FROM THE HOSPITAL TO HOME: ENHANCING TRANSITIONS IN CARE

Geriatric Grand Rounds
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NEWCOURTLAND CENTER FOR TRANSITIONS AND HEALTH
School of Nursing at the University of Pennsylvania
Transitional Care

*Transitional care* – *time limited* services and environments that *complement* primary care and are designed to ensure health care continuity and avoid preventable poor outcomes among *at risk* populations as they move from one level of care to another, among multiple providers and across settings.
The Case for Transitional Care

- High rates of medical error
- Serious unmet needs
- Poor satisfaction with care
- High rates of preventable readmissions
- Tremendous human and cost burden
Context: Acute Care Episode

Adapted from the National Quality Forum (NQF) steering committee on Measurement Framework: Evaluating Efficiency Across Patient-Focused Episodes of Care. The committee’s report presents the NQF-endorsed measurement framework for assessing efficiency, and ultimately value, associated with the care over the course of an episode of illness and sets forth a vision to guide ongoing and future efforts.
Published Evidence

• 21 RCTs of diverse “Hospital to Home” innovations targeting primarily chronically ill older adults
• 9/21, + impact on at least one measure of rehospitalization plus other health outcomes
• Effective interventions
  – Multidimensional and span settings
  – Use inter-professional teams with primarily nurses, as “hubs”

Different Goals of Evidence-Based Interventions

• Address gaps in care and promote effective “hand-offs”

• Address “root causes” of poor outcomes with focus on longer-term value
Transitional Care Model

- Screening
- Engaging Elder & Caregiver
- Managing Symptoms
- Educating/Promoting Self-Mgmt
- Coordinating Care
- Assuring Continuity
- Collaborating
Unique Features

Care is delivered and coordinated
...by same advanced practice nurse
...in hospitals, SNFs, and homes
...seven days per week
...using evidence-based protocol
...with focus on *long term* outcomes
Across Reported RCTs, TCM has...  

• Increased time to first readmission or death  
• Improved physical function & QoL*  
• Increased patient satisfaction  
• Decreased total all-cause readmissions  
• Decreased total health care costs  

*Most recently completed RCT only
TCM’s Impact on Readmission Rates After Index Hospitalization

<table>
<thead>
<tr>
<th>% of Patients</th>
<th>TCM Group</th>
<th>Control Group</th>
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<tbody>
<tr>
<td>at 6 weeks$^1$</td>
<td>10%</td>
<td>23%</td>
</tr>
<tr>
<td>at 26 weeks$^2$</td>
<td>28%</td>
<td>56%</td>
</tr>
<tr>
<td>at 52 weeks$^3$</td>
<td>48%</td>
<td>61%</td>
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Readmission After Hospital Discharge


TCM's Impact on Total Health Care Costs*

<table>
<thead>
<tr>
<th></th>
<th>TCM Group</th>
<th>Control Group</th>
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<tbody>
<tr>
<td><strong>at 52 weeks</strong></td>
<td>$7,636</td>
<td>$12,481</td>
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<tr>
<td><strong>at 26 weeks</strong></td>
<td>$3,630</td>
<td>$6,661</td>
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* Total costs were calculated using average Medicare reimbursements for hospital readmissions, ED visits, physician visits, and care provided by visiting nurses and other healthcare personnel. Costs for TCM care is included in the intervention group total.


Would cognitively impaired hospitalized older adults and their caregivers benefit from the transitional care model?

Funding: Marian S. Ware Alzheimer Program, and National Institute on Aging, R01 AG023116 (2005-2011)
Study Aim

• Compare effects of three evidence-based innovations among hospitalized cognitively impaired older adults and family caregivers, each designed to:
  – Improve patients’ and family caregivers’ outcomes
  – Reduce preventable rehospitalizations
  – Decrease total health care costs
Augmented Standard of Care (ASC)

**Pennsylvania Hospital**

- Cognitive status assessed within 24 hours of hospital admission
- Verbal and electronic communication of cognitive deficits to patient’s health team within 2 hours of assessment
Resource Nurse Care (RNC) + ASC

*Presbyterian Medical Center*

- RN volunteers completed training modules on dementia and delirium developed by national experts (80% on post-test to become Resource Nurse)
- A Resource Nurse was assigned to an enrolled patient (within 24hrs) and continued to care for patients and assist other staff until transition to home
- Documented interventions in care plans and progress notes
Transitional Care Model (TCM)+ASC

Hospital of the University of Pennsylvania

• Care in Hospital
  – Assessed patient within 24 hours
  – Daily visits to prevent adverse events; develop plan of care with other team members

• Home Care (substituting for visiting nurse)
  – Visit within 24 hours; Visits through two months to implement plan; Daily availability via phone
### Quasi-Experimental Design

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<tr>
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<th>PAH</th>
<th>PPMC</th>
<th>HUP</th>
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<tbody>
<tr>
<td>Phase I</td>
<td>ASC</td>
<td>RNC</td>
<td>TCM</td>
</tr>
<tr>
<td>Phase II</td>
<td>TCM</td>
<td>TCM</td>
<td>TCM</td>
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Hospitals randomly assigned to intervention in Phase I.

**Enrollment:**
- Phase I: 2006-2008
- Phase II: 2008-2009
# Eligibility Criteria

- > 65+ years of age and living within 30 miles of hospital
- Hospitalized for common medical or surgical problem
- Diagnosis of dementia and/or delirium OR
diagnosis of dementia and/or delirium OR
- Screened positive for deficits in orientation, recall, or executive function
- Family caregiver willing to be a study partner
- Excluded: patients undergoing treatment for cancer, dialysis, substance abuse; <6 months prognosis; residing in a nursing home
# Screening tools

<table>
<thead>
<tr>
<th>Six-Item Screen (SIS)</th>
<th>CLOX1, clock drawing task</th>
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<tbody>
<tr>
<td>- Orientation (3-items)</td>
<td>- Executive function</td>
</tr>
<tr>
<td>- Recall (3-items)</td>
<td>- Praxis</td>
</tr>
<tr>
<td>- Scores range: 0-6</td>
<td>- Scores range: 0-15</td>
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</tbody>
</table>

- Scores >4 continue to clock drawing task
- Score ≤ 4 eligible for this study
- Scores >10 not eligible for study
- Scores ≤ 10 eligible for study

Evidence of Cognitive Impairment (CI)

• 52% with evidence of CI (1884/3635)
Enrollment

536 patient-caregiver dyads enrolled
- 41 determined ineligible after enrollment
- 87 lost due to death, withdrawal, relocation, other
407 patient-caregiver dyads in FINAL sample

<table>
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<tr>
<th>Final Sample</th>
<th>PAH</th>
<th>PPMC</th>
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<tbody>
<tr>
<td>Phase I</td>
<td>ASC = 65</td>
<td>RNC = 71</td>
<td>TCM = 66</td>
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<tr>
<td>Phase II</td>
<td>TCM = 69</td>
<td>TCM = 68</td>
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Patient Demographic Characteristics (N=407)

- **80 years old** (range: 65-102)
- **66% Female**
- **60% African American**
- **12 yrs Edu** (range: 0-25)
- **30% Living alone**
- **Cognitive Impairment**
  - 19% Dementia dx
  - 43% Orientation/Recall
  - 38% Executive Function
- **25% Delirium**
- **5 Co-existing conditions** (range: 3-13)
- **7 Medications** (range: 3-27)
- **1 Hospitalization/prior 6m** (range: 0-11)
Caregiver Characteristics (N=407)

- 59 years old (range: 18-93 years)
- 76% Female
- Relationship:
  - 55% Adult Children
  - 21% Spouses
- Caregiver Burden: 17.0±16.6 Range: 0-83
  - 32% Little or none (≤5)
  - 39% Mild (6-22)
  - 29% Moderate to High (>22)
Preliminary Outcomes

• Time to first rehospitalization

• All-cause rehospitalizations and days through 6 months post-index hospital discharge
Primary Analyses

• Propensity Score Adjustment
  – Groups were matched using 15 baseline variables
  – All patients included in analyses

• Time to first rehospitalization
  – Cox Proportional Hazard Model & Kaplan-Meier Curve

• Number of all-cause rehospitalizations and number of days rehospitalized (log transformed)
  – GEE, linear mixed modeling over time (through 6 months)
Phase I - Analyses

• Intervention is confounded with hospital
• Used full propensity modeling approach with weights (included all 202 Phase I patients) to minimize bias
• Demonstrated improved balance (significant bias reduction in covariates and low variation in bias)
Phase I Findings

• Findings suggested improvements in TCM group when compared to each of other two groups
• No differences observed between lower dose interventions (ASC vs. RNC), so groups collapsed
• Used full propensity approach to rematch entire patient sample (N=407)
• Combined data increased power to show differences by intervention and reduce bias in unobserved/hospital characteristics
**Time to First Readmission (N=407)**

- **Preliminary Results**
  - TCM: 93.4% at 0%, 78.6% at 30%, 79.8% at 60%, 67.9% at 120%
  - ASC/RNC: 53.1% at 0%, 25% at 30%, 63.7% at 60%, 53.1% at 120%
  - **P=0.0005**

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All Cause Rehospitalizations*

PRELIMINARY RESULTS

Mean No Rehospitalizations vs. Days

p=0.005

* Through 6-months using propensity score weighted multivariate models.
All Cause Rehospitalization Days*

PRELIMINARY RESULTS

p=0.009

* Through 6-months using propensity score weighted multivariate models.
Limitations

• Only 43% of patients screened as eligible were enrolled (primarily due to lack of willing family caregiver and patient refusal)

• Fidelity to ASC and TCM interventions carefully monitored, but nature of RNC intervention did not allow for such monitoring

• Propensity modeling does not account for unobserved differences
Discussion

• Findings suggest that, among hospitalized, cognitively impaired older adults, the TCM contributes to:
  – Delays in time to first readmission
  – Decreases in all-cause rehospitalization and days
• Impact of TCM decreases over time
Findings suggest need for...

- Increased attention to the importance of cognitive deficits among chronically ill older adults
- Focus on the care needs of patients throughout entire episode of acute illness
- Continued monitoring of high risk group
- Person and family-centered, evidence-based approaches that compliment primary care
Future Research

• Complete analyses of health, quality of life and cost outcomes among patients and family caregivers
• Test implementation of the TCM among cognitively impaired older adults transitioning between the long-term and acute care sectors (e.g., hospital to nursing home)
## Research Team

<table>
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<tr>
<th>Principal Investigator</th>
<th>Study Team</th>
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<tbody>
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<td>Christine Bradway, PhD CRNP</td>
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<td>Kathleen McCauley, PhD RN</td>
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<td>Mark Pauly, PhD</td>
<td>SarahLena Panzer</td>
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<td>Tamora Williams</td>
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Thank You

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For more information go to: www.transitionalcare.info