CFM Grand Rounds
Continuing Education

In order to receive credit for participating today, please text the code RELZOX to 919.213.8033. Must be entered into system within 12 hours of session. This session is 1 hour of CE.
Evaluation

A short evaluation will be emailed to you within 48 hours. Please take a moment to give us your feedback.

Our next Grand Rounds will be January 10, 2017 in Hanes 131.
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Incorporating Physician Assistants and Nurse Practitioners on Primary Care Teams

Christine M. Everett, PhD, MPH, PA-C
November 8, 2016
CFM Grand Rounds
Objectives

• Define key concepts including team and PA and NP role
• Describe the results of the first comparative effectiveness study comparing different PA and NP roles on primary care teams
• Describe current research project evaluating PA and NP team roles, interdependence, and coordination
Demand for Primary Care Exceeds Supply

- Increased demand for primary care
  - Affordable Care Act: 32 million Americans will gain insurance coverage by 2019 \(^1,2\)
  - Additional 15-24 million primary care visits annually \(^3\)
- Limited supply of primary care physicians \(^3-5\)
- Demand-supply mismatch could reduce access and quality of care \(^6,7\)
- Increased reliance on PAs and NPs is one strategy for bridging the gap
Expectations of Healthcare Teams

• Improve Access
  – Health Professional Shortages

• Improve Processes
  – Overcome Fragmentation

• Improve Patient Outcomes
  – Benefit from a range of clinical expertise and skills

• Lower Cost
  – Improve efficiency
Definitions
“A group of two or more individuals, who have specific roles, perform interdependent tasks, are adaptable, and share a common goal”

Teams

Structure -> Teamwork -> Work of the Team -> Outcomes

Roles Interdependence Goals

Adapted from Integrated (Health Care) Team Effectiveness Model (ITEM); Lemieux-Charles, McGuire 2006
PAs (and NPs) Work in Teams

???
Defining Role

• A cluster of related and goal-directed behaviors characteristic of a person within a specific situation
• Defining feature of organizations
• Relational concept
  – Defined in relation to other positions
  – Task oriented
  – Hierarchical

NO USABLE DEFINITION FOR PRIMARY CARE PAs & NPs
What is the Role of PAs & NPs on Primary Care Teams

In My Humble Opinion: A primary care physician’s thoughts on medicine and life.
Jordan Grumet, a primary care Internal Medicine physician in Highland Park, Illinois

Monday, May 12, 2008
On Nurse Practitioners and Physician Assistants

“There is a nurse practitioner that works at my hospital. She is employed by the pulmonology group and helps run the intensive care. .... She probably knows more than seventy five percent of the docs in the hospital. ....she is closely monitored by the attending staff and each patient is seen by the covering physician daily. Sometimes it makes me wonder…It works for them…could it work for us?”

http://jordan-inmyhumbleopinion.blogspot.com/2008/05/on-nurse-practitioners-and-physician.html
Example Clinic #1
Physicians Only
Example Clinic #2
PA/NP as Usual Provider
Example Clinic #3
PA/NP Providing Chronic Care
PAs (and NPs) Work in Teams

• Interdependence
  – Legally mandated
  – Caring for same patients

• Defined (Heterogenous) Roles
  – Scope of practice varies by state
  – “Negotiated Autonomy”

• Adaptable Due to Overlap in Capacities

• Shared Goal = Quality and Patient goals
Primary Care PA/NP Role Conceptual Model

- **Contextual Influences**
  - Practice Factors
  - Organizational Factors
  - Regulatory Factors

- **Physician**
  - Patient Panel

- **PA/NP Role**
  - Level of Involvement
  - Complexity of Patients
  - Type of Service Provided

- **Patient Outcomes**
  - Diabetes-specific

Studies:
- Study 1
- Study 2
- Study 3
# PA/NP Role on Study Panel

<table>
<thead>
<tr>
<th>PA/NP Role</th>
<th>Level of Involvement</th>
<th>High Complexity Patient</th>
<th>At Least Some Chronic Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Role</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usual Provider/Non-Complex</td>
<td>Majority</td>
<td>No</td>
<td>N/A</td>
</tr>
<tr>
<td>Usual Provider/At Least One Complex</td>
<td>Majority</td>
<td>Yes</td>
<td>N/A</td>
</tr>
<tr>
<td>Supplemental/ Non-Complex/ No Chronic</td>
<td>Not Majority</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Supplemental/ Non-Complex/ Some Chronic</td>
<td>Not Majority</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Supplemental/ At Least One Complex/No Chronic</td>
<td>Not Majority</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Supplemental/At Least One Complex/Some Chronic</td>
<td>Not Majority</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Comparative Effectiveness of Primary Care PA & NP Roles
Population, Sampling and Data Sources

• Study Setting
  – Large academic multi-specialty physician group
    • 210 physicians, 24 PAs, 28 NPs, 51 residents
    • 32 primary care clinics

• Patient Sample (CY 2008)
  – Adult Medicare patients with diabetes
  – Received at least one primary care visit in 2008
  – N=2603

• Panel Sample
  – N= 263

• Data Sources: Medicare Claims and EHR
Defining Primary Care Panels of Patients with Diabetes

• Determine patient membership on panel based on primary care visits received each year:
  – To primary care clinic where majority of care was provided (usual clinic)
  – To provider within the usual clinic that provided the majority of care (usual primary care provider)

• Panels defined by usual provider of care: constitute all patients that received the majority of their care from the same provider in the same clinic
PA/NP Role

Operational Definitions

• Level of Involvement
  – Usual Provider-majority of primary care
  – Supplemental Provider-1+ visits to patients on the panel

• Complexity of Patients
  – Adjusted Clinical Groups (ACG)
    • 1.0= mean utilization for elderly
  – Non-Complex Only= PA/NP primary care visits with patients with ACG of <2.0
  – At Least One Complex= PA/NP provided at least one visit to a patient on the panel with ACG of ≥ 2.0

• Services Provided
  – No Chronic
  – At Least Some Chronic
Study 2: Characterize and Describe Primary Care PA/NP Roles for Patients with Diabetes

Objective:

Propose a multi-dimensional characterization of the roles of primary care PA/NPs on panels of patients with diabetes
Results

Characterizing PA/NP Roles

Exhibit 2: PA/NP Roles on Panels with Medicare Patients with Diabetes (N=263)

AND PA/NPs performed a mean of 3 roles within a clinic (SD=1.8; range 1-6)
Study 3: PA/NP roles on primary care panels and the quality of diabetes care provided to older patients

Objective:

Compare the effectiveness of different primary care PA/NP roles
Analytic Approach

- Patient-level analyses (N=2603)
- PA/NP Role $\geq 2$ HbA1c Tests
  - Logistic Regression (clustering on clinic)
- PA/NP Role Mean HbA1c
  - Multinomial Logistic Regression (clustering on clinic)
    - <7 (Reference), 7-9 and >9
  - Complete case analysis with reweighting
- PA/NP Role # ED Visits/# Hospitalizations
  - Negative Binomial Model (clustering on clinic)

- Control Variables
  - Panel
    - Usual Provider Specialty
    - # Patients on Panel
    - % Female
  - Patient
    - Sociodemographic
    - Clinical
    - Utilization
**Results**

PA/NP roles are associated with different quality of diabetes care and health service utilization patterns and no single role was best for all outcomes

<table>
<thead>
<tr>
<th>Primary Care PA/NP Role</th>
<th>Outcome Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥2 A1c Tests</td>
</tr>
<tr>
<td><strong>PA/NP Level of Involvement</strong></td>
<td><strong>Complex Patients</strong></td>
</tr>
<tr>
<td>Supplemental</td>
<td>No</td>
</tr>
<tr>
<td>Supplemental</td>
<td>No</td>
</tr>
<tr>
<td>Supplemental</td>
<td>Yes</td>
</tr>
<tr>
<td>Supplemental</td>
<td>Yes</td>
</tr>
<tr>
<td>Usual Provider</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

+ = Better outcome than physician-only care  
- = Worse outcome than physician-only care  
Finding reflect p ≤ 0.05
Summary

• Patient care is distributed between primary care providers- i.e, we work in teams
• Primary care PA/NP perform multiple roles (simultaneously)
• “Best” PA/NP role depends on patient population and goals
  – Supplemental PA/NPs providing care to less complex patients = better diabetes outcomes and ED utilization
  – Supplemental PA/NPs providing care to most complex patients = mixed outcomes (caution warranted)
  – PA/NP usual providers = equivalent diabetes outcomes but increased ED utilization
• Patient population from a single institution that lacked diversity of race/ethnicity and SES
• Small number of patients on each panel
• Relatively small sample of patients that experienced PA/NPs in some roles
• PA/NP role was determined using outpatient visit data and may not reflect full range of care
• Misspecified variables and/or unobserved confounding
Strengths

• Theory based conceptualization of PA/NP roles
• Patients were attributed to providers rather than clinic
• First study to compare multiple roles
• Relatively large number of clinics and providers
• Linkage of Medicare and EHR data
Implications

• Primary Care Redesign
  – Teams work!
  – Multiple possibilities exist for PA/NP roles on primary care teams
  – Potential for greater improvements in outcomes if PA/NP roles are designed with larger organizational goals in mind including needs of patient population being served

• Workforce Policy
  – Estimating number of providers needed
Current Study

Impact of Primary Care Clinician Interdependence and Coordination on Quality of care Delivered to Complex Older Patients

NIA-Funded K01
Background

• Previous comparative effectiveness study suggests a variety of primary care PA&NP roles are effective, however
• PAs&NPs performing supplemental roles for older patients with multiple chronic illnesses resulted in the least optimal patient outcomes
• Suboptimal outcomes may be due to how PAs, NPs and physicians interact
• Key features of interaction are
  – Interdependence- providing care to common patients
  – Coordination- managing interdependence
Objective

Determine if PA, NP and physician interaction on teams impacts outcomes for complex older patients with diabetes
Teams

Adapted from Integrated (Health Care) Team Effectiveness Model (ITEM); Lemieux-Charles, McGuire 2006
Figure 3: Conceptual Model

Team Design
- PA/NP Role
  - Level of Involvement
  - Patient Complexity
  - Type of Patient Care
- Interdependence

Teamwork
- Coordination
  - Routines
  - Boundary Spanners
  - Team Meetings
  - Relational Coordination
- Aim 1

Outcomes
- Comprehensive Diabetes Care (HEDIS)
  - HbA1c testing
  - LDL Testing
- Average HbA1c
- Patient Treatment Goals

Aim 2
Aim 3
Aim 3
Mixed Methods Study

- **Aim 1**: Describe the methods of coordination utilized between PA&NPs and physicians on primary care teams. To achieve this aim, we will survey and interview professionals at each of the 24 primary care clinics. Qualitative content analysis will be used to analyze interview data.

- **Aim 2**: Evaluate the relationship between the PA&NP role, interdependence of PA&NPs and physicians on primary care teams and outcomes (glycemic and lipid control as well as patient treatment goals) for older patients with diabetes. Building on previous work, we will utilize data from the electronic health record of 24 primary care clinics to measure PA&NP role, level of clinician interdependence and patient outcomes. Patient-level multivariable regression analysis will be performed.

- **Aim 3**: Determine if methods of coordination mediate the relationship between PA&NP role, interdependence and outcomes for older patients with diabetes. Qualitative data from Aim 1 will be combined with quantitative data from Aim 2 and patient-level mediation analysis will be performed.
Sampling Design

Figure 5: Sampling Design

Primary Care Clinics
N = 24

- PA&NP (all)
  PAs = 10; NPs = 22

- Physicians (2 per clinic)
  N = 48

- Other Professionals (1 per clinic)
  N = 24

Patients
Estimated N = 3,750
### Data Sources and Measures

**Table 4: Data Collection and Measures**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Data Source</th>
<th>Measurement Level</th>
<th>Measures</th>
<th>Aim</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA/NP Role</td>
<td>EHR</td>
<td>Patient Panel</td>
<td>Level of involvement&lt;sup&gt;3,4&lt;/sup&gt;</td>
<td>2,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Complexity of patients&lt;sup&gt;3,4&lt;/sup&gt;</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Clinical services provided&lt;sup&gt;3,4&lt;/sup&gt;</td>
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<tr>
<td>Interdependence</td>
<td>EHR</td>
<td>Patient Panel</td>
<td>Patient sharing between primary care clinicians in the same clinic&lt;sup&gt;3&lt;/sup&gt;</td>
<td>2,3</td>
</tr>
<tr>
<td>Coordination</td>
<td>Interview</td>
<td>Clinic</td>
<td>Intensity of use of routines</td>
<td>1,3</td>
</tr>
<tr>
<td>Routines</td>
<td>Interview</td>
<td>Clinic</td>
<td>Utilization of boundry spanners</td>
<td></td>
</tr>
<tr>
<td>Boundry spanners</td>
<td>Survey</td>
<td>Clinic</td>
<td>Participation and intensity of team meetings</td>
<td></td>
</tr>
<tr>
<td>Team meetings</td>
<td>Survey</td>
<td>Clinic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relational Coordination</td>
<td>Interview/Survey</td>
<td>Clinic</td>
<td>Weighted relational coordination measure&lt;sup&gt;44&lt;/sup&gt;</td>
<td>1,3</td>
</tr>
<tr>
<td>Quality outcomes</td>
<td>EHR</td>
<td>Patient</td>
<td>Receipt of HbA1c tests</td>
<td>2,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Receipt of LDL testing/screening</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Mean HbA1c (categorical and binary)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Composit: # of quality services received</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Patient treatment goals</td>
<td></td>
</tr>
<tr>
<td>Control variables</td>
<td>EHR</td>
<td>Patient</td>
<td>Sociodemographics, insurance status, comorbidities, and healthcare utilization&lt;sup&gt;3&lt;/sup&gt;</td>
<td>2,3</td>
</tr>
<tr>
<td></td>
<td>Interview</td>
<td>Provider</td>
<td>Team design variables (membership, roles, etc)</td>
<td>1,2,3</td>
</tr>
<tr>
<td></td>
<td>Administrative Summary Data</td>
<td>Clinic</td>
<td>Number of clinicians and staff, geographic location</td>
<td>1,2,3</td>
</tr>
</tbody>
</table>
Implications/Next Steps

• Results will inform primary care team design and processes
• Development of team intervention to be tested in an implementation study
Thoughts/Questions?


Evaluation

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