

ABF
PCSI 17

9 – 13 October 2017
Hilton Sydney, Australia



Improving Care Coordination through Information

**Dr. Karen Kinder,
Dr. Craig Pollack, Dr. Klaus Lemke**

Johns Hopkins Bloomberg School of Public Health

Presented during the PCSI Conference

Sydney, Australia

Oct 11, 2017



What Do We Mean By Coordination?

“The extent to which a patient’s principal-care physician is aware of all treatments a patient is receiving and communicates with other providers.”

Tarlov, AR, et al. JAMA. 262(7):925-940, 1989

Coordination Implications

- Evidence suggests that coordination exerts an important impact on both the efficiency (cost) and effectiveness (quality) of care
- Patients most in need of highly coordinated care include those with **multiple chronic medical conditions**, concurrent care from **several health professionals** or **many medications**, and patients undergoing extensive diagnostic workups or **transitions from one setting** of care to another. (AHRQ)



Care Coordination Markers

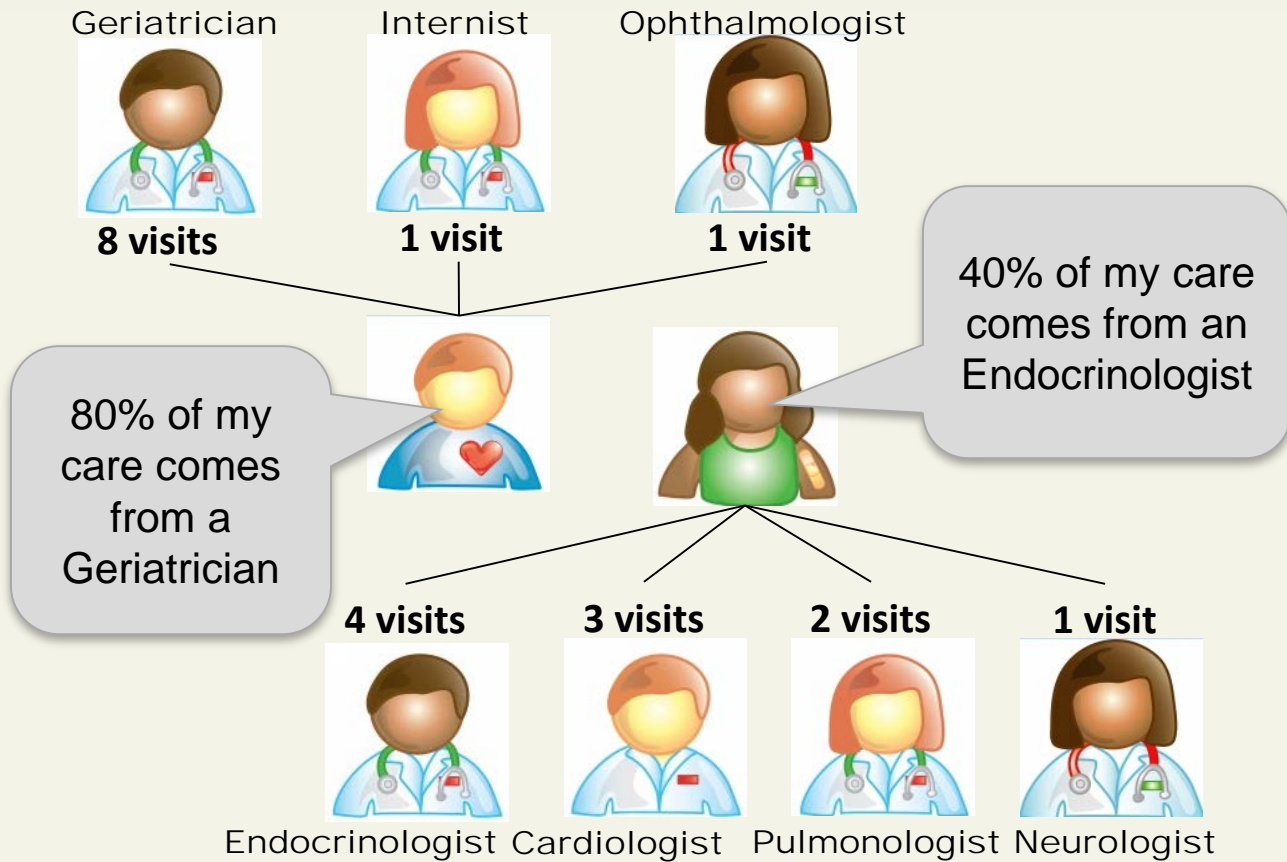
Method

- A review of studies was used to identify key factors and confounders of care coordination, both those that will lead to potentially poor coordination, and those that improve coordination
- Algorithms were derived to produce a classification of care coordination and interaction between providers using routine hospital, community and family doctor data

Four Coordination Markers

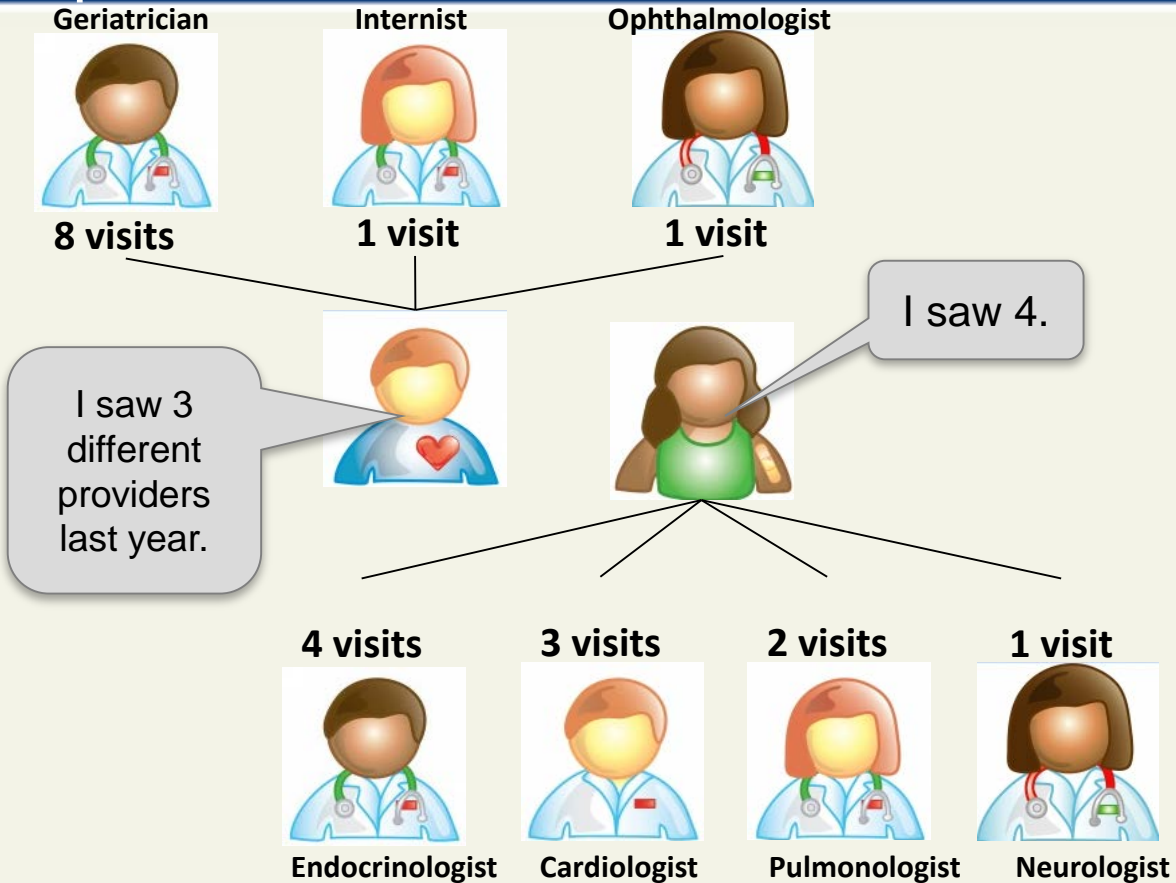
- A majority source of care (based on percent of outpatient visits provided)
- A count of the number of unique providers
- A count of the number of specialty types (not the same as number of specialists seen)
- A marker for the involvement of a generalist

Coordination Markers: Majority Source of Care



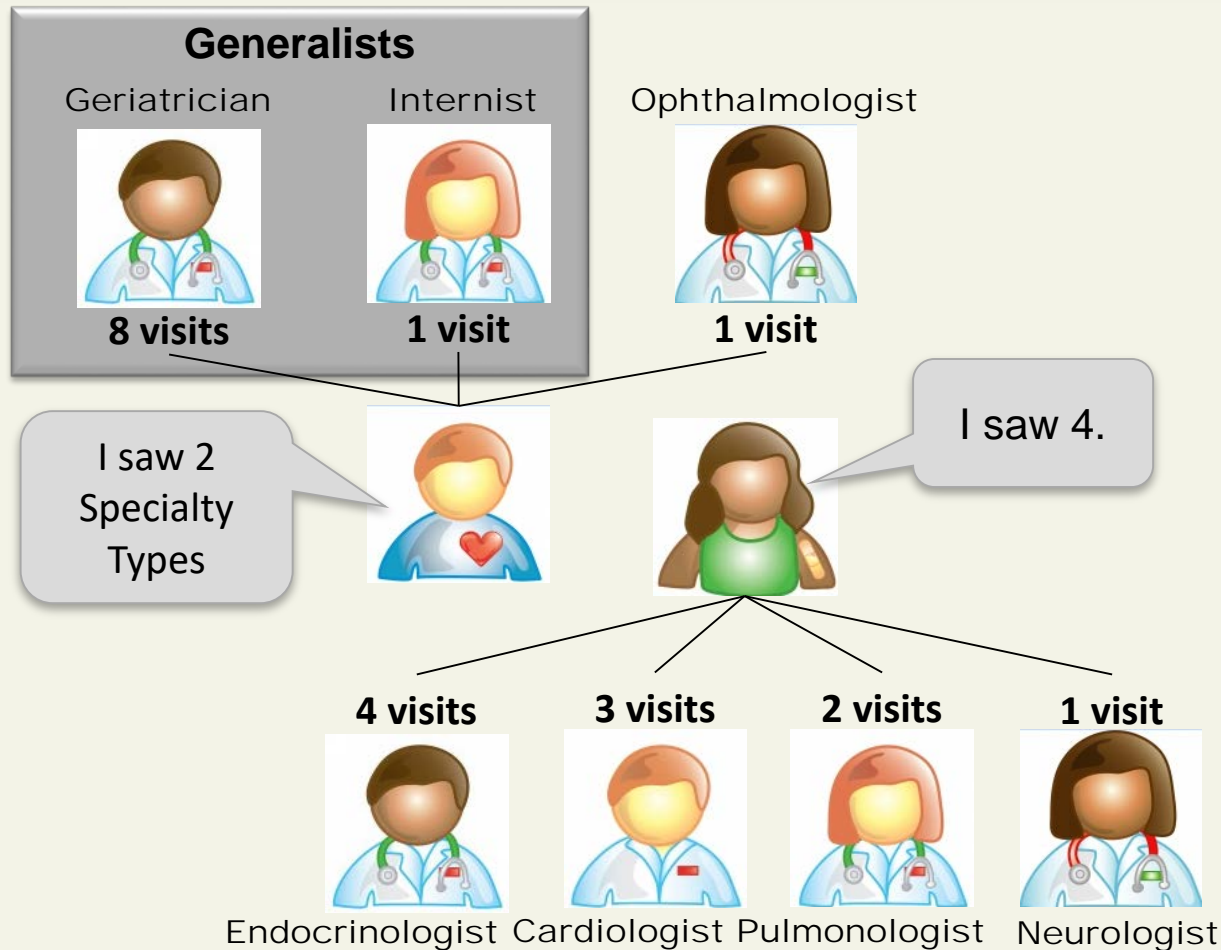
The percentage of the outpatient visits provided by eligible physicians that saw the member most over the measurement period.

Coordination Markers: Unique Provider Count



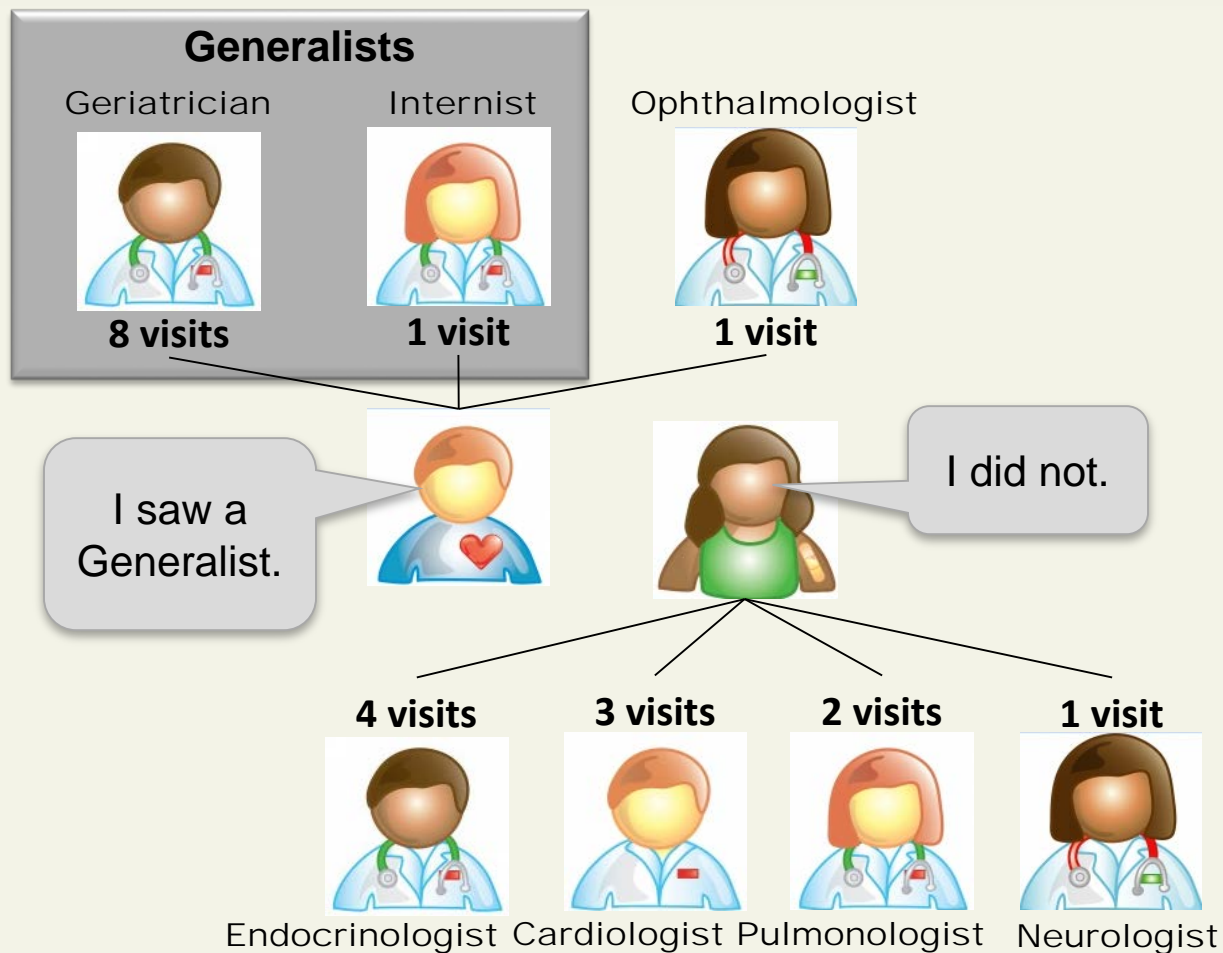
A count of the number of unique eligible providers that imparted outpatient care over the measurement period for any condition.

Coordination Markers: Specialty Count



Count of the number of eligible specialty types that provided outpatient care over the measurement period for any condition.

Coordination Markers: Generalist Seen



No generalist has provided outpatient care over the measurement period.

Hypothesis

- Null hypothesis: A greater likelihood of care coordination issues negatively correlates with higher healthcare costs.
- In other words, poor coordination means higher healthcare costs.

Thresholds

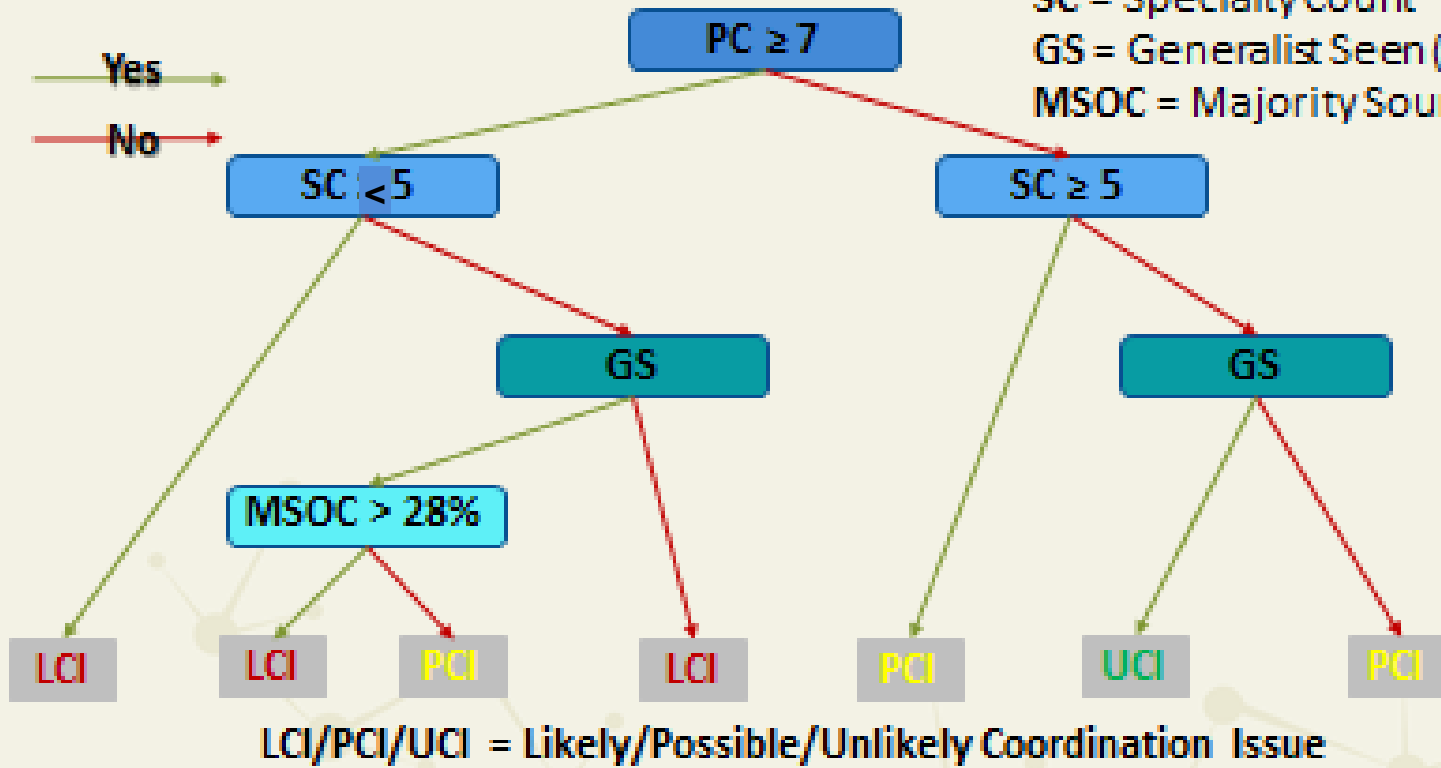
- To enhance the utility of the coordination markers, an effort was made to combine them into a single summary score.
- First, thresholds were used to partition the markers as follows ...

Thresholds

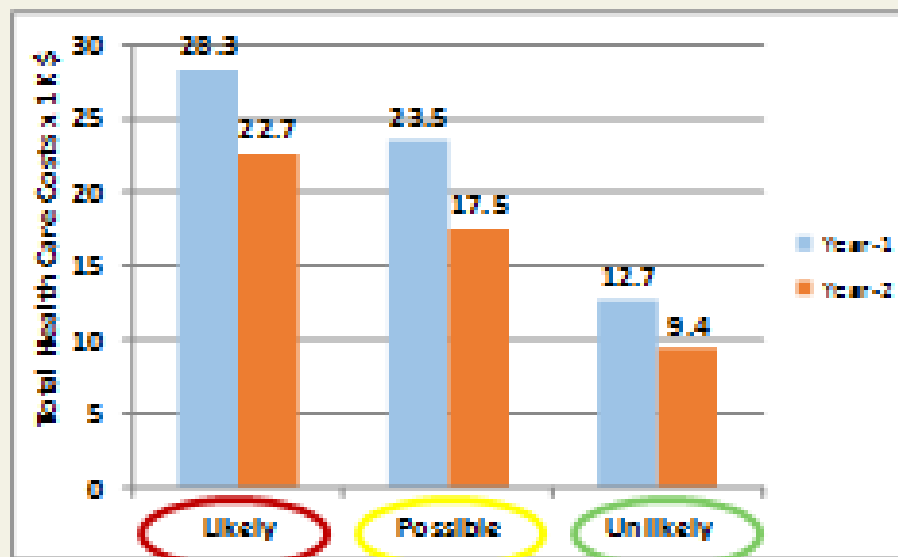
- Majority Source of Care %
 - HIGH > 0.28
 - LOW ≤ 0.28
- Unique Provider Count
 - HIGH = 7+
 - MEDIUM = 2-6
 - LOW = 1
- Specialty Count
 - HIGH = 5+
 - LOW = < 5
- Generalist Seen
 - Y
 - N

Coordination Risk Decision Tree

PC = Physician Count
 SC = Specialty Count
 GS = Generalist Seen (Yes/No)
 MSOC = Majority Source of Care %



Coordination Risk and Total Cost



Coordination risk measured by ACG System. Year-1 coordination markers: count of MDs, count of specialties, presence of generalist, and percent of visits with majority source of care. Analysis of 418K commercial health plan enrollees in 2005/06. Analysis is case-mix adjusted and includes only persons identified in Year-1 as being “high morbidity” based on ACG RUB.

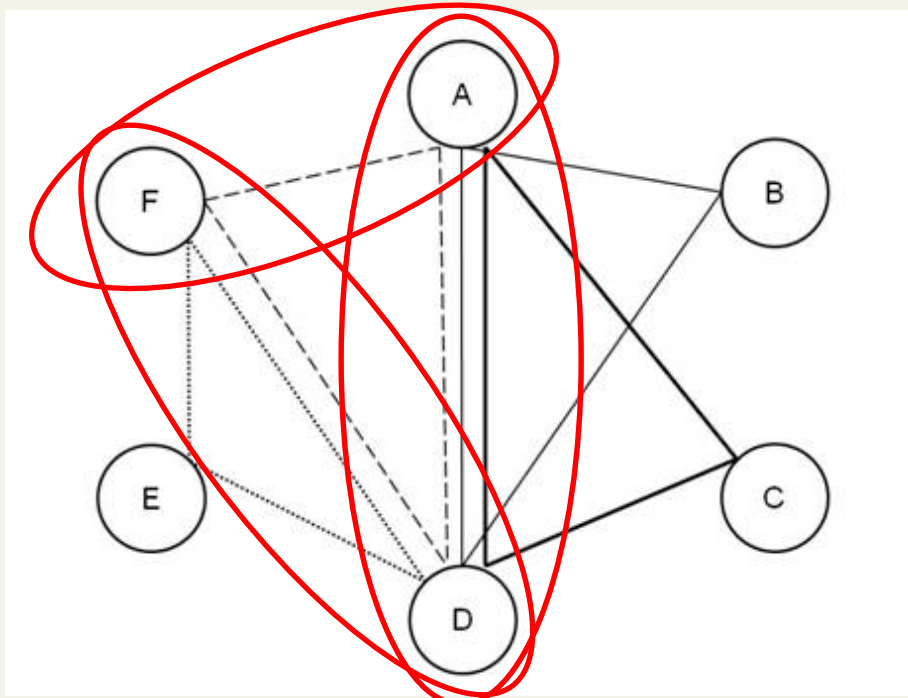


Care Density Score

Care Density: Issue

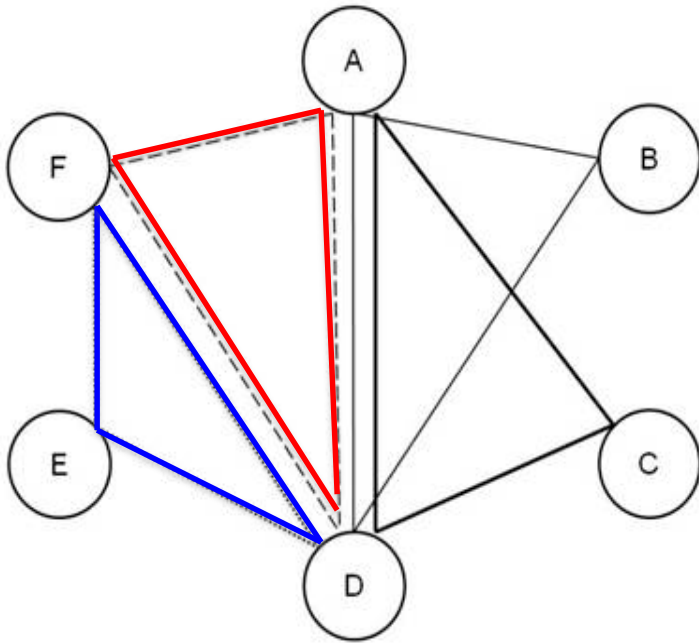
- Common measurement strategies consider number of providers seen and use of generalists in the provider mix
- We have applied techniques for measuring network density to assess the level to which providers share patients
- Presumption is that providers with more patients in common have a higher level of coordination
- **Care density** measures, at the patient-level, the amount of patient sharing among his/her providers

Care Density: Construction



- Circles = Doctors
- Lines = Patients
- Weight of the connection is given by the number of shared patients
- $AD = 3$
- $DF = 2$
- $FA = 1$

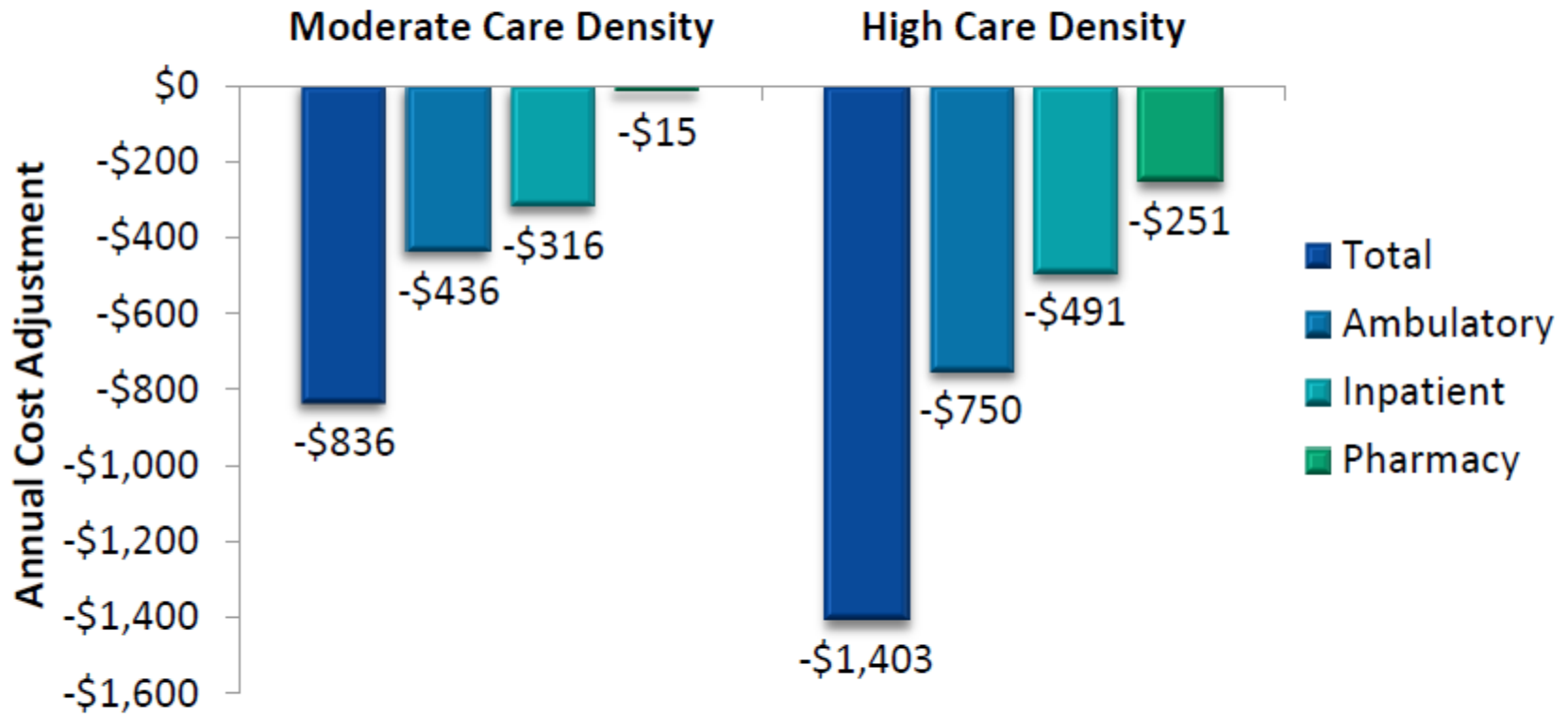
Care Density: Construction



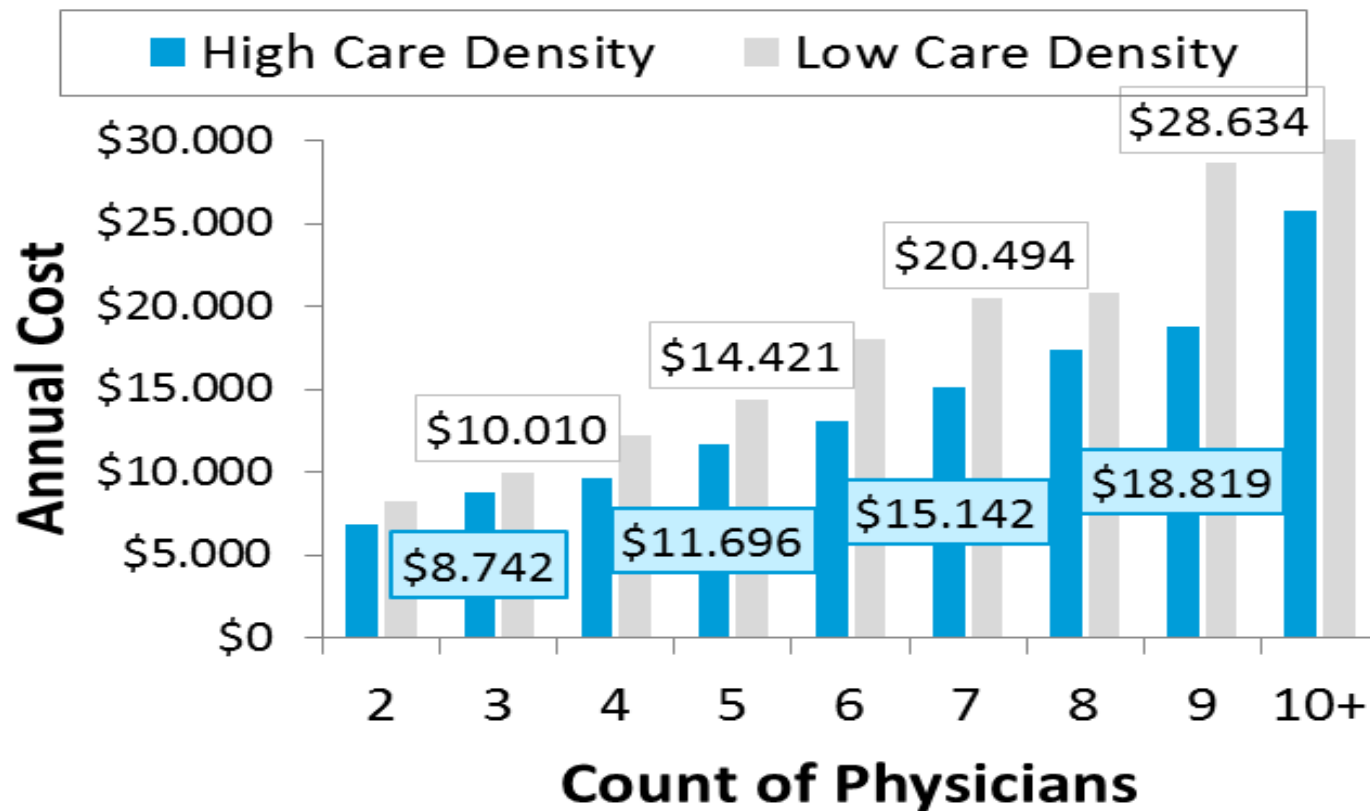
- Care Density (CD) is a per patient concept
- $CD = \text{Sum of weights for their doctors} / \text{number of doctor they have seen}$
- $AD (3) + DF (2) + FA (1) / 3$
- $6 / 3 = 2$
- $FD (2) + DE (1) + EF (1) / 3$
- $4 / 3 = 1.33$

ASSOCIATION BETWEEN INCREASED CARE DENSITY AND LOWER COST

Plot shows the median adjusted cost associated with moderate and high care density
Compare to average claim cost of \$5,861 for a patient with low care density

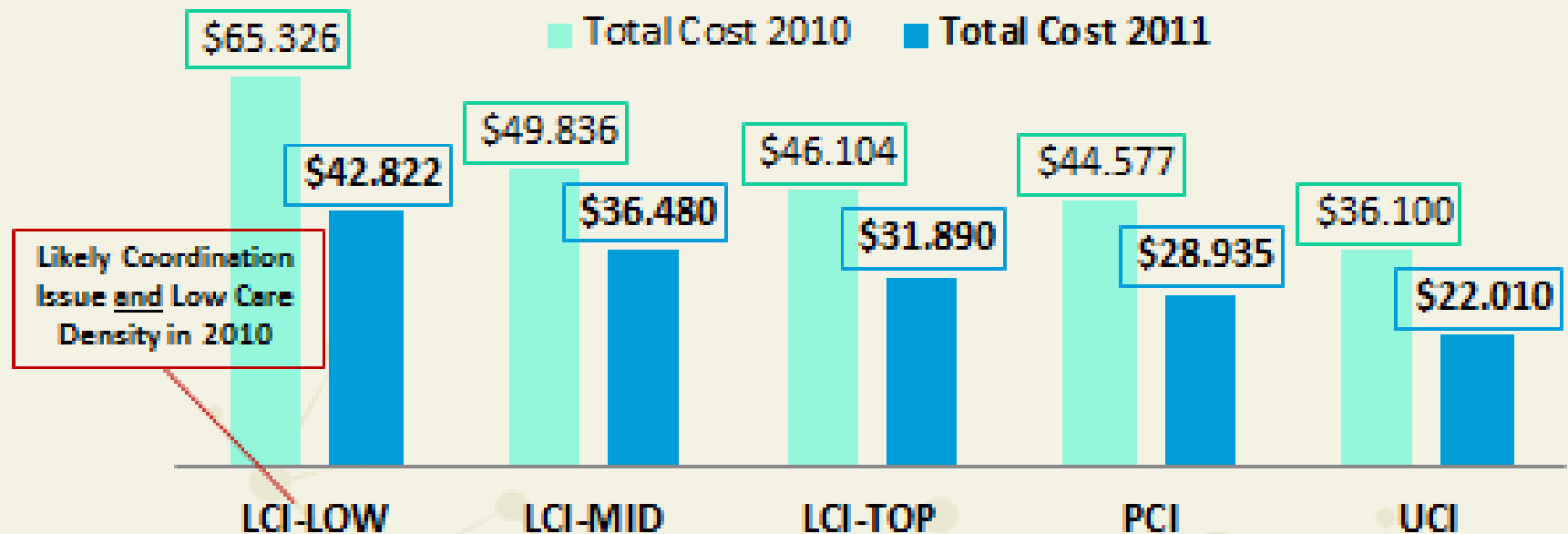


Care Density and Cost of Care



•Annual Cost of Patients in High RUB who have seen a Generalist

3. For patients with very high morbidity (RUB 5): Are costs associated with coordination risk and care density?



Data source: IMS LifeLink™ plan database, non-elderly patients in employer-sponsored plans; 570K patients in RUB 5 LOW 25%/MID 50%/TOP 25% Care Density Quantiles; LCI/PCI/UCI = Likely/Possible/Unlikely Coordination Issues

Concluding Comments:

- The ability to identify patients who could benefit from early intervention will likely sustain better long-term outcomes while experiencing lower costs of care.
- There is a need to understand the coordination of clinicians involved in patients' care in increasing fragmented health care systems to optimize quality of care and patient safety.

Opportunities for learning more

– www.hopkinsacg.org

• To learn more, contact:

– **Dr. Karen Kinder** (presenter)

Executive Director, ACG System

• kkinder@jhsph.edu

• Acknowledgements:

– Dr. Klaus Lemke

– Dr. Craig Pollack

– Dr. Barbara Starfield

