Co-located, Integrated Community Specialists in Primary Care

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Overview

• Background Trends and Challenges
• Systematic Review / Meta-Analysis on Co-located Specialty Care in Primary Care Settings
• Mayo Clinic Integrated Community Specialist Model and Experience
Disclosures

- None
Rising Healthcare Costs – US

Growth in National Health Expenditures (NHE), Gross Domestic Product (GDP), and the Health Share of GDP, 1990-2024

Rising Healthcare Costs – Canada

Canadian Institute for Health Information. https://www.cihi.ca/en/nhex2016-topic6
Allocation of US Healthcare Spending

Distribution of National Health Expenditures, by Type of Service (in Billions), 2012 and 2023

2012 NHE Total Expenditures: $2,793.4 billion
- Hospital Care, $882.3 (31.6%)
- Other Health Spending, $433.0 (15.5%)
- Other Personal Health Care, $420.6 (15.1%)
- Prescription Drugs, $263.3 (9.4%)
- Nursing Care Facilities & Continuing Care Retirement Communities, $151.5 (5.4%)
- Physician & Clinical Services, $565.0 (20.2%)

Projected 2022 NHE Total Expenditures: $5,158.8 billion
- Hospital Care, $1,637.7 (31.7%)
- Other Health Spending, $799.1 (15.5%)
- Other Personal Health Care, $781.8 (15.2%)
- Prescription Drugs, $482.9 (9.4%)
- Nursing Care Facilities & Continuing Care Retirement Communities, $271.4 (5.3%)
- Physician & Clinical Services, $1,023.8 (19.8%)

Wasteful Healthcare Spending

Shift toward Value Based Payment

Better Care. Smarter Spending. Healthier People: Paying Providers for Value, Not Volume:
Shift toward Value Based Payment

Healthcare Costs Shifting to Patients

Cumulative Increases in Health Insurance Premiums, Workers’ Contributions to Premiums, Inflation, and Workers’ Earnings, 1999-2014


Increasing Population of Older Americans

Population age 65 and over and age 85 and over, selected years 1900–2008 and projected 2010–2050

NOTE: Data for 2010–2050 are projections of the population. Reference population: These data refer to the resident population. SOURCE: U.S. Census Bureau, Decennial Census, Population Estimates and Projections.

Administration on Aging http://www.aoa.acl.gov/Aging_Statistics/index.aspx
Increasing Burden of Disease

- Increasing burden of chronic & comorbid disease
- 117+ million Americans with at least one chronic disease (CDC, 2012)


Chronic Disease Overview. CDC. http://www.cdc.gov/chronicdisease/overview/
Costs due to Chronic Diseases

Patients Get Care from Multiple Providers

Table 1. Numbers of Providers Who Treated Medicare Beneficiaries in 2000.

<table>
<thead>
<tr>
<th>Beneficiary Group</th>
<th>No. of Beneficiaries (%)</th>
<th>Total Physicians</th>
<th></th>
<th>No. of Unique Providers</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>median</td>
<td>IQR</td>
<td>median</td>
<td>IQR</td>
<td>median</td>
<td>IQR</td>
<td>median</td>
<td>IQR</td>
</tr>
<tr>
<td>All beneficiaries</td>
<td>1,787,454 (100)</td>
<td>7</td>
<td>4–11</td>
<td>2</td>
<td>1–4</td>
<td>5</td>
<td>2–8</td>
<td>4</td>
<td>3–7</td>
</tr>
<tr>
<td>Considering all physician visits</td>
<td></td>
<td>3</td>
<td>2–5</td>
<td>1</td>
<td>1–2</td>
<td>2</td>
<td>1–3</td>
<td>3</td>
<td>2–4</td>
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<tr>
<td>Considering evaluation and management visits</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Beneficiaries with chronic conditions, considering all physician visits†</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>430,461 (25)</td>
<td>8</td>
<td>5–14</td>
<td>3</td>
<td>1–4</td>
<td>6</td>
<td>3–10</td>
<td>5</td>
<td>3–8</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>633,750 (38)</td>
<td>10</td>
<td>6–15</td>
<td>3</td>
<td>1–5</td>
<td>7</td>
<td>4–11</td>
<td>6</td>
<td>4–8</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>40,086 (3)</td>
<td>11</td>
<td>7–16</td>
<td>3</td>
<td>2–5</td>
<td>8</td>
<td>5–12</td>
<td>6</td>
<td>4–9</td>
</tr>
<tr>
<td>No. of conditions</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–2</td>
<td>257,471 (13)</td>
<td>3</td>
<td>2–5</td>
<td>1</td>
<td>1–2</td>
<td>2</td>
<td>1–3</td>
<td>2</td>
<td>1–3</td>
</tr>
<tr>
<td>3 or 4</td>
<td>451,774 (24)</td>
<td>5</td>
<td>3–7</td>
<td>2</td>
<td>1–3</td>
<td>3</td>
<td>2–5</td>
<td>3</td>
<td>2–5</td>
</tr>
<tr>
<td>5 or 6</td>
<td>448,855 (25)</td>
<td>7</td>
<td>5–10</td>
<td>2</td>
<td>1–3</td>
<td>4</td>
<td>3–7</td>
<td>4</td>
<td>3–6</td>
</tr>
<tr>
<td>≥7</td>
<td>629,354 (38)</td>
<td>11</td>
<td>8–16</td>
<td>3</td>
<td>2–5</td>
<td>8</td>
<td>5–12</td>
<td>7</td>
<td>5–9</td>
</tr>
</tbody>
</table>

- Those with ≥7 diseases could see 16+ physicians per year

Pham, H. et al. Care Patterns in Medicare and Their Implications for Pay for Performance NEJM 2007;356:1130-39.
Physician Supply and Demand for Care

- More specialists than generalists in the US
- Annual visits per generalist exceeds annual visits per specialist
- Access challenges exist for both primary and specialty care

Physician Supply and Demand Through 2025: Key Findings
Total Professionally Active Physicians.. KFF.org http://kff.org/other/state-indicator/total-active-physicians/
Primary-Specialty Care Interface

• The primary-specialty care interface is key to delivering high value care yet is beset by several challenges
Primary-Specialty Care Interface

- PCPs and specialists often report not receiving adequate information in the referral process
- Disagreement on appropriateness of referrals
- Half of specialty visits are for routine care
- $\frac{3}{4}$ of specialty visits $\rightarrow$ a return visit

Primary-Specialty Care Interface

- Increased use of specialty care can diminish effective care coordination and role of PCPs
- PCPs value direct, personal interaction with specialists
- PCPs best as coordinators and collaborators not as competitors or gatekeepers to specialists
- Medical errors, inefficient testing, delayed treatment, lower value and costlier care
The Key Question

• How can we deliver specialty expertise and care to a population with increasing demand, while leveraging the benefits of primary care with respect to continuity, and achieve improved outcomes, better care experience, and lower costs?
Primary Care Medical Home (PCMH)

• Key Features
  • Comprehensive
  • Patient-Centered
  • Coordinated
  • Accessible
  • Quality and Safety

• PCMH associated with improved quality and some decreased utilization and cost

• Small positive effect on patient experiences and small to moderate positive effects on preventive care services

Medical Neighborhood

• Key Features
  • Bidirectional communication, coordination, integration with PCMH
  • Appropriate and timely consultations and referrals
  • Efficient, appropriate, and effective flow of patient information
  • Guide determination of responsibility in co-management situations
  • Support patient-centered care, access, and high quality/safety
  • Support PCMH PCP as central provider

Medical Neighborhood
## Medical Neighborhood

<table>
<thead>
<tr>
<th>Category</th>
<th>Proposed Measure</th>
<th>Data Source</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Referral demand</td>
<td>PCP referral volume/rate</td>
<td>Electronic referral tracking</td>
<td>Can measure absolute volume or rates of referral normalized for patient panel size</td>
</tr>
<tr>
<td></td>
<td>&quot;Preconsult triage&quot; volume</td>
<td>Electronic preconsult requests</td>
<td>Preconsult triage volume should increase with integration of neighborhood model</td>
</tr>
<tr>
<td>Leakage</td>
<td>Administrative claims</td>
<td></td>
<td>Medical neighborhood implementation should reduce leakage</td>
</tr>
<tr>
<td>Referrals avoided</td>
<td>Electronic preconsult requests</td>
<td></td>
<td>Percentage of preconsult triage requests that are resolved without an in-person referral</td>
</tr>
<tr>
<td>Communication/</td>
<td>Referral appropriateness</td>
<td>Referral-level specialist</td>
<td>Implementation of &quot;preconsult exchange&quot; should make referrals more appropriate</td>
</tr>
<tr>
<td>referral quality</td>
<td>Referral preparedness</td>
<td>surveys</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comanagement perception</td>
<td>Referral-level PCP and</td>
<td>Measuring both PCP and specialist perceptions of management plans for the same referrals is an</td>
</tr>
<tr>
<td></td>
<td></td>
<td>specialist surveys</td>
<td>important measure of adequate communication</td>
</tr>
<tr>
<td></td>
<td>Patient care coordination perception</td>
<td>Patient satisfaction surveys</td>
<td>Medical neighborhood should improve patient experience navigating care across settings</td>
</tr>
<tr>
<td></td>
<td>Procedural yield</td>
<td>Administrative claims</td>
<td>Medical neighborhood should increase proportion of referrals resulting in procedure in the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>following 6-12 mo</td>
</tr>
<tr>
<td>Access to care</td>
<td>Time to next new patient appointment</td>
<td>Scheduling system</td>
<td>Preconsult triage can reduce demand for full consults, opening up access; improved triage of</td>
</tr>
<tr>
<td></td>
<td>No. of new patient consults per</td>
<td></td>
<td>referrals to right specialists can reduce inefficiency and wasted visits</td>
</tr>
<tr>
<td></td>
<td>specialist FTE</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Percent completed referrals</td>
<td>Scheduling database +</td>
<td>Medical neighborhood should improve no-show rate as a result of better scheduling coordination</td>
</tr>
<tr>
<td></td>
<td></td>
<td>electronic referral tracking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PCP perceived access</td>
<td>Physician survey</td>
<td>PCP perceptions are as important as actual access data because perceptions can lag service</td>
</tr>
<tr>
<td></td>
<td>Physician satisfaction</td>
<td></td>
<td>improvements and affect leakage</td>
</tr>
<tr>
<td></td>
<td>PCP and specialist satisfaction</td>
<td></td>
<td>Overall satisfaction with referral and preconsult process</td>
</tr>
</tbody>
</table>

Co-Locating Specialists in Primary Care

• An approach to address primary-specialty care interface challenges

• Co-location as a feature of advanced integration

• Facilitate clinical decision support, information transfer, referral quality, referral tracking


Effect of Co-Location Model

Co-located Specialists in Primary Care

· Improved Communication
· Knowledge Exchange

Improved Quality Care

· Enhanced Care Coordination

Improved Access

· Efficient testing & referrals

Improved Outcomes

· Improved Care Experience

Decreased Cost

The IHI Triple Aim

Population Health

Experience of Care
Per Capita Cost
Systematic Review and Meta Analysis

Co-located Specialty Care within Primary Care Practice Settings
Systematic Review / Meta Analysis

- Physically co-located specialists
- Outcome measures
  - Patient satisfaction
  - Provider satisfaction
  - Healthcare access and utilization
  - Clinical outcomes
  - Cost
- 1,620 citations, 22 meeting inclusion
Systematic Review / Meta Analysis

Results

- **Patient Satisfaction**
  - improved
- **Provider Satisfaction**
  - improved
- **Total Visits**
  - increased
- **Waiting Time**
  - decreased
- **Hospitalization**
  - no effect
- **Referral rate**
  - decreased

- **4 studies, OR 2.04**
  (95%CI 1.04, 3.98) $I^2=93.8\%$
- **2 studies, OR 6.49**
  (95%CI 4.28, 9.85) $I^2=95.5\%$
- **5 studies, OR 1.94**
  (95%CI 1.13, 3.33) $I^2=96.5\%$
- **3 studies, OR 0.20**
  (95%CI 0.10, 0.41) $I^2=80.5\%$
- **3 studies, OR 0.75**
  (95%CI 0.53, 1.07) $I^2=46.5\%$
- **1 study OR 0.28**
  (95%CI 0.21, 0.37) $I^2=NA$
Systematic Review / Meta Analysis Results

• **Clinical outcomes** – *mixed*
  • Improvement in quality of life and in some diabetes related measures

• **Cost** – *decreased*
  • Lower costs to patient and per member per month
Systematic Review / Meta Analysis Summary

• Co-located specialty care in primary care settings may support aims of high value care
  • Improved patient & provider satisfaction, reduced wait time, specialty referrals, cost
  • Increased primary care visits
  • Variable impact on outcomes

• Limitations
  • Few studies, limited quality of studies, and high risk of bias
  • Heterogeneity of studies
Integrated Community Specialists (ICS)

Mayo Clinic – Employee and Community Health Practice
AN INTERNATIONAL NETWORK
MAYO CLINIC CARE NETWORK
Employee and Community Health (ECH)
Employee and Community Health (ECH)

- Multispecialty primary care practice
  - Community Pediatric & Adolescent Medicine
  - Family Medicine
  - Primary Care Internal Medicine

- 101 PCPs at main clinic site (Baldwin), 74 PCPs at 4 additional sites plus resident trainees

- 152,000 patients, 50% employees and dependents

- Salaried physicians
ECH High Value Care Programs

- Anticoagulation Clinic and Home INR
- Community Health Workers
- Adult Care Coordination
- Care Transitions Program
- Palliative Care Homebound Program
- Integrated Community Specialists (ICS)
Previous State

Traditional Referral Practice

Suboptimal referring/return

“Churn” and secondary referrals disconnecting PCP

Specialty Practice #1

Specialty Practice #2

Patients

ECH Practice

Referrals bypassing PCP

ED/Hospital
Previous State

Goal to improve coordinated care and eliminate referral/flow patterns that fragment and decrease value of care delivered.

Tradational Referral Practice

- Specialty Practice #1
- Specialty Practice #2

Patients → ECH Practice → Specialty Practice #1 → Specialty Practice #2
ICS Model

- Proactive (upstream) engagement with patients and subpopulations in the community to improve health
- Shift of patients back to ECH PCMH/N improving continuity and long-term coordination
- More efficient referral
- Reduce “churn”, secondary referrals and redirect patients back to PCMH/N

ICS

Specialty Practice #1

Specialty Practice #2

ECH Practice

PCMH/N

Patients

Traditional Referral Practice

More efficient referral
ICS Model

- Co-located physicians
  - Behavioral Health, Cardiology, Neurology, Gastroenterology
- Co-located advanced practice providers (NP/PA)
  - Gynecology, Orthopedics
- Virtual – Telemedicine
  - Dermatology, Ophthalmology
ICS Model

• Stepwise consultative approach
• Curbside
  • Staffed pager
  • Synchronous/urgent discussion
• Electronic consultation
  • EHR inbox or E-mail
  • Non-urgent or chart review
• Face-to-face visit
ICS – Neurology

1. Consult Typology
2. Utilization
ICS – Neurology Pilot Data

• Observational pilot
• 0.6 FTE neurologist co-located in main site
• 3 month survey
• Prospective data on consecutive consults
• Follow up (4-8 months)
ICS – Neurology Pilot Data

• 359 unique patients
• Curbsides – 179
• e-Consults – 68
• Face to face visits – 182

ICS – Neurology
Pilot Data

Disease category of referrals, by patient (N=359)

- Headache (33%)
- Seizure/spells (14%)
- Cerebrovascular (9%)
- Movement disorder (8%)
- Radiculopathy (8%)
- Dizziness (8%)
- Non-neurological disorder (7%)
- Mononeuropathy (7%)
- Other (6%)

More than one diagnosis may be included for a single patient

## ICS – Neurology Pilot Data

<table>
<thead>
<tr>
<th>General Consultation Questions</th>
<th>Curbside Consultations (N=179)</th>
<th>Electronic Consultations (N=68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing Recommendations</td>
<td>110 (61%)</td>
<td>23 (33%)</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>102 (57%)</td>
<td>24 (35%)</td>
</tr>
<tr>
<td>Pharmacologic Treatment Recommendations</td>
<td>96 (53%)</td>
<td>27 (40%)</td>
</tr>
<tr>
<td>Indication for FTF Neurology Consultation</td>
<td>58 (32%)</td>
<td>16 (24%)</td>
</tr>
<tr>
<td>Neuroimaging Review</td>
<td>38 (21%)</td>
<td>23 (34%)</td>
</tr>
<tr>
<td>Non-Pharmacologic Treatment Recommendations</td>
<td>22 (12%)</td>
<td>4 (6%)</td>
</tr>
</tbody>
</table>

## ICS – Neurology Pilot Data

<table>
<thead>
<tr>
<th>Test Modality</th>
<th>Tests Avoided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain MRI</td>
<td>39 (33%)</td>
</tr>
<tr>
<td>EMG</td>
<td>50 (89%)</td>
</tr>
<tr>
<td>Cervical MRI</td>
<td>24 (92%)</td>
</tr>
<tr>
<td>MRA or CTA Head and Neck</td>
<td>18 (90%)</td>
</tr>
<tr>
<td>Lumbar MRI</td>
<td>11 (100%)</td>
</tr>
</tbody>
</table>

ICS – Neurology
Pilot Data – Referral Volumes

ICS – Neurology Comparison Study

• Retrospective, propensity score matched case-control study
  • Patients referred to ICS Neurology for face-to-face consultation vs. patients referred to non-co-located neurology
  • 12 month follow up

• Outcomes
  • Diagnostic testing
  • Visits – outpatient, ED, inpatient
  • Appointment wait time
ICS – Neurology Comparison Study

• ICS Neurology associated with reduced:
  • Subsequent referral for visits (p=0.001)
  • Brain MRI (p=0.0004)
  • EMG (p=0.009)

• No difference
  • ED visits
  • Hospitalizations
  • Appointment wait time

• Curbsides and e-consults not captured
ICS – Cardiology

1. Utilization
2. PCP satisfaction
3. Patient satisfaction
ICS Cardiology Model

- 1.0 FTE (5 staff)
- Scheduled and unscheduled time
  - Face-to-face consultation (6-8)
  - e-Consult (1)
  - Phone calls with PCPs (10)
  - EHR messages (10)
  - ED triaging (2)
Referrals to Cardiology

PCP Referred Patients to Cardiology

- ICS
- DMC

ECH Referred
Referrals to Cardiology

Non-PCP Referred Patients to Cardiology

- 4th Qtr 2013
- 1st Qtr 2014
- 2nd Qtr 2015
- 3rd Qtr 2016
- 4th Qtr 2017

Internal Provider

ICS
DMC
ICS – Provider Satisfaction

• Surveyed ECH primary care providers
• Pre: 98/160 (61.3% response rate)
• Post: 109/171 (63.7% response rate)
• Paired t-test analysis
Access and Communication

- Easy access
- Timely appointment
- Addresses reason for referral
- Clear POC communication

Pre-ICS vs. Post-ICS
PCP at the Center of Care Plan

- Transitions care back to PCP
- Clear POC when to re-refer
- Referral results in duplicate testing
- Communication with PCP before secondary referral

Pre-ICS vs. Post-ICS
Knowledge Transfer and Satisfaction

- Transfer of knowledge
- Overall satisfaction

Pre-ICS  |  Post-ICS

- Chart showing comparison between Pre-ICS and Post-ICS for transfer of knowledge and overall satisfaction.
Patient Satisfaction

• 500 patients pre and post implementation
• Approximately 60% response
• High satisfaction at baseline
Patient Satisfaction

Accessibility / Convenience
Time Spent with Doctor
Financial Aspects
Communication
Interpersonal Matter
Technical Quality
General Satisfaction

* p(<0.05)

Pre-Intervention
Post-Intervention
Final Notes

• Co-located ICS implemented at largest primary care practice site

• Small core of specialists aligned with model

• Financial alignment of staff and reimbursement
Summary

- Multiple trends and challenges necessitate development of high-value care models
- Co-located specialty care models have potential to provide triple aim benefits and shift care back to the PCMH
- Large primary care practice sites
- Need for staff and financial alignment
- Potential unintended effects during transformation phase
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LET’S GO OILERS!