Home Health Research Review

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Disclosure

No conflicts of interest or financial relationships exist for all presenters
Session Description

• The need to provide demonstrable evidence-based care for patients in the home health setting continues to grow as lower cost alternatives and superior outcomes are being sought by payers, patients, and family members.

• This session will provide a review of selected home health relevant research published during the past year to afford an opportunity to disseminate and integrate into clinical practice.

• The course will include key elements of interest for clinicians, administrators, and managers practicing in the home health setting
Learning Objectives

1. Differentiate types and quality of research studies.
2. Describe ways to refine and improve clinical practice management based on current research.
3. Analyze recent published research findings that can be immediately integrated into clinical practice.
4. Describe the opportunities and responsibilities for physical therapy-related research in the home health practice setting.
Session Outline

• Tracey Collins, PT, PhD, MBA, GCS – Clinical Practice
• Mary Marchetti, PT, PhD, GCS – Outcomes
• Dawn Widmer-Greaves, PT, DPT – Reimbursement/Payment
• Matt Janes, PT, DPT, MHS, OCS, CSCS – Administrative/Management
Clinical Practice

Tracey Collins, PT, PhD, MBA, GCS
Balance and Falls
Purpose: To evaluate the predictive ability of history questions, self-report measures, and performance-based measures for assessing fall risk of community-dwelling older adults by calculating and comparing posttest probability (PoTP) values for individual test/measures. To evaluate usefulness of cumulative PoTP for measures in combination.

Data Sources: To be included, a study must have used fall status as an outcome or classification variable, have a sample size of at least 30 ambulatory community-living older adults (≥65 years), and track falls occurrence for a minimum of 6 months. Studies in acute or long-term care settings, as well as those including participants with significant cognitive or neuromuscular conditions related to increased fall risk, were excluded. Searches of Medline/PubMED and Cumulative Index of Nursing and Allied Health (CINAHL) from January 1990 through September 2013 identified 2294 abstracts concerned with fall risk assessment in community-dwelling older adults.

Study Selection: Because the number of prospective studies of fall risk assessment was limited, retrospective studies that classified participants (faller/nonfallers) were also included. Ninety-five full-text articles met inclusion criteria; 59 contained necessary data for calculation of PoTP. The Quality Assessment Tool for Diagnostic Accuracy Studies (QUADAS) was used to assess each study's methodological quality.
Data Extraction: Study design and QUADAS score determined the level of evidence. Data for calculation of sensitivity (Sn), specificity (Sp), likelihood ratios (LR), and PoTP values were available for 21 of 46 measures used as search terms. An additional 73 history questions, self-report measures, and performance-based measures were used in included articles; PoTP values could be calculated for 35.

Data Synthesis: Evidence tables including PoTP values were constructed for 15 history questions, 15 self-report measures, and 26 performance-based measures. Recommendations for clinical practice were based on consensus.

Limitations: Variations in study quality, procedures, and statistical analyses challenged data extraction, interpretation, and synthesis. There was insufficient data for calculation of PoTP values for 63 of 119 tests.

Conclusions: No single test/measure demonstrated strong PoTP values. Five history questions, 2 self-report measures, and 5 performance-based measures may have clinical usefulness in assessing risk of falling on the basis of cumulative PoTP. Berg Balance Scale score (≤50 points), Timed Up and Go times (≥12 seconds), and 5 times sit-to-stand times (≥12) seconds are currently the most evidence-supported functional measures to determine individual risk of future falls. Shortfalls identified during review will direct researchers to address knowledge gaps.
Short- and Long-Term Effects of Balance Training on Physical Activity in Older Adults With Osteoporosis: A Randomized Controlled Trial

Purpose: To evaluate short- and long-term effects of a 12-week balance training program on objectively measured habitual PA in older adults with osteoporosis. To assess the effects of the balance training on HRQoL, and to study whether any effects on PA were associated with changes in HRQoL, gait speed, balance performance, fall-related concerns, and physical function.

Methods: A randomized controlled trial with follow-up at 3, 9, and 15 months, including 91 participants with osteoporosis (75.6 ± 5.4 years), compared a balance training group (n = 61) with a control group (n = 30). The primary outcome was effect on habitual PA measured as steps/day, dichotomized into less than 5000 or 5000 or more steps/day. Physical activity was assessed with pedometers (Yamax) and accelerometers (Actigraph), HRQoL with the Short Form-36 (SF-36), gait with a GAITRite walkway, balance performance with Modified-Figure-Eight test and one-leg stance, fall-related concerns with Falls Efficacy Scale International, and physical function with the advanced lower extremity subscale of the questionnaire Late Life Function and Disability Instrument. Statistical methods used were multivariate logistic regression and logistic generalized estimating equation.
Short- and Long-Term Effects of Balance Training on Physical Activity in Older Adults With Osteoporosis: A Randomized Controlled Trial

Results: 68 participants completed the short-term follow-up at 3 months, and 53 participants completed the long-term follow-up at 15 months. Per-protocol analysis showed that the odds ratio for having a daily step count of 5000 or more at 3 months was 6.17 (95% confidence interval, 1.23-30.91), \( P = .027 \), for the intervention group compared with the control group. The longitudinal analysis (n = 91) showed that the odds ratio for having a daily step count of 5000 or more at 15 months was 2.02 (95% confidence interval, 0.88-4.64), \( P = .096 \), for the intervention group compared with the control group. The SF-36 improved significantly from baseline to 3 months in the intervention group, and the physical component sum improved in both groups, but no statistically significant differences were found between groups. No associations were found between PA and changes in covariates.

Conclusions: The short-term balance training increased habitual PA in community-dwelling older adults with osteoporosis. A significantly higher proportion of participants in the intervention group reached a level of 5000 or more steps/day, which is important for overall health. This effect was not associated with improvements in HRQoL, gait speed, balance performance, or fall-related concerns, and did not persist through the long-term follow-up.
Short-Term Effect of BalanceWear Therapy on Mobility in Older Adults With Mobility Limitations

• Purpose: To examine the effects of Balance-based torso weighting, also known as BalanceWear Therapy (BWT) on measures of mobility among older adults with limited mobility.

• Methods: This study was a double-blind, randomized controlled trial of older adults recruited from senior living facilities. Adults aged 86.0 (6.1) years were randomized into a BWT, weighted orthotic (WG), group, n = 17, or a sham BWT, sham-weighted orthotic (SWG), group, n = 16. All participants wore the orthotic for 4 hours per day for 5 days. Mobility, measured by the Short Physical Performance Battery (SPPB), Timed Up and Go (TUG), gait speed (GS), and the Functional Gait Assessment (FGA), was recorded pre- and postintervention. Separate repeated analysis of variances were conducted for each variable to determine the intervention group (WG, SWG) by time (before, after) interaction effect.
Short-Term Effect of BalanceWear Therapy on Mobility in Older Adults With Mobility Limitations

Results and Discussion: After a 5-day intervention of strategically weighted BWT intervention compared with a sham intervention, the SPPB improved 1.3 points in the WG, with no change in the SWG (P = .04). No between-group differences were observed for the TUG (P = .70), GS (P = .74), or FGA (P = .22).

Conclusion: A short-term BWT intervention resulted in improvements in mobility on the SPPB among older adults with limited mobility.
Purpose: This study compared the validity and relative ability of the BBS, BESTest, Mini-BESTest, and Brief-BESTest to identify fall status in older adults with type 2 diabetes (T2D).

Methods: This study involved a cross-sectional design. Sixty-sixty older adults with T2D (75 ± 7.6 years) were included and asked to report the number of falls during the previous 12 months and to complete the Activities-specific Balance Confidence scale. The BBS and the BESTest were administered, and the Mini-BESTest and Brief-BESTest scores were computed based on the BESTest performance. Receiver operating characteristics were used to assess the ability of each balance test to differentiate between participants with and without a history of falls.
Validity and Relative Ability of 4 Balance Tests to Identify Fall Status of Older Adults With Type 2 Diabetes

- Results: The 4 balance tests were able to identify fall status (areas under the curve = 0.74-0.76), with similar sensitivity (60%-67%) and specificity (71%-76%).
- Conclusions: The 4 balance tests were able to differentiate between older adults with T2D with and without a history of falls. As the BBS and the BESTest require longer application time, the Brief-BESTest may be an appropriate choice to use in clinical practice to detect fall risk.
Effect of Sitting Pause Times on Balance After Supine to Standing Transfer in Dim Light

Purpose: to measure the effect of sitting pause times on postural sway velocity immediately after a supine to standing transfer in a dimly lit room in older adult women.

Methods: Eighteen healthy women aged 65 to 75 years who were able to independently perform supine to standing transfers participated in the study. On each of 2 consecutive days, participants assumed the supine position on a mat table and closed their eyes for 45 minutes. Then, participants were instructed to open their eyes and transfer from supine to sitting, with either 2- or 30-second pause in the sitting position followed by standing. The sitting pause time order was randomized.
**Effect of Sitting Pause Times on Balance After Supine to Standing Transfer in Dim Light**

Results: A significant difference was observed in postural sway velocity between the 2- and 30-second sitting pause times. The results revealed that there was less postural sway velocity after 30-second than 2-second sitting pause time (0.61 +/- 0.19 vs 1.22 +/- 0.68, P < .001).

Discussion: Falls related to bathroom usage at night are the most common reported falls among older adults. The findings showed that the mean postural sway velocity was significantly less after 30-second sitting pause time compared with 2-second sitting pause time.

Conclusions: Postural sway velocity decreased when participants performed a sitting pause of 30 seconds before standing in a dimly lit environment. These results suggest that longer sitting pause times may improve adaptability to dimly lit environments, contributing to improved postural stability and reduced risk of fall in older adult women when getting out of bed at night.
Screening for Cognitive Impairment as a Part of Falls Risk Assessment in Physical Therapist Practice

Purpose: To describe the cognitive screening practice patterns of physical therapists (PTs) as a part of falls risk assessments.

Subjects: An electronic survey was sent to a random selection of 500 licensed PTs from 1 state.

Methods: Factors associated with cognitive screening practices and respondents' demographic information were gathered. Group comparisons between those who screened and did not screen cognition were completed.
Screening for Cognitive Impairment as a Part of Falls Risk Assessment in Physical Therapist Practice

- Results: Response rate was 42.8% (n = 214). Only 32.7% (n = 70) of respondents reported screening cognition as a part of falls risk assessments. Orientation was most commonly screened (80.0%, n = 56) followed by a dementia screen using the Mini-Mental State Examination (64.3%, n = 45). Significant differences between groups on cognitive screening practices were found on the basis of work setting, practice time spent with older adults, and practice time spent examining falls risk.

- Discussion: Screening for mild deficits in cognitive function is limited within physical therapy practice, which likely influences the detection of early cognitive declines associated with functional limitations.

- Conclusions: Considering the number of older adults at risk for falling and the likelihood of undiagnosed cognitive impairment, PTs should screen for cognitive deficits as a part of falls risk assessments.
Sitting Time
Self-reported Sitting Time is Associated With Decreased Mobility in Older Adults

Purpose: to examine the test-retest reliability of older adults' reported (using a recall strategy) sitting time and to determine its association with mobility limitation.

Methods: In this cross-sectional study, 140 older adults aged 65 years or more from community centers were assessed for their sitting time and mobility limitation. A week later, 86 participants returned for the retest of sitting time. The test-retest reliability of the reported (recall strategy) measure of sitting time was examined by intraclass correlation coefficient (ICC), and its association with mobility limitation was examined by logistic regression analysis adjusted for age.
Self-reported Sitting Time is Associated With Decreased Mobility in Older Adults

Results: The reported measure (recall strategy) of sitting time showed good test-retest reliability (ICC = 0.85). The results of logistic regression analysis indicated that sitting time was associated with mobility limitation, adjusted for age.

Discussion: Older adults' reported (recall strategy) sitting time had good test-retest reliability (ICC(2,1) = 0.85). The reported measure (recall strategy) seems to have yielded consistent reporting. The association of prolonged sitting time with mobility limitation needs to be substantiated in a future longitudinal study to determine whether a causality relationship exists.

Conclusions: Sitting time in older adults can be reliably measured with a reported measure (a recall strategy) over a 1-week interval. Older adults who spend more time sitting are more likely to experience mobility limitation.
Targeting Reductions in Sitting Time to Increase Physical Activity and Improve Health

Purpose: This report provides a knowledge update reflecting the rapid accumulation of new evidence related to sedentary behavior and health among adults.

Methods: Literature review

Results: Leveraging the time-inverse relationship between sedentary and active behaviors by replacing sitting with standing, light- or moderate-intensity activity can have important health benefits, particularly among less active adults. Studies are providing evidence of the probable physiologic mechanisms and the cardiometabolic impact of breaking up and reducing sedentary behavior. In contrast to the well-established behavioral theories that guide the development and dissemination of evidence-based interventions to increase moderate- to vigorous-intensity physical activity, much less is known about how to reduce sedentary time to increase daily activities. It has become clear that the environmental, social, and individual level determinants for sedentary time are distinct from those linked to the adoption and maintenance of moderate- to vigorous-intensity physical activity. As a result, novel intervention strategies that focus on sitting and lower-intensity activities by leveraging the surrounding environment as well as individual-level cues and habits of sedentary behavior are being tested to increase the potency of interventions designed to increase overall physical activity.
Conclusion: It has become clear that the environmental, social, and individual level determinants for sedentary time are distinct from those linked to the adoption and maintenance of moderate- to vigorous-intensity physical activity. As a result, novel intervention strategies that focus on sitting and lower-intensity activities by leveraging the surrounding environment as well as individual-level cues and habits of sedentary behavior are being tested to increase the potency of interventions designed to increase overall physical activity.
Parkinson’s Disease
Purpose: This study examined test-retest relative (intraclass correlation coefficient [ICC]) and absolute (minimum detectable change [MDC]) reliabilities for the 5 times sit-to-stand (5×STS), 30-second sit-to-stand (30sSTS), and the functional gait assessment (FGA) tests in people with Parkinson disease (PD). In addition, correlation of these functional tests with a history of falls was examined over a 6-month period, and the internal consistency of the FGA was established.

Methods: Twenty-two patients with PD (Hoehn and Yahr stages 1-3) completed 3 functional tests over 2 test-retest periods of 6 to 8 days. Falls were self-reported for the prior 6 months.
Reliability and Minimal Detectable Change for Sit-to-Stand Tests and the Functional Gait Assessment for Individuals With Parkinson Disease

Results and Discussion: Moderate-to-excellent test-retest ICC(2,2) and MDC95 values were found for the 30sSTS (0.94, 3 times) and ICC(2,1) and MDC95 values were found for the FGA (0.86, 4 points). The 5×STS demonstrated a lower ICC(2,2) and a high MDC95 value (0.74, 10 seconds). A significant correlation was only found between past falls and the FGA test (r =-0.48, P < .05) during session 1. Cronbach α values for the 10-item FGA during session 1 and session 2 were 0.75 and 0.85, respectively.

Conclusions: To assess for change over time, we found the 30sSTS and the FGA tests can be used reliably in patients with PD. A lower FGA score was associated with a higher chance of falls, and good internal consistency of the FGA was found.
A Cross-sectional Analysis of the Characteristics of Individuals With Parkinson Disease Who Avoid Activities and Participation Due to Fear of Falling

Purpose: To compare the characteristics of individuals with Parkinson's Disease (PD) who exhibit fear of falling (FOF) avoidance behavior with those who do not.

Methods: Fifty-nine participants with PD were classified as avoiders (n = 27) or nonavoiders (n = 32) by using the Fear of Falling Avoidance Behavior Questionnaire and compared across 5 domains: demographic characteristics; PD-specific symptoms (subtype, Movement Disorder Society–Unified Parkinson's Disease Rating Scale [MDS-UPDRS], Hoehn and Yahr Scale, Parkinson's Disease Questionnaire–39 [PDQ-39]); balance and falls (fall history, Berg Balance Scale [BBS], Activities-Specific Balance Confidence [ABC] Scale, Impact of Events Scale, Consequences of Falling Questionnaire [CoFQ]); physical performance (30 Second Sit-to-Stand Test, Timed Up and Go Test, physical activity monitoring); and psychological factors (Zung Anxiety Scale, Beck Depression Inventory [BDI]).
Results: There were no differences between avoiders and nonavoiders for demographic characteristics and fall history (Ps > 0.272). Avoiders had worse MDS-UPDRS (Ps < 0.014) and PDQ-39 scores (Ps < 0.028). Avoiders had poorer balance performance (BBS, P = 0.003), lower balance confidence (ABC, P < 0.001), and more fall catastrophization (CoFQ, P < 0.001). Avoiders reported more depression (P = 0.015) and anxiety (P = 0.028).

Discussion and Conclusions: PD FOF avoiders had more involved symptoms and scored lower on balance and physical performance measures. In addition, they reported greater psychological stress. Several potentially mitigable characteristics of those with FOF avoidance behavior were identified.
Purpose: To examine multiyear adherence to a community-based group exercise program for people with Parkinson's disease (PWP). To document how physical functioning progressed after 1, 3, and 5 years for participants who consistently attended a community-based, group, exercise program.

Methods: Forty-six individuals with idiopathic Parkinson's disease, who were at modified Hoehn and Yahr stage I, II, or III and were community ambulators, were recruited between 2008 and 2013. Participants engaged in a free, community-based, group exercise program offered 2 days per week, 1 hour per day, for three 10-week sessions per year. The program included supervised floor exercises for balance, coordination, strength, and flexibility along with resistance training on dual-action exercise machines. Participants who attended more than half the classes for 1, 3, or 5 years (n = 27, n = 14, n = 7, respectively) were considered to have completed the fitness program (consistent exercisers) and were included in the longitudinal data analysis; participants who either dropped out or attended less than half the classes (n = 19) were not included. Physical functioning was evaluated at baseline for all participants and yearly thereafter for consistent exercisers. Wilcoxon signed rank tests were used to compare baseline data with data collected after 1, 3, and 5 years of consistent exercise.
Physical Functioning After 1, 3, and 5 Years of Exercise Among People With Parkinson's Disease: A Longitudinal Observational Study

Results and Discussion: Over half of the participants initially evaluated completed at least 1 year of the fitness program (27 of the 46 = 59%) and a proportion completed 3 years (14 of the 39 = 39%), and 5 years (7 of the 24 = 29%). At baseline, consistent exercisers were younger than those who dropped out (63.9 vs 69.9 years, P < .05), but had similar modified Hoehn and Yahr medians (2.0 vs 2.3), and similar time since diagnosis (8.0 vs 5.6 years). Consistent exercisers showed small statistically significant improvements in grip strength (8.9% change), Berg Balance scores (5.1% change), and 6-minute walk test (11% change) from baseline to year 1. No significant differences were found in these variables after 3 or 5 years, or for gait speed and timed up and go after 1, 3, or 5 years.

Conclusion: Despite the progressive nature of Parkinson's disease, many PWP can sustain a regular program of varied modes of community-based, group exercise over a period of years. Participants who did so maintained initial performance levels on key measures of physical functioning. By working with an interprofessional team in a supportive community-based exercise program, physical therapists can help many PWP engage in consistent and sustained exercise activity over multiyear periods.
Oldest-Old
Functional Performance and Balance in the Oldest-Old

Purpose: To characterize balance control, functional abilities, and balance self-efficacy in the oldest-old, to test the correlations between these constructs, and to explore differences between fallers and nonfallers in this age group.

Methods: Forty-five individuals living in an assisted living facility who ambulated independently participated in the study. The mean age was 90.3 (3.7) years. Function was tested using the Late-Life Function and Disability Instrument (LLFDI). Balance was tested with the mini-Balance Evaluation System Test (mini-BESTest) and the Timed Up and Go (TUG) test. Balance self-efficacy was tested with the Activities-Specific Balance Confidence (ABC) scale.
Results: The mean total function LLFDI score was 63.2 (11.4). The mean mini-BESTest score was 69.8% (18.6%) and the mean TUG time was 12.6 (6.9) seconds. The mean ABC score was 80.2% (14.2%). Good correlation (r > 0.7) was observed between the ABC and the function component of the LLFDI, as well as with the lower extremity domains. Correlations between the mini-BESTest scores and the LLFDI were fair to moderate (r's range: 0.38-0.62). Age and ABC scores were significant independent explanators of LLFDI score (P = .0141 and P = .0009, respectively). Fallers and nonfallers differed significantly across all outcome measures scores, except for TUG and for the "Reactive Postural Control" and "Sensory Orientation" domains of the mini-BESTest.

Discussion and Conclusions: The results of this study provide normative data regarding the balance and functional abilities of the oldest-old, and indicate a strong association between self-efficacy and function. These results emphasize the importance of incorporating strategies that maintain and improve balance self-efficacy in interventions aimed at enhancing the functional level of this cohort.
References


References


Outcomes

Mary Marchetti PT, PhD, GCS
Introduction

• Reviewed lots of articles – few with HHPT outcomes found this year…
YAY FOR US!!

(...sort of...)
Walters et al\textsuperscript{1}

- Effect of Training Program for HH Care Workers…and (Preventative) Behaviors of Their Clients (sic)
  - \textit{Background}: HHCW in unique position to influence health behaviors of pts.
  - \textit{Objective}: To determine short & medium term effects of training program on HHCW and health-related behavior of their pts.
Participants: RNs and HHAs and pts.

- Inclusion/exclusion criteria for HHCW:
  - None described; volunteers recruited

- Inclusion criteria for pts.:
  - >55 y/o
  - Agreed to participate by filling out questionnaire

- Exclusionary criteria for pts.:
  - <55 y/o
  - “Mental disease”
  - Receiving palliative care
Walters et al (cont’d.)¹

– Methods:

• Baseline behaviors of both HHCW and pts. established via questionnaires
  – HHCW asked about frequency of addressing preventative health issues w pts.
    » Data collected on HHCW health/health behaviors
  – Pts. asked about typical behaviors surrounding preventative health issues
Walters et al (cont’d.)¹

– Methods (cont’d.)
  • Intervention:
    – Control group: Usual care, i.e., HHCW rec’d. no special training
    – Intervention group: HHCW rec’d. three 4 hr. training sessions on education, communication and preventative healthcare
Walters et al (cont’d.)¹

– Methods (cont’d.)

• Data analysis
  – HHCW (intervention [n=155] and control groups [n=50]):
    » Demographic info
    » Education level
    » Employment Hx
    » BMI
    » Health behaviors
Walters et al (cont’d.)¹

– **Methods (cont’d.)**
  
  • Data analysis
    
    – Patients
      
      » Data collected at baseline and 2 intervals
        
        **Baseline: intervention (n=209); control (n=95)**
        
        **1st interval: intervention (n=151); control (n=63)**
        
        **2nd interval: intervention (n=134); control (n=52)**
Walters et al (cont’d.)¹

– **Results:**

- No significant difference between HHCW groups at baseline
- No significant difference between pt. groups
  - At end of both 1\(^{st}\) and 2\(^{nd}\) intervals, pts. in intervention group demonstrated improvement in preventative healthcare domains (trending, but not statistically sign.)
  - “Physical activity” showed slightest increase in intervention group, however control group declined
Walters et al (cont’d.)¹

• Comments:
  – Nursing study!
  – Pts. of HHCW trained to address preventative health issues demonstrate better health behaviors
  – PTs need to address current issue, as well as long-term health
  – More refined studies needed
Sefcik et al^2

• “Why older adults may decline offers of post-acute care services…”
  – Qualitative study
  – Pts. who refuse post-acute care services more likely to have 30-60 day hospital re-admission
Sefcik et al (cont’d.)²

• 30 older adults asked why they or someone else would refuse PAC

• Three themes noted:
  – Possible previous negative experience with PAC
  – Prefer to be at home
    • Would choose hospice over SNF to stay home
  – Willing to participate – would not refuse (5 participants)
    • Cost, among other reasons, speculated to be why some might refuse
• Those suggesting a preference for being at home indicated they would only refuse facility-based PAC; would participate in HHS
Sefcik et al (cont’d.)\textsuperscript{2}

• Comments:
  – Study indicates home health desirable for many pts. – high value
    • Own home
      – Familiar
      – Family around
    • No cost to pt.
...JUST TO GET YOUR BLOOD PRESSURE UP A BIT...
Austin et al\(^3\)

- “Formal Physical Therapy After Total Hip Arthroplasty Is Not Required: A Randomized Controlled Study”
  - THE JOURNAL OF BONE AND JOINT SURGERY
• Study conducted by US orthopedic surgeons
  – 128 pts, 54 experimental, 54 control
  – No marked b/t group differences at outset
    • Control group *slightly* worse in some characteristics (BMI, length of stay in acute care...)

Austin et al (cont’d.)³
Austin et al (cont’d.)³

• Experimental group:
  – In-hospital PT, then exercise on own with detailed “physical therapy manual” provided

• Control group – usual protocol:
  – In-hospital PT, f/b 2 wks home health and 8 wks outpt., 2-3x/wk
Austin et al (cont’d.)³

• Both groups:
  – Instructed to, at minimum, use walker x 2 wks, then cane x 2 wks
  – Permitted to “cross-over” to other group if desired
    • Experimental group would be “crossed over” by researchers if not meeting goals by 2 wks
At 2 wks., 10 pts. (almost 20%) from experimental group to usual protocol (i.e., PT)

During course of study, 20 pts. from experimental group “crossed over” to home group (cost of co-pays cited as a factor)

In both groups, 6 pts. “lost or excluded”
- Control group slightly better than remaining
- Experimental group slightly worse than remaining
Austin et al (cont’d.)³

• Outcome measures:
  – Harris hip score (HHS)
  – Western Ontario and McMaster Universities Osteo-arthritis Index (WOMAC)
  – Short-Form 36 (SF-36)
    • Mental health subset
    • Physical health subset
Austin et al (cont’d.)³

• Measurements taken at:
  – Baseline (pre-operatively)
  – 1-month routine follow-up appt.
  – 6-12 month routine follow-up appt.
Per authors, “small size” of group who “chose” to cross over from unsupervised to PT precluded meaningful analysis other than age (~66 y/o vs. 61 y/o)

- 18.5% of initial n
- 20.8% of final n
Austin et al (cont’d.)

• Results:
  – Reported no significant differences b/t groups at 1-month & 6-12 month appts.
  – Based on tables/figures, questionable interpretation of results (mult. points indicated as “outliers; other issues
Austin et al (cont’d.)

• Conclusion:
  – Based on results, drs. at large medical center no longer ordering PT post-op
  – Acknowledged some pts. may benefit
  – Described marked cost savings
    • Including 20 pts. who self-selected out of PT group
Austin et al (cont’d.)

- Strengths (IMHO):
  - Used well-established outcome measures
    - Included rationale for msmt. choices
  - Presented intention-to-treat data
Austin et al (cont’d.)³

• Concerns (IMHO):
  – Most of outcome measures focus on impairments of body structure/function
    • Limited assessment of activities; virtually no participation
  – Pts. moved from home group to PT group due to poor progress
    • Unclear how pts. would have performed had they remained in home group
      – PT remediated deficits
Austin et al (cont’d.)³

• Concerns (IMHO – cont’d.):
  – Has already affected ordering of PT
  – Cost-savings based on standard of 10 wks. of therapy, not individual needs
  – Status at hospital d/c not considered
  – SF-36 M lower in home group at 1-month and 6-12 month follow-ups
Austin et al (cont’d.)

• Concerns (IMHO – cont’d.):
  – How will such research affect bundled pymts.??
    • We need to conduct/promote research that more clearly identifies those in need of individualized services and best setting

**At least they ordered HH PT when they were ordering PT…**
WE SHOULDA BEEN THERE...
Murtaugh et al

• “Reducing Readmissions Among Heart Failure Patients Discharged to Home Health Care...”
  – *Purpose*: To investigate the impact of early home health nursing & early physician intervention on readmission rates of pts. hospitalized for HF
Methods: CMS databases reviewed for multiple indices of pts. discharged to HHS with Dx of HF, including various items on OASIS

• Four conditions sought
  a.) Early & intensive nrsg. visits
  b.) Early physician visits
  c.) Both
  d.) Neither
Murtaugh et al (cont’d.)

– Results:

• 98,730 records identified
• Outcomes by conditions
  a.) Early & intensive nursing visits 23.0%
  b.) Early physician visits 24.3%
  c.) Both 12.6%
  d.) Neither 40.1%
Murtaugh et al (cont’d.)

– Results (cont’d.):
  • 76.2% no events
  • 20.8% readmitted to acute care hospitals
  • Remainder w other dispositions
    – SNF/”other inpatient setting”, hospice, death
Murtaugh et al (cont’d.)

• Results (cont’d.):

“In a multinomial logit model of outcomes on exposure indicators and observed covariates without control function adjustments, exposure to only one of the treatments has no statistically significant effect on readmission, while exposure to both treatments increases the risk of hospital readmission.” (pg. 1454)
Murtaugh et al (cont’d.)

• Comments:
  – We “should have” been involved
    • ADL/IADL limitations
      – 79.4% had >2 limitations (48.2% > 4 limitations)
    • SOB/decreased CV endurance
      – 58.8% demonstrated SOB
    • Mobility limitations
      – Not reported separately, however later data indicate most pts. had impaired mobility
Comment:

– In general, this study is a good start

– We need to collaborate with other professions for research to demonstrate the need/benefits of HHS

• Best care practices
…AND A BRIEF WORD ABOUT TECHNOLOGY…
Chatto et al (oops! 2018)\textsuperscript{5}

- “Use of a Telehealth System to Enhance a Home Exercise Program for a Person With Parkinson Disease: A Case Report”
  - Feasibility of telehealth to enhance adherence and maintain/improve impairments and activity limitations – START program
- In short – it worked!
Chatto et al (cont’d.)

• Comments:
  – Telehealth something to consider
    • Cost effectiveness in changing healthcare environment
    • Rural areas
    • Maintenance
Summary

• 2015 – Lots of articles with HH PT/rehab outcomes

• 2016, 2017 – Not so much
  – Many on changes in HC pymts., restructuring, etc.
    • Reaction to changing HC environment
Summary (cont’d.)

• At least one study each year suggestive that HH PT/PT not beneficial
  – Significant limitations with each study
Summary (cont’d.)

• Need to demonstrate our value
  – Be consumers of literature
    • Counter “negative” studies when appropriate
    • Utilize such studies to improve services
      – Identify populations who best benefit from HHPT
      – Change our behaviors as appropriate
Summary (cont’d.)

• Demonstrate value (cont’d.)
  – Use quantitative measures
  – Document thoroughly
  – Collaborate w other disciplines to demonstrate value of comprehensive HHS
  – PUBLISH!!
QUESTIONS?
References


Reimbursement/Payment

Dawn Widmer-Greaves, PT, DPT
Bundled Payment Initiatives

BPCI
BPCI – Review

• Model 2
  – Most comprehensive bundle
  – Includes triggering hospital stay, all concurrent professional services, post discharge services, including readmissions
  – Episode length 30, 60, 90 days selected
  – Individual providers paid fee for service
  – Total episode payments reconciled retrospectively against established target
  – Episode initiator (EI) can be a hospital or physician group practice
BPCI – Review (cont’d)

• Model 3¹
  – Episode length (30, 60, 90) days and type of clinical episode are chosen
  – Episode starts with admission to a participating SNF, HHA, IRF, LTAC
  – Or, admission to PAC by a participating physician provider
  – Includes services after the hospital stay, including professional services and readmissions
  – Individual providers paid fee for service
  – Total episode payments reconciled retrospectively against established target
  – The EI can be a SNF, HHA, IRF, LTCH or PGP
BPCI – Review (cont’d)

• Model 4
  – Includes anchoring hospital stay, all concurrent professional services, and associated professional services including readmissions, unless excluded from the bundle
  – Episode length is 30 days
  – Awardees are the convener and receive a prospectively determined payment
  – They in turn pay the other providers involved during the episode
CMS BPCI Model 2-4: Year 3 Evaluation

CMS BPCI Model 2-4: Year 3 Evaluation and Monitoring Annual Report

Purpose – “This report reflects the early stages of our evaluation of the impact of three of the four BPCI Models based on the first two years of the BPCI initiative.”

Method – Non experimental quantitative and qualitative design relying on data available from BPCI participants. It includes three quarters of data. Pre and post comparisons are made to estimate changes. Three main evaluation questions:

• What are the characteristics of the BPCI initiative and participants at baseline and how have they changed during the course of the initiative?
• What is the impact of the BPCI initiative on Medicare payments and the quality of care for Medicare beneficiaries?
• What program, provider, beneficiary, and environmental factors contributed to the various results of the BPCI initiative?
Data – Medicare claims and enrollment data and PAC patient assessments for episodes initiated through September 2015; patient surveys through December of 2015; participant interviews through June 2016, and participant site visits through August of 2016.

“Because of the unique design or the BPCI initiative, with multiple start dates for participants and various combinations of models, clinical episodes, and EIs, the results across the three main evaluation questions are first differentiated by Model and EI provider type. They are further stratified by clinical episode because of differences in the underlying cost and utilization patterns across them. The sample sizes are not sufficient to examine every Model, EI and clinical episode combination.”

Additionally they examined:

- Outcomes across clinical episodes with similar characteristics under the same model.
- Outcomes across certain clinical episodes regardless of the model.
CMS BPCI Model 2-4: Year 3 Evaluation and Monitoring Annual Report

Results – Participant characteristics

- Model 3 had the most participants, but Model 2 had the vast majority of episodes initiated (242,000 vs. 35,000).
- MJRLE was selected by 60% of Model 2 EIs, but only approximately one third of Model 3 EIS.
- Model 4 was chosen by few (23) and there were substantial withdrawals (only 9 left in the second performance year).
- Participating providers were larger and appear to have more resources and had higher baseline payments than non participants.
- Use of beneficiary incentives and gainsharing was limited –
  - Model 2 - 49% of EIs could have provided incentives but only 18% actually did.
  - Model 3 – 71% of EIs could have provided incentives but only 5% actually did.
Results – Key findings by Model

Model 2 –

- Accounted for about 85% of all episodes in the three models.
- Measurable impact of BPCI on cost and quality during the time studied has been limited.
- Only MJRLE exhibited significant decreases in payment – largely driven by the decline in institutional PAC ($1273 [p<0.01] for Hospital EI).
- Did not appear to be a concomitant decline in quality with MJRLE.
- Participants who did the best with MJRLE, had a higher severity of mix and higher than average institutional PAC prior to BPCI.
- All 10 of the Model 2 clinical episodes with the highest proportion of payments attributable to PAC prior, had relative increases in HHA and reductions in institutional PAC payments. (only statistically significant for MJRLE).
Results – Key findings by Model

Model 3 –

- Only SNF MJRLE and HHA CHF episodes achieved statistically significant payment reductions.
- Both did so by decreasing the services that were in their control – Days for the SNF and visits for the HHA.
- Functional status and other characteristics indicate that SNFs and HHAs were admitting healthier MJRLE and CHF patients respectively.
### CMS BPCI Model 2-4: Year 3 Evaluation and Monitoring Annual Report

#### Exhibit 190: Impact of BPCI on Claim-based and Assessment-based Quality Outcomes, by Clinical Episode, Model 3 HHA, Baseline to Intervention, Q4 2013 - Q3 2015

<table>
<thead>
<tr>
<th>Clinical episode</th>
<th>Number of episodes initiated Q4 2013 – Q3 2015</th>
<th>Unplanned readmission rate, 90 days from episode start date</th>
<th>Emergency Department Use, 90 days from episode start date</th>
<th>All-cause mortality rate, 90 days from episode start date</th>
<th>ADL, HHA, improved ambulation</th>
<th>ADL, HHA, improved bathing</th>
<th>ADL, HHA, improved bed transferring</th>
<th>ADL, HHA, improved lower body dressing</th>
<th>ADL, HHA, improved upper body dressing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive Heart Failure</td>
<td>2,551</td>
<td>0.1 pp</td>
<td>2.5 pp</td>
<td>-1.7 pp</td>
<td>-0.9 pp</td>
<td>4.7 pp</td>
<td>2.2 pp</td>
<td>2.0 pp</td>
<td>5.4 pp*</td>
</tr>
<tr>
<td>Major Joint Replacement of the Lower Extremity</td>
<td>639</td>
<td>-2.1 pp</td>
<td>-3.2 pp</td>
<td>0.7 pp</td>
<td>0.7 pp</td>
<td>7.9 pp</td>
<td>-2.0 pp</td>
<td>1.2 pp</td>
<td></td>
</tr>
<tr>
<td>Simple Pneumonia &amp; Respiratory Infections</td>
<td>680</td>
<td>0.7 pp</td>
<td>-4.8 pp</td>
<td>1.2 pp</td>
<td>-0.4 pp</td>
<td>-4.0 pp</td>
<td>0.4 pp</td>
<td>1.9 pp</td>
<td>1.8 pp</td>
</tr>
</tbody>
</table>

*Note: The estimates in this table are the results of a difference-in-differences (DiD) model. Positive DiD estimates that are significant at the 5% or 10% significance level are indicated by dark and light green shaded cells, respectively. Negative DiD estimates that are significant at the 5% or 10% significance level are indicated by dark and light orange shaded cells, respectively. A blank cell indicates that the outcome cannot be presented, either due to insufficient sample size. PDP = post-discharge period.

* This might be a biased estimate because we rejected the null hypothesis that BPCI and matched comparison providers had parallel trends for this outcome (with 90% confidence), which is required for an unbiased estimate. Equal trends test was conducted for ED, readmission, mortality, and CHF ADL improved upper body dressing outcomes.

*Source: Lewin analysis of Medicare claims and enrollment data for episodes that began Q4 2011 through Q3 2015 for BPCI and comparison providers.
### CMS BPCI Model 2-4: Year 3 Evaluation

CMS BPCI Model 2-4: Year 3 Evaluation and Monitoring Annual Report

#### Exhibit 187: Impact of BPCI on Allowed Payment Outcomes, by Clinical Episode, Model 3 HHA, Baseline to Intervention, Q4 2013 - Q3 2015

<table>
<thead>
<tr>
<th>Clinical Episode</th>
<th>Number of episodes initiated Q4 2013 – Q3 2015</th>
<th>Total Amount Included in Bundle Definition¹</th>
<th>HHA Standardized Allowed Amount, 90-day PDP²</th>
<th>SNF Standardized Allowed Amount, within the bundle¹,²</th>
<th>Readmissions Standardized Allowed Amount, 90-day PDP²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive Heart Failure</td>
<td>2,551</td>
<td>-$975</td>
<td>-$248</td>
<td>-$194</td>
<td>-$147</td>
</tr>
<tr>
<td>Major Joint Replacement of the Lower Extremity</td>
<td>639</td>
<td>-$957</td>
<td>-$184</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Pneumonia &amp; Respiratory Infections</td>
<td>680</td>
<td>-$403</td>
<td>-$112</td>
<td></td>
<td>$173</td>
</tr>
</tbody>
</table>

**Note:** The estimates in this table are the results of a difference-in-differences (DiD) model. Positive DiD estimates that are significant at the 5% or 10% significance level are indicated by dark and light green shaded cells, respectively. Negative DiD estimates that are significant at the 5% or 10% significance level are indicated by dark and light orange shaded cells, respectively. A blank cell indicates that the outcome cannot be presented, either due to insufficient sample size or the type of episodes initiated during the time period. Medicare payment outcomes are standardized to remove the effect of geographic and other adjustments and are trended to 2015. PDP = post-discharge period.

¹ The total amount included in bundle definition values are based on only the 90-day episodes.
² These payment measures are not conditional upon use of the service.

**Source:** Lewin analysis of Medicare claims and enrollment data for episodes that began Q4 2011 through Q3 2015 for BPCI and comparison providers.
Conclusion – “Indication that BPCI participants have responded to incentives but relatively few instances in which these responses significantly changed key outcomes”.

Limitations – Sample size when looking at the number of combinations possible in the models, staggered dates for data collection time frames, short average tenure of participants (3 quarters), difficulty capturing some patient and provider characteristics through administrative data limits the ability to match on all factors.

Relevance – Trends towards the patient coming directly home without an institutional PAC stay will likely continue. CHF patients did have a statistically significant increased utilization of ER during the 90 day period.
Cost Savings of BPCI

Similar Cost Savings of Bundled Payment Initiatives Applied to Lower Extremity Total Joint Arthroplasty Can be Achieved by Applying Both Models 2 and 3 (Alfonso, et al)²

Purpose – To analyze and compare the cost savings achieved by 2 different BPCI program participants enrolled in different models of BPCI for lower extremity joint replacement (LEJR).

Method – Retrospective analysis of MS-DRG 469 and 470 (LEJR) of two different BPCI program participants. One in Model 2 (provider A) and one in Model 3 (Provider B). Savings were determined by decreased actual expenditures against target pricing in the respective model. Baseline data from 2009 to 2012. Performance period - October 2013 to September 2015 A, December 2013 - September 2015 B.

Sample – Model 2 - Baseline 1905 episodes, performance 1680 episodes. Provider B - Baseline 5410 episodes, performance 3298 episodes. Both in major urban areas and associated with major academic medical centers. Provider A was one hospital with 40 surgeons performing LEJR. Provider B was an orthopedic practice with 44 surgeons performing LEJR at 16 hospitals in five healthcare systems.
Cost Savings of BPCI

Similar Cost Savings of Bundled Payment Initiatives Applied to Lower Extremity Total Joint Arthroplasty Can be Achieved by Applying Both Models 2 and 3 (Alfonso, et al)²

Results – Cost savings all occurred during the post discharge phase of the episode, though this was achieved in very different ways.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Provider A baseline</th>
<th>Provider A performance</th>
<th>Provider B baseline</th>
<th>Provider B performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHC utilization</td>
<td>28%</td>
<td>66%</td>
<td>17%</td>
<td>22%</td>
</tr>
<tr>
<td>Institutional PAC utilization</td>
<td>72%</td>
<td>34%</td>
<td>83%</td>
<td>78%</td>
</tr>
<tr>
<td>HHC LOS (in days)</td>
<td>15.7</td>
<td>22.3</td>
<td>19</td>
<td>15.1</td>
</tr>
<tr>
<td>PAC LOS (in days)</td>
<td>15.0</td>
<td>22.1</td>
<td>16.9</td>
<td>12.2</td>
</tr>
<tr>
<td>Hospital readmission</td>
<td>13%</td>
<td>6.4%</td>
<td>12.8%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Savings</td>
<td></td>
<td>18.5%</td>
<td></td>
<td>16.73%</td>
</tr>
</tbody>
</table>
Cost Savings of BPCI

Similar Cost Savings of Bundled Payment Initiatives Applied to Lower Extremity Total Joint Arthroplasty Can be Achieved by Applying Both Models 2 and 3 (Alfonso, et al)²

Conclusion – Both models provide similar percentage of cost savings. Decreasing LOS for institutional PAC provider is an important driver of savings as they are reimbursed on a per diem basis whereas HH providers are reimbursed in an episodic rate so change in length of stay for HH does not effect costs.

Limitations – Small sample size of only one provider per model and the disparate nature of providers. Lack of statistical analysis of the results to support claim of “similar” percentage of cost savings.

Relevance – The conclusion that all savings occurred post discharge is in line with the CMS center for innovation Lewin Group Report¹ we reviewed last year. May inform target partner selection for growing HH referrals or partner selection in a market.
Improving Value in Total Joint Arthroplasty: A Comprehensive Patient Education and Management Program Decreases Discharge to Post-Acute Care Facilities and Post-Operative Complications (Pelt, et al)³

**Background** – Sought to create a comprehensive patient education, expectation and management program designed to reduce discharges to post acute care centers (PACs) following total joint arthroplasty (TJA).

**Hypotheses:**
1. Implementation of a pre-operative patient education program, emphasizing discharge to home, will result in fewer patients discharged to PACs.
2. The implementation of a new patient education program with the aim of decreasing discharges to PAC will result in fewer 30 and 90 day hospital readmissions.
3. Discharge to PASs, after adjusting for co-morbidities, is an independent risk factor for 30 and 90 day readmissions and reoperations.

**Method** – Retrospective cohort study using secondary data. A stepwise model of implementation was utilized.
In Preparation for BPCI (Model 2)

Improving Value in Total Joint Arthroplasty: A Comprehensive Patient Education and Management Program Decreases Discharge to Post-Acute Care Facilities and Post-Operative Complications (Pelt, et al)³

Method – Retrospective cohort study using secondary data. A stepwise model of implementation was utilized. Discharges were divided into two categories – discharge to PAC or to home (with or without home care). Multivariable modified Poisson regression was used.

<table>
<thead>
<tr>
<th>Implementation Date</th>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2015</td>
<td>All providers counsel patients that discharge to home is preferable</td>
</tr>
<tr>
<td>June 2015</td>
<td>Restructured joint class – multidisciplinary; educational video series for pre op education</td>
</tr>
<tr>
<td>August 2015</td>
<td>Inpatient nursing team educated on new care pathways and guidelines</td>
</tr>
<tr>
<td>September 2015</td>
<td>Updated to Joint Academy completed</td>
</tr>
<tr>
<td>October 2015</td>
<td>Care navigation process was integrated including pre and post op calls</td>
</tr>
<tr>
<td>November 2015</td>
<td>Increased provider availability by having PA and fellows available after hours to decrease patients going to the ER</td>
</tr>
</tbody>
</table>
In Preparation for BPCI (Model 2)

Improving Value in Total Joint Arthroplasty: A Comprehensive Patient Education and Management Program Decreases Discharge to Post-Acute Care Facilities and Post-Operative Complications (Pelt, et al)\(^3\)

**Sample** – Patients who underwent primary TJA of the hip or knee 12 months prior to implementation (n=465) of the program and 12 months after implementation (n=462). (total of 927).

**Results** – of the 937 patients, 65% were discharged home with home health, 24% to PACs and 11% to home with self care. Discharge to PACs dropped from 34% to 14%. When holding all other variables constant patients were more likely to d/c to PACs pre implementation (IRR 2.56, 95%CI 2.00-3.28, \(P < .001\)). 30 day readmission, 90 day readmissions and 90 day reoperations were all higher prior to implementation. Patients discharge to PACs were more likely to have a 30 day readmission or 30 day reoperation when controlling for age, sex and American Society of Anesthesiologist score. They were also at greater risk for a 90 day readmission and 90 day reoperation.
In Preparation for BPCI (Model 2)

Improving Value in Total Joint Arthroplasty: A Comprehensive Patient Education and Management Program Decreases Discharge to Post-Acute Care Facilities and Post-Operative Complications (Pelt, et al)³

Conclusion – A comprehensive patient education program, expectation and management program led to a reduction in the number of patients being discharged to PAC facilities following total joint replacement. Discharge to PAC also appears to be an independent risk factor for readmission and reoperation.

Limitations – Many changes occurred over an 8 month period of time and in addition results could have been impacted by other initiatives as well. Limited to one institution. Only readmissions and reoperations that occurred at their institution were considered in the findings. Cost data was not reported relative to decreased readmission and reoperations, decreased use of PACs or cost to develop and support the program.

Relevance – There is a trend in the reporting of data from BPCI initiatives specific to TJA to conclude that patients should be discharged directly to home. Additional research is needed to support the involvement in of HH. No distinction was made between home with home health as compared to home with self care.
Referral Concentration in BPCI

Hospital Post acute care referral Networks: Is Referral Concentration Associated with Medicare-Style Bundled Payments? (Kaur, et al)⁴

Purpose – To evaluate if Medicare-style bundled payments are lower or high for beneficiaries discharged from hospitals with post acute care (PAC) referrals concentrated amongst fewer PAC providers.

Method – Observational Study in which hospitals were distinguished according to PAC referral concentration. The number of referrals sent to the top 4 PAC providers for each hospital was divided by the total number of PAC referrals utilized to determine the referral concentration index.

Sample – Convenience sample of hospitals contained within market areas defined by the locations of grantees from the ONC Beacon Community Program. Data from 2008 – 2012 was utilized. Utilized Medicare data to determine beneficiaries who would qualify for a bundled payment given the BPCI definitions. Focus was on 5 bundles; congestive heart failure (CHF), hip and femur procedures except major joint (HIPF), major joint replacement of lower extremity (MJLE), stroke and urinary tract infection (UTI). Hospitals with fewer than 25 cases in a bundle were excluded. Followed the definition of bundles from Model 2 for cost included 90 days post discharge.
Referral Concentration in BPCI

Hospital Post acute care referral Networks: Is Referral Concentration Associated with Medicare-Style Bundled Payments? (Kaur, et al)⁴

Results –

• The average hospitals referral concentration for the four most-used PAC providers was 60%.
• Referral concentration to the 4 most frequently used SNFs averaged 67%.
• Referral concentration to the 4 most frequently used HHAs averaged 80%.
• Hospitals with less than 100 beds had higher concentration compared to those with greater than 250 beds.
• Total bundle payments in 3 of the 5 bundles were significantly associated with increased hospital referral concentration. HIPF ($p < .001$) MJLE ($p < .001$) and UTI ($p < .01$).
• An increase referral concentration of 10% was associated with lower total bundle cost of: $944 (2.3\%)$ for HIPF, $532 (2.1\%)$ for MJLE, and $502 (2.7\%)$ for UTI.
Hospital Post acute care referral Networks: Is Referral Concentration Associated with Medicare-Style Bundled Payments? (Kaur, et al)\(^4\)

**Conclusion** – Using fewer PAC providers may lead to lower costs.  

**Limitations** – Referral concentration is an emerging and complex concept. No distinction was made between provider types in the top 4 referral concentration (SNFs, HHAs, IRFs and LTCHs). The analysis was cross-sectional and can show association, but not necessarily causation. Other factors such as strong case management might account for the savings. Result may not generalize to the other bundle diagnosis groups.  

**Relevance** – As hospitals look to cut overall spend in BPCI to enhance their share of savings, further restriction of PAC referral networks is likely.
Effect of BPCI

Effect of Bundled Payments and Health Care Reform as Alternative Payment Models in Total Joint Arthroplasty: A Clinical Review (Siddiqi, et al)\textsuperscript{5}

**Purpose** – To summarize the preliminary clinical results of BPCI and discuss how it has led to other reforms and alternative payment models.

**Method** – Literature search using PubMed and CMMSIC. Studies that were not in English or unrelated to the topic were excluded.

**Sample** – Search terms not listed, number of articles found or included was not listed.

**Results** – Preliminary results of bundled payment models have shown reduced cost in TJA largely by decreasing length of hospital stay, readmission rates and use of in-patient rehabilitation facilities.

- In BPCI, the most popular payment model selected for TJA has been model 2.
- Studies specific to decreasing discharges to IRF have supported a longer hospital stay of up to 5.2 extra days is preferable from a cost perspective to discharge to an IRF.
Effect of BPCI

Effect of Bundled Payments and Health Care Reform as Alternative Payment Models in Total Joint Arthroplasty: A Clinical Review (Siddiqi, et al)\textsuperscript{5}

Results – (cont’d)

- Majority of studies focused on decreasing hospital LOS, decreasing readmissions and decreasing discharges to short term care facilities.
- Authors not recent increased interest in minimizing expenses specific to implant control noting that implant cost is estimated to be 20% to 40% of the cost for the episode of care.

Conclusion – Alternative payment models (APM) have ultimately led to reduction in cost transitioning care from volume based to value based. Despite the unknown future specific to the Affordable Care Act, studies should continue to refine these initiatives. Authors support investigation of further surgeon control of the initiatives to further improve patient care and maximize financial compensation.

Limitations – search terms were not listed, nor were the number of articles found or the number included in the review.

Relevance – Continued support of preparing for increased number of these patients and a higher acuity of these patients in the home health care environment.
Private Practice Experience with BPCI

Bundled Payments for Care Improvement: Boom or Bust? (Curtin, et al)\textsuperscript{6}

**Purpose** – A private practice orthopedic surgeons group sought to compare their readmission rates, post-acute care utilization, and length of stay for the first year of BPCI to baseline data.

**Method** – Retrospective analysis of CMS data was utilized to compare total expenditures of the DRGs managed under the contract bundle. Non BPCI patients were compared to BPCI patients.

**Sample** – Medicare patients who underwent surgery between 2009 and 2012 were classified as non BPCI\( (n = 8415) \). Medicare patients who underwent surgery 2015 were classified as BPCI \( (n = 4757) \). 90 day post acute events were analyzed.

**Results** – Preliminary results of bundled payment models have shown reduced cost in TJA largely by decreasing length of hospital stay, readmission rates and use of in-patient rehabilitation facilities. A brief reference was mad to key for success related to appropriate patient selection for elective surgery though detail on that was not clear.
Bundled Payments for Care Improvement: Boom or Bust? (Curtin, et al)\textsuperscript{6}

Results – (cont’d)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Non BPCI</th>
<th>BPCI</th>
<th>$P$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Spend</td>
<td>$22,193</td>
<td>$19,476</td>
<td>$P &lt; .001</td>
</tr>
<tr>
<td>Post-acute care spend</td>
<td>$6861</td>
<td>$5360</td>
<td>$P &lt; .001</td>
</tr>
<tr>
<td>SNF utilization</td>
<td>43%</td>
<td>37%</td>
<td>$P &lt; .001</td>
</tr>
<tr>
<td>IRF utilization</td>
<td>3%</td>
<td>4%</td>
<td>$P &lt; .005</td>
</tr>
<tr>
<td>HHA utilization</td>
<td>79%</td>
<td>73%</td>
<td>$P &lt; .001</td>
</tr>
<tr>
<td>Readmissions</td>
<td>12%</td>
<td>10%</td>
<td>$P &lt; .02</td>
</tr>
<tr>
<td>LOS HH</td>
<td>24 days</td>
<td>10 days</td>
<td>$P &lt; .001</td>
</tr>
</tbody>
</table>

- No significant change in SNF or IRF LOS.
Bundled Payments for Care Improvement: Boom or Bust? (Curtin, et al)\textsuperscript{6}

**Conclusion** – Through substantial financial efforts and utilization of human resources to contain costs with clinical practice guidelines, patient care navigators, and a BPCI management team, the expenditures for CMS were significantly lower for BPCI patients.

**Limitations** – Retrospective analysis with no availability of clinical or patient related outcome data, large number of DRGs across several specialties so analysis not specific to a DRG. Authors did not report on cost related to the addition of the resources noted above.

**Relevance** – Selection criteria and the proliferation of these payment models may make it more difficult for higher risk patient to have access to the procedures. Decreased utilization of home care both from a utilization % and a decrease in LOS by over 50%.
Accountable Care Organizations

ACO
ACO in Medicare

Early Performance of Accountable Care Organizations in Medicare (McWilliams, et al)⁷

Purpose – To assess early performance of Medicare Shared Savings Programs (MSSP) ACOs.

Method – Reviewed Medicare claims from 2009 – 2013 using linear regression and a difference in differences design to compare spending and quality measures before the start of the ACO to after the start of the ACO. Compared ACO savings according to organizational structure, baseline spending and concurrent contracting with commercial insurers. 220 ACOs entering the MSSP in mid 2012 and January of 2013.

Sample – 20% random sample of Medicare claims and enrollment data from 2009 – 2013 of fee for service beneficiaries who were continuously enrolled during that year. Then using the CMS ACO provider level research identifiable file, attributed each beneficiary to ACO or non ACO. Those served by non ACO providers were the control group. Adjustments were made for geographic area and beneficiary characteristics.
Results – Adjusted Medicare spending and spending trends were similar in the ACO cohorts and the control group during the precontract period. In 2013, the differential change in total adjusted annual spending was $144 less per beneficiary in the ACO cohort as compared to the control group. (P = 0.02).

A primary contributor to the savings was decreased cost in post acute care.

In 2013, the differential change was only $3 less per beneficiary in the ACO cohort as compared to the control group.

<table>
<thead>
<tr>
<th>Provider</th>
<th>Change in spending 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient Care</td>
<td>(1.4%)</td>
</tr>
<tr>
<td>Hospital Outpatient Care</td>
<td>(2.1%)</td>
</tr>
<tr>
<td>Office based outpatient care</td>
<td>1.5%</td>
</tr>
<tr>
<td>Skilled nursing facilities</td>
<td>(6.1%)</td>
</tr>
<tr>
<td>Home health care</td>
<td>(2.7%)</td>
</tr>
</tbody>
</table>
Early Performance of Accountable Care Organizations in Medicare (McWilliams, et al)\(^7\)

Results (cont’d) – Quality measures either differentially improved or remained unchanged.

Conclusion – The first full year was associated with early savings for those that entered the program in 2012. However, the savings suggested by the 2012 estimates did not result in net savings due to the $244 million Medicare paid in bonuses without a measure to recoup dollars from providers whose spending is above the benchmark.

Limitations – ACO programs are voluntary participating providers may differ from non-participating providers. The estimate of savings did not consider the cost to the ACOs of efforts to lower spending or improve quality.

Relevance – Continued compression of reimbursement in the post acute sector, but without impact on quality. Need to demonstrate the value of physical therapy and home care services.
Purpose – To examine the extent to which accountable care organizations (ACOs) formally incorporate post acute care providers (PAC).

Method – Cross sectional analysis of the National Survey of ACOs (NSACO). Baseline data was collected in 2 waves (October 2012 to May 2013 and September 2013 to March 2014).

Sample – 269 ACOs completed the survey for a response rate of 66%.

Results – 52% of ACOs include at least one type of PAC provider formally within their ACO; 21% contract with a PAC provider; 27% have no formal relationship with a PAC provider. By provider type, outpatient rehabilitation is most commonly included in an ACO (41%); inpatient rehabilitation (38%), home health (34%) and skilled nursing facility (18%). ACOs with PAC participant providers are more likely to report a fully developed program to reduce preventable hospital readmissions (P = .010) There is not significant difference in acute care readmissions.
ACO and the Continuum

Accountability across the Continuum: The Participation of Post Acute Care Providers in Accountable Care Organization (Colla, et al)\textsuperscript{8}

**Conclusion** – Overall ACOs most formally include inpatient rehabilitation. Those with formal relationships with PAC providers report more advanced capabilities such as chronic care management programs or systems for smoother transitions.

**Limitations** – timing and nature of the survey data which doesn’t allow a view of the operational relationships or the details of the PAC providers beyond classification. ACOs ranked themselves specific to advanced capabilities. “Formal inclusion of post acute providers is an imperfect proxy for the functional integration of care across the continuum.”

**Relevance** – trend toward ACO development of formal relationships with post acute care providers could impact access to patients for agencies not seeking these relationships.
References


Administrative/Management

Matt Janes PT, DPT, MHS, OCS, CSCS
Translating Evidence-Based Protocols Into the Home Healthcare Setting

- Examine an evidence-based pain self-management program delivered by physical therapists (PTs).

- Focus on PT training, methods implemented to reinforce content after training and to encourage uptake of the program with appropriate patients, and therapists' fidelity to the program.

- Seventeen physical therapy teams were included in the cluster randomized controlled trial, with 8 teams (155 PTs) assigned to a control and 9 teams (165 PTs) assigned to a treatment arm.

- Treatment therapists received interactive training over two sessions, with a follow-up session 6 months later. Additional support was provided via emails, e-learning materials including videos, and a therapist manual.
• Program fidelity was assessed by examining PT pain documentation in the agency's electronic health record. PT feedback on the program was obtained via semistructured surveys.

• PTs felt comfortable teaching the program elements, but cited time as the biggest barrier to implementing the protocol.

• Possible explanations for study results suggesting limited adherence to the program protocol by intervention-group PTs include the top-down implementation strategy, competing organizational priorities, program complexity, competing patient priorities, and inadequate patient buy-in.
The purpose of this study was to understand the health and safety risk factors for HHCW.

One-on-one interviews were conducted with HHCW to elicit frequency of daily occupational exposures to hazards and risk factors during visits to patients' homes.

Approximately 67% of the study population was over 40 years old and mostly obese, potentially increasing risk for injury.

HHCW routinely perform physical tasks with increased risk for occupational musculoskeletal injuries.
Occupational Exposures of Home Healthcare Workers

- Exposures to drug residue from dispensing oral medications and anticancer medications and potentially infectious agents and cleaning chemicals used for infection prevention were reported.
- The majority of HHCW were also exposed to secondhand smoke and occasionally experienced violence.
- Developing and implementing intervention strategies that address engineering controls, establish employee safety-related policies, provide training and retraining, promote a healthy lifestyle among HHCW, and providing suitable personal protective equipment may help to decrease occupational injury rates.
Development of a Tool to Identify Problems Related to Medication Adherence in Home Healthcare Patients

• In the home healthcare setting, clinicians are required to evaluate patient's medication therapy, including adherence.

• A pilot question list to help uncover potential medication nonadherence was created after completing a review of the literature and ascertaining the common themes as to why patients were nonadherent to their medication therapies.

• Pharmacy personnel who provide onsite consultations in a home healthcare setting used the question list to identify medication-related problems that could contribute to nonadherence and to document potential solutions.
Development of a Tool to Identify Problems Related to Medication Adherence in Home Healthcare Patients

- Through pharmacist–patient interactions, which occurred after admission to the home healthcare agency, pharmacy personnel found on average 2.3 issues per patient, which could affect medication adherence.
- Side effects were the most common problem identified.
- After this tool was tested with 65 patient interviews, the questions were analyzed and condensed into a shorter list more specific to the identification of medication-related problems for use by home care clinicians.
Nurses’ Use of iPads in Home Care—What Does It Mean to Patients?4

• Although the use of technology is growing, little is known about how patients perceive technology in the form of tools used by health professionals.
• This study examines patients’ perspectives on the use of iPads by home care nurses.
• Semistructured interviews were conducted with seven participants who were receiving home care in Denmark, aged 62 to 90 years, with different backgrounds and experiences with technology.
Participants viewed nurses’ use of iPads as an everyday occurrence, reflecting societal growth in the use of technology, and some perceived it as a sign of professionalism with the potential to enhance care.

Perceptions varied somewhat according to their baseline knowledge and experience with the technology.

Although nurses may view technology as cold, the findings suggest that patients have a slightly warmer view of it.
Prevalence and risk factors of frailty among home care clients

Background

Frailty is a common problem among older people and it is associated with an increased risk of death and long-term institutional care. Early identification of frailty is necessary to prevent a further decline in the health status of home care clients. The aims of the present study were to determine the prevalence of frailty and associated factors among 75-year-old or older home care clients.

Methods

The study participants were 75-year-old or older home care clients living in three cities in Eastern and Central Finland. Home care clients who had completed the abbreviated Comprehensive Geriatric Assessment (aCGA) for frailty (n=257) were included in the present study. Baseline data were obtained on functional status, cognitive status, depressive symptoms, self-rated health, ability to walk 400 m, nutritional status, drug use and comorbidities.
Results

Most of the home care clients (90%) were screened for frailty using the aCGA. Multivariate analysis showed that the risk of malnutrition or malnutrition (OR=4.27, 95% CI=1.56, 11.68) and a low level of education (OR=1.14, 95% CI=1.07, 1.23) were associated with frailty.

Conclusion

Frailty is a prevalent problem among home care clients. The risk of malnutrition or malnourishment and a lower level of education increase the risk of frailty. Screening for frailty should be done to detect the most vulnerable older people for further intervention to prevent adverse health problems.
Current Trends in Discharge Disposition and Post-discharge Care After Total Joint Arthroplasty

Purpose of Review

The purpose of this manuscript is to review published literature over the last 5 years to assess recent trends and influencing factors regarding discharge disposition and post-discharge care following total joint arthroplasty. We evaluated instruments proposed to predict a patient’s discharge disposition and summarize reports investigating the safety in sending more patients home by reviewing complications and readmission rates.

Recent Findings

Current literature supports decreased length of hospital stay and increased discharge to home with cost savings and stable readmission rates.
Summary

Surgeons with defined clinical pathways and those who shape patient expectations may more effectively control costs than those without defined pathways. Further research is needed analyzing best practices in care coordination, managing patient expectations, and cost-effective analysis of home discharge while at the same time ensuring patient outcomes are optimized following total joint arthroplasty.
Examining the relationship between therapeutic self-care and adverse events for home care clients in Ontario, Canada: a retrospective cohort study

Background

In an era of a rapidly aging population who requires home care services, clients must possess or develop therapeutic self-care ability in order to manage their health conditions safely in their homes. Therapeutic self-care is the ability to take medications as prescribed and to recognize and manage symptoms that may be experienced, such as pain.

Purpose

The purpose of this research study was to investigate whether therapeutic self-care ability explained variation in the frequency and types of adverse events experienced by home care clients.
Examining the relationship between therapeutic self-care and adverse events for home care clients in Ontario, Canada: a retrospective cohort study

Methods

A retrospective cohort design was used, utilizing secondary databases available for Ontario home care clients from the years 2010 to 2012. Descriptive analysis was used to identify the types and prevalence of adverse events experienced by home care clients. Logistic regression analysis was used to examine the association between therapeutic self-care ability and occurrence of adverse events in home care.

Results

The results indicated that low therapeutic self-care ability was associated with an increase in adverse events including: (1) unplanned hospital visits; (2) a decline in activities of daily living; (3) falls; (4) unintended weight loss, and (5) non-compliance with medication.
Conclusions

This study advances the understanding about the role of therapeutic self-care ability in supporting the safety of home care clients. High levels of therapeutic self-care ability can be a protective factor against the occurrence of adverse events among home care clients. A clear understanding of the nature of the relationship between therapeutic self-care ability and adverse events helps to pinpoint the areas of home care service delivery required to improve clients’ health and functioning. Such knowledge is vital for informing health care leaders about effective strategies that promote therapeutic self-care, as well as providing evidence for policy formulation in relation to risk mitigation in home care.
Background

Up to 25% of patients hospitalized with heart failure (HF) are re-admitted within 30 days. The highest risk of re-admission is within the first days after discharge. Transitional care programs usually only involve nurses and physicians.

Purpose

The purpose of this study was to describe a post–acute care program including physical therapists and to evaluate re-admission rates following program implementation.
Reduction in Re-Hospitalization Rates Utilizing Physical Therapists Within a Post–Acute Transitional Care Program for Home Care Patients With Heart Failure

Method

The program provided HF-specific training encouraging nurses and physical therapists to assess HF status and instruct on self-monitoring. Thresholds for communication with medical providers were established. Patient groups before (n = 162) and after implementation (n = 300) were similar.

Results

Following implementation, there was a 16% decrease in re-hospitalization with little change in the number of visits. Similar multidisciplinary programs may impact re-hospitalization rates and health care costs for HF.
Despite poor outcomes for older adults following hospitalization, practice patterns of post–acute care clinicians and factors impacting quality of care are not well studied, which limits advancements in clinical care.

Qualitative research on the factors that influence physician practice patterns with respect to older adults has been studied and may provide a framework for hypothesizing factors relevant to other post–acute care clinicians.

Three themes emerged from this qualitative metasynthesis: (1) Current medical education and clinical guidelines are not aligned with the multifaceted care needed for older adults, (2) communication gaps impact quality of care, and (3) health policies constrain quality of care. Identifying potential factors that impact practice patterns in post-acute care providers may guide future research initiatives that shape health professional education and system policies.
A criticism of Medicare’s home health prospective payment system is its partial reliance on cost-based reimbursement of therapy services provided by home health agencies (HHAs) to Medicare fee-for-service (FFS) beneficiaries, potentially overincentivizing the provision of therapy services.

Using Medicare FFS home health claims and assessment data, we estimated a model to predict therapy use as a proxy for clinical need and replace actual therapy use with the prediction in the home health payment system.

We estimated a $1.178 billion (95% confidence interval, $1.171-$1.184) decrease in home health payments relative to levels under the current system. The majority of the decrease was due to the model predicting fewer high therapy episodes than actually occurred. It may therefore be more appropriate to predict both therapy and nontherapy use, requiring an overhaul of the current system.
OBJECTIVES:

This scoping study is the first step of a multiphase, international project aimed at designing a homecare robot that can provide functional support, track physical and psychological well-being, and deliver therapeutic intervention specifically for individuals with mild cognitive impairment.

PARTICIPANTS AND SETTINGS:

Semistructured interviews were conducted with 3 participant groups: (1) individuals with memory challenges, mild cognitive impairment (MCI), or mild dementia (patients; n = 9); (2) carers of those with MCI or dementia (carers; n = 8); and (3) those with expertise in MCI or dementia research, clinical care, or management (experts; n = 16). Interviews took place at the university, at dementia care facilities or other workplaces, at participant's homes, or via skype (experts only).
HOME CARE ROBOTS TO IMPROVE HEALTH AND WELL-BEING IN MILD COGNITIVE IMPAIRMENT AND EARLY STAGE DEMENTIA: RESULTS FROM A SCOPING STUDY

MEASUREMENTS:

Semistructured interviews were conducted, transcribed, and reviewed.

RESULTS:

Several key themes were identified within the 4 topics of: (1) daily challenges, (2) safety and security, (3) monitoring health and well-being, and (4) therapeutic intervention.

CONCLUSIONS:

A homecare robot could provide both practical and therapeutic benefit for the mildly cognitively impaired with 2 broad programs providing routine and reassurance; and tracking health and well-being. The next phase of the project aims to program homecare robots with scenarios developed from these results, integrate components from project partners, and then test the feasibility, utility, and acceptability of the homecare robot.
References


