Patient-Aligned Care Teams in the Veterans Health Administration: Assessment of Effectiveness of PACT Implementation and Relation to Interprofessional Teams

Stephan Fihn MD MPH  
Director, Office of Analytics and Business Intelligence, Veterans Health Administration  
Professor, Depts. of Medicine and Health Services, University of Washington

- Overview of VHA and PACT
- PACT ROI
- Effectiveness of implementation Pi²
- Synthesis of published literature
Veterans Health Administration:
Largest U.S. integrated health care system

- Over 5 million primary care patients
- 16.4 million primary care encounters annually

- 160 Medical Centers
- 802 Community-Based Outpatient Centers
Unique features of primary care in VHA

• **Well developed quality improvement program**

• **Electronic tools**
  – Secure messaging
  – Referral management (specialty care)
  – Performance reporting
  – E-consults
  – telehealth

• **Population health** tools available (disease registries), robust health IT, predictive modeling to identify high risk patients.

• Reimbursement: salaried medical staff (with P4P system)

• Veteran population: socioeconomically disadvantaged, high rates of disability and mental health disorders

• **Practice redesign** in primary care to achieve
  – “advanced access”: same day or next day access
  – Focus on continuity of care with primary care provider
  – Focus on expanded access (e.g. telephone care)
  – Team-based care
Other Team Members

- Clinical Pharmacy Specialist: ± 3 panels
- Clinical Pharmacy anticoagulation: ± 5 panels
- Social Work: ± 2 panels
- Nutrition: ± 5 panels
- Case Managers
- Trainees
- Integrated Behavioral Health
  - Psychologist ± 3 panels
  - Social Worker ± 5 panels
  - Care Manager ± 5 panels
  - Psychiatrist ± 10 panels

Teamlet: assigned to 1 panel (±1200 patients)

- Provider: 1 FTE
- RN Care Mgr: 1 FTE
- Clinical Associate (LPN, MA, or Health Tech): 1 FTE
- Clerk: 1 FTE

For each parent facility

- Health Promotion Disease Prevention Program Manager: 1 FTE
- Health Behavior Coordinator: 1 FTE
- MyHealthEvet Coordinator: 1 FTE

Mean Job Satisfaction

- Fully staffed
- Not fully staffed

The Patient’s Primary Care Team
PACT Expectations

- Better access
- More coordinated care
- Better Continuity

- Better patient satisfaction
- Better staff satisfaction
- Less staff burnout

- Lower admission rates
- Fewer Emergency Room visits

- Ultimately cost-neutral or + ROI
PACT Workload Trends

- PACT patients: ↑10%
- Enrolled in Home Telehealth: ↑112%
- Opted into Secure Messaging: ↑60,534%
- Same day appt. with PCP: ↑38%

Graph showing encounters (in millions) from July 2010 to July 2014 for different categories:
- Face to Face
- Telephone
- Group
- Total Secure Messages (In+Out)

July 2010 to July 2014 encounters trend graph.
ROI of PACT Initiative – As of 2012

• Interrupted time-series analysis
  – VA facility level, quarterly from FY03Q1 to FY12Q4
  – Estimate VA-wide time trend, effect of PACT, and facility-level random components for time and PACT
  – Adjust for time-varying measure of health risk, facility-specific unemployment rate, number of primary care patients at facility

• Predicted utilization with and without PACT

• Change in costs = (change in utilization) * (cost-per-unit)
  – discounted 4% per year
Results: Hospitalizations for Ambulatory Care Sensitive Conditions (ACSC), Veterans age <65

Hospitalizations avoided - 4.2%

Predicted ACSC hospitalizations if PACT=0

Observed hospitalizations for ACSCs

Predicted hospitalizations for ACSCs
Methods and Outcome Measures

Outpatient Utilization Categories
• Primary care visits
• Specialty mental health care visits
• Specialty care visits
  – major subspecialty
  – procedure-based
• Emergency department visits
• Urgent care visits

Inpatient Utilization Categories
• Total hospitalizations
• Hospitalizations for ambulatory care-sensitive conditions (ACSCs)
• Hospitalizations for medical conditions
• Hospitalizations for mental health conditions

Statistically significant effect of PACT
Return on investment – compared with 5 year delayed start scenario

ROI Relative to PACT ONLY Investment - 5 Year delay-start scenario

- Net discounted cash flow through 2010= $1.175 billion
- 5 Year delayed start scenario assumes
  - PACT-related changes to care would have occurred gradually over the 2010-19 period in the absence of the PACT initiative
  - No new PACT investment through 2019 in the delayed start scenario. All investments come from operating budgets.
  - PACT-related effects on utilization reflect only those gains realized through 2012—i.e., the effect of PACT on utilization does not improve as PACT becomes more fully implemented.
  - No long-term implications of PACT related improvements in clinical markers (e.g., hypertension control)
Limitations

- No contemporaneous comparison group
- Results of interrupted time series analysis can be confounded by other policy changes that have taken place in the post-period
- No estimate of long-term economic effect of improving patient clinical outcomes
PACT ROI Summary Points

• ROI calculation complex due to many interventions in addition to PACT initiative, large baseline investment, dual use, early in process of lengthy deployment and long time horizon for potential benefits.

• Nationally, modest effect on healthcare utilization & costs to date
  – ↓’ed admissions for Amb. Care Sensitive Conditions (4.2% under age 65, 1.2% overall)
  – ↓’ed specialty MH visits (7.3%)
  – ↑’ed primary care and specialty care visits (1%)
## PACT Implementation Progress Index (Pi²)

<table>
<thead>
<tr>
<th>Domains</th>
<th>Source of data</th>
<th># of items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accessible, continuous and coordinated care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td>Waiting for care, after-hours care, non-face-to-face care</td>
<td>CAHPS-PCMH CDW</td>
</tr>
<tr>
<td>Continuity of care</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Coordination of care</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td><strong>Team-based care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delegation, staffing, team functioning, working to top of competency</td>
<td>Provider survey</td>
<td>18</td>
</tr>
<tr>
<td><strong>Patient-centered care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehensiveness</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Self-management support</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Patient centered care and communication</td>
<td>CAHPS-PCMH</td>
<td>6</td>
</tr>
<tr>
<td>Shared decision making</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>53</td>
</tr>
</tbody>
</table>

Nelson et al. JAMA Intern Med 2014 *in press*
**Pi² Scores, Patient Satisfaction, Provider Burnout**

<table>
<thead>
<tr>
<th>Pi² scores*</th>
<th>No. of clinics</th>
<th>Provider rating, CAHPS-PMCH</th>
<th>Provider rating, SHEP</th>
<th>Overall health care rating, SHEP</th>
<th>MBI**</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 8</td>
<td>77</td>
<td>9.33</td>
<td>9.05</td>
<td>8.62</td>
<td>2.29</td>
</tr>
<tr>
<td>2 to 4</td>
<td>213</td>
<td>9.02</td>
<td>8.91</td>
<td>8.49</td>
<td>2.47</td>
</tr>
<tr>
<td>-1 to 1</td>
<td>346</td>
<td>8.67</td>
<td>8.73</td>
<td>8.32</td>
<td>2.56</td>
</tr>
<tr>
<td>-4 to -2</td>
<td>190</td>
<td>8.23</td>
<td>8.55</td>
<td>8.15</td>
<td>2.62</td>
</tr>
<tr>
<td>-7 to -5</td>
<td>87</td>
<td>7.53</td>
<td>7.52</td>
<td>7.87</td>
<td>2.80</td>
</tr>
</tbody>
</table>

*Pi² score = number of domains in top and bottom quartiles for the domain scores, range 8 (all domain scores in top quartile) to -8 (all domain scores in bottom quartile).

**MBI emotional exhaustion scale**
Sites with higher PI² score had lower ED utilization

<table>
<thead>
<tr>
<th>PI² scores*</th>
<th>No. of clinics</th>
<th>No. ED encounters/1000 pts</th>
<th>No. hospitalizations/1000 pts</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 8</td>
<td>77</td>
<td>188</td>
<td>68</td>
</tr>
<tr>
<td>2 to 4</td>
<td>213</td>
<td>227</td>
<td>77</td>
</tr>
<tr>
<td>-1 to 1</td>
<td>346</td>
<td>286</td>
<td>87</td>
</tr>
<tr>
<td>-4 to -2</td>
<td>190</td>
<td>289</td>
<td>83</td>
</tr>
<tr>
<td>-7 to -5</td>
<td>87</td>
<td>245</td>
<td>74</td>
</tr>
</tbody>
</table>

P<0.001  P=0.99
Sites with higher PI² Scores had lower hospitalization rates for Ambulatory Care Sensitive Conditions (ACSC)

<table>
<thead>
<tr>
<th>PI² scores</th>
<th>Patients under 65 years</th>
<th>Patients 65 years and higher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>with PACT</td>
<td>Predicted without PACT</td>
</tr>
<tr>
<td></td>
<td>2.28</td>
<td>2.63</td>
</tr>
<tr>
<td>5 – 8</td>
<td>2.53</td>
<td>2.61</td>
</tr>
<tr>
<td>-7 to - 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.68</td>
<td>3.85</td>
</tr>
<tr>
<td>5 – 8</td>
<td>4.42</td>
<td>4.33</td>
</tr>
<tr>
<td>-7 to - 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sites with better implementation had higher clinical quality

48 clinical quality indicators

- Significantly higher (p<0.05) for 19/48 by high vs. low PI²
- Fixed effects model: signif. Incr. in avg outcomes for sites w/ higher PI² scores as compared w/ those w/ lower scores (p <0.001)
7 Major Recommendations for PACT Improvement

**Adequate Staffing**: Develop methods & resources to improve alignment btwn staffing models, measures of staffing, and workforce configurations needed to achieve PACT goals.

**Team Functioning**: Develop new approaches to promote, structure and encourage team culture and improved function; includes team training and role development.

**Engaging Veterans**: Improve methods for engaging Veterans in their own care as well as in PACT care design.

**Performance Measure**: Improve the match between performance measures and PACT goals by undertaking a broad-based and sharp review of the measures.

**Primary Care Quality Improvement**: Improve ability of primary care practices to engage effectively in ongoing quality improvement.

**Interdisciplinary Leader & Administrator Roles & Training**: Develop additional resources for training & role development for interdisciplinary leaders and administrators at regional, medical center, and primary care site levels.

**Mental Health**: Develop structures, incentives & measures to better integrate PC & MH.
Threads

• Adherence to a rigid set of policies and structures deprives teams and practices of essential flexibility in adapting to a whole new approach to delivering care.

• Effective teams must be nurtured with consistent leadership, stable staffing, and meaningful ways to gauge progress.

• There must be resources to support care teams so that they can successfully manage Veterans’ medical and mental health problems.