Selecting Patients for Comprehensive Care Management Programs

Brooke Salzman
Assistant Professor
Division of Geriatric Medicine
Department of Family & Community Medicine
Thomas Jefferson University
Brooke.Salzman@jefferson.edu
3/23/2012
Objectives

• Background
• Compare/contrast evidence-based care management programs in the U.S.
• Discuss approaches, including predictive modeling, for selecting patients for care management programs
• Discuss utilization of an office-based tool
Disclosures

- No conflicts of interest
- HRSA GACA award, 2010-2015
• “Geriatrics may be thought of as the epitome of chronic disease care. In many ways, it has pioneered salient approaches, but much remains to be done.”

  – Robert Kane, MD, What Can Improve Chronic Disease Care? J Am Geriatr Soc 2009
Chronic Disease

• Chronic disease is the leading cause of death and disability in the US
• Account for 70% of all deaths
• 84% of total health care spending is on people with chronic conditions
• 145 million Americans have at least 1 CD, 2009

• Robert Wood Johnson Foundation. Chronic Care: Making the Case for Ongoing Care. 2010
Chronic Disease in the Elderly

- Over 80% of older adults have at least 1 chronic condition
- Over 50% of older adults have at least 3 or more chronic conditions

- Robert Wood Johnson Foundation. Chronic Care: Making the Case for Ongoing Care, 2010
- Guiding Principles for the Care of Older Adults with Multimorbidity: An Approach for Clinicians, American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity, draft, 2012
Challenges of Multimorbidity

- Higher rates of death, disability, and institutionalization
- Increased utilization of health care resources
- Decreased quality of life
- Higher rates of adverse effects of treatments and interventions

- Guiding Principles for the Care of Older Adults with Multimorbidity: An Approach for Clinicians, American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity, draft, 2012
Costs of Care

• Cost of providing care for older Americans is:
  – 3-5 times greater than for someone < 65
  – 17 times greater for someone with 5 or more conditions

• By 2030, health care spending is expected to increase by 25% just based on the aging population
  – Robert Wood Johnson Foundation. Chronic Care: Making the Case for Ongoing Care. 2010
• New models of care
  – Focus on chronic care
  – Ensuring quality, evidence based care and safety
  – Utilize health care teams
  – Emphasize care coordination
  – Increase engagement of patients and caregivers
  – Payment for added value
Challenges of Multimorbidity

- Limited evidence-based resources for managing this population
- Clinical Practice Guidelines focus on single diseases
- Adults with multimorbidity are often excluded from clinical trials
Chronic Care for Elders

- Guided Care
- GRACE (Geriatric Resources for Assessment and Care of Elders)
- PACE (Program of All-inclusive Care for the Elderly)
6 common elements

• 1. Comprehensive assessment
• 2. Patient-centered, evidence-based care plan
• 3. Proactive monitoring
• 4. Communication and coordination across settings and with all care providers
• 5. Promotion of the patient’s (and caregiver’s) active engagement in his or her health
• 6. Facilitating access to resources
# Models of Comprehensive Primary Care for Older Patients With Multiple Chronic Conditions

## Table. Models of Comprehensive Primary Care for Older Patients With Multiple Chronic Conditions

<table>
<thead>
<tr>
<th></th>
<th>GRACE</th>
<th>Guided Care</th>
<th>PACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year program began</td>
<td>2002</td>
<td>2006</td>
<td>1990</td>
</tr>
<tr>
<td>Primary care clinician</td>
<td>Established primary care physician</td>
<td>Established primary care physician</td>
<td>PACE staff physician(^a)</td>
</tr>
<tr>
<td>Other team members</td>
<td>On-site advanced practice nurse and social worker, off-site geriatrician, physical therapist, mental health social worker, pharmacist, community liaison</td>
<td>Registered nurse</td>
<td>Registered nurse, social worker, physical therapist, occupational therapist, recreational therapist, pharmacist, dietitian, home care coordinator, personal care aide, driver, site manager</td>
</tr>
<tr>
<td>Service base</td>
<td>Community-based health center</td>
<td>Primary care office</td>
<td>Day health center</td>
</tr>
<tr>
<td>Patient eligibility</td>
<td>Low-income</td>
<td>Hierarchical condition category score in highest quartile(^b)</td>
<td>Certified as requiring long-term care</td>
</tr>
<tr>
<td>Frequency of contact</td>
<td>Monthly</td>
<td>Monthly</td>
<td>1-5 days per week</td>
</tr>
<tr>
<td>Services covered by Medicare</td>
<td>No(^c)</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Medicaid</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Abbreviations: GRACE, Geriatric Resources for Assessment and Care of Elders; PACE, Program of All-Inclusive Care for the Elderly.

\(^a\)At some sites, PACE contracts with community-based physicians.

\(^b\)Indicates risk of using extensive health services during the following year.

\(^c\)Only home visits by advanced practice nurses are covered.
My GACA

- Replicate “Guided Care” in an urban, academic primary-care practice for older adults with multimorbidity
- Evaluate GC as an interprofessional teaching model in geriatric education
Guided Care

- What is Guided Care?
  - Intensive care management program that targets older adults with multiple chronic conditions who are at the highest risk for health care utilization
  - Team-based approach with an embedded RN who collaborates with PCP’s to manage about 50-60 high risk patients
Guided Care

- In-home assessment
- Care plan and Action Plan
- Monitoring patient’s conditions monthly
- Actively promotes self-management
- Coordinates care among all providers and sites
- Smoothes transitions between sites of care
- Educates and supports caregivers
- Facilitates access to community resources
Guided Care

• Benefits of GC:
  – Improve patient perception of quality of care
  – Improve caregiver satisfaction with care
  – Improve physician satisfaction with chronic care
  – Produces high job satisfaction among GC nurses
  – Reduced costs by reducing use of expensive services—
    • 21 to 49 % fewer hospital readmissions
    • 17% fewer emergency department visits
    • 30% fewer home health care episodes
Research questions....

• How should we choose the patients for GC or other care management programs?
• How do we direct the delivery of resource-intensive interventions involved in GC?
• How do we increase the cost-effectiveness of the program?
Selecting Patients

• Targeting the appropriate patient is key to a program’s effectiveness

• Comprehensive Geriatric Assessments (CGAs)
  – No benefit shown in studies that included elders who were too well or too ill
  – Elders at risk for progressive disability
Selection Methods for Care management

- Predictive modeling
- PCP selection
Predictive Modeling

- HCC (Hierarchical Conditions Categories)
- Charlson Comorbidity index
- Probability of Repeated Admission
- Ambulatory pharmacy data
- VES-13 (Vulnerable Elders Survey)
- Lee/Schonberg Mortality Index

- Differ in types of variables, types of data sources, timing of data collection, what they’re predicting
Predictive Modeling

• What should we be trying to predict to target the right patients who will benefit the most?
  – Hospital admission/readmission
  – Mortality
  – Complexity
  – Cost
  – Functional decline/frailty
  – Placement in long-term care
Predictive Modeling

- **Accuracy**
  - How well are we able to predict which patients are likely to be readmitted?

- **Reversibility**
  - Are we predicting an outcome that is reversible, or is it too late?

- **Priority**
  - Patients, insurers, hospitals, providers
Predictive Modeling: Variables

- Medical comorbidity
- Mental health comorbidity
- Prior use of medical services
- Demographics: age, sex, race/ethnicity
- Illness severity: classification, lab findings or clinical values (Cr, Na, Hgb, BP)
Predictive Modeling: Variables

• Overall health and function
  – Self-rated health, performance in ADL’s, mobility
  – Cognitive impairment, visual or hearing impairment

• Social determinants of health
  – Socioeconomic status, insurance, education, marital status
  – Caregiver availability, social support
  – Access to care, health literacy
  – Substance and/or alcohol abuse, smoking status
Predictive Modeling: Variables

- Hospital or health system factors
  - Transitional care issues: Post-discharge follow-up, coordination of care, medication reconciliation
  - Quality of inpatient care
  - Number of different providers
Conflicting Data

• Retrospective cohort of 28,430 persons > 64 yrs
  – Unplanned admissions in the previous year***
    • Lopez-Aguila et al, Am J Manag Care, 2011
• Retrospective cohort evaluating Evercare for persons > 65 with 2 or more hospitalizations
  – Care management did not reduce admissions
  – General drop in admissions from 2.6/yr to 0.6/yr with no interventions
    • Roland et al, BMJ, 2005
## Charlson Comorbidity Index

### Table 1. Charlson Comorbidity Index Scoring System

<table>
<thead>
<tr>
<th>Score</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Myocardial infarction (history, not ECG changes only)</td>
</tr>
<tr>
<td></td>
<td>Congestive heart failure</td>
</tr>
<tr>
<td></td>
<td>Peripheral vascular disease (includes aortic aneurysm ( \geq 6 ) cm)</td>
</tr>
<tr>
<td></td>
<td>Cerebrovascular disease: CVA with mild or no residua or TIA</td>
</tr>
<tr>
<td></td>
<td>Dementia</td>
</tr>
<tr>
<td></td>
<td>Chronic pulmonary disease</td>
</tr>
<tr>
<td></td>
<td>Connective tissue disease</td>
</tr>
<tr>
<td></td>
<td>Peptic ulcer disease</td>
</tr>
<tr>
<td></td>
<td>Mild liver disease (without portal hypertension, includes chronic hepatitis)</td>
</tr>
<tr>
<td></td>
<td>Diabetes without end-organ damage (excludes diet-controlled alone)</td>
</tr>
<tr>
<td>2</td>
<td>Hemiplegia</td>
</tr>
<tr>
<td></td>
<td>Moderate or severe renal disease</td>
</tr>
<tr>
<td></td>
<td>Diabetes with end-organ damage (retinopathy, neuropathy, nephropathy, or brittle diabetes)</td>
</tr>
<tr>
<td></td>
<td>Tumor without metastases (exclude if &gt;5 y from diagnosis)</td>
</tr>
<tr>
<td></td>
<td>Leukemia (acute or chronic)</td>
</tr>
<tr>
<td></td>
<td>Lymphoma</td>
</tr>
<tr>
<td>3</td>
<td>Moderate or severe liver disease</td>
</tr>
<tr>
<td>6</td>
<td>Metastatic solid tumor</td>
</tr>
<tr>
<td></td>
<td>AIDS (not just HIV positive)</td>
</tr>
</tbody>
</table>

**NOTE.** For each decade \( \geq 40 \) years of age, a score of 1 is added to the above score.

Abbreviations: ECG, electrocardiogram; CVA, cerebrovascular accident; TIA, transient ischemic attack; AIDS, acquired immunodeficiency syndrome; HIV, human immunodeficiency virus.
Probability of Repeated Hospital Admission (Pra)

1. In general, would you say your health is:
   1. Excellent, very good, good, fair, poor
2. In the previous 12 months, have you stayed overnight as a patient in a hospital?
   1. Not at all, 1 time, 2-3 times, more than 3 times
3. In the previous 12 months, how many times did you visit a physician or clinic?
   1. Not at all, 1 time, 2-3 times, 4-6 times, more than 6 times
4. In the previous 12 months, did you have diabetes? Yes, no
5. Have you every had?
   1. Coronary heart disease, angina pectoris, an MI, any other heart attack
6. Is there a friend, relative or neighbor who would take care of you for a few days, if necessary? Yes, no
7. Are you? male, female
8. What is your date of birth? Month, day, year
VES-13

• 1. Age
• 2. In general, compared to other people your age, would you say that your health is:
  – Poor, fair, Good, Very Good, Excellent
• 3. How much difficulty, on average, do you have with the following physical activities:
  – Stooping, crouching or kneeling?
  – Lifting, or carrying objects as heavy as 10 pounds?
  – Reaching or extending arms above shoulder level?
  – Writing, or handling and grasping small objects?
  – Walking a quarter of a mile?
  – Heavy housework such as scrubbing floors or washing windows?
VES-13

4. Because of your health or a physical condition, do you have any difficulty:

- Shopping for personal items (like toilet items or medicines)?
- Managing money (like keeping track of expenses or paying bills)?
- Walking across the room? Use of cane or walker OK
- Doing light housework (like washing dishes, straightening up, or light cleaning)?
- Bathing or showering?
Lee 4-yr mortality Index

1. Age
2. Sex
3. BMI < 25
4. Has a doctor ever told you that you have diabetes or high blood sugar?
5. Has a doctor told you that you have cancer or a malignant tumor, excluding minor skin cancers?
6. Do you have a chronic lung disease that limits your usual activities or makes you need oxygen at home?
7. Has a doctor told you that you have congestive heart failure?
8. Have you smoked cigarettes in the past week?
9. Because of a health or memory problem, do you have any difficulty with bathing or showering?
10. Because of a health or memory problem, do you have any difficulty with managing your money—such as paying your bills and keeping track of expenses?
11. Because of a health or memory problem, do you have any difficulty with walking several blocks?
12. Because of a health or memory problem, do you have any difficulty with pulling or pushing large objects like a living room chair?
Schonberg 5-year Life expectancy

1. Age
2. Sex
3. BMI < 25
4. Would you say your health in general is: Excellent, very good, good, fair, poor
5. Have you ever been told by a doctor or health professional that you had:
   a. Emphysema/chronic bronchitis, cancer, diabetes
6. Because of a physical, mental, or emotional problem, do you need the help of other persons in handling routine needs such as everyday household chores, doing necessary business, shopping, or getting around for other purposes?
   a. Yes, no
7. By yourself, and without using any special equipment, how difficult is it for you to walk a quarter of a mile-about 3 city blocks?
   a. Not at all difficult, a little difficult to very difficult, can’t do at all/do not do
8. Which best describes your cigarette use? Never, former, current
9. During the past 12 months, how many times were you hospitalized overnight?
   a. None, once, twice or more
Predictive Modeling: Performance

- Perform poorly
- Review of 26 readmission risk prediction models which demonstrate poor predictive ability (Kansagara et al, JAMA, 2011)
  - Poorly understood and complex phenomenon beyond typical factors (medical comorbidities, basic demographic data, clinical variables) included in PM
  - If we can’t accurately predict which patients will be readmitted, can we really prevent readmissions?
Predictive Factors

- Predicting complicated post-hospital care patterns
- Variables that improved accuracy of predictions
  - Self-rated health status
  - Visual impairment
  - Mean scores on physical functional tasks
  - Assistance with ADLs score
    - Better discrimination than PM only using administrative data
      - (Coleman et al, Health Services Research, 2004)
Predictive Modeling

• Automated ambulatory pharmacy data used to predict future health care cost
  – Compared with complex PM like HCCs and ACGs (ambulatory clinical groups)
  – Less accurate than HCCs but similar to ACGs
  – Data often more reliable and complete than ICD-9 codes
  – Reasonable alternative
    • (Fishman et al, Medical Care, 2003)
Physician Selection

- Ability to predict which hospitalized patients were most likely to be readmitted
- Not necessarily any better, but not worse than PM
- Compared PM (Pra) with physicians, case managers and nurses
- Poor for all providers and the Pra (0.50-0.59)

(Allaudeen et al, J Gen Intern Med, 2011)
Comparing PM and PCP selection methods

- PCP selection:
  - 14 PCPs from 10 primary care practices
  - Screen a list of their patients and select up to 30 to participate in a care management program aimed at reducing avoidable hospitalizations

- PM:
  - Software package Case Smart Suite Germany
  - Diagnostic codes, prior costs, hospital admissions, demographic data
    - (Freund et al, Am J Manag Care, 2011)
Comparing PM and PCP selection

- Paper-based questionnaire:
  - European Quality of life index
  - Medication adherence report scale
  - Sociodemographic variables
Comparing PM and PCP selection

• Selected versus non-selected patients (regardless of method)
  – Older, higher likelihood of future hospitalization, higher morbidity burden, higher predicted costs

• PM (301 patients)
  – More prior hospitalizations, higher likelihood of future hospitalization, higher morbidity burden, higher predicted costs, 1 of every 2 pts had CHF
Comparing PM and PCP selection

• PCP selection (203 patients)
  – Lower prevalence of CHF, higher rates of prior participation care management programs
• Both (32 patients-mutually exclusive)
  – 1 of every 2 pts with CHF
  – Higher rates of prior participation in care management programs
Comparing PM and PCP selection

- Patient survey: 40.7% of total responded
- Patients selected by PCP responded more frequently (58.1% vs 22.7%)
- Non-respondents: more hospital admissions, greater morbidity burden, higher predicted costs and hospitalizations
Comparing PM and PCP selection

- **PM**
  - Higher risk for future healthcare utilization and high predicted annual costs

- **PCP**
  - Higher rates of prior participation in intensified care programs and higher response rate

- **Both**
  - Had both
Care Sensitivity

• Willingness may be a key characteristic to identify
  – Engage in and benefit from the program
  – Too healthy to benefit?
Or, on the other hand….

• Lack of willingness may be a key characteristic
  – Highest risk patients less willing
  – Too ill or frail to benefit?
  – May be due to complex social/economic factors
Physician Selection

- Physician selection:
  - Choose patients who we feel are more willing or approachable?
  - Choose patients who are more complex or difficult to manage?
  - What shapes the perception of patients seen as “most likely to benefit?”
So what?

• Need for more clinically based PM that doesn’t rely on complex administrative data
• Include variables for care sensitivity
• Practicable concepts for case finding
• Standardized assessment tools should be developed and implemented to assist clinicians in refining PM-based selection
Project Idea

• Practice-based, real-time clinical tool to help identify patients who are:
  – At highest risk for health care utilization AND
  – Most likely to benefit from intensive resources (GC)
  – Combine PM, PCP selection, and patient willingness into 1 single, simplified approach in a practice setting
Survey Tool

- Tool attached to encounter of all patients 65 years of age or older at Jefferson Family Medicine in the PSC
- Filled out by PCP and patient together
- Validated instrument to identify high-risk older patients
  - Pra, VES-13, Schonberg mortality index
Survey Tool

- If the patient is identified as “high-risk” by tool
- Do you [provider] think this patient would benefit from a care management program like Guided Care?
  - If no, why?
  - If yes, is the patient willing to be contacted to hear more information and consider receiving additional services through Guided Care?
  - If no, why?
Evaluation

• Patients who meet criteria who are and are not recommended by PCP
• Patients who meet criteria who are and aren’t willing to participate
• Does willingness to participate change over time?
Evaluation

• Compare tool to PM + PCP selection
• List of high risk older patients
• PCP circles who he/she thinks would benefit from GC
• Answers 2 open-ended questions:
  – What are the major characteristics of patients that made you select them to refer to this program?
  – What are the major characteristics of patients that made you not select them for this program?
• Selected patients are called and asked if willing to participate
Evaluation

• Compare patients willing to participate in GC identified by each method
  – Does patient willingness to enroll increase with tool?
Additional factors?

- Insurance type
- Zip code
- Social support
Conclusion

- New models of care must address the complex health care needs of multimorbid older patients.
- Guided Care, GRACE, PACE are 3 evidence-based models of comprehensive, coordinated care.
- Evaluation of these models must consider targeting populations who will benefit most.
- Approaches to patient selection can include a variety of measures and methods.
References

References
