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

Combined Sections Meeting Programming

Feb. 21-24, 2018 | New Orleans, LA
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.
Physical and Occupational Therapy after Transfemoral tAVR

PRESENTED BY
Adele Myszenski

PURPOSE/HYPOTHESIS
Develop a standardized pathway for new transcatheter aortic valve replacement patients, improve patient outcomes including increasing the percentage of patients returning to home rather than a rehab facility destination at discharge and reduction in length of hospital stay post procedure.

NUMBER OF SUBJECTS
195 patients s/p transfemoral catheter Aortic Valve Replacement via percutaneous access site, no intra or post operative major events (such as death, MI, stroke, additional cardiac surgery or EP monitoring, etc) and sheath sizes 16-28 were identified via STS/ACC TVT Registry; 139 had minor events (afib, unplanned vascular surgery or intervention for access site complication or bleeding, GI bleed, hematoma).

MATERIALS/METHODS
Consecutive subjects from 2013 through July 2015. Pathway implementation (as described in clinical relevance) initiated December 2014. Chi-square tests are used to compare proportions between groups, while Wilcoxon two-sample tests are used to compare distributions of continuous variables between groups. This nonparametric test was chosen due to non-Gaussian distribution of the continuous outcomes within groups. Statistical significance was set at p<0.05. All analyses were performed using SAS 9.4 (SAS Institute Inc, Cary, NC, USA).

RESULTS
Length of hospital stay post procedure was reduced from an average of 5.6 days to an average of 4.1 days (a difference of 1.5 patient days) Percentage of patient discharged to home increased from 69.3% to 83.8%. Mean and median LOS are statistically significantly higher in the pre-pathway group as compared to the post-pathway group (p<0.001). Significantly more patients discharged home in the post-pathway group as compared to the pre-pathway group (p=0.027). No significant difference in STS Risk Factor Scores. Downtrend in LOS was maintained when individual sheath sizes were compared pre-pathway and post-pathway.

CONCLUSIONS
Implementation of PT and OT pathway reduces length of stay and increased discharge destinations of home.

CLINICAL RELEVANCE
PT and OT assessments completed on post op day 1 and follow up daily until goals met. Hemodynamic markers are monitored pre, mid and post PT and OT intervention.
PT pathway goals are individualized based on patient specific level of function with focus on progression of aerobic capacity for ambulation and stair climbing (per required MET levels).
OT pathway goals are individualized for a return of bADL/iADL function by teaching and training energy conservation, task simplification and adaptation needs to increase quality of life in their home and within their community.
Patient education handouts include: activity progression, exercise log, pedal bike program, energy conservation, activity limitations and precautions, warning signs of activity intolerance.
Traditional physical therapy supplemented with continuous passive motion for an adolescent with septic arthritis complicated by the development of heterotopic ossification. A case report

PRESENTED BY
Aja Wade

BACKGROUND AND PURPOSE
The majority of the research on use of continuous passive motion (CPM) has been heavily researched in populations after total knee arthroplasty with little focus on its application in other populations. The purpose of this case report is to describe the use of CPM as a support for traditional rehabilitation of an adolescent male with septic arthritis of the knees and to discuss the possible implications of prolonged immobility in the absence of the CPM on his development of heterotopic ossification.

CASE DESCRIPTION
A 16 year old male who contracted methicillin-sensitive staphylococcus aureus resulting in systemic sepsis. He developed septic arthritis in bilateral knees as well as septic emboli on both lungs and kidneys. During his PT evaluation, he presented with bilateral decreased knee range of motion (ROM) in both flexion and extension and demonstrated impaired functional ability, particularly with gait. He displayed signs of additional psychosocial impairments including kinesiophobia and perseveration on pain which appeared to greatly impact rehabilitation methods.

OUTCOMES
After implementing the CPM, the patient demonstrated decreased kinesiophobia by participating in therapy sessions and allowing manual mobilization of the knee joints. He demonstrated maintained knee flexion and extension ROM bilaterally and made steady gains in independence with ambulation. However, during a period in which the CPM was broken, there was a recurrence of the patient’s kinesiophobia and significant losses in knee flexion ROM bilaterally with losses up to 50 degrees on the left. Concerned by the patient’s lack of progress, decreased range, limited joint play with mobilizations and a bone-like feel in the distal portion of the quadriceps, the physical therapist contacted orthopedics. A radiograph was ordered and confirmed the development of significant heterotopic ossification (HO) in the left knee and its surrounding structures.

DISCUSSION
With the implementation of the CPM, the patient was able to maintain ROM while improving functional mobility. However, during the time the CPM was malfunctioning and not appropriate for use, the patient experienced significant decreases in knee flexion ROM bilaterally. It was discovered that the observed losses in ROM were exacerbated by the presence of heterotopic ossification (HO). This may provide evidence of prophylactic use of CPM for HO in patients suffering from systemic sepsis, septic arthritis, and concurrent negative affective psychosocial beliefs. Further research is needed to determine if the possible use of continuous passive motion is preventive in this unique population.
Managing Functional Expectations in the Palliative Patient Transitioning to Hospice in Acute Care: A Case Study

PRESENTED BY
ALISON COYLE

BACKGROUND AND PURPOSE
The difference between palliative care (PC) and hospice is not well understood by clinicians and patients (pts). PC is for pts with serious illness with the goal of improving quality of life (QOL). Hospice is a type of PC for pts with less than 6 months to live where treatment is no longer curative. Physical Therapists (PT) are members of the interdisciplinary team (IDT) who regularly treat PC pts. As part of the IDT, PTs play a role in managing expectations of the medical team regarding functional outcomes. It is important for members of the IDT to communicate efficiently to set attainable goals while maintaining pts wishes. The purpose of this case study is to describe the PTs strategies used to address improbable functional outcomes expected by the medical team as a pt transitioned from PC to hospice.

CASE DESCRIPTION
Pt was a 53 y/o female with metastatic ovarian cancer admitted for small bowel obstruction. Pt had multiple abdominal surgeries and sustained numerous secondary complications during three month hospitalization. PC was involved in pain management and to determine goals of care. PT was consulted to improve function and to assist with discharge planning in efforts to transition pt to rehab. Despite regular PT sessions, pt required significant physical or mechanical assist for all mobility. Due to progression of disease, pt made minimal functional gains. Throughout hospitalization, pt refused transitioning to hospice despite poor prognosis. PT met weekly with members of IDT to discuss pt’s progress in order to manage their expectations and determine appropriate discharge disposition. Ultimately, through open dialogue, the goals of PT were shifted to improve QOL and comfort until the pt transitioned to hospice.

OUTCOMES
Through establishing weekly meetings, the PTs were able to redirect the medical team’s expectations due to the pt’s limitations. Meetings assisted with: shifting the PT interventions and frequency, redirecting the goals and plan, and determining the most appropriate discharge destination. During this time, goal setting was made in accordance with the pt’s functional ability.

DISCUSSION
In acute care, it is important to communicate effectively with members of the IDT. Specifically, for those receiving PC, multidisciplinary rounds and establishment of attainable goals are necessary to facilitate the best plan of care. In palliative cases, managing functional outcomes for medical teams and pts can be challenging and thus, should be discussed once PT is initiated. In pts with poor prognoses, communication amongst members of the IDT is essential for understanding a pt’s potential. Further education to medical teams in the role of PT can assist in providing appropriate frequency, duration and goal setting for palliative pts.
Early rehabilitation improves function after minimally invasive mitral valve repair using MitralClip: A case report.

PRESENTED BY
Allie Lawing

BACKGROUND AND PURPOSE
Mitral valve regurgitation is caused by mitral valve prolapse where blood leaks backward into the ventricles. Traditionally, open-heart surgical repair is the gold standard, but is not recommended for older, high-risk patients. Mitral valve clip (MVC) is a minimally invasive transcatheter repair of the mitral valve where the physician threads a catheter through the arteries and advances a clothespin-like clip in the heart’s left atrium where it is positioned to clasp the leaflets together allowing blood to continue flowing while reducing the back flow into the atrium.

CASE DESCRIPTION
An 87-year-old female with history of symptomatic severe mitral valve regurgitation who elected to receive a MVC. The patient has a history of smoking and comorbidities including chronic atrial fibrillation with pacemaker, hyperlipidemia, hypertension, subdural hematoma, jugular vein distention, systolic murmur and dilated left atrium.

OUTCOMES
At initial physical therapy evaluation, the patient was scored on the Acute Care Index of Function (ACIF) which detects functional status changes. The patient presented with decreased strength, balance, bed mobility and gait skills. PT interventions included gait and balance training, education on use of rolling walker and implementing a HEP to address goals of increasing bed mobility, improving ambulation and increasing strength. The patient’s ACIF score increased from 18.3 to 30.33 indicating a higher level of functional independence. Barriers to goal achievement included decreased endurance and severe medical conditions. Patient was successfully discharged after PT goals were met and reduction of mitral valve regurgitation was documented.

DISCUSSION
This case illustrates the outcome of MVC surgery on high-risk patients with multiple comorbidities and how it is safe and effective for the patient to receive physical therapy to improve patients level of independence prior to discharge.
Early Mobilization of a Patient with a Biventricular Assist Device and Additional Support Devices: A Retrospective Case Report

PRESENTED BY
Allison Kras

BACKGROUND AND PURPOSE
Research supports the mobilization of patients with short-term biventricular assist device (BiVAD) in situ (1,2,3,4,5) but is limited regarding patients with BiVAD support via CentriMag (6,7). Evidence indicates physical therapy (PT) is safe for select patients who require mechanical ventilator support, continuous veno-venous hemodialysis (CVVHD), or extracorporeal membrane oxygenation (ECMO)(8,9,10,11,12). However, there is a lack of literature supporting mobilization of patients with BiVAD in place while they require support from one or more of these additional devices. The purpose of this case report is to demonstrate the safety and feasibility of a PT led early mobilization program for a patient with a BiVAD CentriMag while still requiring additional support from mechanical ventilation, ECMO, and/or CVVHD.

CASE DESCRIPTION
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.

OUTCOMES
A multidisciplinary team, including PT, nursing, perfusionist, and intensivist developed a mobility and safety plan. PT led mobility was initiated 3 days after BiVAD CentriMag implantation. At that time the patient was intubated, on VA-ECMO support, and on CVVHD. Upon evaluation he was dependent with all mobility. Overall, he was able to participate in a total of 42 PT sessions with a BiVAD CentriMag in situ and ambulated during 28 sessions. During 12 of these sessions he had additional support from mechanical ventilator, VA-ECMO, and/or CVVHD. He was able to surpass mobility goals set by the transplant team and at best, he ambulated 1,000 feet with supervision and assistance for BiVAD management. No major adverse events were documented; there were 3 incidents of alarms due to low flow rates which were resolved with change in patient position. Of note, during this time the patient participated in a total of 14 sessions of occupational therapy.

DISCUSSION
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.
Improving Functional Mobility and Quality of Life for Patients with Congestive Heart Failure Beginning in the Acute Care Setting

PRESENTED BY
Alyssa Levin

PURPOSE/HYPOTHESIS
5.7 million adults in the United States suffer from Congestive Heart Failure (CHF) and of those individuals one million are admitted to the hospital annually. These patients are at high risk for re-hospitalization and suffer a reduced quality of life. This places a significant financial burden on healthcare systems with more than $15 billion spent on hospitalizations annually. Research studies have shown the benefits of resistance and aerobic exercise training in patients with CHF; however, most research focuses on the outpatient setting. Currently, patients admitted to our 1,070 bed hospital receive a standard physical therapy (PT) evaluation and infrequent treatment sessions. The purpose of this study is to evaluate the impact of additional interventions (educational booklets, Nu-Step, and the use of a portable leg ergometer following discharge) and compare them with our current PT standard of care for hospitalized patients. We anticipate our intervention will increase activity tolerance, improve quality of life, increase the percentage of patient’s discharging home, and reduce hospital re-admission rates.

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
To date, 35% of patients in our pre-study group have discharged to a rehabilitation facility and 28% have been re-admitted to the hospital within 30 days of discharge.

CONCLUSIONS
We are in the process of collecting data.

CLINICAL RELEVANCE
Our proposed intervention will help patients with financial or transportation barriers continue with a cardiac specific exercise program at discharge from the hospital. There will be tremendous economic benefit if our proposed intervention leads to reduced hospital re-admissions and an increase in patients discharging home. Our study will be the first to focus on a standardized protocol for patients with CHF in the acute care setting.
The prevalence of patients with blood coagulation disorders in an acute physical therapy hospital.

PRESENTED BY
Amanda Robinson

PURPOSE/HYPOTHESIS
To identify the number of patients on an acute care caseload that suffered from a blood coagulation disorder.

NUMBER OF SUBJECTS
6,212 patient records.

MATERIALS/METHODS
An IRB was obtained through Northside Hospital Forsyth in Cumming, GA to perform a post hoc analysis of the number of patients with a blood coagulation disorder (hyper or hypocoagulable). The study was performed for 160 days. Two education sessions were performed prior to the study by a Pharmacist to ensure understanding of blood coagulation disorders and treatment. All therapists were required to document daily on the communication hand-off tool prior to the study. Patient information included: patient identifiers, priority, diagnosis, and information for treatment that included blood coagulation levels (if abnormal,) or other pertinent patient care information.

RESULTS
Of the 6,212 charts reviewed, only 2.4% of the total number of patients seen on caseload had a blood coagulation disorder. 19 patients had supratherapeutic INR >4; 56 patients had a diagnosis of an acute pulmonary embolism and orders for physical therapy; and 76 patients with a new diagnosis of deep venous thrombosis had orders for PT to “evaluate and treat.” Out of 160 days of data analyzed, 97 days had a patient with a blood coagulation disorder, or there was at least one patient with a blood coagulation disorder on caseload 60% of the time. There were also days with multiple patients with blood dyscrasias, the highest being 5 out of 37 patients with a blood coagulation disorder.

CONCLUSIONS
The Clinical Practice Guideline (CPG) for treatment of patients with a venous thromboembolism recommended by the APTA provides guidance for working with patients at risk for developing a DVT or PE. The guideline does not identify the prevalence of patients with blood coagulation disorders on PT caseload in an acute care population. This study found that patients on caseload had a blood coagulation disorder and orders for physical therapy at the same time. This identifies the need for therapists to use the CPG when working with patients, talk to their pharmacists about medication timeframes, and to communicate with the physician if there are concerns regarding the safety of mobility.

CLINICAL RELEVANCE
Acute care physical therapy may have more patients with blood dyscrasias on their case load than hospital wide, due to the need for physicians to determine medications in patients with a fall risk and due to the possibility of patients needing services for other co-morbidities. This study showed that there is the potential to have multiple patients on a physical therapy caseload with blood coagulation disorders. Order sets that are generated upon admission for a patient may not identify if a patient is stable to receive physical therapy. The physical therapist is always responsible to understand and interpret the safety of mobility in their clinical setting.
The use of a comprehensive vestibular examination in the acute care setting to identify and treat benign paroxysmal positional vertigo in a patient with traumatic brain injury

PRESENTED BY
Amanda Soto

BACKGROUND AND PURPOSE
Benign paroxysmal positional vertigo (BPPV) is one of the most common causes of dizziness in patients presenting to an emergency department (ED). Head trauma accounts for up to 17% of BPPV cases and those with traumatic brain injury (TBI) are less likely to report characteristic vertigo with positional changes. Patients with posttraumatic BPPV can be safely treated with canalith repositioning procedure (CRP) with efficacy similar to patients with idiopathic BPPV. Despite the prevalence of dizziness presentations to the ED, patients often do not receive a thorough vestibular examination (VE) or timely diagnosis of BPPV. In addition, limited studies have investigated BPPV treatment in admitted patients. The purpose of this case study is to detail the importance of a comprehensive bedside VE in the acute care setting to identify and treat BPPV in a patient with TBI.

CASE DESCRIPTION
A 38 year old male presented to the ED 2 days after sustaining head trauma with loss of consciousness. The patient reported headache, anxiety, and dizziness which worsened with gait. His exam was notable for head contusion, conjunctival hemorrhage, and periorbital ecchymosis. Imaging revealed a 6 mm hemorrhagic contusion in the right front lobe with surrounding edema and a small focal venous epidural hematoma. The patient was admitted to the neurosurgery service. On hospital day 2 the patient experienced increased dizziness and gait ataxia requiring assistance for ambulation. A physiatry consult and PT evaluation were ordered to assist with discharge planning. A bedside vestibular examination (VE) was completed and the patient demonstrated convergence impairment, reported dizziness with bed mobility, and required contact guard assist to ambulate. Assessment of BPPV was deferred until imagining demonstrated a stable hematoma and neurosurgery cleared patient for positional testing.

OUTCOMES
Positional testing was completed on hospital day 3. The patient exhibited a positive left dix hallpike with upbeating nystagmus and left torsion that fatigued in 20 seconds. CRP was completed twice to address left posterior canalithiasis without adverse event. The patient reported resolution of dizziness, ambulated with supervision, and discharged that day. PT provided a handout for self completion of CRP should symptoms recur. The interdisciplinary team was contacted to facilitate referral to outpatient vestibular rehabilitation.

DISCUSSION
A comprehensive VE in the acute care setting facilitated the diagnosis and treatment of BPPV in a patient with TBI. This evaluation was both safe and efficient. This case highlights the importance of a comprehensive VE for patients with TBI and vague symptom report. Prompt evaluation and communication with an interdisciplinary team decreased the patient’s length of stay and facilitated follow up treatment.
The effect of a high fidelity simulation experience on acute care confidence in DPT students

PRESENTED BY
Amy Bayliss

BACKGROUND AND PURPOSE
Limitations in didactic training and opportunity for clinical exposure provide challenges when preparing DPT students for acute care clinical practice and the intensive care unit. The purpose of this case analysis was to determine if a single high fidelity human simulation (HFHS) experience could impact acute care confidence and therefore clinical readiness in DPT students.

CASE DESCRIPTION
Teams of 3-4 students were given objectives and a case history one week prior to a single HFHS experience. The HFHS used the Laerdal’s SimMan™ 3G mannequin. The mannequin was equipped with a cuffed tracheostomy tube, ventilator circuit, chest tube with collecting unit, electrocardiogram leads, urinary catheter, arterial line, IV line, and pulse oximeter with vitals displayed on a telemetry unit. The format for the simulation lab included a 15 minute pre-brief session which included reviewing the objectives and case history, then assigning a task to each student, thereby rotating the PT role throughout the experience. The student-SimMan™ encounter was 25 minutes and required the team to assess readiness to mobilize, perform range of motion, and then mobilize the SimMan™ to sitting. Following the HFHS, the student teams participated in a debrief session for 20 minutes. Three course instructors were present each day, one assigned to perform all the pre-briefs and the other two observed the HFHS and then debriefed student teams.

OUTCOMES
41 students completed the Acute Care Confidence Survey (ACCS) prior to the simulation lab and following completion of the learning experience. A Wilcoxon Signed Ranks test was used to compare change in confidence scores. There were significant findings in the overall survey score (P=0.0001) with students feeling more confident after the single HFHS experience. Additionally 3 of the 4 subscales within the ACC survey showed significance: judgment (P=0.0001), mobility (P=0.0009) and instruction (P=0.0008). The manual subscale was not significant, which involves questions about completing tasks such as taking blood pressure. Student feedback was also solicited informally and was very positive in regards to the realism of the simulation particularly in regards to managing lines, leads and tubes and making decisions based on changing vital signs.

DISCUSSION
Based on this one HFHS session, students were impacted positively and significantly improved their self-confidence in an acute care environment. Further simulated sessions may have the potential to improve clinical readiness. However, the high cost of HFHS may be a barrier for some educational programs. The described HFHS session used a mannequin rather than a standardized patient; the use of a “real” patient may have yielded improvements in all subscales. It could be that a combination of “real” patient interactions such as integrated clinical experiences prior to fulltime clinical internships combined with HFHS may have an even greater potential to enhance students readiness for acute care.
Patient and Provider Satisfaction with Emergency Department Physical Therapy at a Level I trauma hospital in Portland, OR.

PRESENTED BY
April Arthur

PURPOSE/HYPOTHESIS
The overall purpose of this platform is to share data on patient and provider satisfaction with ED PT in a hospital in the US since much of the research is based in Australia and United Kingdom.

DESCRIPTION
The APTA has recognized the importance of PT’s in an ED setting since the year 2000. The first full time program in the US began in 1998 in Tucson, AZ and continues to be successful (1). The most recent data from the APTA CSM in 2017 collected by the ED PT focus group documented over 40 programs throughout the US (2).

ED PT programs continue to grow along with the growing demand of ED usage. With over 80% of ED visits classified as non-emergent (3) and a large percentage of conditions being musculoskeletal and/or chronic pain in nature (4), evidence strongly suggests ED PT’s have been able to decrease wait times (5), improve patient satisfaction (6), avoid inappropriate admissions (7), provide appropriate early interventions (6), provide support to the rest of the ED team (8), and decrease wait times for referrals (9). Until recently much of the research on these topics have been primarily published outside of the US.

ED PT research has come primarily from England and Australia. To date there is one published article out of Australia regarding patient satisfaction (10) and one on how patients perceive the extended scope of PT in the ED (11). There is one article on physician impressions of ED PT in the US (12).

In Portland, OR a full time ED PT program was implemented in 2015. There has been positive verbal feedback from patients regarding having a good understanding of their deficits, an appreciation of getting hands on treatments, and confidence in their discharge plan. A common quote from patients with back pain have been “you are the first person to actually look at my back.” There has also been positive verbal feedback from providers of PT being able to provide a strong musculoskeletal diagnosis. Providers feel more confident in reducing opioid prescriptions and knowing the patient has a safe discharge plan. A common quote from staff has been “how did we ever not have PT in the ED?”

With the discovery of the ED PT helping to decrease opioid prescriptions, the program has been able to promote the #Choose PT campaign of the APTA. The CDC recommends providers find alternatives to prescribing opioids and recognizes PT as a non-drug option to help treat patients with pain (13). In the ED setting, providers and PT’s can work closely together to avoid these harmful prescriptions.

SUMMARY OF USE
For this platform, data will be collected on patient and provider satisfaction to gain a better understanding on developing successful ED PT programs, improving patient satisfaction scores, and decreasing the need for opioid prescriptions in the ED.

IMPORTANCE TO MEMBERS
This platform is designed to show the continued importance of ED PT to promote the field of PT, promote the #Choose PT campaign of the APTA to battle the opioid epidemic, and support the need for more published data in the US.
Progressive Mobility: Evidenced Based Program Improves Outcomes in Critically Ill Patients in the ICU Setting

PRESENTED BY
ashley silverman

PURPOSE/HYPOTHESIS
Prolonged immobilization in critically ill patients can lead to secondary complications including; deconditioning, skin breakdown, contractures, increased ventilator associated events (2/2 decreased chest excursion leading to atelectasis or pneumonia (PNA)2 and increased length of stay (LOS). This study was designed to investigate the benefits of early mobilization in the critically ill patients during their ICU stay by utilizing an interdisciplinary approach to patient care. We investigated two hypotheses: (1) Length of stay (LOS) to decrease with implementation of early mobilization and (2) Decreased Ventilator Associated Events (VAE) by decreasing time on ventilator as a result of early mobilization. Both hypotheses were tested using a five phase program that progressively increased activity.

NUMBER OF SUBJECTS
24 bed ICU unit.

MATERIALS/METHODS
Two evidence based methods we included in our pilot study. (1) The ABCDE Bundle. The bundle is a 6-step process: awakening ventilated patients, breathing trials, coordinated efforts between nurses and respiratory therapists to decrease sedation/analgesics while attempting spontaneous breathing trials, delirium assessment including prevention and treatment, and finally, early mobilization and ambulation 1 (2) Hill-ROM’s five phase progression of mobilization. Breath, Tilt, Sit, Stand and Move.

RESULTS
After implementation, there have been decreases in VAEs, time patients are on a ventilator, length of stay in the ICU (LOS). The mean LOS in the ICU in the 12 months prior to the Progressive Mobility Program (PMP) implementation was 3.69 and is 3.44 for the 12 months following PMP implementation. This represents a 0.25 day decrease, which is estimated to save $162,000 monthly and close to $2,000,000 annually. The mean days on a ventilator prior to the PMP implementation was 5.90 and is 5.57 post PMP implementation. This represents a 0.33 day decrease. A 45% reduction in VAEs was also noted. This accounts for 20 VAEs in the year prior compared to 9 in the year following implementation. There continued to be no pressure injuries identified during prevalence studies, compared to 4 UAPIs (rate of 1.34) in CY15. There were no patient fall related injuries or staff injuries related to patient handling.

CONCLUSIONS
The study showed that early mobilization in the critically ill patients are safe and support the hypotheses of decreasing LOS and VAE.

CLINICAL RELEVANCE
As care providers in an intensive care unit, we strive to alleviate pain and suffering, provide support to family members and collaborate with team members to deliver optimal care. In addition to our caring and compassionate ways, we continually explore and examine those practices which will provide the best outcomes to our patients. With more people surviving critical events it’s important to focus on this population to minimize impairments and improve functional outcome.
The Use of Supine Ergometry to Facilitate Conservative Treatment of Ileus in the Critically Ill Patient: A Case Series

PRESENTED BY
Brenna Randolph

BACKGROUND AND PURPOSE
Patient mobility, typically ambulation, has been shown to be an effective conservative treatment option in patients with ileus in the acute care setting. However there is limited research on the use of mobility to assist in the treatment of an ileus in critically ill patients in the ICU setting. The purpose of this case series is to explain and describe the potential benefits of utilizing the MOTOmed Letto 2 supine lower extremity ergometer to improve GI tract motility in critically ill patients with an ileus.

CASE DESCRIPTION
Four participants were clinically diagnosed with an ileus via imaging during their hospital course in the MRICU. Conservative medical treatment (i.e. laxative, enema, suppository) was utilized. Each patient had limited capacity for out of bed activity or ambulation due to complicated medical issues, therefore performed supine lower extremity ergometry during a PT session. Patient 1 was a 58 y.o. male admitted with respiratory failure requiring intubation. He tolerated 15 minutes of supine ergometry with next documented BM 2 hours after completion of session. Patient 2 was an 18 y.o. male with aplastic anemia and recurrent infections admitted with respiratory failure requiring intubation. He tolerated 3 minutes and 50 seconds of supine ergometry with next documented BM 3 days after completion of the session. Patient 3 was a 57 y.o. male with mantle cell lymphoma s/p SCT complicated by pulmonary GVHD. He tolerated 15 minutes of supine ergometry with next documented BM 2 hours after completion of the session. Patient 4 was a 63 y.o. male admitted with worsening dyspnea and found to have blastoid mantle cell lymphoma. He tolerated 18 minutes of supine ergometry with next documented BM approximately 2 hours after completion of the session.

OUTCOMES
The length of time spent performing passive lower extremity ergometry in supine and interval of time between therapy session and nursing documentation of a bowel movement post-therapy session were considered. The patients that participated in greater than or equal to 15 minutes of supine ergometry had return of bowel function when used in conjunction with conservative medical therapies compared to the patient that participated less than 15 minutes.

DISCUSSION
Current research on the use of mobility for conservative treatment of ileus is limited, but demonstrates the benefits of ambulation in certain patient populations. Passive lower extremity ergometry in conjunction with conservative medical management appears to improve GI motility in the critically ill patient diagnosed with an ileus during their hospital course. Additional research comparing the combination of lower extremity ergometry and medication versus usual care alone would be beneficial in determining any confounding effect. For critically ill patients unable to ambulate, the MOTOmed Letto 2 could be another option for increasing mobility to induce a bowel movement.
Increasing Value-Focused Behaviors and Quantified Value-Added in Acute Care Physical Therapy Using a Simple Value Calculation.

PRESENTED BY
Brian Hull

PURPOSE/HYPOTHESIS
Acute physical therapy (PT) continues to search for a practical method to measure value. The overall purpose of this platform is to introduce the Therapy Value Quotient (TVQ) and its simple yet effective ability to measure changes in value. Additionally, when PTs have a basic understanding of the mathematics behind the TVQ application and are motivated to increase their measurable value-added, they will heuristically determine and employ successful strategies to improve value.

DESCRIPTION
Porter discussed how health care should be measured by the value equation of outcomes produced divided by the cost of services to produce those outcomes. While acute PT practice continues to progress towards consistent outcome measurement, widespread application of outcomes to quantify value is rare. This leaves acute care PTs’ value measured primarily in terms of how many units or visits a therapist can code in a certain amount of hours worked. Unfortunately, quantities of units or visits are not synonymous with whether high value was provided.

The Acute Care Task Force on Productivity/Value has been developing a comprehensive method for measuring value delivered, but while that work continues to progress, acute care managers and practitioners need a viable and easy to use option now which requires minimal data entry utilizing existing and easily accessible payroll and electronic health record data.

The goal of this project was to simplify data collection and analysis based on available data in commonly used systems (payroll, Electronic Health Record). The TVQ combines data points from the AMPAC “6-Clicks” with payroll data plus value constants to quantify value. By minimizing the manual data entry, one decreases data entry errors and improves real time data calculations. This purposely minimized equation design allows PTs the full potential to create the highest value processes to achieve the maximal value.

The heuristic decision model indicates that less prescriptive guidance can lead to more efficiency and easier attainment of goals. By providing PTs the lone goal of improving quantified value along with the calculations, will clinicians create value-adding tactics that improve quantified value?

The hypotheses are 1) creating a derivative of Porter’s value equation could provide a viable way of measuring changes of value over time and 2) educating PTs in the TVQ without prescribing specific tactics to achieve higher values would increase value-focused behaviors.

SUMMARY OF USE
The TVQ will be discussed with data and observations collected from a multisite trial. The investigators found that providing PTs with an understanding of TVQ allowed the clinicians to develop effective strategies for improving quantified value and AMPAC gains while decreasing cost of care. Additionally, focus group data will be shared regarding the PTs views on changes to value.

IMPORTANCE TO MEMBERS
This platform is designed to demonstrate a simple and effective calculation strategy to measure and promote value using easily accessible data.
The Evaluation and Management of Vestibular Symptoms in a Patient with an Acute Traumatic Brain Injury

PRESENTED BY
Brianna Fitzpatrick

BACKGROUND AND PURPOSE
Vertigo is a common symptom that can occur after a traumatic brain injury (TBI). Underlying causes include benign paroxysmal positional vertigo (BPPV), unilateral vestibular hypofunction, and central vertigo. Physical therapy (PT) can improve vestibular symptoms after a TBI, however studies have focused mostly on the outpatient population. Research on the management of vertigo in acute care is limited. This case study aims to demonstrate an approach to patient management that is feasible in a hospital setting.

CASE DESCRIPTION
The patient (pt) was a 23-year-old male who was admitted to a trauma center after an assault. The pt experienced a loss of consciousness and presented with a Glasgow Coma Scale score of 12. He had a full medical workup including intracranial imaging which was negative for acute injury. A PT consult was placed one day after admission. On evaluation, the pt was alert and oriented and could follow 2 step commands. He presented as a VII (Automatic Appropriate) on the Rancho Los Amigos Scale. The pt reported vertigo at rest, during bed mobility, and during ambulation. He could ambulate 30 feet with contact guard assistance, but required minimal assistance when ambulating with head turns. Vestibular testing revealed no spontaneous or gaze induced nystagmus and intact smooth pursuits. Saccades were intact vertically but hypometric horizontally. The pt also had a vergence insufficiency. Slow vestibular ocular reflex (VOR) testing revealed right beating nystagmus and head thrust test was positive bilaterally. Right Dix-Hallpike (DH) was positive for mild vertigo but negative for nystagmus. Left DH was positive with onset of severe vertigo and upbeating left torsional nystagmus. The Epley maneuver was performed twice for management of left posterior canal BPPV. The pt was educated in vestibular rehabilitation exercises and VORx1 was initiated.

OUTCOMES
With left DH during the second Epley maneuver, the pt had improved but persistent vertigo with pure downbeating nystagmus. The pt was able to demonstrate VORx1 exercises independently. He was discharged later that day and was lost to follow up.

DISCUSSION
This case shows that evaluation of vertigo in the acute care setting is safe and feasible. Research has demonstrated the importance of vestibular testing prior to BPPV treatment to rule out additional vestibular pathology, as they can occur together. This is emphasized in this case due to history of head trauma and subjective report not fully consistent with BPPV. Pts with concurrent diagnoses are more likely to have incomplete resolution of symptoms after the Epley maneuver. This combined with the positive findings on VOR testing led to the initiation of vestibular exercises. It is valuable for physical therapists in acute care to be comfortable screening for basic vestibular pathology such as BPPV. However, individual clinical experience may be a barrier to this. Further research is needed to determine the impact of acute vestibular intervention on long-term patient outcomes.
Would Ischemic Stroke patients benefit from specific treatment progression to avoid perfusional symptoms in the acute care setting?

PRESENTED BY
Caitlyn Hawthorne

PURPOSE/HYPOTHESIS
The purpose of this report is to discuss current literature involving direct treatment of the ischemic stroke patient (pt), what factors may influence perfusional symptoms, and how the role of a physical therapist (PT) can be more clearly defined. Current research has not yet outlined protocol and/or guidelines for the role of a PT managing the perfusional stroke pt. A structured progression of treatment provided by PTs with specific monitoring may benefit pts immediately post stroke (1-3 days) in order to avoid perfusional symptoms. A decline in a pt’s status secondary to hypoperfusion often becomes an additional barrier to the pt’s recovery.

DESCRIPTION
Early mobilization initiated by the PT has been proven beneficial to the ischemic stroke pt within the acute care setting, improving outcomes and recovery in the first 6 months to 1 year. Pts with acute ischemic infarcts require blood reperfusion and medical monitoring of symptoms including but not limited to: weakness, sensory deficits, impaired motor control, and aphasia. If the brain is not properly reperfused following infarct, pts will experience continued or worsened symptoms due to cell death. Mobilizing a pt without proper monitoring during the hypoperfused state could potentially lead to increased hospital stays.

SUMMARY OF USE
A proposed treatment progression based on therapist observation and implementation over a 1-3 day period may decrease risk of hypoperfusion during acute mobility. Sitting upright for 1 hour, sitting for 3 hours, and short distance ambulation (50-75 feet if applicable), may assist the medical team in better managing symptoms and avoiding setbacks. During this period, the pt’s vitals will be monitored closely and neurological checks should be completed in order to assess for blood pressure fluctuations during and after mobilization within suggested time frames. If the pt’s status worsens at any step, the pt returns to the previous step before progressing mobility.

IMPORTANCE TO MEMBERS
Creating a more specific treatment progression (protocol) for pts post ischemic stroke may be beneficial to rehabilitation therapists and medical staff in order to safely monitor symptoms and prevent adverse events caused by hypoperfusion. Specifically, after tPA administration and other thrombolytic interventions, pts are sensitive to hemodynamic changes in blood pressure and overall cerebral flow. Prior research has concluded PT’s important role in acute care regarding mobilization; further research is required to establish guidelines for the perfusional stroke pt as hypoperfusion may worsen symptoms, area of ischemia, and complicate the pt’s discharge planning and ultimate recovery. Further, the proposed progression may provide therapists with a baseline treatment plan that can be retested for future reliability and validity.
A multidisciplinary approach to improve patient outcomes in the stroke population in the acute care setting

PRESENTED BY
Carolyn Haggerty

PURPOSE/HYPOTHESIS
Patients who experience a stroke can endure physical and cognitive impairments. Many patients require rehab after a stroke, discharging to a rehab facility after hospitalization. A 2-month review of patients with an ischemic stroke at one academic medical center found patients were receiving less therapy than was recommended by their plan of care (POC). This poster will discuss the outcomes of a 2-month quality improvement project that increased physical therapy (PT) staffing dedicated to this population. Additionally, results will include length of stay, discharge time, and frequency of care (FOC).

NUMBER OF SUBJECTS
For the first 2 weeks of this trial, 48 patients were mobilized over 163 sessions.

MATERIALS/METHODS
Baseline data included a convenience sample of patients with an ischemic stroke admitted over 2-months. Data analyzed included FOC, POC, and discharge recommendation. Using this data, an interdisciplinary team created an ideal course of care for patients. Areas of improvement included length of stay, timeliness of communication between team members, and availability of therapy services. For a 2-month period, 2 additional full-time equivalent (FTE) therapists were dedicated to the ischemic stroke population. The therapists were provided cell phones and were required to attend daily multidisciplinary rounds.

RESULTS
Eighty-one patients with ischemic stroke were included in the baseline cohort. Baseline data reported patients were receiving PT 2 days/week on average during their hospitalization. For this trial, the established goal is 5 days of therapy/week during admission. Previously, 12% of patients were meeting a plan of care designated by therapists as 3-5 times/week. These patients were recommended for acute rehab which typically offers therapy 5 days/week. There were no patients in this cohort discharged before 12PM. Early discharge allows for improved bed turnover for ICU and ED admissions. At this time, 2 FTE therapists have successfully been added to the ischemic stroke service.

CONCLUSIONS
Additional staffing allowed for an increased FOC and consistency of therapy providers. All patients in this project have met the recommended FOC. Daily multidisciplinary rounds informed the team of priority patients for discharge, or procedures scheduled that preclude participation in therapy. This allowed for prioritization of patients to expedite a PT session to the morning for discharge-ready patients, and prevented missed therapy sessions secondary to testing. Additionally, consistent care led to a subjective increase in satisfaction with outcomes for PTs.

CLINICAL RELEVANCE
Increased staffing in the acute care setting for the ischemic stroke population may expedite discharge to the post-acute care setting, increase FOC, and maintain consistency of therapy providers. Implementation of multidisciplinary rounds and access to therapists via phone has increased communication. Future research may lend to examining functional outcomes of patients with stroke through the continuum of therapy services provided post-acute care hospital stay.
Assessing the Impact of General Anesthesia versus Spinal Anesthesia on Primary Elective Hip and Knee Replacements: A Longitudinal Study

PRESENTED BY
Charles Workman

PURPOSE/HYPOTHESIS
Elective primary total hip and total knee replacement surgical procedures can be performed with either regional or general anesthesia. A pre-operative decision is required to determine the benefits and risks of each anesthesia option. Recent literature suggests lower rates of mortality as well as decreased medical complications including pulmonary compromise, pneumonia, infections, and acute renal failure have been realized with use of regional anesthesia. Limited studies, however, have assessed quality of life (QOL) and mobility outcomes when comparing the two anesthesia options.
Authors hypothesized that total hip and total knee arthroplasty participants receiving regional anesthesia would have better functional level scores and higher quality of life scores at the 3 month interval post-operation and no difference in 6 month and 12 month intervals when compared to general anesthesia candidates.

NUMBER OF SUBJECTS
158 total participants receiving primary total hip or total knee arthroplasty between 2013 and 2015

MATERIALS/METHODS
This longitudinal cohort study included 158 patients who had undergone either an elective total hip arthroplasty or total knee arthroplasty from 2013 through 2015. Participants’ main outcome measures were assessed using (i) health related quality of life instrument, short form 12 (SF-12) for mental and physical components of health gained (ii) orthopedic patient reported outcome measures, Oxford Hip or Knee Scores. Measures for each participant were reported at the following intervals: 1 week pre-operatively, then post – operative at 3mo, 6 mo. and 12 mo. After scoring, the association between anesthesia type and QOL and mobility outcomes scores was determined.

RESULTS
When comparing both hip and knee outcomes measures at postoperative intervals, participants that received regional anesthesia had slightly better Oxford scores and QOL scores in both physical components and mental components of the SF12 at the post-operative 3 month interval, however, no statistically significant. The post-operative 6 month and 12 month intervals results showed no statistically significant difference as well. (supporting statistical results and tests to be included in final presentation)

CONCLUSIONS
Compared to general anesthesia, regional anesthesia procedure for elective hip and knee arthroplasty was associated with an improved mobility score and quality of life score at the three month interval. No statistically significant differences were identified at the 6 month or 12 month post-operative intervals for mobility or QOL scores.

CLINICAL RELEVANCE
These findings could have an important impact on surgical candidates by eliminating quality of life and functional level outcomes concerns when selecting anesthesia options for total hip and total knee procedures. Decision of anesthesia procedure selection can be focused on medical risks and mortality rates.
The Role of the Physical Therapist in Managing a Patient with Peripheral Nerve Entrapment: From Emergency Department Early Access to Outpatient Rehabilitation

PRESENTED BY
Christina Stough

BACKGROUND AND PURPOSE
The emergency department (ED) has become an increasingly common entry point into the healthcare system in the United States. The upward trend in ED visits for non-urgent, musculoskeletal care needs has provided a unique opportunity for physical therapists (PT) to apply their expert musculoskeletal knowledge to a variety of diagnoses. The purpose of this case study is to illustrate the potential benefit of early intervention and education by an emergency department physical therapist (EDPT) and how it may smooth the transition into follow-up services.

CASE DESCRIPTION
A 39-year-old female reported to the ED with an exacerbation of symptoms suggestive of bilateral upper extremity peripheral nerve pathology. The patient had been diagnosed with Carpal Tunnel via EMG testing three months prior, was approved for bilateral Carpal tunnel release surgery, and indicated that she wanted a second opinion and further evaluation of her condition. The ED physician examined the patient and subsequently ordered a PT consultation. The EDPT ultimately concluded that the patient was presenting with Cubital Tunnel Syndrome with a possible cervical involvement instead of the original diagnosis of bilateral Carpal Tunnel Syndrome. Intervention provided by the EDPT included nerve gliding, posture assessment, ergonomic recommendations as well as a home stretching program.

OUTCOMES
The patient reported an immediate decrease in pain and symptoms after EDPT treatment. Encouraged by her EDPT experience, she followed up with outpatient physical therapy nine days later and reported continued compliance with the exercises prescribed by the EDPT. After eight visits with an outpatient PT, the patient was able to return to work full time with a measurable 25% reduction of pain. Follow up EMG testing indicated increased signals in bilateral upper extremities. As a result of the treatment provided by the PTs in both the ED and outpatient settings, the patient did not need to follow through with her previously approved bilateral Carpal Tunnel release surgery.

DISCUSSION
There is a growing body of evidence outlining the benefits of early PT intervention for musculoskeletal injuries. Providing early access to a PT in the ED may reduce costs by eliminating unnecessary diagnostic tests and reducing subsequent visits for the same condition. In addition to providing such system-wide benefits, these services also have the potential to increase patient satisfaction. Though additional research is needed to identify the specific benefits of EDPT services, this case illustrates represents one possible role that an EDPT may play in this setting and how this intervention may facilitate the transition to outpatient care.
Reliability of an Installed Chair Exit Alarm System for Fall Prevention: A Double Blind Randomized Controlled Trial

PRESENTED BY
Christopher Wilson

PURPOSE/HYPOTHESIS
Within the acute care hospital setting, falls are a common concern and significant time and resources are dedicated to fall prevention. Chair alarm systems are commonly utilized; however they can increase costs and may contribute to alarm fatigue via overly sensitive systems. The purpose of this study was to compare the reliability and accuracy of an installed chair alarm system entitled Safe Sitting System (SSS) as compared to commercially available and commonly used products – a disposable pressure-sensing alarm system (control) and a magnetic clip on alarm.

NUMBER OF SUBJECTS
75 healthy volunteers aged 19-60

MATERIALS/METHODS
A facilitator set up the chair alarm systems on two identical chairs. A confidential randomization sheet determined which chair would be tested first. Both the SSS and the control system had an identical alarm tone so that the alarm tone did not reveal which alarm was being evaluated. The facilitator activated the pre-determined alarm based on a randomization sheet. During both trials, the clip alarm was activated after the patient sat in the chair as blinding and randomization was not feasible for this product, hence its use in both trials for each subject.

Once the testing station was prepared, the facilitator summoned a blinded data collector and blinded subject from another room to begin data collection. The facilitator remained in the room during testing to reset the alarms when activated to preserve blinding procedures. Subjects performed a series of nine common motions in two chairs - one that contained the control product and the SSS.

RESULTS
The SSS chair had a total of 16 false positives out of all 600 responses (2.7%) and 0 false negatives out of 75 responses. The control product had a total of 187 false positives out of all 600 responses (31.2%) and 6 false negatives out of 75 responses (8.0%). A sign tests for the paired differences of total appropriate responses for the chairs not equal to zero was statistically significantly different. (p<0.0001).

CONCLUSIONS
An installed chair alarm with a timer and a slight delay in alarm response significantly reduced false positives and false negatives. In addition, there is the potential for cost savings from an installed chair alarm system as compared to a disposable chair alarm.

CLINICAL RELEVANCE
Chair alarm systems that utilize disposable sensor pads result in significant costs to hospital systems, especially with increased use. Caregiver alarm fatigue (including false positives for chair alarms) has the potential to delay healthcare provider response which may, in turn, increase the risk of falls. An installed chair alarm system with a slight sensor delay reduced the number of false positive responses while being just as reliable as two commonly utilized and commercially available products. This has the potential to reduce costs and improve patient safety during hospitalization.
Perspectives of acute care clinical instructors regarding the preparedness of novice physical therapy students for safe practice

PRESENTED BY
Clara Neumann

PURPOSE/HYPOTHESIS
A compelling issue recently addressed by the Physical Therapy (PT) profession has been to establish clear guidelines delineating the competencies that should be demonstrated by PT graduates entering the acute care practice setting. The Academy of Acute Care Physical Therapy (AACPT) adopted in 2015 the document, “Core Competencies for Entry-Level Practice in Acute Care Physical Therapy”, which identified important entry-level clinical skillsets, including those in the domain of Safety, required for this setting. The purpose of the current study is to identify safety skills that SPTs should possess upon entering their first full-time clinical learning experience, with the setting being that of acute care. The researchers investigated perceptions of acute care clinical instructors (CIs) to assess how much assistance novice physical therapy students (SPTs) would require with safety skills when beginning their first full-time acute care clinical experience.

NUMBER OF SUBJECTS
58

MATERIALS/METHODS
An electronic survey using QualtricsTM was generated consisting of seventeen 5-point Likert-type questions regarding safe behaviors which were adapted from the AACPT “Core Competencies for Entry-Level Practice in Acute Care PT” document’s section on Safety. A demographic form was included. Convenience sampling utilizing electronic survey links were posted to the APTA Acute Care LISTSERV and sent to Touro College’s affiliation acute care database. PTs who had served as CIs in the acute care practice setting gauged the amount of assistance novice SPTs would need in order to demonstrate safe patient management in this setting. A summative table of responses was interpreted and demographic information was analyzed.

RESULTS
CIs felt that SPTs entering their first acute care clinical affiliation should demonstrate independence or require minimal assistance while following hospital policies and procedures (86% total responses), seeking assistance from PT colleagues (75% total responses) and screening patients and the environment for safety barriers (61% total responses). In contrast, CIs expected novice SPTs to require maximal assistance in considering ventilator properties’ impact on the PT plan of care (55% total responses).

CONCLUSIONS
The document “Core Competencies for Entry-Level Practice in Acute Care Physical Therapy” can be used as a resource for identifying expectations for PT students who are entering their first affiliation in the acute care setting. In the current study, specific safety skills for novice SPTs entering the acute care setting were prioritized.

CLINICAL RELEVANCE
Clear guidelines outlining the learning objectives in which SPTs should be proficient upon entering their first acute care experience are essential for successful outcomes. The current study provides such guiding recommendations specifically with respect to students’ required safety skill sets. Academic programs, CIs, and SPTs can reference these results to prepare and prioritize students’ safety skills for the acute care hospital setting.
Physical Therapy Utilization in Older Adults Hospitalized for Fall Related Injury: A Retrospective Chart Review

PRESENTED BY
Connie Bogard

PURPOSE/HYPOTHESIS
The primary purpose of this retrospective chart review study was to determine utilization of inpatient Physical Therapy (PT) services by persons 65 years and over who have sustained accidental fall related injuries requiring hospital admission.

NUMBER OF SUBJECTS
From 1828 patients in the institution’s Trauma registry, 150 patients meeting the inclusionary criteria were randomly sampled and reviewed for data extraction and coding.

MATERIALS/METHODS
This study was approved by the organization’s Institutional Review Board. A retrospective chart review was conducted using the institution’s Trauma Registry data and patient electronic medical records (EMRs) from January 1, 2012 to June 30, 2015. Charts from 150 subjects were reviewed. Four abstractors coded the data using an Excel spreadsheet, and SPSS version 21.0 was used for data analysis of descriptive statistics. To assess abstraction consistency for inter-rater reliability, 25 charts were separately reviewed by all abstractors to measure agreement. Based on high reliability (Fleiss’ kappa coefficient for multiple raters of k=0.946 or higher), the remaining 125 charts were randomly assigned to the four abstractors for review.

RESULTS
Patients were 81.2 ±9 years of age and had a length of stay of 4.9 ±4.1 days. Based on Abbreviated Injury Scale (AIS) scores, 78% had either moderate to severe injury. A median score of 9 was found for Injury Severity scores (ISS) which is considered the gold standard for measuring injury severity. A score greater than 15 is considered severe polytrauma. Subjects reviewed participated in 3.2 ±2.2 physical therapy sessions. The majority of subjects were female (68%), Caucasian (97.3%) and discharged to a skilled nursing facility/long term care center (60%). Of patients sampled, 85.3% were seen by a physical therapist (PT), 76% of patients received PT recommendations in their hospital discharge summary, and 8.7% were readmitted to the hospital or seen in the emergency department within 6 months for another fall. The most commonly documented falls (based off E-Codes) were “other falls” at 36.7% and “accidental fall on same level from slipping, tripping or stumbling” at 26.7%. Falls occurred evenly across all months.

CONCLUSIONS
Managing falls remains a complex task. Nearly 15% of the patient charts sampled had not seen a physical therapist following a fall related hospitalization, and 24% did not receive recommendations for PT services within their hospital discharge summary.

CLINICAL RELEVANCE
Guidelines for physical therapy services established for older adults who have fall risk and sustained serious fall related injury requiring hospitalization are not always being fully met. Future utilization of and recommendations for PT in regards to fall prevention practices to rehabilitation following hospitalization from a fall related injury and subsequent reintegration of older adults into the community may be warranted and ongoing research promoted.
Feasibility of Ambulation for Patients on Heated High-Flow Nasal Cannula Oxygen Therapy in Intensive Care Unit

PRESENTED BY
Danielle Keenan

BACKGROUND AND PURPOSE
This case report investigates the feasibility of progressing ambulation for patients on heated high-flow nasal cannula oxygen therapy in an intensive care unit (ICU). Over the last several years there has been increased use of heated high-flow nasal cannula oxygen therapy in adult intensive care units. This therapy allows for humidified flow rates of up to 60L/min through a nasal cannula. Currently, no literature exists on progressing mobility with patients on this therapy. Often patients are limited to ambulation for short distances, in room, due to perceived limitations of portability of this oxygen therapy.

CASE DESCRIPTION
To date, two patients diagnosed with interstitial lung disease were able to progress to ambulation distances greater than 30 feet on heated high-flow nasal cannula therapy with the assistance of a physical therapist, rehabilitation technician and respiratory therapist.

OUTCOMES
Both patients were able to progress ambulation distances with less oxygen support during subsequent physical therapy visits. Furthermore, each patient was able to decrease oxygen support required to more conventional oxygen therapy that is able to be supported outside of the hospital setting. No adverse advents were identified during therapy sessions.

DISCUSSION
As the literature continues to support early progressive mobilization for ICU patients, physical therapists must continue to seek out mobility opportunities for patients on new therapies to their ICU units. Following these case studies, further discussions identified the need for developing standard guidelines for progressing ambulation on heated high flow nasal cannula oxygen therapy. Further research is needed to support the feasibility and safety of ambulation on heated high-flow nasal cannula oxygen therapy.
Physical Therapy Considerations for Patients with Wernicke-Korsakoff Syndrome: A Case Study

PRESENTED BY
Darra Zisser

BACKGROUND AND PURPOSE
Wernicke’s encephalopathy (WE) is an acute neuro-psychiatric condition caused by thiamine deficiency, characterized by mental status change, ocular abnormalities, and motor impairments such as gait instability and ataxia. Most cases are found in people who misuse alcohol. Thiamine deficiency and alcohol neurotoxicity produce brain damage such as loss of cells in the basal forebrain, hippocampal acetylcholine hypofunction, and shrinkage of frontal grey and white matter. Wernicke-Korsakoff syndrome (WKS) is the chronic disease that follows WE in up to 20% of cases and is characterized by amnesia and possibly delirium tremens. The purpose of this case study is to explore which physical therapy (PT) treatment techniques play an important role in preserving functional mobility and cognition, as well as, delirium prevention in a patient with WKS.

CASE DESCRIPTION
Patient (pt) is a 66 year-old female with PMH of hypertension, breast CA, gastric ulcers, and ETOH dependence admitted for marked resting tremor of the head and upper extremities, altered mental status, rigidity, and gait abnormalities. Pt was sober until 6 months prior to admission, when she began to drink secondary to family-related stressors. Pt noted to have a 20 pound weight loss in the past 6 months. Patient’s LOS was 15 days and was seen by physical therapy for 7 sessions. Treatment sessions focused on re-orientation and OOB for delirium prevention, as well as, transfer training and therapeutic exercise to increase functional independence and safety.

OUTCOMES
Upon initial evaluation, pt was MOD A x 1 assist for bed mobility and transfers, however, became MAX A x 2 for bed mobility and dependent x 2 for transfers on day 4 of admission, post-ETOH withdrawal. Treatment sessions focused on blocked sit to stand transfers with verbal and tactile cues, pre-gait activities in standing with postural re-education, and re-orientation via cognitive conversation and therapeutic exercise. Delirium prevention consisted of out of bed to chair during the day to aid in normalizing sleep cycles, frequent reorientation, and the use of familiar objects from home. Patient progressed to MAX A x 1 for out of bed transfers and concurrently mental status began to improve by day 14 of admission. On day of discharge, pt was alert and oriented to self and place, able to participate in active conversation, and was MAX A x 1 for bed mobility and transfers.

DISCUSSION
PT played a large role in improvement of functional and mental status in a patient with alcohol-related WKS. Overlapping symptoms of withdrawal, delirium, and WE increased medical management complexity in this case study, however, the PT treatment plan of re-orientation, OOB, and transfer training consistently applied to improving cognition and functional independence for differential diagnoses. Despite PT treatment plan, a diagnosis of WKS has long-term functional and cognitive deficits. Treatment focus should remain on improving and/or maintaining level of functional independence and cognitive reorientation.
INSPIRATORY MUSCLE TRAINING COMBINED WITH PULMONARY REHABILITATION, DIETARY MANAGEMENT, AND NIGHTTIME VENTILATORY SUPPORT IN AN OLDER WOMAN WITH OBESITY HYPOVENTILATORY SYNDROME: A CASE REPORT

PRESENTED BY
David Mandel

BACKGROUND AND PURPOSE
Obesity hypoventilation syndrome (OHS) is defined as a combination of obesity [body mass index (BMI) ≥ 30 kg/m²], daytime hypercapnia (PaCO₂ ≥ 45 mmHg) and sleep-disordered breathing in the absence of other known causes of alveolar hypoventilation. Clinical characteristics include daytime sleepiness, fatigue, lower extremity edema, low oxygen saturation measured by pulse oximetry, and restrictive lung disease due to obesity. Estimated prevalence of OHS in the United States is 3.7/1000 individuals. The purpose of this case study is to describe the addition of inspiratory muscle training (IMT) with standard treatment of pulmonary rehabilitation/physical therapy (PR), weight loss (WL), and nighttime ventilatory assist (NVA) for OHS.

CASE DESCRIPTION
A socially active 78 y/o female progressively developed OHS due to chronic obesity. The patient was initially given a prognosis of 2 year survival with no further treatment options. A second consult provided a better prognosis that included implementing 3L/min continuous supplemental oxygen; 6 weeks of PR focusing on aerobic exercise; a WL program with nutritionist consultation emphasizing increased protein intake and reducing total calories; a Trilogy NVA system (Respironics, Inc.); and IMT performed as a home program using a Threshold trainer device commencing at 9 cm H2O for 1 minute sessions at 2-3 times a day which progressed to 5 minute sessions at 41cm H20 over a period of 7 months.

OUTCOMES
After 7 months the patient reduced her weight from 96.8kg to 84.37kg with improvements in arterial carbon dioxide and oxygen levels (59 to 39 mmHg and 46 to 89 mmHg, respectively), forced vital capacity (1.19 to 1.70), forced expiratory volume at 1 second (0.89 to 1.16), and total lung capacity (3.20 to 3.51). Frequent daytime sleepiness was eliminated completely and continuous supplemental oxygen was reduced to 6 hour time periods on room air with no decrease in oxygen saturation. The patient resumed driving to social events and used a small portable on demand oxygen tank.

DISCUSSION
Combining a home program of IMT with standard program of WL, PR and PT, and NVA improved arterial blood gases, pulmonary function, need for supplemental oxygen, self-confidence, and activities of daily living. Including IMT with WL and standard pulmonary management appears to be an important therapeutic intervention in reducing the impairments related to OHS. Despite pulmonary function remaining below predicted levels, the pulmonary function improvements observed in this patient were enough to return her to a much better quality of life. Further investigation of IMT in patients with OHS is warranted.
INSPIRATORY MUSCLE AND FUNCTIONAL PERFORMANCE LIMITATIONS IN PATIENTS AFTER ORTHOTOPIC LIVER TRANSPLANTATION: A CASE SERIES REPORT

PRESENTED BY
David Mandel

BACKGROUND AND PURPOSE
End-stage liver disease and orthotopic liver transplantation (OLT) can produce substantial impairments in functional tasks due to marked muscle wasting and mechanical trauma to the abdominal musculature, rib cage, and diaphragm, respectively, producing a poor quality of life. Impairments in pulmonary function and inspiratory muscle performance (IMP) may lead to post-transplant pulmonary complications such as atelectasis, pneumonia, respiratory failure, hospital readmission, and increased mortality. The purpose of this case series was to investigate inspiratory muscle strength and functional performance in individuals post-liver transplantation.

CASE DESCRIPTION
Four female patients (age range 60-68) within 6 weeks post-OLT underwent tests of maximal inspiratory pressure (MIP) and sustained maximal inspiratory pressure (SMIP) using the PrO2 inspiratory muscle training (IMT) device, 6-Minute Walk Test (6MWT), 30 Second Chair Stand (30CS), Chronic Liver Disease Questionnaire (CLDQ) for self-perceived health-related quality of life, and the Karnofksy Performance Status Scale (KPSS).

OUTCOMES
Three of the females had a KPSS score of 60 (requiring occasional assistance but able to care for most of personal needs) while one had a score of 90 (able to carry on normal activity with only minor signs or symptoms of disease). The CLDQ demonstrated markedly low scores representing a poor quality of life. The total CLDQ score had a range from 16.0 to 24.66 out of a total score of 33.83 and the CLDQ Fatigue and Activity subscale scores (both of which have a total score of 7) had a range from 2.8 to 4.8 and 2.66 to 4.66, respectively. The 6MWT distance ambulated and 30CS were poor with the patients achieving only 26 to 59% and 0 to 71% of predicted values, respectively. The MIP and SMIP were markedly impaired compared to predicted values with patients achieving only 28% to 55% and 31% to 70% of the age- and gender-predicted values, respectively. The percent of predicted values for MIP and 6MWT were similar in three of the patients (e.g. 28% and 26%, 39% and 38%, and 55% and 58%, respectively) suggesting that a correlation between the two measures may exist.

DISCUSSION
This case series demonstrates that IMP, functional performance, and quality of life are significantly reduced in patient’s post-OLT. The similar percent of predicted values of MIP and 6MWT suggest that functional performance limitations are potentially related to inspiratory muscle weakness. Further investigation of the relationship between IMP, functional mobility, and quality of life are warranted in this population. Furthermore, the observed marked inspiratory muscle weakness may be improved with IMT which may subsequently improve functional mobility and quality of life in this patient population. In fact, both patients awaiting OLT and post-OLT may benefit from IMT highlighting the role it may have in the acute care setting.
Post-operative Functional Outcomes following Total Hip Arthroplasty using Three Different Approaches in the Acute Care Setting

PRESENTED BY
Dawn Brennan

PURPOSE/HYPOTHESIS
Total hip arthroplasties (THAs) are regarded as one of the most successful and cost-effective operations.1 Depending on the surgical approach used for THA, the impact on the muscle groups involved will vary greatly.2 More advanced surgical approaches have helped to decrease the trauma to muscle groups and improve preserve muscle strength.3 Currently there is little consensus on which approach offers the best and or fastest recovery.4-6 The purpose of this study was to compare outcomes in patients who underwent THA using three different approaches; anterolateral (AH), direct anterior (DAH) and posterior approach (PH) in an acute care setting.

NUMBER OF SUBJECTS
213

MATERIALS/METHODS
Participants included patients that underwent a THA between March and May 2016 at community based hospital. Based on the THA approach, participants were divided into 3 groups: AH (n = 45, 61.5 ± 12.4 y), DAH (n = 66, 66 ± 11.9 y), and PH (n = 102, 65.3 ± 12.1 y). For all participants, THA was performed by an experienced orthopedic surgeon, and received the same post-operative care in the hospital. At discharge, following outcomes were recorded: length of stay, ambulation distance, number of physical therapy (PT) sessions in the hospital, and discharge disposition. A one-way ANOVA with LSD post hoc testing was used to analyze differences between the groups (P < 0.05). Chi-square analysis was used for assessing differences in discharge disposition.

RESULTS
A significant difference was noted between the groups for length of stay (P = 0.003), ambulation distance (P = 0.003), and number of PT sessions (P = 0.010). Post hoc testing revealed that AH and DAH groups had better outcomes compared to the PH group for length of stay (AH = 1.8 ± .83 days vs. PH = 2.3 ± 1.6 days, P = 0.024; DAH = 1.6 ± 0.8 days vs. PH, P = 0.002), ambulation distance (DAH = 79.0 ± 29.9 m vs. PH = 62.9 m ± 27.5 m. P = 0.001) and number of PT sessions (AH = 3.1 ± 1.1 sessions vs. PH = 3.7 ± 1.4 sessions, P = 0.014; DAH = 3.2 ± 1.6 sessions vs. PH, P = 0.012). Lastly, a significant proportion of individuals in AH and DAH groups were found to be discharged to outpatient PT versus home PT (P = 0.017) compared to PH group.

CONCLUSIONS
AH and DAH approaches may offer improved outcomes for shorter length of stay, distance ambulated, reduced PT sessions in the acute care setting, and greater attendance to outpatient PT as well as needed compared to PH approach.

CLINICAL RELEVANCE
Data from this study suggests that type of THA may determine functional recovery of patients immediately post-operatively. Given the need for knowledge translation in clinical practice, this data may provide vital information to design a plan of care that maximizes patient function and allows faster progression after THA.
Sentinel Events: A growing concern in physical therapy practice

PRESENTED BY
Dawn Hall Bibb

BACKGROUND AND PURPOSE
A sentinel event is a phrase used by medical professionals to refer to medical error and is defined as “an unexpected occurrence involving death or serious physical/psychological injury, or the risk thereof.” Sentinel events, the 8th leading cause of death in the United States, can involve patient suicide occurring while being cared for at a healthcare facility, operative and postoperative complications, diagnostic inaccuracies, medication errors, devices and equipment failure, or system failure. Sentinel events are a growing concern in the United States. The Journal of Patient Safety reported that in 2013, 210,000 – 440,000 patients who enter a hospital experienced preventable harm that eventually leads to death. The purpose of this case study is to help therapists define and identify sentinel event(s) and to understand the role of the physical therapist in the prevention, identification, and intervention of sentinel events.

CASE DESCRIPTION
This case report describes the sentinel events that occurred at an inpatient rehabilitation hospital involving a 64 year old man with a bilateral above knee amputation with various comorbidities who experienced several admissions over a 6 year period. With every admission the patient participated in physical therapy yet continued to decline in overall patient status. As a result, the patient’s therapy and hospital stay were longer than anticipated. It was pure happenstance that helped all healthcare professionals realize the sentinel events that were occurring.

OUTCOMES
Upon the discovery of each of the sentinel events and appropriate interventions provided, the patient was able to return home at the previous functional level.

DISCUSSION
Using the experiences of this patient, it is the hope to enlighten physical therapists about our role and responsibility as it relates to sentinel events in all arenas of physical therapy practice. Physical therapists should be aware of sentinel events (what they are) and what causes them (in order to develop strategies to reduce them). If nothing else, a discussion of this case should serve as a reminder that the physical therapist should stay vigilant in patient care so that we can aid in the recognition of a sentinel event before it is too late.
Role of Acute Physical Therapy on the Medical Units: Who Are We Seeing and Why

PRESENTED BY
Debra Powell

PURPOSE/HYPOTHESIS
To determine the patient population seen by PT on the medical units, identify reasons for utilization of PT services, identify the knowledge & skill set a therapist should have for effective utilization of services. Data was collected & analyzed on the following: 1) patient population requiring skilled therapy consult 2) timing of intervention 3) reason of referral 4) discharge recommendations made by the physical therapy versus actual discharge destination, & 5) standardized test utilized.

DESCRIPTION
Setting: Large urban academic medical center (886 beds)
Main Outcomes Measures: Utilization of Acute PT services & patient profiles on the medical units.

SUMMARY OF USE
To establish a profile of the patients on the medical units that were being seen by PT, a convenience sample of 200 charts were reviewed from three medical units over a 12-week period, January-March of 2016. The sample revealed that the average LOS was 8.8 days & the patient population consisted of: 56% Medical, 26.5% Cardiac, 11.5% Orthopedic, & 6% Neurological.

The data revealed that the therapy evaluation occurred 48 hours or less of discharge 90% of the time. The reason for physician referral primarily being for discharge recommendations occurred in 130 cases, difficulty mobilizing was selected in 100 cases, & 59 cases for fall risk management. The actual discharge destination was compatible with the PT recommendations 78.5% of the time with 63% discharging home & 37% to a facility. Patients being seen for only evaluation made up 74% of the cases, with evaluation & one follow-up treatment at 16%, & greater than one follow-up treatment occurring 10%.

Of the standardized tests administered, the Tinetti Test (POMA) was selected in 120 of the 200 cases, Elderly Mobility Scale in 51, & the Boston AM-PAC “6-Clicks” in 29 cases. Physicians selected the referral reason as fall risk management in 59 of the 200 cases with the PT selecting the Tinetti Test in 33, or 56% of the 59 cases.

IMPORTANCE TO MEMBERS
Our findings demonstrated that the role of PT on the medical units is primarily to aid in establishing a safe discharge recommendation. With patients primarily seen for evaluation only at the end of their hospitalization & discharging to home, our findings revealed that utilization of standardized tests are being used primarily as an objective measure to address referral reason & aid in our recommendations; rather than being used as tools for outcome measures.

Our findings revealed that the diverse diagnoses addressed by PTs on the medical units, require staffing with therapists who have clinical experience across the care continuum in various patient care settings & have clinical expertise in selecting the appropriate standardized test to aid in addressing the reason for referral. While discharge planning is multifactorial & the actual destination is not always in adherence with therapy recommendations, the PT contributes to timely case management by effectively collaborating with the healthcare team & having a thorough understanding of utilization of payor benefits.
Early Mobilization of patients within 24 hours of receiving IV Tissue Plasminogen Activator

PRESENTED BY
Denise Brown

BACKGROUND AND PURPOSE
Background: The 2015 AVERT study noted that the outcomes for patients who received IV tPA were no different than those that did not. Therefore, the study noted that there is no evidence that early mobilization is harmful. The AVERT study did leave some questions. One being when is the best time to start rehab after stroke.

Einstein Medical Center Philadelphia (EMCP) has a JACHO accredited Neuroscience unit. In the past common practice was to withhold physical therapy services for 24 hours post administration of IV r-tPA. The rationale was that this time frame provided a large enough window for patient stability and minimal adverse reactions to treatment. The main one being the increased risk for bleeding. The half-life of Alteplase is 5 minutes and within 10 minutes after the infusion is stopped 80% of the of the tPA present in circulation plasma is cleared. Given the short half-life and rate of plasma clearance the neuroscience team believed that it would be possible to begin physical therapy with 12-24 hours of IV r-tPA.

Purpose: To determine the feasibility of early mobilization of acute stroke patients treated with IV r-tPA (Recombinant tissue plasminogen activator) between 12 and 24 hours of treatment.

CASE DESCRIPTION
Beginning November 1, 2015 EMCP issued a protocol for mobilization of patients post IV r-tPA within 12-24 hours of treatment. The inclusion criteria were as follows:
- 12 hours have elapsed since the infusion of IV r-tPA
- Patient should demonstrate stable or improving neurological signs from initiation of ischemic stroke
- Patients are hemodynamically stable (not on e.g. vasopressors for blood pressure control or requiring multiple PRN boluses for BP control).
- Patient can actively engage in the evaluation
- NIHSS is stable
- MAP goals and Systolic Blood Pressure goals can be maintained
- OOB orders can be obtained

OUTCOMES
During a six month period 27 patients received IV r-tPA. Out of the 27 patients who received IV r-tPA 7 were evaluated by a physical therapist within 24 hours. Out of those 7 patients three patients were evaluated by a physical therapist within 12 hours. There was only one evaluation session that was terminated due to activity intolerance. All the other sessions were completed without adverse reaction. Of the remaining 20 patients, the main reason why physical therapy treatment was not initiated within 24 hours was due to patient inability to maintain BP goals.

DISCUSSION
Early mobilization post IV r-tPA is possible. However, most of patients in this study were not appropriate to begin mobility. Some questions to consider are: Is 12 hours to soon for mobility? Due to the acuity of some of these patients is it best to hold all mobility for 24 hours? Or as in this study should each patient continue to be evaluated on a case basis given our inclusion criteria?
The Effectiveness of Early Mobilization for Critically Ill Patients

PRESENTED BY
DonnaJo DiNorcia

PURPOSE/HYPOTHESIS
The purpose of this narrative review was to determine if early mobilization (EM) is effective for improving physical function and hospital outcomes in critically ill patients.

NUMBER OF SUBJECTS
This narrative review included 716 participants across five studies.

MATERIALS/METHODS
A thorough search of PubMed, CINAHL, and PEDRO identified 411 articles. Titles and abstracts were initially screened by two independent reviewers for potential inclusion. After initial screen, 11 articles were identified for possible inclusion. Two independent reviewers each assessed all 11 full text articles. The inclusion criteria were the following: 1. Studies must be RCT’s within the last five years, 2. All participants were on mechanical ventilation, 3. All participants were either in intensive care unit (ICU) or high dependency unit (HDU). After applying inclusion criteria, five RCT’s were selected for this narrative review. Two independent reviewers extracted data with a third reviewer being consulted to resolve any discrepancies. Data extracted included: study year, country setting, patient demographics, definition of early mobilization, intervention delivered, and results. The primary outcome variables were ICU length of stay (LOS), hospital LOS, and mortality.

RESULTS
Three of the studies found a significant reduction in ICU LOS (p < 0.01). Two studies demonstrated a significant reduction in hospital LOS (p < 0.01). In addition two studies demonstrated a positive trend towards increases in mobility in the group receiving EM compared to standard care. All studies found no significant differences in hospital mortality between groups.

CONCLUSIONS
Based on the findings across the evidence assessed, EM is effective for decreasing ICU and hospital LOS and improving mobility for critically ill patients. There is consistent and strong results in regards to hospital mortality proposing a firm conclusion on the safety and feasibility of EM.

CLINICAL RELEVANCE
Early mobilization is a safe and effective treatment intervention for the management of critically ill patients. Shorter ICU LOS will improve quality of life and decrease overall hospital costs.
Liberalization of Sternal Precautions for Patients with Complicating Mobility Challenges

PRESENTED BY
Elissa Wolf

BACKGROUND AND PURPOSE
It is common for patients who undergo a sternotomy to be placed under restrictions for bilateral upper extremity activities for several weeks to months to promote appropriate healing, referred to as sternal precautions. However, when a patient also presents with an underlying impairment to mobility, following these precautions may delay or further inhibit their functional recovery. The purpose of this case series was to highlight complex patient cases where sternal precautions, once modified or discontinued, improved patient’s mobility and independence.

CASE DESCRIPTION
The four individuals in this case series, all of whom were independent or modified independent prior to hospital admission, each underwent sternotomy and presented to acute care physical therapy. In addition to their admitting diagnosis for surgery, each presented with one of the following additional diagnoses: bilateral lower extremity amputation, acute spinal cord injury (SCI), severe lower extremity osteoarthritis, and hemiparesis. As a result of these additional diagnoses, standard sternal precautions at the acute care facility delayed or limited their progression of functional mobility along a standard post-operative timeline.

OUTCOMES
Physical Therapy staff communicated with the Cardiothoracic Surgical team regarding modifications to the standard sternal precautions for this facility during the course of each patient’s stay. Two of the four cases (SCI and double amputation) had modifications to their sternal precautions at six days post-operatively to allow for the use of their upper extremities for seated balance but not to lift their body weight for transfers. The other two cases (severe osteoarthritis and hemiparesis) had complete discontinuation of sternal precautions at two and six weeks post-operatively, respectively. These modifications resulted in a change to functional mobility status within one physical therapy treatment session, from total to minimal assistance, for two (double amputation and severe osteoarthritis) out of the four cases investigated. Of the other two cases, one (SCI) remained total assist for transfers and the other (hemiparesis) improved from total to moderate assistance for transfers within five days of sternal precaution liberalization.

DISCUSSION
Current literature suggests that sternal precautions post-sternotomy may be too restrictive and limiting in the functional recovery of patients. The basis of this case series was to highlight the change in mobility status of patients with underlying mobility challenges once sternal precautions are modified or discontinued. Three of the four cases were found to have improvement in functional mobility once sternal precautions were liberalized. There are many factors that need to be considered in liberalization of sternal precautions for other patients: discharge disposition, timing and degree of sternal precaution liberalization, facility-specific sternal precautions, and medical complications affecting patients’ length of stay.
Using interdisciplinary team coordination and management to guide physical therapy treatment and early mobility for a critically ill patient with familial dysautonomia

PRESENTED BY
Elizabeth Appel

BACKGROUND AND PURPOSE
Familial dysautonomia (FD) is a hereditary disorder caused by a mutation in the IKBKAP gene leading to autonomic nervous system and respiratory compromise. There is no cure for FD but life expectancy and quality of life have improved with advances in medical management and establishment of comprehensive care centers. Literature detailing the management of FD is limited to outpatient intervention and the role of chest PT to manage respiratory impairments. While acute care intervention case reports are scarce, a graded approach to mobility in the critical care setting has proven safe and effective for patients experiencing respiratory failure. The purpose of this case study is to detail the effectiveness of coordinated PT intervention in a patient with FD and respiratory failure when using an established ICU early mobility protocol. Daily interdisciplinary rounds including the NYU Dysautonomia Center were utilized to coordinate medications, respiratory support, and rehabilitation.

CASE DESCRIPTION
The patient is a 24 year old female with FD who was referred to the emergency room from the NYU Dysautonomia Center with lethargy, progressive weakness, autonomic crisis, and EKG changes. The patient was admitted to the medical ICU and her condition worsened requiring CPR and intubation. The patient’s past medical history was notable for autonomic crisis, ataxia, visual deficits, chronic restrictive lung disease, hypoventilation and hypercapnia, scoliosis, and R foot valgus collapse. Her hospital course was complicated by seizure and failed extubation requiring tracheostomy. Using established early mobility protocol guidelines related to ventilator settings, hemodynamic stability, medication management, and lab values the patient received chest PT, progressive strengthening, and functional mobility training.

OUTCOMES
The PT initial evaluation (IE) was completed on hospital day 7. At IE the patient was dependent for all mobility and out of bed activity required a dependent lift. The patient received chest PT, was provided a therapeutic exercise program, and progressed to transfers and gait. As the patient was progressing, she was able to tolerate two PT sessions daily. On hospital day 19 the patient was able to ambulate with 2 person assist. PT sessions were completed with passy muir speaking valve beginning on day 21. By discharge on hospital day 23 the patient could ambulate 60 ft with a rolling walker and contact guard assist of one PT.

DISCUSSION
The use of an existing early mobility protocol and coordination with a specialized dysautonomia center led to the progression of mobility in a patient with FD. No adverse events were noted during PT sessions and a safe discharge to home was created. This case report highlights the importance of a multi-dimensional PT plan of care when managing patients with FD in the acute care setting.
The Role of Physical Therapy in Care Coordination Value-Based Medicare Bundled Payment Programs

PRESENTED BY
Elizabeth Biehl

PURPOSE/HYPOTHESIS
The purpose of this platform is to discuss the integral role and physical therapy (PT) involvement in Value-Based Care Medicare Bundled Payment Programs. Traditional roles of Care Coordination are held by Nursing and Case Management professionals; this platform will introduce and discuss the key role PTs can play in post-acute care.

DESCRIPTION
As the health care industry continues to change due to general economic forces in the country, there are a number of catalysts to what is referred to as this volume-to-value trend. Healthcare industries and the federal government are trying to improve quality, access to care, and make health care more affordable. One method the federal government is employing is use of bundled payments, which is defined as the reimbursement of health care providers on the basis of expected costs for clinically-defined episodes of care.

As care coordination roles are traditionally held by Nursing and Case Management, it is critical for our profession to incorporate our key knowledge base to value-based hospital initiatives. At Hospital for Special Surgery (HSS), PTs are playing a pivotal role in care coordination. Post-operatively, if a patient requires additional therapy, they are sent to a subacute facility where they are followed by a PT via a daily census exchange on any patient at one of our criteria based Care Coordination Facilities. A PT will review the census and assess their functional progression and readiness for discharge. Clinical pathways have been created and shared with facilities, and if patients are not on target within the 5-7 day pathway, direct communication with the facility occurs to troubleshoot potential issues and offer additional input. If medical questions arise, the PT will alert our team of post-op Nurse Practitioners and the attending, in order provide real time information on medical complications our patients experience. The therapist’s direct role has led to increased savings for the hospital of >$750,000, decreased length of stay at subacute facilities, from 19 days to 8 days, all while maintaining an exceptional level of care.

Although our current model is utilized for DRG 469 and 470 (Major Joint Replacement or Reattachment of the Lower Extremity with or without complications/co-morbidities), it can be replicated for use among other Medicare bundles, utilizing a PTs distinct functional knowledge base and critical clinical thinking skills to oversee a patient’s post-acute care.

SUMMARY OF USE
The intention is to highlight the importance of PTs as a Post- Acute Care Coordinator and role in Value-Based Medicare Bundled Payments. By creating post-operative pathways and a means to exchange patient information on a daily basis, HSS is more carefully able to follow and have an impact on the post-acute care of our patients at a sub-acute facility.

IMPORTANCE TO MEMBERS
This platform will illustrate and discuss how facilities can incorporate PTs as integral members of value-based care coordination.
Making Early Intervention Mobility a Reality for Patients with Extreme Obesity in the Acute Care Setting: A Case Study

PRESENTED BY
Elizabeth Lewis

BACKGROUND AND PURPOSE
The purpose of this study was to investigate if early intervention physical therapy and early identification of needed equipment could help to improve mobility related outcomes in patients with extreme obesity. Barriers to mobilizing a patient with extreme obesity in the acute setting include: marginal functional mobility status on admission, fear of staff to mobilize, accessibility to equipment, and limited out of bed opportunities. This lack of mobility may result in the need for post-acute placement, which is often difficult to secure due to high care needs and lack of resources.

CASE DESCRIPTION
This study included twenty patients with extreme obesity (BMI>50) on a telemetry unit. Patients were screened by a physical therapist to identify any mobility concerns, make equipment recommendations, and establish a mobility plan. If ongoing intervention was indicated, therapy was initiated within 24 hours of admission. An equipment resource guide was created and made available for staff to assist in identifying durable medical equipment that was available to order. Patients were categorized by pre/post mobility level using a progressive mobility scale.

OUTCOMES
The study found 85% of participants discharged back to their prior living environment. Of the 17 ambulatory patients, 12 were walking a distance of 40 feet or greater upon discharge. No falls or adverse events were identified within the parameters of this study. The overall impression from staff involved was that the equipment was more accurately ordered and delivered in a timely manner. Subjective feedback from staff indicated increased confidence when mobilizing this patient population.

DISCUSSION
The importance of overcoming barriers to early mobilization for the bariatric patient becomes more evident when one considers its potential impact on a patient’s discharge. Our study seeks to investigate whether early identification and timely initiation of mobility may help to maintain functional mobility status in this patient population. These factors paired with an equipment resource guide, allow for timely access to bariatric equipment, early mobility, and increased comfort of staff. More research needs to be conducted to determine if these interventions are significant to improve mobility at discharge.
Appropriate Dosing of Acute Care Physical Therapy Services for Patients Status-post Hip Open Reduction Internal Fixation After a Trauma or Fall

PRESENTED BY
Elizabeth Nelson

PURPOSE/HYPOTHESIS
To assess appropriate and effective dosing of acute care physical therapy services for patients status-post hip open reduction internal fixation surgical intervention for hip fracture after a trauma or fall.

DESCRIPTION
The orthopedic department at NYU Hospital for Joint Diseases has established a clinical pathway for those patients admitted for surgical intervention for hip fracture after a trauma or fall. The focus of the interdisciplinary team is to discharge these patients safely home versus to a rehabilitation facility. Prior to January 22nd, 2016 patients status-post (s/p) hip open-reduction internal fixation (ORIF) procedure received Physical Therapy (PT) services once-a-day for 30 minutes compared to patients s/p total hip arthroplasty or hemiarthroplasty who received PT services twice-a-day (BID) for 30 minutes each. The reason for the difference in programming was due to the belief that the patients who underwent hip ORIF procedure would not tolerate two sessions of PT due to the pain and apprehension from the trauma and subsequent surgical procedure. A literature review was performed; however there was no research on appropriate dosing of these patients. Since January 22nd, 2016 PT increased the frequency of visits to BID for patients s/p hip ORIF. We hypothesized that increasing PT services to BID for 30 minutes each session would result in significant functional gains facilitating a safe discharge home and a decreased length of stay (LOS.)

SUMMARY OF USE
To track the effectiveness of increasing PT programming, we looked at Boston University AM-PAC 6-clicks basic mobility change between initial evaluation and discharge, LOS, and discharge disposition. To assess patient tolerance to the increase in programming we analyzed the percentage of missed sessions and the reasons for missed sessions. After increasing programming, we noted an initial increase in missed sessions due to modifiable factors of patient report of pain and fatigue. With education and reinforcement of staff to coordinate the sessions with the administration of pain medication as well as increasing time between sessions, there was a significant decrease in missed sessions due to pain and fatigue. The most common reason for missed sessions after the increase to BID programming was medical reasons, which were non-modifiable. Although we did not see a significant increase in change of AM-PAC scores, there was a decrease in LOS by 1 day and an increase in the percentage of patients being discharged home.

IMPORTANCE TO MEMBERS
It is important to appropriately dose physical therapy in order to maximize patient potential and progress. Coordination of care with the the interdisciplinary team facilitates improved patient tolerance and decreased number of missed sessions. Twice-a-day acute care physical therapy programming can assist the interdisciplinary team in decreasing length of stay, as well as increase discharges to home.
Feasibility of running a successful acute care therapy gym in a tertiary setting: role of physical therapist assistant

PRESENTED BY
Enjeen Woolford

PURPOSE/HYPOTHESIS
Establish the feasibility and identify the challenges/barriers in running a Physical Therapy (PT) gym in an acute care setting

DESCRIPTION
In the acute care setting, physical therapist works closely with other team members in the hospital to establish safe discharge recommendation for patients and prevent readmissions. Though the focus of PT in most acute care settings is providing with appropriate recommendations, patients typically receive follow up when categorized as pathway; updated note is required or patient/family member requests therapy. Physical therapy assistants (PTA) play a pivotal role in follow up care for patients in the acute care setting. Utilizing an acute care therapy gym not only progress the patients towards their goals but also boost efficiency. In our tertiary acute care setting, we run 3 PT gyms to service general medical, surgical and neurological population. Specifically the neuroscience gym has been run solely by a PTA from 2014 to 2015 with a new rotation of PTs and PTA from 2015 to present. Typically 8-10 pts are treated per day in the gym with at least > 50% of patients having inpatient rehabilitation recommendations. The limited space of our gym has the basic essentials for treatment- mat table, portable steps, weights, mirror and balance items. Challenges for initiating a gym required a consistent PT aide to assist the therapist with transportation. Common barriers from preventing patients coming to the gym are pain limitations, bedside rounds, presence of tracheostomy, and being off the floor for testing purposes.

SUMMARY OF USE
Longer hospital stay increases the risk for deconditioning and delirium. Establishing a PT gym in acute care and implementing a therapy schedule for treating patients especially with longer length of stay will help with progressing their functional mobility, endurance and strength. Patients with home or outpatient recommendations allow them to experience and understand their maximum potential towards their recovery for functional mobility which might help them to adhere to recommendations

IMPORTANCE TO MEMBERS
Running a regular gym in acute care setting is feasible. PTAs can play an important role in providing care within their scope of practice in acute care gym to advance the patient to the next level in the continuum of care.
Integration of the Acute Care Competencies to Enhance Doctor of Physical Therapy Student Preparation for Inpatient Settings

Presented By
Eric Sawyer

Purpose/Hypothesis
The purpose of this platform is to describe one Doctor of Physical Therapy (DPT) program’s implementation of the Acute Care Competencies (ACC) to enhance student preparation for inpatient clinical experiences.

Description
The recently published Acute Care Competencies (ACC) identify important benchmarks for entry level physical therapy practice in the domains of clinical reasoning, patient management, safety, communication and discharge planning. Due to the team-based nature of the acute/inpatient settings, interprofessional collaborative practice is key to safe, efficient and effective patient care. Although the ACC were developed for the acute care setting, these skills are necessary for physical therapists across practice settings.

To determine program alignment with these competencies, our DPT Program reviewed the musculoskeletal (MSK) curriculum, and faculty recognized didactic and experiential content addressing these competencies were lacking. These gaps were supported by clinical instructor (CI) reports of student challenges in treatment progression, discharge planning, and interprofessional communication.

To address the gaps, the MSK faculty added one lecture and three lab experiences: 1) observation of a live patient examination followed by student reflection and clinical reasoning discussion; 2) case-based small group problem solving for treatment progression and discharge planning report out to the team; 3) a standardized patient (SP) examination and intervention session. To practice team communication and information handoffs, nursing students were included in the SP encounters. Following these encounters, faculty led debriefing sessions consisting of student/peer reflection in small groups and feedback.

Pre- and post-course surveys inquiring about student confidence in the five competency domains and the impact of the nursing collaboration were administered. The greatest improvements in student confidence were seen in the following areas: understanding the roles/responsibilities of the acute care PT, communication and discharge planning. In addition, course evaluations were overwhelmingly positive about the SP experiential lab addition, and 93% of students reported the nursing collaboration in the simulation lab either somewhat or significantly enhanced their experience.

Summary of Use
For this platform, the curricular assessment process and the development of new content and its delivery will be reviewed. Results from the assessment of curricular revisions will be shared along with anecdotal comments from course evaluations. Proposed next steps for improvements in the curriculum and implementation of ACCs into clinical education will be described.

Importance to Members
This platform will provide both clinicians and educators with an example of how the ACCs can improve educational preparation for DPT students prior to clinical experiences, and how they might be used as a learning tool in the clinic.
The Development and Rewards of Establishing a Safe Patient Handling/Mobility Program

PRESENTED BY
Golda Widawski

PURPOSE/HYPOTHESIS
The purpose of this report is to discuss and promote the steps in the creation of and the rewards of interdisciplinary teamwork in creating a Safe Patient Handling/Mobility (SPH/M) Program for a large healthcare institution.

DESCRIPTION
New York State passed a Safe Patient Handling law in 2014. In accordance with the law, New York Presbyterian Hospital (NYP) established a SPH/M Committee. This committee is inter-professional and is made up of 50% frontline non-managerial staff and 50% managerial staff. Membership is represented by staff from Nursing, Rehabilitation Medicine (including Physical and Occupational Therapy), Nursing Education, Radiology, Transportation, Emergency Medical Services (EMS), Talent Development, Quality, Finance, and Work Force Health and Safety. Collaboratively, we created a policy based on a literature review of research and consultation with other hospitals regarding best practices. We also conducted an institution-wide needs assessment in preparation for implementation of our SPH/M program.

SUMMARY OF USE
Over the past several years, NYP developed an early mobilization program in our intensive care units, and in support of this initiative purchased limited mechanical lift equipment for use throughout the institution. With the passage of the New York State law for Safe Patient Handling, NYP embraced the opportunity to expand what it already has in place. The program, to date, includes an assessment of risk factors, identification of SPH/M equipment and training, development of a hospital-wide policy, and chosen metrics to monitor the program’s progress and success. Education of hospital administration and staff in all patient care areas about this new law and policy, as well as the plan for gradual implementation across all campuses, is ongoing.

IMPORTANCE TO MEMBERS
With the advent of early mobilization programs in many hospitals throughout the country, as well as passage of SPH/M laws in many states, it is beneficial to share best practices and also experiences in regards to safe patient handling. The NYP SPH/M Committee provides leadership opportunities for physical therapists within our hospital system and creates a forum for inter-disciplinary collaboration and sharing of expertise. Benefits experienced by physical therapists through Rehabilitation’s participation on this committee include developing relationships with colleagues throughout NYP, increasing knowledge about safe patient handling, and insight into the administrative processes involved in developing such a large scope program. It is tremendously rewarding to be “front and center” in creating an environment that promotes increased mobility for patients and also ensures optimal safety of both patients and caregivers.

PRESENTED BY
Heather Anderson

PURPOSE/HYPOTHESIS
The purpose of this research was to examine practice patterns of physical therapists (PTs) related to mobilization of persons with acute stroke and compare it to recent findings in the literature. It was hypothesized that: (1) PTs with more experience and those working for facilities accredited by the Joint Commission (TJC) will mobilize sooner (2) PTs are most frequently the practitioner to initially mobilize a person after stroke (3) persons with severe impairments and those treated with tPA are mobilized later.

NUMBER OF SUBJECTS
161 physical therapists; majority are subscribers to the listserv of the American Physical Therapy Association’s (APTA) Neurology and/or Acute Care Sections

MATERIALS/METHODS
The online survey consisted of 26 questions related to participant characteristics, the timing and frequency of mobilization for persons with acute stroke, perceptions about influences on mobilization, and knowledge of current evidence.

RESULTS
The majority of respondents report mobilizing persons with uncomplicated strokes, not treated with tPA, within 24 hours or less. As hypothesized, persons with complex strokes, treated with tPA and/or with severe impairment were initially mobilized later (majority 25-48 hours after stroke onset). Although 53% of respondents are aware of the findings from a large clinical trial, A Very Early Rehabilitation Trial (AVERT) after acute stroke, 46% report being unaware. Congruent with the hypothesis, respondents identified PTs as the first to mobilize persons post-stroke with severe and moderate impairments (95% and 91%, respectively). Contrary to the hypothesis, PTs with more experience and those working for a TJC accredited institution are not more likely to mobilize sooner. Most respondents (88%) believe that more frequent mobilization after acute stroke is beneficial, a premise supported by the recent AVERT trial. However, respondents report that more frequent mobilization is limited by inadequate staffing (46%), limited interdisciplinary coordination of care (18.5%), and lack of resources (17%).

CONCLUSIONS
The survey results indicate that the timing of mobilization for persons with uncomplicated acute stroke is typically within the recommended 24 hours. Persons treated with tPA, those with medical complications or with severe impairment following stroke are typically mobilized later. Incongruent with current practice recommendations is the frequency of mobilization for persons with acute stroke following the initial assessment. Although, the majority of respondents indicated that increased frequency would be beneficial, they report prohibitive barriers.

CLINICAL RELEVANCE
Appropriate timing and frequency of mobilization for persons with acute stroke is integral to maximizing recovery. The survey results reflect agreement with the initial timing of mobilization for persons with acute stroke, but not with frequency. The results provide essential information about the barriers to more frequent mobilization. This knowledge may ultimately improve the quality of care for persons with acute stroke.
Intensive Care Unit Acquired Weakness After Bilateral Ventricular Assistive Device Implantation: A Retrospective Case Study

PRESENTED BY
James Walrath

BACKGROUND AND PURPOSE
Establishing the functional status of critically ill patients is a challenging process that is often limited by the many practical restrictions present in the critical care environment. The Six Minute Walk Test (6MWT) has been established as a valid and reliable tool to assess patients with chronic heart failure, as well as utilized to predict survival in patients after ventricular assist device (VAD) implantation. Hand-grip dynamometry has been shown to be a useful surrogate for global strength testing in the Intensive Care Unit (ICU).

CASE DESCRIPTION
Patient was a 26 year old male with congenital heart disease, double inlet left ventricle with transposition of the great arteries. He underwent a number of palliative cardiac surgeries and ultimately received an orthotopic heart transplant on 1/2/2001 due to a failing Fontan circulation. The patient developed chronic graft dysfunction and end-stage renal disease and heart failure secondary to rejection, requiring intubation and hemodialysis, which prompted placement of an Impella percutaneous VAD (5/23/2015), and ultimately placement of a HeartWare BiVAD (6/2/2015). Post- BiVAD implantation, the patient began receiving physical therapy on post-op day 9 and was seen 1-2 times per day as appropriate with focus on post-op mobility, strengthening, and endurance. Additionally, the patient received occupational therapy once per day to focus on regaining independence with activities of daily living.

OUTCOMES
Hand-grip dynamometry and the Six Minute Walk Test (6MWT) were systematically administered throughout the patient’s admission and rehabilitative course. This data was retrospectively evaluated from the medical record. The patient demonstrated steady improvement in his 6MWT and hand-grip strength from 11/11/2015 to 2/11/2016. The patient demonstrated regression in both tests after 2/11/2016. This was associated with a precipitous medical decline, with the patient’s course complicated by an acute kidney injury and septic shock, ultimately leading to the patient’s death.

DISCUSSIO
Establishing a relationship between 6MWT distances and hand-grip dynamometry could be a useful tool in assessing ICU acquired weakness and may assist with predicting functional limitations for patients in an ICU setting. Many critically ill patients are not able to perform a full battery of testing and/or may be limited to testing within the confines of the ICU. Thus, establishing this relationship may allow practitioners the flexibility to perform either of these tests to accurately determine the patient’s global strength and endurance and assist with prediction of the patient’s future functional mobility.
Early Inclusion of Physical Therapy Home Exercise Programs In Acute Care

PRESENTED BY
Jane Dumas

PURPOSE/HYPOTHESIS
To survey the effect of early inclusion of a home exercise program (HEP) on acute inpatient neurology floors.

BACKGROUND/ SIGNIFICANCE
Evidence reports a high incidence of functional decline during adult hospitalizations; therefore, it is necessary to provide physical therapy (PT) in the plan of care (POC), beginning at the acute stage. This study’s intent is to provide an individualized HEP to the patient and/or caregiver at initial evaluation (IE) and to specifically highlight the HEP at every subsequent patient interaction. This program will increase patient participation in exercise outside of PT sessions and patients/caregivers will report increased feelings of involvement in the exercise POC.

METHODS
Standard practice on acute neurology floors includes issuing a HEP for all patients receiving PT. A baseline group of 20 participants and/or caregivers received a usual care HEP and completed a questionnaire within 24 hours of discharge. Following completion of this baseline data, 20 participants and/or caregivers will be provided with a HEP at the time of the IE. This intervention group HEP will be highlighted at each PT session by writing on participant white boards, providing reminders of instructions, and reviewing the HEP through verbal instruction, demonstration, and/or performance. These participants and/or caregivers will complete a questionnaire within 24 hours of discharge.

RESULTS
Within the baseline group (n=20), 40% of participants stated they did not receive a HEP despite physical therapist report of providing a HEP to all 20 of these participants. In the intervention group (n=6;14 in progress with expected completion of 20 in July 2017), 100% of participants stated they received a HEP. In the baseline group, 35% of participants stated the HEP instructions were not easy to follow, as well as 75% stating they were unable to find the instructions when needed. In contrast, 83.3% of participants in the intervention group stated the instructions were easy to follow and easy to find. Lastly, 50% of baseline group participants stated they did not feel involved in the process of carrying out the HEP, whereas 100% of intervention group participants did feel involved.

CONCLUSIONS
It is standard for physical therapists to provide exercises for patients during their hospital stay; however, research is limited regarding at which point the HEP was given and the physical therapist’s emphasis regarding adherence to program. A HEP given upon IE in combination with frequent education regarding the vast importance of it appears to significantly improve the participants’ knowledge of receiving the HEP in addition to feeling more involved in the process. This study demonstrates that it is pertinent for physical therapists to provide frequent reminders at every session, including at the IE, in order for patients to find program provided, easily follow instructions, and perform the HEP.
Impact of strength on physical performance and quality of life in an outpatient dialysis population

PRESENTED BY
Jane Wetzel

PURPOSE/HYPOTHESIS
Individuals with End-Stage Renal Disease (ESRD) receiving dialysis have decreased strength and physical performance. There is evidence that strength may be influenced by duration and frequency of dialysis duration. The goal of this study was to examine the effects of muscle on measures of physical performance and quality of life (QoL) and to examine differences between people with ESRD undergoing center (3x week) versus home dialysis (4-5x week).

NUMBER OF SUBJECTS
22

MATERIALS/METHODS
A cross-sectional quasi-experimental design was used. Study participants were ambulatory adults with ESRD receiving outpatient hemodialysis. Muscle performance for grip, lower extremity (LE) strength (dynamometry) and power (Sit to Stand tests[STS]) were compared to measures of physical performance (Short Performance Physical Battery [SPPB], 4-meter gait speed, Timed Up and Go, estimated 6-minute walk distance) and QoL measures (Medical Outcome Short Form 36, Activities-specific Balance Confidence [ABC] Scale).

Descriptive statistics were analyzed for the entire group and each subgroup. Pearson correlations were used to determine associations for muscle strength and power to measures of physical performance and QoL. Independent samples T test was performed to determine differences between center vs home dialysis. A level of significance was set at p<.05.

RESULTS
Twenty-two ambulatory adults (14 Center and 8 Home) with ESRD participated in this study. The main findings for the entire group were; 1) strength and power were decreased compared to published norms (Grip = 86.06%; LE force = 52.95 to 67.39% predicted); 2) All but one of the LE strength measures were significantly related to the SPPB (r=0.50 to 0.65); 3)10x STS measures were significantly correlated with all measures of physical performance (r=-.58 to -.75); 4) The ABC was significantly associated with 10x STS (r =-0.47), gait speed (r=-0.46) and 6MWD (r=- 0.59); 5) Although not significant, home dialysis patients had greater mean results for SPBB (9.88 vs 8.43 score), TUG (9.03 vs 11.39 seconds), 10x STS (23.99 vs 30.83 seconds) and ABC score (84.63 vs 69.86).

CONCLUSIONS
Individuals with ESRD have muscular deficits that may influence physical performance and balance confidence. The 10 STS and SPPB appear to be useful outcome measures in this population. Future research should examine the effects of dialysis delivery frequency on physical performance and balance confidence.

CLINICAL RELEVANCE
Individuals receiving outpatient dialysis may have weakness that influences balance confidence and physical performance. There is preliminary evidence to suggest individuals receiving home dialysis perform better than those seen for center dialysis.
Determining Discharge Recommendations Following Elective Orthopedic Surgery

PRESENTED BY
Jason Diaz

PURPOSE/HYPOTHESIS
Total joint arthroplasties, spinal fusions and spinal laminectomies are among the most commonly performed surgical procedures in the United States. Determining post-acute care discharge destination following these procedures is of critical importance as patients discharged to extended care facilities have an increased risk for adverse events, hospital readmission and face a greater economic burden. Physical therapists are often utilized in hospital settings to make discharge recommendations. Having objective measures that can be used to guide physical therapy discharge recommendations may reduce hospital readmission. The purpose of this research report was to determine if post-operative mobility can be used to predict home discharge following elective orthopedic surgery.

NUMBER OF SUBJECTS
72 adults admitted to an area hospital between May 2015 to October 2015 for a primary total hip or knee arthroplasty or revision (n = 9), cervical spinal fusion or decompression (n = 22), and lumbar spinal fusion or decompression (n = 41).

MATERIALS/METHODS
This prospective quality improvement project involved the use of a mobility assessment administered within 48 hours of surgery. The assessment included rolling, supine to sit, sit to stand from an 18 chair with arm rests, gait, stairs, static sitting and standing balance. The level of assist and assistive device needed for each task was documented. Discharge destination was ascertained by electronic medical record and was classified as home discharge or discharge to a rehabilitation facility. A multivariable logistic regression model adjusted for age, gender, Medicaid (as a proxy for socioeconomic status), Charlson comorbidity index, surgery type, and length of stay was used to determine predictors of home discharge. Models were mutually adjusted for all functional mobility measures. Receiver operator characteristic (ROC) curves were generated to determine accuracy of significant predictors.

RESULTS
In a multivariate model that mutually adjusted for all functional mobility measures, sit to stand performance was the only significant predictor of discharge home (OR: 10.5, 95% CI: 10.4-80.7; p = 0.02). The area under the ROC curve to discriminate home discharge from sit to stand performance was 0.95 (95% CI: 0.94-0.99; p <0.001). A level of assistance of contact guard assist or less for sit to stand transfer was the cut-point that maximized the sum of sensitivity (0.87) and specificity (0.96) for determining home discharge.

CONCLUSIONS
Mobility assessments are easy to administer and can be used to predict home discharge following elective orthopedic surgery. Our results show that sit to stand performance is a strong predictor of home discharge, with a rating of contact guard assist or less yielding the best accuracy for determining home discharge.

CLINICAL RELEVANCE
Physical therapists play a critical role in discharge disposition. Mobility assessments can be used to guide therapists in their discharge recommendations.
Use of an Early Mobility Protocol in the Trauma Intensive Care Unit: A Case Report

PRESENTED BY
Jason Diaz

BACKGROUND AND PURPOSE
Early mobility can reduce the detrimental effects of immobilization that occur in patients admitted to an intensive care unit (ICU)1-3. To date, only one study has assessed the effects of early mobility in a trauma ICU4. This study utilized an early mobility protocol in which patients were classified into mobility levels using set criteria. However, their criteria was adapted from a protocol developed for patients in a medical ICU5 and was not specific for patients with traumatic injuries. The purpose of this case report was to determine the effectiveness of the early mobility protocol utilized by Clark et al. 2013 in classifying and progressing mobility in a critically ill patient admitted to a trauma ICU.

CASE DESCRIPTION
Patient was a 26-year-old male with no significant past medical history, admitted to a level I trauma center with multiple gun-shot wounds to the chest and abdomen resulting in hemorrhagic shock. Physical therapy (PT) interventions included therapeutic exercise and functional mobility. Nursing staff also played a vital role in supporting out of bed activity recommended by PT. The early mobility protocol developed by Clark et al. 2013 was used as a guide to progress mobility.

OUTCOMES
On initial evaluation, the patient was unable to follow commands due to sedation and was therefore classified as the lowest mobility level. Per the guidelines of the early mobility protocol, passive range of motion was performed to all joints. Upon session 2, the patient was off sedation, consistently followed commands and demonstrated greater than 3/5 strength in all extremities. Following the guidelines of the early mobility protocol, the patient was classified as the highest mobility level and mobility was initiated. The patient required moderate to maximum assist for all transfers and was unable ambulate. Upon discharge the patient transferred with supervision, ambulated 200 feet with supervision and a single point cane, and ascended and descended 5 stairs with contact guard assist. Modified Iowa Level of Assistance6 measure was used to document change. The patient improved from 36 on initial evaluation to 6 at discharge.

DISCUSSION
The early mobility protocol was intended to be used as guide for mobility progression throughout the patients’ length of stay. However, the patient maxed out of the protocol by session 2 due to excellent retention of muscle strength and rapid improvement in cognitive and physical status, as well as decreased sedation. This highlights the need for an early mobility protocol more specific to patients with traumatic injuries who are typically younger, have a higher baseline functional status and who may rapidly progress through early mobility protocols. Future research should seek to develop early mobility protocols for trauma ICU’s.
The Role of Physical Therapy in Disaster Response: A scoping review of the literature

PRESENTED BY
Jeff Hartman

PURPOSE/HYPOTHESIS
Natural disasters are defined as events that cause extensive damage and suffering that overwhelms local resources and requires assistance from outside the affected area. In 2016, the World Health Organization produced minimal technical standards for rehabilitation and provided guidance on building the capacity of emergency medical teams in rehabilitation.

Given the novelty of physical therapy in disaster response and the recent call for participation, the purpose of this scoping review was to gain a comprehensive understanding of the scope of published literature indexed in common databases describing the specific role of physical therapists in the response phase of natural disasters throughout the world.

DESCRIPTION
This review uses the methodology of a scoping review outlined by Arksey and O’Malley. A medical librarian used a search strategy looking for all articles on natural disasters, relief work, and humanitarian crises combined with physical therapists, rehabilitation, and their variant terms in common databases. A total of 2340 articles were found across all databases. Six reviewers screened these articles dividing the work so that at least two independent reviewers assessed each article using pre-determined criteria. The full text of 304 studies were screened and 13 were assessed for the final review.

SUMMARY OF USE
The included articles documented disasters that occurred between 1992 and 2015 and were published in 10 different publications. Only six of which were peer-reviewed journals. Articles were a mixture of professional interest stories, case studies, commentaries, narrative reviews, editorials and one phenomenological study. Of the thirty authors, only seven were physical therapists and one was written by representatives from a national physical therapy association.

Despite the limited publications, the findings still complimented the World Confederations of Physical Therapy’s 2016 report and provided substantial insight into a spectrum of responsibilities including leadership, clinical evaluation and treatment, and participating in non-traditional roles when necessary.

IMPORTANCE TO MEMBERS
This study was the first to objectively look at the scope of publications that demonstrate the role of physical therapists during disaster response indexed in common databases. Only 13 articles were discovered and collectively, demonstrated very little scientific rigor. Significant barriers still exist that inhibit physical therapists from responding to disasters and researching their efforts but times are changing. From the results of this study, it is clear that what is now needed to promote the profession of physical therapy in disaster response is a collective voice found in high quality research and publications critically examining response efforts and demonstrating the benefit of physical therapy. It is the belief of the authors that this study offers a better understanding and awareness of the lack of quality publications and should act as a spring board for the development of a global research agenda.
Enhanced Recovery Program (ERP) for Total Hip Arthroplasty (THA)

PRESENTED BY
Jennifer Brandon

PURPOSE/HYPOTHESIS
The purpose of this project is to enhance the surgical and hospital stay experiences of THA patients through an evidence-based program which addresses pre-operative education, hydration and anesthesia and facilitates the collaboration of the THA Team (patient, caregiver, surgeon, anesthesiologist, physical therapist, nursing, dietitian) resulting in a shorter length of stay and higher patient satisfaction with an expeditious return to function.

DESCRIPTION
Patients are screened for appropriateness in the surgeons’ office based on a set of established exclusion criteria which include multiple medical comorbidities, uncontrolled diabetes, sleep apnea, BMI, and availability of caregiver for 72 hours post-op. Pre-op hydration and shorter length of stay are discussed. A newly designed packet is provided which includes a program brochure, hydration handout and class schedule. The program was initially limited to 3 surgeons and opened to all surgeons at 6 months.
A tailored pre-operative class is required for all participating patients and their post-op caregivers. The class discusses a pre-op checklist, safety concerns, discharge planning, and a review of the hydration program. “Hands-on” skill practice is provided.
Adopting current literature regarding benefits of carbohydrate loading and anesthesia protocols, “NPO after Midnight” restrictions were liberalized, and patients are instructed to adequately hydrate and drink clear liquid carbohydrate drinks or water the morning of surgery. Multi-modal analgesia is done pre-op and significantly lower doses of spinal Bupivicaine are used during the procedure. Post-operatively, as patients are more awake and have less nausea, nursing is able to provide earlier p.o. medications and food. Nursing assists patients out of bed prior to therapy to ensure the patients aren’t nauseous or orthostatic. Post-op PT includes instruction on mobility skills.

SUMMARY OF USE
Since the inception of the ERP program, 384 patients have participated with a 61% increase in volume between the 1st and 2nd years. 81.3% of patients discharge on the day of surgery. The average length of stay (ALOS) is 15:33 hours; 12:06 for those discharged day of surgery. For non-ERP THA, the ALOS is comparatively 47:49 hours. The average number of PT visits is currently 1.22. In the first year, there were no readmissions or complications. Follow-up phone calls are made by the surgeons upon discharge. Many patients have been repeat participants.

IMPORTANCE TO MEMBERS
Through adjustments in pre-op hydration and in surgical anesthesia, patients are able to tolerate physical therapy intervention within an earlier timeframe allowing for same day discharge. The class facilitates patient and family engagement. In addition, the class lessened anxiety related to surgery or post-op mobility and established realistic expectations for discharge. Patients are motivated for therapy and to discharge home and resume normal routine/activities. The teamwork approach with nursing ensured earlier mobilization and increased tolerance to focused PT training.
Advocating for Early Acute Care Physical Therapy in a Patient with a Severe Traumatic Brain Injury (TBI): A Case Report

PRESENTED BY
Jenny Sampras

BACKGROUND AND PURPOSE
Early mobilization and initiation of physical therapy have been documented to improve functional recovery in individuals with brain injuries and assists in combatting the detrimental effects of bed rest. Research suggests early initiation of rehabilitation is most effective as healing and functional improvement is time-sensitive. However, recent research states that traditional medical practice tends to dictate that patients with low levels of consciousness may be inappropriate for rehabilitation. Some physicians note they feel patients with unknown or poor prognoses following a TBI may not gain benefits from rehabilitation. This case report describes the role of an acute care physical therapist/student physical therapist in advocating for rehabilitation services for an individual with a TBI.

CASE DESCRIPTION
The patient is a 30-year-old male with a left frontal lobe traumatic brain injury following a self-inflicted gunshot wound. The patient was independent with all mobility prior to injury but not initially referred to physical therapy by his medical team. The primary physical therapist was involved in gaining a referral and educating the trauma team on the importance of rehabilitation for all severity levels of TBI. Upon PT evaluation, the patient was unable to follow commands and scored six on the Glasgow Coma Scale. Using the Modified Ashworth Scale, the patient had 1+ for left knee extension and 2 for Right knee extension with 5 beats of clonus at the left ankle. The patient did not demonstrate any movement of the right upper and lower extremities but demonstrated spontaneous movement of the left upper and lower extremities against gravity. The patient required total assist of two for bed mobility and transfers and tolerated five minutes of static sitting at the edge of bed with maximal assistance.

OUTCOMES
Upon the patient’s discharge from acute care to inpatient rehabilitation, he was following 50% of verbal commands for movement initiation. The patient was ambulating with minimal assist of one and an additional person for safety for up to twenty-five feet. He demonstrated static sitting balance with contact guard assist and static standing balance with minimal assist. The patient’s Acute Measure of Post-Acute Care (AM-PAC) score improved by six points. No spasticity was noted bilaterally and the patient regained movement of the right upper and lower extremities.

DISCUSSION
Research suggests that an earlier injury-to-physical therapy timeframe and repetitive practice of motor tasks can promote neural plasticity and functional improvements for even severely involved TBIs. Given research in neuroplasticity and the detrimental effects of bed rest, this case report suggests that a standard referral for a physical therapy evaluation should be made for all individuals TBIs in an acute care setting on admission.
The Impact of Acute-Care Simulation on Clinical Performance and Competence: Going Beyond Self-Efficacy

PRESENTED BY
John Nguyen

PURPOSE/HYPOTHESIS
Research validates sim as a tool for clinical skill performance, critical thinking, and communication. Studies report up to 90% of students feel simulations are valuable experiences, and current studies outline relationships between sims, self-efficacy, and performance within physical therapy education, but lack validated outcome measures for each respective area. There is a significant gap as to how this self-efficacy translates to actual performance. The purpose of this study is to analyze the relationship between sim in PT education, self-efficacy, and competence in acute care clinicals to determine if DPT student’s exposure to sims improve clinical performance.

NUMBER OF SUBJECTS
The 12 participants in this study were recruited from the first-year cohort of 30 Doctor of Physical Therapy (DPT) students at Indiana State University in the Spring of 2017.

MATERIALS/METHODS
Subjects were randomized to control and experimental group, each with a separate HFS and SP simulation. Each scenario assessed skills outlined in APTA’s Clinical Performance Instrument (CPI) used to formally assess student clinical rotations. The experimental group were designed to require higher levels of critical thinking and communication skills than previously experienced, but consisted of the same structure and format. Subjects completed a pre and post-sim survey to assess their confidence in their ability to perform certain skills and behaviours required of an entry-level PT. The survey comprised of questions relating to self-efficacy and CPI skills for each scenario using a 6-point Likert scale. Midterm CPI performance scores will be analyzed and compared to observe any relationship between self-efficacy pre and post simulation.

RESULTS
The average self-efficacy scores of control and experimental groups increased from initial pre-sim to post-sim, regardless of patient simulator used (HFS/SP) or sim difficulty (control/experimental). At the time of submission, data collected was incomplete pending completion of subject’s 1st clinical rotation midterm on 6/23/17. Upon complete, all questionnaire responses and CPI scores will be analyzed.

CONCLUSIONS
Student physical therapists appear to benefit from increased exposure to acute care sims, resulting in an improvement in self-efficacy scores regardless of sim difficulty or type of patients used.

CLINICAL RELEVANCE
In the acute care physical therapy setting, clinicians are responsible for the safe management of critically ill patients. This include medical equipment as well as the management of a patient with possible adverse physiological events that may occur during treatment. Improved clinical performance can be directly related to improved patient safety. It is with patient safety in mind that continued interest in healthcare simulations prompt further research in the field of physical therapy and education.
Successful Patient Participation Among Acute Hospital Physical Therapists

PRESENTED BY
Joseph Fertitta

PURPOSE/HYPOTHESIS
Research has demonstrated that physical therapy plays a crucial role in patient recovery in the acute hospital setting. Despite known benefits, planned therapy sessions do not always occur and have been called non-treatment events. Reported non-treatment ranges from 15% to 26% of planned sessions. Previous studies have shown an association between non-treatment and patient diagnosis as well as between non-treatment and the day of the week on which treatment was planned. Identifying additional factors that predict non-treatment events is important if therapists and administrators are to make improvements. The purpose of this study is to determine if an association exists between physical therapist attributes and non-treatment risk among their patients. A secondary aim of this study is to determine if the association between patient diagnosis and day of the week predicting non-treatment persist among a different group of patients and therapists.

NUMBER OF SUBJECTS
36 physical therapists and 623 of their adult patients

MATERIALS/METHODS
A cross-sectional, medical record review of 623 consecutive patients over 3 months scheduled for 2,419 physical therapy sessions. Therapist demographics were collected via questionnaire.

RESULTS
The overall non-treatment proportion of planned therapy sessions was 13.2%, it was 4.8% for the first scheduled session, and 16.1% among remaining sessions. Non-treatment proportions for individual therapists ranged from 1.7% to 22.6% among therapists with at least 30 planned sessions. When male patients were scheduled for therapy with a female therapist, 25.5% of sessions resulted in non-treatment. Non-treatment was 15.0% when female patients were scheduled for therapy with a male therapist and 16.1% when the sex of the patient and therapist matched. As in previous studies, patients were less likely to experience non-treatment if they had a musculoskeletal condition or if scheduled for therapy during the week rather than on a weekend.

CONCLUSIONS
Findings from previous studies that day of the week and patient diagnosis were associated with non-treatment were confirmed. While the mean proportion of non-treatment was around 15%, individual physical therapists may be much higher or lower. The sex of patients and therapists was associated with significantly different non-treatment proportions and should be evaluated further. Future research efforts should include other therapist traits that may influence non-treatment.

CLINICAL RELEVANCE
With a better understanding of reasons for non-treatment, therapists and administrators may be able to match patients with therapists most likely to be successful in treatment. The relationship between sex of the patient and therapist may have an impact on the occurrence of non-treatment. Hospital and rehabilitation department policies need to be evaluated in an effort to reduce the higher percentage of non-treatment among patients without musculoskeletal diagnoses and on weekends.
Acute Care Outcome Measures......Measuring Function For A 27-year-old Male With Medical Complexity and Failure to Thrive: A Case Report

PRESENTED BY
Joseph Terrill

BACKGROUND AND PURPOSE
Failure to thrive (FTT), a complex medical diagnosis usually found in infants and older adults, presents with a variety of symptoms associated with underlying pathophysiological processes. FTT often stems from chronic concurrent diseases and subsequent functional impairments, polypharmacy, and malnutrition. There is currently a lack of evidence-based literature discussing FTT in middle-aged adults. The purpose of this case report is to demonstrate clinical decision making utilized during physical therapy for a client with a complex multifactorial chronic health condition resulting in body function and structure impairments significantly limiting ability to participate in daily activities at home or in the community.

CASE DESCRIPTION
A 27-year-old Hispanic male was admitted to the hospital with a medical diagnosis of acute hypothermia, possible urinary tract infection, generalized weakness, and FTT. The client has a medical history of superior mesenteric artery syndrome (SMAS), chronic malnutrition, DM1, osteopenia, and chronic pain disorder, with stable vertebral fractures and multiple comorbidities. He was unable to independently participate in activities due to impairments in strength, endurance, pain, generalized weakness and fatigue resulting in an inability to perform basic and instrumental activities of daily living including inability to tolerate weight-bearing.

OUTCOMES
A 20% improvement in the NPRS, 29% improvement in the mCTSIB, and a 15% improvement was seen on the Barthel Index. Bed mobility and supine-to-sit transfers (Mod A to SBA), bed-to-chair transfers (Max A to Max A-), sitting posture (poor to fair), and 30-second sit-to-stand test (0 to 5 repetitions) further demonstrated positive treatment effect. BP improved 20 points (systolic), returning to normal range during functional activities. 12% increase in functional abilities was seen on the AMPAC (“6-clicks”) score.

DISCUSSION
There is a lack of literature linking young adults to FTT, as well as identification of both appropriate outcome measures and evidence-based physical therapy interventions for this client based on his medical complexity and profound physical mobility deficits for his age. Interventions applied were based on identified functional impairments. The AMPAC may be an effective outcome measure to document functional ability in this population and is valid in the acute setting.

This client required short intervals of activity, necessitating an exercise program focused on one or two impactful interventions per session. Fatigue played a large role in clinical decision making; use of PNF techniques to provide resistance across functional movement patterns were beneficial in this case, especially since the client could not tolerate weight-bearing activities at this stage. There appears to be a need for research into the occurrence of FTT among young adults, as well as the use of PNF techniques in an acute setting and the efficacy of such techniques versus traditional functional training.
Timing of Rehabilitation on Length of Stay and Cost in Patients with Hip or Knee Joint Arthroplasty: A Systematic Review with Meta-Analysis

PRESENTED BY
Kaitlin Kirker

PURPOSE/HYPOTHESIS
To investigate the role of early initiation of rehabilitation on length of stay (LOS) and cost following total hip arthroplasty, total knee arthroplasty, or unicompartmental knee arthroplasty.

NUMBER OF SUBJECTS
Searching identified 1,029 potential articles, of which 17 studies with 26,614 participants met the inclusion criteria.

MATERIALS/METHODS
Electronic databases PubMed, CINAHL, Pedro, Embase, AMED, and the Cochrane Library were searched in July 2016. Five additional trials were identified through reference list scanning. Eligible studies were published in English language peer-reviewed journals; included participants that had undergone total hip arthroplasty, total knee arthroplasty, or unicompartmental knee arthroplasty reported clearly defined timing of rehabilitation onset for at least two groups; and reported at least one measure of LOS or cost. Inclusion criteria were applied by 2 independent authors, with disagreements being determined by a third author. Data was extracted independently by 2 authors, with disagreements being determined by a third author. Methodological quality of each study was evaluated independently by 2 authors using the Downs and Black checklist. Pooled analyses were analyzed using a random-effects model with inverse variance methods to calculate standardized mean differences (SMD) and 95% confidence intervals for LOS.

RESULTS
When compared with standard care, early initiation of physical therapy demonstrated a decrease in length of stay for the 4 randomized clinical trials (SMD = -1.90; 95% CI -2.76 to -1.05; I² = 93%) and for the quasi-experimental and 5 prospective studies (SMD = -1.47; 95% CI -1.85 to -1.10; I² = 88%).

CONCLUSIONS
Early initiation of rehabilitation following total hip arthroplasty, total knee arthroplasty, or unicompartmental knee arthroplasty is associated with a shorter LOS, a lower overall cost, with no evidence of an increased number of adverse reactions. Additional high quality studies with standardized methodology are needed to further examine the impact of early initiation of physical therapy among patients with joint replacement procedures.

CLINICAL RELEVANCE
Considering that there will be a significant increase in THA and TKA over the next 15 years, a more comprehensive systematic review, which includes various study designs that analyze both LOS and cost effectiveness is warranted to synthesize evidence regarding the safety and effectiveness, as well as economic impact of early physical therapy initiation after joint replacement procedures.
A contemporary review of Emergency Department (ED) physical therapist (PT) practice and considerations for expansion of the EDPT model

PRESENTED BY
Kaitlin Mullen

PURPOSE/HYPOTHESIS
This project will provide an updated summary of contemporary literature describing the role of the Emergency Department (ED) Physical Therapist (PT) in both US and international settings, and will illustrate the logistics, benefits, and barriers associated with expansion of this role.

DESCRIPTION
Three researchers systematically reviewed literature describing EDPT practice in both US and international settings. Relevant and recent articles, most of which had not been discussed in earlier reviews, were identified and summarized. Focus was placed on literature which allowed comparison of ED physiotherapist practice models and PTs in U.S. EDs for the purpose of highlighting how other countries more fully utilize physiotherapists in this capacity, and therefore, provide future direction for US programs.

SUMMARY OF USE
EDs in both US and international settings are experiencing an increasing demand for services which provides potential for an expanded PT role in this setting. Multiple sources of evidence outline a theoretical framework which demonstrates how PT services may enhance health care options for both individuals and the system as a whole. The ED provides a significant opportunity for interprofessional collaborations, and the perceptions of other providers in the ED have a significant influence over the potential for the success of EDPT programs. Based on the supporting literature, authors propose that expansion of EDPT services in the U.S. has potential benefits and outline a strategy for overcoming current barriers. Specifically, an extended scope of EDPT practice may result in improved value of EDPT services.

IMPORTANCE TO MEMBERS
EDPT services are a rapidly developing facet of PT practice with which members should be familiar. Though still limited in scope, the volume of EDPT literature research is proliferating and this updated evidence summary illustrates the potential for growth. Supporting expansion of practice in all settings is the responsibility of all PTs but is of particular concern for those with interest in developing a program in his/her respective facility.
The Effectiveness of Cognitive Behavioral Therapy Techniques in Physical Therapy for a Patient with a Chronic Spinal Cord Injury After an Elective Spinal Fusion

PRESENTED BY
Keiko Okuda

BACKGROUND AND PURPOSE
Cognitive Behavioral Therapy (CBT) has been shown to improve outcomes related to pain, depression, anxiety, adjustment and coping for persons with spinal cord injury as well as for patients after lumbar surgeries; however, there is limited evidence supporting the functional benefits of CBT on patients with spinal cord injuries undergoing spinal fusions. The purpose of this case study was to evaluate the effectiveness of CBT with physical therapy interventions on functional mobility and psychological outcomes in a patient with chronic spinal cord injury (SCI) after spinal fusion.

CASE DESCRIPTION
A 53 year-old female with a chronic T6 ASIA A SCI underwent a T2-L3 Posterior Spine Interbody Fusion and T11-T12 Vertebral Column Resection with expandable cage for severe kyphoscoliosis in an acute care orthopedic hospital. Prior to the surgery, the patient was a full time employee, and independent in transfers and wheelchair mobility. Her pain progressively worsened for 3 years and she began to require intermittent physical assistance for transfers. After the spinal fusion, the patient presented with severe back pain, limited functional mobility, and symptoms of depression, including decreased motivation and feelings of sadness, before being admitted to an inpatient acute rehabilitation facility.

OUTCOMES
Functional Mobility was assessed using the Functional Independence Measure (FIM), sitting balance was assessed using the Function In Sitting Test (FIST), depression severity was assessed using the Patient Health Questionnaire-9 (PHQ-9), anxiety was assessed using the Generalized Anxiety Disorder 7-item scale (GAD), and pain was assessed using the Numeric Pain Rating Scale (NPRS). Compliance with physical therapy participation improved from 73.3% in acute care to 95.7% in acute rehabilitation. The average pain score on the NPRS during physical therapy was a 9.07 in acute care, and 3.91 in acute rehabilitation. The FIM score for Bed, Chair, Wheelchair Transfers improved from 1 in acute care to 4 in acute rehabilitation. FIST score improved from 1 in acute care to 32 in acute rehabilitation. The patient’s scores improved on the PHQ-9 and GAD with reductions from 7 to 2 and 3 to 0, respectively.

DISCUSSION
Physical therapists in acute care and acute rehabilitation may benefit from education regarding CBT interventions to enhance their treatment of patients with chronic spinal cord injuries after spinal fusions. CBT interventions can be implemented early in and throughout the physical therapy plan of care to improve compliance to physical therapy, pain perception, functional mobility and psychological outcomes in a patient with chronic SCI after spinal fusion.
Promoting a Culture of Mobility in the Hospital Using a Progressive Activity and Mobility Plan (PAMP)

PRESENTED BY
Kimberly McGarry

PURPOSE/HYPOTHESIS
Immobility is a common problem in hospitalized adults. Physical activity in the hospital is important to maintain functional independence and prevent complications associated with bedrest. Older adults are at particularly high risk for hospital-associated functional decline and acquired geriatric syndromes (e.g. delirium, falls). These hospital-associated complications may impact length of stay (LOS) and the need for new placement in a skilled nursing facility (SNF).

No systematic approach existed to address mobility and activity in a coordinated fashion. Nursing, acute care therapy (PT and OT), and medical providers (MDs, NPPAs) working in isolation resulted in a silo approach to patient activity and mobility with fragmented, uncoordinated, and inefficient care.

This pilot aimed to improve activity/mobility by developing and implementing a comprehensive activity and mobilization program on pilot nursing units with the goal of decreasing LOS and new SNF placement by decreasing the time to first activity and increasing the frequency of activity and mobilization, with no adverse impact on counterbalance measures of patient falls or staff injuries.

DESCRIPTION
Using stakeholder input and Pareto analysis, five key barriers to activity/mobility were identified: perceived lack of time, team engagement, low confidence in skills, safety concerns, and variability of practice surrounding activity/mobility.

The Progressive Activity and Mobility Plan (PAMP) algorithm was created. It includes eligibility guidelines, specific activity goals, and advancement criteria through four PAMP levels, using current nursing assessments to assign a level.

Interprofessional collaboration was crucial during PAMP development and implementation. Staff nurse mobility champions, educational tools, and bedside team communication tools helped to foster and sustain a “culture of mobility”.

SUMMARY OF USE
Data were abstracted from the electronic health record for patients admitted to five medical units between November 2015-September 2016, comparing 2198 patients in the pre-intervention period to 4605 patients in two post-intervention phases. Average LOS decreased by 1.9%. New SNF placement decreased by 9.6% (absolute reduction 1.1%). Counterbalance measures of patient falls and staff injuries did not increase.

IMPORTANCE TO MEMBERS
A nurse-driven activity/mobility algorithm systematically addresses immobility in hospitalized patients and may reduce LOS and new SNF placement. PAMP promotes patient-centered care and aligns with principles of value and equity. Implementation of a comprehensive activity and mobilization program encourages the right provider for the right patient at the right time, with decreased potential for hospital-associated functional decline and therefore, possibly a new need for physical therapy services. The availability of a comprehensive activity/mobility program may also free up physical and occupational therapy staff to focus on patients with the greatest need for skilled therapy services.
Gravity-facilitated weight-bearing in an upright tilting hospital bed elicits minimal muscle activity in healthy individuals

PRESENTED BY
Kirby Mayer

PURPOSE/HYPOTHESIS
Upright tilting hospital beds (UTHB) have recently been introduced as an early intervention for rehabilitation of critically ill patients in the intensive care unit. The UTHB safely tilts patients into an upright, gravity-facilitated weight-bearing position without the patient leaving the bed or having to engage. Similar to a tilt table, the UTHB has the potential to improve cardiorespiratory function and arousal in patients with critical illness.1-3 Additionally, weight-bearing is purported to mitigate the response of prolonged immobility associated with critical care preventing ICU-acquired weakness.4 The aim of this study is to determine the average muscle activity during weight-bearing in an UTHB with healthy individuals in a relaxed state, mimicking a reduced level of consciousness observed during early critical illness.

NUMBER OF SUBJECTS
19 healthy adults with mean age of 28.5 ± 3.1 were assigned to Group A (straps on, n = 10) or Group B (straps off, n=9).

MATERIALS/METHODS
Muscle activity was recorded using surface electromyography (EMG) in tibialis anterior, rectus femoris, gluteus medius and lumbar erector spinae. Maximum voluntary isometric contractions (MVIC) were measured at identified test positions for each muscle.5-8 Subjects were then instructed to lay relaxed in the total lift bed. Safety straps were placed for group A. Prior to tilting, a baseline EMG activity was recorded for 60 seconds at supine. EMG and weight-bearing load (percentage of total body weight recorded from the UTHB footplate) were recorded as the subjects were tilted at ten-degree intervals from supine (0) to max angle of 82 degrees. Raw EMG data were processed using the Noraxon software (Scottsdale, AZ). The processed data were analyzed as actual change in microvolts (µV) from supine rest and analyzed with a linear mixed model approach.

RESULTS
Percentage of weight-bearing load gradually increased when tilting at larger angles, however no statistical differences in EMG activity were observed, compared to supine rest for either group (p > 0.05). When comparing muscle activity between the two groups, there were no differences in muscle activity in tibialis anterior, gluteus medius, or lumbar erector spinae at any angle. A significant increase in muscle activity was recorded in the rectus femoris muscle of group B (no straps) at each angle from 30-70 (mean EMG activity = 2.86 ± 1.65 µV) when compared to the group with straps (1.42 ± 0.45 µV) (p= 0.037, 0.018, 0.002, 0.004, 0.026, respectively).

CONCLUSIONS
Weight-bearing as a percentage of total body weight gradually increases as angle of tilt increases, but muscle activity does not increase. Weight-bearing in a UTHB with healthy subjects elicits only minimal muscle activity regardless of tilt angle. The placement of safety straps may attenuate rectus femoris activation during relaxed tilting.

CLINICAL RELEVANCE
Weight-bearing in a UTHB likely does not stimulate enough muscle activity to be utilized as a strengthening intervention in patients with reduced consciousness due to critical illness.
Safety and Feasibility of Lower Extremity Serial Casting in the Acute Care Setting

PRESENTED BY
Kristin Eyler

PURPOSE/HYPOTHESIS
Serial casting as an intervention to manage range of motion (ROM) deficits in patients with hypertonicity is documented in the post-acute phases of rehabilitation. However, there is little documented on the safety and feasibility of using serial casting as an intervention to address ankle ROM deficits for patients with hypertonicity in the Acute/Critical Care setting. The goal of this project was to document and examine outcomes in patients that received serial casting of the ankles while in the acute/critical care setting.

DESCRIPTION
Data was collected from March 2013 – June 2017 for all patients that received serial casting of the ankle(s) at the University of Maryland Medical Center (UMMC). Diagnostic information, pharmacological agents utilized with casting, passive ROM outcomes, and any complications that occurred while performing the intervention were examined retrospectively. Serial casting was utilized for patients that met the inclusion criteria set forth by UMMC’s guidelines for Serial Casting when conventional stretching, positioning, and off-the-shelf positioning devices proved ineffective in managing ankle ROM deficits in patients with hypertonicity. The data is comprised of 23 patients who received ankle serial casting. Two patients were excluded because they were discharged prior to final data collection. A total of 35 limbs received serial casting (13 patients received bilateral ankle casts, 8 patients received single limb casts). Thirty-three limbs demonstrated improvement in passive ankle dorsiflexion ROM with serial casting intervention. The mean ROM gain was 9 degrees of passive ankle dorsiflexion. Two limbs demonstrated a loss of passive ankle dorsiflexion ROM. Casting was discontinued for 5 patients due to development of pressure ulcers or cast soiling due to incontinence.

SUMMARY OF USE
This examination identified that performing serial casting of the ankle(s) during the acute phase of injury is a safe and feasible intervention to manage ROM loss at the ankle due to hypertonicity. Further investigation is needed to determine maximum benefit combining serial casting with pharmacological agents at the time of casting.

IMPORTANCE TO MEMBERS
Serial Casting should be considered as a management tool for patients in the Acute Care setting to address passive ankle ROM in the early phases of rehabilitation, allowing for early contracture prevention.
Effects of Neuromuscular Electrical Stimulation on Skeletal Muscle Mass and Muscle Strength in Critically Ill Patients in the Intensive Care Unit: A Systematic Review

PRESENTED BY
Kristin Lefebvre

PURPOSE/HYPOTHESIS
Decreased muscle strength and volume are unfortunate consequences of prolonged intensive care unit (ICU) stays. It is difficult to prevent these adverse outcomes in patients that are inappropriate for early mobilization due to level of sedation or hemodynamic instability. The purpose of this systematic review is to synthesize the evidence that determines effectiveness of neuromuscular electrical stimulation (NMES) on skeletal muscle strength and volume in critically ill patients in the ICU.

NUMBER OF SUBJECTS
N= 290 across multiple studies

MATERIALS/METHODS
Cumulative Index to Nursing and Allied Health Literature (CINHAL), PubMed, MEDLINE, and Cochrane Library were searched using the terms and combinations of neuromuscular electrical stimulation (NMES), electrical stimulation (ES), intensive care unit (ICU), intensive care (IC), critically ill (CI), and mechanical ventilation (MV) alone and in combination. Authors used the following inclusion criteria: (1) randomized clinical trials (RCTs) and clinical trials assessing effects of NMES or ES in critically ill patients in the ICU; (2) NMES or ES was applied to skeletal muscle of upper and/or lower limbs; (3) 1 or more outcome measures examined muscle strength and/or muscle mass. Studies that applied NMES to proximal muscles (e.g., serratus anterior, intercostal muscles), included patients in a non-ICU setting (e.g., rehabilitation hospital unit) or were conference abstracts were excluded. Fifteen articles were identified that met the predefined inclusion criteria, of these nine articles achieved a PEDro score of 6 or greater and were included in the analysis.

RESULTS
Across various randomized controlled trials, NMES has been deemed effective in the critically ill population to maintain and gain muscle mass and strength. The length of NMES protocols ranged from 5-28 days for the 9 studies included in this review. Frequency of the programs ranged from a minimum of 5 days/week to a maximum of 7 days/week. Duration of the program ranged from a minimum of 1 week to a maximum of 4 weeks. Most studies applied NMES for approximately an hour a day. Pulse width ranged from 200 to 400 µs, with 4 of 9 studies using 400 µs. Five studies used a frequency of 50 Hz, and remaining studies ranged between 35 – 100 Hz. Intensity was set to visible muscle contraction in all studies, with some aiming for highest tolerable intensity below pain threshold. On times ranged from as high as 15 seconds to as low as 2 seconds. Off time ranged from as high as 24 seconds to as low as 4 seconds. Strength and volume maintenance was found in a majority of the studies in this systematic review.

CONCLUSIONS
This systematic review synthesizes the evidence supporting the use of NMES in critically ill patients in the ICU to prevent muscle volume and strength loss in the ICU as an adjunct to early mobility protocols.

CLINICAL RELEVANCE
This data can provide a springboard by which other physical therapists could initiate the use of NMES in the intensive care unit population.
FUNCTIONAL OUTCOMES OF LIVER TRANSPLANT PATIENTS ACROSS THE CONTINUUM

PRESENTED BY
Laura Oldenburg

PURPOSE/HYPOTHESIS
Liver transplantation (LT) is an option for end stage liver disease (ESLD) when medical and surgical management is no longer effective. Patients with ESLD often present with fatigue, muscle wasting, weakness and overall deconditioning during the LT waiting period due to the underlying liver disease. There is limited evidence describing the functional status of this patient population before and after LT. The purpose of this study is to provide descriptive data of functional outcomes for patients with ESLD before, immediately after transplant and 4-8 weeks post-transplant.

NUMBER OF SUBJECTS
101

MATERIALS/METHODS
As part of a feasibility of prehabilitation study, a Physical Therapist (PT) prospectively collected the following outcomes during the subject’s evaluation for possible LT, at 4-6 days post-LT and at 4-8 weeks post-LT: Six Minute Walk Test (6MWT), Timed Up and Go Test (TUG), Modified Dynamic Gait Index (mDGI), Five Times Sit to Stand (STSTS), and the 10 meter Walk Test. The International Physical Activity Questionnaire (IPAQ) was used to provide a self-reported objective measure of physical activity. Descriptive statistics were used to describe the data.

RESULTS
The mean age of the subjects at baseline was 56.1±9.8 years and 66.3% were male. The underlying liver disease was Cirrhosis (46.5%), Hepatocellular Carcinoma (28.7%), Nonalcoholic Steatohepatitis (15.8%), and other (8.9%). At the time of initial evaluation the Model for End-Stage Liver Disease (MELD) score was 15.9±7 with 24% having a MELD score >20. Although 35.6% reported falling in the past year, 89.1% denied using an assistive device and 78.2% reported ambulating community distances. The baseline 6MWT was 343±148.4m (48% of the age predicted), gait speed was 1.1±0.4m/s, TUG was 12.7±10.5s, mDGI was 12/12 and STSTS was 17.5±11s. Thirty-four of the patients were transplanted after an average of 163±144 days on the transplant list. Patients received an average of 5.2±4.9 PT sessions during their hospitalization, spent 4±4.6 days in the ICU and 12.4±10.7days in the hospital. The 6MWT at 4-6 days post-LT was 177.3±177.3m (26% of the age predicted), gait speed was 0.66±0.4m/s, TUG was 22.7±10.9s, MDGI was 8/12 and STSTS was 24.5±11.9s. At 4-8 weeks post-LT the 6MWT was 332.6.6±151.7 (49% of the age predicted), gait speed was 0.93±0.4 m/s, TUG was 11.8±9.5s, mDGI was 12/12 and STSTS was 15.9±7s. At baseline 46.5% of patients self-reported a low IPAQ score and at 4-8 weeks post-LT only 15.3%.

CONCLUSIONS
This study provides objective data of physical impairments that are present in patients before LT, immediately after LT and 4-8 weeks post-LT. Improvements are noted in aerobic capacity and strength following LT but are often still below normative values. The data supports previous reports of impaired function and the need for further research to evaluate the effect of a prehabilitation program for people awaiting LT.

CLINICAL RELEVANCE
Patients with ESLD have functional impairments and may benefit from a formal rehabilitation program before and after LT to maximize their functional status.
The Feasibility of a Prehabilitation Program for Liver Transplant Patients

PRESENTED BY
Laura Oldenburg

PURPOSE/HYPOTHESIS
Patients with end stage liver disease (ESLD) often present with reduced aerobic capacity and strength. There are often limited options for patients who have ESLD and are listed for liver transplant (LT) to participate in a formal exercise program due to lack of standardized programs for patients with ESLD, lack of funding, and low volume of patients in a centralized region. The purpose of this study was to examine the feasibility of a prehabilitation program for patients with ESLD awaiting LT.

NUMBER OF SUBJECTS
50

MATERIALS/METHODS
Subjects who were listed for LT were randomized into two groups. The intervention group received an individualized strength and endurance exercise program from a Physical Therapist (PT) over the phone along with written instructions sent via mail. The PT then followed up with weekly phone calls to provide additional instruction and coaching during the pre-transplant period. The frequency of calls was often decreased once the exercise program was established. The following outcome measures were collected at baseline, 4-6 days post LT and again at 4-8 weeks post LT: the 6 Minute Walk Test (6MWT), Timed Up and Go test, Modified Dynamic Gait Index, 5 Times Sit to Stand Test, 10 meter walk test. Descriptive statistics were used to describe the data and the percent change from baseline.

RESULTS
The intervention group (n=25) received 462 calls during the study period and contact was made 66.5% of the time to provide instruction and coaching to increase physical activity. Each subject received 0.66±0.27 calls per week while on the transplant list. Thirty-four subjects received a LT during the study period (n=17 intervention group). Despite randomization there were differences between groups for the baseline 6MWT and gait speed outcome measures. At baseline the control group demonstrated a greater distance for the 6MWT (407.6±116.7 vs 298.3±115.2 meters, p=0.01) and a faster gait speed (1.3±0.3 vs 1.1+0.3 m/sec, p=0.024) when compared to the intervention group. Upon comparing the intervention group to the control group for percent change from 4-6 days post LT to 4-8 weeks post LT, the intervention group demonstrated greater gains in both the 6MWT (164% vs 54.8%) and gait speed (54.8% vs 28.2%).

CONCLUSIONS
This study demonstrates the feasibility of a prehabilitation program for patients waiting for a LT to provide an exercise program/encourage activity. Due to the intervention group having a lower functional status at baseline, it cannot be determined if the intervention group directly benefited from the exercise program post-transplant. Additional research examining functional outcomes after a prehabilitation program for patients with ESLD is needed to provide evidence of its effectiveness.

CLINICAL RELEVANCE
Evidence in the literature has shown the benefits of a prehabilitation program in other transplant populations but there is very little available on the topic of ESLD. This study provides an alternative method of providing a prehabilitation program during the LT waiting time.
Fall Risk Assessment Using the Tinetti Following Orthopedic Surgery: A Quality Improvement Case Series

PRESENTED BY
Lauren Knepper

BACKGROUND AND PURPOSE
Falls are among the most common adverse events across in-patient settings, which can lead to serious injury and increased medical costs. As an important public health issue, hospitals commonly adopt fall risk assessment tools utilized by nursing, including STRATIFY and Morse, whereas physical therapy balance assessments are predominantly underutilized in acute care. Despite the lack of evidence for feasible physical therapy fall risk assessments in acute care settings, there is a need for physical therapists to engage in a more active role in fall prevention. Among the evidenced based risk assessments commonly used in the community dwelling elderly population is the Tinetti Performance Oriented Mobility Assessment - Total (POMA-T), which provides stratification of fall-risk scores. The purpose of this study is to evaluate the feasibility of implementation of the Tinetti POMA-T into an evaluation in a post-op orthopedic surgical patient population in the acute care setting.

CASE DESCRIPTION
Physical therapy examinations for patients following orthopedic surgery were identified over a two week time period on a general surgical unit. Ability to examine the patient with the Tinetti POMA-T and scores were extracted for each patient. De-identified data was collected for patient diagnosis, Tinetti score, level of assistance needed for functional mobility, and assistive device used on examination. Patient surgical interventions included total hip arthroplasty, total knee arthroplasty, cervical spine surgery, lumbar spine surgery, and total shoulder arthroplasty. This case series was deemed exempt by the Thomas Jefferson University IRB.

OUTCOMES
A total of 14 out of 18 patients were assessed using the Tinetti POMA-T. Four patients were classified as low risk, 9 patients were moderate risk, and 1 patient was high risk.

DISCUSSION
The Tinetti POMA-T is a feasible balance assessment to stratify fall risk in patients following orthopedic surgery within the cases described. Advantages of the Tinetti POMA-T within an acute care setting is that no equipment is needed for the assessment and the ability to examine a patient using an assistive device. The major limiting factor for use within this retrospective study was the inability of patients to fully complete the gait portion.
Using an Interprofessional Education Simulation in Physical Therapy Curricula to Improve Knowledge Regarding the Discharge Planning Process and the Role of Physical Therapists

PRESENTED BY
Leslie Smith

PURPOSE/HYPOTHESIS
Physical therapists (PT), despite having appropriate clinical reasoning and unique skills for determining the functional abilities of the patients, are often not involved in the discharge planning (DP) process.1 While there is strong support for PT to be a member of the DP team a need exists to expose other health professions students to the role of PT in the acute treatment of older hospitalized adults.1, 2 The purpose of this study was to describe the student physical therapist’s (SPT) ability to identify primary issues related to discharge, their perceptions of the PT role as a member of the interprofessional team (IPT), and their impressions of the team dynamics during an interprofessional simulated DP meeting.

NUMBER OF SUBJECTS
Fifty-seven students in the third and final year of an entry-level Doctorate Physical Therapy (DPT) program.

MATERIALS/METHODS
Students from physical therapy (n=57), undergraduate nursing (n=36), graduate nurse practitioners students (n=2), and social work (n=37) participated in an interprofessional simulated DP meeting utilizing standardized patients. The simulation sessions were recorded and placed on an e-learning platform for students to review and reflect. The SPTs completed a reflection paper post-simulation and answered questions regarding the primary discharge issue being addressed during the simulation, roles and responsibilities of the PT in the IPT, and impressions of the team dynamics. Qualitative analysis of the reflections was used to understand the perceptions and interactions of the SPTs within the IPT.

RESULTS
The reflection papers (n=57) were analyzed to identify trends and main themes. Fifty-four (95%) correctly identified that the primary discharge issue addressed during this simulation was patient safety and fall risk. Thirty-two (56%) reported an improved understanding of the PT’s role on the interprofessional DP team, but only six (10%) reported an increased understanding of other professionals role. Fourteen (24%) reported feeling that other students were unaware of PT’s role on IPT. Twenty-six students (45%) reported that other health profession students were unprepared for the simulation which left a negative impact on the experience.

CONCLUSIONS
PTs are qualified to provide valuable information regarding patient mobility to the interprofessional DP team.2, 6 Following the simulation experience, our study identified that the SPTs were able to correctly identified a primary discharge issue; however, the SPTs were unable to increase their knowledge regarding other profession’s roles and responsibilities, possibly due to the perceived lack of preparation of the other health professional students.

CLINICAL RELEVANCE
DP is important to a safe transition home following an acute hospitalization and the knowledge provided by an IPT can improve outcomes.3,4,5,7 The use of a simulated DP meeting in a DPT program may improve the student’s confidence in their future role as a PT engaging in an interprofessional discharge process.
Development of a facility-specific “bundle” of outcome measures for individuals with an acute stroke in the hospital setting

PRESENTED BY
Mark Cox

BACKGROUND AND PURPOSE
The systematic use of a comprehensive “bundle” of outcome measures is valuable in describing functional mobility and may assist with discharge planning for patients with stroke in a hospital setting. Inclusion of therapists’ preferences in the selection process helps shape the “culture” and encourage the use of outcome measures. The purpose of this project was to develop a bundle of outcome measures that describe a patient’s functional ability, may assist with discharge planning, meets the needs of therapists working with patients with stroke, and to implement the use of outcome measures into an acute care “culture”.

CASE DESCRIPTION
A paper survey was administered to physical, occupational, and speech therapists at HonorHealth John C. Lincoln Medical Center. The purpose of the survey was three-fold: 1) determine which stroke outcome measures were already being used, 2) determine perceived barriers to the systematic use of outcome measures, 3) summarize therapists perceptions of important qualities for outcome measures with this population. Seventeen responses were received from 25 potential survey participants. The survey responses indicated that time to complete, ease of application, and prognostic ability were the most important factors when selecting outcome measures for patients with acute stroke in the acute care setting. A literature review utilizing PubMed and StrokEDGE documents was conducted to identify outcome measures that meet the criteria described above. StrokEDGE outcome measures for acute care setting with a score of 4, which indicates a highly recommended outcome measure with excellent psychometric properties and clinical utility, were identified. From those suggested measures, we referred to Rehabmeasures.org and to collect information regarding, reliability, validity, execution time, and instructions for performing said measures.

OUTCOMES
Our “bundle” consisted of: Orpington Prognostic Scale, the Simplified-Stroke Rehabilitation Assessment of Movement (S-STREAM), the Modified Rankin Scale and the Barthel Index. The process for administering this case report was to first determine if the therapists were utilizing outcome measures to identify the patient’s functional mobility and to aide in discharge planning. The survey was used to establish the most commonly used outcome measures for patient with acute stroke, barriers in use of outcome measures, and components perceived as important by therapists.

DISCUSSION
The identified bundle of these outcome measures may describe functional abilities and assist with discharge planning. In addition, the individual measures are time efficient and easy to administer and have the potential to provide prognostic guidance for clinical decision making in patients with stroke in the acute care setting. The systematic use of the bundle by staff therapists may lead to retrospective analysis of outcomes and discharge recommendations.
Safe Ambulation of a Patient with an Axillary Intra-aortic Balloon Pump as a Bridge to Heart Transplant: A Case Report

PRESENTED BY
Michelle Cangialosi

BACKGROUND AND PURPOSE
Femoral intra-aortic balloon pumps (IABP) are a means of temporary hemodynamic support in patients with advanced heart failure. However, one significant drawback to use of the femoral IABP is extended bedrest. Bedrest can lead to profound deconditioning, decreased lung function, and an increased risk for pneumonia and DVT. Early mobility within the ICU plays an important role to negate the side effects of bedrest. The purpose of this case report is to evaluate changes in functional mobility and walking, as measured by the Johns Hopkins-Highest Level of Mobility Scale (JH-HLM) and the ICU Mobility Scale (IMS), in a patient with an axillary IABP as a bridge to heart transplant.

CASE DESCRIPTION
Patient is a 37 year-old male with end-stage (EF 10-15%) cardiomyopathy, transferred to our institution for a heart transplant evaluation. A 1:1 right femoral IABP was placed secondary to severe hemodynamic derangements. After 14 days with a femoral IABP, the patient was transitioned to a 1:1 right axillary IABP with the sole intention of improving patient mobility and ambulation while listed as status 1A for heart transplant. The axillary IABP remained in place for 20 days prior to undergoing heart transplant.

OUTCOMES
The patient remained on bedrest with a femoral IABP for 14 days. There were 4 skilled therapy treatment sessions over that time that included repositioning in bed and bilateral upper and lower extremity exercises. The patient was surgically transitioned to an axillary IABP and received an additional 15 skilled therapy treatment sessions over the 20 days prior to heart transplant. These incorporated rolling, supine to/from sit transfers, sit to stand, pivoting, ambulation and exercises. Based on the JH-HLM, patient mobility considerably improved once the IABP was transitioned from femoral to axillary access. With the femoral IABP, the highest level of patient mobility was a 2/8 on the JH-HLM (turning self/bed activity) and a 1/10 on the IMS (any activity in bed/not moving out of bed). With the axillary IABP, the highest level of patient mobility was an 8/8 on the JH-HLM (ambulation greater than 250 feet) and an 8/10 on the IMS (walking 5 meters or more with the assistance of one person). On the day of heart transplant, the patient ambulated a total of 530 feet with minimal to moderate assistance.

DISCUSSION
Skilled therapy interventions, including out of bed mobility and monitored gait training, were performed in a patient with an axillary IABP with no adverse safety events. Our findings are limited to one patient within the cardiac ICU. The JH-HLM and the IMS were appropriate for our case report as our goal was to identify safe mobility and ambulation in a patient with an axillary IABP. Since recent reports also suggest feasibility of mobility with axillary IABP, future research should compare the safety and efficacy of mobility with varying IABPs.
Relationship between Physical Therapy Assessments, Need for Assistive Device, and Forced Vital Capacity in Patients with ALS

PRESENTED BY
Michelle Gorman

PURPOSE/HYPOTHESIS
Our study’s objective was to determine if there is a relationship between physical therapy assessment and pulmonary function analysis in patients with ALS.

NUMBER OF SUBJECTS
18

MATERIALS/METHODS
Physical Therapy data; 10 meter gait velocity (10 m), Timed Up and Go task (TUG), Manual Muscle testing (MMT) and assistive devise (AD) use was collected from willing ALS patients in the interdisciplinary ALS clinic at Peninsula Regional Medical Center in Salisbury, MD. Additionally, a retrospective medical record review was performed to collect pulmonary function data i.e. FVC which is routinely performed at each clinic visit in order to search for relationships between pulmonary capacity, assessment test results, and AD use.

RESULTS
Upon examination, the data yielded several meaningful connections. The MMT of hip flexion/extension and an increased time for the first TUG trial were significantly associated with the need for an AD. Regression analysis of spirometric values revealed that most patients likely had 90% of their predicted FVC at first symptoms, however at the time of confirmed diagnosis patients displayed an FVC of 76% predicted. A Kendall Tau correlation of FVC to 10m and TUG assessments revealed a weak relationship between FVC and 10 M gait velocities with higher FVCs (n=18 +0.12) but TUG scores were affected by a lower FVC, with the first (n=18 -0.30) and third trial (n=11 -0.27) being the most impacted, TUG overall (n=41 -0.21).

CONCLUSIONS
These results are suggestive of the relationship of the first and third TUG indicating a need for an AD and a reduced FVC in patients with ALS. The association of the 10 M gait velocity and higher FVCs along with the TUG results, may indicate a need for further research to better understand fatigue, pulmonary function, and strength with an interprofessional approach.

CLINICAL RELEVANCE
Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease that progressively destroys an individual’s corticomotoneurons, thereby leading to a catastrophic loss of motor functioning. Signs and symptoms at the onset of the disease loosely correlate to disease progression and the time to diagnostic confirmation averages about 14 months from the onset of symptoms. This delay is due to the requirement for clinical evidence progression of signs and symptoms of the disease. Overall lifespan of the patient with the disease ranges between two to four years from onset of symptoms. The period during diagnostic delay may present an opportunity when patients could modify their lifestyle patterns in order to optimize their quality of life while living with ALS.
Clinical Physical Features of Amyotrophic Lateral Sclerosis Illustrates Need for Earlier Physical Therapy Assessment and Intervention

PRESENTED BY
Michelle Gorman

PURPOSE/HYPOTHESIS
Our study’s objective was to determine if there is a relationship between early physical therapy interventions and assistive device (AD) use in ALS patients.

NUMBER OF SUBJECTS
N=17

MATERIALS/METHODS
Physical testing data (10 meter gait velocity (10 m), Timed Up and Go task (TUG), and Forced Vital Capacity Spirometry (FVC) was collected from willing ALS patients at the interdisciplinary ALS clinic at Peninsula Regional Medical Center in Salisbury, MD. Additionally, a retrospective medical record sampling further increased the available data to search for relationships between test results and AD use. Regression analysis was used for data analysis for graphing, data management, and tabulation.

RESULTS
Upon examination of patients from first signs of ALS through first visit, the data yielded several meaningful connections. Longer completion times on the first trial of the TUG were statistically significant for increased usage of AD, with third trials closely approaching significance. Considering spirometry, regression analysis revealed that whereas most patients likely had 90% of predicted FVC at first symptoms, by the time diagnosis was complete those same patients were at 76%. Binomial logistic regression modeling of AD presence probability during gait testing determined greater than 50% of patients with ALS needed some form an AD by their 24th month post diagnosis (95% confidence interval (CI) [17.1, 34.6]). Greater than 50% of patients with ALS needed an AD 12 months after their first visit to a multidisciplinary clinic (95% CI [-1.3, 21.6]). Also, 27% of patients with ALS need an AD at their very first clinical visit.

CONCLUSIONS
These results, taken together, are highly suggestive of the potential for recovery of function possible through effective PT interventions aimed at delaying the need for AD use. As expected, disease progression resulted in a diminished 10 m gait velocity and slower TUG scores. Surprisingly, we discovered earlier use of rollators may result in improved mobility and patient fitness. Unexpectedly, was the discovery of an average of 14% drop in FVC in the time between first symptoms.

CLINICAL RELEVANCE
Upon examination, the data yielded several meaningful connections. Longer completion times on the first trial of the TUG were statistically significant for increased usage of AD, with third trials closely approaching significance. This is highly suggestive of the potential for recovery of function through effective, early physical therapy interventions aimed at delaying the need for AD use.
Activity Levels and Length of Stay in Hospitalized Patients with Leukemia and Lymphoma

PRESENTED BY
Monica Lee

PURPOSE/HYPOTHESIS
Physical activity can help manage symptoms and side effects associated with chemotherapy, such as fatigue and physical deconditioning. Bouts of exercise outside of conventional therapies may occur when a patient walks in his or her hospital room or hallway and is often missed. Research lacks adequate quantitative data of activity occurring in this patient population. The purpose of this study was to determine whether activity levels and sedentary time would impact hospital length of stay in patients with Leukemia and Lymphoma.

NUMBER OF SUBJECTS
A convenience sample of 17 participants (11 males, 6 females; mean age 53.9 yrs [SD=11.6]; 12 diagnosed with Leukemia, 5 with Lymphoma) admitted to an oncology floor of a large academic hospital between July and October 2016.

MATERIALS/METHODS
Activity levels were recorded using an accelerometer and a questionnaire. Length of stay was determined by chart review. An ActiGraph accelerometer was secured around the participant’s ankle or wrist. The device remained on the limb for 21 days or until hospital discharge, whichever occurred first. The International Physical Activity Questionnaire (IPAQ) was completed within 3 days of admission and again by telephone at 30 days post discharge from the study. Participants were categorized as low, moderate, or high self-reported activity levels based on IPAQ scores. Data was normally distributed. Pearson correlations were used to determine relationships between variables for parametric data and Spearman correlations for nonparametric data. A Kruskal-Wallis test was used to determine difference in categorical data.

RESULTS
The average steps taken per day was 5832.9, average sedentary time per day was 1030.6 mins, and average hospital length of stay was 26.1 days. A weak negative correlation was found between average steps/day and hospital length of stay r= -0.40 (p= 0.11). A moderate negative correlation was found between average steps/day and sedentary time r= -0.54 (p= 0.03). A low correlation was found between initial IPAQ scores and average steps/day r= 0.27 (p= 0.29). No significant difference was found in average steps/day for high, moderate, and low groups (perceived activity) at the initial (p= 0.35) or follow up questionnaire (p= 0.08).

CONCLUSIONS
Study participants took considerably fewer steps/day (approximately 50%) when compared to typical U.S. adults. A weak negative correlation was found between average steps/day and hospital length of stay indicating the fewer number of steps/day the longer their length of stay. Subjects’ perceived level of activity was not representative of their actual activity level demonstrating the need for objective measurement of activity during hospitalizations.

CLINICAL RELEVANCE
Objective activity monitoring in the hospital setting may allow healthcare professionals to educate, encourage, and set individualized activity goals for patients. Activity levels may have an impact on length of stay, but future research is needed. It is important for follow-up research to investigate the use of activity monitoring in the acute care setting.
Physical Therapy Management Following the Bite of West Nile Virus with Associated Neurological Deficits: A Case Report

PRESENTED BY
Nadine Askar

BACKGROUND AND PURPOSE
There is minimal literature for physical therapy management following West Nile Virus with associated neurological deficits; and a significant lack of information on how to manage these patients following acute infection with West Nile Virus. The purpose of this case report is to describe a physical therapy plan of care based upon evidence to address impairments in patients with a diagnosis of West Nile Virus with associated neurological deficits.

CASE DESCRIPTION
A 63-year old working male diagnosed with West Nile Virus and associated Meningoencephalitis was admitted to an inpatient rehabilitation unit for intense inpatient rehabilitation. The patient presented with impairments of significant weakness, deconditioning, impaired function and decline in all functional mobility.

OUTCOMES
The described patient made significant improvements in all aspects of functional mobility and required significantly less assistance at discharge in comparison to the initial physical therapy examination. The patient also demonstrated significant improvement in functional outcome measure scores of the Five Times Sit-to-Stand test, the 10-Meter Walk Test, and the Functional Independence Measure (FIM). Though activity limitations and participation restrictions remained unchanged, significant improvements were evident in functional mobility.

DISCUSSION
Physical therapy is effective in improving functional outcomes in patients West Nile Virus with associated neurological deficits. Due to the lack of published evidence of physical therapy for patients with this pathology, this case can be used in conjunction with the few previous studies of patients with West Nile Virus to create an enhanced physical therapy plan of care for these patients.
For patients on mechanical ventilation in the ICU is early mobilization or usual care more effective in improving functional outcome measures?

PRESENTED BY
Nicole Graziano

PURPOSE/HYPOTHESIS
Prolonged bed rest in patients in the ICU contributes to deconditioning which decreases functional capacity. Up to 69% of ICU survivors have clinically important long-term functional impairments (Calvo-Ayala, E. et al., 2013). Additionally, patients in the ICU requiring mechanical ventilation often develop respiratory impairments and weakness resulting in functional decline (Schweickert et al., 2009). Early mobilization focuses on initiating treatment sooner and incorporating higher skilled tasks compared to usual care (UC). The purpose of this literature review was to evaluate the evidence addressing functional outcomes of patients receiving early mobilization in the ICU versus UC.

NUMBER OF SUBJECTS
Subjects are mechanically ventilated adults utilizing various protocols with a variety of medical diagnoses in diverse ICU settings located in the United States, New Zealand, and Australia.

MATERIALS/METHODS
PEDro, and PubMed were searched and yielded 16 and 69 articles respectively. Key terms included ICU, early mobilization, mechanical ventilation, physical therapy, and function, with Boolean operators. Inclusion criteria were peer-reviewed, published between 2006-2016 as studies prior to 2006 focused on safety and feasibility, English language, adult subjects (≥18), who were mechanically ventilated, and the examination of one or more functional outcome measures. Exclusion criteria were pediatric populations, no mechanical ventilation, and if functional outcomes were not assessed. Seven readers independently and collaboratively assessed the relevance and quality of the articles using the PEDro and the CEBM-1 level of evidence scales.

RESULTS
Four randomized control trials were found with level 1b evidence on the Oxford CEBM scale and ranged from 5-9 on the PEDro scale. A variety of diagnoses, functional outcome measures, ICU settings, and countries were included. Schweickert et al. and Hodgson et al. showed improvements in the early mobilization group at hospital discharge (d/c), and ICU d/c respectively. Hodgson noted no between group differences in ADL or return to work status at six months follow-up. Morris et al. and Kayambu et al. demonstrated improvements in the early mobilization group at six months post hospital d/c. Neither study identified significant between group differences at ICU d/c.

CONCLUSIONS
Strong evidence supports that early mobilization is associated with greater improvement in functional outcomes at hospital or ICU d/c compared to UC in mechanically ventilated patients, while the evidence for six months post hospital d/c is equivocal. Prior level of function, sedation, and dosage are significant variables impacting functional outcomes and limiting generalizability.

CLINICAL RELEVANCE
Early mobilization is associated with improved functional outcomes of mechanically ventilated patients in the ICU. Program implementation within 48 hours of hospital admission with progression to functional training, will safely improve patient status at d/c, reduce length of stay in the ICU and reduce costs.
Effects of Early Ambulation on Functional Outcomes and Hospital Length of Stay while on Bi-level Positive Airway (BiPAP)

PRESENTED BY
nicole greene

BACKGROUND AND PURPOSE
Research has shown that immobility can lead to muscle atrophy, cognitive deficits, impaired cardiopulmonary endurance and decreased quality of life1-5. There has been increased mobilization of mechanically ventilated patients, however there is limited published on mobilizing patients on BiPAP. The purpose of this case study is to demonstrate the benefits of early ambulation on functional outcomes and hospital length of stay for a patient on BiPAP.

CASE DESCRIPTION
Patient is an 18 yo male admitted to PICU on two occasions 9 months apart. Patient with history of brainstem glioma diagnosed in 2005 s/p radiation in 2013 with history of aspiration pneumonia requiring ICU admission. Prior to first hospitalization patient performed all functional mobility with supervision. Patient was a participant in early mobility initiative.

OUTCOMES
Patient presents on first admission with resolving hypoxic episode and placed on BiPAP. Patient evaluated by Physical Therapy (PT) on hospital day 1 and was transferred out of bed to chair. Patient seen daily, progressing mobility as tolerated. On hospital day 9, patient was cleared to ambulate with tethered BiPAP, 10’ with moderate assistance of 2 therapists. Patient discharged to inpatient rehabilitation on day 23 performing transfers with contact guard assist and ambulating 50’ with rolling walker and moderate assistance of 2 therapists. Patient was admitted to inpatient rehabilitation for 15 days. At discharge, patient was performing transfers with contact guard assist and ambulating 150’ with minimal to moderate assist.

Patient readmitted for hypoxemia requiring intubation. Prior to this admission, patient was at his baseline functional status. Patient evaluated by PT on day 1 of admission working on sitting edge of bed while intubated. Patient extubated to BiPAP on day 3 with continued progression of mobility including ambulation on day 5. Patient ambulated on BiPAP 100’ x 2 with minimum assistance from PT. Patient was discharged to home on day 8 ambulating 200’ with contact guard to minimal assist.

DISCUSSION
Following invasive and non-invasive mechanical ventilation, patients often require therapy services upon hospital discharge. In this case study we were able to see the difference in patient function following early ambulation while on Bi-PAP. During patients first admission focus was on transfer training. A change in culture is required in order to get buy in and participation from all disciplines. With the focus of early mobilization in our PICU there has been an increase in opportunity to mobilize both invasive and non-invasively mechanically ventilated patient. As demonstrated above patient demonstrated benefits of early ambulation. More research is needed on progressing patients to ambulating while on non-invasive ventilation such as BiPAP.
The power of communication: the role of PT in managing a patient with Dropped Head Syndrome

PRESENTED BY
Patricia Laverty

BACKGROUND AND PURPOSE
Dropped Head Syndrome (DHS) is a rare condition characterized by weakness of the paraspinal muscles resulting in chin on chest deformity. Various etiologies are associated with DHS such as muscular and neurological disorders, cervical spondylosis, and spine surgery. DHS can be corrected with prolonged passive neck extension or surgical management, with surgery being more common. This deformity significantly impacts forward gaze, ambulation, swallowing, ADLs, and quality of life (QOL). There is minimal research about the role of physical therapy (PT) treating this population in acute care. The purpose of this case study is to describe the importance of PT management and interdisciplinary communication for a patient (pt) with DHS, managed nonoperatively.

CASE DESCRIPTION
Pt is a 59 year old female with a history of osteoporosis, kyphosis, T4-S1 posterior spinal fusion with paraspinal flaps and subsequent revision due to hardware failure. Pt was admitted to the hospital diagnosed with DHS requiring spinal debridement, removal of hardware, wound vac placement, and halo placement for traction. Extensive communication with the interdisciplinary team (IDT) was integral to assess appropriateness for mobility. PT clarified orders secondary to documentation of unstable cervical spine. As per the surgeon, the halo had to receive 15 lbs of traction in order to prevent a rigid deformity. Traction should be maintained at all times except during mobility, at which point support would be given by PT for comfort. At initial evaluation, pt reported discomfort and was observed to be in cervical hyperextension. After discussion with IDT, traction was decreased to 10 lbs to promote optimal alignment in supine and sitting. The pt had 24 PT sessions, ranging between 20-40 minutes, twice a day. Treatments focused on strengthening, transfers, and ambulation.

OUTCOMES
Upon the initial PT evaluation, Activity Measure for Post-Acute Care (AM-PAC) “6 Clicks” score was 10 and improved to 17 by discharge. Sitting tolerance improved to 4 hours when traction was decreased from 15 to 10 lbs. The pt was able to ambulate after one week, distance progressing from 20 ft to 35 ft during stay. The amount of assistance needed for all mobility improved from 3 people (2 for mobility and 1 for head support) to 2 people (1 for mobility and 1 for head support).

DISCUSSION
Currently there is minimal research regarding PT management of pts with acute DHS treated nonoperatively. Due to pt complexity, nursing staff was unable to mobilize pt. In order to improve QOL, PT has an essential role with this population to prevent deconditioning and promote effective swallow and forward gaze by sitting upright. With PT, pt progressed functionally, improved pulmonary hygiene, and off-loading of the surgical site. Nonoperative management of DHS is not widely used, therefore, halo to traction may be intimidating to members of the IDT. PTs should be empowered to facilitate interdisciplinary communication in order to provide quality patient-centered care in this population.
Physical Therapy Driven Guidelines can assist the medical team in Triaging Patients appropriately in an Acute Care Observation Unit

PRESENTED BY
Patricia Laverty

PURPOSE/HYPOTHESIS
The purpose of this study is to explore the effect of physical therapist (PT) proposed guidelines within an observation unit (OU) setting with goals to improve timeliness and appropriateness of PT orders. Our hypothesis is: following the implementation of guidelines on May 12, 2017, OU orders will improve by 4 hours and appropriateness of orders will improve by at least 10%.

NUMBER OF SUBJECTS
Patient (pt) data collected from a large, urban medical center OU for two months tracking pts from admittance to OU to discharge from hospital, as well as receipt of orders and PT evaluation. This data was then compared to one month of orders (135 pts) received following education on algorithm.

MATERIALS/METHODS
All data was obtained through Epic EMR retrospectively. Medical team members included: 2 PTs, attending physician, PT manager, care manager and social worker. Interdisciplinary meetings were conducted to comprise efficient guidelines for PT referral. Education and use of the guidelines was distributed within the medical team via email.

RESULTS
Results from pre algorithm data analysis for 2 months include: the time from OU admit to received PT orders was 8 hours 33 minutes; 22% of total pts were not evaluated due to inappropriate orders or those who were at an independent level or baseline mobility. 14% were evaluated, then eventually admitted to inpatient. Post algorithm data for 1 month includes: the time from OU admit to receive PT orders was 6 hours 46 minutes; 20% of total pts were subsequently not evaluated secondary to the above reasons.

CONCLUSIONS
A PT driven order set assisted licensed practitioners in identification of appropriate pts requiring skilled PT evaluation within the fast-paced setting of the OU. The guidelines prompted the medical team to place orders earlier, thus better facilitating same day discharges from the hospital, which is an ultimate goal of an OU. Further education needs to be conducted with LIPs through direct training. Although there has been improvement, hypothesis has not fully been met due to introduction of short stay patients to unit, need for further formal education, and time to allow for change of culture. Inappropriate orders showed small decrease, however, PT initiated screening process to not evaluate these patients.

CLINICAL RELEVANCE
With the healthcare world constantly changing including insurance, reimbursement, therapy services and pt volumes, it is imperative medical systems install efficient interdisciplinary treatment teams in OU settings. More importantly, the PT role in these environments is increasingly beneficial in assisting triage of patients, decreasing overall costs, improving pt care, and in facilitation of appropriate services and follow up. By implementing general guidelines for PT evaluation within the OU settings in various medical centers, improved workflow and need for skilled PT may be properly identified.
Assessment of Implementation of Safe Patient Handling Policies During Physical Therapy Interventions Within Acute Care, Subacute Care, and Skilled Nursing Facilities

PRESENTED BY
Peg Olson

PURPOSE/HYPOTHESIS
The purpose of this pilot study was to assess the adherence to SPHP by physical therapists during specific therapeutic interventions and therapist’s rationale in choosing when to abide by their facility’s SPHP within acute care, subacute care, and skilled nursing facilities.

NUMBER OF SUBJECTS
199

MATERIALS/METHODS
An online survey was disseminated to APTA Geriatrics, Acute Care, Neurology, Oncology, and Cardiovascular and Pulmonary Section listserv members. The coded data was analyzed using descriptive and inferential statistics using SPSS® (Version 24).

RESULTS
67% of participants were between the ages of 32 and 51, 85% female, 62% worked full time, and 54% worked in the acute care setting. 51% reported their facility’s SPHP included adherence by physical therapists. Between 71% and 86% of participants with SPHP reported following the policy frequently or most of the time during transfers, gait, bed mobility, therapeutic exercise, and balance training. Statistically significant reasons for not adhering included not aligned with therapy goals, time constraints, inconvenience, staffing shortage, lack of equipment, patient discharge, and other. Statistically significant reasons for adhering included personal safety, patient safety, efficiency of treatment, SPHP mandated, therapist self-limit. Employment status significantly influenced adherence to SPHP during therapeutic exercise (P = .039). During transfer training (P = .015) and therapeutic exercise (P = .006), a significant difference existed between the number of transfers per day a therapist performed and adherence to SPHP. A statistically significant difference existed between therapists’ belief in SPHP producing positive patient outcomes and enforcement of safe patient handling at the therapist’s facility (P = .017). When comparing device availability and use frequency, the number of ceiling lifts (P < .001), lateral transfer aids (P = .001), and sling or Hoyer lifts (P = .016) were statistically significant. A positive trend existed between the number of transfer devices available and use of the device.

CONCLUSIONS
The findings show a need to further explore the efficacy of SPHP to decrease injury rates among physical therapists, the effect these policies may have on patient outcomes, and to qualitatively examine the details behind reasons participants choose to adhere to SPHP to guide future development, implementation, refinement, and maintenance of SPHP by physical therapists.

CLINICAL RELEVANCE
To fulfill the APTA’s vision of physical therapists to be leaders in the safe patient handling movement further research and awareness of SPHP is required.
Main Effect of Time on Activity, Participation, and Fatigue in Abdominal Organ Transplant Recipients Participating in a Supervised Exercise

PRESENTED BY
Samantha Thompson

PURPOSE/HYPOTHESIS
To explore the main effects of time on activity, participation, and fatigue in post abdominal organ transplant recipients following participation in a supervised exercise program.

NUMBER OF SUBJECTS
9

MATERIALS/METHODS
This was an implementation pilot study to explore the effects of time on activity, participation, and fatigue in abdominal organ transplant patients that were involved in a supervised exercise program throughout their hospitalization. Participants in the study completed assessments consisting of the ICF Measure of Activity and Participation (IMPACT) to measure activity and participation limitations, and the PERFORM Questionnaire to measure fatigue impact (lower score better on both measures). Subjects participated in a; 1) baseline assessment, 2) post-assessment at discharge from the hospital, and 3) 12-week follow-up phone call assessment. Participants attended a supervised group exercise session in the physical therapy (PT) gym 5 times per week throughout their hospital stay. The supervised exercise class included open chain strengthening exercises of the major muscle groups of both the upper and lower extremities, sustained physical activity on a recumbent bike or treadmill, and balance exercises. Data were analyzed using descriptive statistics (demographics) and repeated measures of analysis of variance (RM-ANOVA) (effect of time on primary outcomes).

RESULTS
Nine of 16 (56%) participants who completed the baseline and post-assessment phases of the study also completed the follow-up phone call assessment and are included in these analyses. Age ranged from 25-66 (48) years and 5 were female (55.5%). RM-ANOVA analysis revealed significant main effects of time on the IMPACT (57.25, 50.00, 36.13, F=6.89, p=0.0008) and the PERFORM Questionnaire (37.22, 23.11, 20.89, F=13.75, p≤0.0001). Activity & Participation limitations (IMPACT) scores indicate decreasing limitation across all 3 assessments with the greatest change between hospital discharge and 12-week follow-up. Fatigue impact scores also demonstrated a decreasing impact of fatigue across all 3 assessments, with the greatest change from baseline to hospital discharge.

CONCLUSIONS
These data demonstrate a positive change in the outcome measures from baseline to follow-up. Continued improvement in outcomes after post-assessment suggests that the overall main effect of time may allow for improvements in activity, participation, and fatigue impact in abdominal organ transplant patients after participation in an exercise program during hospitalization.

CLINICAL RELEVANCE
The results of this study indicate that positive changes in activity, participation, and fatigue impact can continue across the continuum of care including transition home from the hospital following abdominal organ transplant. It is interesting to note that the most dramatic improvement in activity and participation occurs after hospital discharge while fatigue makes the most dramatic change during the hospitalization.
The Effect of a Pre-operative Education Session on Functional Outcomes in Patients with Total Knee and Hip Arthroplasty in an Acute Care Setting

PRESENTED BY
Sara Holland

PURPOSE/HYPOTHESIS
Total joint arthroplasties (TJA) have evolved over the years and have come to be regarded the most successful and cost effective operations with regards to joint pain.1 Evidence for pre-operative education, as a tool to augment outcomes following TKA and THA, is inconclusive.2-4 The purpose of this study was to determine the effectiveness of a pre-operative education session on the length of stay, ambulation distance, number of physical therapy (PT) sessions, and discharge destination following TKA and THA in an acute care setting.

NUMBER OF SUBJECTS
553

MATERIALS/METHODS
Participants included patients that underwent THA and TKA (n = 553), between March and May 2016 at a community based hospital. Participants were divided into 2 groups based on their attendance of the pre-operative session (pre-op: n = 374; M = 158, F = 216) or not (no pre-op: n = 179; M = 84, F = 95). The pre-op session was a 1.5-hour session, focused on reviewing exercises and preparation for appropriate complications/ expectations related to surgery, by a multi-disciplinary team (registered nurse and a physical or an occupational therapist). Outcome measures collected via electronic medical record at discharge were length of stay, ambulation distance, number of PT sessions, and discharge destination. Mann Whitney U test was utilized to examine group differences (P < 0.05). For discharge disposition, a chi square analysis was performed (P < 0.05).

RESULTS
Both the groups were similar in age (pre-op: 64.4 ± 10.6 y, no pre-op: 64.6 ± 11.2 y, P = 0.85). Pre-op group had a significantly greater ambulation distance than the no pre-op group (pre-op: 69.4 ± 30.2 m vs. no pre-op 59.9 ± 30.7 m, P = 0.001). A significantly greater proportion of participants in the pre-op group would receive outpatient PT versus the no pre-op group (40.9% vs. 29.8%, P = 0.008). No significant differences were noted for the length of stay (P = 0.72) and number of PT sessions (P = 0.772).

CONCLUSIONS
Our findings suggest that pre-operative education may improve ambulation distance and discharge destination compared to routine care in individuals with THA and TKA. Early mobility is vital to reduce the likelihood of deep vein thrombus and pulmonary embolism.5 Since the pre-op group was likely to be discharged to outpatient PT versus home or inpatient rehabilitation facility, this may affect healthcare costs.

CLINICAL RELEVANCE
The data provides physical therapists information about pre-operative education in patients undergoing TKAs and THAs. These findings are relevant due to current changes in healthcare utilization with introduction of bundled payments to cover rehabilitation costs.
Role of Physical Therapy in the ICU with the Management of Life-Threatening Cat-Scratch Disease Resulting in Bilateral Below Knee Amputations

PRESENTED BY
Shelina Martinez

BACKGROUND AND PURPOSE
Cat-scratch disease (CSD) can in rare cases develop into a life-threatening condition requiring hospitalization in the intensive care unit (ICU). Early mobility is a beneficial component of multidisciplinary ICU care to help prevent deconditioning and decline. The purpose of this case report is to describe the role of an acute physical therapist in the management of a critically ill patient treated in the ICU with accompanying complications.

CASE DESCRIPTION
The patient was a 58-year-old male admitted to the medical intensive care unit (MICU) with CSD-related cellulitis which rapidly progressed to gangrene requiring bilateral below knee amputations (BKA). Examination revealed deficits in ROM, strength, balance, activity tolerance, aerobic capacity, and functional mobility. Treatment included therapeutic exercise, balance and functional mobility training, and patient education regarding post-BKA management. Following evaluation, discharge recommendations included inpatient rehabilitation to maximize functional outcome.

OUTCOMES
The patient had a total length of stay of 26 days in the hospital and was discharged to inpatient rehabilitation. By discharge, the patient was in a stable medical condition and demonstrated improved strength, ROM, balance, activity tolerance, aerobic capacity, and functional mobility.

DISCUSSION
This case demonstrates the role of physical therapy in the ICU and how early mobility can be included in the management of critically ill patients while highlighting the disparities that exist between early mobility protocols and real-life provisions of care. It also presents a severe case of CSD as well as the physical therapy management of a patient status post bilateral BKA’s. Additional research is required for the development of a bilateral BKA rehabilitation protocol for an at-risk population.
Management of Horizontal Benign Paroxysmal Positional Vertigo after Severe Traumatic Brain Injury: A Case Report

PRESENTED BY
Stephen Banks

BACKGROUND AND PURPOSE
Recent literature has described the complexity and benefits of diagnosing and treating benign paroxysmal positional vertigo (BPPV) after severe traumatic brain injury (TBI). Daniel Stam reported a case series in which he identified and treated two patients with horizontal canal BPPV after severe TBI in an inpatient rehabilitation hospital. The purpose of this case report was to apply Stam’s examination and treatment framework to the management of horizontal BPPV after severe TBI in the acute care hospital.

CASE DESCRIPTION
A twenty-four-year-old man acquired a severe TBI during a motor vehicle accident. He initially presented with a Glasgow Coma Scale score of 4 and a diffuse axonal injury and subarachnoid hemorrhage. Concomitant injuries included fractures of the cervical spine, mandible and acetabulum, and lacerations of the kidney, liver and spleen. The patient required intermittent mechanical ventilation and placement of a tracheostomy and feeding tube. Due to the serious nature of his injuries, the progressive upright mobility component of his coma stimulation program commenced 25 days into his hospitalization. The patient demonstrated generalized responses, required total assistance for mobility and was unable to communicate effectively, consistent with a Rancho Los Amigos Scale of Cognitive Function Scale (RLA) Level II. Mobility was significantly limited due to frequent episodes of emesis which presented as a medical emergency because of the risk of aspiration. The patient was evaluated for BPPV because of the consistent presence of emesis and nystagmus with positional changes. A supine roll test and bow and lean test, modified due to cervical spine precautions, evoked persistent apogeotropic horizontal nystagmus and emesis consistent with right horizontal canal cupulolithiasis. The patient was treated with the Gufoni Maneuver for the right horizontal cupulolithiasis and subsequent conversion to a right horizontal canalolithiasis, followed by prolonged side-lying position.

OUTCOMES
Over nine sessions focusing on the treatment of right horizontal canal BPPV, the patient progressed from intolerance to rolling due to emesis and Nystagmus, to tolerance of a wide variety of positions. With symptom resolution, the patient demonstrated more sustained alertness and attention, the ability to follow one-step commands and was able to tolerate daily out of bed activity, consistent with a RLA Level III-IV.

DISCUSSION
Although challenging, the identification and treatment BPPV after severe TBI in the acute hospital care setting may be beneficial to recovery. The increased tolerance to activity after treatment for horizontal canal BPPV allowed for a greater range of physical therapy interventions in a severely brain injured patient. Tests and treatment for BPPV may need to be modified due to concomitant injuries in patients with traumatic injuries. Continued research on the treatment of BPPV after severe TBI is recommended.
Falls Risk in Patients Diagnosed with Critical Illness Myopathy

PRESENTED BY
Sujay Galen

PURPOSE/HYPOTHESIS
Intensive care unit (ICU) acquired illnesses are becoming more prevalent in the hospital setting. Critical illness myopathy (CIM) is a muscular pathology acquired in the ICU with clinical findings that include significant weakness affecting proximal muscles more than distal muscles. The financial burden of falls and fall related injuries continues to be an area of concern for health care systems. Currently there are no estimates of the risk of falls in individuals with CIM post-discharge. The aim of this study was to assess fall risk using spatio-temporal gait parameters, and the modified gait efficacy scale (mGES) in patients diagnosed with CIM prior to discharge from inpatient rehabilitation, and follow-up on the falls they may have sustained, and mGES 3 months post-discharge.

NUMBER OF SUBJECTS
24 participants (11 female, Age 71.1 +/- 8.3 years).

MATERIALS/METHODS
All subjects had the mGES completed and a single assessment of 4 gait parameters: gait speed, stride length, stance time, and swing time at discharge. All gait parameters were recorded using the wireless gait assessment tool (Wi-GAT) while the subjects walked 3 times over a 10-meter walkway using a self-selected walking speed. A follow-up phone call was made 3 months post discharge. The mGES was administered and any falls experienced within the past 3 months were recorded.

RESULTS
The average walking speed was 0.44 +/- 0.16 m/s. Previous studies have shown that healthy individuals in their 70’s have a gait speed of 1.33 +/- 0.2 m/s (male) and 1.27 +/- 0.21 m/s (female). In individuals above 70 years of age (n=13) gait speed was moderately correlated with their stance time (r=-0.798, p=0.001), and stride length (r=0.708, p=0.007) on the right side and similar correlations for observed on the left side too. Similar significant correlations were also observed in individuals below 70 years. The mGES scores on average was 46.3 +/- 24.8 at discharge and significantly improved to 64.3 +/- 21, 3 months post discharge in 19 subjects who completed the follow-up (p=0.013). Only two participants reported falls post discharge, and 52.6% (10/19) were using assistive devices for ambulation post-discharge.

CONCLUSIONS
All subjects recorded slower walking speeds in comparison to the age matched normative data. Slower walking speeds are associated with an increased risk of falls. The mGES scores were well below the normative values (79.3 +/- 19.3) for community dwelling elderly individuals, which has also been associated with increased risk of falls. The slower walking speed was also moderately correlated with longer stance time, and decreased stride length at discharge, which may also indicate a high risk of fall. Although these trends were associated with increased risk of falls, only two individuals recorded falls at the 3 month follow-up. This may be due to lack of overall mobility post discharge.

CLINICAL RELEVANCE
Gait speed may be an important clinical measure at discharge, however, further studies addressing physical activity levels post discharge may be helpful to fully understand the risk of falls in this population.
Access to Physical Therapy and Socioeconomic Status on Fear of Falling and Mobility Outcomes in Individuals with Lower Limb Loss

PRESENTED BY
Szu-Ping Lee

PURPOSE/HYPOTHESIS
Current research showed that 52.4% of individuals with lower limb loss report falling at least once within the past year. Comprehensive rehabilitation care after amputation, including physical therapy (PT), has been shown to improve patient outcomes and reduce mortality and hospital readmissions. Socioeconomic status has been shown to play a vital role in access to healthcare but has yet to be investigated in the amputee population. The purpose of this study was to investigate the effects of socioeconomic status on access to PT after amputation, and to quantify the difference in mobility outcomes between older individuals with limb loss and non-amputee, age-matched controls. We hypothesized: 1) individuals with socioeconomic difficulty would have reduced access to PT after amputation, and 2) older individuals with limb loss will exhibit increased fear of falling and decreased mobility performance when compared to controls.

NUMBER OF SUBJECTS
23 subjects with lower limb loss (7 female, 16 male, mean age 51.3±13.2 years old, range 22-70) and currently using a prosthesis for ambulation.

MATERIALS/METHODS
Subjects completed questions to determine their socioeconomic status and whether they received PT after amputation. Mobility outcome measures included the Fear of Falling Avoidance Behavior Questionnaire (FFABQ), Timed Up and Go (TUG) test, and the Six Minute Walk Test (6MWT). Chi-square analysis was used to assess the effect of socioeconomic status on PT access. t-tests were used to compare mobility outcomes between older amputees (50-70 years old) and age-matched controls (n=150, collected in a previous study using identical protocol).

RESULTS
34.8% of the individuals with limb loss reported socioeconomic difficulties, of them only 25% received PT after amputation when compared to 75% of those who reported no socioeconomic difficulty received PT (p=0.354). Additionally, when compared to the controls, older individuals with lower limb loss demonstrated a significant difference in the TUG (p<0.001), 6MWT (p<0.001), and FFABQ (p=0.008). On average, they were 4.4 seconds slower on the TUG, walked 136.4m less on the 6MWT, and had an increased FFABQ score of 6.6 points (out of 56).

CONCLUSIONS
Although not statistically significant, our preliminary findings showed that socioeconomic difficulty affected access to PT after amputation. Furthermore, our data demonstrated that older individuals with lower limb loss exhibit reduced mobility performance and increased fear of falling when compared to the age-matched controls.

CLINICAL RELEVANCE
This study highlights a possible link between socioeconomic status and access to PT after amputation. Given that individuals with lower limb loss exhibit significantly reduced mobility when compared to age-matched controls, future studies should focus on examining the disparities in socioeconomic status, PT access, and health outcomes in individuals with lower limb loss.
Number of physical therapy visits predicts discharge disposition in community-dwelling older adults after acute hospitalization

PRESENTED BY
Tammy Simmons

PURPOSE/HYPOTHESIS
Hospital associated disability is a recently recognized diagnosis and is becoming an epidemic within the older adult population. The primary purpose of this study was to determine if discharge disposition could be predicted based on number of physical therapy (PT) visits completed during an acute hospitalization for urinary tract infection (URI).

NUMBER OF SUBJECTS
523

MATERIALS/METHODS
Five hundred twenty-three medical records over a three-year period were reviewed in this retrospective cohort study. Community-dwelling older adults (aged 65 years and older) who were admitted from home functionally independent 30 days prior to hospitalization were included. Data collected included demographic and patient characteristics (gender, age, living status), as well as primary outcomes of length of stay (LOS), discharge disposition, and number of physical therapy visits. Data were first analyzed to explore differences and/or relationships between the demographic variables and the outcome variables in order to determine which variables should be used in the regression model (p < .10). A multinomial regression was conducted to determine predictors of disposition. Differences in PT visits/day across disposition groups (home with self-care, home with home PT, and rehab) were assessed with the Kruskal-Wallis test.

RESULTS
The most predictive logistic regression model included age, LOS and PT visits (c2(136) = 416.4, p < .001). This model explained 62% (Nagelkerke R2) of the variance in discharge disposition and correctly classified 67% of cases. Older age, longer LOS and fewer PT visits during acute hospitalization were significant predictors of hospital discharge disposition to acute or subacute rehabilitation facilities. In addition, significant differences were found across groups in average PT visits per day (Home with self-care 0.33 IQR 0.67; Home with home PT 0.50 IQR 0.39; Rehab 0.39 IQR 0.25; p<.001)

CONCLUSIONS
Increased age and LOS, as well as reduced PT visits, predicted a higher rate of discharge to a rehabilitation facility. An increase in the average number of daily PT visits during an acute inpatient hospitalization improved patients’ rate of discharge home to the community regardless of gender or living status (living alone verses with family).

CLINICAL RELEVANCE
It is imperative that patients admitted with UTI for acute hospitalization are prioritized for physical therapy treatment during their stay. Increasing the number of visits by PT for these patients can improve their potential to be discharged to the community.
Experiences of Mandated Outcome Measure Protocol Implementation in the Acute Care Setting

PRESENTED BY
Thuha Hoang

PURPOSE/HYPOTHESIS
Evidence based practice among rehabilitation clinicians across all clinical settings has become more prevalent. Institutions have used multiple strategies to facilitate evidence based practice and support clinical decisions, yet there remains an underutilization of research integration into daily clinical practice. More recently, mandatory outcome measures protocols have been found to increase utilization in the acute care setting. However, there is limited research on how clinicians’ experience these protocols and impacts on clinical practice. The purposes of this study were to explore and describe how acute care clinicians at a private academic medical institution experience the implementation of mandated outcome measure protocol.

NUMBER OF SUBJECTS
A purposeful sampling was used to select 13 clinicians (6 PT, 4 OT, 3 SLP) who were employed full-time and had at least 6 months of experiences with the protocol.

MATERIALS/METHODS
A qualitative method was used, with data obtained from semi-structured focus group interviews and program documents. Data was analyzed with within-case and across-case methods.

RESULTS
Data analysis revealed 4 emerging themes regarding the participants’ perceptions of mandated outcome measure protocol: expansion of clinical roles, barriers, facilitators, and changes in clinical practice. Major barriers included various training on outcome measures among clinicians, perceived low value for outcome measure, ineffective communication between clinicians and administration, and inconsistent application of outcome measure.

CONCLUSIONS
The findings suggest there were common experiences and themes that emerged as the participants experience the protocol. While all participants acknowledged institutional support in the forms of education and training impacted clinical practice, many barriers related to training and workplace culture contributed to inconsistent implementation of the outcome measure. Further exploration of these barriers may assist institutions in the design of effective educational strategies that enhance evidence based practice and overall workplace culture.

CLINICAL RELEVANCE
As outcome measures continue to be essential elements of clinical practice, minimizing current barriers will facilitate physical therapist’s abilities to optimize patient care services and thrive in the current acute care environment
COMPARISON OF SUBJECTIVE AND PHYSICAL FUNCTION OUTCOMES USING AXILLARY CRUTCHES AND A “HANDS-FREE CRUTCH,” IN COMPARISON TO NO CRUTCH, FOR MOBILITY

PRESENTED BY
Toran MacLeod

PURPOSE/HYPOTHESIS
Physical therapists regularly give advice on assisted devices (AD) for gait. One limitation of axillary crutches (AC) is the inability to use your hands while using the AD. A new FDA approved “hands-free” crutch (HFC) may be used as an AD for gait instead; it is strapped to the leg, making the hands available. The HFC has not been compared for functional or subjective performance. The purpose of this study was to investigate functional and subjective outcomes for walking with the standard AC and the HFC, in comparison to no AD. We hypothesized that either AD would be significantly impaired compared to no AD, there would be no differences between the AD, and that individuals would prefer the HFC.

NUMBER OF SUBJECTS
Seventeen uninjured subjects (15 females, age: 27.7±1.7 years) that were physically active and had prior experience using an AD (per the requirements of our Institutional Review Board) participated.

MATERIALS/METHODS
Baseline testing included performing the 6-minute-walk-test (6MWT), Stair-Climbing-Test (SCT), and Timed-Up-and-Go Test (TUG). Following testing, subjects were randomized to either the AC or the HFC, and were fitted and trained on their use. Then took the AD home to complete training while using the device, completed an activity log, and returned for follow-up testing using the AD. All then repeated the training and testing procedure with the remaining AD. Following all functional testing, subjects completed a subjective Likert scale questionnaire for AD preference to assess preference for the AD during the 6MWT, SCT, and TUG. Potential differences between no AD, AC, and HFC were examined using a repeated ANOVA.

RESULTS
Significant main effects were found for the 6MWT, SCT, and TUG (p<0.001). For the 6MWT, subjects walked significantly farther without an AD (2147±179 feet) than the other conditions (p<0.001), but not significantly farther with the AC (1279.1±242 feet) than the HFC (1269.7±254 feet; p=0.851). During the SCT, subjects walked significantly faster without an AD (8.89±1.28 seconds) than the other conditions (p<0.001). In the TUG, subjects walked significantly faster without an AD (5.73±0.51 seconds) than the other conditions (p<0.001), and were significantly faster with the HFC (10.11±1.98 seconds) than the AC (10.76±1.50 seconds; p=0.048). The majority of subjects preferred the HFC over the AC for both the 6MWT and the SCT, while the preference for the TUG was mixed.

CONCLUSIONS
For healthy subjects functional outcomes were either better, or not different, using the HFC in comparison to the more standard AC while performing clinical outcome measures of activity. Any potential differences between the two AD should be interpreted cautiously, as they may not exceed the minimal detectable change for these tests. Subjective preference was mixed, however, the majority of subjects preferred the HFC while performing the SCT and 6MWT.

CLINICAL RELEVANCE
Therapists may consider using the HFC as an AD in cases where endurance or stair ambulation is hindered using AC.
Are there differences in energy consumption and distance ambulated in young healthy adults using different cane types during timed tests?

PRESENTED BY
Veronica Southard

PURPOSE/HYPOTHESIS
Background/Purpose: About 30 percent of persons require mobility devices after a hospitalization. Individuals rely on canes to be able to restore function when dealing with a mobility issue. Canes have a wide array of external features. These include but are not limited to, the height of the cane, the shape of its handle, and the portion that contacts the ground. Together, these features may play an impactful role on the mechanics of the operator. Standard single point canes have been found to provide safe and efficient support at the most optimal gait speed when compared to other devices. Jointed canes have been favored by some because the point that contacts the ground is able to mimic the ankle joint since the shaft moves independently of the tip at floor contact. There have been no studies that demonstrate these claims. The purpose of our study was to assess the effect of the jointed cane, offset cane, and single axis cane (SAC) on energy expenditure and distance ambulated.

NUMBER OF SUBJECTS
Fifty healthy subjects performed a 2 Minute Walk Test (2MWT) and 6 Minute Walk Test (6MWT) using the three distinct types of canes while wearing pedometers.

MATERIALS/METHODS
Stride length was calculated for each participant prior to the application of a Digimax pedometer. Blood pressure (BP), heart rate (HR) and rate of perceived exertion (RPE) were taken before and after the 2MWT and 6MWT. Canes were randomly assigned to participants.

RESULTS
A Repeated Measures ANOVA assessed non-significant differences between the canes on energy variables. However, main effects were found on distance measures, F=163.88, p. =. 00; 2MWT and F= 4.44, p. = .01 6MWT. Paired t-tests assessed distance differences as p. = .01 for the jointed cane/ SAC; p. = .03 offset cane /jointed cane.

CONCLUSIONS
This was the first study to assess the jointed cane. The results demonstrate fewer steps resulting in less distance traveled when using the jointed cane as compared to the single point canes on timed tests. Energy expenditure was similar regardless of device. More study is needed on persons that need a cane for safe mobility using the jointed cane to determine it’s overall efficacy.

CLINICAL RELEVANCE
Therapists should consider different options that are appropriate for each patient in cane selection. The completion of significantly less distance on both of the timed tests, indicates a reduction in gait speed which is apparent in persons with increased falls risk. There is no evidence that the jointed cane has a beneficial effect on energy use or distance.
A systematic review examining the exercise parameters required to induce the repeated bout effect. Implications for acute care physical therapists

Presented By
William VanWye

Purpose/Hypothesis
Exercise prescription requires skilled manipulation of frequency, intensity, duration, and mode. However, it can be challenging in the acute care setting due to the numerous variables affecting acutely ill patients. These individuals often have reduced activity and participation tolerance, thus requiring utilization of exercise to target body functions and structures (i.e., impairments) as a supplement to or even replacing activity-based interventions. Interestingly, little is known regarding the mechanism of action (MOA) explaining how exercise enables future activity and participation. One potential MOA is the repeated bout effect (RBE), which is the phenomenon that a single bout of exercise provides protective adaptations for future sessions. The RBE can be measured by the level of muscle damage (i.e., plasma creatine kinase (CK)) that has occurred after an exercise session. Unaccustomed and/or exhaustive exercise frequently results in elevated plasma CK levels; however, the level of muscle damage in subsequent sessions is attenuated indicating protective adaptations have occurred. Therefore, the purpose of this systematic review is to examine the exercise parameters required to induce the RBE in the lower extremities measured by elevated plasma CK levels.

Description
A systematic review of databases (Academic Search Complete, CINAHL, MasterFILE Premier, MEDLINE, PsycINFO, and SPORTDiscus) was performed using key words to identify relevant peer-reviewed articles. Three researchers screened the references using pre-defined inclusion-exclusion criteria. Of the 1,780 titles and abstracts screened, 254 articles met the inclusion criteria and each full-text was reviewed.

Summary of Use
Of the 254 articles, 7 met criteria. The articles were analyzed using the Physiotherapy Evidence Database (PEDro) scale, a valid assessment tool that measures the methodological quality of RCTs on a 0 to 10 scale. Six of the 7 studies (PEDro scale range 7-8, mean 7.17) found that eccentric (ECC) muscle actions induce the RBE. This included ECC training (i.e., passive or assisted concentric action followed by a volitional ECC action) or ECC-concentric exercise. One study (PEDro scale 7) found the RBE was induced by maximal voluntary isometric contractions (MVIC) at elongated muscle lengths (e.g., MVIC of knee extensors in 90° flexion). According to this review, the RBE can be induced by the following exercise parameters: 1) 50-100 reps that include an ECC component at an intensity of 60-120% of the individual’s 1 repetition maximum, or 2) 60 reps of MVIC using 3 second holds at elongated muscle lengths.

Importance to Members
Exercises that utilize an ECC component will induce the RBE, as do MVIC at elongated muscle lengths. Concentric-only exercise does not induce the RBE and could actually blunt it. This research adds to our understanding of potential MOAs by which exercise targeting body functions and structures enable future activity and participation.
Enhanced Recovery After Surgery: Physical Therapy Modifications to Reduce Total Joint Length of Stay

PRESENTED BY
Patrick Rugo, DPT

BACKGROUND AND PURPOSE
Enhanced Recovery After Surgery (ERAS) protocols were first implemented to standardize perioperative care for colorectal surgeries, resulting in reduced postoperative complications and hospital length of stay (LOS). ERAS protocols developed for total joint arthroplasty surgeries have also demonstrated decreased LOS. Longer LOS has been associated with increased rates of readmission and periprosthetic joint infection following total joint arthroplasty. The purpose of this study was to examine the effect of adopting an ERAS protocol on LOS for elective total hip and total knee arthroplasty surgeries and to describe the changes in total joint arthroplasty physical therapy (PT) treatment that were implemented as part of the ERAS program.

CASE DESCRIPTION
Case Series Description: All patients receiving elective total hip arthroplasty (THA) and total knee arthroplasty (TKA) were tracked from January of 2013 through January of 2017 in an acute care hospital in California. An ERAS protocol was implemented with decreased use of opiates, change from general to epidural anesthesia, and provision of calories before and after surgery. Modifications to PT services for THA and TKA patients were recorded as they were adopted in pre-operative, acute hospital and home health phases of rehabilitation.

OUTCOMES
LOS and 30 day readmission rates were recorded. Pre-operative classes were redesigned to teach ERAS principles including benefits of early mobilization. Total joint exercises and functional mobility were taught to improve acquisition of necessary skills for discharge from the hospital. Patients were assisted in discharge planning to ensure caregiver assistance for post hospitalization recovery. Post-operative PT was initiated as soon as sensory and motor function had returned. Treatment sessions were restructured to focus on efficient completion of exercise and functional mobility training to meet discharge criteria. Initiation of home health PT was accelerated. THA LOS decreased from 2.5 to 0.8 days, representing a 68% decrease. TKA LOS decreased 67% from 2.4 to 0.8 days. Readmission rates decreased from 2.3% and 1.0% in 2014 to 1.3% and 0% in 2016 for THA and TKA respectively.

DISCUSSION
Implementation of an ERAS protocol decreased LOS to less than one day in TKA and THA patients; many of these patients discharged home the same day as surgery. Adopting ERAS principles allowed patients to successfully participate in therapy a few hours after surgery. More efficient PT treatment allowed for rapid completion of postoperative training, often in a single session. As healthcare advances ERAS programs for elective and emergent surgeries have the potential to improve patient outcomes and decrease LOS. Developing ERAS programs will provide opportunities for innovation of physical therapy treatment. Optimization of functional recovery will require physical therapists to play a crucial role in the multidisciplinary ERAS team.
Determining AM-PAC “6-Clicks” Functional Assessment Cutoff Scores to Predict Discharge Destination in Patients following Total Joint Replacement

PRESENTED BY
Dana Maida, PT, DPT

PURPOSE/HYPOTHESIS
The Boston University Activity Measure for Post-Acute Care “6-Clicks” Inpatient Short Forms (6-Clicks) is a comprehensive, non-condition specific outcome measure that can assist therapists to make decisions regarding functional abilities in a quick and easy to interpret manner. Research demonstrating the utility of this tool in the acute care setting is ongoing. Research presented by these authors at CSM 2016 using a small random sample (323) demonstrated low to moderate correlations between physical therapy (PT) and occupational therapy (OT) initial evaluation (IE) 6-Clicks scores and discharge (D/C) destination and robust correlations between PT and OT D/C 6-Clicks scores and D/C destination. The purpose of this study was to determine the specific cutoff 6-Clicks scores that predict D/C destination for patients undergoing elective total joint replacement (TJR).

NUMBER OF SUBJECTS
839

MATERIALS/METHODS
Researchers reviewed 839 charts of persons who underwent elective total knee replacement, total hip replacement, and total shoulder replacement at a local hospital during June 2013-February 2015. Data collected included PT and OT 6-Clicks Scores at IE and D/C. The data was entered into Statistical Package for Social Sciences (SPSS) and analyzed using Pearson Correlation Coefficients, Crosstabs by discharge destination and 6-Clicks, and ROC Curve analysis, as well as MEDCALC diagnostic test evaluation.

RESULTS
Analyses revealed moderate correlation between IE PT scores and D/C destination, weak correlation between IE OT score and D/C destination, and nearly identical robust correlation for PT and OT scores at D/C. ROC Curve analysis and MEDCALC diagnostic tests revealed cutoff scores providing the best accuracy for determining D/C destination to home/home health to be: IE PT 13.5/24 [Sensitivity=67.44%, Specificity=67.27%, Positive Predictive Value (PPV)=64.46%, Negative Predictive Value (NPV)=70.12%]; D/C PT 20.5/24 [Sensitivity=81.61%, Specificity=89.47%, PPV=91.80%, NPV=84.63%]; D/C OT 22.5/24 [Sensitivity=74.62%, Specificity=94.13%, PPV=91.80%, NPV=80.81%]. IE OT correlation between score and D/C destination was too weak to determine an accurate IE cutoff score.

CONCLUSIONS
When evaluating patients who have TJR, PT can confidently recommend D/C to home for IE PT scores > 13.5 and confirm recommendation with D/C scores >20.5. OT can feel confident recommending D/C to home for D/C OT scores >22.5. Based on the findings of this study, IE OT scores are not predictive of D/C destination greater than chance. Future research should investigate why IE OT scores are not predictive and whether type of TJR impacts cutoff score.

CLINICAL RELEVANCE
The changing health care environment and push for reduced length of stay places great emphasis on acute care PT evaluations to determine D/C destination (home versus facility). Research identifying cut-off scores using the 6-Clicks assessment may assist PT and OT clinicians to confidently make D/C recommendations at the time of IE for patients following TJR.
Very early mobilization of neurointensive care patients after placement of extraventricular drains.

PRESENTED BY
Scott Arnold, DPT

PURPOSE/HYPOTHESIS
Early mobilization of critically ill patients has been shown to be safe, feasible, and beneficial. Patients having undergone placement of extraventricular drains (EVD) due to increased intracranial pressure often remain on bedrest and the literature is scanty regarding the safety of mobilization of patients with EVDs. The aims of this study were to describe outcomes and adverse events in patients who underwent placement of EVDs and who were screened for possible early functional mobilization by physical therapy (PT) or occupational therapy (OT).

NUMBER OF SUBJECTS
n=153

MATERIALS/METHODS
Retrospective chart review collected data on baseline patient characteristics, hospitalization information, and mobilization information. Continuous variables were summarized with the sample median and range. Categorical variables were summarized with number and percentage of patients. We estimated the proportion of patients who were mobilized, and also the proportion of patients who experienced various adverse responses, along with 95% confidence intervals (CIs).

RESULTS
Median age was 58 years (Range: 23 – 95 years) and 94 patients (61.4%) were female. The most common principal diagnoses were SAH (61.4%) and ICH (17.0%). The majority of patients (83.0%) survived to discharge and the therapy ordered for most patients (90.8%) was PT and OT. A total of 117 patients (76.5%, 95% CI: 69.2% - 82.5%) were mobilized with a median time from EVD to first mobilization of 38 hours (Range: 4 – 537 hours). The most common reason for lack of mobilization was decreased responsiveness (N=23, 63.9%). The highest level of mobility was ambulation in 51 patients (43.6%), followed by supine-to-sit in 36 patients (30.8%), transferred to chair in 20 patients (17.1%), and sit-to-stand in 10 patients (8.5%). For the 51 patients who ambulated, the peak distance mobilized during ambulation was a median of 120 feet (Range: 1 – 1080 feet). Adverse responses to mobilization were rare (6.9%, 95% CI: 3.5% - 12.9%) and included diastolic blood pressure > 105 mmHg (0.9%, 95% CI: 0.2% - 4.7%), increased headache (0.9%, 95% CI: 0.2% - 4.7%), nausea (0.9%, 95% CI: 0.2% - 4.7%), emesis (2.6%, 95% CI: 0.9% - 7.3%), and other adverse responses (1.7%, 95% CI: 0.5% - 6.0%).

CONCLUSIONS
The results of this study indicate that 76.5% of patients who underwent placement of an EVD achieved early functional mobilization by PT or OT, with a relatively low rate of adverse responses.

CLINICAL RELEVANCE
Prolonged immobility of the critically ill patient can lead to increased hospital days, muscular weakness and wasting, and decreased functional independence. Early mobilization within the ICU has been shown to be beneficial in reducing length of hospital stay, increasing strength, and optimizing return to functional independence. However, evidence to support the early mobilization of patients with EVDs is limited. This study suggests early functional mobilization of patients with EVDs by PTs and OTs is both safe and feasible.
Physical Therapy Wound and Functional Intervention in a Patient with an Open Abdomen and Acute Respiratory Distress Syndrome

PRESENTED BY
Elizabeth Steele, DPT

BACKGROUND AND PURPOSE
Patients who have had complex abdominal surgeries have an increased risk of developing postoperative respiratory failure1,2. The use of mechanical ventilation with tracheostomy placement may have negative impacts on balance and mobility due to altered intra-thoracic pressure (ITP) and decreased diaphragmatic activation, limiting core stability3. The combination of tracheostomy and abdominal wounds alters the pressure systems in both thoracic and abdominal cavities, decreasing postural control. The purpose of this case is to describe the impact of physical therapy interventions in a patient after tracheostomy placement and open abdominal wounds.

CASE DESCRIPTION
An 18-year-old female presented from an outside hospital with acute respiratory distress syndrome (ARDS) after small bowel perforation requiring a partial gastrectomy and multiple subsequent abdominal surgeries. The patient arrived with a partially open abdomen with intact distal fascial sutures. Abdominal wound management prior to transfer involved twice daily wet to dry dressings with an abdominal binder. Ventilator settings were set to ARDS protocol with 300 mL tidal volume set at 18 breaths per minute. Physical therapy was consulted on day of admission for wound management and functional training. Functional intervention included bed mobility, transfer, gait training, strength training, postural/balance training, and endurance training. Wound management involved transition from wet to dry dressings to negative pressure wound therapy (NPWT) on her ninth day of hospitalization. The wound was measured over time and the total Functional Independence Measure Scores (FIM) were tracked throughout treatment.

OUTCOMES
The patient had a 33-day length of stay. At initial evaluation, the wound measured 23x6x3 cm and was 17.5x4x0 cm on the day of discharge. The total FIM scores for bed mobility, transfers, and gait were 1/21 on evaluation and 15/21 on day of discharge. The patient was able to initiate walking after placement of the NPWT and had a noticeable increase in FIM score. The FIM scores increased again when transitioned from mechanical ventilation to trach collar.

DISCUSSION
Implementation of NPWT and functional retraining of an individual with an open abdomen and ARDS proved safe and efficacious. NPWT provided both wound approximation and improved abdominal integrity and may have contributed to increased functional mobility by normalizing intra-abdominal pressure (IAP). This patient had improving functional independence as the pressure systems were normalized with use of NWPT and decreasing respiratory support. This case highlights the interplay between functional mobility, postural support and the pressure systems of the abdominal and thoracic cavities. In similar cases, PTs may consider optimizing IAP and ITP in order to progress postural control and functional mobility.
Early Rehab Quality Improvement Project Demonstrates Cost Savings While Validating Safe and Effective Physical and Occupational Therapy in a Critical Care Unit

PRESENTED BY
Adele Myszenski, MPT

PURPOSE/HYPOTHESIS
The aims of the MICU early rehab program are to align HFH with evidence based practice for early rehab interventions in the MICU, decrease length of stay, reduce number of ventilator days, hospital acquired conditions and maintain or reduce average variable direct costs per patient.

NUMBER OF SUBJECTS
Control group (12 bed medicine ICU standard PT/OT prn and no more than 3 times per week): 640; Intervention Group (see Methods): 610

MATERIALS/METHODS
Intervention Group: Implementation included the following for one 12 bed MICU unit: Addition of one full time physical therapist and one full time occupational therapist dedicated to the unit. Daily collaborative rounds with MICU Fellow. PT and OT consults placed for medically appropriate patients and seen same day. Daily PT and OT skilled interventions (in addition to RN-driven mobility protocol). Provider, Nursing and RT engagement via weekly collaboratives and intermittent educational opportunities; Individualized Care Experiences. Data collection and analysis: July 9, 2015-April 30, 2016. Control Group: receive routine PT and OT driven by provider consults often not consulting until GPU

RESULTS
Reduction in Hospital Length of stay from 11.2 to 10.1 days (9.2%), Reduction in ICU Length of stay from 5.5 to 5.4 days (2.0%) Reduction in Vent days from 4.6 to 3.26 days (29.1%), Reduction in DVT/PE rates from 9.64 to 7.0 (20%); All decreases in spite of increase Charlson Acuity score by 10.2%. Control Group data reflects an acuity score which increased 6%, no change in hospital LOS, decrease of ICU LOS by 2%, vent days by 11.5%, DVT/PE rates increased by 13% during the same time periods. Corporate Finance use of EPSi system based on HARs and DRG: Average Variable Direct Costs per patient were $1,371 lower in intervention versus control (all patients). Average Variable Direct Costs per patient were $760 lower on average intervention versus control Top 20 DRGs only). Using a conservative approach, the cost savings of $760 per patient was applied to all 601 patients for a total cost savings of $456,760 over 9 months. Increased number of new consults and patients receiving PT and / or OT to 72% of beds in pod (from 22%). Zero safety events reported. Total encounters: 2800.

CONCLUSIONS
PT and OT intervention early in ICU reduces LOS, vent days, cost. Equitable and timely provision of physical and occupational therapy services to critically ill patients is safe, feasible and cost effective.

CLINICAL RELEVANCE
At HFH, expansion to all 68 MICU beds has been completed as of November 14, 2016. Plan for continued spread to Surgical ICU, Cardiovascular ICU and Neuro ICU in future.
The Relationship between Muscle Strength and Function on One’s Ability to Swallow: A Pilot Study

PRESENTED BY
Ann Fick, DPT, CCS

PURPOSE/HYPOTHESIS
Patients in the intensive care unit (ICU) are often on prolonged bed rest. Immobility and bed rest may lead to muscle weakness and, in turn, can cause a variety of impairments such as impaired functional mobility. Muscle weakness may also affect the muscles involved in swallowing which could lead to dysphagia. The purpose of this study was to determine if a patient’s swallowing ability, as seen by food or liquid residue after swallowing, has an individual relationship with either functional mobility or strength.

NUMBER OF SUBJECTS
32 patients with an ICU stay of at least three days and a mean age of 52.3 years

MATERIALS/METHODS
This was a prospective correlational study of Physical Therapy (PT) and Speech-Language Pathology (SLP) outcome measures. The following PT measures were collected: Medical Research Council (MRC), “6 Clicks” Basic Mobility (AM-PAC), longest ambulation distance and neck flexion strength measured in seconds. To obtain results of a patient’s swallowing ability, a Fiberoptic Endoscopic Evaluation of Swallowing (FEES) was performed by a SLP and the Yale Pharyngeal Severity Rating Scale (Yale Scale) was used as the outcome. Non-parametric variables were analyzed using Spearman’s Rank correlation coefficient and parametric variables using Pearson’s Rank correlation coefficient. A Rank Biserial correlation compared ordinal to ratio data. A Chi Square test compared nominal to nominal data. The MRC (<48 or >48) and Yale Scale (dysphagia or no dysphagia) were converted into nominal scales.

RESULTS
Low negative correlations were found between the AM-PAC and the Yale Scale (r = -0.385, p < 0.05) along with the longest ambulation distance and the Yale Scale (r = -0.422, p < 0.05). A low positive correlation was found between the longest ambulation distance and neck flexion strength (r < 0.20, p < 0.05). A trend was noted between muscle weakness and dysphagia.

CONCLUSIONS
The findings of this pilot study suggest that if a patient exhibits a decreased swallowing ability, as seen by residue on a FEES (abnormal Yale Scale), he or she may also present with generalized weakness/impaired functional mobility and early PT intervention may be indicated. Conversely, patients with decreased ambulation distance, decreased neck flexion strength and low MRC score (<48) may benefit from a SLP consult to evaluate swallowing ability. Since this study was a pilot study with a small sample size, more research is needed for generalizability of these initial observations.

CLINICAL RELEVANCE
Trends in this study, along with previous research, highlight how the close collaboration of PTs and SLPs can benefit patients in the acute care setting. If a PT identifies that a patient has mobility difficulties or overall muscle weakness, the PT should assess for signs and symptoms of swallowing difficulties and aspiration. Examples may include a wet gurgling voice, a cough during swallowing, fever and egophany or crackles in the right middle/lower lobe. If any of these exist, the PT should request a physician order for a SLP consultation.
Predictors of Functional Decline in Hospitalized Older Adults: A Systematic Review of the Literature

PRESENTED BY
Molly Hickey, PT, DPT

PURPOSE/HYPOTHESIS
Hospital associated functional decline in older adults is a well-documented problem in the United States. This type of decline increases hospital length-of-stay, the likelihood that expensive aftercare services will be needed following hospital discharge, and negatively impacts quality of life. The ability to identify which patients are at greatest risk for developing hospital-associated functional decline would allow for implementation of prevention strategies. The purpose of this study was to identify predictors of functional decline in hospitalized older adults.

NUMBER OF SUBJECTS
na

MATERIALS/METHODS
Relevant studies published between 2005-2017 were obtained, screened, and pared down to a total of 35 for in-depth review. This process produced 19 studies which were blindly assigned to opposing researchers for quality appraisal using The Joanna Briggs Critical Appraisal Tool for Cohort Studies and the National Institutes of Health Heart, Lung, and Blood Institute Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies. The independent reviewers presented each study head-to-head, and a third reviewer moderated discussion until consensus was reached on quality. Six studies were identified for inclusion in the review.

RESULTS
Analysis revealed several risk factors directly related to functional decline in hospitalized adults including age, mobility, nutrition, and education. Analysis of the studies also revealed two novel outcome measures that detect functional decline of older adults including, Identification of Seniors at Risk Hospitalized Patients (ISAR-HP) and the Veiligheids Management System (VMS) plus age.

CONCLUSIONS
There is a significant financial burden placed on the patient and the health care system to care for older adults following a hospital associated decline. The implications associated with our findings may facilitate strategies for prevention. The long-term effects of hospital-associated functional decline include decreased quality of life, earlier mortality and a greater likelihood of hospital readmission. Additionally, the phenomenon of “post hospital syndrome” is an emerging theme in the literature, and hospital-related functional decline is a significant factor in its development.

CLINICAL RELEVANCE
Acute care physical therapists are often tasked with evaluating older patients who are admitted to the hospital at their “functional baseline.” Many times this results in a “screen-off” in order to prioritize patients who have obvious impairments and for whom aftercare planning is urgently needed, only to have a consultation re-generated near the end of admission because of new onset of hospital-associated functional decline. Getting the right services to the right patients at the right time has always been a challenge. Better ability to identify those patients most at risk for developing hospital-associated decline could aid in the development of preventative mobility programs that could increase efficiency, decrease overall costs, and allow for better triage of skilled physical therapy services in hospitals.
The Combination of Adductor Canal Block and Periarticular Injection with an Accelerated Rehabilitation Protocol: A Novel Technique for Patients Undergoing Total Knee Replacement (ACB PAI)

PRESENTED BY
RUPALI SOETERS, PT, MEd, PhD

PURPOSE/HYPOTHESIS
The Periarticular Injection (PAI) has become a popular technique for managing postoperative pain after Total Knee Arthroplasties (TKA). The Adductor Canal Block (ACB) is a sensory block with motor sparing capabilities which facilitates quicker ambulation. We hypothesized that the combination of ACB+PAI with an accelerated rehabilitation protocol would enable patients to reach the physical therapy (PT) discharge criteria—specifically, negotiating stairs one leg at a time without assistance—12 hours faster than with the PAI alone.

NUMBER OF SUBJECTS
111

MATERIALS/METHODS
111 patients were enrolled to this prospective, double blinded, randomized controlled trial. 56 patients were randomized to the PAI group and 55 to the ACB PAI group. All patients received intraoperative neuroaxial anesthesia, multimodal analgesia and an accelerated rehab protocol with one PT session on the day of surgery (DOS) and three sessions on postoperative days (POD) 1 and 2. The primary endpoint was comparing the time to reach PT discharge criteria between arms. Secondary outcomes included comparisons of NRS pain scores, painOUT questionnaire, opioid consumption and opioid related side effects, assessed upon spinal resolution, 24 and 48 hours post anesthesia administration.

RESULTS
The median [interquartile range] time to reach PT discharge criteria was 25.8 [23.4, 44.3] hours for the ACB PAI group and 26.4 [22.9, 46.2] hours for the PAI group, a difference which was not statistically significant (P = 0.518). ACB PAI patients experienced less pain, defined as lower pain scores on DOS after ambulation, with PT and at rest on POD 1. ACB PAI patients also experienced greater pain relief 24 hours post anesthesia and also had increased patient satisfaction. There was no difference between study arms in opioid consumption rates, opioid related side effects (including nausea, vomiting, dizziness, and pruritus), or NRS ambulation and during knee range of motion exercises.

CONCLUSIONS
The ACB PAI group experienced slightly faster time to reach PT discharge criteria compared to the PAI group, but this difference was not statistically significant. Employing a combination of multimodal analgesia and an accelerated PT regimen enabled patients in both groups to meet discharge criteria 50% faster than previously reported studies. Greater pain relief on DOS was reported by patients in the ACB PAI group, which was associated with a lower NRS after the first PT session and greater satisfaction. Although both PAI and ACB PAI with multimodal analgesia are appropriate for pain control following TKA, additional PT sessions enable patients to ambulate sooner.

CLINICAL RELEVANCE
Irrespective of the type of pain management approach, TKA Patients that received PT on day of surgery followed by increased number of PT sessions during acute inpatient stay resulted in accelerated recovery.
Implementing a Mobility Protocol in Six Specialty Intensive Care Units

PRESENTED BY
Molly Hickey, PT, DPT

PURPOSE/HYPOTHESIS
Early mobility in the intensive care unit (ICU) shows many benefits such as improved function, decreased ventilator days, and decreased length of stay (LOS). Despite these benefits early mobility is not consistently performed in all ICUs. The purpose of this quality improvement (QI) project was to examine the impact of an interdisciplinary mobility protocol in 6 specialty ICUs in a large academic hospital.

NUMBER OF SUBJECTS
1109 patients (258 pre protocol and 851 post protocol)

MATERIALS/METHODS
A staggered QI project of the implementation of an early mobility protocol was initiated to 2 ICUs every 2-3 months. The mobility protocol was based on the American Association of Critical Care Nurses’ early progressive mobility protocol which consists of a safety screening tool (that was modified based on the specific patient population in each ICU) and a 4 level mobility program that progresses a patient’s mobility from range of motion (Level 1) to ambulation (Level 4). Multidisciplinary education on the project purpose and logistics occurred in each ICU prior to the implementation of the protocol. Outcome measures (LOS, time to achieve mobility levels) and Physical Therapy (PT) specific measures (ICU mobility scale, Functional Status Score for the ICU (FSS-ICU), Medical Research Council (MRC) scale, and Activity Measure for Post-Acute Care (AM-PAC) basic mobility short form “6-Clicks”) were collected on a random selection of 20% of patients in each ICU for 2 months prior and 6 months post with an ICU stay ≥3 days.

RESULTS
The time to the first PT visit decreased from 4.7±3.5 to 3.8±2.6 days (p=0.003) and there was a 15% increase in PT billable units. Mobility levels increased overall post protocol as evident by an increase in the ICU mobility scale score during the initial PT evaluation (p=0.002) and in the ICU mobility scale score at time of ICU discharge (p=.002). The time to achieve mobility Levels 2-4 decreased with a significant decrease in Level 3 mobility (out of bed to chair) (p=0.05). Non-significant increases were noted in the FSS-ICU, MRC and “6 clicks” outcome measures. The ICU LOS decreased from 7.8±7.3 to 6.8±6 days (p=0.038) with a non-significant decrease in hospital LOS from 16.3±12.2 to 15.3±11.8 days (p=0.220) and ventilator days 3.5±6.3 to 2.8±5.5 (p=.152). No differences were noted in discharge location before and after the mobility protocol. The number of adverse events that occurred during mobility was low (0.2%).

CONCLUSIONS
A positive impact was noted after the implementation of the early mobility program. This was evident from an increase in mobility levels in the ICU, a decreased time to the first PT visit, an increase in the billable PT units, a decreased ICU length of stay and improvements in PT outcome measures. Few complications occurred, despite an increase in mobility.

CLINICAL RELEVANCE
It is feasible and safe to mobilize critically ill patients across specialized ICUs. An interdisciplinary approach with collaboration of nursing, physical and occupational therapy, respiratory therapy and physicians is necessary for success.
Mobilizing Patients Undergoing Continuous Renal Replacement Therapy (CRRT): A Case

PRESENTED BY
Janelle Gilmer, PT, DPT, GCS

BACKGROUND AND PURPOSE
CRRT is considered a routine intervention for the treatment of renal failure in critically ill patients in intensive care units (ICUs). However, due to the continuous nature of this therapy, patients are immobilized for prolonged periods of time with ICU lengths of stay (LOS) for CRRT typically between 12-24 days. Evidence illustrating the adverse effects of prolonged bed rest (e.g. progressive weakness and deconditioning) already exists extensively in the literature. If reduced physical and functional capacities are known to contribute to increased hospital LOS, increased costs and higher incidence of mortality, it seems reasonable to ask whether or not the benefit of mobilization of patients on CRRT outweighs the risk.

The purpose of this poster is to describe patient tolerance to mobilization during CRRT.

CASE DESCRIPTION
While some patient populations in our ICUs are routinely mobilized on CRRT, there has never been a consensus amongst stakeholders regarding criteria that should be utilized in the determination of whether or not to mobilize any given patient on CRRT. Eight patients in various ICUs were mobilized by physical therapists with therapeutic interventions ranging from sitting edge of bed to short distance ambulation (e.g. < or equal to 5 feet) while undergoing CRRT at least twice [and as many as 13 times] during the course of their ICU stays. In a total of 40 sessions, no major adverse events were encountered. Major adverse events were defined as catheter dislodgement or disconnection while minor adverse events were defined as brief disruptions to flow, sometimes requiring nursing interventions, but not preventing continuation of intended mobilization. Minor adverse events were noted in 2 out of 40 sessions.

OUTCOMES
Eight out of eight [100% of] patients were safely mobilized while undergoing CRRT without any evidence of major adverse events. On average, patients were mobilized between 1-4 times per week over periods of 1-6 weeks.

DISCUSSION
Given the early success of mobilization of patients undergoing CRRT without an established clinical care pathway, development of an algorithm was proposed to assist in the clinical decision-making process to promote increased incidence of mobilization of all patients undergoing CRRT who meet established criteria.

Other relevant considerations: We noted some alarm patterns based on the location of venous access (e.g. internal jugular, subclavian or femoral) and/or patient positions that resulted in minor disruptions to flow and necessity of real-time nursing interventions. This may be an area of further investigation in the future.
Feasibility, Safety, and Functional Impact of Physical Therapy During Hemodialysis: A Systematic Review

PRESENTED BY
Dana Maida, PT, DPT

PURPOSE/HYPOTHESIS
Patients (pt) receiving hemodialysis (HD) experience fatigue and impaired mobility. Especially in acute care, physical therapy (PT) treatment is often withheld during HD, resulting in forced sedentary time. The purpose of this systematic review was to determine the feasibility, safety, and functional impact of PT during HD to improve mobility.

NUMBER OF SUBJECTS
N/a

MATERIALS/METHODS
A literature search of ProQuest Central, Medline/PubMed, and CINAHL Complete was conducted using search terms: physical therapy, during dialysis OR intradialytic, physical performance OR mobility OR (walking or ambulation or gait) OR (fatigue or endurance) OR balance, AND acute OR hospital OR inpatient OR outpatient. Search limits: English, humans, and peer reviewed (2006-2016). Selection criteria: adults 18+ years, functional outcome measures, and randomized control trial (RCT) or quasi-experimental (QE) design. Two reviewers independently assessed each study for methodological quality and consensus based on MINORS criteria.

RESULTS
404 articles were screened for eligibility, yielding 8 RCT and 4 QE studies. MINORS scores ranged from 16-21/24 (mean=19). Sample sizes ranged from 18-71 outpatients (n=475) with a HD history of 3-48 months. PT interventions during HD included: cycle ergometer (upper or lower extremity), walking, resistance exercise, and neuromuscular electrical stimulation during the first 1-2 hours of dialysis (9 studies), hours 2-3 (1 study), or unspecified time (2 studies) at intensity of 7-17 on Borg scale for 30-60 minutes. Significant functional gains were reported via multiple functional outcome measures including: 6 minute walk test, variants of the sit to stand test, incremental shuttle walk test, and the short physical performance battery. One article reported significant decrease in fatigue using the Hemodialysis Patient Fatigue Scale. Four adverse events were reported indirectly related to intervention.

CONCLUSIONS
Moderate to strong evidence suggests that PT during outpatient HD is feasible, safe, and improves functional outcomes. A variety of interventions significantly improved mobility, increased endurance, and decreased fatigue. Limitations include lack of any studies in acute care, pt medical complexity, and diversity of interventions and outcome measures. Future research should focus on the feasibility and safety of monitored PT during HD in acute care, using standardized interventions and outcome measures.

CLINICAL RELEVANCE
PT sessions are often missed in acute care due to HD treatments and subsequent pt fatigue. Evidence supports the use of PT in the first 1-2 hours of HD, without significant adverse events in pt with an established HD regimen. Some of the reported interventions used in studies could be applied to the acute care setting. Clinicians should consider collaborating with a nephrologist to allow PT with pts who have established HD programs and are hemodynamically and medically stable. Clinicians should monitor pt vital signs closely throughout treatment and provide individualized interventions based on pt abilities.
Predicting Student Preparedness for Acute Care Clinical Placements: A Multi Program Examination of the Acute Care Confidence Survey

PRESENTED BY
Anson Rosenfeldt, PT, DPT, MBA

PURPOSE/HYPOTHESIS
Clinical education sites and academic programs constantly strive to ensure students are prepared for clinical placements. The Acute Care Confidence Survey (ACCS) is a valid and reliable tool to measure student’s self-efficacy and predicts student performance in the inpatient clinical environment. Further testing of psychometric properties on a diverse group of students is necessary to assess generalizability. This study aimed to examine the relationship between ACCS scores at the start of an acute care clinical rotation and student performance on acute care clinical rotations at mid-term using a multi-program cohort.

NUMBER OF SUBJECTS
A convenience sample of students (n= 49) from 13 DPT programs throughout the country who participated in an acute care rotation at one large tertiary hospital network.

MATERIALS/METHODS
On day one of their acute care clinical rotation, students completed the ACCS. Clinical instructors evaluated the students at mid-term using the Clinical Performance Instrument (CPI), the gold standard measure for clinical performance among DPT students. Descriptive statistics characterized the sample. Correlation coefficients were used to compare students’ midterm CPI scores to both the overall ACCS score, and ACCS subcategories (Manual, Judgment, Mobility, and Instruct). Pearson correlation coefficients were used, except in the case of the manual ACCS subscale, as these data were not normally distributed.

RESULTS
Median age of the students was 24 (range= 23-31) years, 80% were in graduate-entry programs, and 29% were male. There was no association found between mid-term CPI scores and total ACCS scores (r=0.10, p=0.56) or with the Manual (r=0.18, p=.30) and Mobility subscales(r=0.25, p=0.15). Moderate correlations were found between the midterm CPI scores and the Judgment (r=0.45, p<0.01) and Instruct subscales (r=0.53, p<0.01).

CONCLUSIONS
Consistent with the single cohort psychometric study, the Judgment and Instruct subscales demonstrated moderate and significant correlations with midterm CPI scores. In contrast with the initial study, overall ACCS scores were not significantly correlated with CPI scores. The results in combination with data from the single cohort study suggest the Judgment and Instruct subscales are good predictors of student performance. Limitations include a relatively small sample size and clinical instructors from a single hospital system.

CLINICAL RELEVANCE
Outcome measures are necessary to assess student readiness and self-efficacy for the acute care clinical environment. Use of the ACCS, specifically the Judgement and Instruct subscales, by academic and clinical programs can contribute to student success by predicting readiness early in the clinical experience. The psychometric properties of the ACCS should be retested on a larger group of DPT students with multi academic programs and multiple clinical sites to further understand the ability of the survey to predict student performance.
Physical Therapy Intervention for an Individual with Severe Thrombocytopenia Following Hematopoietic Stem Cell Transplant (HSCT): A Case Report

PRESENTED BY
Stephanie Covert, PT

BACKGROUND AND PURPOSE
Individuals can develop refractoriness to platelet transfusions, defined as a platelet count that does not rise after transfusion. This report describes the complex physical mobility needs of an individual who incurred platelet refractoriness and physical deconditioning after undergoing a hematopoietic stem cell transplant (HSCT).

CASE DESCRIPTION
A 47-year-old male with a diagnosis of myelodysplastic syndrome was admitted to an inpatient hospital setting and underwent an allogeneic HSCT. After the transplant, the patient developed thrombocytopenia refractory to platelet transfusion with accompanying significant physical deconditioning and mobility dysfunction. At the time of the physical therapy evaluation, the patient required moderate assistance for transfers and moderate assistance to ambulate two feet. Over the course of eight physical therapy sessions, the patient’s platelet count ranged from 1,000/µL - 6,000/µL. The sessions focused on functional mobility with modifications to reduce joint and muscle strain.

OUTCOMES
No bleeding events occurred as a result of the physical therapy intervention. After physical therapy intervention, the patient was able to ambulate 150 feet, ascend/descend several stairs, and complete the Five Time Sit to Stand in 18.9 seconds. The patient’s 6 Clicks score improved from 12 (60-79% functional impairment) to 24 (0% functional impairment).

DISCUSSION
Despite severe thrombocytopenia, the patient made significant improvements in mobility. It is critical for therapists to consider the entire clinical situation when weighing the risk and benefits of mobilizing individuals with chronic thrombocytopenia.
Ambulatory Status is Associated with Daily Call Bell Frequency in Hospitalized Neurosciences Patients

PRESENTED BY
Kara Shumock, DPT

PURPOSE/HYPOTHESIS
To study the association between daily nursing call bell use and patient ambulation status in adult hospitalized inpatients

DESCRIPTION
Research continues to explore both nurse-driven and physical therapist-driven mobility models that have been adopted throughout hospitals to combat the effects of immobility and reallocate skilled needs. When hospitalized patients need help from their care providers to get out of bed for activities of daily living (ADL), the call bell system is an important tool used for communication. Prior studies show that patients use their call bells approximately 12-15 times per day utilizing about 4 minutes of nursing time per request. Since nurses care for multiple patients simultaneously, considering the frequency of call bell requests is imperative to optimize provider time and patient safety. Encouraging patients to maintain their baseline mobility status while hospitalized may reduce the risks of hospital acquired complications as well as the number of physical therapy (PT) consults that require little to no formal skills for functional mobility, allowing reallocation of physical therapist time as well.

SUMMARY OF USE
Data Source and Covariates: Sunrise Clinical Manager system, The Johns Hopkins Hospital Datamart financial database and Ascom Telligence Nurse Call System were used for data collection.
Primary Outcome: The frequency of all nursing call bell requests during the hospital stay, defined as mean number of total call bell requests per patient per day.
Primary Exposure: The Johns Hopkins Highest Level of Mobility (JH-HLM) was used to record daily patient mobility by nursing. Patients were considered ambulatory if they had an average daily maximum score of ≥6 (walk ≥10 steps).
Statistical Analysis: Analyses were conducted with multivariate regression models adjusted for patient characteristics and clinical indicators.
Outcomes: 944 consecutively admitted patients were assessed from an adult neuroscience unit. Unadjusted mean number of daily call bell requests for all patients was 6.9, and for ambulatory and non-ambulatory patients was 6.0 and 7.6, respectively. We found that ambulatory patients used their call bells significantly less than non-ambulatory patients, with a relative reduction in call bell requests of 16%. This was independent of age, gender, race, payer, comorbidity index, length of stay and diagnostic category.

IMPORTANCE TO MEMBERS
Prior research has shown that levels of physical impairment directly influence the services and resources required. This study extends those findings by demonstrating that patients who are non-ambulatory will likely use their call bells more frequently to request help, which may create a greater burden on clinical staff. Our results provide objective data to suggest that if hospital based mobility programs are successful at maintaining baseline patient ambulation status, that may allow nurses to reallocate their time for other areas of clinical care, and ultimately allow reallocation of skilled PT services to those patients which have the most needs.
Creating a Protocol for the Mobilization of Patients with Critical Lines: A Physical Therapist Driven Multidisciplinary Initiative

PRESENTED BY
Sara Krasney, DPT

PURPOSE/HYPOTHESIS
The purpose of this report is to evaluate the process of creating an evidence-based protocol for mobilizing patients with critical lines using a physical therapist (PT) driven multidisciplinary team approach.

DESCRIPTION
Three PTs at a level one trauma hospital observed variability in patient experience due to healthcare providers having varying comfort levels and expectations regarding patient mobility. The PTs sought to examine how much mobility has been shown to be safe in patients requiring temporary pacemakers, femoral access, pulmonary artery catheters (PACs), hemodialysis (HD), continuous renal replacement therapy (CRRT), intra-aortic balloon pumps (IABPs), Impella, CentriMag Ventricular Assist Devices (VADs), and extracorporeal membrane oxygenation (ECMO). The PTs performed a systematic literature review using databases including PubMed, Cochrane Library, CINAHL, UpToDate, and Google Scholar, and incorporated findings from over 30 articles into the protocol. The PTs initiated the creation of an expert clinician panel including ICU intensivists, attending physicians, nurse managers and educators, and rehabilitation department managers to evaluate the protocol. The PTs facilitated discussion between multidisciplinary team members over email and during three separate live meetings. Compromises were made to ensure that all three tenets of evidence-based practice were considered: clinician expertise, scientific research, and patient/caregiver values. Once consensus was reached among the expert clinician panel, the finalized protocol was presented at the hospital’s Critical Care Committee meeting and was submitted for acceptance as a hospital-wide policy.

SUMMARY OF USE
Healthcare providers at our institution have an evidence-based protocol to guide the safe mobilization of patients with critical lines. Bed rest is associated with increased morbidity, mortality, cost of care, and length of hospital stay, as well as functional decline. Mobility has been shown to have a beneficial effect on all of these factors. A protocol for mobilizing patients with critical lines promotes a culture of safe mobility in the acute care setting. Future goals will include hospital-wide use of the protocol and data collection to evaluate its effect on patient care quality outcomes measures.

IMPORTANCE TO MEMBERS
PTs who work in in the acute care setting frequently encounter critical lines. It is essential that the practicing PT knows the implications of such lines on a patient’s mobility so that unnecessary bed rest can be avoided and so that PT interventions can be progressed in a safe manner. This protocol allows for all hospital staff involved in patient care to have access to a comprehensive, evidence-based protocol for mobilizing patients requiring temporary pacemakers, femoral access, PACs, HD, CRRT, IABPs, Impella, CentriMag VADs, and ECMO who meet specified inclusion criteria. The process used to create this protocol is feasible and can be applied to other challenges encountered in patient care.
Identifying current trends between therapy treatment time and patient outcomes on a neurological acute care unit

PRESENTED BY
Christine Ryan, Bachelors in Physical Therapy

PURPOSE/HYPOTHESIS
One component of maximizing the value of acute physical therapy (PT) with patients who have a neurological or neurosurgical diagnosis could be to better understand current resource allocation (therapy time spent) and its relation to patient characteristics including functional progress during their hospital length of stay (LOS) and post-acute discharge destination. The purpose of this project is to present this data in order to establish a foundation for future research and potential quality improvement (QI) projects.

DESCRIPTION
Benefits of acute physical therapy for patients with neurological or neurosurgical diagnoses are well documented. However, there is limited evidence regarding average treatment time and functional mobility status as they relate to discharge (d/c) setting for this patient population. PT’s on the University of Utah Neurological Acute Care Unit (NACU) have observed an increased frequency of complicated discharge situations that hinder d/c to the most appropriate setting. This led the team to initiate a study of our current practice patterns and outcomes. A Retrospective Cohort Analysis was performed with 2722 patients with PT orders that were admitted with neurological or neurosurgical diagnoses to NACU in 2016. Data markers include % of patients discharged from NACU to each setting, average first/last recorded AM-PAC score with SD, average LOS in days with SD and mean treatment time in minutes.

SUMMARY OF USE
Patients discharged from NACU to an inpatient rehab facility: 13.6 %, AM-PAC 10/12, SD 4.23/4.54, LOS 7.5, treatment time 42.2, SD 8.7. Home with home health services: 15%, AM-PAC 15/18, SD 4.62/3.69, LOS 5.0, treatment time 38.5, SD 11.9. Home without home health services: 59%, AM-PAC 18/20, SD 4.65/3.58, LOS 5.02, treatment time 34.2, SD 11.1. SNF: 11 % AM-PAC 11/15, SD 4.6/5.0, LOS 7.78, treatment time 39, SD 9.9, RR 6.28.

IMPORTANCE TO MEMBERS
This retrospective data analysis became Phase 1 of the University of Utah Neuro Acute Care Early Rehab (NACER) QI project. It provides valuable information as related to current resource allocation as deemed by average treatment time and its relation to functional gains and the discharge settings of patients with a neurological or neurosurgical diagnosis. One of the primary findings was that, at an average of 34.2 minutes per therapy session, nearly 60% of all patients discharged to home with no services. While this may be a positive finding for many patients, questions arise if adequate therapy resources are being allocated to a subgroup of patients who fall into this category due to lack of access to continued therapy services. Additionally, the data suggest further inquiry is warranted regarding whether an increase in treatment time for patients with initial AM-PAC scores between 11 and 15 could improve functional status and result in more patients discharging to home instead of SNF.
“Safety and feasibility of mobilizing patients with external ventricular drains and lumbar drains”.

PRESENTED BY
Christiane Perme, PT, CCS

PURPOSE/HYPOTHESIS
Patients with external ventricular drains (EVD) and lumbar drains (LD) have variations in their mobility status in intensive care units. These differences are possibly a result of perceived mobility barriers, diverse mobility guidelines, and therapeutic interventions used for these patients. In addition, the experience level of the therapists mobilizing these patients may play a role. The purpose of this study is to determine the safety, feasibility, and mobility status of patients with EVD and LD in a neurosurgical intensive care unit (NICU).

NUMBER OF SUBJECTS
50 subjects

MATERIALS/METHODS
Patients with external ventricular drains (EVD) and lumbar drains (LD) in the NICU at the Houston Methodist Hospital were referred for physical therapy (PT) and included in the study according to the inclusion and exclusion criteria. The data was collected at the initial PT evaluation and each subsequent PT treatment while the patient had an EVD or LD and remained in NICU. Patients were assessed for signs and symptoms that were pre-identified as potentially signaling an adverse effect such as sudden onset or increase in severity of nausea/vomiting, headache, decreased alertness, sniffs, and cerebrospinal fluid (CSF) leak, as well as breakage of drain system. The Perme ICU Mobility Score (Perme Score) was used to determine the mobility status of the patients.

RESULTS
We included 50 patients with a total of 128 mobility activity encounters in this study. The mean age was 51.32 (19-77) with a mean BMI of 29.2 (16-50). There were 32 patients in the study with EVDs and 18 with LDs. The mean number of days with an EVD or LD was 6.26 (SD 5.14). The feasibility was determined by the highest level of mobility activities performed on each encounter and they included: sitting on the side of bed: 83 (10.16%), standing: 2 (19.53%), transfer to stretcher chair: 2 (1.56%), transfer to regular chair: 3 (2.34%), and walking: 85 (66.41%). The Perme Score has a range of 0-32. The mean Perme Score was 24.64 (8-32). There were 8 encounters where symptoms of headache developed during or after mobility and 4 encounters in which patients experienced an episode of nausea/vomiting during mobility. In 9 encounters, headache, nausea or vomiting improved during or after mobility activities. There were no symptoms severe enough to terminate treatment or adverse events to delay ICU discharge.

CONCLUSIONS
We concluded that mobilizing patients with EVDs and LDs in NICU is feasible and safe, and patients have variable levels of mobility status. There were no major complications associated with this practice.

CLINICAL RELEVANCE
The data from this study may be used in the future for the development of best-practice clinical guidelines to promote versus restrict early mobility for patients with EVDs and LDs.
Predicting Student Preparedness for Acute Care Clinical Placements: A Multi Program Examination of the of the Acute Care Confidence Survey

PRESENTED BY
Anson Rosenfeldt, PT, DPT, MBA

PURPOSE/HYPOTHESIS
Clinical education sites and academic programs constantly strive to ensure students are prepared for clinical placements. The Acute Care Confidence Survey (ACCS) is a valid and reliable tool to measure student’s self-efficacy and predicts student performance in the inpatient clinical environment. Further testing of psychometric properties on a diverse group of students is necessary to assess generalizability. This study aimed to examine the relationship between ACCS scores at the start of an acute care clinical rotation and student performance on acute care clinical rotations at mid-term using a multi-program cohort.

NUMBER OF SUBJECTS
A convenience sample of students (n= 49) from 13 DPT programs throughout the country who participated in an acute care rotation at one large tertiary hospital network.

MATERIALS/METHODS
On day one of their acute care clinical rotation, students completed the ACCS. Clinical instructors evaluated the students at mid-term using the Clinical Performance Instrument (CPI), the gold standard measure for clinical performance among DPT students. Descriptive statistics characterized the sample. Correlation coefficients were used to compare students’ midterm CPI scores to both the overall ACCS score, and ACCS subcategories (Manual, Judgment, Mobility, and Instruct). Pearson correlation coefficients were used, except in the case of the manual ACCS subscale, as these data were not normally distributed.

RESULTS
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CONCLUSIONS
Consistent with the single cohort psychometric study, the Judgment and Instruct subscales demonstrated moderate and significant correlations with midterm CPI scores. In contrast with the initial study, overall ACCS scores were not significantly correlated with CPI scores. The results in combination with data from the single cohort study suggest the Judgment and Instruct subscales are good predictors of student performance. Limitations include a relatively small sample size and clinical instructors from a single hospital system.

CLINICAL RELEVANCE
Outcome measures are necessary to assess student readiness and self-efficacy for the acute care clinical environment. Use of the ACCS, specifically the Judgement and Instruct subscales, by academic and clinical programs can contribute to student success by predicting readiness early in the clinical experience. The psychometric properties of the ACCS should be retested on a larger group of DPT students with multi academic programs and multiple clinical sites to further understand the ability of the survey to predict student performance.