in the SGS group improved (0.56+0.23 to 0.86+0.25 m/s, p=<0.001) whereas gait speed of the UGS remained unchanged (1.02±0.15 to 0.99±0.22 m/s, p=0.63).

CONCLUSION
In this study, patients with a pre-procedure gait speed of ≤0.83 m/s had lower FSS-ICU and AM-PAC IMSF scores, and ambulated shorter distances immediately post-procedure. By 30 days post-procedure, gait speed in this group significantly improved.

CLINICAL RELEVANCE
Gait speed is a simple assessment to perform prior to TAVR which may assist therapists in establishing an appropriate post-procedure plan of care. Patients with a ≤0.83 m/s gait speed may benefit from a higher frequency/intensity mobility program in the acute setting to improve functional status and safety of the patient at home.
High-Intensity Training and Cardiac Rehabilitation in Critical Care after Total Artificial Heart: A Case Report

PRESENTED BY
Annie Gumieny

BACKGROUND/PURPOSE
Acute rehabilitation of an individual status post total artificial heart (TAH) implantation focuses on initiating early mobility and approaching functional independence in a critical care setting. To date, little research has described higher-level ambulation, endurance, strength and balance training, and details few objective guidelines to monitor and progress activity intensity. This case study illustrates the rehabilitation course of an individual who progressed beyond typical critical care physical therapy (PT) goals to begin participation in high-intensity training and cardiac rehabilitation as an inpatient. It also describes the use of objective measures to quantify activity tolerance and guide progression of intensity in the absence of typical vital sign responses due to unmodifiable device settings.

DESCRIPTION
A 60-year-old male admitted after a non-revascularizable myocardial infarction underwent TAH implantation as a bridge to transplant after a complicated hospital course. PT evaluation was completed on postoperative day (POD) 4. A multidisciplinary rehabilitation approach along the continuum of acute, inpatient and outpatient care was utilized throughout the plan of care. The patient discharged on a portable TAH POD 47 and readmitted for device failure POD 51. He received an orthotopic heart transplantation POD 69 and discharged home with outpatient cardiac rehabilitation POD 77.

OUTCOMES
Overall the patient made rapid and impressive mobility gains with few medical setbacks, achieving modified independence with a rolling walker within six days of PT evaluation. Although he reached independence quickly, he ambulated just 290 feet with a rollator during the six minute walk test on POD 26. A cardiac rehabilitation program was initiated POD 28, including endurance training on a stationary bicycle and resistance exercises within Move In The Tube restrictions. Blood pressure and fill volume responses were constantly monitored. Starting POD 37, the patient participated in high-intensity interval training until discharge. Over time, he improved from 9 to 2/10 on the Modified Borg scale of perceived exertion with ambulation. In all sessions, the patient maintained appropriate TAH parameters and mean arterial blood pressure with only transient symptomatic orthostasis. Post-transplantation, he achieved complete independence with all mobility within three PT sessions.

DISCUSSION
During his course, the patient progressed through four informal phases of rehabilitation to achieve independence and enhance physical fitness with a TAH in preparation for and following an orthotopic heart transplant. This case report describes one instance of successful implementation of multidisciplinary, cross-continuum, high-intensity rehabilitation strategies in maximizing function and accelerating physical recovery in the absence of typical physiological responses to exercise with the use of diverse objective measures and patient symptom report to guide activity progression.
Feedback Training Improves Ability to Perform Functional Mobility Tasks with Sternal Precautions

PRESENTED BY
Ansel LaPier

PURPOSE/HYPOTHESIS
Patients often need to use their arms to assist with functional activities but after open heart surgery pushing with the arms is limited to 10 lb or less of force. The rationale for these restrictions is to promote sternal bone healing by minimizing sheer and distractive forces across the sternum as well as motion between the sternal edges. Restricting upper extremities (UE) use is particularly problematic for patients that need assistance sitting down/standing up from a chair and or need to use a walker for ambulation. The purposes of this study were to determine: 1) if patients can accurately estimate using 10 lb or less of force through their UE when performing functional mobility tasks, 2) if a brief intervention using feedback training can improve patients’ ability to modulate UE force and pectoralis major (PM) muscle activity, and 3) if PM muscle activation is directly related to UE weight-bearing force.

NUMBER OF SUBJECTS
Study participants (n = 21) were able to walk independently, had normal balance, and were pain-free with UE activity.

MATERIALS/METHODS
Force through the UE was measured using a walker instrumented with digital hand grip dynamometers wirelessly connected to tablets. Root-mean-square PM muscle electromyography (EMG) data were expressed relative to a maximal voluntary isometric contraction. Peak force and PM muscle EMG were recorded simultaneously over 3 trials during 4 functional tasks: ambulation using a standard and front wheeled walker and sit-stand transfers from a chair. After baseline testing, study participants underwent a brief session of visual and auditory concurrent feedback training. Data analyses included t-tests, ANOVA, and Pearson Correlations (P<0.05).

RESULTS
Results showed that self-selected UE force was > 10 lb for all tasks (11.7-28.3 lb) but after feedback training, it was significantly lower (8.3-13.4 lb). During most trials (67%), study participants over-estimated arm force. PM muscle EMG values were less than 10% of maximal voluntary isometric contractions and were reduced (2.7-3.3%) after feedback training. Mean UE force and PM muscle EMG values were significantly lower while using a front wheeled walker than during stand-to-sit. Intra-subject correlations between PM muscle EMG values and UE average force were high (r = 0.65-0.98).

CONCLUSION
Results suggest that overestimation occurs when patients are asked to use < 10 lb of UE force during transfers and ambulation with assistive devices. This study also demonstrates that a brief session of feedback training may significantly improve patients’ ability to accurately modulate the degree of UE force and PM muscle EMG activation used during functional mobility tasks. Activation of the PM muscle may be a useful indirect indicator of force occurs across the sternum since it is directly related to UE average weight-bearing force.

CLINICAL RELEVANCE
Overall, these findings suggest that use of an instrumented walker and feedback training would be beneficial in clinical practice to help patients recovering from median sternotomy more accurately follow UE weight-bearing instructions while promoting optimal return to functional activity.
Confidence in Acute Care Using Virtual Reality Video and Experiential Learning Activities: A Pilot

PRESENTED BY
Ashley Akiko Crow

PURPOSE/HYPOTHESIS
Physical therapy (PT) students can be overwhelmed in an acute care setting where inexperience and unfamiliarity of the environment can lessen student confidence. Historically, PT education has addressed student confidence for acute care with high fidelity human and mannequin simulation which are expensive and time costly. This study was designed to explore the efficacy of a new learning tool, virtual reality video (VRV), in conjunction with experiential learning activities (ELA) on student confidence for the acute care environment. We hypothesized that students who had VRV and ELA (experimental group) would have increased confidence in acute care practice compared to a control group (no VRV and ELA).

NUMBER OF SUBJECTS
25; control (n=12) and experimental (n=13) group.

MATERIALS AND METHODS
Second year PT students from two consecutive graduating classes volunteered to participate. All subjects received the same acute care coursework prior to a first acute care clinical education practical. The experimental group had the addition of VRV and ELA. An eight item self-efficacy survey was administered to both groups at two times: once after all coursework (pre-rotation) and then after the practical (post-rotation).

RESULTS
The experimental group rated themselves more confident than the control group at pre-rotation in ability to recognize which lines or tubes can be unattached prior to mobilizing a patient (p=0.012). No statistical significances were noted on any other items. With regard to the same item, there was a significant difference in change score between the control and experimental group (p = 0.001) with the control group experiencing an increase of 2 points and the experimental group a decrease of 0.08 point. While not statistically significant, it was noted that the experimental group had a smaller mean change scores on 7 of the 8 items as compared to the control group. Both groups were less confident at post-rotation in ability to monitor vitals to determine if the patient has an unstable response to exercise (p = 0.007 and p < 0.001, respectively). The control group had more confidence post-rotation in ability to recognize which lines or tubes can be unattached prior to mobilizing a patient (p = 0.002) and ability to interpret alarms and notifications from support equipment (p = 0.001).

CONCLUSION
The addition of VRV and ELA to the standard acute care coursework such as in the experimental group may be contributing to the increase in student confidence in line management relative to mobilizing a patient. The lack of statistical differences in pre and post-rotation scores in the experimental group may indicate that it was a realistic representation of the acute care environment. The authors acknowledge that the sample size may be a contributing factor to the lack of statistical significance.

CLINICAL RELEVANCE
Student confidence is important when entering a clinical rotation especially in the acute care setting. VRV training with ELA allows the instructors to bring the dynamic, fast paced and stressful hospital environment into the classroom in a way that is meaningful to current students and may help to increase student confidence.
Optimal Limb Occlusion Pressure for Blood Flow Restriction in Heart Failure and Health – Case Comparison

PRESENTED BY
Baabak Mostoufi

BACKGROUND/PURPOSE
Blood flow restriction training (BFRT) increases strength and hypertrophy with low-load exercise. Despite its known benefits, the optimal limb occlusion pressure (LOP) to perform BFRT is unclear. Providing safe and effective BFRT to individuals with heart failure may require a lower LOP than the traditional 80% LOP. We sought to examine the acute cardiovascular (CV) effects at 40%, 60%, and 80% LOP at rest in a subject with heart failure (HF) compared to an age and gender matched healthy subject (HS).

DESCRIPTION
The subjects were a 56 year old female HF (60.8 kg, 160 cm) and a 51 year old female HS (77 kg, 165 cm) with similar exercise habits. Past medical history (PMH) of HF included asthma, hyperlipidemia, and coronary artery disease. In Oct. 2018, HF underwent coronary artery bypass graft (CABG) surgery complicated by graft occlusion leading to a subsequent myocardial infarction and reduced ejection fraction of 25%. In May 2019, anginal symptoms prompted a nuclear stress test (positive for myocardial ischemia) and redo CABG. HF completed 3 cardiac rehabilitation visits performing 20-40 minutes of aerobic exercise at 50% age-predicted max heart rate before the study. HF medications included aspirin, amiodarone (200 mg daily), and amlodipine (2.5 mg daily). PMH of HS included hyperlipidemia, migraines, and occasional supraventricular arrhythmias. HS medications included Crestor (10 mg daily). Both subjects underwent Finometer™ PRO examination, with CV responses recorded and averaged for 5 minutes during and after 40%, 60%, and 80% LOP on bilateral lower extremities (Delfi PTS) at rest while seated.

OUTCOMES
Average heart rate (bpm) and systolic/diastolic blood pressure (mmHg) were consistent during and after 5 minutes of LOP at 40% (HF=64 vs 63; HS=70 vs 71) (HF=111/56 vs 107/54; HS=140/82 vs 147/84), 60% (HF=71 vs 69; HS=74 vs 70) (HF=118/60 vs 122/61; HS=152/89 vs 140/81), and 80% (HF=69 vs 68; HS=75 vs 77) (HF=125/62 vs 125/62; HS=138/83 vs 164/91) for both subjects. Average stroke volume (SV) (ml) and cardiac output (CO) (L/min) increased after 5 minutes of LOP at 60% (SV HF=93 vs 101; HS=66.5 vs 80) (CO HF=6.5 vs 6.9; HS=4.8 vs 5.6) and 80% (SV HF=95.5 vs 100; HS=68 vs 75) (CO HF=6.5 vs 6.8; HS=5.1 vs 5.7) for both subjects, but only increased at 40% (SV HF=100 vs 101; HS=70 vs 74.5) (CO HF=6.4 vs 6.4; HS=4.9 vs 5.3) in HS. Average total peripheral resistance (TPR) (dyne·s/cm5) mainly decreased after 5 minutes of LOP at 40% (HF=968 vs 930; HS=1667 vs 1615), 60% (HF=990 vs 963; HS=1816 vs 1475), and 80% (HF=1051 vs 1018; HS=1613 vs 1647). The ECG revealed no abnormalities.

DISCUSSION
Acute CV responses to all LOP levels were similar in HF and HS, indicating BFRT may be a safe and effective method of training in patients with heart failure. HS responded similarly to all LOP levels. However, in HF the largest changes in CO, SV, and TPR were seen in the first 2 minutes following cuff deflation at 80% LOP, suggesting that 80% LOP may be the optimal pressure for acute benefits of BFRT at rest for patients with heart failure.
Effects of Intradialytic Exercise on Functional Outcomes and Dialysis Efficacy: A Literature Review

PRESENTED BY
Barbara Jayne Ehrmann

PURPOSE/HYPOTHESIS
The purpose of this review is to examine if intradialytic exercise improves the efficacy of hemodialysis and functional outcomes. Hemodialysis efficacy is measured by the Kt/V value and functional outcome is measured by the Six-Minute Walk Test (6MWT).

NUMBER OF SUBJECTS
Six articles are included and reviewed.

MATERIALS/METHODS
Searches were conducted in PubMed and Pedro to locate research relating to intradialytic exercise for individuals with end-stage renal disease (ESRD) receiving hemodialysis. The articles reviewed were examined for measurements of hemodialysis efficacy and functional outcomes. The primary research was conducted from August through September 2017. A second search was conducted in April 2019.

RESULTS
The review of the literature found some statistically significant improvement in hemodialysis efficacy in patients with ESRD who participated in intradialytic exercise. All four studies that included 6MWT as an outcome measure showed statistically significant increases, and three studies demonstrated clinical significance. There were no adverse effects in those patients participating in intradialytic exercise.

CONCLUSION
Intradialytic exercise can be an efficient intervention to improve function in patients with ESRD, as well increasing dialysis efficacy.

CLINICAL RELEVANCE
Patients with ESRD on dialysis are typically deconditioned as a result of the disease and require physical therapy to maintain their strength and functional activity tolerance. However, patients are often too fatigued for therapy following hemodialysis. Combining hemodialysis with an exercise program would be more time efficient for both the patient and therapist. Furthermore, combining the two could increase patient compliance to exercise, as well as possibly increasing the efficacy of the hemodialysis treatment.
Use of an Outcome Measure Bundle in Acute Care to Determine Post-Acute Therapy Needs

PRESENTED BY
Brenna M. Randolph

BACKGROUND/PURPOSE
With changes in healthcare and the need for more data-driven outcomes there has been an increased push for use of outcome measures in all settings, including acute care physical therapy. The challenge is that no single outcome measure captures the spectrum of post-acute therapy needs for patients receiving therapy services in acute care. The goal of this case series is to evaluate the utility of outcome measures that are time efficient, easy to administer, and predictive of post-acute therapy needs. The patient’s level of assistance required for mobility, physical performance with a balance measure, and self-reported balance confidence were considered to create a composite view of the patient’s deficits and potential for additional therapy needs.

DESCRIPTION
Eight male patients (mean age 63) on a general medicine unit with physical therapy orders were assessed using the Activity Measure for Post Acute Care - 6 clicks (AM-PAC), Short Form Berg Balance Scale (SF-BBS), and Activities Specific Balance Confidence Scale (ABC). The AM-PAC was scored based on the assistance level required for basic mobility, with a score of less than or equal to 18/24 correlating to post-acute care placement needs. According to current research, patients who score less than 23/28 on the SF-BBS and less than 67% on the ABC Scale are at an increased risk for falling.

OUTCOMES
Trends were analyzed between scores on the outcome measure bundle with post-acute discharge location. All patients who scored greater than 20 on the AM-PAC were discharged home with home health, outpatient, or no continued physical therapy. Two patients scored less than 18 on the AM-PAC and were discharged to inpatient rehabilitation. Six patients scored within fall risk on the SF-BBS and were all discharged with continued physical therapy. When analyzing the ABC Scale, five patients scored within fall risk, while only four patients were discharged with continued therapy. One patient was not recommended for continued therapy due to a high SF-BBS score and independence with mobility per the AM-PAC. The patients with AM-PAC scores less than 18 also scored at a significant fall risk on both the SF-BBS and ABC Scale.

DISCUSSION
The use of a physical therapy outcome measure bundle in the acute care setting provides objective data to determine a baseline. There is limited research exploring practical acute care outcome measures to determine discharge placement and need for continued therapy services. The outcome measure bundle is easy to administer and provides a multi-modal approach to assess post-acute care therapy needs. The ABC Scale was developed for independent living older adults, therefore does not fully capture balance impairments within the assisted living or nursing home populations. Although the outcome measure bundle is easy to administer and provides baseline data, future research is needed to determine if there are more appropriate psychometric measures to utilize in the acute care setting.
Physical Therapy Utilization of the JFK CRS-R to Demonstrate Rehab Readiness in Survivors of Polytrauma

PRESENTED BY
Brenna M. Randolph

BACKGROUND/PURPOSE
The JFK Coma Recovery Scale-Revised (CRS-R) is an outcome measure traditionally utilized by physical therapists in the rehab setting to assess and treat patients diagnosed with disorders of consciousness. It is a measure of neurobehavioral function with the lowest score reflecting reflexive behavior and the highest scores reflecting cognitively mediated behavior. The reality is that recovery from traumatic brain injury begins in the early stages of the patient’s hospitalization, oftentimes while the patients are still in the intensive care unit. Physical therapy plays an integral role in functional recovery and care planning for these patients. The purpose of this case series is describe the utilization of the JFK CRS-R in the acute care setting to demonstrate rehab potential in patients with trauma brain injury following a polytrauma.

DESCRIPTION
Six patients diagnosed with traumatic brain injury with documented JFK CRS-R scores were identified via retrospective chart review. The score on the outcome measure was compared to the patient’s post-acute care discharge disposition.

OUTCOMES
Trends were analyzed between scores on the outcome measure bundle with post-acute discharge location. All patients who scored greater than 20 on the AM-PAC were discharged home with home health, outpatient, or no continued physical therapy. Two patients scored less than 18 on the AM-PAC and were discharged to inpatient rehabilitation. Six patients scored within fall risk on the SF-BBS and were all discharged with continued physical therapy. When analyzing the ABC Scale, five patients scored within fall risk, while only four patients were discharged with continued therapy. One patient was not recommended for continued therapy due to a high SF-BBS score and independence with mobility per the AM-PAC. The patients with AM-PAC scores less than 18 also scored at a significant fall risk on both the SF-BBS and ABC Scale. All of the patients included in this case series required placement in a post-acute care setting. Four patients were discharged from acute care to inpatient rehab, one patient was discharged to a skilled nursing facility (SNF), and one patient was discharged to a long term acute care hospital (LTACH). The patients discharged to inpatient rehab scored greater than or equal to 10/23, the patient that discharged to SNF scored 11/23, and the patient that discharged to LTACH scored 9/23.

DISCUSSION
Activity tolerance and participation with therapy are two key indicators for guiding disposition recommendation. A higher score on the JFK CRS-R at initial assessment or an improvement at reassessment was an important indicator that patients would likely be successful inpatient rehab candidates. These findings were similar to published studies performed in the rehab setting with the added benefit that these patients were identified earlier in their recovery. Mid-range scores (10-11) required consideration of confounding variables such as language barrier, injuries to multiple extremities with prolonged periods of restricted weight bearing limiting the patient’s ability to regain functional mobility, respiratory involvement, payor source, family support, and living situation. Ultimately the JFK CRS-R is a valuable outcome measure to demonstrate rehab potential in patients with traumatic brain injury when utilized early in the recovery process.
Early Supported Discharge After Stroke and the Bundled Payment for Care Improvement Program

PRESENTED BY
Brian F. Olkowski

PURPOSE/HYPOTHESIS
Recent advances in the medical and surgical management of acute stroke have reduced disability in stroke survivors. The decision to discharge a patient to the community after acute stroke requires collaboration among providers and caregivers. The most recent American Heart Association/American Stroke Association guideline for rehabilitation and recovery after stroke recommends early supported discharge (ESD) to the community for patients with mild stroke when community rehabilitation and caregiver support are available. The Centers for Medicare and Medicaid Services bundled payment for care improvement-advanced (BPCI-A) program incentivizes providers to better coordinate care, reduce expenses, and improve quality. The purpose of this study was to determine the impact of ESD after stroke on quality and resource utilization in the BPCI-A program.

NUMBER OF SUBJECTS
94 patients with acute stroke eligible for the BPCI-A program.

MATERIALS/METHODS
Capital Health developed a program to identify potential candidates for ESD to the community after acute stroke. The criteria for ESD included a National Institutes of Health Stroke Score (NIHSS) ≤5, Assessment of Mobility-Post Acute Care (AM-PAC) Mobility ≥18, AM-PAC Activities of Daily Living (ADL) ≥18, Montreal Cognitive Assessment (MoCA) ≥20, Functional Oral Intake Scale (FOIS) ≥5, Dynamic Gait Index (DGI) ≥18, and caregiver support in the home. Capital Health engaged home health and outpatient providers to expedite post-acute rehabilitation after hospital discharge. Quality and resource utilization measures for 43 patients enrolled in the BCPI-A program for stroke were compared to 51 patients eligible for the BPCI-A program prior to implementation of the ESD program.

RESULTS
After the implementation of the ESD program, community discharge increased 19.0%. Admission to an inpatient rehabilitation facility decreased by 22.2% resulting in a 12.0% increase in the utilization of home health services. Admission to a skilled nursing facility increased by 0.2%. The 90-day readmission rate decreased by 5.3%. The 90-day adjusted total cost decreased approximately $6,500 per episode of care. Patients identified for ESD to the community after acute stroke had the following clinical characteristics: NIHSS 1.0(±2.3), AM-PAC Mobility 18.3(±4.3), AM-PAC ADL 19.7(±4.4), MoCA 22.4(±4.6), FOIS 6.8(±0.6), and DGI 21.0(±4.2).

CONCLUSION
Patients with a mild stroke demonstrating intact cognition, balance, function, and oral intake may be eligible for ESD to the community. ESD to the community did not increase hospital readmission and reduced cost.

CLINICAL RELEVANCE
Advanced treatment for acute stroke has increased the likelihood of discharge to the community. Criteria for ESD to the community after acute stroke may guide providers with discharge decision-making. ESD does not appear to increase hospital readmission and may reduce the utilization of post-acute resources leading to incentives under the BPCI-A program for stroke.
Management Challenges of the Insensate Foot - Knowledge- Translation (KT) of Final Year Physical Therapy Students.

PRESENTED BY
Brittany Lea Brunty

PURPOSE/HYPOTHESIS
Charcot disorder is an insensate foot that is the sequela of peripheral neuropathy, a common consequence of uncontrolled hyperglycemia and a common cause of morbidity in patients with Diabetes mellitus (DM). The problem is compounded by widespread ignorance, delayed diagnosis, even by experienced practitioners. This results in progressive collapse of the foot and eventual amputations. Early identification of the neuropathy is critical to minimizing secondary complications and is implicitly or explicitly taught in physical therapy education. However, it is unknown if final year DPT students can translate this knowledge into practice (KT), by routinely screening for insensate foot in patients with diabetes, or those with loss of balance as presenting complaints.

NUMBER OF SUBJECTS
112

MATERIALS/METHODS
A qualitative online survey was developed and piloted within a focus-group. The survey was distributed with IRB approval to CAPTE-accredited PT schools using an online survey tool. As of this abstract, a total of 112 anonymous subjects attempted the survey. 44 subjects were eliminated for being 1st, or 2nd year students, or, fully licensed PTs. Of the remaining subjects, all were 3rd year PT students, the target of our study.

RESULTS
Data as of this abstract revealed that 40% of the participants did not identify hypoglycemia as a potential cause of the syncopal episode. 54% did not identify the impact of uncontrolled hyperglycemia on small to medium sized arteries. 24% did not identify Hemoglobin A1C as the most predictive lab value in the diagnosis of uncontrolled hyperglycemia. 25% associated uncontrolled hyperglycemia with an increased likelihood of developing Schmorl’s nodes. 54% believed Charcot Marie Tooth disorder is associated with uncontrolled hyperglycemia. Only 12% identified various sequelae of uncontrolled hyperglycemia. 86% identified balance training as the most appropriate intervention as opposed to unweighting the foot or feet when treating patients with severe neuropathic changes in the lower extremities. 13% identified appropriate orthotics for treating disorganized ankle and foot architecture. 51% identified appropriate interventions for treating patients with uncontrolled hyperglycemia. Only 9% felt confident in managing altered foot anatomy independently, while 38% felt they could manage with supervision, and 47% felt continuing education is needed in order to clinically manage altered foot anatomy.

CONCLUSIONS
There is widespread variation in personal readiness to practice. However, early data trend reveals insufficient or wide variation in knowledge-translation in impact of hyperglycemia in eventual development of foot problems and will impact the extent of education, protection, and active management strategies in early to mid-stages of DM.

CLINICAL RELEVANCE
To the extent we can currently determine, there is no available literature looking at knowledge-translation into practice at the final year level of DPT students in the field of chronic disorders in evolution foot care and prognostic management.
Lungs of the Future? Physical Therapy Outcomes Pre and Post Ex Vivo Lung Perfusion Transplantation

PRESENTED BY
Caitlyn Anderson

BACKGROUND/PURPOSE
Ex Vivo Lung Perfusion (EVLP) is a cutting edge and translational organ transplantation (TP) technique by which a previously unsuitable donor lung can have restored circulation and ventilation. Following treatment on the EVLP system which includes a ventilator, perfusate and fluid circuit, oxygenator, and pump, the lung can be re-evaluated and eventually transplanted into a viable patient (pt). EVLP lungs not only have the ability to expand the donor pool but may give high risk pts with end stage lung disease a chance at functional and meaningful life. Physical therapy (PT) intervention has yet to be studied in this pt population in acute or outpatient settings. This case study describes a successful EVLP TP outcome following acute inpatient rehabilitation (IRF).

DESCRIPTION
A 70 year old male with complicated medical history including pulmonary fibrosis and chronic obstructive pulmonary disease presented to a large, urban medical center with rapid decline and respiratory failure. Following intubation and aggressive pulmonary treatment, the pt was admitted to IRF where he spent approximately 2.5 weeks prior to re-admission to the intensive care unit (ICU) for respiratory distress. Throughout his initial hospitalization, pt was deemed an unsuitable candidate for conventional TP due to complex co-morbidities, insurance issues, and medical fragility. Pt received EVLP single lung TP with transfer back to IRF once stable to maximize functional outcomes.

OUTCOMES
Pre-EVLP PT initial evaluation (IE): 6 minute walk test (6MW): 331’ with seated rest breaks on 6 to 8 liters using non re-breather mask with severe dyspnea. Despite significant oxygen needs up to 15 liters and intermittent high-flow, pt engaged in progressive cycling, gait training, chest PT, and functional strengthening for 13 sessions using Borg scale for moderate intensity. Pt experienced eventual respiratory failure post steroid wean with ICU re-admission and was given poor prognosis. Post EVLP TP, PT IE: 6MW 765’ on room air. For 22 sessions, pt performed cycling, strength training, and aerobic exercise at high intensities without adverse event (70-85% heart rate maximum). Upon discharge, 6MW: 890’ on room air with complete independence.

DISCUSSION
Thus far no significant difference has been observed or identified in mechanical ventilation, ICU stay, hospital stay, or 30-day mortality when comparing conventional donor lungs and EVLP lungs. Small studies outlining these outcomes have been conducted in the literature within clinical trials; however, no study has described rehabilitation outcomes pre and post EVLP TP. This case study suggests the feasibility of IRF in treating pts post EVLP as well as the utilization of high intensity training in a medically complex pulmonary pt. Further research and tracking will be required in assessing these pts long term in relation to their rehabilitation performance.
Utilizing the Simulation Lab to Orient Physical and Occupational Therapists to the Intensive Care Setting

PRESENTED BY
Cassandra Giuliani

BACKGROUND/PURPOSE
The purpose of this project is to: Develop a high level fidelity simulation program to orient staff to the ICU in a safe, realistic, and controlled environment. Streamline the orientation process for PT/OT staff to the ICU.

DESCRIPTION
The lack of a standardized curriculum to prepare therapists for ICU practice has been identified as a barrier by academic institutions as well as hospitals in which physical and occupational therapists provide care in acute settings. Acute care simulation in physical and occupational therapy graduate programs have shown that participants are more confident and clinical instructors have identified that students are ready for fieldwork in acute care settings. Beyond the academic setting, there are opportunities to develop and implement simulations in the clinical setting. Simulation training offers a way to bridge knowledge and clinical skills and ease the transition for staff orienting into the intensive care units. Simulation trainings would also streamline the orientation process and increase clinician’s self-efficacy prior to becoming an independent clinician in the ICU.

SUMMARY OF USE
Three clinicians, both physical and occupational therapists, participated in the pilot simulation program. A pre- and post-simulation survey adapted from a previous study was administered to the participating clinicians. The program consisted of an introduction to the simulation, four simulation scenarios and a debriefing session after each scenario. Clinicians were able to practice skills in a simulated intensive care room equipped with a hospital bed, bedside chair, an actor or mannequin attached to lines and tubes as well as standard medical equipment.

IMPORTANCE TO MEMBERS
This program demonstrated that using a simulation lab to provide a realistic experience enhanced clinician’s self-efficacy, knowledge and skills needed to prepare staff to work in the intensive care units. It also allowed clinicians to gain competence and confidence through a more hands on experience with complex patients, as evidenced by the results of post-simulation self-efficacy surveys. Participants provided feedback including “[it was] great to practice treating more complex patients in a controlled environment” and “I felt able to try without fear of failure”. Literature has supported the use of high fidelity simulation when teaching acute care in the academic setting. However, it has not been extensively explored in the professional setting for physical therapy and occupational therapy. This program has helped therapists orienting to the intensive care unit at a pediatric acute care hospital become more comfortable and confident when treating patients that are critically ill. As the program is still in its infancy, data continues to be collected through the self-efficacy surveys and number of exposures each participant had to the ICU prior to becoming fully independent.
Identifying the Role of a Physical Therapist in LVAD Implantation: A Case Series.

PRESENTED BY
Christine Marie Heywood

BACKGROUND/PURPOSE
A Left Ventricular Assist Device (LVAD) is a battery operated internal mechanical pump device that is implanted into patients who have failed conservative management of advanced heart failure. Its function is to support the left ventricle in pumping blood to the rest of the body, and can be utilized as a bridge to cardiac transplant or as destination therapy. The purpose of this study is to explain the process of identifying the role of a physical therapist in a new cardiac program during the pre-operative/patient selection process as well as the throughout the post-operative phase.

DESCRIPTION
Between September 2018 and June 2019, five male participants between the ages of 37 and 61 years old were selected by the Mechanical Circulatory Support Team after they had failed medical management of their advanced heart failure (AHF) and met specific inclusion criteria. Physical therapy (PT) was consulted during the pre-operative phase to establish baseline functional status as measured via the 6-Minute Walk Test (6MWT), Functional Status Scale for the Intensive Care Unit (FSS-ICU) and Frailty Test, as well as to provide some early patient education regarding sternal precautions, Rate of Perceived Exertion (RPE) and the expected progression of functional return. PT was consulted again post-operatively upon extubation to begin the rehabilitative process. PT continued until goals had been met or until the patient was discharged from the hospital.

OUTCOMES
Following skilled PT intervention, patients demonstrated progressive improvement in standardized tests, indicating improvement in functional independence and exercise capacity. Albeit a limited number of participants, such results may suggest the importance of establishing a strong PT presence throughout a patient’s hospital course. With a comprehensive team approach, the average length of stay was 35 days, and all patients were able to discharge to their home environment.

DISCUSSION
The role of a PT across the continuum of care for this patient population is vast and can include an initial pre-operative evaluation to assist in identifying candidacy and baseline functional status. Additionally, a PT would also provide skilled interventions to expedite the functional recovery process and promote a home disposition. Areas for further development include consistent administration of standardized tests following a specific timeline, as well as consideration of a true control group of patients who do not receive PT and are mobilized by nursing staff alone. Additionally, further research on the correlation of the 6-Minute Walk Test with the 1-Minute Sit to Stand Test would be helpful to assess the reliability of the latter test in the Cardiovascular Intensive Care Unit setting for patients with LVAD implantation. Lastly, the benefits of an outpatient PT cardiac rehab program specific to the LVAD population could be investigated.
Interdisciplinary Management of Spasticity and Contractures in a Complex Neurosurgical Patient in the Acute Setting

PRESENTED BY
Christine W. Ryan

BACKGROUND/PURPOSE
The purpose of this case study is to demonstrate how interdisciplinary team collaboration and treatment planning can address spasticity and contracture management and have an impact on patient outcomes in a non-traditional setting.

DESCRIPTION
TE is a 40 y/o female initially admitted to UH 10/22/18 with R MCA aneurysm rupture and R SAH requiring craniectomy, aneurysm clipping, hematoma evacuation, and EVD placement. TE was discharged after 18 days to an LTAC (GCS = 8). Over the next 6 months, TE had 2 readmissions for cranioplasty and VP shunt placement. PT evaluated TE during VP shunt readmission. TE presented as non-verbal with severe spasticity and contractures in bilateral upper/lower extremities and cervical musculature and was dependent for all care. PT relied on facial expression to monitor pain and treatment tolerance. Treatment plan was established for the management of spasticity and contractures including botox, intrathecal baclofen pump trial/placement, 3D Printing for static splint fabrication.

OUTCOMES
PT Findings: Poor tolerance of ROM assessment with subjective description of initial posture and contractures as follows: Cervical: flexion, left rotation and lateral flexion; B elbows: flexion; B wrists/hands: supination, flexion with finger flexion; B Shoulders: adduction, internal rotation; R knee fixed in extension, ankle PF; L ankle fixed in PF. Modified Ashworth scores (MAS): L UE= 3, R UE= 3, L LE= 3, R LE: hip= 2, knee/ankle= 4. Due to poor tolerance of ROM and positioning, PT unable to begin transferring patient from bed to wheelchair until spasticity management was addressed.

DISCUSSION
Once Acute PT evaluation was performed and goals of care were established, PT initiated communication with the team for problem solving. Interdisciplinary collaboration resulted in a comprehensive treatment plan to address management of severe spasticity and contractures for TE. The interdisciplinary team included PT, OT, NSG, PMR MD, PMR clinic, Nursing, TE and family. At discharge, TE was able to tolerate daily splint schedule (cervical, elbow, wrist/hand), sit in tilt in space wheelchair x 2 hours and began communicating with her eyes. At discharge TE’s family was educated about plan of care, given referrals and educational tools for hand off to LTAC and outpatient clinics.
The Safety and Feasibility in Performing Standardized Outcome Measures on Patients with Pulmonary Artery Catheters

PRESENTED BY
Claire Marine

PURPOSE/HYPOTHESIS
The Pulmonary Artery Catheter (PAC) is a central venous line threaded through the right side of the heart, residing in the pulmonary artery, providing continuous hemodynamic monitoring. Common indications for use of a PAC include shock management, intravascular volume, response to therapeutic intervention, and hemodynamic monitoring. Previous research has documented safety of mobilizing patients with PACs without complications, including bed mobility, transfers, ambulation, and stair training; however, the majority of research regarding functional mobility for individuals with PACs has been primarily in ICUs where there is increased oversight and monitoring by medical staff. Evidence-based literature on mobility guidelines for patients with indwelling PACs is lacking and protocols within facilities vary, including for when patients transition from the ICU to cardiac intermediate care units (CICUs). The purpose of this project was to determine the safety and feasibility of performing standardized balance and endurance outcome measures on patients with indwelling pulmonary artery catheters in a step-down cardiovascular unit.

NUMBER OF SUBJECTS
19

MATERIALS/METHODS
19 patients in a 776 bed university hospital, located on the CICU with indwelling PACs underwent physical therapy evaluation and treatment. Patients with active PT evaluation/treatment orders were evaluated for strength and endurance deficits. Within 48 hours of PAC insertion, patients performed the Five Time Sit to Stand and 2 Minute Step Test. Vitals and RPE were monitored throughout testing. Outcome measures were re-assessed within 48 hours of PAC removal.

RESULTS
19 patients (11 males) participated in a total of 25 PT sessions while an indwelling PAC was in place (median age: 62; age range: 36-78). Fifteen patients were hemodynamically stable and physically able to participate in both the Five Time Sit to Stand (5xSTS) and 2 Minute Step Test (2MST). Of those who were able to perform these outcome measures while a PAC was inserted and post-removal, 3/8 improved their 5xSTS time (n=1 demonstrating minimally detectable change) and 6/8 improved their 2MST performance. There were no occurrences of PAC complications during PT sessions including catheter dislodgement or hemodynamic instability.

CONCLUSION
Performing stationary balance and endurance tests are feasible to be completed on patients with indwelling PAC’s in the CICU and do not place patients at increased risk of PAC complications. The 5xSTS was not tolerated well by all patients partially due to proximal weakness in this population. The 2MST was a useful endurance measure when ambulation distance was limited by medical attachments. Further testing and data collection are needed to identify how mobilization impacts functional outcomes following removal of a PAC.

CLINICAL RELEVANCE
As supported by limited research, mobilizing patients with PACs in a CICU demonstrated moderate improvements in the specified standardized balance and endurance outcomes. There were no adverse events during any PT intervention that was performed concluding that mobilizing patients with PACs in a CICU environment is safe and feasible.
Early Use of Tilt Table in Patients with Disorders of Consciousness Following Neurosurgery

PRESENTED BY
Clara H. Gaspari

PURPOSE/HYPOTHESIS
The purpose of this study was to evaluate the safety, feasibility and effectiveness of the tilt table therapy on patients with disorders of consciousness (DOC) in the immediate post-operative period in a neurosurgical intensive care unit.

NUMBER OF SUBJECTS
10

MATERIALS AND METHODS
A total of 10 participants in vegetative or minimally conscious states underwent verticalization using a tilt-table in the acute post-operative period following neurosurgery. The Coma Recovery Scale-Revised (CRS-R) and the Glasgow Coma Scale (GCS) were used to assess the level of consciousness before after the intervention. Blood pressure, heart rate and oxygen saturation were monitored.

RESULTS
Although the GCS did not show statistical significant changes, the CRS-R showed improvement by a median of 2 points (p value 0.0035). Oxygen saturation and mean arterial pressure showed no significant change whereas HR showed a significant increase, which returned to baseline at rest. The median time from day of surgery to the use of tilt table was 16 days (SD +/12 days). No adverse events were documented.

CONCLUSION
The use of the standing tilt table is safe, feasible and improves level of consciousness in the immediate post-operative period following neurosurgery in patients with DOC. The GCS, although widely used across many neuro-ICUs, may not pick up subtle and important improvements of level of consciousness that are seen with the use of the CRS-R.

CLINICAL RELEVANCE
Verticalization seems to be beneficial and safe in the acute post-operative period following neurosurgery and should be administered to patients with DOC in early rehabilitation.
Every Patient out of Bed for Every Meal: A Quality Improvement Initiative

PRESENTED BY
Colleen Manning

PURPOSE/HYPOTHESIS
Studies show in-hospital mobilization is important to optimize outcomes and reduce length of stay. Adequate nutrition and digestion are also important for healing, especially post-operatively. Optimizing mobilization around meals offers an opportunity to promote both mobilization and optimal digestion to facilitate recovery. The purpose of this project was to improve workflow and culture of mobilization around meal times on an acute care floor in a large academic medical center.

NUMBER OF SUBJECTS
Data from electronic health records (EHR) for a 29-bed unit at a Level 1 Trauma Center.

MATERIALS/METHODS
A quality improvement (QI) team consisting of physical therapists, nurses, physicians, and methodologists was formed in January of 2018. The QI team utilized process mapping and failure mode effects analyses to devise and execute Plan-Do-Study-Act cycles. The primary outcome measure was % of meals for which mobilization was recorded within 1 hour prior to or after the documented meal. Time series analysis of data was used to evaluate the trajectory and stability of month-to-month changes in percentage of meals with near-meal-time mobilization with a direct comparison of pre-QI efforts for October 2017-January 2018 to the active QI implementation phase from February 2018-February 2019. Key interventions included a patient care assistant (PCA) designated to assist with mobility, staff training and education to promote a culture and comfort level in supporting patient mobility, and patient education on mobility benefits and the dangers of bed rest.

RESULTS
Over the course of the QI initiative, % of meals with near-meal-time mobilization improved by 48.61%. However, this percentage remained below the team’s established goal and later declined to only an 18.18% improvement over baseline when the designated patient care assistant option became unavailable due to staffing limitations. Consistent documentation of meals and near-meal time mobilization remained a challenge throughout and was primarily due to documentation workflows, EHR infrastructure, and varying options for recording mobility-related ordersets. Future priorities for the QI team include finding new ways to ensure consistent mobilization assistance for staff, optimizing the documentation practices to improve consistency, and establishing protocols for orderset selection.

CONCLUSION
The results of this initiative provided key insights into the opportunity to target near meal-time mobilization as a quality initiative, including facilitators and barriers for implementation. Improvements in documentation and near meal-time mobilization were linked to utilizing PCAs, yet due to staffing shortages this was difficult to maintain. Additionally, EHR set-up may need to be re-designed to minimize documentation variation and errors.

CLINICAL RELEVANCE
Promoting mobilization near meal-times may offer opportunities to dually target increased mobilization and nutrition in hospital settings.
Improving Mobility for Hospitalized Inpatients with Use of Interdisciplinary Rounding and a Communication Tool

PRESENTED BY
Courtney Lynn Dube

PURPOSE/HYPOTHESIS
Initiation of a structured quality improvement project will improve the number of times the patient is mobilized to their mobility goal on a general medicine inpatient unit by incorporating a number of interventions to improve staff awareness of mobility, communication of mobility levels and comfort with mobilizing hospitalized inpatients.

NUMBER OF SUBJECTS
This project included all patients admitted to the Red Internal Medicine Team on 3Pavilion at UPMC Shadyside from January – June 2019 (total data points collected were 1218).

MATERIALS/METHODS
We utilized several different interventions to improve documentation of the patient’s mobility goals (manual process currently) and percentage of patients who reached their mobility goals daily. These interventions included: use of a bedside communication board that included the JH HLM scale, the level of assistance and any mobility device utilized with the patient; introduction of the physician to the already existing mobility rounds in addition to discussion on the patient’s current and goal JH HLM score; giving staff data feedback on goals of the project and compliance with the goals; biweekly data posting in staff lounge, introducing patient educational handouts to understand why mobility is important; and utilization of the hospital wide mobility aides to assist with mobilizing higher level patients. We met as an inter-collaborative group, at a minimum, 1x/month to review the data to that point and determine if intermediate interventions were warranted to improve the compliance with documenting the JH HLM score as well as the number of patients achieving their goal.

RESULTS
Upon initiation of the data collection, a median of 20% of patients were meeting their mobility goal twice/day. At the end of the data collection, a median of 40% of patients were achieving the twice/day JH HLM goal and a median of 60% of patients were achieving their JH HLM goal once/day. There was a noted trend toward increasing days between falls, however did not reach criteria for special cause. No difference between LOS, discharge to SNF or readmissions were noted at this time.

CONCLUSION
Overall, there was an improvement in the number of times a patient was mobilized toward their JH HLM goal, more patients met their goal once/day vs. twice/day. More time and data collection would be beneficial to continue to implement more PDSA cycles toward the goal a median of 75% of patients meeting their JH HLM goal twice/day. Further consideration for incorporating project into a team where there is more consistent physician presence during rounds may also be helpful at holding staff accountable (currently Red Team Service covered by two different rounding groups with various academic commitments prohibiting participation at times). In addition, there were other initiatives (bedside shift report) occurring on the unit which may have influenced staff compliance with a new process as well.

CLINICAL RELEVANCE
Future progress may be made by incorporating the JH HLM goal into the electronic health record versus doing manual data collecting to allow for more timely and specific feedback for staff to understand progress and to assist the team with determining what other interventions are necessary as well as other outcomes that can be more easily measured (for example: functional status correlation for patients at discharge versus those not receiving the interventions).
Standardizing Mobility Measurement Shifts Therapist Prioritization in Acute Care

PRESENTED BY
Danica Rae Dummer

PURPOSE/HYPOTHESIS
Decisions made about patient management may be related to the environment, resources of the facility, patient impairments, caseload and physical therapist experience. Further, the determination of patient impairment may depend on the tests and measures available. The purpose of this investigation was to determine if physical therapist prioritization practices have changed over a three year time period following implementation of the Activity Measure for Post-acute Care “6-clicks” Basic Mobility short form (AM-PAC). We hypothesized that there would be a shift away from treatments for patients at higher AMPAC scores to patients with lower AMPAC scores between 2017-2019.

NUMBER OF SUBJECTS
28,333 patients, 92,101 observations

MATERIALS/METHODS
AM-PAC scores were collected at each therapy session for patients receiving physical therapy while admitted to one academic medical center from Jan 2017 through June 2019. The primary outcome was raw AM-PAC score (range=6-24), the primary predictor was admission year (2017, 2018, 2019). Multiple linear regression was used to determine the relationship between admission year on AM-PAC scores collected during treatment sessions. Multinomial logistic regression was used to determine if the proportion of patients in five different AM-PAC score categories changed significantly between admission years. Additional variables included in the model were age, sex, Charlson Comorbidity Index, and MS-DRG Weight.

RESULTS
After controlling for age (58.9±16.6 years), sex (55.2% male), Charlson Comorbidity Index (4.03±3.3), and MS-DRG weight (4.8±5.3) in the model, admission year was significantly associated with AM-PAC treatment scores. Each year increase was associated with a 0.15 decrease in mean AM-PAC score (95%CI=-0.20, -0.11, p<.0001). From 2017 to 2019, the proportion of treatments with patients at an AM-PAC score between 21-24 decreased from 17.8% to 14.9% (referent group), 17-20 decreased from 32.5% to 31.9% (RR=0.99,95%CI .97,1.02,p<.0001), 13-16 increased from 19.4% to 20.9%(RR=1.09,95%CI 1.05,1.12,p<.0001), 9-12 increased from 16.1% to 18.3%(RR=1.12,95%CI 1.08,1.17,p<.0001), and 6-8 decreased from 14.3% to 13.9%(RR=.95,95%CI .91,.99,p=.01).

CONCLUSION
From 2017, when the AM-PAC measure was implemented as a standard mobility measure for all patients receiving physical therapy, to 2019, mean AM-PAC treatment scores have decreased. Additionally, the spread of treatment scores has shifted from higher AM-PAC scores (17-24) to lower AM-PAC scores (9-16). These results suggest that clinical decisions might be impacted by employing such standard measures in this setting. Understanding patient abilities in functional activities is important in making decisions about discharge from the acute care setting.

CLINICAL RELEVANCE
Implementing a standardized tool to measure mobility at each physical therapy treatment session resulted in an organic shift of treatments away from higher functioning patients. Providing a standard tool for mobility measurement appeared to influence how acute care therapists prioritized their caseload. Future research should determine how this prioritization influences health outcomes.
Discharge Options at a Safety Net Hospital: Choosing the Best of the Worst

PRESENTED BY
Danielle Crider

BACKGROUND/PURPOSE
Discharge planning, an integral part of acute care physical therapy (PT), requires extensive interdisciplinary efforts to ensure patients have needs met after hospitalization. Attempting to address the International Classification of Functioning, Disability, and Health Model is at the core of PT; however, optimizing discharge for patients with limited resources is an acquired skill. Medical emergencies do not discriminate and patients who are uninsured (UI) and underinsured (UDI) often require continued resources for reintegration into the community. As an interdisciplinary team member, PT’s role is not only to provide optimal treatment for the patient, but to recommend appropriate discharge options. The purpose of this project is to discuss the critical involvement of a physical therapist in planning for those who are UI and UDI to secure safe and appropriate discharge.

DESCRIPTION
The role of PT in discharge planning includes evaluation of functional mobility which allows a PT to deduce appropriate discharge location for patients. Information was amassed at a 525 bed, Level 1 Trauma Center and safety net teaching hospital. Over 21% of the patients at this hospital are UI and UDI and provides 200 million dollars each year in uncompensated care. As discharge options are frequently limited, recommendations from therapy must be safe, feasible, and timely. Weighing functional, social, and medical prognosis, PTs are able to determine optimal discharge plan for a patient utilizing the resources available. Without PT involvement, patients are 2.9 times more likely to be readmitted to the hospital and 35% of those over 70 demonstrate functional decline during hospitalization.

SUMMARY OF USE
The process of planning appropriate discharges is initiated soon after admission. During the initial chart review, PTs discern the patient’s insurance status, if any. The evaluating PT determines baseline function and establishes goals for discharge, taking into consideration the prognosis. Typical options available for UI/UDI individuals include a medical respite bed, home, street, or shelters. Additionally, discharge planning includes collaborating with the care management to obtain insurance for long term placement options, contacting consulates for repatriation, or perform skip traces to find interested parties. To reduce the rate of readmission and improve patient safety, discharge recommendations are shared with interdisciplinary team members as PT continues to maximize function for discharge. A unique dynamic is created within the interdisciplinary team as recommendations for a safe discharge can frequently cause increased lengths of stay for UI/UDI as patients remain in hospital to reach functional mobility goals consistent with the discharge plan.

IMPORTANCE TO MEMBERS
Involvement of physical therapy within the interdisciplinary team improves patient discharge safety as well as assist with the prevention of readmission. As discharge planning becomes more complex related to psychosocial and insurance status, PT must be included in the process.
Teaching Skilled Falling to an Individual with Bilateral Upper Limb Loss:
A Case Report

PRESENTED BY
Davor Vasiljevic

BACKGROUND/PURPOSE
Individuals with upper limb loss (ULL) have a greater risk of falling than community dwelling older adults. This increased risk of falling and injury is associated with loss of protective reaching responses, impaired dynamic stability, and fatigue due to decreased efficiency of walking. Although most rehabilitation plans of care include improving dynamic and reactive balance strategies, these interventions have been ineffective at reducing falls in high-risk individuals. Therefore teaching patients with ULL safe falling techniques may decrease the risk of injury when falls do occur. Recent studies have demonstrated that martial arts falling strategies can be effective at minimizing hip impact force and reducing the impact load of falling. The purpose of this case study is to demonstrate the successful and safe implementation of fall training in an individual with bilateral upper limb loss.

DESCRIPTION
A 43 year-old male with no significant past medical history was admitted to an acute inpatient rehabilitation (AIR) hospital for intensive therapy following a high voltage electrical injury resulting in a left shoulder disarticulation and a right mid-arm amputation. Comprehensive therapy services targeted functional mobility, strength, endurance, agility, and balance. Although his mobility improved to a modified independent level, he was identified as having an increased risk of falling due to his bilateral upper limb loss. The individual was referred to a physical therapist with a martial arts background, and screened for the ability to maintain cervical flexion >40 seconds, be able to squat and rise unaided, and perform independent floor recovery transfers. Training on the skill of falling safely was progressed over 4 sessions. First, the patient sat on a therapy mat and practiced posterior rolling, ensuring his head did not contact the surface. He progressed to posterior rolling from a standing position, first landing on a raised therapy mat and eventually on the ground, using a squatting strategy to control the speed of descent. Side falling progressed similarly, culminating in modified forward rolling on a raised surface.

OUTCOMES
Prior to the fall intervention, the individual’s Functional Independence Measure score improved from moderate assistance to a modified independent level, and he achieved a score of 30/30 on the Functional Gait Assessment. At discharge, the patient scored 65% on the Activities-Specific Balance Confidence scale.

DISCUSSION
Based on mobility level, this individual would not have been identified as a fall risk. However, due to bilateral ULL and low activity-based confidence score, this individual is likely to experience future falls with potential for injury. As fall training can be safely performed with appropriate individuals in AIR, early identification of those who would benefit from this intervention is important. Future studies are needed to examine the effectiveness of fall training on mitigating fall-related injury rates in individuals with upper limb loss.
ICU Mobility Milestones in a Surgical Intensive Care Unit: A Retrospective Quality Assessment

PRESENTED BY
Derek David Furze

BACKGROUND/PURPOSE
To reveal the mobility milestones achieved in a Level 1 Trauma-Surgical Intensive Care Unit during a 10 month period.

DESCRIPTION
A retrospective data collection was performed from 1/1/17-10/31/17. Total number of patients with at least 1 therapy intervention were included. The total number of therapy interventions was collected for observation. The ICU Mobility Scale (IMS) was used as the primary outcome for identifying mobility milestones achieved. Cohorts were established by identifying the top 5 primary service teams with respect to largest number of patients. Both average total IMS score and average highest IMS score achieved per cohort were collected for observation.

SUMMARY OF USE
207 patients received 868 PT interventions. 72% achieved a score of 3 or higher on the IMS. 37% of total PT interventions resulted in patients ambulating >5 yards. Average total IMS and average total highest achieved IMS in 868 interventions were 5.4 and 6.5, respectively.

IMPORTANCE TO MEMBERS
Significant mobility milestones can be achieved in a Level 1 Trauma-Surgical ICU. Over a 10 month period, standard PT practice in the SICU at the University of Utah Hospital led to an average patient mobility milestone equivalent to transferring to chair and nearly forty percent ambulated.
An Interdisciplinary Approach to Patient Mobility in a Safety Net Hospital: Nursing Driven Ambulation Program

PRESENTED BY
Elizabeth Christine Fonken

PURPOSE/HYPOTHESIS
Immobility during hospitalization has negative effects including falls, functional decline, and new walking dependence. Conversely, mobilization interventions decrease complication rates and length of stay, and improve patient satisfaction. There is a consensus in nursing literature that patient mobility is the role of the nurse, not just the physical therapist. Therefore, this project standardized nursing assessment of patient mobility in order to appropriately triage patients into a nursing driven ambulation program. The hypothesis was that mobilizing previous ambulatory patients would decrease hospital length of stay and readmission rate, without increasing falls.

NUMBER OF SUBJECTS
756

MATERIALS/METHODS
Utilizing video training on the Banner Mobility Assessment Tool (BMAT) an interdisciplinary team trained nurses on a 32 bed surgical trauma unit to assess functional mobility and determine when patients were appropriate for an ambulation program. The assessment was completed twice in 24 hours. Patients were scored 0-4 ranging from 0 (dependent) to 4 (independent). Patients who scored 4 or 4M (modified independent) were placed on a walking program: Ambulation twice a day and up to a chair three times a day (TID) with nursing staff. Those scoring a 3, able to complete transfers but not ambulation, or less were referred to physical therapy. Those scoring a three were mobilized to a chair for all meals, TID. Additionally, fall rate, length of stay, and readmission rates were tracked. Exclusion criteria included non-weight bearing on a lower extremity, Richmond Agitation Sedation Scale (RASS) score of -2 or lower, combative patients, those unable to follow commands, or on strict bed rest.

RESULTS
Length of stay index decreased from 1.00 to 0.84, readmission rate stayed stable at 9%, and fall rate decreased from an average 3.48 falls/month in the in 13 months prior to the pilot to 2.31 falls/month during the 3 months of the pilot. Additionally, nurses completed a mobility assessment as part of standardized work flow.

CONCLUSION
There was a decrease in length of stay as well as fall rate when nursing staff drive an ambulation program for patients. While the length of stay decreased, readmission rates did not.

CLINICAL RELEVANCE
This pilot study indicates that nursing staff play a crucial role in maintaining the mobility status of previously ambulatory patients during their hospitalization. Standardizing mobility assessments and implementation of an ambulation program, decreased fall rate and length of stay which are both crucial cost saving measures critical to stewarding resources in safety net hospitals. Future research can examine whether a similar program would work on a medical unit, as it did on a surgical floor.
A Unique Approach to Exercise and Mobilization for Individuals Undergoing Veno-Venous ECMO: A Pilot Study

PRESENTED BY
Eric Michael Andersen

PURPOSE/HYPOTHESIS
Determine the safety and feasibility of lower extremity weight-bearing exercise in subjects undergoing extracorporeal membrane oxygenation (ECMO). Identify barriers to physical therapy intervention and assess hospital and functional outcomes.

NUMBER OF SUBJECTS
Three subjects met inclusion criteria for participation: Adults undergoing veno-venous ECMO, ability to follow 3/3 commands, and weight-bear through lower extremities. Individuals with a femoral catheter or medical instability were excluded.

MATERIALS/METHODS
One individual (age 27) participated in ECMO mobilization protocol coupled with the MOVEO™ (DJO, LLC, Dallas, TX) leg press exercise machine. Two individuals (ages 48 and 49) participated in the mobilization protocol alone. Functional outcomes measured were Medical Research Council (MRC) Sum Score, hand grip strength, Functional Status Score for the Intensive Care Unit, 30 second sit-to-stand and specific durations to functional milestones. Hospital-related outcomes including hospital days, days on ECMO, days on mechanical ventilation and discharge destination were extrapolated.

RESULTS
No adverse events occurred during the course of the study. The MOVEO + mobilization protocol subject time to ambulation was 15 days. They demonstrated an MRC Sum Score increase from 32 to 55, spent 35 days in the hospital and ambulated 70 feet prior to discharge to a long-term acute care hospital. The mobilization protocol alone subjects average time to ambulation was 14.5 days. They demonstrated MRC sum score increases from 14 to 53 and 19 to 53. One subject spent 49 days in the hospital and ambulated 300 feet prior to discharge to an LTACH. The other subject spent 69 days in the hospital and ambulated 450 feet prior to discharge to home with outpatient follow-up.

CONCLUSION
The MOVEO leg press machine was used safely in one individual without adverse events. Although this individual had a considerably shorter hospital length of stay versus the other two subjects, strength and functional measures were not greater when compared to those who did not use the MOVEO. A sizeable limitation of this study was a lack of interdisciplinary coordination to decrease sedation and allow subjects to actively participate in the protocol. This hampered the ability to increase the sample size.

CLINICAL RELEVANCE
Severe deconditioning and quality of life detriments are often seen in this critically ill population. Decreasing sedation to the point of following commands is imperative so that the individual can actively participate in functional mobility. This pilot study provides a unique mobility option for therapists to consider when working with this population.
Concordance of Care between Physiotherapists and Physicians for Patients Presenting to Emergency Departments

PRESENTED BY
Eveline Matifat

PURPOSE/HYPOTHESIS
Overcrowding in emergency departments (ED) is a major concern worldwide and the aging population and prevalence of chronic diseases is increasing pressure on health care systems. Musculoskeletal disorders (MSKD) have been identified as one of the most prevalent disorder in primary care settings. In emergency departments, MSKD, such as tendinopathy, back pain, sprains and osteoarthritis, represent more than 25% of all ED visits, which is contributing to the increased pressure on EDs. To answer to those increasing health care demands, new models of care including advanced practice physiotherapists (APP) have been implemented in EDs. The purpose of this study was to assess diagnostic, treatment and discharge plan concordance between APPs and ED physicians for patients consulting to the ED for minor musculoskeletal disorders (MSKD).

NUMBER OF SUBJECTS
One hundred and thirteen participants were recruited, mean age was 50.3±17.4 years old, 51.3% had an atraumatic MSKD.

MATERIALS/METHODS
Patients presenting to two EDs in Montréal (Canada) with a minor MSKD were recruited. Patients were independently assessed by an APP and an ED physician. After their assessment, both providers had to independently formulate diagnosis, treatment and discharge plans. Participants completed before discharge a modified version of the 9-item Visit-Specific Satisfaction Questionnaire in relation to their satisfaction with received care from both providers. Cohen's kappas (κ) and Prevalence and Bias Adjusted Kappas (PABAK) with associated 95%CI were calculated. Chi Square and t-tests were used to compare treatment, discharge plan modalities and patient satisfaction between providers.

RESULTS
Diagnostic inter-rater agreement between providers was very good (κ=0.81; 95%CI: 0.72-0.90). In terms of treatment plan, APPs referred significantly more participants to physiotherapy care than ED physicians (κ=0.27; PABAK=0.27; 95%CI: 0.07-0.45; p=0.003). There was a moderate inter-rater agreement (κ=0.46; PABAK=0.64; 95%CI: 0.46-0.77) for discharge plans. High patient satisfaction was reported with no significant differences between providers (p=0.57).

CONCLUSION
Significant concordance in terms of diagnosis and discharge plans was found between APPs and ED physicians for patients with MSKD presenting to the ED, but there were more discrepancies between healthcare providers in terms of treatment plans. Further prospective evaluation of the efficiency of these types of models is warranted.

CLINICAL RELEVANCE
Evidence-based development of APP models of care has the potential to profoundly impact efficacy and quality of care for patients with MSKD and is a novel model that may alleviate increasing health care demands. Future studies should include prospective designs, such as an RCT, and should evaluate the financial impacts, in terms of direct and indirect costs, of these type of models in ED.
Patients’ Acceptability of Physiotherapists Providing Care in Emergency Departments for Adults with Musculoskeletal Disorders

PRESENTED BY
Eveline Matifat

PURPOSE/HYPOTHESIS
Aging of the population and increased prevalence of chronic disorders has led to overcrowding in emergency departments (ED). New models of care involving non-medical healthcare practitioners, such as advanced practice physiotherapists (APP), are emerging. Benefits of these models of care in the ED are increasingly being reported in terms of efficiency and access to care for patients with musculoskeletal disorders (MSKD). However, evidence of patients’ acceptability of these new models of care is still scarce. This study aimed to assess patients’ acceptability of physiotherapists providing care for MSKD in the ED.

NUMBER OF SUBJECTS
Forty-one patients presenting to one ED in Montreal (Canada) with a MSKD were recruited.

MATERIALS/METHODS
This is a cross sectional study where participants were asked to complete a multiple-choice questionnaire that included thirteen questions assessing demographic characteristics, previous experience with physiotherapy care and acceptability of ED APP care for MSKD. Descriptive analyses were performed. Chi square tests and Fisher’s exact tests were used to compare answers according to participants’ characteristics.

RESULTS
Mean age of participants was 48.8 ± 8.6 years old and 21 them were women. Twenty-three participants suffered from a traumatic injury. A majority of participants, 56%, trusted advanced practice physiotherapists to perform an accurate diagnosis and 81% were confident they would provide safe care in an ED setting. Fifty-nine percent of participants would likely seek consultation in the ED if an APP, able to prescribe the appropriate medication and imaging tests, was the professional providing care. Seventy-one percent trusted the APP to refer them to an ED physician if it was required by their health condition. Sixty-six percent of participants agreed that not meeting a physician and seeing only a physiotherapist as a primary healthcare provider would reduce the length of stay in the ED. No significant differences in response proportions were found in regard to participants’ characteristics.

CONCLUSION
Participants’ acceptability of APP models of care in the ED was high and suggests that greater implementation in our healthcare systems would likely be well received by ED patients. These results need to be validated within a multicenter study with a larger sample size.

CLINICAL RELEVANCE
These preliminary results may serve as groundwork for further studies to investigate determinants of a successful implementation of physiotherapy models of care in the ED.
Integrating Clinical Observation and Didactic Learning in the Acute Care Setting for Dpt Students

PRESENTED BY
Evelyne Orlander

BACKGROUND/PURPOSE
The purpose of this project is to describe the collaboration between a physical therapy education program and an acute care hospital to integrate clinical observation with didactic learning for second year DPT students over an 18-month period.

DESCRIPTION
Tampa General Hospital (TGH), Acute Care Physical Therapy and University of South Florida, School of Physical Therapy & Rehabilitation Sciences (USF SPT & RS) have collaborated to provide second year DPT students four hours of clinical observation in the hospital as part of their curriculum, Integrated Clinical Experience (ICE). Observation occurred during Spring 2018, Fall 2018 and Spring 2019 semesters. After each semester, the acute care therapists completed an on-line survey to solicit feedback on the student assignments and input on opportunities to improve. An assessment of strengths, weaknesses, and opportunities was received from therapists and faculty and utilized towards the following semester.

SUMMARY OF USE
Spring 2018, each student reviewed four case studies prior to observation. The student and therapist reviewed the cases and discussed the application of pharmacology and laboratory values. Therapist survey following the semester indicated 9 of 11 thought the cases facilitated learning and 2 of 11 indicated that many students had never been in a hospital setting and found the cases too complex. Suggestions for improvement included, allocating additional time to discuss the chart review process and using a 1:1 model. Collaborating with USF Faculty, enhancements were implemented for Fall 2018 with the intent of familiarizing students with the hospital setting. Acute care therapists developed an environmental scan worksheet and each student completed the worksheet during their observation. Therapist survey following the semester indicated, 6 of 7 thought the scan facilitated learning. For Spring 2019, a new student assignment was implemented. The students were provided a list of specific medical chart review items and tasked to gather the information prior to observing patient care. Therapist survey following the semester indicated, 11 of 12 thought the chart review facilitated learning and 3 of 12 indicated the task consumed time away from patient care.

IMPORTANCE TO MEMBERS
DPT students enhance their skills and knowledge with increased exposure to specific clinical settings, such as acute care. The collaboration of TGH and USF SPT&RS through a course such as ICE is one method of bringing awareness of the role of acute care therapists and increasing student comfort level in the acute care setting. In addition, ICE provides students the opportunity to interact with patients while strengthening their knowledge, refining clinical skills, facilitate clinical reasoning, and gaining competency in the acute care setting. Observation with interactive tasks facilitated by therapists, such as cases, environmental scans and chart reviews allow students to be challenged beyond simply observing. We believe the integrated approach provides benefits above and beyond observation for students.
Combining Physical Therapy with CBT after Lung Transplant to Increase Participation

PRESENTED BY
Evelyne Orlander

BACKGROUND/PURPOSE
Lung transplant is used as a treatment for advanced lung diseases. Researchers report 20 to 50 percent of pre lung transplants have psychiatric conditions, including anxiety and panic disorders. The feeling of general anxiety continues even after lung transplant (LT). The pain associated with LT may drive emotional factors such as fear and anxiety, which then can adversely affect a patient’s motivation, self-esteem, and ability to problem-solve and cope. LT recipients experiencing high stress report decreased independence in functional activities. Fatigue, difficulty breathing, and muscle weakness are frequent symptoms related to functional limitations following LT. The psychological effect of dyspnea on LT recipients could pose challenges in participating with physical therapy (PT) in addressing their symptoms causing their functional deficits. Cognitive behavior therapy, CBT, is a biopsychosocial method that concentrates on the psychological, social, and environmental factors that affect the patients’ pain, function, and quality of life while tackling the underlying pathology. It uses a systematic approach to increase a patient’s ability to cope though learning, practicing and applying a range of behavioral, and cognitive skills.

DESCRIPTION
The purpose of this study is to determine the efficacy of CBT post bilateral lung transplantation to increase participation in a mobility program with PT. Evidence of the utility of CBT combined with PT to manage anxiety and panic of post bilateral lung transplant patients is lacking. Patients will be taught cognitive skills addressing dyspnea and pain. Patients will be provided education modules including levels of shortness of breath, diaphragmatic breathing, deep breathing exercises, rate of perceived exertion, controlled breathing and pain neuroscience education. Each patient is encouraged to identify and acknowledge the feeling of anxiety and panic. The patients are guided to use the techniques learned from each module when anxiety and panic ensure during PT treatment. PT treatment will include mobility training, strengthening, and pain management. The therapist will use motor imagery, manual therapy, transcutaneous electrical nerve stimulation, and kinesio-taping to address the patient’s pain. We hypothesize that combining traditional PT and the holistic approach of CBT will increase LT recipients’ participation and functional improvement.

OUTCOMES
Evidence suggests that CBT combined with PT is effective in the treatments of chronic pain, complex regional pain syndrome and cancer related fatigue.
Determining the Appropriateness of Bedrest Restriction Following TPA Administration for Acute Stroke: A Systematic Review

PRESENTED BY
Grace Craven

BACKGROUND/PURPOSE
Throughout the country hospitals are becoming certified stroke centers to facilitate patients receiving efficient and coordinated care following initiation of stroke symptoms. Rehabilitation consults are part of this process with the goal of initiating services soon after patient arrival. The treatment for patients with ischemic stroke with less than 4.5 hours since onset often includes administration of tissue plasminogen activator (tPA). Due to the risks of hemorrhage, angioedema, and GI bleed, patients receiving tPA are placed on bedrest for 24-48 hours based on hospital protocol.

DESCRIPTION
The purpose of this systematic review is to determine if current evidence supports the bedrest restriction or if early mobility may be safely initiated with patients following tPA administration for acute stroke.

OUTCOMES
73 articles were screened for eligibility, yielding 5 studies after application of inclusion/exclusion criteria. Sample size ranged from 18-6153 subjects (n=8481), all > 35 years old. Sackett scores ranged from 3B to 5. Early mobility was inconsistently defined and was initiated by either nursing or therapy. 25% of patients were mobilized 0-12 hours post tPA (2 studies) and 75% were mobilized within 48 hours (5 studies). Modified Rankin Scale (mRS) was the primary outcome measure in 2 studies and 3 studies noted the presence of adverse events. 1 study specified adverse events as orthostasis, dizziness, and transient paresis. Persons with severe stroke were unable to participate in early mobility (4 studies). Early mobility was associated with achieving functional independence on the mRS (2 studies). 1 study noted decline on the mRS 3 months post stroke.

DISCUSSION
Moderate evidence exists on the safety of initiating early mobility in patients following tPA administration for acute stroke. Evidence does not support the current protocols restricting mobility, as long as adverse effects are monitored for and treatments are modified accordingly. Limitations included small sample sizes and lack of clearly defined terms and comparison groups. Future research should focus on addressing these limitations and explicit report of adverse events. Administration of tPA is the gold standard treatment for ischemic stroke, with known risks such as bleeding. Protocols often restrict mobility based on these risks in favor of bedrest, which may place the patient at risk for other complications. Based on this systematic review, mobility may be safely initiated within 24-48 hours of tPA administration with monitoring for adverse events. Healthcare providers should consider reviewing protocols to possibly eliminate restriction of mobility following tPA administration as a standard measure for all patients.
Factors Related to Discharge Destination in Older Adults Post-Abdominal Surgery

PRESENTED BY
Hailey Renee Zanette

BACKGROUND/PURPOSE
The aim of this project was to (i) describe discharge trends in adults age 65+ years undergoing abdominal surgery at a large urban hospital and to (ii) identify factors affecting discharge destination.

DESCRIPTION
This project included sixty four adults over 65 years of age hospitalized at an academic medical center for abdominal surgery service over a 4 month period. The cohort was divided into a young old (YO) group 65-75 years (N=37) and old old (OO) group greater than 75 years (N=27). The average age of inclusion was 74.1±7.1 years (range 65 -95).

OUTCOMES
Participants were evaluated using the Boston University Activity Measure for Post-Acute Care (AMPAC) Mobility comparing scores immediately before discharge. Average time from admission to consultation was 3.5 days. Participants received and average of 2.8±2.0 treatments. In the cohort, 15.62% discharged home without services (10/64), 39.01% discharged home with services (25/64), 37.50% discharged to a SNF (24/64), and 7.81% discharged to an acute rehabilitation facility (5/64). The OO group was more likely to require ALOC at discharge (p<0.001) compared to the YO group. Length of stay (p=0.39), number of treatments (p=0.38), and time to consult (p=1.9) did not differ between groups. AMPAC scores differed between discharge destination(p<.001), with higher scores of those discharged home (with and without services) compared to those discharged to SNF and inpatient rehab (16.8±4.3 and 17.4±4.4 versus 11.5±3.7 and 9.6±3.0 respectively). Nearly half of all participants undergoing abdominal surgery required ALOC, with over one third discharged to a SNF. Higher age and AMPAC scores were statistically related to requiring ALOC upon discharge. Finally, no difference were found between the amount of PT treatments or time to consult between age groups, which may warrant increased number of treatments and decrease time to consult for the OO group in order to improve mobility and lower the need for post-acute care services.

DISCUSSION
The older population is projected to reach 1 billion by 2020 representing 22% of the world’s population. This population has unique difficulties with recovery from surgery with less physiological reserve and less tolerance for adverse events. Still, more than half of all surgeries in the US are on the older population. Health care costs are three to five times higher than costs for patients <65 years. Despite the evidence for the growing older population and associated costs, little research has been done to identify characteristics related to requiring services at discharge, such as placement to another level of care. This study found age and AMPAC mobility scores are factors related to discharge destination. This highlights the use of the AMPAC as an important tool for acute care PTs. Further, the results suggest acute care therapists can target their limited resources towards older adults, specifically >75 years, in order to reduce post-acute care resources.
Clinician- and Patient-Reported Inpatient Physical Function: New Measures Derived from Promis Adult Physical Function

PRESENTED BY
Heather Brown

PURPOSE/HYPOTHESIS
Develop two correlated, precise score-level targeted physical function (PF) measures: one suitable for patient-reporting (PRO) and the other for clinician-reporting (CRO), derived from existing PROMIS PF bank items. 2) Evaluate the efficacy of new PF measures in identifying patients’ post-discharge care needs.

NUMBER OF SUBJECTS
515

MATERIALS/METHODS
Identified PROMIS PF items for measuring lower-level function with high score-level reliability. Selected PRO items were edited for clinician reporting and assessed in an inpatient sample (N=515) by Kaiser Permanente physical therapists. Response data were evaluated for meeting PROMIS measure development standards and new items were calibrated on the PROMIS PF scale via a single-group design linking study. PRO and CRO short forms (SF), known as PF5-P and PF5-C were developed. Pearson correlation coefficients were used to assess the relationship between PF5-P & C values, as well as between PF5 T-scores and acute and chronic severity of illness measures. Multivariable logistic regression models adjusted for acute and chronic severity of illness were used to evaluate association between PF5 T-scores and discharge disposition. Model explanatory power and area under the receiver operating characteristic curves (AUC) were used as summary performance metrics. STATA/SE 14.2 was used for analyses.

RESULTS
Three new PRO and 12 new CRO items were linked to the PROMIS PF metric (raw score r = 0.90, 0.73, respectively). A 5-item CRO SF (PF5-C) and mirrored 5-item PRO SF (PF5-P) were constructed with score-level reliabilities ≥ 0.90 for T-scores 10-45. Correlation between PF5-C and PF5-P was strong at +0.75. Correlation between PF5 T-scores and age or severity of illness was weak (PF-P r = -0.03 to -0.05, PF5-C r = -0.22 to -0.25). PF5 scores were strongly and independently associated with discharge disposition. In a univariate model including PF5-C T-score values, each 10-point increase corresponded to an odds ratio of 9.82 (95% CI: 6.14-15.71) for discharge home or home health compared with any other disposition. The model AUC was 0.87. The association was similar in a multivariable model, in which only age and PF5-C were significantly associated with discharge disposition (odds ratio: 9.53; 95% CI: 5.83-15.58, R2 value: 0.36, AUC 0.89). Using PF5-P T-scores, each 10-point increase was associated with an attenuated odds ratio (3.66, 95% CI: 2.60 – 5.14) with an overall model AUC of 0.82 and R2 of 0.24.

CONCLUSION
A precise, score-level targeted item set was developed for clinician and patient reporting of inpatient PF status; accompanying 5-item SFs for patient- and clinician-reporting are an effective and efficient means of assessing inpatient PF and were strongly associated with discharge disposition.

CLINICAL RELEVANCE
PF5 assessments enable clinicians to assess and stratify inpatient functional status across a relevant functional range in accordance with the PROMIS scale. PF5 values can suggest the likelihood of discharge to home with or without home health; PF5 usage unlocks potential to track patient physical function across care settings.
The Use of ICU Assessments to Predict Discharge Home

PRESENTED BY
Heidi A. Tymkew

PURPOSE/HYPOTHESIS
Discharge planning in the acute care setting can be a complicated process, requiring multidisciplinary input and is often initiated in the intensive care unit (ICU). Providing effective discharge planning can result in reduced health care costs, readmissions and improved patient satisfaction. Physical therapists frequently provide input on the patient’s functional status which can help guide the discharge planning process. Therefore, the purpose of this study was to determine the ability of current ICU standardized measures to accurately predict discharge (DC) home from the hospital setting.

NUMBER OF SUBJECTS
1939 patients who had an ICU admission

MATERIALS/METHODS
A retrospective chart review was performed. The Functional Status Score for the ICU (FSS-ICU) and the ICU Mobility Scale (IMS) were collected upon initial evaluation, ICU discharge and the last physical therapy session prior to hospital discharge. Receiver Operating Characteristic curves were analyzed to determine a potential cutoff value for discharge home.

RESULTS
The area under the curve (AUC) for the FSS-ICU at initial evaluation was 0.75 (95% Confidence Interval [CI]=0.71, 0.79), at ICU discharge 0.84 (95% CI=0.82, 0.86) and prior to hospital discharge 0.87 (95% CI=0.86, 0.89). A FSS-ICU score at ICU discharge of at least 20.5 predicted discharge to home with sensitivity of 58.9% and specificity of 87%. A FSS-ICU score prior to hospital discharge of at least 21.5 predicted discharge to home with sensitivity of 68.2% and specificity of 84.2%. The AUC for IMS at initial evaluation was 0.71 (95%CI=0.67, 0.75), at ICU discharge 0.78 (95% CI=0.73, 0.81) and prior to hospital discharge 0.79 (95% CI=0.77, 0.81). An IMS score at ICU discharge of at least 7.5 predicted discharge to home with sensitivity of 83.6% and specificity of 68.6%. An IMS score prior to hospital discharge of at least 7.5 predicted discharge to home with sensitivity of 90.6% and specificity of 53.9%.

CONCLUSION
The FSS-ICU score at ICU discharge of at least 20.5 and a score of at least 21.5 prior to hospital DC provided the best accuracy for predicting discharge home in patients who had an ICU admission.

CLINICAL RELEVANCE
Using standardized assessments could help clinicians in supporting a discharge to home recommendation. The ICU is an environment in which finding relevant, clinically meaningful standardized assessments may be challenging for clinicians. Although a patient’s mobility and functional status is only one of several components currently involved in developing a discharge plan, information obtained through standardized assessments such as the FSS-ICU and IMS may assist the physical therapist when making a discharge recommendation in the ICU setting.
Is There a Clinical Relationship between Functional Mobility and Swallow Dysfunction?

PRESENTED BY
Heidi A. Tymkew

PURPOSE/HYPOTHESIS
Immobility and bed rest are common in the hospital setting and may lead to muscle weakness which is often associated with a variety of impairments such as diminished functional mobility. Muscle weakness can also affect the muscles involved in swallowing, which can lead to dysphagia and/or aspiration. The purpose of this study was to examine the relationship between a patient’s swallowing ability and functional mobility in the acute care setting.

NUMBER OF SUBJECTS
300 hospitalized patients

MATERIALS/METHODS
A retrospective chart review was performed on patients who had a swallow evaluation (Modified Barium Swallow (MBS), n=150 or Fiberoptic Endoscopic Evaluation of Swallowing (FEES) test, n=150). Patients with a neurological diagnosis, vocal cord paralysis, head/neck cancer, or prior history of dysphagia were excluded from the study. The Dysphagia Outcome and Severity Scale (DOSS) and the documentation of aspiration were extracted. The Functional Status Score for the ICU (FSS-ICU), ICU Mobility Scale (IMS), AM-PAC Basic Mobility and Daily Activity Short Form (AM-PAC IMSF) and the maximum ambulation distance (MAD) were collected +/- 72 hours of the swallow evaluation. One-way ANOVA was used to determine differences in physical outcomes between patients who had swallowing dysfunction to those with a normal swallow.

RESULTS
Patients who were diagnosed with dysphagia via the MBS had lower functional scores and ambulation distances compared to those without dysphagia (FSS-ICU 15.4±7.1 vs 19.8±7.7, p=0.001; IMS 5.6±2.8 vs 7.3±2.3, p<0.001; AM-PAC IMSF 13.8±4.8 vs 17.5±4.8, p<0.001; MAD 46.2±95.1 vs 140.6±225.2 ft, p<0.001). Similar differences were also noted in patients diagnosed with dysphagia via the FEES. Patients who exhibited aspiration on the MBS had lower functional scores and ambulation distances compared to those who did not aspirate (FSS-ICU 15.6±7.2 vs 18.2±7.8, p=0.04; IMS 5.6±2.9 vs 6.7±2.4, p=0.014; AM-PAC IMSF 14±4.8 vs 16.1±5.1, p=0.009; MAD 49.1±100.0 vs 106.3±195.1 ft, p=0.025). Weak, but statistically significant correlations (0.1<r<0.3) were noted between the DOSS and each of the functional outcomes.

CONCLUSION
Patients who present with dysphagia or aspiration often exhibit impairments in functional mobility as evident by lower FSS-ICU, IMS and AM-PAC IMSF scores and shorter ambulation distances. As functional mobility increases swallowing function improves as evident by an increase in the DOSS but the clinical significance is not known due to the weak correlation.

CLINICAL RELEVANCE
Results of this study highlight how collaboration between physical therapists (PT) and speech-language pathologists (SLP) can benefit patients in the acute care setting. If a PT identifies impairments in functional mobility due to muscle weakness, then signs and symptoms of swallowing dysfunction should be assessed along with a request for a SLP referral if indicated.
Physical Therapy Management of a Patient Hospitalized Neisseria Meningoencephalitis with Sepsis Syndrome and Ventriculitis

**PRESENTED BY**
Holly Elizabeth Brownstein

**BACKGROUND/PURPOSE**
Infection resulting from the bacteria Neisseria Meningitidis is rare, affecting 0.36 persons per 100,000 for those between 80-84 years of age. It is considered a medical emergency, with a 10-15% mortality rate even for those who have receive prescribed antibiotic treatment. Limited research currently exists regarding effective physical therapy intervention for the specific sequelae associated with Neisseria meningoencephalitis. However, a larger body of research exists providing supporting evidence for physical therapy intervention for those with similar sequelae including non-degenerative neurologic trauma and cognitive impairment secondary to traumatic brain injury (TBI). This case study centers on physical therapy management of a patient recovering from Neisseria meningoencephalitis with sepsis syndrome and ventriculitis.

**DESCRIPTION**
The patient was an 82-year-old retired male admitted to an inpatient swing bed unit for rehabilitation after a 16-day hospital admission, including admission to the intensive care unit, secondary to a diagnosis of Neisseria meningoencephalitis with sepsis syndrome and ventriculitis. After resolution of the infection, the patient suffered a sequelae including impaired cognition, impaired short-term memory, fatigue with activity and increased cognitive load, decreased global strength, and deconditioning resulting in decreased functional mobility. Skilled physical therapy treatment was provided and included functional mobility training, static and dynamic balance training, gait training, and strength and endurance training.

**OUTCOMES**
The patient completed 25 inpatient physical therapy sessions over the course of 42 days. At the time of discharge, the patient was independent with bed mobility, required stand-by assist for transfers and ambulation, and contact-guard assist for ascending and descending stairs with use of his front-wheeled walker. A recommendation was made for 24 hour/7 days-a-week assistance at home with home health physical therapy with the goal of progressing the patient to modified independence for transfers, ambulation and stair climbing.

**DISCUSSION**
While the patient in this study did not return to baseline prior level of function, he did make measurable improvements nearing his long-term physical therapy goals, supporting the use of skilled physical therapy intervention typically employed for patients with TBI and non-degenerative neuronal trauma. However, it is possible that targeted interventions supported by specific research and practice guidelines concerned with physical therapy post Neisseria meningitides infection may have facilitated a return to his prior level of function given the same time period. Specifically, further research related to addressing impairments arising from parenchymal damage, local ischemic lesions, increased intracranial pressure, and hippocampal lesions may help optimize physical therapy protocols for these patients.
Orthopedic Surgery & Anesthesia Surgical Improvement (OASIS) Project’s Impact on Post Op Day Zero Physical Therapy

PRESENTED BY
Jane Eileen Redalen O’Koren

BACKGROUND/PURPOSE
The Orthopedic Surgery and Anesthesia Surgical Improvement (OASIS) Project was designed to improve orthopedic surgical patient care processes, provider collaboration and satisfaction, and value based total knee arthroplasty/total hip arthroplasty care in addition to implementing continuous improvement mechanisms.

DESCRIPTION
The OASIS project looked at the continuum of care for total knee and hip arthroplasty patients from pre-admission to hospital discharge. One of the main aspects of the project was to initiate postop day zero physical therapy for all primary total knee and hip arthroplasty patients.

SUMMARY OF USE
This project involved an extensive multi-disciplinary team (anesthesia, nursing, pharmacy, physical therapy, social services, surgery) that met weekly to review and implement each phase of the project over a 1 year period. This concept included 3 phases: preoperative, intraoperative and postoperative. The preoperative phase involved pre-hospital patient education and expectations as well as developing a pre-surgery checklist and multi-modal analgesic pathway; the intraoperative phase involved improving surgical and PACU efficiencies. These two phases set a foundation for the postoperative phase and contributed to the overall success of the project. The postoperative phase, which involved physical therapy, included making significant changes to staffing levels and hours, integrating improved communication between the PACU, nursing staff on the floor, and the physical therapy team, and working closely with anesthesia to provide data related to patient problems that interfered with the ability to participate in post op day zero physical therapy.

IMPORTANCE TO MEMBERS
Prior to this project approximately 10% of Mayo Clinic Hospital - Rochester Methodist Campus total knee and hip arthroplasty patients were seen by physical therapy on postop day 0 per surgeon request. Average hospital length of stay for total hip patients was 2.4 days and for total knee patients was 2.6 days. At the conclusion of the project 89% of primary total hip and knee arthroplasty patients were seen by physical therapy on post op day zero. The average length of hospital stay decreased to 1.7 days for total hip patients and to 1.9 for total knee patients.
Safety and Efficacy of Early Ambulation on an Alternative Oxygen Delivery Device for Patients Receiving Bedside Heated Humidified High Flow Nasal Cannula Therapy

PRESENTED BY
Jennifer Lyn Jordan

PURPOSE/HYPOTHESIS
Early physical therapy (PT) in the acute hospital setting is standard practice for decreasing mortality and morbidity. For patients in this setting receiving heated humidified high flow nasal cannula (HHFNC) therapy for acute respiratory failure, their ability to ambulate is restricted by limitations in equipment and resources. For this reason, patients are often switched from HHFNC to an alternative device to engage in ambulation. The purpose of this study was to determine if early ambulation with a PT is safe and efficacious on an alternative high flow oxygen (HFO2) mask.

NUMBER OF SUBJECTS
There were 23 participants with acute respiratory failure requiring HHFNC therapy from acute and critical care units.

MATERIALS/METHODS
This was a prospective observational study. Initial aerobic tolerance was established while on HHFNC by marching at bedside. For ambulation with a PT, the participant was switched to a HFO2 mask and vital signs were collected.

RESULTS
Participants were separated into 3 diagnostic groups: cardiac (n=8), pulmonary (n=11), and other (n=4, including poly trauma, abdominal surgery, non-Hodgkin’s lymphoma, and seizure with fall). No statistically significant differences were found among groups or sexes within an ambulation trial for blood pressure, heart rate (HR), respiration rate (RR), oxygen saturation (O2 sats), or rating of perceived exertion (RPE) (all P>.05). Significant changes were detected at different time points within an ambulation trial for HR, RR, RPE, and O2Sat (all P<.001): outcomes during marching and ambulation differed from outcomes collected at rest or during recovery following ambulation. A small proportion of participants experienced adverse events during the ambulation trial, including anxiety (n=2), hypotension (n=1), and arrhythmia (n=2). Adverse events after an ambulation trial included arrhythmias (n=1).

CONCLUSION
Early ambulation with a PT is safe and efficacious for cardiac, pulmonary, or other patients with primary or secondary respiratory failure requiring HHFNC. Patients demonstrated normal physiologic responses with ambulation on a HFO2 mask and recovery on HHFNC, and recovered well following an ambulation trial with HFO2. The results suggest that it is a safe practice for patients requiring HHFNC to be placed on a HFO2 mask in order to ambulate under the supervision of a PT.

CLINICAL REFERENCE
Patients requiring HHFNC therapy can safely participate in early ambulation with a PT on a HFO2 mask. Ambulation of patients on HHFNC is important in diminishing the negative effects of restricted mobility, and the presence of HHFNC alone should not be a barrier for early ambulation.
A Biopsychosocial Approach to Analyzing Inpatient Falls

PRESENTED BY
Jessica Erin Bath

PURPOSE/HYPOTHESIS
While plentiful research exists identifying factors that contribute to inpatient falls, people continue to fall during their hospital stays. This can partially be explained by a lack of consistency in the implementation and documentation of evidence-based fall precautions, and that existing fall screens and protocols do not consistently identify potential fallers or prevent falls. This study examines biopsychosocial factors not commonly reported in the fall literature that may affect falls. We analyzed patient mobility level, polypharmacy, mental status, language spoken, insurance type, and substance use on fall incidence and fall precaution protocol implementation in an urban, academic healthcare system.

NUMBER OF SUBJECTS
217 inpatient fall incidents and 100 randomized non-incidents.

MATERIALS/METHODS
Data was collected using a retrospective case-controlled study with stratified random sampling. Using the incident reporting system, post-fall huddles and electronic medical records, a comprehensive aggregate database was created. Variables included: insurance type, primary spoken language, history of substance use, mental status, polypharmacy, mobility level, and whether the fall precaution protocol was implemented. Chi-square tests, z-tests of proportions, and absolute risk reduction (ARR) and increase (ARI) were calculated to assess associated fall potential for each predictor.

RESULTS
55.2% of patients screened to be at risk for falls did not have a fall precaution protocol in place when they fell. The predictor with the largest effect (ARI 30%) on fall incidence was if the fall precaution protocol was missing. Patients requiring Supervision through Minimal Assist for mobility were associated with an ARI of 18%; non-intact mental status (ARI 20%) and history of substance use (ARI 10%) were also associated with fall incidences. Psychosocial factors also had an effect; a history of substance use or having Medicaid insurance each reduced fall precaution protocol implementation by 15%.

CONCLUSION
Novel results suggest that patients requiring less assistance for mobility experienced higher incidences of falls, and patients with a history of substance use and Medicaid insurance had a higher risk for not having fall precaution protocols implemented. It was also found that fall precaution protocols may be effective in decreasing inpatient fall incidences.

CLINICAL RELEVANCE
Limited research exists examining the impact of biopsychosocial factors on fall incidence and fall precaution protocol implementation. Patients would benefit if physical therapists and nurses shared mobility assessment tools and communication methods, potentially improving mobilization triaging between the professions. Further research exploring how patient ethnicity, ability to pay for care, and/or presence of comorbid conditions may impact fall incidence and fall precaution protocol implementation is warranted.
Comparing Hybrid Patient Simulation to Integrated Clinical Experiences in Acute Care Education of Dpt Students

PRESENTED BY
Jill Jandreau Seattle

PURPOSE/HYPOTHESIS
Patient simulation has been utilized in nursing education for decades to introduce clinical skills that will be necessary as a clinician within a low risk environment. The utilization of simulation in physical therapy education warrants the study of this teaching technique as it pertains to the unique needs of physical therapy students as well. Though there is evidence to support its use, the support is limited with few quality studies available and none that specifically compare student preparation through simulation of patient scenarios to real life exposure during an integrated clinical experience that may be imbedded within a course. This study will compare the effectiveness of hybrid patient simulation to integrated clinical experiences in preparing DPT students to participate in acute care clinical rotations.

NUMBER OF SUBJECTS
40

MATERIALS/METHODS
Evidence-based teaching techniques focus on active learning and are associated with improved learning outcomes and student engagement. As part of a first year DPT Acute Care course, students participated in hybrid patient simulation. Patient simulation can take on varying levels of complexity. The goals for the first of two Acute Care courses was to expose students to the scope of practice within an acute care setting with minimally complex patients and allow them to practice examination and intervention skills gained throughout the curriculum as well as begin to develop clinical reasoning skills. Community dwelling adults were recruited and trained to act the patient roles for the simulated patient cases and appropriate moulage applied based on simple acute care orthopedic cases. This SIM group was compared to a group who participated in an integrated clinical experience. Integrated clinical experience (ICE) is the participation of students in patient care with a physical therapist mentor imbedded within a course. The results were represented graphically and a Mann-Whitney u test calculated to determine if a true difference existed between the SIM and ICE groups for each CPI item. In addition, comments from course feedback were reviewed to determine student perception of each teaching method.

RESULTS
The use of simulation did not decrease student learning and allowed instructors to offer a consistent learning experience for all students participating in SIM. Students in ICE, reported that the content learned in the hospital was not engaging and the teaching skill of the clinical instructors varied. Clinical instructors rated students who participated in SIM higher than those who participated in ICE using the CPI.

CONCLUSION
Simulation allows the educator to control for consistency in the learning environment and provide scenarios that students may not be exposed to. Simulation does not detract from learning of clinical practice skills that may occur during an integrated clinical experience with real patients. In fact, feedback from clinical instructors indicates that students were more confident and better prepared for their clinical rotations using SIM as a teaching technique compared to ICE. Simulation may be preferred to integrated clinical experiences for teaching students skills required in an acute care setting. Studies with a larger sample size are recommended.

CLINICAL RELEVANCE
The current generation of students is accustomed to learning with technology and the use of simulation engages them with the material in a way that is familiar to them. Patient simulation need not involve high fidelity manikins making it accessible to more DPT programs.
A Characterization of Hospital-Based Physical Therapy Utilization and Patient Outcomes Using the AM-PAC 6-Clicks

PRESENTED BY
Joshua Kurt Johnson

PURPOSE/HYPOTHESIS
Physical therapists working in the hospital setting are consulted to lead mobility interventions for patients with a wide range of functional ability. The extent to which physical therapists have provided care across this range has not previously been quantified. Thus, it is unclear whether current physical therapy (PT) utilization patterns in the hospital are based on a patient’s mobility status. Further, whether mobility status is associated with the patient’s hospital outcomes is not known. The aims of this study were to first characterize both the utilization of PT and patient outcomes relative to patients’ mobility status at the time of the hospital PT evaluation then test whether this mobility status was associated with PT utilization and patient outcomes in the hospital.

NUMBER OF SUBJECTS
The study sample included 45,501 patients discharged from a single academic hospital in 2017 -2018.

MATERIALS/METHODS
To understand patterns in current practice, we characterized utilization of PT across these categories in terms of total PT visits during the hospital stay and the volume of PT treatment (in minutes) per day beginning on the date of the patient’s PT evaluation through the day of hospital discharge, thus normalizing to length of stay across the sample. Using patients with an initial 6-clicks score of 23-24 as the referent group, differences in the volume of PT treatment across categories of mobility status were tested using simple regression. Patient outcomes including hospital length of stay and discharge to home were also characterized, with differences across categories of mobility status being similarly analyzed, accounting for the level of the outcome variable.

RESULTS
Overall, 15.5% of patients had an initial 6-clicks score of 23-24, ranging from 3.7% among those evaluated on the Critical Care service to 21.3% on the Medical/Surgical service. The largest proportion of patients were those scoring 18-22 (41.5%). Patients scoring 23-24 had a median of 1 (IQR: 1,1) PT visit during their hospitalization. Across all PT service lines except Orthopedics, there were non-meaningful differences observed in the normalized PT treatment duration per day between patients scoring 23-24 and those with lower scores. On the Orthopedics service (N=5,865), patients scoring 16-17 participated in 20.5 (95%CI: 18.3, 22.7) more minutes of PT treatment per day than those scoring 23-24. In the full sample, and consistently across each PT service, a direct relationship was observed between higher initial 6-clicks scores and shorter hospital length of stay (17.5-day shorter stay for all patients scoring 23-24 compared to those scoring 6-7). Among all patients, those scoring 23-24 were discharged home most often (94.6%; odds ratio=3.6, 95%CI: 3.2, 4.1, compared to patients scoring 18-22). These trends were consistent across all PT service lines.

CONCLUSION
Patients with the greatest independence in mobility (6-clicks=23-24) were generally seen for only one PT visit and discharged home after a short length of stay. Across mobility categories, however, the duration of PT treatment per day was not clinically different. This indicates that PT utilization is generally consistent for all patients in the hospital, despite any difference in functional independence at the time of their PT evaluation or the decreased likelihood that patients with greater dependence are less likely to be discharged home.

CLINICAL RELEVANCE
For a large proportion of patients, there may be an opportunity to identify earlier in the hospital stay that their independence in mobility is satisfactory for a safe and timely discharge to home even in the absence of a consult to PT.
Early Interventions for Patients with Disorders of Consciousness: Is There Strong Evidence?

PRESENTED BY
Julia Lee Falkenklous

BACKGROUND/PURPOSE
Early mobility has almost become standard practice in the ICU and acute care settings. However, it is challenging and often a barrier to mobilize patients who present with disorders of consciousness (DOC). The mechanisms underlying emergence of consciousness from coma continue to be misunderstood despite ongoing efforts to understand, diagnose, and treat these patients. Recent findings support the hypothesis of a complex brain connectivity architecture and demonstrate the importance of considering functions of a brain region in terms of its functional integration rather than segregation. Interventions for emergence from coma generally focus on the neural pathways responsible for arousal, which is thought to be the reticular activating system and the midbrain.

DESCRIPTION
The purpose of this comprehensive literature review is to critically analyze rehabilitation interventions promoting emergence from coma for type, dosage, and efficacy.

OUTCOME
Comprehensive review of literature indicate that multimodal coma stimulation, verticalization, cycling, and NMES of the right median nerve are each beneficial to some degree to improve consciousness. Multimodal sensory stimulation was found to be effective when applied for shorter duration with high frequency. A verticalization protocol may be beneficial to begin at least 24 hours after admission as hemodynamic tolerance appeared greater after this time, patients may tolerate greater degrees of head-up tilt better with simultaneous leg movement/stepping versus without. FES cycle increased cardiac output and produces significant intensity of muscle work in sedated patients. Right median nerve NMES applied to patients 8 hours for 2 weeks emerge from coma sooner versus sham.

DISCUSSION
There is no consensus or protocol on treatment techniques for patients with acute DOC currently. RCTs, though limited by smaller sample size, indicate that multimodal coma stimulation, verticalization, and NMES to the right median nerve may be effective treatment options to promote emergence from an unconscious state.
Is There a Difference in Fss-ICU Discharge Scores between Hospital Discharge Location?

PRESENTED BY
Julie Marie Skrzat

PURPOSE/HYPOTHESIS
The aim of this study was to determine if there is a difference between the Functional Status Score for the Intensive Care Unit (FSS-ICU) scores acquired within 24 hours of intensive care unit (ICU) discharge across hospital discharge locations. We hypothesized there would be a difference in FSS-ICU scores acquired within 24 hours of ICU discharge across hospital discharge locations.

NUMBER OF SUBJECTS
One hundred fourteen subjects (mean age = 65 years [22 – 94 years old], 71 males) were included. Subjects were included if they followed a linear hospitalization defined as entrance through the emergency department followed by a direct admit to ICU. Exclusion criteria was notable for re-admissions to ICU during the same hospital stay and multiple re-admissions throughout the year.

MATERIALS/METHODS
A retrospective chart review was conducted for patients admitted to a medical surgical intensive care unit at a tertiary care hospital over 12 months. The FSS-ICU scores were collected within 24 hours prior to ICU discharge. The FSS-ICU includes 5 functional components and is scored on a scale of 0 – 7, with a maximum cumulative score of 35. The subjects were stratified into 1 of the 4 discharge locations: home, skilled nursing facility (SNF), inpatient rehabilitation (IP), and other (AMA, expired, hospice, long term care facility and psych). A one-way ANOVA and corresponding post hoc analyses were performed to analyze the differences between FSS-ICU ICU discharge scores and hospital discharge location.

RESULTS
Forty percent of the subjects had a respiratory admitting diagnosis. The frequencies of discharge locations amongst all subjects are as follows: home = 71.93%, SNF = 16.67%, IP = 5.26%, and other = 6.14%. Mean FSS-ICU ICU discharge scores for discharge locations are as follows: home = 27.20 (18 – 35), SNF=19.84 (14 – 31), IP=16.34 (9 – 25), and other=20.71 (18 – 23). FSS-ICU scores acquired within 24 hours of ICU discharge were significantly different (p<0.001) across discharge locations. Post-hoc analysis showed a statistically significant difference between home and SNF (p<0.001), home and IP (p<0.001), and home and other (p=0.005). There were no statistically significant differences amongst FSS-ICU scores between SNF, rehab, and other.

CONCLUSION
There is a difference between FSS-ICU ICU discharge scores across discharge locations, with higher FSS-ICU scores (>18) being associated with a home discharge disposition. Our results show consistent means for discharge to home while narrowing the range from previous literature.

CLINICAL RELEVANCE
This study builds upon previously published literature by expanding the sample by size and medical acuity. This outcome measure successfully discriminated amongst home and other discharge settings for patients receiving usual care physical therapy. Future research should include a larger sample size to discriminate amongst other discharge locations, as well as study which physical therapy interventions are more likely to improve score to optimize home discharge.
Mobilizing a Patient with VA-ECMO and Aortic Balloon Pump for Cardiogenic Shock: A Case Report

PRESENTED BY
Justin Froiseth

BACKGROUND/PURPOSE
In recent years, VA-ECMO has been increasingly used in the setting of cardiogenic shock. In a recent meta-analysis, mortality was lower in patients with concomitant LV unloading which most frequently combined ECMO and IABP. Research has demonstrated that Physical Therapy can safely mobilize patients on ECMO, however to our knowledge, there is very limited information regarding mobilization of patients on VA-ECMO with IABP.

DESCRIPTION
A 30-year-old female presented with cardiogenic shock secondary to post-partum cardiomyopathy requiring more advanced care. The patient’s medical history was also significant for bilateral retinoblastoma requiring enucleation of both eyes at a young age. She initially had placement of IABP via femoral approach for hemodynamic support which limited her mobility prompting a switch to subclavian IABP. Unfortunately, the patient’s medical status continued to decline requiring placement of VA-ECMO via R subclavian and J cannulation as a bridge to possible heart transplant. After four days, utilizing our established Practice Guidelines and a medical screening and physical therapy assessment tool from University of Maryland, the patient was deemed appropriate for mobility. After donning all appropriate gear and coordinating with multidisciplinary staff, the patient was able to sit at edge of bed progressing to sit <> stand with marching in place for 20 repetitions. The following day, the patient progressed to ambulate 140ft with minimal assist. We did not experience any adverse medical events or alarms from her ECMO and IABP during or immediately after mobility.

OUTCOMES
Unfortunately, the patient was deferred by MRB for transplant. No additional mobility was performed due to a rapid decline in medical status two days after the IABP was removed. We used the Johns Hopkins – Highest Level of Mobility (JH-HLM) scale as a measure to track the patient’s progress with mobility. The scoring ranges from 1 (bed – only lying) to 8 (walk – 250ft). The patient progressed mobility from a 5 (standing ≥ 1 minute) on her first day of mobility to a 7 (walk – 25+ feet) without any adverse events.

DISCUSSION
This case demonstrates that ambulation can be safely performed in patients supported by VA-ECMO in conjunction with an IABP. While this is not the first case demonstrating the safety and feasibility of mobilizing on ECMO, it appears to be the first case of mobility with subclavian VA-ECMO and IABP. Future research should focus on determining the most appropriate standardized measure for this unique patient population and include a larger sample size.
AM-PAC “6-Clicks” Basic Mobility Score Predicts Discharge Destination in a Cardiothoracic Intensive Care Unit

PRESENTED BY
Katelyn Lee Corridon

PURPOSE/HYPOTHESIS
The Activity Measure for Post-Acute Care (AM-PACTM: “6-Clicks”) Inpatient Basic Mobility Short Form is a validated measure shown to predict hospital discharge destination when performed on physical therapy (PT) evaluation. The utility of AM-PACTM “6-Clicks” for the intensive care unit (ICU) has not been examined. The purpose of the study was to determine the ability of the AM-PACTM “6-Clicks” Basic Mobility score to predict discharge destination when performed at PT evaluation in a Cardiothoracic ICU (CTICU).

NUMBER OF SUBJECTS
The Emory University Hospital Midtown (EUHM) is a 531 plus-bed metropolitan hospital in Atlanta, Georgia. 848 patients were admitted to the CTICU at EUHM from September 1, 2017 to August 31, 2018. This study included 219 patients on which physical therapy evaluations including the AM-PACTM “6-Clicks” were completed. 141 patients were included in the analysis after exclusion of patients who were either discharged to other hospitals or hospice, died, or had PT orders or evaluations outside of the CTICU.

MATERIALS/METHODS
This retrospective cohort study received an IRB Exempt status. Data were extracted from the Emory Data Warehouse and charts manually reviewed. Analysis was performed using SPSS®. One-Way ANOVA was utilized to compare AM-PACTM of patients discharged to a facility including a skilled nursing facility, inpatient rehabilitation, or long-term acute care facility compared to those who were discharged home (with or without home health physical therapy). Secondary outcomes included severity of illness measured by the Acute Physiology and Chronic Health Evaluation (APACHE II) score, length of stay (days), and physical therapy consulting practices.

RESULTS
Patients discharged to a facility had significantly lower AM-PACTM scores at PT evaluation in the ICU (9.46, SD 3.44) compared to those were discharged home (14.82, SD 3.36) (p=0.000). In addition, patients who were discharged to a facility had significantly longer ICU (p=0.000) and hospital length of stay (p=0.000), increased severity of illness (p=0.001), increased time to PT order (p=0.000) and evaluation (p=0.000) from ICU admit date, more missed PT treatments (p=0.005), and more PT sessions in (p=0.000) and outside of ICU (p=0.001) compared to those who were discharged home.

CONCLUSION
This study provides evidence for utility of the AM-PACTM “6-Clicks” Basic Mobility Score in predicting discharge destination among individuals admitted to a CTICU.

CLINICAL RELEVANCE
Early mobilization after cardiac surgery prevents complications, improves function, and decreases length of stay.4 Along with mobilizing tenuous patients to optimize function and recovery, accurate assessment of mobility and initiation of discharge planning should be performed early in an admission.3,5,6 The results of this study may help improve interdisciplinary communication for early discharge planning from the ICU, which may decrease the length of stay. Future work may look to evaluate the utilization of PT in the CTICU, to identify the patients most in need of early mobilization, and to improve patient outcomes.
Takotsubo Cardiomyopathy in a Patient with Right MCA Ischemic Stroke

PRESENTED BY
Katelyn Lee Corridon

BACKGROUND/PURPOSE
Middle cerebral artery territory (MCA) infarction is the most common type of cerebral vascular territory infarct and results in a variety of neurologic deficits. Takotsubo cardiomyopathy (TCM) is a rare acute cardiac syndrome characterized by transient left ventricular dysfunction often triggered by physical or emotional stress or a medical event, including ischemic stroke. TCM mimics acute myocardial infarction (MI) and common symptoms include chest pain, dyspnea, syncope, nausea and malaise. Hiccups have been associated with conditions such as gastrointestinal reflux and rarely as a symptom of MI, but have not been reported in TCM. The purpose of this case report is to discuss the role of physical therapy in identifying signs and symptoms of medical instability in a patient with hiccups as a symptom of TCM.

DESCRIPTION
The 51 year-old male patient with acute infarct in the right putamen and punctate acute infarct in the right parietal matter presented with left hemiparesis, left neglect, and dysphagia. Initially treated with tissue plasminogen activator (tPA), he then underwent a thrombectomy for the occlusion of the right horizontal segment of the MCA and admitted to the Neurologic Intensive Care Unit (NICU). Physical therapy evaluation was performed within 48 hours of admission. Five days after admission he had persistent hiccups, which worsened during physical therapy. One day later the physical therapist reported the patient appeared grey, diaphoretic, tachypnic, tachycardic, with continued persistent hiccups. Cardiology was consulted and his electrocardiogram (EKG) showed ST elevation in V2 and V3, troponin elevated to 2.32, and transthoracic echocardiogram (TTE) demonstrating signs of TCM. He was transferred to the Coronary Care Unit (CCU) and medically optimized. One day later, a left heart catheterization revealed 70% lesion of the proximal left anterior descending (LAD) coronary artery and a drug-eluting stent was placed. Anterior apical and inferior apical severe hypokinesis was detected and left ventricular ejection fraction was 30-35%, decreased from 60-65% in NICU on admit day one.

OUTCOMES
Concern over the patient’s hiccups, tachycardia, and diaphoresis by the physical therapist and bedside nurse prompted a cardiology consult, resulting in life-saving care. The patient remained on the neurology physical therapy caseload and continued to make progress with functional mobility. After thirteen days in the hospital including medical and surgical treatment for right MCA stroke and TCM, he was optimized on medical therapy and discharged to an inpatient rehabilitation facility with an external wearable cardioverter-defibrillator.

DISCUSSION
Early physical therapy is becoming routine in the acute care setting after stroke, when patients are susceptible to complication. Physical therapists may be the first to recognize signs of medical instability or complication due to placing increased metabolic demand on the patient. This patient with hiccups as an early symptom of TCM, which worsened during exercise, is one such example. Early identification of symptoms of medical complications and subsequent interdisciplinary care can improve patient outcomes.
A Multifaceted Strategy to Implement Venous Thromboembolism (VTE) Clinical Practice Guidelines (CPGs): 18-Month Follow-up

PRESENTED BY
Kathleen Regan McEwen

BACKGROUND/PURPOSE
The purpose of this poster is to describe 18-month outcomes after the use of a specific, multi-faceted strategy to implement the VTE CPGs in the acute care therapy department of a large teaching hospital.

DESCRIPTION
In 2016 the Acute Care and Cardiovascular and Pulmonary sections of the APTA jointly published, CPGs related to physical therapy for individuals at risk of diagnosed with VTE. (1). CPGs are intended to provide the best available evidence to support clinical decision making in order to improve quality of care, patient outcomes and cost effectiveness (2). While the value of CPGs is widely recognized, they are not always translated into clinical practice (3). To successfully implement CPGs, barriers must be identified and systematically addressed by a diversity of activities which have been shown to be effective. (4) Strategies recommended to overcome barriers include dissemination, education and training, social interactions, and decision support systems. (5) Shortly after publication, our acute care therapy department began planning to implement the CPGs.

SUMMARY OF USE
The implementation team created a survey to assess current staff knowledge, attitudes and practice related to VTE. Based on findings, a strategy was adopted which included several educational meetings on topics such as key action statements of the guideline, the Wells Criteria, and anticoagulants used for VTE. Changes were made to procedures for mobilizing patients with suspected or newly-diagnosed VTE, and for rehab management of individuals on anticoagulants, for which caution and hold guidelines for INR and PTT were liberalized. Competencies were carried out related to the Wells Criteria, the new lab value guidelines, and the mobilization algorithm. A user-friendly 2-page clinical resource was created and provided. The changes were implemented on May 1, 2017. After this, discussions occurred at regularly scheduled staff meetings where questions were addressed, experiences shared and adverse outcomes were monitored. After 18 months, a follow up survey was undertaken. The most salient findings include fewer patients held for high INR or PTT, no complications related to VTE or bleeding, and increased staff feelings of pride and competency around making and supporting decisions about mobilizing patients after VTE. The staff identified the 2-page resource guide as a crucial source of on-the spot support.

IMPORTANCE TO MEMBERS
CPGs provide valuable support in identifying best practice. The availability of physical therapy CPGs is expanding. It is important to bridge the gap between the availability of guidelines and their incorporation into practice. This describes an approach used in a large teaching hospital to assess barriers and utilize effective methods to support implementation of the VTE CPGs, and reports 18-month outcomes. This approach can be used by other facilities in relation to a wide variety of practice guidelines.
Health Coaching and Readiness for Change in a Hospitalized Patient with a Ventricular Assistive Device

PRESENTED BY
Kathryn Kessler

BACKGROUND/PURPOSE
Patients may be hospitalized for complex health conditions and experience psychosocial barriers to improving physical health. Patients may benefit from acute care physical therapists (PT) recognizing the trans-theoretical model (TTM) stages of change, using health coaching strategies to facilitate progress through stages of change. The purpose of this case report is to describe an example of recognizing stages of change and utilizing health coaching strategies to promote lifestyle changes in a patient (pt). The clinical goal is to explore ways to maximize acute care PT impact, minimize hospital readmission, and maximize quality of life and health behaviors after discharge.

DESCRIPTION
61 year old male with a VAD, placed as destination therapy 2.5 years prior, with multiple co-morbidities and depression, hospitalized for GI bleeding. He initially demonstrated low self-efficacy, was in the pre-contemplation stage for improving his physical health and activity tolerance. Health coaching strategies were used to augment standard inpatient PT plan of care.

OUTCOMES
The pt was seen 4 times over 7 day hospitalization with measurable gait distance, gait speed, levels of mobility assistance, modified borg scale, AMPAC, and VAD flow.

DISCUSSION
Following PT interventions, PT demonstrated improved overall mobility and pacing demonstrated by improved gait speed, increased gait distance, lower exertion per BORG, decreased levels of assistance required, smaller increase in pt’s VAD flow suggesting decreased exertion, and improved score on AMPAC. Qualitatively, pt expressed strong readiness for change, entering the action stage of change. Increased level of self-efficacy and internal locus of control may explain the pt’s increased readiness for change. The outcomes of this case study demonstrate an example of using health coaching strategies to maximize therapy engagement and outcomes.
Interprofessional Collaboration for the Management of Tonic Bite in Adults with Severe Brain Injury

PRESENTED BY
Kelly L. Tucker

BACKGROUND/PURPOSE
The purpose of this report is to share an innovative solution for the evaluation and treatment of adult patients in an Acute Care Hospital presenting with tonic bite following a severe brain injury.

DESCRIPTION
Acute Care Speech-Language Pathology (SLP) was consulted for the evaluation and treatment of adult patients who presented with an inability to open their mouth and had active lingual and/or labial bleeding. This required an emergent solution to treat wounds, prevent further blood loss and eliminate the need for transfusion of blood products. The SLPs collaborated with Occupational Therapy (OT) and Physical Therapy (PT) for assistance on positioning the patient in bed. Each discipline shared their input on treatment strategies and collectively consulted other resources including Dentistry and Nursing. A literature review was completed to determine current practice for OT, PT and SLP interventions for adults with tonic bite, concluding with minimal results. The lack of research lead to the formation of an Interprofessional Tonic Bite Task Force (ITBTF); to formulate interventions for the management of tonic bite.

The ITBTF defined roles, determined the application of neurological interventions and created a standardized method for evaluation and treatment within each discipline’s scope of practice. PT specifically focused on the impairments of body function in the neurological, integumentary, and musculoskeletal system as well as the impaired body structures of head, neck, extremities and trunk; thereby requiring the assessment of tone, range of motion of the jaw and neck, and deep tendon reflexes. Treatment interventions focused on the facilitation of upright, midline head posture, jaw opening and tone reduction.

SUMMARY OF USE
The ITBTF observed the progression of 6 adult patients referred to therapy for the management of tonic bite.

IMPORTANCE TO MEMBERS
A need was identified to specifically address adults with severe brain injury, who present with tonic bite; as it is a neuromuscular condition involving the jaw, it is within the PT scope of practice to evaluate and treat patients with tonic bite. Raising awareness of this condition within the population of adults with severe brain injury, as well as PT’s role will lend an opportunity for further investigation and research using evolving, innovative techniques and solutions for the management of tonic bite in the adult population.
POEMS Syndrome: PT’s Role in an Interdisciplinary Approach to Return to Function

PRESENTED BY
Kelsi Dilger

BACKGROUND/PURPOSE
POEMS (Polyneuropathy, Organomegaly, Endocrinopathy, Monoclonal protein, Skin changes) syndrome is a rare, multisystem disorder causing neuromuscular damage. As a result, patients with POEMS experience a significant decline in strength limiting participation in ADLs and functional mobility. The purpose of this case study is to share experiences of a patient with POEMS and demonstrate the impact of physical therapy’s (PT) role in interdisciplinary rehabilitation throughout an extended hospital stay.

DESCRIPTION
A 60 year old male presented to the emergency department in March 2018 with new onset of paresthesia, sensory ataxia, vocal cord paralysis, and bilateral foot drop. He was misdiagnosed for a year becoming dependent with all ADLs/functional mobility and had no active motion in any extremity. He was admitted to the ICU in March 2019 for worsening chronic neuromuscular respiratory failure, muscle wasting, anasarca, and skin thickening. He was then diagnosed with POEMS. During his ICU stay, PT requested a speech consult to facilitate patient communication. PT collaborated with occupational therapy (OT) in educating nursing staff, the patient, and his family on positioning needs and orthotic prescription to prevent contracture. PT’s ICU plan of care focused on improving the patient’s lower extremity muscle length and lower extremity weight-bearing elicitation using tools like the tilt table, promotion of core strengthening and sitting balance, promoting functional mobility and progressing lower extremity strength through a home exercise program. Treatment sessions included Proprioceptive Neuromuscular Facilitation (PNF) strategies, upper and lower extremity strength training, and performing functional training. Frequencies and intensities of exercise prescription were individualized based on his need.

OUTCOMES
After 12 weeks of PT, the patient progressed to requiring moderate assistance for bed mobility and sit to stands. With maximal assistance he completed squat pivot transfers and was able to take 2 steps, demonstrating improvements in his Functional Status in the ICU (FSS-ICU) scores. During his hospitalization, his Activity Measure for Post Acute Care score (AM-PAC)-inpatient mobility short form score increased by 5 points, which is greater than the minimal detectable change of 4.28. No adverse effects were attributed to the PT sessions. The patient was then transferred to a long-term acute care facility for continuation of therapy and wound care with a plan to transition to an inpatient rehab facility.

DISCUSSION
PT played a crucial role in optimizing functional return, advocating for the patient, and coordinating care throughout his prolonged hospital stay. Focusing on individualized therapeutic rehabilitation is critical to ensure progress in patients with POEMS. In the case of this rare diagnosis, PT was not only feasible but was effective in progressing patient mobility and achieving functional milestones during hospitalization. PT is an important member of an interdisciplinary rehabilitation team for patients with this condition.
Clinician Adherence to a Clinical Practice Standard Developed for Patients with Acute Stroke

PRESENTED BY
Kevin Matthew Allen

BACKGROUND/PURPOSE
Recent clinical practice guidelines and consensus recommendations have been published in an effort to standardize the use of outcome measures across the continuum of care for adults with neurologic dysfunction in physical therapy practice. Despite recommendations, there continues to exist much variability in physical therapists’ implementation and utilization of outcome measures across care settings, especially in acute care practice. The translation of evidence into clinical practice is challenged by many barriers at both the clinician and hospital-system level, resulting in a mismatch between current practice and best evidence. During the knowledge translation (KT) process, it is important to identify barriers, address barriers through interventions, monitor knowledge use, evaluate outcomes and sustain knowledge use. This case study will report clinician adherence with a clinical practice standard that was developed to assist with translating evidence into acute care clinical practice and report the challenges faced with knowledge sustainment during the KT process.

DESCRIPTION
In an effort to align current clinical practice with evidence-based recommendations, an interdisciplinary set of outcome measures was developed for use in patients with stroke in the acute hospital setting. In order to improve utilization of this outcome measure battery, a clinical practice standard was developed to define the physical and occupational therapy standard of care for patients with acute stroke in this hospital system. The clinical practice standard included minimal expectations for the physical examination, identification of precautions, outcome measure utilization and interpretation, as well as patient education and discharge recommendations. KT principles were applied during the implementation phase of the clinical practice standard project.

OUTCOMES
Medical records were audited on a monthly basis to monitor knowledge use and determine clinician compliance with the clinical practice standard, including outcome measure documentation. 43 charts were randomly selected from the stroke census over a two year period. Outcome measures were documented appropriately (including performance and interpretation) in 55% of reviewed charts. The reviewed charts were in compliance with the clinical practice standard (excluding outcome measure documentation) in 74% of audited charts.

DISCUSSION
Despite significant resources dedicated to clinical practice standard implementation though the KT process, clinician compliance remained below the targeted compliance rate of 80%. Outcome measure documentation was even further below the target at only 55%. Clinicians were more consistent with examination methods, precaution identification and discharge recommendations than they were with the utilization of outcome measures for patients with acute stroke in the acute hospital setting. In order to sustain knowledge use, it is important to re-visit the knowledge-to-action framework cycle and make necessary adjustments in order to sustain knowledge use and successfully implement evidence into routine clinical practice.
BACKGROUND/PURPOSE
Normal pressure hydrocephalus (NPH) is characterized by the symptom triad of gait disturbances, urinary incontinence and cognitive decline. Patients with NPH may present in acute settings as ambulatory, non-ambulatory or with high-level balance deficits. Symptom improvement with cerebrospinal fluid (CSF) drainage identifies who may benefit from ventriculoperitoneal (VP) shunt insertion. Accurate examination is one consideration when assessing response to CSF drainage. The purpose of this case study is to develop a facility specific bundle of evidence-based outcome measures with a decision tree for physical therapists to identify symptom changes in patients with NPH post CSF drainage.

DESCRIPTION
There is wide variation in patient presentation and no standardization of testing pre and post CSF drainage for NPH in one trauma hospital. Physical therapists were surveyed to identify what they valued in outcome measures to facilitate change in culture. A literature search using PubMed and Google Scholar identified symptoms of NPH and outcome measures that quantify deficits responsive to CSF drainage. Key words: NPH, CSF tap test; gait, balance, bladder and cognitive outcome measures. Measures chosen met therapist’s preferences. Staff was in-serviced on NPH symptoms and performance of recommended outcome measures. A decision tree was developed. Documentation smart phrases and interdisciplinary participation will follow.

OUTCOMES
Staff criteria for outcome measures: measure is easy to perform, completed in a timely manner and has prognostic value. Symptoms of NPH: weakness, difficulty with transitions of movement, urinary or fecal incontinence or urgency, decline in memory. Gait characteristics: decreased step length, speed, height, and cadence. Compensations for imbalance: increased step width, foot outward rotation. Deficits most likely to improve after CSF drainage: gait speed, likelihood of falling. Tendency to fall and movement transitions are assessed with Timed Up and Go (TUG) and Tinetti. Measures most responsive to change: TUG, Tinetti, 10m walk test (10MWT), number of steps to turn 360 degrees. Tests that were redundant or time-consuming were omitted. Tests chosen were reliable, valid, and sensitive to change. No literature addressed non-ambulatory patients with NPH. Clinical observations of individuals with NPH include standing and sitting posterior loss of balance (retropulsion). The Function in Sitting Test (FIST) was chosen to document this issue. The narrow corridor test will quantify step width and outward rotation of feet for high level balance issues. Standardized bladder, fall risk and cognitive questionnaires may be added to further quantify subjective improvements. 131415 NPH decision tree: Non-ambulatory: FIST, Tinetti. Ambulatory: TUG, Tinetti, 10MWT. High level balance deficits: TUG, Tinetti, 10MWT, Narrow Corridor Walk Test.

DISCUSSION
More research is needed to identify appropriate outcome measures for non-ambulatory and high-level patients. Outcomes of this case report established a decision tree to standardize assessment of patients with NPH in this hospital. Utilizing evidence based, standardized outcome measures that meet staff preferences may improve the accuracy and objectivity of this facilities assessments of individuals post CSF drainage.
**Predictive Modeling to Forecast Discharge Disposition in Individuals Undergoing Total Joint Replacement**

**Presented by**
Kimberly Ann Fritts

**Background/Purpose**
The purpose of this project was to determine if the utilization of a standardized outcome tool such as the Pre-Surgical AM PAC T-score would be a significant variable in a predictive model to forecast discharge disposition in total joint arthroplasty.

**Description**
Variables that were relevant to patient discharge were identified as age, sex, ethnicity, marital status, home location, surgical risk score, and Pre-Surgical AM PAC T-score. Patients scheduled to have total joint replacement surgery are recommended to attend a preoperative joint education class. Patients that attended were asked the standardized testing question that is associated with the Boston University Pre-Surgical AM PAC. The raw scores were converted to a standardized T-score using the tests conversation tables. T-scores conversation is critical to AM PAC scoring as it allows for comparison across different short form versions. The remaining six variables were collected during a retrospective review of these same patients after the procedure was completed. Patients selected to have the pre-surgical assessment were scheduled for surgery starting July 1, 2018 through present. There were no exclusion criteria, except for peri-operative mortality, of which we had no cases during this period. Correlation analysis was performed to quantify the association between variables. There was significant correlation between multiple variables to the target variable and were correlated at the .01 significant level. Linear regression was used to construct a prediction model to forecast discharge disposition. The variables were analyzed using a reverse method. The final prediction model included three variables: T-score, age, and marital status. The coefficients from the resulting regression model were used to construct a predictive discharge disposition.

**Summary of Use**
The utilization of a model that can effectively predict discharge disposition prior to admission may allow caregivers to prepare for support at home, and therapists to provide pre-operative services that may change patient’s functional status. If sufficiently accurate, such a model would prove extremely useful in managing cost per episode of care by facilitating patients to the least restrictive post-operative discharge plan and if necessary to pre-operatively procure a bed at a rehab facility.

Importance to Members: With the number of total joint replacements increasing dramatically, it is a priority to ensure appropriate discharge for patients. By having the likelihood of predicting discharge to a rehab facility prior to admission, patients can be provided with pre-operative planning and therapeutic intervention that could potentially alter the post-operative disposition. The ability to affect change could prove to be mutually beneficial to the patient and the surgical facility leading to increase discharges to home with outpatient services and decreasing the high costs associated with post-procedural care.

**Importance to Members**
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Screening for Anxiety in Physical Therapy Practice

PRESENTED BY
Kimberly Taylor

BACKGROUND/PURPOSE
Anxiety and depression are highly prevalent conditions experienced by approximately 40 million adults in the US. These afflictions often interfere with an individual’s daily activities and may lead to higher medical utilization and costs. Because the presence of anxiety or depression is linked to higher levels of inflammation and C-reactive protein, altered autonomic nervous system function, and a higher resting heart rate, they may affect rehabilitation outcomes in patients managed in acute care settings.

DESCRIPTION
Though treatment for these conditions is not within the scope of physical therapy practice, the ability to screen for anxiety in patients receiving physical therapy services contributes to a holistic practice approach and may result in improved outcomes. This presentation describes results of a comprehensive literature review focused on standardized tools physical therapists may use to screen patients for anxiety and depression.

OUTCOMES
Results of this review suggest that the Patient Health Questionnaire-4 tool (PHQ-4) may be used to rule in or out both anxiety or depression. If a score of 3 or more is achieved on the PHQ-4 in either category, then the Generalized Anxiety Disorder-7 tool (GAD-7) or Patient Health Questionnaire-9 tool (PHQ-9) should be used for more in-depth screening.

DISCUSSION
As anxiety is expressed differently in the elderly, when screening for anxiety in the elderly, the Geriatric Anxiety Inventory (GAI) is recommended.
Burning Down the House! How Hospital Culture Effects Burnout and Quality of Care

PRESENTED BY
Kristen Sexton Omanwa

BACKGROUND/PURPOSE
Unit based culture in an academic medical center can affect multidisciplinary interactions that impact efficiency and quality of care. Additionally, these strained relationships can lead to burnout syndrome (BOS) and negatively impact patient care and staff retention. The purpose of this project was to identify and develop strategies to address these stressors to improve multidisciplinary relationships, staff satisfaction, and patient care.

DESCRIPTION
BOS can affect all health care professionals, and is common in staff working with the critically ill. BOS is a unique type of work-related stress resulting in physical or emotional exhaustion, cynicism, and a sense of reduced professional efficacy. BOS can lead to staff turnover, reduced patient satisfaction, and decreased quality of care. It was identified that acute care physical therapists work under stressful conditions: nursing units with various cultures, different patient populations with different service line expectations, and unpredictable workflow, while maintaining productivity standards to justify the services and staffing provided. Working with the chronically critically ill creates additional stress due to the severity of illness, functional limitations, bonding from prolonged hospital stays, and emotions centered on death and dying. This can be particularly true in highly specialized patient populations, such as patients undergoing cardiothoracic surgery.

OUTCOMES
Multiple strategies were used to improve unit culture and patient interactions and care. Patient and family engagement were improved with exercise programs, scheduling, and ongoing communication. Engagement of administrative leadership prompted meetings with the multidisciplinary team to foster a positive, interactive culture and working relationship. Staff debriefing and interaction with the employee assistance program helped manage employee stress and burnout. The multidisciplinary team solidified outcome measures that helped guide the medical plan of care and increased staff and team investment. All of these strategies helped reframe staff interactions and relationships, and improve the patient experience. Purposefully improving unit culture has led to a healthier work environment and improved staff engagement.

DISCUSSION
This platform will assist acute care therapists in identifying BOS and provide strategies to improve culture and multidisciplinary collaboration.
Effects of Early Postoperative Physical Therapy Evaluation after Joint Replacement Surgery on Discharge Disposition

PRESENTED BY
Lana Tsirakidis

PURPOSE/HYPOTHESIS
To evaluate if early initiation of Physical Therapy (PT) postoperatively after total hip arthroplasty (THA) and total knee arthroplasty (TKA) was associated with increased rates of discharge to home versus discharge to a rehabilitation facility.

NUMBER OF SUBJECTS
247

MATERIALS/METHODS
From October 2016 to September 2017, 118 elective single THA and 129 single TKA surgeries were performed and included in the study. Depending on the time of day that the patient arrived to the orthopedic unit postoperatively, patients were assigned to either the POD 0 or the POD 1 group. Patients that arrived on the unit after 4 pm for the first 6 months of data collection were assigned to POD 1 group. With the addition of an additional PT to the staff, the time that patients were eligible for POD 0 PT was expanded to 7 pm for the remainder of the study. Patients that were found to be medically unstable for PT evaluation on POD 0 were automatically assigned to POD 1 group. Medically instability was determined by care provider based on patient’s vitals and tolerance to movement. Patients undergoing bilateral THA/TKA were excluded from the sample since all were found to be discharged to inpatient rehabilitation centers. Patients with continuous local anesthetic pump after TKA were also excluded as these patients were automatically assigned to POD 1 group as per protocol. The effectiveness of the intervention was evaluated using comparisons between TKA/THA patients seen on POD 0 and POD 1 during the same time period.

RESULTS
Initiating PT POD 0 resulted in increased patients discharged to home versus rehabilitation for both single hip and single knee replacement. Receiving POD 0 therapy was associated with a higher proportion of patients who were discharged to home by 34% (75% / 55.9% = 1.34) post THA and 37% (68.5% / 50% = 1.37) post TKA. This effect was stronger for men than for women, regardless of whether it was hip or knee replacement. The apparent improvement in discharge to home for women was not statistically significant, Χ(1) = 2.267, p = .132. For men, seen led to a 54% improvement in the proportion of men who were discharged to home (79.7% / 51.7% = 1.54), Cramer’s V = .283, p = .005. For men, age group 60 to 70, outcomes improved by 44% (84.4% / 58.8% = 1.44) which was highly statistically significant, Χ(1) = 7.839, p = .005, Cramer’s V = .283.

CONCLUSION
This study found that patients receiving rehabilitation services following total joint replacements on the day of surgery were discharged to home at higher rates than similar subjects that received the same rehabilitation services starting on POD 1. These findings were particularly pronounced for male patients ages 60 to 70.

CLINICAL RELEVANCE
This study provides the foundation for evidence supporting initiation of PT post op day 0 for patients undergoing total joint arthroplasty to increase discharge home versus rehabilitation.
BACKGROUND/PURPOSE
Early progressive mobilization of select patients while supported on extracorporeal membrane oxygenation (ECMO) has been documented to be safe and feasible. The impact of early mobilization of critically ill patients has proven to reduce length of stay, minimize adverse complications from prolonged ICU admissions, and improve long-term patient outcomes. This case study report describes a critically-ill, medically-complex patient with a rapidly evolving clinical presentation who participated in an early, progressive multimodal rehabilitation program while on prolonged advanced life support.

DESCRIPTION
A 39-year-old female active duty Air Force medical technician with no remarkable past medical history was admitted with acute respiratory distress syndrome (ARDS) from an outside hospital to the Mayo Clinic Hospital ICU in Jacksonville, Florida. Her history of present illness was significant for a 1-2 week history of diffuse skin rash with associated fever, profound fatigue, and arthralgia after returning from a recent pleasure cruise. The patient was diagnosed with adenovirus and placed on mechanical ventilation via artificial airway. Her hospital course was complicated by worsening respiratory compromise requiring veno-venous ECMO, prolonged mechanical ventilation with failed attempts at weaning, renal failure requiring continuous renal replacement therapy (CRRT), and surgical intervention to decompress intrahepatic compartment syndrome resulting from a hematoma on her liver. Total hospital length of stay was 48 days. Physical and Occupational Therapy were initiated on hospital day 11. She participated in 14 PT and 10 OT sessions. Multimodal therapeutic interventions included a progression of long sitting on the bed, sitting edge of bed, standing at the bedside, transferring from standing at the bedside to a chair, and exercising on an upper and lower extremity ergometer. By hospital discharge she progressed to ambulation and was discharged to an acute rehabilitation hospital to continue her rehabilitation program.

OUTCOMES
We used the standardized, validated AM-PAC “6-Clicks” Basic Mobility Functional Assessment Tool to track the effectiveness of therapeutic interventions. Minimal Detectable Change for the “6-Clicks” is 4.72 points (90% CI). Initial “6-Clicks” mobility score obtained at PT evaluation was “6” equating to 100% physical impairment. By discharge, a significant score improvement of 15 points to “21” was recorded, equating to 33% mobility impairment. No adverse physiologic responses or safety events occurred during therapy sessions.

DISCUSSION
Initiating an early rehabilitation program for select patients with highly complex medical acuity is an advanced practice, requiring cooperation from a multi-disciplinary team, specialized equipment, and careful attention to safety. This case demonstrates that an early progressive multimodal rehabilitation program while on VV ECMO, mechanical ventilation, and continuous renal replacement therapies is safe and can significantly improve physical function.
A Multi-Disciplinary Quality Improvement Initiative to Improve the Culture for Mobilizing Hospitalized Post-Surgical Patients

PRESENTED BY
Madison Jayne Marquez

PURPOSE/HYPOTHESIS
Mobilization in the hospital has been shown to reduce weakness, delirium, and length of stay. Factors such as limited staff, lack of time, and insufficient training are seen as barriers for mobilization. Additionally, increased focus on reducing in-hospital falls can lead to a culture that suppresses patient mobilization. Patients who have undergone orthopaedic surgeries often have unique challenges than can add risk to safe mobilization. The aim of this report is to describe quality improvement strategies and outcomes for a multi-disciplinary initiative to improve early mobilization for patients hospitalized after spinal surgery or orthopaedic trauma.

NUMBER OF SUBJECTS
Patients admitted to 29 bed unit at Level 1 Trauma Center

MATERIALS/METHODS
In January 2018, a Quality Improvement (QI) team consisting of physical therapists, physicians, nurses, and methodologists was formed to lead a mobilization campaign. QI strategies were utilized to map workflows and engage in Plan-Do-Study-Act cycles. Intervention trials included: education on the importance of mobility, physical therapist-led mobilization training sessions, and incentives to promote the initiative. Staff feedback was assessed though informal interviews and multiple administrations of a survey regarding mobilization barriers. Fall rates were tracked throughout the campaign and analyzed using time series analysis to compare pre-initiative fall rates and fall rates during the implementation phase.

RESULTS
Staff consistently reported an improved culture and comfort level to support patient mobilization. Barriers to consistent mobilization included inconsistencies in mobility order sets, a cumbersome documentation structure, and changes in staffing. Ideas to improve mobilization rates from staff included holding ongoing mobilization classes and to increase collaboration between physical therapy, physicians, and nursing. During the campaign, zero falls with injury were reported, and a sustained overall reduction of 54.45% in total falls was observed on the floor from the start of the campaign compared to the 12 months prior to the start of the campaign. Objective mobility tracking and progress remained a barrier due to limitations in the ability to effectively track mobility within the electronic health record.

CONCLUSION
Results of the initiative indicate that staff culture and comfort level for mobilization of post-operative patients can be improved through multidisciplinary collaboration. Increased confidence in mobilization by staff may have translated into a decrease in fall rates. Despite the shift in culture, barriers remained in successful tracking and workflows to support mobilization. Ongoing quality improvement efforts will be needed to optimize mobilization and ensure the changes in culture are sustained.

CLINICAL RELEVANCE
Institutions looking to increase mobilization rates can use findings from this report to guide and promote culture shifts and increase staff confidence in mobilizing patients.
Acute Traumatic Brain Injury in Polytrauma Patients: A Resource Guide for Acute Care Physical Therapists

PRESENTED BY
Maggie Carson Griebert

BACKGROUND/PURPOSE
To develop an acute care specific resource guide for physical therapists to assist with identifying and treating patients with a mild-moderate traumatic brain injury.

DESCRIPTION
Development of clinical resource guide utilizing retrospective chart audit to identify areas of gaps in clinical practice.

• Preliminary Literature Review: A review of traumatic brain injury literature was performed to establish clinical definitions of acute traumatic brain injuries and current best practices in physical therapy.
• Preliminary Chart Review: A retrospective chart audit was performed on all patients admitted to a 900-bed level I trauma acute care hospital from December 2017 to December 2018 with an ICD-10 code of acute head injury. Of 249 charts reviewed, 30 met inclusion criteria. These 30 charts were reviewed to determine if physical therapists identified a traumatic brain injury in their assessment and/or assigned an appropriate Rancho Los Amigos Cognitive Functioning Level.
• Development of Resource Guide: Collaboration was led by two resource therapists in Stroke and Traumatic Brain Injury with assistance from acute care manager, Neuro Team Senior, Trauma/Ortho Team Senior and mid-level medical clinicians from Trauma and Orthopedic Services. The resource guide included guidelines for chart review, signs and symptoms consistent with acute mild TBI (m-TBI) behaviors, ideas to optimize initial evaluation and treatment sessions, resources for discharge, and recommendations for follow-up and communication with trauma and orthopedic teams.

SUMMARY OF USE
The staff physical therapists were educated on the resource guide use to integrate into clinical practice. The guide was intended to be used to meet the following objectives:

• Improve early recognition of m-TBIs in trauma patients
• Improve staff ability to perform differential diagnosis and identify behaviors inconsistent with baseline
• Increase collaboration with interdisciplinary team to advocate for additional imaging
• Improve patient discharge planning and treatment strategies
• Standardize physical therapy documentation and appropriate language to use for individuals with m-TBI
• Improve staff collaboration with TBI resource clinicians

IMPORTANCE TO MEMBERS
This resource guide was created to improve the management of m-TBIs in the acute care setting. Based on preliminary chart audits, clinicians showed difficulty in identifying signs and symptoms consistent with a m-TBI with or without the presence of a confirming diagnosis from the medical team. Development of this guide resulted in increased awareness of these patients to ensure best practice including use of evidence-based outcome measures and discharge recommendations. Future work is needed to research best practice for rehabilitation of acute m-TBI patients in the acute care setting and how to effectively transition patients to the next level of care.
Application of a Core Set of Outcome Measures to Patients in the Intensive Care Unit

PRESENTED BY
Mallory Anne Kargela

BACKGROUND/PURPOSE
A recently published clinical practice guideline (CPG) made recommendations surrounding outcome measure (OM) utilization for adults with neurologic dysfunction across the continuum of care. These OM’s include functional performance measures in the constructs of gait speed and distance, transfers, balance and balance confidence. There is also a growing body of literature supporting the use of standardized OM’s by rehabilitation professionals in the intensive care unit (ICU). However, many of these outcome measures have a ceiling effect, limiting their clinical utility outside of the ICU setting. Additional barriers limiting the use of functional OM’s in acute care settings include patient acuity, limited time, space and equipment, and perceived lack of value added by the clinician. There exists a need to utilize performance-based functional outcome measures in the ICU and acute care settings to monitor patient functional progress across the care continuum. This case study will demonstrate the application of both ICU specific OM’s and an OM CPG to patients in an ICU setting in a patient-centered and efficient manner.

DESCRIPTION
An ICU-based physical therapist with over 5 years of clinical experience applied the OM CPG to a variety of patients within the ICU over the course of three days. Patient diagnostic categories included: neurologic dysfunction, cardiopulmonary impairments and orthopedic trauma. The OM CPG was applied to each patient using standardized protocols adapted to the ICU setting. Standardized ICU specific OM’s were utilized per hospital protocol. The clinician participated in intentional reflection following each patient encounter on the impact and value of OM application for each patient scenario.

OUTCOMES
Standardized ICU OM’s were completed each day in addition to the application of the OM CPG as appropriate based on patient-specific goals and potential for progress. The physical therapist was able to efficiently apply ICU specific OM’s as well as the OM CPG without a change in productivity. Due to the generic nature of the measures within the CPG, the PT was able to apply the OM’s to patients in practice patterns other than neurologic impairment. Journaled reflection themes included improved job satisfaction, and improved decision making and documented clinical reasoning. The therapist also reported more opportunities for collaboration and shared decision making with the patient and interprofessional team. The therapist found that the commonly cited barriers of patient acuity, lack of time, space and equipment were easily addressed through appropriate planning and patient screening.

DISCUSSION
This therapist was able to evoke a practice behavior and attitude change within only 3 days of clinical practice. Although ICU specific OM’s are beneficial to capture progress within the ICU, they are often discontinued once the patient is medically stable to leave the ICU. There is an enhanced benefit to incorporating functional OM’s with less of a ceiling effect, to capture a patient’s function at their lowest point and track progress throughout the continuum of care. The ICU is a natural point to initiate OM utilization, as a significant amount of rehabilitation takes place in this setting. An opportunity for future research includes exploring the feasibility of applying the OM CPG in an ICU care setting.
Assessing University of California San Francisco Mobility Score as a Measure of ICU Patient Progress

PRESENTED BY
Mariano Wechsler

PURPOSE/HYPOTHESIS
No definition of ICU early mobilization exists. Current literature offers inconsistent descriptions of early mobilization interventions. The University of California San Francisco (UCSF) Mobility Score accurately describes early mobilization interventions, functions as a universal score utilized interprofessionally on all hospital floors, and guides discharge destination. Current ICU mobility scores are used exclusively in the ICU and only measure low level ambulation. This analysis of the UCSF Mobility score utilized on the floor demonstrates effectiveness in assessing both low and high functioning patients in the ICU, and in guiding discharge destination.

NUMBER OF SUBJECTS
506

MATERIALS/METHODS
Retrospective data collection of all patients receiving physical therapy in two UCSF Medical Surgical ICUs between February 1st, 2016 and July 31st, 2016 demonstrated that of the 506 patients, a majority received physical therapy evaluations within 48 hours of ICU admission. A team of five physical therapists utilized the UCSF Mobility Score to assess and track patient progress from time of evaluation to discharge.

RESULTS
Of 506 ICU patients, the mean length of ICU stay was 7.0 days (SD 12.4 days). Median Mobility Score was 8. 29.8% of patients were ventilated during their ICU stay. 66.1% achieved a score of 8, 9 or 10, indicating that over half of the patients ambulated in the ICU. Only 1.6% of patients scored a 0, indicating passive range of motion. 53.3% of patients were discharged home, and of those patients 86% were ambulatory in the ICU.

CONCLUSIONS
The UCSF Mobility Score’s wide spectrum of functional mobility assessment allows for both accurate description of early mobility intervention and use across different hospital floors. 66.1% of patients who ambulated in the ICU demonstrates that ambulation is an appropriate level intervention. Further research is required to validate the UCSF Mobility Score.

CLINICAL RELEVANCE
The UCSF Mobility Score describes functional capabilities among a wide spectrum of patients across the entire hospital. Scores based on levels of assist, like the ICU Mobility Scale, may not translate when patients leave the ICU. Furthermore, scales based on level of assist may inaccurately measure patients’ true physical ability because managing equipment attached to patients requires assistance. Since the UCSF Mobility Score measures patients who can ambulate any distance, it effectively guides discharge destination and is applicable both in the ICU and on the floor. The UCSF Mobility Score’s simple scoring criteria makes it usable by all members of the multidisciplinary teams across the entire hospital.
Increasing Acute Care Interprofessional Collaboration for Physical Therapy and Nursing Students through Immersive Patient Simulations

PRESENTED BY
Marilyn Moffat

PURPOSE/HYPOTHESIS
Future health practitioners prepared to understand and appreciate the contributions of team members will result in a less fragmented, stronger health system with improved health outcomes. This study was designed to build interprofessional practice of physical therapy and nursing students with patients in the acute care environment and to enhance mutual appreciation of roles through simulated case scenarios.

NUMBER OF SUBJECTS
60 (41 physical therapy and 19 nursing students)

MATERIALS/METHODS
Faculty from Physical Therapy and Nursing Programs developed five reality-based simulated interprofessional experiences (Sim-IPE) using acute care patient scenarios. These included: 1) patient with diabetes with a foot ulcer post flap and task was to get patient out of bed and to teach use of walker; 2) patient with a femoral neck fracture post-operative open reduction with internal fixation and task was to ambulate patient with crutches for first time; 3) weak patient and task was to ambulate while encountering episode of orthostatic hypotension; 4) critical patient (intubated manikin with many connections) and task was to transfer the patient from bed to stretcher for an off-unit test; and 5) patient who sustained a stroke with right sided hemiparesis and expressive aphasia and task was to evaluate and ambulate. A faculty guide was created including the learning objectives for each acute care patient scenario and expected interventions and observations. The Interprofessional Collaborative Competencies Attainment Survey (ICCAS) was used pre- and post-Sim-IPE evaluating experiences in the areas of communication, collaboration, roles and responsibilities, collaborative patient/family-centered approach, conflict management, and team functioning. A debriefing experience occurred at the end of each scenario followed by a large group debrief at the end.

RESULTS
Responses on the ICCAS pre-sim were high [average 5.93 (SD 0.77) for physical therapy and 6.04 (SD 1.16) for nursing]. Improvement from pre-to post-sim was noted in all six subscales with the largest on the collaboration subscale. Students indicated that their positive experiences were related to engagement in the safe, interactive nature of the acute care simulation scenarios and to benefits of working together and learning from each other.

CONCLUSION
Physical therapy and nursing students engaged in a Sim-IPE using acute care patient scenarios had improved ICCAS scores in all six subscales with the largest gains on the collaboration subscale.

CLINICAL RELEVANCE
Teamwork among health professionals is essential to improving patient service delivery in the acute care environment. Interprofessional initiatives are increasingly being used within health professions education. This sim day was relevant to accreditation bodies recognition and requirement of increasing interprofessional collaboration for students in the health professions.
Physical Therapy Practice in the Emergency Department: Results of a Three Year Study

PRESENTED BY
Mark Everett Magdaleno

BACKGROUND/PURPOSE
To improve patient outcomes and hospital efficiency through Physical Therapy interventions and expertise.

DESCRIPTION
Presenting the results of three years worth of data collection, of a full-time Physical Therapist (PT) in the Emergency Department (ED) at the University of Colorado Hospital.

SUMMARY OF USE
Our data shows a growing tally of avoided hospital admissions, increased rates of follow-up with out patient therapy referrals, reduced rates of recidivism in patients for the same complaint, stellar provider satisfaction with ED PT presence.

IMPORTANCE TO MEMBERS
ED PT is a growing opportunity for the profession and facilitates patient outcomes and better community health. Raising awareness of the positive outcomes associated with this program and collaborating with others to expand the practice of ED PT is vital to growth and development of the profession.
Physical Therapy Driven Guidelines Can Assist the Medical Team in Triaging Patients Appropriately in an Acute Care Observation Unit

PRESENTED BY
Mary G. Fischer

BACKGROUND/PURPOSE
To determine the safety and feasibility of ambulating patients with femoral Intra-aortic Balloon Pumps (IABP) using a tilt table protocol.

DESCRIPTION
The IABP is a temporary mechanical circulatory assist device that augments cardiac output and coronary blood flow. Used for patients in cardiogenic shock, the IABP is inserted via the femoral or axillary artery. Patients with femoral IABPs must not flex the affected hip greater than 30 degrees, relegating them to bedrest while awaiting a procedure such as heart transplant or coronary bypass. A critical care Physical Therapist (PT) developed The Ramsey Protocol to allow patients with femoral IABPs to safely transfer out of bed to a standing position using a tilt table. This protocol includes assessment of the patient’s pre-morbid function, current strength and medical stability. Patients who were ambulatory prior to IABP placement, demonstrated against gravity muscle strength, followed multi-step instructions and had stable vitals were considered candidates. The NYULH (New York University Langone-Health) protocol added: IABP augmentation parameter monitoring, comparison of the IABP waveform before and after mobilization, and tilt table follow during ambulation. Patients are dependently transferred in supine to the table which is gradually tilted from supine to 90 degrees with continual monitoring. If all factors are stable, the patient steps off the tilt table to ambulate with assistance. The patient then returns to the erect tilt table, is lowered to supine and returned to bed.

SUMMARY OF USE
Led by the PT department and partnering with critical care nursing, NYULH has safely mobilized 7 patients for 17 sessions of ambulation without complication. No changes in augmentation, waveform, or balloon position were noted. 5 of the 7 patients received heart transplants and progressed well post procedure. 2 patients remain with IABP awaiting a cardiac procedure. These patients would be on bedrest for more than 7 days if our team had not learned about the Ramsey protocol at CSM 2017. We plan to continue to use and refine our protocol to safely help other patients prepare for surgery and avoid bedrest.

IMPORTANCE TO MEMBERS
Select patients with femoral IABPs who meet criteria for the tilt table protocol can be safely mobilized and ambulated, avoiding the deleterious effects of bedrest (deconditioning, delirium, impaired ventilation) so often seen in this population.
Mobility As Medicine - Changing Hospital Culture

PRESENTED BY
Mary McLaughlin

BACKGROUND/PURPOSE
The purpose of this project is to describe the ongoing efforts of one acute care hospital in developing a culture of mobility. In a previous performance improvement project we had focused on reducing inappropriate referrals from the Observation Unit. In this report we expanded the scope of our earlier project to include two med/surg nursing units.

DESCRIPTION
In our acute care hospital we had implemented a process for nurses on the Observation Unit to complete the AM-PAC at the time of admission. If the patient scored between 19 and 24 and the doctor subsequently ordered PT, the doctor would receive a pop up message to reconsider the therapy consult. Based on some success with this project, we decided to roll this out to two inpatient med/surg units. At the time, we were aware of a version of the AM-PAC that used 5 questions, leaving out the question regarding stairs. We used this 5 question version of the AM-PAC for this project. Nurses were trained using an education module that was designed by Physical Therapy. Data was collected on two metrics. Percent of potential inappropriate cases (first PT score of 18, 19 or 20); and percent of potential mobilization by nursing (first PT score of 20). In June 2018 the percent of potential inappropriate cases was 19% and the percent of potential mobilization by nursing was 27%. These indicators dropped to a low of 13% and 23% respectively in December 2018. In evaluating this project the therapists felt that using the 5 question AM-PAC was not as valuable as the 6 question “6-Clicks” version of the AM-PAC. We re-educated the nursing staff and returned to the 6 question scale in May 2019. The next phase of this project is to roll out the AM-PAC to the remainder of the med/surg nursing units along with the pop up message to the doctor. We decided to use a nursing obtained score of 24/24 as the indicator to send a message to the doctor. In addition we are advancing one of the initial pilot units on to our next step in the Mobility as Medicine initiative. On this unit nurses will be completing the Johns Hopkins – Highest Level of Mobility (JH-HLM) tool twice a day and will be reporting daily in multidisciplinary rounds the level each patient achieves. Physicians and other care providers will be expected to encourage and even assist patients in reaching their mobility goal daily.

SUMMARY OF USE
Engaging nursing units in using a simple functional screening tool and providing feedback to doctors when ordering therapy can reduce the number of inappropriate referrals to PT and can identify patients who can potentially be mobilized by nursing.

IMPORTANCE TO MEMBERS
Acute care hospitals may be able to use a phased approach to implement a Mobility as Medicine program which could lead to improved utilization of the unique skills of the physical therapy staff.
Overground Body Weight Support Gait Training After Acute Stroke and It’s Effect on Functional Performance

PRESENTED BY
Melissa Lynn Cox

PURPOSE/HYPOTHESIS
A body weight support (BWS) system reduces risk for falls by increasing trunk stabilization and supporting the body weight through the lower extremities. This study was designed to investigate the effects of the Rifton TRAM for body weight support overground gait training and to determine if increased functional progress can be made, using BWS, in the early stages following acute ischemic stroke. I hypothesize that patients that use BWS in acute care will show significant functional improvement in their gait as compared to those who receive traditional physical therapy.

NUMBER OF SUBJECTS
28

MATERIALS/METHODS
28 total subjects were categorized into either the overground body weight support gait training (BWS) group utilizing the Rifton TRAM or the no body weight support (no-BWS) control group based upon the therapist’s preference and comfort level with the Rifton TRAM. 21 patients (11 females, 10 males, mean age 68 years old) were in the BWS group and 7 patient (5 females, 2 males, mean age of 57 years old) were in the no-BWS group. Inclusion criteria required that participants be diagnosed with an acute ischemic stroke, needed at least moderate assistance to stand, and be discharged to Acute Inpatient Rehabilitation at Carolinas Rehabilitation Hospital. All participants received traditional physical therapy treatment once discharged to the acute inpatient rehabilitation hospital. Gait distance traveled and gait assistance required was recorded and compared between groups in both the acute care and acute inpatient rehabilitation settings.

RESULTS
The BWS group was able to ambulate with the Rifton TRAM an average of 79.43 feet while admitted in acute care. Without the use of the Rifton TRAM, the BWS group produced an average gait distance of 38.81 feet with maximum assistance while the no-BWS group was only able to ambulate an average of 11.14 feet dependently upon discharge from acute care, a difference of 248%. At the culmination of their acute inpatient rehabilitation admission, the BWS group improved to ambulate an average of 235.38 feet with minimal assistance while the no-BWS group required moderate assistance to ambulate an average of 97.71 feet, a difference of 141%.

CONCLUSIONS
These findings are consistent with the hypothesis that after acute stroke, patients who utilize overground BWS gait training demonstrate improved gait distances and require lower levels of assistance in both acute care and after acute inpatient rehabilitation.

CLINICAL RELEVANCE
Stroke results in mobility impairments which leads to the disruption of static and dynamic balance, in turn affecting gait. This new disability creates loss of confidence and reduced motivation to participate in physical activity. The level of independence in which a patient is able to walk is a key factor of whether they return home following a stroke and has long term repercussions for the patient’s quality of life. The use of BWS gait training provides task specific training during the acute phase of rehabilitation. Re-establishing functional independence through gait training is a primary goal of patients and should be a major goal in our acute care rehabilitation efforts. Patients also anecdotally reported increased motivation to participate in more challenging tasks due to feeling safe and supported.
Mobility For All! A Multi-Faceted Approach to Propelling a Culture of Mobility

PRESENTED BY
Melissa Lika Bass

BACKGROUND/PURPOSE
Recent research has drawn attention to the detriment of immobility for all individuals but especially for those experiencing current hospitalizations. Increasing lengths of stay, readmission rates, falls, delirium and higher mortality rates have all been linked to reduced mobility among critically ill patients. To combat this, acute care physical therapists have transformed from a consultative service to treatment-focused care. This shift of practice has perpetuated increasingly large caseloads for therapists, highlighting a critical need for the burden of mobility to be shared by all. However, ambulation is often excluded from nursing cares despite being considered within their scope of practice. This is unfortunately due to initiatives surrounding patient falls, lack of collaboration leading to missed mobility opportunities, increasing patient acuity and the demands made on their time.

DESCRIPTION
Through three quality initiatives, we instituted a multi-faceted approach to change mobility culture on the Cardiovascular ICU, Cardiovascular medical unit and Surgical specialty and transplant unit by standardization of therapy services, reformation of workflow, improved methods of communication, and interdisciplinary collaboration. In order to meet the unique needs on each floor, we developed targeted nursing education, refined the roles of responsibility between ancillary services and worked to ingrain our service within the daily operations. By making fundamental changes to our standard of practice, we have optimized both hospital and patient-centered outcomes.

SUMMARY OF USE
There is no one-size-fits-all strategy to patient care. Because of this, we built multi-factorial protocols to target specific barriers that may be faced when propelling the culture of mobility within an institution. Each protocol addresses not only optimization of physical therapy services but methods to improve communication, innovation and collaboration to create an interdisciplinary approach. Through joint ownership of mobility we can work to elevate our standard of care.

IMPORTANCE TO MEMBERS
As part of a healthcare system emphasizing value care, it is important to challenge ourselves to provide the best services at the right times to meet the unique needs of every patient. Research has shown us that immobility has significant deleterious effects on a patient’s return to function, psyche, discharge disposition and overall long-term prognosis. It is essential that we learn to shoulder this burden together to provide optimal care and combat a culture of perceived immobility.
Patient Reported Outcome Measure of Quality of Life and Strength in Chronic Kidney Disease

PRESENTED BY
Mihal Lakhovsky

PURPOSE/HYPOTHESIS
Decline in muscle mass and strength is often present in patients with chronic kidney disease (CKD). Assessment of patient-reported outcome measures (PROMs) is essential in the management of this population for identifying those who are experiencing physical performance (PP) impairment. Reduced PP is common in people with CKD, but the relationship between PROMs and objective PP is not well understood. This study aims to examine relationships between self-reported quality of life (QOL) and objective strength measures in those with CKD.

NUMBER OF SUBJECTS
A total of 61 adults with CKD (28 males, 33 females) were included in this study (mean age= 63.9; SD=13.7).

MATERIALS/METHODS
Ambulatory adults with CKD, defined as an estimated glomerular filtration rate <60ml/min per 1.73m2 and not treated with dialysis, were recruited from the Muscle Mitochondrial Energetics and Dysfunction Study (NIH #5R01DK101509-04, #K23DK099442). A cross sectional study was conducted to examine the relationship between two PP measures and self-reported QOL on the Kidney Disease Quality of Life (KDQOL) Short Form, which contains subscales representing multiple domains of QOL. Physical and mental health composite scores were created as additional domains and were derived from the Short Form 12 questionnaire (SF-12). Physical measures consisted of handgrip strength (GS), adjusted for BMI, and a Five Times Sit to Stand Test (FTSTS). Partial correlations, adjusted for age and gender, between KDQOL subscales and strength measures were conducted. The strength of correlation coefficients was interpreted as follows: weak if <.10-.29, moderate if .30-.49, and strong if >.50.

RESULTS
In CKD participants, GS was positively associated (p < .05) with the following KDQOL subscales: symptoms (r =.34), effects of kidney disease (r =.37), sleep (r =.46), overall health (r =.36), physical functioning (r =.32), general health (r =.49), social function (r =.46), energy/fatigue (r =.43), and the SF-12 physical composite score (r =.31). FTSTS was negatively associated (p < .05) with overall health (r =.39), physical functioning (r=.42), emotional well-being (r =.35), and SF-12 physical composite scores (r =.42).

CONCLUSION
GS and lower extremity strength were moderately correlated with patient report on KDQOL subscales among persons with CKD.

CLINICAL RELEVANCE
CKD is increasing in both incidence and prevalence particularly due to the aging demographic. It is important for physical therapists (PT) to be aware of the deleterious effects of kidney disease on strength and function. These results indicate that GS and FTSTS are associated with the KDQOL domains of symptoms, effects of kidney disease, sleep, overall health, physical functioning, social function, energy/fatigue, and emotional well-being. Therefore, PTs should consider these subscales in the management of patients with CKD.
Knowledge, Skills and Behaviours Desirable for Physiotherapists in the Emergency Department: A Scoping Review

PRESENTED BY
Molly A. Hickey

PURPOSE/HYPOTHESIS
Acute Care physical therapists (PTs) in the United States (US) have long been practicing as secondary contact practitioners to a wide variety of patient types in the Emergency Department (ED). Efforts have been made to develop primary contact EDPT practices within the US to address patients with primary musculoskeletal injuries. While the role of PT in the ED has developed globally, its expansion appears incongruent. The aim of our study was to identify pathways taken by other countries to develop EDPT practice, evaluate key similarities/differences in education and practice in those countries, and to map out the desirable knowledge, skills, and behaviors of EDPTs in order to provide a more unified direction for the US to undertake the vital steps toward further development of EDPT practice.

MATERIALS/METHODS
A priori scoping protocol was first developed in order to outline the intended methodology and calibrate the researchers. Search strategies emphasized studies and documents from countries with established roles for EDPTs. Searches within 11 indexed databases were systematically conducted. 5 common search engines were used to evaluate the grey literature. Documents/studies were independently evaluated by pairs of blinded researchers, and data extraction and charting took place after consensus was reached on which should be included in the synthesis.

RESULTS
Of 207 potentially-relevant documents, 30 were retained. This included 7 qualitative studies, 6 consensus documents, 14 observational studies, and 3 grey literature pieces. Themes that emerged included the need for an evidence-based regulatory framework for an extended scope PT, need for continuous data collection on characteristics of PTs in the ED along with clinical outcomes of patients receiving PT treatment, a definitive set of expectations of the role of a PT on the ED team, and the ongoing legislative and professional barriers inhibiting the extended scope practitioner role of physiotherapists in the ED. There were no studies or documents that directly measured knowledge, skills, or behaviors desirable of EDPTs.

CONCLUSION
There is lack of agreement on a preferred pathway to EDPT practice even in countries that recognize the role. EDPT practitioners in these countries must have experience and advanced credentials in musculoskeletal PT. Given this, comparing outcomes and developing strategies in the US based primarily on studies conducted in these countries may be troublesome.

CLINICAL RELEVANCE
Many of the studies used to support development of specialized EDPT practices in the US have been conducted in other countries. The emphasis on advanced musculoskeletal practices does not address the types of complex consultations that are conducted by hospital-based acute care PTs on a regular basis. Future work should include a nationwide analysis of practice in order to create a unified plan toward developing educational and clinical pathways for EDPT practice that is inclusive of that conducted by acute care PT’s.
A Place for Pelvic Rehabilitation in the Acute Care Setting?

PRESENTED BY
Morgan Lea Kelly

BACKGROUND/PURPOSE
Incontinence is highly prevalent in the acute care setting, with 22.9% of patients suffering from urinary incontinence and 20% suffering from fecal incontinence. Several procedures and events that take place in acute care can lead to pelvic muscle injury and new onset of incontinence. This includes childbirth, prostatectomy, pelvic radiation therapy, and indwelling catheter use.

DESCRIPTION
Physical therapists can be trained to provide conservative management and prevention strategies for urinary and fecal incontinence resulting from pelvic muscle dysfunction. It is not known how early these interventions can safely begin after an acute change in status. Certain interventions such as patient education, visualization of pelvic muscle contractions, and early referral to outpatient providers are low risk and have the potential to mitigate some of the devastating effects of incontinence in acute care.

OUTCOMES
While some medical centers have begun incorporating physical therapists into their antepartum and postpartum wards, pelvic rehabilitation is not widely practiced in the hospital setting. Assessment and intervention techniques used by outpatient pelvic health specialists, such as internal examination, may not be appropriate or feasible in an acutely ill population. However, there may be low risk conservative strategies to retrain pelvic motor function and help patients regain or retain continence in acute care.

DISCUSSION
Further collaboration between outpatient pelvic health specialists, acute care physical therapists, and physicians may allow new exploration of the possible efficacy of early pelvic rehabilitation in a hospital setting.
Recognition of Pituitary Apoplexy As a Result of Physical Therapist Consultation in the Emergency Department

PRESENTED BY
Naveed Shan

BACKGROUND/PURPOSE
Physical therapists (PT) in the United States are trained to act as direct access providers providing evaluation and intervention for musculoskeletal (MSK) conditions. In the Emergency Department (ED) setting, PT management of MSK conditions has resulted in increased patient satisfaction levels, decreased patient length of stay, and reduced use of imaging resources without adverse effects. In addition, PT consultation may play an important role in screening for potentially life-threatening red flag pathologies. The purpose of this case report is to demonstrate how one PT in the ED was able to add value by screening for and identifying a serious underlying pathology in a patient presenting with a routine MSK condition.

DESCRIPTION
The patient was a 25-year-old male admitted to the ED with complaints of knee and wrist pain after falling while having his arm “caught” in an elevator door. The on-staff ED PT was consulted to address the patient’s wrist and knee pain. The following outcomes describe the examination performed by the PT and subsequent action taken.

OUTCOMES
Radiographs were ordered by the ED provider and showed no acute findings. A comprehensive MSK examination and initial treatment of the wrist and knee was performed by the PT. During the evaluation, the patient complained of intense head pain that had not been mentioned to the triage nurse or during the initial physician assessment. The patient did not recall if he had experienced head trauma during the fall but stated “I must have because I never get headaches, and this is the worst of my life.” The therapist suspected a possible concussion and performed a vestibular/ocular motor screening (VOMS) test. The patient demonstrated bi-directional, non-fatiguing horizontal nystagmus and increased symptoms (pain, headache, and nausea) with saccades and horizontal/vertical vestibular ocular reflex. The patient also displayed dilated pupils and reported double vision when trying to look at his phone. The therapist informed the physician of his findings and recommended further neurological examination and imaging to rule out significant injury. A computed tomography scan was ordered. The radiologist suspected a pituitary apoplexy which was later confirmed by the neurological radiologist, magnetic resonance imaging, and blood tests. The patient was immediately admitted to the neuro intensive care unit where he received high-dose corticosteroids. The patient’s condition stabilized, and he was discharged home two days after admission no longer reporting symptoms.

DISCUSSION
Pituitary apoplexy is an emergent condition in which hemorrhage or infarction of the pituitary gland may compress the optic nerves leading to visual disturbances, oculomotor palsy, and endocrine dysfunction. This case report demonstrates that a physical therapist employed in the emergency department possessed the training necessary to screen for and identify a serious pathology, which may have prevented progression to a potentially life-threatening condition.
The Feasibility of an Early Mobility Protocol for Patients POD 0 Transcatheter Mitral Valve Replacement

PRESENTED BY
Nicolette Ruffler

BACKGROUND/PURPOSE
NYULH Physical Therapy (PT) has successfully implemented a standardized mobility protocol for patients POD 0 Transcatheter Aortic Valve Replacement (TAVR). Transcatheter Mitral Valve (TMV) procedures, such as the Mitralclip, Valve-in-Valve, and Transcatheter Mitral Valve Replacement (TMVR), offer different challenges to early mobility. The purpose of this report is to explain the surgical approaches for TMV procedures, describe potential complications, and discuss the feasibility of a POD 0 mobility protocol.

DESCRIPTION
Mitral Regurgitation (MR), is the most common valvular disease impacting the aging population, resulting in impaired activity tolerance and leading to functional decline. 50% of patients with MR are too high-risk for open surgical procedures. TMV procedures are performed via a trans-septal or transapical approach. These methods are less invasive compared to open surgery and with less risk for bleeding at femoral site compared to TAVR due to venous access. However, the trans-septal approach creates risk for post-op tamponade while the transapical approach is associated with a higher degree of myocardial injury. Additionally, the Mitralclip is the only FDA approved device available for repair of MR, and TMVR devices are in clinical stages, only available through investigative trials with an authorized surgeon. Manufacturers have found it challenging to design a system for TMVR due to the anatomy of the MV and lack of arterial access. Clinical results thus far have demonstrated increased early and late mortality rates, impacting in-human investigations. An early mobility protocol must include precautions to reduce adverse events. There is limited literature on TMVR due to continued investigation of devices, however an interdisciplinary protocol has been implemented at NYULH.

SUMMARY OF USE
At NYULH, interdisciplinary communication is crucial to successful and safe early mobility. Mobility begins 2-3 hours post-op once hemostasis is established at the groin access site and hemodynamic stability is achieved. Serial vital signs and patient report are utilized to determine stability during incremental positional changes and gait. Depending on patient history, the goal is to ambulate a short distance with appropriate assist and wheelchair follow for safety. Special attention is focused on post-operative signs of tamponade and complete heart block. Although our sample size is limited, mobility on POD 0 has proved safe and feasible for 15 patients post TMVR. The average length of stay (LOS) for these patients was 2 versus 5 days for open procedures.

IMPORTANCE TO MEMBERS
The global TMVR market is expected to grow due to the aging of the population, rising healthcare costs and advances in technology. Although human clinical trials are ongoing, early mobility must be considered in this population to improve functional mobility and decrease hospital LOS. PT can lead the way in decreasing post-op complications and improving outcomes for this new, growing population. The PT must be knowledgeable of TMV surgical approaches and associated complications in order to provide the best quality care.
Does Early Mobilization in the ICU Improve Outcomes At >6 Months?

PRESENTED BY
Patricia A. Fay

PURPOSE/HYPOTHESIS
Patients on mechanical ventilation (MV) in the ICU present with long lasting limitations which can persist for greater than 5 years (Denehy, 2013). There is a need to identify long-term outcomes of early mobilization (EM) in the ICU for this population (Desai, 2011). The purpose of this literature review is to investigate the long-term effects of EM on QOL, cognitive and physical function for patients on MV at 6-months or greater.

NUMBER OF SUBJECTS
Mechanically ventilated adults (n=727) utilizing various protocols with a variety of medical diagnoses in diverse ICU settings located in the United States, Taiwan, Australia, the United Kingdom, and Switzerland.

MATERIALS/METHODS
The following databases were searched without any time restrictions: PubMed, CINAHL, clinicaltrials.gov, and PEDro. MeSH Terms, Boolean operators, and grey searching were utilized. Key terms included ICU, early mobilization, mechanical ventilation, and long term outcomes. Inclusion criteria: mechanical ventilation, ICU, outcomes ≥6-months, English language, and peer reviewed. Exclusion criteria: not mechanically ventilated, outcomes at < 6-months, and age <18.

RESULTS
Five studies, with 1b level of evidence on the Oxford CEBM scale, met the inclusion criteria. EM and usual care (UC) protocols were defined differently within each study, which introduced heterogeneity in treatment initiation, dosage, intensity, and quantity. Interventions were administered 1-2 times per day and ranged from 15-60 minutes, 5-7 days per week; two studies included outpatient therapy. The outcomes, assessed included a variety of QOL, and physical function measures such as the SF-36, 6MWT, and FIM. There were no statistically significant differences in long-term outcomes in four out of the five studies. One study demonstrated improved functional outcomes in the intervention group however, the UC did not include any mobilization.

CONCLUSION
There is limited evidence that EM for adult patients on MV improves long-term outcomes compared to UC at 6-months or greater. Factors impacting the execution and results of each study included small sample size, heterogeneity within and between groups, greater time allocated to the EM group, and dissimilarities in health care delivery systems. Additionally, time spent on MV and post-ICU setting varied. Challenges with achieving targeted treatment time and follow-up may have further influenced the outcome of each study. Areas for future research include determining the optimal threshold of dosage and intensity in homogenous populations and addressing the effects of rehab across the continuum of care. Overall, significant variations across these studies limit generalizability of this literature review.

CLINICAL RELEVANCE
Literature on long-term outcomes at 6-months or greater is limited and does not support EM as superior to UC for adult patients on mechanical ventilation in the ICU. Significant challenges exist in conducting this type of research. Cautious interpretation of results is warranted.
Effects of Minor Prosthetic Malalignment on Gait Parameters

PRESENTED BY
Patrick Leo Hauer

PURPOSE/HYPOTHESIS
Can GAITRite® be used to identify imposed prosthetic malalignment problems in a transtibial (TT) or transfemoral (TF) amputee’s self-selected walking speed activity. GAITRite® provides instantaneous data in relation to gait analysis and it has been found to be a valid and reliable tool for spatio-temporal gait parameters.

NUMBER OF SUBJECTS
Two subjects were used in this pilot study, one experienced ambulator utilized a transtibial prosthesis and one experienced ambulator a transfemoral prosthesis.

MATERIALS/METHODS
GAITRite® was used to assess the spatio-temporal gait parameters of the two subjects. The subjects initially ambulated with their preferred prosthetic adjustment setting and their preferred walking speed. A series of malalignment adjustments were made by the prosthetist involved with the two subjects’ prosthetic intervention. The participants then walked on the GAITRite® following each imposed malalignment and data was collected and compared to initial base-line data.

RESULTS
Significant differences for Participant A (TT prosthesis) were found with stance time and step length on the affected side for two of the malalignments. Significant differences for Participant B (TF prosthesis) were found with stance time on the affected and sound side for three of the malalignments. Participant B also had significant differences for step length on the affected side and sound side for five of the malalignment problems.

CONCLUSION
GAITRite® does demonstrate effectiveness in identifying gait abnormalities resulting from prosthetic malalignment and provides a visual representation of prosthetic gait patterns and associated spatio-temporal parameters. GAITRite® data results may also be used to identify gait asymmetries associated with musculoskeletal impairments resulting in increased fall risk.

CLINICAL RELEVANCE
GAITRite® can serve as a very useful evaluation tool when trying to establish optimal prosthetic alignment or to identify problems associated with prosthetic malalignment.
Distance Ambulated on Post-Op Day #0 and Earlier Hospital Discharge: Is There a Correlation?

PRESENTED BY
Patrick A. Tino

BACKGROUND/PURPOSE
Current literature supports that a physical therapy evaluation on post op day zero (POD 0) following a total joint replacement leads to a decreased hospital length of stay (LOS) without compromising patient outcomes. The purpose of this quality improvement project (QI) was to determine if there was a negative correlation between the distance ambulated during the physical therapy evaluation on (POD 0) following a total joint replacement, which includes a total knee (TKA) or a total hip (THA), and hospital length of stay (LOS). We anticipated that these findings would assist our rehab department in determining appropriate staffing on the joint center floors.

DESCRIPTION
This project was performed at Tampa General Hospital, a 1,000+ bed level 1 trauma center within its' joint center of excellence where over 2,000 total joint replacements are performed each year. Data including total distance ambulated in feet and patient discharge date was collected retrospectively over a 12-month period. This time frame spanned the period from June 2017 to May 2018 with the patient population as follows: THA (n = 302) and TKA (n=430). A Pearson’s correlation was used to ascertain whether a negative correlation existed between ambulation distance and hospital length of stay.

SUMMARY OF USE
When looking at ambulation distances individually for TKA patients (5 ft, 10 ft, 15 ft, etc.) there was little to no negative association between distance ambulated and discharge date (r= 0.25, N=430, p <.001). When looking at ambulation distances individually for THA patients (5 ft, 10 ft, 15 ft, etc.), there was a fair negative association between distance ambulated on POD 0 and discharge date ( r = -0.34, N = 302, p <.001). Interestingly, when ambulation distances for TKA patients are grouped together (50-75, 76-100 ft, 101-199 ft, etc.) there is a moderate to good negative association between distance ambulated on POD 0 and discharge date for TKA (r = -0.74, N=430). When ambulation distances are grouped together for THA (50-75, 76-100 ft, 101-199 ft, etc.) there is a moderate to good negative association between distances ambulated on POD 0 and discharge date for THA (r= -0.73, N= 304).

IMPORTANCE TO MEMBERS
The results of this retrospective review can be used to form a hypothesis to be tested in a randomized controlled trial. Limitations to our review include not documenting other variables affecting discharge: pain control, bowel/bladder return, age, and co-morbidities. Another limitation was that LOS was collected in days rather than hours in which the latter would have been more sensitive. With the recent introduction of Medicare Bundled Payment Care Initiative (BPCI) and Comprehensive Care for Joint Replacement (CJR), future research is needed to assist hospitals in anticipating staff needs to allow for efficient flow of patients without compromising quality of care.
Physical Therapist Led Learning on Diagnostic Lung Ultrasound Imaging Acquisition and Interpretation

PRESENTED BY
Phillip Arash Mirian

BACKGROUND/PURPOSE
The purpose of this platform is to shed light on the capacity of physical therapists to demonstrate competence of performing lung ultrasound imaging in the acute care setting.

DESCRIPTION
The American Physical Therapy Association’s vision for the year 2020 is to have all physical therapists licensed with a doctorate-level degree, thereby increasing consumer confidence and the prevalence of direct access. This necessitates autonomy and the ability to refer or perform diagnostic imaging. This is not a new concept as PT’s have, for decades, shown to have high diagnostic accuracy and effectively reduce the number of images ordered. The majority of these imaging privileges have been confined to the military and specifically for orthopedic pathologies. In 2006 the application of ultrasound (US) had been expanded by the APTA to three clinical categories, one of which being the diagnosis and monitoring of pathology (diagnostic US). This falls under the term point-of-care US. Furthermore, it has been shown the diagnostic accuracy of US to assess lung pathology outperforms the use of x-ray imaging and is in fact as accurate as the gold standard computed tomography. As of now, there is no standardized educational model for teaching lung US. A recent systematic review by Pietersen et al. had found the educational programs, teaching methods, participant assessments and outcomes were all too heterogeneous, and of low level of evidence. Despite this, it has been shown that competency to interpret lung ultrasound may be possible by non-physicians. However, not one study involved physical therapists.

SUMMARY OF USE
A physical therapist deemed competent in use of lung ultrasound will educate two physical therapists using the same educational model. Assessment of competence will be performed by a critical care pulmonologist with advanced proficiency in US. Education will consist of a didactic portion, supervised practice, mentored practice, and assessment of competence. The proficiency of the newly trained cohort will be presented.

IMPORTANCE TO MEMBERS
This platform will demonstrate the possibility of educating physical therapists on using lung ultrasound in an effort to improve assessment and intervention outside the musculoskeletal realm, and drive autonomy.
Cardiac Pacemakers – Decision Tree for Physical Therapists & Occupational Therapists (PT/OT)

PRESENTED BY
Rajashree S. Mondkar

BACKGROUND/PURPOSE
The purpose of this project was to develop Cardiac Pacemakers – Decision Tree for PT/OT that will provide guidelines for safe and consistent PT/OT management of patients with temporary and permanent cardiac pacemakers.

DESCRIPTION
An extensive literature review was completed by members of the Houston Methodist Hospital (HMH) Rehabilitation Services Evidence Based Practice and Research Committee. An initial document was developed and reviewed by PT/OT, and nurse practitioners. After several revisions, a final draft of the Cardiac Pacemaker – Decision Tree for PT/OT was accepted and was formally reviewed by a group of HMH physicians for additional recommendations and final approval.

SUMMARY OF USE
The Cardiac Pacemakers – Decision Tree for PT/OT was developed and adopted for use by the HMH Department of Rehabilitation Services in October 2018
• An educational session on the PM Decision Tree was held for staff to discuss and to address questions/concerns.
• Cardiac Pacemaker Decision Tree for PT/OT Trifold Brochure was made available for staff to use during clinical practice.
• Therapists now use the decision tree when treating patients with temporary and permanent PM
• Cardiac Pacemaker Decision Tree for PT/OT Trifold Brochure is included in new employee orientation package

IMPORTANCE TO MEMBERS
Cardiac Pacemakers – Decision Tree for Physical Therapists & Occupational Therapists (PT/OT) provides a standard of practice and confidence in clinical decision making. It shows improvement in safety and consistency in providing therapy for patient with different types of cardiac pacemakers.
Improving Access to Therapy in the Acute Hospital Setting

PRESENTED BY
Rebecca Fulton

BACKGROUND/PURPOSE
The purpose of this project was intended to improve access to PT/OT therapist resources in the acute care setting. Strategies included efforts to enhance the partnership with multi-disciplinary team members, improve PT/OT efficiency, and to redesign acute care therapy service delivery in order to decrease missed patient visits.

DESCRIPTION
The aim of this project was to analyze inefficiencies in physical and occupational therapy services delivery including identification of barriers, engagement of stakeholders, assessment of current practices and gaps, understanding staffing to workload gaps including potential recommendations for additional staff. These previous inefficiency and barriers were felt to increase hospital length of stay and lead to patient and provider dissatisfaction. Five teams were formed to analyze multiple areas of the practice.
A comprehensive analysis was completed with opportunities identified and worked across five broad categories:
• Understanding the demand for PT/OT services
• Identifying how best to supply the resources needed to meet patient needs
• Changing the culture and building a strong partnership with the multi-disciplinary team
• Improving the efficiency of PT/OT processes
• Implementing the correct metrics and monitoring system to allow informed, timely decisions on resource deployment

SUMMARY OF USE
Efficiency gains were noted with streamlined chart review process, redesigned patient assignment process and modifications to current rounding practices. Additional lessons learned came from face to face stakeholder interviews and establishment of ongoing annual meetings. Information from stakeholder meetings, external benchmarking, and pilot trials of embedded therapy models led to new Mayo Clinic therapy design and strategic plan.

IMPORTANCE TO MEMBERS
A systematic method to quantify therapy demand and supply was established and can be helpful in securing staffing resources. Barriers to efficiency were identified and minimized which can be emulated in other facilities. Missed visits markedly decreased through efficiency gains.
Clinical Decision-Making for a Patient with a New SCI Discharging to Jail:
A Case Report

PRESENTED BY
Rebecca Marie Hughes

BACKGROUND/PURPOSE
Physical Therapy (PT) treatment plans in the hospital are established in terms of the domains of the International Classification of Functioning, Disability and Health model. Consideration of these factors allows PTs to prioritize the plan of care (POC) and make appropriate discharge (DC) recommendations. Financial or legal constraints may result in patients discharging to a location other than that recommended by PT. When a patient must discharge to jail, the PT must adjust the POC to prepare the patient to be functional in this environment. There is currently no literature on the functional requirements or environmental barriers that exist in jails, particularly for people who require wheelchairs, making it difficult for PTs to know how to modify the POC for these patients. The purpose of this case study is to describe the clinical decision-making for the PT POC for a patient with a new SCI discharging from a hospital directly to jail.

DESCRIPTION
This case report describes the clinical decision-making process for the PT POC of a previously independent, adult male s/p fall from a third story apartment. He sustained a T12 chance fracture and was diagnosed with a T10 ASIA B SCI. His discharge setting would be jail. He discharged to jail 36 days after his initial PT evaluation and had a total of 33 PT sessions. Outcome measures tracked each session included level of independence in functional mobility, seated balance, and the Activity Measure for Post-Acute Care (AMPAC) 6-clicks score. Through discussions with the interdisciplinary team, the PT learned specific jail requirements and adjusted the POC accordingly. Interventions and patient education were modified to meet the constraints of the jail.

OUTCOMES
Bed mobility improved from moderate assist x2 to modified independent and transfers improved from maximal assist x2 to supervision. He progressed from Poor to Fair static and dynamic sitting balance. His AM-PAC score improved from 8 to 16. While he did not become independent in transfers, he was deemed ready for transfer to jail. DC assessment included a required jail-specific justification for his equipment, education materials, and recommendation for continued skilled rehabilitation when possible to address community reintegration.

DISCUSSION
When planning interventions for patients who will be discharging directly to jail, a knowledge of jail-specific regulations, environment, and functional requirements is necessary. The PT team may then use this information to develop a unique rehab plan targeted towards preparing patients to be functional and safe in the jail setting. In the case presented here, interdisciplinary discussions were essential for the PT team to understand the environment to which a patient with a T10 ASIA B SCI would be discharging and allowed them to develop a POC that would maximize his independence. In conclusion, problem-solving between members of the interdisciplinary team is integral to the creation and modification of the PT POC for patients with new SCIs discharging from hospital directly to jail.
The Utilization and Perceived Rationale for Assistive Equipment in Intensive Care Unit Physical Therapy

PRESENTED BY
Samantha Caitlin Henson

PURPOSE/HYPOTHESIS
Patients surviving critical illness develop persistent functional mobility impairments that significantly impact their quality of life. Early physical therapy interventions with emphasis on mobility are purported to mitigate the long-term sequela of critical illness. Recent observational studies demonstrate that the implementation of early mobility is very low in clinical practice. New equipment such as the tilting hospital beds and cycle ergometers provide clinicians with more opportunities to intervene. Given the novelty of these tools, it is unknown how physical therapists allocate and implement in the intensive care unit (ICU). The purpose of this study is to determine the usage rates of assistive technology in clinical practice and to describe the perceived rationale for implementation of these tools.

NUMBER OF SUBJECTS
241

MATERIALS/METHODS
An electronic survey (Qualtrics) with closed- and open-ended questions was distributed to physical therapists that work in the ICU via the Academy Acute Care Physical Therapy “PTinICU” email listerv, ICU Recovery Network, and marketed on Twitter. Descriptive statistics were used to assess usage rates and rationale trends. In addition, multivariate logistic regression was performed to determine any demographic or clinician-related variables predict usage of these devices.

RESULTS
241 clinicians with mean age of 39.4 ± 10 and 75% female completed the survey (81% USA, and 19% from 13 international countries). 75% of respondents (174/241) reporting using at least one type of assistive technology. The most common devices utilized were tilting hospital beds and tilt tables (n = 119, 51%), mobilization chair (n = 90, 39%), standing frames (n= 73, 32%), cycle ergometers (n = 69, 30%), and exercise platforms (n= 40, 17%). The most common rationale for using tilting as intervention was lower extremity and core strengthening (n = 26, 23%), as a bridge to early mobility (n= 20, 18%), and to improve alertness (n=10, 9%). The perceived rationales for the use of all devices are presented in Figure 1. The most common reason for not using assistive equipment in ICU physical therapy was time restraints, financial restraints, and clinical judgment does not warrant use of these tools. International physiotherapists were statistically more likely to utilize assistive equipment than physical therapist in the USA (OR 9.012, CI: 2.05-39.8, p = 0.003). In addition, clinicians that serve on early rehabilitation or mobility committees within in their hospital were more likely to implement these tools (OR 1.94, CI = 0.96-4.0, p = 0.06), although not statistically significant. Age, sex, physical therapy degree, completing additional training after terminal degree, ICU-type, and hospital-type had no relationship with using these tools.

CONCLUSION
Approximately three-fourths of ICU physical therapists completing this survey report using assistive technology in their clinical practice.

CLINICAL RELEVANCE
These data demonstrate that usage of these devices is high in practice warranting further studies on the dosage, intensity, and efficacy.
Early Rehab Quality Improvement Project Demonstrates Cost Savings While Validating Safe and Effective Physical and Occupational Therapy in a Critical Care Unit

**PRESENTED BY**
Sara Elizabeth Bawden

**PURPOSE/HYPOTHESIS**
Patients recovering from median sternotomy are often instructed to limit arm activity for up to 2 months while the sternal halves are healing. The intended goal is to reduce sternal complications such as dehiscence, infection, and instability. These sternal precautions commonly include limitations on unilateral and or bilateral shoulder range of motion (ROM) and upper extremity (UE) lifting to 10 lb or less. However, these limitations can drastically impair patient ability to be functionally independent. The purpose of this study was to examine the amount of pectoralis major (PM) muscle activation during UE unilateral vs bilateral and active vs resisted ROM.

**NUMBER OF SUBJECTS**
This study included 21 participants with normal pain-free UE ROM and the ability to ambulate 25' independently.

**MATERIALS/METHODS**
To measure PM muscle activation, surface electromyography (EMG) was used with bipolar electrodes. Bilateral data were summed, processed using root-mean-square, and expressed relative to maximal voluntary isometric contractions. Study participants performed UE active and resisted (10 lb) unilateral and bilateral ROM exercises including elbow flexion and shoulder abduction, flexion, horizontal adduction, and internal rotation. Additionally, study participants placed 10 lb of weight-bearing force with both UE using an instrumented walker which was used as a reference contraction. Statistical analyses included ANOVA and Tukey's HSD post-hoc tests (P < 0.05).

**RESULTS**
Mean PM muscle EMG activity during unilateral and bilateral AROM ranged from 4.3-11.7% and 5.3-18.1%, respectively. We found no significant differences in PM muscle EMG data for unilateral vs bilateral ROM both active and resisted. For all movements, PM muscle EMG was significantly greater during active than resisted ROM. PM muscle EMG activity during bilateral resisted movements was greatest during shoulder horizontal adduction (32.4%) and least during shoulder abduction (8.1%). It was also significantly greater during shoulder flexion, horizontal abduction, and internal rotation as compared to the reference contraction of 10 lb bilateral UE weight bearing (4.8%).

**CONCLUSION**
Study results indicate that some unweighted UE movements are performed with minimal PM muscle activation and therefore most likely do not produce large forces across the sternum. We also found that overall PM muscle activation was not significantly different during unilateral vs bilateral UE movements with no weight or 10 lb. Recruitment of the PM muscle was greater when lifting 10 lb of force as compared to unweighted movements for all UE movements analyzed. Although all UE activities evaluated in this study used a 10 lb weight very different PM muscle activation was seen suggesting that a uniform weight limitation may not be ideal for facilitating return to function.

**CLINICAL RELEVANCE**
Overall, our study findings suggest that standard sternal precautions are arbitrary and do not consistently limit force across the sternum. Based on this data both unilateral and bilateral unweighted UE movements through a full ROM should be allowed. Furthermore, the 10 lb lifting limit maybe overly restrictive when applied to elbow flexion, shoulder abduction, and shoulder flexion.
Increasing Awareness of Skin Health Management through Interdisciplinary Collaboration on an Acute Rehabilitation Unit

PRESENTED BY
Sarah Gross

BACKGROUND/PURPOSE
The purpose of this report is to describe the implementation of interdisciplinary skin rounds and strategies to improve team engagement in managing pressure injuries (PIs).

DESCRIPTION
Medically complex patients admitted to acute rehab are at a high risk for skin break down and PIs due to complex comorbidities, limited mobility, impaired cognition, and poor nutrition. PIs not only inhibit a person’s independence and quality of life, but also lead to increased cost of care, risk of infection, and prolonged length of stay. Addressing skin health management is an interdisciplinary endeavor; however, it can be challenging to delineate the unique collaboration between disciplines. An internal review of our unit’s skin care practices and PI prevention techniques revealed inconsistencies and challenges in decreased interdisciplinary communication and patient education. Our unit reestablished a Skin Rounds Team (SRT) to distinguish each team member’s role with PI prevention, to increase awareness of current skin injuries, to better identify those who are at risk, and to provide education on what interventions to prioritize.

SUMMARY OF USE
When admitted to acute rehab, patients are screened for existing pressure injuries and are assigned a Braden score, which identifies patients who are at risk of injury (<18). Our unit’s SRT consists of PT, OT, MD, Nutrition, Wound/Ostomy (W/O), and RN rounding weekly. Rounding protocol includes staging PIs by RN member, evaluating at risk patients, identifying current interventions, review of progress from previous assessment and recommendations for seating and positioning adaptations. Recommendations have included specialty W/C cushions, low-air loss mattresses, and turning and positioning guidelines. Use of medical photography in our EMR allows for consistent tracking of healing across all disciplines and allows the W/O team to be consulted on complex wounds. The SRT communicates weekly through written hand-off, shared information in interdisciplinary team rounds, and one to one meetings with staff. These methods improve the ability to incorporate skin management into daily practice. Implementing the SRT program has been beneficial in ensuring all team members are accountable in preventing PIs and addressing skin health.

IMPORTANCE TO MEMBERS
Research identifies that skin impairments can negatively affect a person’s physical and psychological well-being. This improved attention to skin management assists in eliminating the occurrence and risk of acquired PIs on the unit. By integrating skin health into all aspects of patient care, it allows for enhanced awareness across all disciplines and prevention of our at risk population. In order to accomplish sufficient skin management, it is imperative that all members of the multidisciplinary rehab team are involved and accountable for their role in PI prevention and treatment.
Can AM-PAC “6-Clicks” Scores Shed New Light on 30-Day Readmission Prevention Interventions?

PRESENTED BY
Scott McKay Arnold

PURPOSE/HYPOTHESIS
Unplanned hospital readmission within 30-days following patient discharge impacts outcomes and increases resource utilization, as well as associated healthcare costs. Impaired inpatient functional status has been shown to increase the risk for hospital readmission. Physical therapy (PT) and occupational therapy (OT) providers in our hospitals routinely capture functional mobility and self-care ability scores upon every visit for inpatients utilizing a well-described, standardized, and validated assessment tool. Our aim was to determine if this functional status data enhanced our identification of patients at higher risk for readmission.

NUMBER OF SUBJECTS
26,629 admissions of patients discharged from Mayo Clinic Hospitals in Jacksonville, Florida and Phoenix, Arizona between January 1, 2016 and December 31, 2017 who received standardized functional assessment scores during their hospital stays.

MATERIALS/METHODS
Retrospective analysis of Activity Measure for Post Acute Care™ (AM-PAC) “6-Clicks” Basic Mobility (BM) and/or Daily Activity (DA) data was made to determine any association between inpatient functional status and subsequent 30-day re-hospitalization. Associations of “6-Clicks” scores with readmission were assessed with t-tests and logistic regression models adjusted for patient age, sex and number of comorbid (Elixhauser) conditions. Separate models were also examined by discharge destination (e.g., home, skilled nursing facility, etc.). A final model included the initial “6-Clicks” scores with a readmission prediction measure (modified LACE) to identify if BM or DA measures improved prediction.

RESULTS
55,524 inpatient stays occurred during the 2 year period: 26,629 (47.9%) of patient stays had either BM or DA “6-Clicks” assessments. 25,628 (46.1%) patients had BM assessments; 17,702 (31.8%) patients had DA assessments. Throughout the two-year review, 3,964 (14.9%) patients with “6-Clicks” scores were readmitted within 30 days. Unadjusted BM and DA scores were significantly lower for readmitted patients. Furthermore, among those with at least 2 BM assessments, patients who were readmitted had significantly smaller improvements in BM scores (mean 2.0 point improvement vs. 2.3 point improvement, p=0.002). Following adjusted analysis, patients with lower DA scores were more likely to be readmitted. When looking within specific discharge dispositions, lower initial DA scores were associated with more readmissions for patients sent home without additional support.

CONCLUSION
AM-PAC “6-Clicks” scores help identify who is at higher risk of readmission among patients being sent home with or without home health care. When utilized in tested prediction models, the score did not appear to strengthen readmission predictions from other discharge destinations.

CLINICAL RELEVANCE
The AM-PAC “6-Clicks” functional assessment scores highlight the importance of functional status in predicting readmission. In addition, the scores may help assist clinicians focus on pre-discharge rehabilitation intervention strategies to reduce the likelihood of hospital readmission among identified at-risk patients.
Continuous Scale-Physical Functional Performance Test Improvements in Transfemoral Amputee Following Sound Side Knee Arthroplasty

PRESENTED BY
Scott Michael Love

BACKGROUND/PURPOSE
Due to abnormal gait patterns in patients with lower extremity amputation (LEA), it has been hypothesized that this population experiences early onset of osteoarthritis (OA) of sound side limb causing pain and impaired function which may lead to surgical intervention. The purpose of this case report is to present a transfemoral LEA who received sound limb total knee arthroplasty (TKA). Just prior to and immediately following surgery, there is a time period where a person with LEA can experience a decrease in physical functional performance and become dependent on assistance for daily activities.

DESCRIPTION
The patient was a 56-year-old male who contracted necrotizing fasciitis in the right knee that resulted in a transfemoral LEA three years later. The onset of OA of the sound side knee was due to abnormal gait patterns and increased stresses. A TKA was performed to improve function and decrease pain. The Continuous Scale-Physical Functional Performance-10 (CS-PFP-10) test consists of 10 standardized daily living tasks that evaluate overall physical functional performance and performance in five individual functional domains: upper body strength (UBS), upper body flexibility (UBF), lower body strength (LBS), balance and coordination (BAL), and endurance (END). Physical Functional Performance (PFP) Total and individual domain scores of 0-47 indicates: Increased likelihood of functional dependence. Scores of 48-56 indicates: Likely at risk of losing independence, while scores of 57-100 indicate: Independent function likely.

OUTCOMES
CS-PFP-10 test was administered one week preoperative as well as one, three, six and twelve-month post-operative TKA. The patient received skilled physical therapy and progressed to a supervised wellness program focusing on strength, balance, coordination and endurance. The skilled physical therapy lasted six months and supervised wellness up to one-year post surgery. One week preoperatively, three of five domains were at Increased likelihood of functional dependence, while two domains and PFP total were scored at the low end of at risk of losing independence. Following the one year of skilled physical therapy and supervised wellness program, all five domain scores as well as the total score were at the 70-95 range.

DISCUSSION
Due to the abnormal stresses placed on the sound limb during gait activities, a patient with a transfemoral amputation may develop early onset sound side OA. There is a dearth of evidence on unilateral LEA confounded by sound side TKA. There is a need for research in this population due to an increase in unilateral LEA and the need to develop a standard of care for optimal outcomes. A motivated patient with a LEA and sound side TKA can benefit from skilled physical therapy in terms of potentially attaining maximal functional independence with ADLs. Physical therapy should focus on rehabilitation for the TKA, but also must incorporate core strengthening, balance, coordination and endurance in order to improve physical functional performance to maintain independence.
CYCLE Ergometry: Safety, Feasibility, and Effectiveness in Mechanically Ventilated Patients: A Systematic Review

PRESENTED BY
Sheena O'Shaughnessy MacFarlane

PURPOSE/HYPOTHESIS
Early mobilization (EM) by a Physical Therapist has shown promising results for patients receiving mechanical ventilation (MV) and in the intensive care unit (ICU). In-bed cycle ergometry, as an EM intervention, has the potential to mobilize patients sooner than other EM interventions; it lacks the barriers of out-of-bed mobilization such as lines, tubes, and level of consciousness. The purpose of this study was to examine the safety, feasibility, and effectiveness of cycle ergometry as an EM intervention for patients receiving MV in the ICU.

MATERIALS/METHODS
OVID, Academic Search Premier on EBSCOhost, and PubMed databases were searched using keywords: cycle ergometry OR cycle ergometer AND mechanical ventilation AND physical therapy. To supplement, a manual search of the reference lists was conducted. Inclusion criteria consisted of: randomized controlled trials (RCT) and cohort studies, > 75% of patients had MV for a minimum of 24 hours, 100% of intervention group patients received in-bed cycle ergometry, and studies published between 2009 and the search date. Utilizing the PEDro Scale for RCT and the Newcastle-Ottawa Scale (NOS) for cohort studies, two reviewers independently assessed each study for methodological quality and threats to internal validity. Discrepancies were resolved by a third team member.

RESULTS
Ten articles met the criteria and were included in this systematic review. Based on PEDro and NOS scale scoring there were generally low to moderate threats to internal validity. Sample sizes ranged from 10-312 patients in the ICU, with initiation of cycle ergometry within 1-5 days after ICU admission and/or receiving MV. Cycle ergometry parameters varied between studies. Safety was quantified via criteria for termination for exercise and adverse events which ranged from 0% to 10.5%. Feasibility was quantified via consent rate (81.4% to 100%), median duration of cycle ergometry intervention, and passive mode versus active participation in cycle ergometry. Although consent rates and participation were high, there was a high attrition rate in some studies mostly due to patient mortality secondary to their precarious medical conditions. Among the articles measuring effectiveness of cycle ergometry, statistical significant improvements were found for a variety of variables including: 6-minute walk distance, Short Form Survey-36, Physical Function in Intensive Care Test, thigh circumference, and peripheral strength.

CONCLUSION
This study demonstrated that in-bed cycle ergometry, either passive or active, is safe and feasible, and has preliminary evidence of effectiveness as an EM intervention for ICU patients on MV. Future research should consider ways to limit the impact of confounding variables and complete studies that compare cycle ergometry protocols to determine the effectiveness of specific parameters.

CLINICAL RELEVANCE
These findings indicate that physical therapists should advocate for cycle ergometry as an EM intervention for MV patients in an acute care setting; it allows for more immediate utilization in critically ill patients.
Report is a Simple Measure of Upper Extremity Strength Indicative of Post-Acute Discharge Destination after Stroke?  

PRESENTED BY  
Siobhan B. Pfaff  

PURPOSE/HYPOTHESIS  
Stroke is the leading long-term disability in the United States (US) and the prevalence is projected to increase over the next twenty years. Discharge disposition from acute hospitalization post-stroke has been shown to be a significant predictor of disability at three months post-stroke. Several factors impact discharge disposition including functional ability, cognitive status, age, sex and support available. A combined shoulder abduction/finger extension (SAFE) strength score is a simple measure available to physical therapists (PTs) that has been shown to strongly predict functional recovery of the paretic upper extremity six months post-stroke onset. The SAFE score may offer a fast, reliable, valid measure to aid clinicians in discharge recommendation. The primary objectives of this initial study were to retrospectively evaluate (1) post-acute discharge destination recommended by PT and (2) if SAFE scores were correlated with discharge destination after stroke.

NUMBER OF SUBJECTS  
150  

MATERIALS/METHODS  
Medical charts for patients admitted to Emory University Hospital with signs and symptoms of stroke between fiscal years 2015-2018 (N=450) were retrospectively reviewed by the study team. Patients met the following inclusion criteria: >18 years old, first or recurrent, ischemic or hemorrhagic stroke, new muscular weakness at onset or after the time of current stroke. Patients were excluded from the study if the stroke was caused by traumatic head injury, cerebellar stroke, or transient ischemic attack. Of the charts reviewed, 150 were included for analysis.

RESULTS  
In the study cohort, there were 19.3% hemorrhagic, 80.7% ischemic strokes, 77 females, 73 males with a mean age of 68.2y (standard deviation: 15.2y). Discharge destination was home in 35.3%, inpatient rehabilitation (acute: 9.3%, subacute: 22%) in 51.3%, and long-term care or hospice in 13.3% of the cohort. PT recommended home for 31.5%, inpatient rehabilitation (acute- 46.8%, subacute- 20.7%) for 67.6%, and long term care for 0.9% of the cohort. SAFE scores were extracted for 114 patients and collected, on average, 2.6 days post-admission. Higher SAFE scores were associated with more independent discharge destination.

CONCLUSION  
Despite ease of collection and potential to inform discharge planning, documented objective evaluation of UE strength was observed in only 76% of charts reviewed. Further, objective evaluation of UE strength by a PT was observed less than 15% of the time. When a SAFE score was available, it was associated with discharge destination extending previous work showing SAFE scores predict functional recovery of the paretic UE. Prospective studies are required to investigate the utility of the SAFE score to inform post-acute discharge planning.

DISCUSSION  
Simple measures such as the SAFE score may provide important information to inform clinical decision-making to improve functional recovery after stroke.
Hospital Patient Ability in Activities of Daily Living Predicts Value Based Outcomes

PRESENTED BY
Stephanie Rosen

PURPOSE/HYPOTHESIS
Illness and inactivity in the hospital frequently leads to disability that can reduce quality of life and increase costs. Early identification of people with limitations in activities of daily living (ADL) who are at risk for poor outcomes such as increased length of stay, hospital acquired conditions (ie, falls and pressure injuries), and discharge away from home can facilitate appropriate intervention. The Activity Measure for Post-Acute Care Inpatient Activity Short Form (AM-PAC IASF), a reliable and valid tool to measure ADL limitations, is scored at admission for all patients in our hospital. The purpose of this study was to determine the relationship between admission AM-PAC IASF and length of stay, hospital acquired conditions (ie, falls and pressure injuries), and discharge disposition.

NUMBER OF SUBJECTS
1899

MATERIALS/METHODS
In this retrospective cohort study, we gathered data from the electronic medical records of patients at The John Hopkins Hospital. The AM-PAC IASF scale score (higher is better), scored within 48 hours of hospital admission, was the independent variable in multivariate regression models for each of the four dependent variables: length of stay, hospital acquired conditions (ie, falls and pressure injuries), and discharge to facility. Models were also adjusted by patient demographic variables including gender, race, and payor.

RESULTS
Our sample included 1039 males and 860 females with a mean age of 54 years (range of 16-95 years). The odds of a patient being in the highest quartile (≥ 8 days) for LOS was 1.91 (p<0.001) times higher for every 10-point decrease in AM-PAC IASF. For every 10-point decrease in AM-PAC IASF the odds of having an injurious fall was 1.66 (p<0.001) times higher. The odds of acquiring a pressure injury (PI) during hospitalization were 2.72 (p<0.001) times higher for every 10-point decrease in AM-PAC IASF. Finally, for every 10-point decrease in AM-PAC IASF the odds were 3.02 (p<0.001) times higher for patients to be discharged to a facility instead of home.

CONCLUSIONS
Lower ability in ADL’s at admission was significantly associated with poor outcomes.

CLINICAL RELEVANCE
Early AM-PAC IASF scores could be used by providers to identify at risk patients and design treatment plans to address those risks including early planning for discharge. This study supports using the AM-PAC IASF to aid the health care team in making evidence-based decisions about patient’s care.
Physical Therapy Treatment of Cerebrovascular Accident Resulting in Hemiballism: A Case Study

PRESENTED BY
Stephanie Lynn Schifferdecker

BACKGROUND/PURPOSE
Hemiballism is the hyperkinetic, or ballistic, and unintentional movement of a limb. It is rare but can result after cerebrovascular events affecting the contralateral basal ganglia. There is very little research into Physical Therapy treatment of patients with hemiballism. The purpose of this case review is to outline the interventions attempted and their results in the treatment of a patient with hemiballism.

DESCRIPTION
A 68 year old male was admitted to the hospital for treatment after suffering a hemorrhagic cerebrovascular accident affecting the right thalamus. The patient began having ballistic movements primarily in his left arm that turned into hemiballism. There was also hemiballismus noted in his trunk and left leg but to a lesser degree. Standard Physical Therapy mobility and transfers as well as treatments to help reduce the hemiballism were initiated within 24 hours of arrival at the hospital.

OUTCOMES
Treatments typically found to aid in stroke recovery and treatments to increase sensation and proprioceptive feedback to the brain were attempted to reduce hemiballism. These interventions included: joint compressions, weight bearing, percussions to the affected limb, compression garments, weighting the limb, visualization of the arm moving slowly and as the patient wanted, tasks focusing on bilateral upper extremities. Some interventions were attempted once, some multiple times, and sometimes in combination with other treatments depending on perceived helpfulness and any improvements noted. By the time of discharge from the hospital, mobility was focused on standing transfers and had not progressed to gait training. The patient required the assistance of two people to transfer which was made difficult for the assistant on the ballistic side. The ballistic movements noted in the patient’s trunk and left leg were controlled during mobility by the patient’s concentration on movement or by weight bearing. Physical Therapy treatment was limited by the patient’s ability to follow commands and level of alertness due to varying medications, delirium, and metabolic encephalopathy that had developed and subsided during his treatment. There were no adverse events related to any of the Physical Therapy interventions.

DISCUSSION
The amplitude of movements decreased with use of compression garments, and movements would stop for a short period of time with guided imagery visualizations. Visualizing movements and compression garments may be useful tools to help treat patients with hemiballism, though more research needs to be done to know if they will be as helpful in other patients suffering with hemiballism.
Physical Therapy Screening for Patient with Non-Musculoskeletal Hip Pain in the ACUTE Care Setting

PRESENTED BY
Stephen Thompson

BACKGROUND/PURPOSE
Physical therapists in the acute care setting evaluate patients with the mindset of determining discharge plans and performing mobility-based safety evaluations. When presented with a common problem different from the referral diagnosis, the physical therapist must use his or her knowledge of palpation, range of motion (ROM), special tests, and outcome tools to evaluate the patient and identify possible sources of their pain. The purpose of this case report is to describe a patient’s atypical presentation of hip pain, examine associated differential diagnoses, describe the subsequent events leading to her final diagnosis, and demonstrate the importance of screening patients beyond their diagnosis in the acute care setting.

DESCRIPTION
A 69-year-old female was referred to physical therapy for a mobility assessment and discharge recommendations but during the initial evaluation, described 10/10 hip pain that had gone undocumented thus far. The physical therapist evaluated the patient using ROM, strength, palpation, and functional mobility. Current evidence for evaluation of hip pain was utilized to examine differential diagnoses that aligned with the patient’s symptoms. The chain of events involving the subsequent referrals and imaging that led to her final diagnosis is then described.

OUTCOMES
An initial CT was positive for lytic lesions involving the root of the right superior pubic ramus (2.4 x 2.6 cm) and posterior left iliac spine with associated pathologic fractures. A subsequent CT-guided biopsy confirmed the diagnosis of metastatic adenocarcinoma consistent with pulmonary origin.

Discussion: It is uncommon for hip pain to be caused by sinister pathologies. In this case, a physical therapist identified “red flag” symptoms during initial evaluation and referred to other providers for further investigation. Determining the need for referral and communicating concisely and effectively to the appropriate provider in the hospital are invaluable skills. The skilled evaluation and timely referral described in this case led to the discovery of a serious pathology that had gone undiagnosed.
Accuracy of Gait Speed Prediction in Patients Receiving Inpatient Rehabilitation

PRESENTED BY
Suzanne Marie Trojanowski

PURPOSE/HYPOTHESIS
Patients admitted to inpatient rehabilitation often are not involved in clinical decision making or goal setting during their course of care. Gait speed is a widely used test that is easy to perform. Gait speed can further assist in clinical decision making by providing objective data about a patient’s ability to be a community or household ambulatory. Feedback on performance has been shown to have a positive impact on outcomes. The purpose of this study is to assess how well patients are able to predict their gait speed performance. This is a subset of data which is part of a larger study examining patient prediction on outcomes.

NUMBER OF SUBJECTS
Fifty-four subjects were recruited from a convenience sample of patients admitted to one inpatient rehabilitation unit and 50 completed the study. The mean age of subjects was 61.1 (SD 15.4). Fifty two percent of subjects were female (n=26) and 48% were male (n=48). Ninety-eight percent of subjects were African-American (n=49) and 2% was Caucasian (n=1). Subjects represented a wide variety of diagnoses with the two largest groups being stroke (46%, n=23) and miscellaneous/debility (12%, n=6).

MATERIALS/METHODS
Subjects were recruited from patients admitted to a hospital-based inpatient rehabilitation unit. Once enrolled, subjects performed the 10 meter walk test (10MWT) to determine baseline gait speed. In subsequent treatment sessions, subjects were reminded what their previous performance on the 10MWT was and then asked to predict what their performance would be on that day’s 10MWT. Subjects performed the 10MWT and were given feedback on the accuracy of that day’s performance. This was repeated at each treatment session for the remainder of the subject’s length of stay.

RESULTS
Gait speed accuracy was calculated by taking actual gait speed minus predicted gait speed. Negative accuracy results represent a subject walking slower than predicted; positive accuracy represents a subject walking faster than predicted. The number of opportunities to predict gait speed ranged from 1 to 17 sessions. When taking the first six opportunities to predict gait speed, the mean accuracy decreased from 0.111 on day one to 0.012 on day six. See table for details. (table has been removed).

CONCLUSIONS
In general, subjects ambulated faster than they predicted. As the number of treatment sessions increased and subjects received more feedback, the accuracy of their gait speed prediction improved. Previously reported minimally clinically important difference of the 10MWT in a geriatric population is 0.05 m/s (small meaningful change) and 0.13 m/s (substantial meaningful change).

CLINICAL RELEVANCE
Gait speed is currently used clinically to determine a patient’s ambulation category. Adding gait speed prediction will allow patients to engage actively in their care and perhaps improve outcomes.
Physical Therapy After Amputation in Community-Dwelling Older Adults

PRESENTED BY
Szu-Ping Lee

PURPOSE/HYPOTHESIS
To investigate the utilization of physical therapy in older adults after lower extremity amputation. The secondary objective was to examine the associations between physical therapy attendance, fear of falling avoidance behavior, self-perceived prosthetic mobility, and mental well-being.

NUMBER OF SUBJECTS
64

MATERIALS/METHODS
Community-dwelling older adults with amputation were recruited and individually interviewed. The data collection consisted of four surveys (Physical Therapy after Amputation Perception Survey, Short-Form Health Survey [SF-36v2], Prosthetic Evaluation Questionnaire [PEQ, group 4], and Fear of Falling Avoidance Behavior Questionnaire [FFABQ]). Participant demographic characteristics were analyzed using descriptive statistics. Participant comments were qualitatively categorized. Bivariate correlations were used to examine the associations between perceptions of physical therapy (10-point visual analog scale) and fear of falling avoidance behavior score as well as mental health and well-being (SF-36v2 mental health subscale). Bivariate correlations were also used to analyze the associations between participant perception of PT and the patient-perceived proficiency to perform functional motor activities.

RESULTS
Of the 64 participants who completed the study, the mean age was 66.9 (10.7) years with 47 males and 17 females. After amputation, 79.4% of the participants received physical therapy, of them 84% expressed a positive experience. The main reasons for the positive perceptions of physical therapy included achieving beneficial outcomes and socioemotional support. The main negative comments included poor outcomes, pain, socioemotional conflict, and external barriers such as difficulty in transportation and insurance. Significant positive correlations were observed between perception of physical therapy and selected prosthetic mobility items (i.e. walking on the street and shower/bathe; p=0.04 and 0.03, respectively). Perception of physical therapy and FFABQ were not significantly correlated (p=0.355). Significant negative correlation between mental well-being score and FFABQ score were observed (r=-0.578, p<0.001).

CONCLUSIONS
A high percentage of community-dwelling older adults received physical therapy after amputation, and most of them expressed having positive experience. Positive perception of physical therapy is related to higher proficiency in walking outdoors and showering/bathing. Lower mental well-being is associated with increased fear of falling avoidance.

CLINICAL RELEVANCE
While community-dwelling older adults with limb loss generally expressed positive perception to physical therapy after their amputation, patient goal-directed intervention may be needed to achieve desirable outcome and to improve selected activity function. Physical therapists should be aware of the connection between mental health issues and fear of falling avoidance behavior in this population.
Point of Care Lung Ultrasound in the ICU: A Knowledge Assessment

PRESENTED BY
Teresa Ann Parziale

PURPOSE/HYPOTHESIS
In 2016, the American Physical Therapy Association developed the Frontiers in Rehabilitation, Science, and Technology (FiRST) Council to support advancements in clinical practice and innovation. One of the five components of this council is evaluating the physical therapists role in imaging, which includes ultrasonography. As a diagnostic tool, physical therapists can utilize the information gained from a standard evaluation and examination in conjunction with ultrasound imaging to enhance informed clinical decision making. The purpose of this study is to determine the current depth of knowledge and belief of the role of ultrasonography of physical therapists in the acute care setting.

NUMBER OF SUBJECTS
95

MATERIALS/METHODS
Ninety-five licensed acute care physical therapists surveyed in the NYC Metropolitan area to identify foundational knowledge and views on imaging overall with a further focus in diagnostic ultrasound in the acute care setting. Additionally, the survey identified views on imaging in relation to the American Physical Therapy Association Vision 2020. The physical therapists surveyed were all employees of Northwell Health System Hospitals located in Manhattan, Staten Island, Queens, Long Island and Westchester County.

RESULTS
The results of this study demonstrated that there is currently no use of diagnostic ultrasound in the acute care setting within the Northwell Health System surveyed therapists. A majority of therapists believed that integrating imaging would be beneficial in patient care and necessary in continuing to pursue the vision of autonomous practice as presented by the APTA. Most PTs with an entry level Doctorate of Physical Therapy (DPT) felt they had received subpar education on the applicability of imaging within the acute care setting. The majority of PTs surveyed expressed the desire for additional training in both the foundational aspects of imaging and technical training on point of care lung ultrasound (POCUS).

CONCLUSIONS
This study demonstrates the need for additional physical therapy education on imaging as well as the technical use of point of care lung ultrasonography. Due to the sample limitation of Northwell Employed Physical Therapists in the NYC Metropolitan region, the results are generalized to this specific demographic.

CLINICAL RELEVANCE
As physical therapists continue towards autonomous evidence based practice, diagnostic imaging may play a role in guiding intervention in critically ill patients. To effectively realize Vision 2020 and the APTA's Strategic Plan, further examination of the use of imaging is of strong value.
Interdisciplinary Screening Tool for Acute Physical and Occupational Therapy

PRESENTED BY
Thomas M. Van Towle

PURPOSE/HYPOTHESIS
Both physical and occupational therapy at the University of Kansas Hospital are consulted on approximately 50% of inpatients on the weekday electronic medical record (EMR) census, many of whom are determined to have no acute therapy needs. In attempts to reduce non-value-added therapy evaluations, an interdisciplinary team of physical and occupational therapists developed a collaborative screening tool focusing on both mobility and activities of daily living. Upon completion by one service, this tool allowed therapists to share information gathered from the in-person visit with the other service. Based on the results of this initial screening, the other service could choose to complete a “screen” defined here as an in-person visit for which an evaluation was deemed unnecessary by using a previously-created standardized tool, or a “quick screen”, in which it was determined that neither an in-person screening nor evaluation was required. We hypothesized that this screening tool would decrease the overuse and duplication of services.

NUMBER OF SUBJECTS
Acute care physical and occupational therapists at the University of Kansas Hospital.

MATERIALS/METHODS
All acute care physical and occupational therapists were educated on the use of the tool. Baseline data was retrospectively collected from the EMR for two months, September 2017 and April 2018. Following implementation, data related to consults and evaluation CPT codes was retrospectively collected for 26,804 therapy consults from September 2018–March 2019. These consults were compared to an EMR charge report to determine the number of consults that had evaluation CPT codes completed in the EMR. In addition, of the 26,804 consults, retrospective data was collected by chart review for 140 patients, that had consults placed by Cardiology or Medicine services for both physical and occupational therapy from January 7th –January 21st, 2019. These 140 patients did not have a CPT evaluation code in the EMR for at least one service. Data was examined to determine the type of screens completed.

RESULTS
Of the 140 records reviewed, 79 consults (62%) were screened by the first service, with the other discipline subsequently completing 65 quick screens (82%), 12 screens (15%) and 2 evaluations (3%). Thirty-four consults (24%) had evaluations completed by the first service, with the therapist determining that continued services were not required. For these consults, the other discipline completed 26 quick screens (75%), 8 screens (25%), and 0 evaluations. For all consults there was a 5.4% reduction in consults that received evaluations. For consults placed by Cardiology or Medicine services, there was an 8.6% reduction in consults that received evaluations.

CONCLUSIONS
The use of an interdisciplinary screening tool appeared to reduce the duplication and over-use of therapy services.

CLINICAL RELEVANCE
Use of an interdisciplinary screening tool can potentially increase efficiency and decrease duplication of therapy services in the acute care setting.
Utilizing Cognitive Behavioral Therapy Skills with the Acute Care Patient: A Case Study

PRESENTED BY
Thomas Reid Medlin

BACKGROUND/PURPOSE
Far too often, physical therapists come up against numerous barriers related to the physical and mental health/well-being of their patients, including pain, anxiety/fear, depression, shortness of breath, etc. Cognitive Behavioral Therapy (CBT) is based on a cognitive theory of psychopathology and describes how people's perceptions or thoughts about situations influence their emotional, behavioral and often physiological reactions. CBT has been studied in numerous populations and shown to achieve significant improvements in both mental and physical outcomes across settings, ages, and specific diagnoses. Engaging the thoughts, feelings, actions, and subsequent behaviors in relation to functional progress and productivity is often the focus in community mental health settings and not particularly the foundational focus of a cardiopulmonary acute care physical therapy intervention. However, a novel and unique partnership between Duke Physical Therapy & Occupational Therapy departments and the Department of Psychiatry and Behavioral Sciences at Duke University allowed for training and supervision of specific CBT techniques. With the guidance of these behavioral health clinicians recognizing the importance of a multidisciplinary approach, both occupational and physical therapists are supported in the effective delivery of structured skills based in CBT, framing specific goals of care according to scope of practice.

DESCRIPTION
The patient was a 21 year old male admitted to the hospital with acute on chronic end stage heart failure (HF). Multiple comorbidities including morbid obesity (380 lbs), pulmonary hypertension, post-traumatic stress disorder (PTSD), depression, anxiety and suicidal attempts contributed to his 5 previous inpatient admissions that year, as well as kept him homebound and minimally active. Specific CBT strategies, in addition to typical physical therapy interventions, were utilized and taught to the patient to help identify and acknowledge barriers to activity participation as well as help reframe his thoughts, feelings, actions and behaviors related to his poor mental and physical health.

OUTCOMES
Specific CBT strategies utilized with this patient included an adaptation module with behavioral analysis, passive muscle relaxation, pleasant imagery, activity rest cycle, values-based goal setting, breath awareness, coping thoughts, and principals of reward/reinforcement. The patient presented as very self-limiting and distrusting towards hospital providers, needed assistance of two people with any functional room mobility, and had poor activity tolerance upon initial evaluation. With the careful introduction of physical therapy interventions as well as the above mentioned CBT strategies, the patient was able to eventually achieve independent bed mobility and sit to stand transfers, required supervision assist with ambulation of 620 feet using a rollator with 1 rest break, and negotiate 5 steps with stand by assistance. He was ultimately able to break down his trust and anxiety barriers and identify personal goals in his life that were important to him and the strategies to help achieve them.

DISCUSSION
The outcomes of this case study suggest that Cognitive Behavior Therapy techniques can have a place in the acute care setting and should be utilized by physical therapists to help meet the specific needs of their patients. As patients in the acute care setting are becoming more medically complex, many with a diagnosis of mental health disorder(s), CBT can be an effective strategy to empower both therapist and patient and improve functional outcomes. More randomized control trials are needed utilizing CBT as an adjunct to physical therapy interventions moving forward.
Ultrasonography of Quadriceps Thickness: Relationships with Surrogate-Reported Pre-Hospitalization Functional Status

PRESENTED BY
Tyson Joshua Arden

PURPOSE/HYPOTHESIS
Intensive care unit acquired weakness (ICUAW), defined as limb muscle weakness, results in physical functional impairment. Functional capacity prior to ICU admission may predict health trajectory after the ICU. Ultrasonography (US) is useful in predicting future impairments and can help identify muscle wasting effects of ICUAW. Changes in muscle size can impact function; however, a relationship between quadriceps muscle thickness and pre-hospitalization ICU function has not been established. The objective of this study was to determine if US quadriceps linear depth (QLD) was associated with surrogate-reported pre-hospitalization physical function in mechanically ventilated ICU patients.

NUMBER OF SUBJECTS
14 mechanically ventilated ICU patients (mean age = 54.5 (SD = 15.5), 11 male, 3 female).

MATERIALS/METHODS
This was a cross-sectional study conducted upon enrollment into a randomized controlled trial, funded by NIH/NHLBI: Nutrition and Exercise in Critical Illness (ClinicalTrials.gov #NCT03021902). QLD was measured with the Lumify Portable US and L12-4 MHz probe (Philips, Seattle WA). The QLD measure included thickness of rectus femoris and vastus intermedius, measured 2/3 distally between ASIS and patella. The average of 2 US QLD measures were adjusted for BMI to create QLD/BMI. Pre-hospitalization physical function was assessed via surrogate report using the Clinical Frailty Scale and the SF-36 Physical Function subscale. Pearson correlations were used to examine associations between physical function and QLD/BMI, adjusting for age and sex. Differences in QLD/BMI were also examined in relation to dichotomous variables of difficulty vs. no difficulty at pre-hospitalization: (1) vigorous physical activity, (2) climbing several flights of stairs and/or walking ¼ mile, and (3) climbing one flight of stairs and/or walking ¼ mile.

RESULTS
The SF-36 physical function subscale was positively correlated with QLD/BMI ($r = .668$, $p = .018$). The Clinical Frailty Scale was negatively correlated with QLD/BMI ($r =-.653$, $p = .021$). QLD/BMI was significantly higher in patients reporting no difficulty vs. any difficulty with vigorous activities [mean diff = 2.85 (SE 1.28), $p = .046$]. QLD/BMI was higher in patients with no difficulty climbing several flights and/or walking ¼ mile [mean diff = 2.93 (SE 1.18), $p = .03$] and for climbing one flight and/or walking ¼ mile [mean diff = 2.74 (SE 1.30), $p = .057$].

CONCLUSIONS
QLD measured via US was associated with surrogate-reported pre-hospitalization frailty and physical function in mechanically ventilated patients in the ICU. Hence, muscle ultrasound may be useful in assessment of baseline function.

CLINICAL RELEVANCE
Assessments of baseline function in the ICU often require the patient to be awake and mobile, and and/or surrogates report, both of which are not always feasible. US measures of quadriceps thickness are associated with surrogate-reported baseline frailty and function, and are a target for future research in exercise, nutrition and functional outcomes in critical illness.
A Process Improvement Project for Safe Patient Discharge (d/c): Using Standardized Instruments As Triage Tools

PRESENTED BY
Yvonne Steffens

PURPOSE/HYPOTHESIS
A physical therapy (PT) d/c evaluation is performed to assess a patient’s functional mobility level to determine the need for skilled services, such as equipment needs, which drives the patient’s d/c planning in the hospital. A patient is considered successfully discharged home when there is no hospital readmission within 30 days. An inappropriate PT evaluation request takes away from other patients who need PT. Therapy orders using systematic triage tools versus using each individual’s clinical judgment (CJ) minimizes decision variability. Two of the best predictors of d/c disposition are a person’s functional mobility and cognitive functioning. We propose a triage tool using three standardize instruments: Activity Measure for Post-Acute Care, Inpatient Short Form for ADL (AM-PAC A) and mobility (AM-PAC M), and the Short Blessed Test (SBT) to identify patients who can be d/c to home without going through full therapy evaluations (TE) when they are medically clear. AM-PAC A and AM-PAC M are standardized instruments that measure patient’s activity limitation of daily living and mobility. Each short form contains 6 items with a 4-level scoring system. Scores gathered from initial therapy evaluations have successfully predicted patient discharge destinations after hospitalization. The SBT evaluates a patient’s orientation, registration, recall, and attention. It identifies patients with dementia using a weighted 6-item instrument. This triage process improvement (PI) is expected to improve efficiency by eliminating unnecessary evaluations while maintaining patient safety, as evidence by no increase in 30-day readmissions after d/c from the hospital.

NUMBER OF SUBJECTS
All patients who have physical therapy and occupation therapy orders and are waiting to be discharged to home pending the completion of the TE.

MATERIALS/METHODS
Four therapists will be recruited to participate in the PI. They will conduct the two AM-PACs and SBT as screening tools before initiating a full TE or decide to d/c therapy orders. The remainder of the therapists will continue their current process, either 1) complete the TE and the AM-PAC A & M, or 2) d/c therapy orders base on individual CJ. Data will be gathered retrospectively. A patient will fall under three comparison conditions 1) Both AM-PACs and SBT, 2) Complete TE and both AM-PACs, 3) CJ Only.

RESULTS
The Chi-squared test will be used to determine whether there are significant differences between the expected frequencies and the observed frequencies of 30-day readmission in the three comparison conditions. We predict that the first two groups will have a lower readmission rate compared to the third group (CJ Only).

CONCLUSIONS
We predict that both AM-PACs and SBT as triage tools are better than using CJ as evidence by decrease 30-day re-admission rates. Discharging patients who are methodically screened is safer than discharging patients using only CJ.

CLINICAL RELEVANCE
This triage tool will allow a therapist to safely d/c TE orders; and be confident that the patient can be d/c to home safely.