Co-located, Integrated Community Specialists in the Primary Care Medical Home: Maximizing Value Utilizing Curbside, Electronic, Triage, and Traditional Consultations

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Audience Response
What is your profession?

1. Physician
2. Advanced Practice Provider (NP/PA)
3. Nurse
4. Single Site Administrator/Manager
5. Regional Administrator/Manager
6. Institutional Administrator/Manager
7. Insurer Administrator/Manager
8. Other – Not Listed
What institution type do you represent?

1. Single-site practice, non-academic
2. Multi-site practice, non-academic
3. Independent practice association
4. Integrated delivery system, non-academic
5. Academic practice
6. Insurer/Payer
7. Other – not listed
What is your biggest challenge in the delivery of high value specialty care?

1. Access to quality specialists, subspecialists
2. Primary care – specialist communication
3. Inappropriate referrals
4. Specialty visit no shows
5. Excessive diagnostic testing
6. Suboptimal referral tracking
7. Referrer satisfaction
8. Specialist satisfaction
9. Cost
Case Scenario
Case Scenario

- 44 year old woman presents to her primary care provider with a new type of persistent headache unlike prior headaches
  - Examination: Normal
  - Working diagnosis: Migraine
  - PCP questions: Is a brain MRI needed because of the new headache type? What is the best treatment?

- How would this common problem be managed at your institution?
Case Scenario – Follow Up

- Despite likely migraine PCP recommended a brain MRI
- Patient has similar presentation that led to MRI 15 years ago (she didn’t recall)
- MRI revealed an incidental abnormality and urgent neurology and neurosurgical consult recommended
- No treatment was offered until brain MRI performed
Case Scenario – Conclusion

- Recurrent migraine
- Incidental meningioma
  1) Patient improved with first line migraine treatment
  2) MRI was performed against guidelines
  3) Follow up MRI still needed based on standard of care
  4) Unnecessary anxiety, stress
  5) Neurosurgical consult canceled
Overview

• Background Trends and Factors
• Systematic Review / Meta-Analysis on Co-Located Specialty Care in Primary Care Settings
• Mayo Clinic Integrated Community Specialist Model and Experience
Rising Healthcare Costs

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

Allocation of 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 billion (31.6%)
- Physician & Clinical Services, $565.0 billion (20.2%)
- Other Health Spending, $433.0 billion (15.5%)
- Other Personal Health Care, $410.6 billion (15.1%)
- Nursing Care Facilities & Continuing Care Retirement Communities, $263.3 billion (9.4%)
- Prescription Drugs, $256.2 billion (9.0%)
- Home Health Care, $77.8 billion (2.8%)
- Other (2.8%)

Projected 2022 NHE Total Expenditures: $5,158.8 billion

- Hospital Care, $1,637.7 billion (31.7%)
- Physician & Clinical Services, $482.3 billion (9.3%)
- Other Health Spending, $799.1 billion (15.5%)
- Other Personal Health Care, $781.8 billion (15.2%)
- Nursing Care Facilities & Continuing Care Retirement Communities, $271.4 billion (5.3%)
- Prescription Drugs, $482.8 billion (9.4%)
- Home Health Care, $77.8 billion (1.5%)
- Other (3.1%)

NOTE: Other Personal Health Care includes, for example, dental and other professional health services, durable medical equipment, etc. Other Health Spending includes, for example, administration and net cost of private health insurance, public health activity, research, and structures and equipment, etc.


Wasteful Healthcare Spending

Shift toward Value Based Payment

Target percentage of Medicare FFS payments linked to quality and alternative payment models in 2016 and 2018

- All Medicare FFS (Categories 1-4)
- FFS linked to quality (Categories 2-4)
- Alternative payment models (Categories 3-4)

2016:
- 30% in All Medicare FFS
- 85% in FFS linked to quality
- 0% in Alternative payment models

2018:
- 50% in All Medicare FFS
- 90% in FFS linked to quality
- 0% in Alternative payment models

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: Those data refer to the resident population.

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/

Disproportionate Cost due to Chronic Diseases

Patients Receive 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>No. of Unique Providers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>median</td>
<td>IQR</td>
</tr>
<tr>
<td>All beneficiaries</td>
<td>1,787,454 (100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Considering all physician visits</td>
<td></td>
<td>7</td>
<td>4–11</td>
</tr>
<tr>
<td>Considering evaluation and management visits</td>
<td></td>
<td>3</td>
<td>2–5</td>
</tr>
<tr>
<td>Beneficiaries with chronic conditions, considering all physician visits†</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>430,461 (25)</td>
<td>8</td>
<td>5–14</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>633,750 (38)</td>
<td>10</td>
<td>6–15</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>40,086 (3)</td>
<td>11</td>
<td>7–16</td>
</tr>
<tr>
<td>No. of conditions</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>
</tr>
<tr>
<td>3 or 4</td>
<td>451,774 (24)</td>
<td>5</td>
<td>3–7</td>
</tr>
<tr>
<td>5 or 6</td>
<td>448,855 (25)</td>
<td>7</td>
<td>5–10</td>
</tr>
<tr>
<td>≥7</td>
<td>629,354 (38)</td>
<td>11</td>
<td>8–16</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
- However, 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/
Suboptimal Primary-Specialty Care Interface

• Approximately 1/3 of specialists and 2/3 of referring PCPs report receiving appropriate communication
• PCPs and specialists disagree on appropriateness of referrals
• Lack of clarity on desired management approach
• 46% of specialty care visits for routine follow up or preventative care
• 73% of specialty care visits resulted in a return visit

Suboptimal 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 care coordinators and collaborators not competitors or gatekeepers to specialists

Suboptimal Primary-Specialty Care Interface

• Primary-specialty care interface challenges result in medical errors, inefficient testing, delayed treatment, lower value and costlier care


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
The Key Question

• How can we deliver specialty expertise and care to a population that increasingly needs it, while leveraging the benefits of primary care with respect to continuity and value, and achieve improved outcomes, care experience, and lower cost?
Co-Locating Specialists in Primary Care Settings

• An approach to address primary-specialty care gaps
• Augment/facilitate clinical decision support, information transfer, referral quality, referral tracking
• Patient impact
  – Improved access and satisfaction
• Provider impact
  – Increased knowledge exchange and satisfaction
• Quality of care impact
  – Improved collaboration and coordination
  – Improved referral quality
  – Improved outcomes

Impact of Co-Location Model

Co-located Specialists in Primary Care

- Improved Communication
  - Enhanced Care Coordination
  - Efficient testing & referrals
  - Decreased Cost

- Knowledge Exchange
  - Improved Quality Care
  - Improved Access
  - Improved Outcomes
  - Improved Care Experience

The IHI Triple Aim
- Population Health
- Experience of Care
- Per Capita Cost

Improved Outcomes
Systematic Review and Meta Analysis
Co-Located Specialty Care within Primary Care Practice Settings
Systematic Review / Meta Analysis

• Physically co-located specialists in primary care settings

• Outcomes
  – Patient satisfaction
  – Provider satisfaction
  – Healthcare access and utilization
  – Clinical outcomes
  – Cost

• Literature search through February 2015

• Two independent lead reviewers of abstracts and full text studies
Systematic Review / Meta Analysis

• 1,620 citations; 22 studies met criteria for inclusion
• 9 RCTs, 13 observational studies
  – Randomization: patient (5), practice site (3), firm (1)
• Setting
  – 14 US, 8 international
• Specialties
  – Behavioral health (15), endocrinology (3), cardiology (1), geriatrics (1), nephrology (1), infectious diseases (1)
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
  – Behavioral health (10), diabetic care (2), nephrology (1)
• Higher quality of life at 12 months (3)
  – 3 studies, OR 1.36, 95%CI 1.1-1.7, $I^2=64.8\%$
• Diabetes related outcomes (2 studies)
  – Reduced systolic BP (OR 0.31, 95%CI 0.22-0.44, $I^2=0\%$)
  – Reduced total cholesterol (OR 0.56, 95%CI 0.39-0.80, $I^2=32.3\%$)
  – No change observed with A1C or triglyceride levels
Systematic Review / Meta Analysis

Results

• Three studies (2 RCTs, 1 observational) reported on cost
  – Cost to patient (2)
  – Per member per month to HMO (1)

• All three reported reduced costs
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

• Limited quality of evidence, few studies, high risk of bias, heterogeneity of studies

• Knowledge gaps and limitations reflect opportunities for directing future research
Integrated Community Specialist (ICS) Model
Mayo Clinic Employee and Community Health Practice
Employee and Community Health (ECH)

• Three divisions
  – Community Pediatric & Adolescent Medicine
  – Family Medicine
  – Primary Care Internal Medicine
• 186 PCPs at main clinic site (Baldwin), 120 PCPs at 4 additional sites
• 152,000 patients, 50% employees and dependents
• Salaried physicians
Employee and Community Health Access Area

Note: Zip 55917 added by request does not meet mkt penetration criteria.
Previous State

Traditional Referral Practice

“Churn” and secondary referrals disconnecting PCP

Suboptimal referring/return

Patients

ECH Practice

Specialty Practice #1

Specialty Practice #2

Referrals bypassing PCP

ED/Hospital

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

Traditional Referral Practice

Reduce “churn”, secondary referrals and redirect patients back to PCMH

Specialty Practice #1

Specialty Practice #2

ICS

ECH Practice

PCMH/N

Patients

More efficient referral
ICS Model

- **Staffed** – co-located staff consultants/support
  - IBH, Cardiology, Neurology, Gastroenterology
- **Hybrid** – APP, RN care manager
  - Endocrinology, Gynecology, Orthopedics
- **Virtual** – curbside/telemedicine modality
  - Dermatology, Ophthalmology
ICS Model

• Stepwise consultation approach
• Curbside consultation
  – Staffed pager
  – Synchronous/urgent discussion
• Electronic consultation
  – MICS ICS inbox or E-mail
  – Non-urgent or chart review
• Face-to-face referral
Case Scenario – Practicing differently

• 44 year old women presents to her primary care provider with a new type of persistent headache unlike prior headaches.
  – Examination: Normal
  – Working diagnosis: Migraine
  – PCP questions: Is a brain MRI needed because of the new headache type? What is the best treatment?
ICS – Neurology
Pilot Data

• Observational pilot
• 0.6 FTE neurologist co-located in main site
• December 1, 2014 to March 13, 2015
• Prospective data on consecutive consults
  – Type and means of consult
  – Consulting provider type
  – Disease category
  – Estimation of avoidable FTF visit
  – Initially referred vs. consult recommended plan
• Follow up (variable 4-8 months)

ICS – Neurology
Pilot Data

• 429 total consults (359 unique patients)
• Curbsides – 179
• e-Consults – 68
• Face to face visits – 182

ICS – Neurology
Pilot Data

Referrals by Disease Category (N = 459 consults)

- Headache: 25%
- Movement disorder: 12%
- Non-neurological disorder: 11%
- Seizure / spells: 11%
- Cerebrovascular: 7%
- Radiculopathy: 6%
- Dizziness: 6%
- Mononeuropathy: 5%
- Cognitive disorder: 4%
- Peripheral neuropathy: 4%
- Demyelinating disease: 4%
- CNS neoplasm: 2%
- Neuroophthalmology: 2%
- Functional disorder: 2%
- Myelopathy: 2%
- Myopathy or motoneuron disease: 2%

# 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>Recommended against at consult</th>
<th>TestsAvoided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain MRI</td>
<td>118</td>
<td>39 (33%)</td>
</tr>
<tr>
<td>EMG</td>
<td>56</td>
<td>50 (89%)</td>
</tr>
<tr>
<td>Cervical MRI</td>
<td>26</td>
<td>24 (92%)</td>
</tr>
<tr>
<td>MRA or CTA Head and Neck</td>
<td>20</td>
<td>18 (90%)</td>
</tr>
<tr>
<td>Lumbar MRI</td>
<td>11</td>
<td>11 (100%)</td>
</tr>
</tbody>
</table>

ICS – Neurology
Pilot Data – Referral Volumes

ECH Referred Patients to Specialties Monthly

[Bar chart showing referral volumes for different months]
ICS – Neurology Comparison Study

• Retrospective, propensity score matched case-control of patients referred to ICS Neurology for face-to-face consultation (cases) vs. patients referred to non-co-located neurology (controls)
• 12 month follow up
• Outcomes
  – Diagnostic testing
  – Visit utilization
  – Appointment wait time
ICS – Neurology Comparison Study

• ICS Neurology associated with lower odds of:
  – 1) subsequent referrals for face-to-face visits with non-co-located neurology (p<0.001)
  – 2) Brain MRI (p < 0.0004)
  – 3) EMG (p < 0.009)

• Curbsides and e-consults not captured

• No difference in ED visits, hospitalizations, or appointment wait time
ICS – Neurology
Current Data – Referral Volumes (Qtr)
ICS - Cardiology
Background on Cardiology Practice

- 350-400 patient visits per month
- 50% “general cardiology”, 50% subspecialty

Source of Referral:

- PCP: 10%
- CV or other non-PCP provider: 60%
- Self-referred: 20%
Integrated Cardiology Specialists

• 1.0 FTE (5 staff consultants)

• Services
  – Curbsides
  – e-Consults
  – Face-to-face consults
  – Triage Emergency Department follow up

• Consistent, small group
ICS – Cardiology Provider Satisfaction

- Surveys electronically sent out pre- and post- ICS implementation
- 13 questions
  - Referral reason and preferred method
  - Access
  - Communication
  - Care coordination
- Pre: 98/160 (61.3% response rate)
- Post: 109/171 (63.7% response rate)
Access and Communication

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

Pre-ICS vs Post-ICS
Knowledge Transfer and Satisfaction

![Bar Chart: Knowledge Transfer and Post-ICS Satisfaction](chart.png)

- **Transfer to Knowledge**
  - Pre-ICS: [Value]
  - Post-ICS: [Value]

- **Overall Satisfaction**
  - Pre-ICS: [Value]
  - Post-ICS: [Value]

*Source: AMGA*
PCP to Cardiology Referrals

ECH Referred CON/ME Patients to Specialties Quarterly

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
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<tbody>
<tr>
<td>3rd Qtr</td>
<td>100</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>4th Qtr</td>
<td>200</td>
<td>300</td>
<td>250</td>
</tr>
<tr>
<td>1st Qtr</td>
<td>250</td>
<td>350</td>
<td>300</td>
</tr>
<tr>
<td>2nd Qtr</td>
<td>300</td>
<td>400</td>
<td>350</td>
</tr>
</tbody>
</table>

DMC  ICS
Patient Satisfaction

• Surveys mailed out pre- and post- ICS implementation
• 19 questions
  – Communication
  – Access
  – Skill/Competency
  – Care coordination
• 500 patients pre and post implementation
• Approximately 60% response
Patient Satisfaction

- High Satisfaction at Baseline
- Technical Quality
- Interpersonal matter
- Communication
- Financial aspects
- Time spent with provider
- Accessibility and Convenience

No Change Post - Intervention
Closing Points

• Demographic and economic trends necessitate development of high-value care models
• Co-located specialty care has potential to provide Triple Aim benefits
• Co-located specialty care requires close collaboration between administrative and research efforts
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