Primary Care Physician Productivity & Patient Satisfaction
A Mayo Clinic’s Community Practice Study

May 20, 2020
12 - 1 pm ET
Jefferson College of Population Health

10 Years of Progress in Population Health
Connecting Health and Healthcare
Today’s Presenters

Thomas Howell, MD, MS
Assistant Medical Director, Patient Experience
MCHS Medical Director, Patient Experience
Mayo Clinic Health System

Mary R. Cooper, MD, JD
Program Director, HQS and OPX
Jefferson College of Population Health
Chief Quality Officer
Connecticut Hospital Association
19 industrialized countries: Mortality amenable to health care

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*Table, adopted from Nolte and Mckee (2008) Health Affairs*
United States Performance

To Err is Human and Crossing the Quality Chasm:
Called out safety and outcomes issues

Concept of the Triple Aim
Better outcomes
Better patient experience
Less cost per capita

Overall improvement in patient satisfaction.

- The same Top Box Percent HCAHPS overall rating
  - 50 percentile performance on HCAHPS in 2013
  - 33 percentile performance in 2017

Questions about measurement of experience

- Are patients qualified?
- How do we get a large enough return size?
- Are there other patient characteristics that have as much influence on scores as providers do? (45 Residents and 11 staff)
- What is the right reliability level?
  - Research vs Improvement

And, there is this perspective........

Analysis of risk-adjusted data for 3000 US hospitals as well as a large systematic review showed:

*Higher CMS Star ratings associated with improved quality outcomes*

“...the data presented display that patient experience is positively associated with clinical effectiveness and patient safety, and support the case for inclusion of patient experience as one of the central pillars of quality in healthcare.” Doyle


Knowledge Gap

• Berkowitz: analysis of several large studies linking many dynamics, but productivity not included.

• Editorial by T Bodenheimer and C Sinsky: Outcomes, Safety, provider satisfaction and patient satisfaction are linked.
  From Triple Aim ➔ Quadruple Aim

The missing data is between satisfaction and productivity.

What do we know about Volume and patient satisfaction?

• Direct observational study using trained nurses looking at USPTF recommended preventative services

• Patient satisfaction based on immediate, internal, post-visit, non-validated visit rating form

• 108 community-based family medicine offices, 3893 outpatient visits

• **Patients in high-volume practices were less likely to receive recommended preventative care and had lower satisfaction scores.**

Patient Satisfaction and Productivity

- **X axis:** high vs low “problem score” defined as >18% negative response on question: would patient refer friends and family
- **Y axis:** Above or below internal productivity goal of MGMA 63%ile.

Data from Boffelli
Patient Satisfaction and Productivity

- Wood (2009): hypothesis that patient satisfaction and physician productivity are inversely related
- 2002-2004 data from large system, 427 physicians, 136,000 press Ganey Returns on Medical Practice survey
- Used RVU data to assess productivity**
- Findings:
  - Increased confidence in provider and decreased time spent were associated with increased productivity, relationship was linear
  - Concluded that hypothesis was false, influence of productivity on patient satisfaction appears to be small
- **Patient satisfaction and physician productivity do NOT have to be sacrificed for each other**

** Older data, pre widespread EHR and The ACA

EHR influence

Implementation of EHR has changed experience

Implementation of CPOE decreased both provider productivity as well as patient satisfaction in ED

EMR System

You caused an error that we never thought of. Click any key and see what happens.
Clerical burden, particularly in primary care is a problem. Large academic study on burnout 2014 vs 2017 with 1774 (95.9%) respondents and 1882 (92.7%) respondents showed increased burnout from 40.6 to 45.6% with highest in early career physicians (0-10 years post training).

Triple Aim Pressures: Influence on Provider Burnout

• Burnout defined as: emotional exhaustion, depersonalization, lack of accomplishment
• Push to perform better on the Triple Aim may have negative consequences on Provider Burnout
• Improved efficiency and experience are part of Triple Aim

“Physicians find practicing medicine harder than ever because it is harder than ever”
Edward Ellison MD, Chairman of the Board Southern California Kaiser Permenente

Ellison, E. (2019). Beyond the economics of burnout. *Annals of Internal Medicine*
Economic costs of burnout.

- Mathematical model estimates annual cost in US of burnout at $4.6 billion (range 2.6-6.3)
- Worse in younger physicians
- Negative relationship between productivity and burnout in a systematic review.
- Large Meta-analysis showed increased burnout associated with lower patient-reported satisfaction (OR=2.28)

Dewa, c., et.al. (2014) How does burnout affect physician productivity? A systematic literature review. *BMC Health Services Research.*
Burnout is epidemic

- Shanafelt estimated a decrease 2017 to 2014
- However, still twice that of general US workforce
- Used Maslach Burnout Inventory (MBI), survey of AMA physician database

Shanafelt 2011-2017 Burnout, Work-life Integration, and Depression

Trend Over Time Percent

- 1 or more SX Burnout
- WLI Dissatisfied
- Depression Screen pos+

2011
2014
2017

35%
40%
45%
50%
55%
60%
65%
Has there been improvement or was 2014 a particularly challenging year due to rapid changes associated with ACA?
Burnout: depersonalization and younger physicians

- Some recent studies suggest some aspects of burnout are worse among younger physicians
- Highest rate of depersonalization associated burnout in youngest physicians
- Depersonalization associated with lowest levels of patient satisfaction


Qualitative data from Mayo Clinic Health System

• Belief that the prioritization of patient experience will compete with finances as a priority, according to Senior Vice President in Health System.

• Every Medical Director for Patient Experience consistently hears from physicians that productivity pressures increase burnout and degrade patient experience. (Personal Communication)

• Physicians were strongly concerned about the impact to increase productivity on quality metrics, including patient satisfaction, that were part of the compensation program.

Bunkers, Brian MD. Chair of Mayo Clinic Health System Personnel Committee. Personal Communication
The core problem


“I believe that physicians have a suspicion that there is a conflict between patient experience and the performance measures they think of as real quality. And I think business people in healthcare have a concern that there is a tension between patient experience and financial performance”
Where are we in the story so far...?

• Providers feel that there exists a choice between improving productivity and experience.
• While there is much research supporting improved outcomes, safety, as well as provider satisfaction with improved patient satisfaction, there is little direct evidence on the link between productivity and patient satisfaction.
• Previous research suggests a trade-off between quality and productivity.
• Previous research limited by small numbers (Boffelli) or old “Pre-ACA/EHR” data (Wood).
Relationship of Improved Patient Satisfaction to Quadruple Aim

**Nursing Engagement**
- Satisfaction $\uparrow$
- Hospital $\uparrow$
- Turnover $\downarrow$

**Provider Engagement**
- Satisfaction $\uparrow$
- Burnout $\downarrow$

**Safety Reportable Events, errors $\downarrow$
Complications $\downarrow$

**Efficiency/Productivity**
- Volume $\uparrow = USPTF \downarrow$
- Boffelli = No Trend
- Wood = Small Influence
- Provider Perception of Competing Interest

**Outcomes**
- CMS Stars $\uparrow$
- Systematic Review
  - 429+
  - 127 +/-
Significance for Our Organization

• Currently setting expectations around productivity (P40)
• Goal to elevate patient satisfaction in community practice
• Improvement of staff and patient experience is one of 4 practice priorities
• Relevant data can be used to modify improvement efforts,
• However, we have minimal data

“No data without stories, no stories not supported by the data.”
72 Communities, 3 states, >1000 square miles
17 Hospitals (6 PPS, 11 CAH)
72 Clinics (65 owned, 7 Physician Mgmt)
>1000 square miles
Four Regional Management Structures
Hypothesis and Design

- There is an correlation between physician productivity and patient satisfaction.
- Optimizing productivity and patient satisfaction with the provider is useful.
- Secondary: there will be a difference based on years of service.

- Design: Cross-sectional stratified research study on the relationship between productivity and patient satisfaction.
Scope And Data

- Mayo Clinic Health System, Outpatient clinic
- Data from Calendar year 2018
- Patient satisfaction data from Press Ganey Medical Practice survey
- Productivity data from Unified Data Platform
- Timeline June, 2019-October 2019
  - Data from calendar year 2018
Sample Press Ganey Medical Practice survey questions

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<th>CARE PROVIDER</th>
<th>very poor</th>
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DURING YOUR VISIT, YOUR CARE WAS PROVIDED PRIMARILY BY A DOCTOR, PHYSICIAN ASSISTANT (PA), NURSE PRACTITIONER (NP), OR MIDWIFE. PLEASE ANSWER THE FOLLOWING QUESTIONS WITH THAT HEALTH CARE PROVIDER IN MIND.

1. Friendliness/courtesy of the care provider ................................................................. ○ ○ ○ ○ ○ ○
2. Explanations the care provider gave you about your problem or condition .................. ○ ○ ○ ○ ○ ○
3. Concern the care provider showed for your questions or worries ................................. ○ ○ ○ ○ ○ ○
4. Care provider’s efforts to include you in decisions about your treatment ..................... ○ ○ ○ ○ ○ ○
5. Information the care provider gave you about medications (if any) .............................. ○ ○ ○ ○ ○ ○
6. Instructions the care provider gave you about follow-up care (if any) ......................... ○ ○ ○ ○ ○ ○
7. Degree to which care provider talked with you using words you could understand .......... ○ ○ ○ ○ ○ ○
8. Amount of time the care provider spent with you ......................................................... ○ ○ ○ ○ ○ ○
9. Your confidence in this care provider .............................................................................. ○ ○ ○ ○ ○ ○
10. Likelihood of your recommending this care provider to others ...................................... ○ ○ ○ ○ ○ ○

Comments (describe good or bad experience): ___________________________________________

___________________________________________

___________________________________________

___________________________________________

___________________________________________
Implementation questions: Patient Satisfaction Options
Mean vs Top Box

• Mean Score: Score on 5 point balanced Likert scale converted to a mean
  - Very Poor, poor, fair, good, very good. Very Poor=0, poor=25, fair=50, good=75, very good=100
  - Gives “partial credit”
  - Scores are tightly bunched

• Top Box
  - Only highest response: very good, counts
  - Percent of patients who gave very good response
  - Inherently more variation as is binary, no “partial credit”
  - Organizationally prevalent metric
Press Ganey Current Mean scores and percentile rank for Provider Section.
Difference between P25 and P75 is only 2.3 out of possible 100 score.

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Which providers to use?

- Original idea was to use all 2000 MCHS providers
- Analysis shows too much variation in data
  - Different specialties have wide variation of average productivity
    - Median Radiology work rvu = 8862
    - Median Primary Care work rvu = 4833

# Implementation: Providers TB score variation

MCHS Medical Practice Average TB%: April 2018-March 2019

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<th>Average Top Box Percent</th>
<th>Overall Care Provider Section</th>
<th>Overall Survey composite</th>
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<td>Lowest specialty</td>
<td>69.2%</td>
<td>62.7%</td>
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<tr>
<td>Highest specialty</td>
<td>86.7%</td>
<td>81.3%</td>
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<tr>
<td>Family Medicine</td>
<td>80.8%</td>
<td>73.4%</td>
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<tr>
<td>General Internal Med</td>
<td>81.0%</td>
<td>73.7%</td>
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<tr>
<td>Pediatrics</td>
<td>81.5%</td>
<td>71.6%</td>
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Decisions: how to filter the data

- Medical Practice Survey
- Top Box percent
- Physicians only
- At least 0.8 FTE clinical
- Primary care: FM, GIM, Peds
- Career stage 0-5, 5-10, >10: different than most have done
  - High number of new providers and mandatory trainings
How to measure productivity? 3 options

• RVUs:
  • difficulty with UDP data acquisition
  • relevance in future pay for value vs volume

• Panel Size:
  • Not consistently used or defined

• Clinic visits
  • Visit data is attainable
  • Primary care templates are roughly equivalent across regions
  • In clinic, productivity pushed through schedule
  • Measures actual encounters, not procedures or complexity of encounters
  • Distribution looks reasonable
Visits Distribution
Analysis of average visits/month

- How to break down variable of productivity?
  - Continuous as a distribution
  - Above and below median
  - Above and below mean
  - Quartiles

- What are we interested in: do busier physicians have better or worse patient satisfaction scores on LTR practice?
  - Top Quartile are above productivity target of P40 by RVU
  - 240 visits is top quartile
## Physician Characteristics

### Years of Service

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<td>&gt;10 years</td>
<td>90 (53.6%)</td>
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<td>5 - 10 years</td>
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<td>0 - 5 years</td>
<td>46 (27.4%)</td>
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### Region

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<th>Physician Count, N(%)</th>
<th>Overall Sample = 168</th>
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<tbody>
<tr>
<td>NWWI</td>
<td>36 (21.4%)</td>
<td></td>
</tr>
<tr>
<td>SEMN</td>
<td>43 (25.6%)</td>
<td></td>
</tr>
<tr>
<td>SWMN</td>
<td>37 (22.0%)</td>
<td></td>
</tr>
<tr>
<td>SWWI</td>
<td>52 (31.0%)</td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Provider characteristics by number of survey responses received and proportion of top box score for overall likelihood to recommend

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Overall Sample</th>
<th>Top Box Score*</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Years of continuous service</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>9497 (61.6%)</td>
<td>7448 (62.1%)</td>
<td>0.142</td>
</tr>
<tr>
<td>5-10 years</td>
<td>2892 (18.8%)</td>
<td>2247 (18.7%)</td>
<td></td>
</tr>
<tr>
<td>0-5 years</td>
<td>3018 (19.6%)</td>
<td>2294 (19.1%)</td>
<td></td>
</tr>
<tr>
<td><strong>Visits per month</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; or = 241</td>
<td>3748 (24.3%)</td>
<td>2884 (24.1%)</td>
<td>0.021</td>
</tr>
<tr>
<td>&lt; 241</td>
<td>11659 (75.7%)</td>
<td>9105 (75.9%)</td>
<td></td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NWWI</td>
<td>2849 (18.5%)</td>
<td>2267 (18.9%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>SEMN</td>
<td>3895 (25.3%)</td>
<td>2638 (22.0%)</td>
<td></td>
</tr>
<tr>
<td>SWMN</td>
<td>3544 (23.0%)</td>
<td>2854 (23.8%)</td>
<td></td>
</tr>
<tr>
<td>SWWI</td>
<td>5119 (33.2%)</td>
<td>4230 (35.3%)</td>
<td></td>
</tr>
</tbody>
</table>

*Top Box represents surveys for which the respondent rated the highest possible category for the question (“Very Good”). Other scores include reported rating that are not top box.*
Analysis needed to be nested

- 2 variables needed to be accounted for:
  - Significant regional performance difference with one region (SEMN) significantly underperforming other 3.
  - Variation in returns per provider gave disproportionate weight to those with more returns.

Therefore

Nested model adjusts for:
- Differences in regional practice
- Number of returns per provider
Likelihood of recommending **practice** by years of service and visits per month.

Table 3. Multi-level Mixed-Effect logistic regression* Comparing provider years of Continuous service and with top quartile of monthly visit frequency with likelihood of receiving a top box score for likelihood to recommend practice.

<table>
<thead>
<tr>
<th>Years of continuous service</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10 years (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-10 years</td>
<td>0.9</td>
<td>0.7-1.2</td>
<td>0.846</td>
</tr>
<tr>
<td>0-5 years</td>
<td>0.9</td>
<td>0.7-1.2</td>
<td>0.018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visits per month</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; or = 241 (reference)</td>
<td>0.7</td>
<td>0.6 -0.9</td>
<td></td>
</tr>
<tr>
<td>&lt; 241</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Two-level nested models for provider and region level
1) There is an correlation between physician productivity and patient satisfaction. Unclear, did show that more productive physicians, as we defined that, were more likely to get a top box response on Likelihood of recommending practice.

2) Optimizing productivity and patient satisfaction with the provider is useful. Yes, at a minimum to help productivity discussions, remove the “either/or”.

3) Secondary: there will be a difference based on years of service. While there is a possible trend between <10 years and >10 years, it was not significant. There are many other possible explanations.
Likelihood of recommending **provider** by years of service and visits per month.

Table 3. Multi-level Mixed-Effect logistic regression* Comparing provider years of Continuous service and with top quartile of monthly visit frequency with likelihood of receiving a top box score for likelihood to recommend provider.

<table>
<thead>
<tr>
<th>Years of continuous service</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10 years (reference)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5-10 years</td>
<td>0.9</td>
<td>0.6 - 1.2</td>
<td>0.0083</td>
</tr>
<tr>
<td>0-5 years</td>
<td>0.6</td>
<td>0.5 - 0.8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visits per month</th>
<th>Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; or = 241 (reference)</td>
<td>0.8</td>
<td>0.6 - 1.1</td>
<td>0.128</td>
</tr>
<tr>
<td>&lt; 241</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Two-level nested models for provider and region level
## Relative Risk of achieving TB score

<table>
<thead>
<tr>
<th>Visits Percentile</th>
<th>LTR overall RR</th>
<th>LTR physician RR</th>
<th>Significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;75</td>
<td>0.7*</td>
<td>0.78</td>
<td>Overall yes, Physician no</td>
</tr>
<tr>
<td>&gt;75</td>
<td>1.0</td>
<td>1.0</td>
<td>Reference</td>
</tr>
<tr>
<td>Years of service</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5</td>
<td>0.9</td>
<td>0.62*</td>
<td>Physician yes, overall no</td>
</tr>
<tr>
<td>5-10</td>
<td>0.9</td>
<td>0.86</td>
<td>Both no</td>
</tr>
<tr>
<td>&gt;10</td>
<td>1.0</td>
<td>1.0</td>
<td>Reference</td>
</tr>
</tbody>
</table>
Barriers

• Data set is so large, that any difference becomes “statistically significant”.

• Adjusted for that by taking a random 20% sample of the data set for final analysis.

• Is the difference relevant? The Absolute difference in TB score is small.

   *The message that our busier primary care physicians have better LTR for practice is relevant.*
Unanswered questions

• Applicable to other specialties?
  • Is methodology even applicable to procedural specialties?
• Applicable to other practice venues?
  • Is there an optimal patient load for hospitalists?
    • How would we do attribution?
    • Nursing staffing: should PX be an additional consideration?
  • ED?
• Same result with RVUs?
• Is trend data ”good enough”? Research vs improvement.
• Why the difference between Physician and overall LTR?
• If we separate out by both years of service & productivity what happens?
Beliefs that hinder us

• If we do not believe we can be successful in improving all aspects of the quadruple aim, we will not be successful.
  
  • Improved outcomes
  • Improved safety
  • Lower cost for population

• Improved experience of *Patients and Providers*
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Surekha Bhamidipati, MD, JD
Medical Director, Care Transitions
Christiana Care

Mary R. Cooper, MD, JD
Program Director, HQS and OPX
Jefferson College of Population Health
Chief Quality Officer
Connecticut Hospital Association

For more information: Jefferson.edu/PHLS
Thank You!