“ACEing” Complex Population Management
Past, Present, and Possible Future for ACE Models of Care

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Learning Objectives

- Define the components of an Acute Care for Elders (ACE) Unit
- List outcomes from clinical trials evaluating the ACE Unit model of care
- Discuss the role of ACE in population management
  - Including readmissions

In what year did these statements appear in a health care administration publication?

- “The overwhelming needs of the aging population have led to increasing expenditures for hospital care....”
- “How this growing elderly population will obtain and pay for health care is emerging as a major social issue....”
- “This changing financial and demographic trend, coupled with the limited resources provided for the elderly population, has been called the “Geriatric Imperative””

1987

- 1987 Stock Market Crash
- Simpsons Debut on TV
- Gallon of Gas 88¢
- Movie Good Morning Vietnam Released
- BAD Album Released

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2014: Healthcare Did Not Heed the Warning
Silver Tsunami is Here

10,000 Baby Boomers will turn 65 years old every day until 2031

If you can’t stop the wave…
Learn to SURF!

Is it just a numbers thing?

Older Adults Are A Different Patient Population Just
As Pediatric Patients Are

62% of older Americans are experiencing multimorbidity
Medicare expenditures for beneficiaries with different numbers of chronic conditions

Older adults experiencing multimorbidity consume 96% of the Medicare budget

Older Adults are More Likely to Experience Geriatric Syndromes

- Dementia
- Delirium
- Depression
- Gait and balance abnormalities/Falls
- Frailty/Functional Decline
- Malnutrition
- Pressure ulcers
- Polypharmacy
- Incontinence
- Caregiver Stress

Geriatric Syndromes = Increased Risk for Adverse Outcomes


Kresovic et al, Ger Nursing, 1998


Kresovic et al, Ger Nursing, 1998


Kresovic et al, Ger Nursing, 1998
Is it just an age thing?

Older Adults Are a More Heterogeneous Patient Population Than Younger Adults

Functionally and Cognitively Intact (some - maybe not much - room to spare)

Functionally or Cognitively Impaired (no margin for error = vulnerable)

Why do We Need Evidence-Based Geriatric Care Models??

Baby Boomers

Slow Economy/Deficit

Perfect Storm

Lack of Geriatric Training for all Providers

Reduced Reimbursement for Care

We Must Think Outside the Box!!
"There is a dearth of clinical programs with the multidisciplinary infrastructure required to provide the full complement of services needed by people with common chronic conditions."

Types of Teams in Healthcare

- **Uniprofessional:** Group of people all from the same discipline working together
- **Multiprofessional:** Group of people from different disciplines who develop a treatment plan independently
- **Interprofessional:** Group of people from different disciplines assess and plan care in a collaborative manner
- **Transprofessional:** Although roles are specialized, everyone is prepared to step in replace one another when necessary. Team leadership varies with the situation – OK to get outside your lane a bit

**What is an ACE Unit? A Model of Inter/Transprofessional Coordinated Care in the Hospital**

- **Acute Illness, Possible Impairment**
- **Hospitalization: ACE Unit**
- **Prehab Program:** Specialized environment
  - Patient-centered, interdisciplinary care
  - Multi-dimensional geriatric assessment and non-pharmacologic management with nurse driven care
  - Daily medical review
  - Care transition planning from day 1

- **Depressed Mood**
- **Positive Expectations**
- **Reduced Impairment**
- **Improved Mood**
- **Decreased Introgenic Risk Factors**
Participants: UAB ACE Interdisciplinary Team Meeting

- Geriatrician/Geriatric NP
- ACE Unit Coordinator
- Nurses
- Rehabilitation Services (PT, OT)
- Pharmacists
- Dietician
- Social Workers
- Pastoral Care
- Psychology Interns (intermittently)
- Trainees from all disciplines

UAB ACE Unit Process

Admit to ACE
Bedside Fun and Cogn Screen
- Katz ADLs
- Lawton IADLs
- Six Item Screener

Discussed in daily
IDT
Care transition planning begins Day
1 based on screen

Existing/new/risks for
geriatric syndromes
identified

Formal geriatric
consult for complex
cases

ACE Coordinator
ensures plan
implemented

Geri care and
transition planning
revised daily

Transprofessional

“I have learned the
importance of the effects
of polypharmacy in the care
and treatment of UAB's
geriatric patients........ A
patient's life may be changed
due to medications.”

- UAB Trauma Unit Occupational Therapist, 2013

Transprofessional

“One of the best things I have
learned was about the different
routes and half-life of IV
compared to po pain meds.
Last week I was able to
counsel a patient and her
daughter on the benefits of
transitioning off IV pain meds.”

- UAB ACE Unit Social Worker, 2014
Acute Care for Elders (ACE) Units are a team model of coordinated geriatric care in the hospital setting originally designed to maintain patient functional status during hospitalization.

ACE in a Community Hospital
- 1531 community-dwelling patients age ≥ 70 admitted for acute medical illness
- Randomized to ACE vs Usual Care
- Demonstrated improved processes of care in the intervention unit
  - Reduced use of restraints
  - Fewer high risk meds
  - Earlier and more frequent involvement of physical therapy and social work
  - Improved patient and provider satisfaction

ACE Unit: Randomized Controlled Trial
Change in ADL performance from admission to discharge (p=0.009)

<table>
<thead>
<tr>
<th></th>
<th>ACE Unit</th>
<th>Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much Worse</td>
<td>10%</td>
<td>40%</td>
</tr>
<tr>
<td>Worse</td>
<td>20%</td>
<td>30%</td>
</tr>
<tr>
<td>Unchanged</td>
<td>40%</td>
<td>10%</td>
</tr>
<tr>
<td>Better</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Much Better</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Secondary Outcome
SNF/rehab/LTC placement: 14% ACE Unit vs 22% Usual Care (p=0.01)

ACE in a Community Hospital
- Demonstrated improved processes of care in the intervention unit
  - Reduced use of restraints
  - Fewer high risk meds
  - Earlier and more frequent involvement of physical therapy and social work
  - Improved patient and provider satisfaction

Health Care Utilization and ACE
- Retrospective, case-control study
- Academic urban hospital
- 680 ACE vs 680 non-ACE patients age ≥ 65
- Matched for age, ethnicity, comorbidity, and DRG (CHF, pneumonia, UTI)
- ACE patients:
  - Shorter mean LOS (4.9 ± 4.3 vs 5.9 ± 4.5, p=0.01)
  - 9.7% reduced unadjusted mean costs ($13,586 vs $15,040; p=0.012)
  - No difference in mean number of unadjusted readmissions
    - 11% reduced readmission rate after controlling for age, race, comorbidity, and pre-admission rate

Landefeld et al, NEJM, 1995
Counsel et al, JAGS, 2005
Jayadevappa et al, Value in Health, 2006;9:186-192
### UAB ACE Study
Comparison of ACE vs Usual Care: FY 10

<table>
<thead>
<tr>
<th></th>
<th>ACE Unit</th>
<th>Usual Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of beds</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>% patients age ≥ 70</td>
<td>39.2%</td>
<td>40.3%</td>
</tr>
<tr>
<td>Unit nursing staff allotment (WHPPD)</td>
<td>9.75</td>
<td>9.75</td>
</tr>
<tr>
<td>Physical therapists FTE: bed ratio</td>
<td>1:19</td>
<td>1:26</td>
</tr>
<tr>
<td>Attending Physician</td>
<td>Hospitalists</td>
<td>Hospitalists</td>
</tr>
<tr>
<td>Formal Geriatric Consultation available upon request</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Evidence-based delirium prevention care processes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Volunteer mealtime assistance program</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Daily Geriatrician led IDT Rounds for Geriatric Care Management</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Counselor for patients/families</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

### Patient Characteristics ACE vs UC FY 10:
Age ≥ 70 who spent entire hospital stay on ACE or UC

<table>
<thead>
<tr>
<th>Variables</th>
<th>ACE (N=428)</th>
<th>UC (N=390)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>81.6 (6.9)</td>
<td>80.9 (6.8)</td>
<td>0.11</td>
</tr>
<tr>
<td>Gender (Female)</td>
<td>64.9%</td>
<td>65.9%</td>
<td>0.29</td>
</tr>
<tr>
<td>Race (White)</td>
<td>64.5%</td>
<td>59.2%</td>
<td>0.30</td>
</tr>
<tr>
<td>Comorbidity Score</td>
<td>3.4 (3.2)</td>
<td>3.1 (3.0)</td>
<td>0.14</td>
</tr>
<tr>
<td>Case Mix Index</td>
<td>1.1 (0.5)</td>
<td>1.1 (0.6)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

No significant differences in patient characteristics between groups

### Cost and Readmission Outcomes ACE vs Usual Care FY 10:
Age ≥ 70 who spent entire hospital stay on ACE or UC

<table>
<thead>
<tr>
<th>Variables</th>
<th>All DRGs</th>
<th>Top 25 DRGs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables Mean (SD) or %</td>
<td>ACE (N=428)</td>
<td>UC (N=390)</td>
</tr>
<tr>
<td>LOS (days): Mean (SD)</td>
<td>4.0 (2.7)</td>
<td>4.2 (2.8)</td>
</tr>
<tr>
<td>Variable Direct Cost/Case ($)</td>
<td>$2,109 ($1,870)</td>
<td>$2,480 ($2,113)</td>
</tr>
<tr>
<td>Daily Variable Direct Cost/Case ($)</td>
<td>$542 ($383)</td>
<td>$595 ($227)</td>
</tr>
<tr>
<td>Patients readmitted to UAB within 30 days of discharge</td>
<td>7.9%</td>
<td>12.8%</td>
</tr>
</tbody>
</table>
Cost Savings from ACE Model

Variable Direct Cost Savings = $371/case

If UC patients experienced ACE model

~ $371,000 savings in variable direct cost for every 1000 patients

Number of patients age ≥ 65 discharged from ACE Unit

So how can the ACE model, originally designed to maintain patient functional status, possibly impact readmissions?

Readmission Patterns for Older Adults with AMI, CHF, and Pneumonia

- Medicare claims data from 2007-2009 to determine patterns
- Mean age of readmitted patients ~ 80 yrs for all DRGs studied
- Most readmits within first 15 days for all studied DRGs

Study Authors’ Thoughts:

- “The broad range of acute conditions responsible for readmission may reflect post-hospitalization syndrome – a generalized vulnerability to illness among recently discharged patients, many of whom have developed new impairments both during and after hospitalization.”
  - Losses in mobility/functional status, nutritional status, delirium, adverse drug events, etc.

- “The heightened vulnerability to a diversity of illnesses may explain why interventions that are broadly applicable to many conditions with multiple components or are delivered by a multidisciplinary team are more likely to reduce readmissions.”
ACE Unit Models of Care Have Been Shown to:

- Improved functional performance at discharge
- Improved likelihood of living at home after discharge
- Reduced restraint use
- Reduced high-risk medication use
- Improved nutritional support during hospitalization
- Improved patient and provider satisfaction
- Reduced length of stay
- Reduced health care utilization costs
- Reduced 30-day readmissions


What is the future for ACE?

Helping hospitals address complex population management via:

Higher Valued Care

- Quality
- Cost

Possible Means of Leveraging ACE Model for Higher Valued Care Hospital-Wide

- ACE for non-general medical patient populations
  - Oncology-ACE
  - Stroke-ACE
  - Ortho-ACE
  - ACE of Hearts
  - Etc, etc
- “Mobile ACE” Consultative Care
  - Take the ACE team to the patient
- UAB “Virtual ACE” Pilot

Virtual ACE

A Pilot Project for an Orthopedic Surgery Unit
Geriatric Info New Feeds into the Unit ACE Tracker Report

Virtual ACE Brings ACE to All Units

- Geriatric screens identify issues in need of management, care coordination, and care transition planning from Day 1
  - Virtual ACE training will empower staff to manage issues identified from geriatric screens

- Geriatric issues summarized in IDT
  - ACE Tracker allows for an electronic IDT

- ACE Coordinator “keeps the train on the tracks”
  - Virtual ACE model will require a revamped coordination model

Key Geriatric Syndromes in Virtual ACE Training and Intervention

- The “Why”
- Function
- Pain Management
- Delirium
- Care Transitions

Learning Objectives Revisited

- Define the components of an Acute Care for Elders (ACE) Unit
  - Interdisciplinary, patient-centered, multi-dimensional geriatric assessment, non-pharmacologic management, daily medical review, care transition planning from day 1

- List outcomes from clinical trials evaluating the ACE Unit model of care
  - Improved functional status, processes of care, med safety, likelihood of living at home after discharge
  - Reduced costs and readmissions

- Discuss the role of ACE in population management
  - Improved outcomes now seen in costs and readmissions provide leverage to disseminate ACE throughout entire hospital
QUESTIONS?

For UAB Hospital Geriatric Program Training Institute Site Visit
Information (ACE Units or NICHE Programs):
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