

PRIMARY CARE FORUM

Robert Graham Center

“COMPLEXITY OF AMBULATORY CARE ACROSS DISCIPLINES”

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WHY COMPLEXITY OF CARE MATTERS

- POTENTIAL FOR:

1. Reduced Quality Of Care
 1. Reduced Comprehensiveness Of Care
 2. Decreased Use Of Practice Guidelines
 3. Increase Risk Of Medical Errors
2. Increased Health Care Costs
 - Inefficiency
 - Increased Testing
 - Increased Referrals
3. Decreased Patient & Physician Satisfaction
 1. Perceived Inadequate Visit Time
 2. Increased Physician Burnout
4. Health Care Reform Process

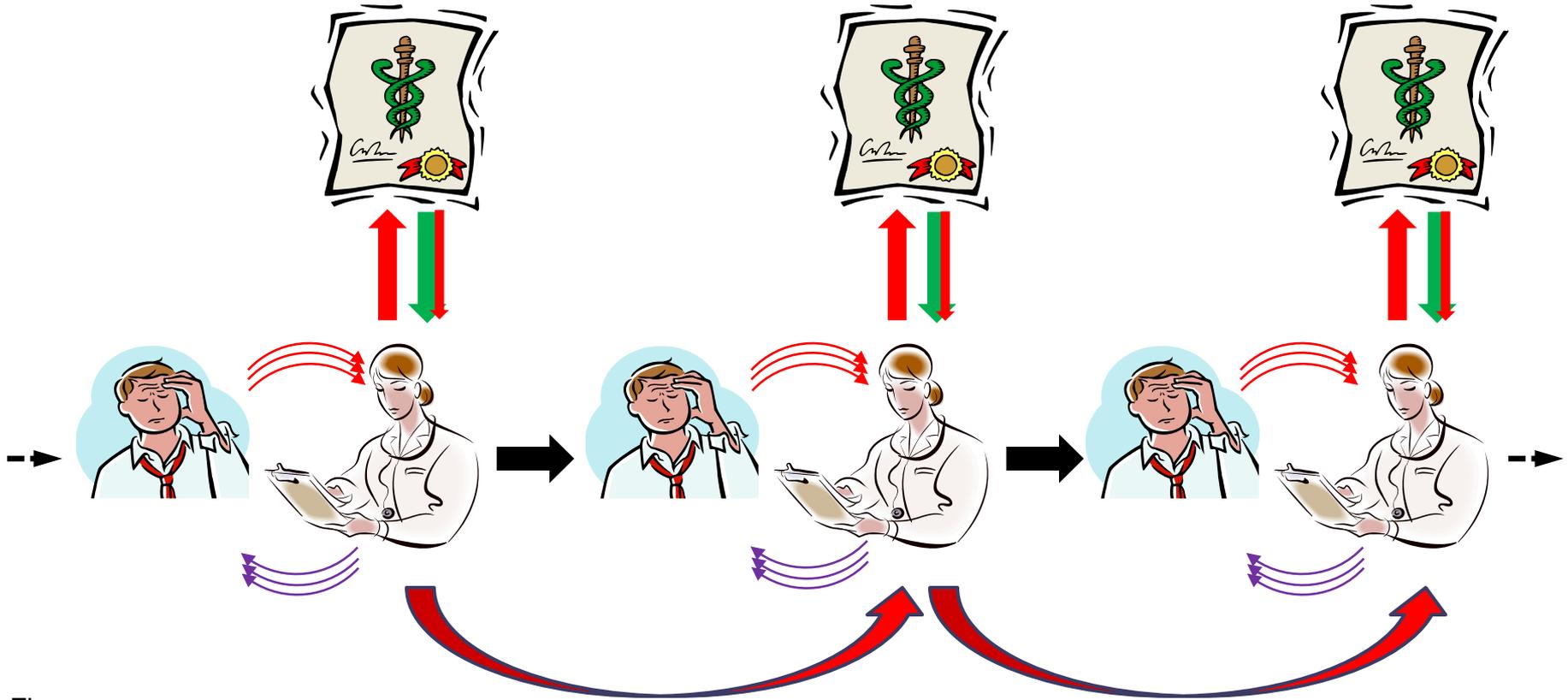
WHAT IS “COMPLEXITY”?

- **“Complexity” = Interrelatedness Of System Components^{1,2}**
 - 1. Cognitive Complexity Component**
 - **Content Of Information (Counts)**
 - 2. Relational Complexity Component**
 - **Flow Of Information Between Members (Variability)**
 - **Uniqueness Of Relationships (Diversity)**

¹Boisot & Child, 1999

²Kannampallil et al, 2011

WHAT MAKES AMBULATORY CARE COMPLEX?



Flows:

- Information
- Care
- Money

MEASURING COMPLEXITY

- **Requirements Of Measure**
 - Includes Quantity Of Activity
 - Reflects Variability & Diversity Across Visits
 - Considers Time Availability
 - Differentiates Input & Output Effects
- **Error Rates (Complexity Measure¹) Depend On:²**
 - Quantity Of Activity
 - Variability
 - Diversity
 - Time Availability

¹Baryam, 1997

²Croskerry et al, 2004

PRIOR ATTEMPTS AT ESTIMATING COMPLEXITY

- **Measures Currently Used**
 - Case-Mix Measures¹
 - Risk Adjustment Measures²
 - Patient Severity Measures³
 - Patient Complexity⁴
 - Problems Per Hour⁵
- **Why These Measure Do NOT Measure Complexity**
 - Complexity \neq Severity
 - Assume Linearity (Regularity, Predictability)⁶
 - Do Not Capture ALL Relevant Dimensions
 - Single Patient Measures

¹Fetter et al, 1980
²Rosen et al, 2003

³Horn et al, 1988
⁴Peek et al, 2009

⁵Tempte et al, 2007
⁶Green, 2010

COMPLEXITY OF CARE MEASUREMENT USED*

-2010 NATIONAL AMBULATORY MEDICAL CARE SURVEY-

1. Identify Each Average Input / Output For Each Discipline

Inputs	Outputs
Reasons	Medications
Diagnoses	Other Treatments
Examinations	• Education
Testing	• Counseling
Patient Demographics	• Therapies
	• Procedures
	Disposition

2. Weight Each Input / Output By Its Variability & Diversity

3. Add All Inputs / Outputs Components Together

4. Calculate “Encounter Complexity”, Weighting Input More Heavily

5. Calculate “Complexity Burden” (Encounter Complexity / Duration-Of-Visit)

*Katerndahl et al, 2010

ENCOUNTER COMPLEXITY*

❖ Internal Medicine & Family Medicine Encounters Most Complex	◆	◆ Internal Medicine
❖ Encounters Of Internal Medicine, Family Medicine, Cardiology & Oncology Clearly Much More Complex Than Those Of Other Disciplines	■	■ Family Medicine
❖ Encounters Of Internal Medicine & Family Medicine About 3X As Complex As Those Of Ophthalmology, ENT, Orthopedics & Psychiatry	▲	▲ Cardiology
	✳	✳ Oncology
	●	● OBGYN
	+	+ Neurology
	◆	— Pediatrics
	■	— Urology
	▲	◆ General Surgery
	✳	■ Dermatology
	●	▲ Ophthalmology
	+	✳ ENT
	◆	✳ Orthopedics
	■	● Psychiatry

ENCOUNTER COMPLEXITY

COMPLEXITY BURDEN*

❖ Complexity Burden Is Highest For Family Medicine & Internal Medicine

❖ Complexity Burden Of Family Medicine & Internal Medicine Care Is 2X That Of Most Surgical Disciplines & Neurology, But 5X That Of Psychiatry



◆ Family Medicine

■ Internal Medicine

▲ Cardiology

✱ OBGYN

● Oncology

+ Urology

— Pediatrics

— Dermatology

◆ General Surgery

■ Ophthalmology

▲ Orthopedics

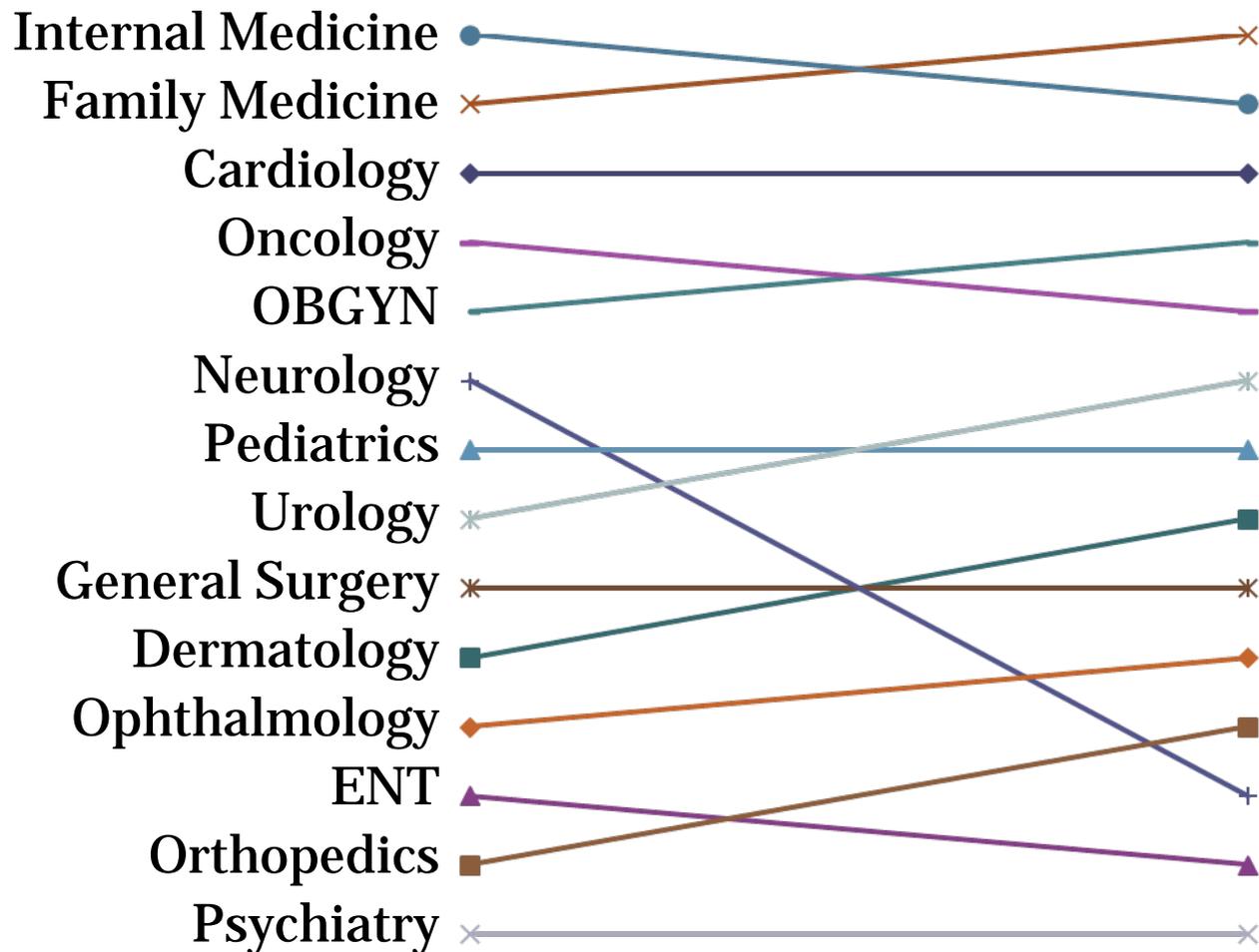
✱ Neurology

✱ ENT

● Psychiatry

COMPLEXITY BURDEN

CHANGES IN RANKING BY DISCIPLINE*



ENCOUNTER COMPLEXITY

COMPLEXITY BURDEN

CONCLUSIONS

1. Encounter Complexity

1. Internal Medicine & Family Medicine Most Complex
2. Internal Medicine, Family Medicine, Cardiology & Oncology More Complex Than Other Disciplines

2. Complexity Burden

1. Most For Family Medicine & Internal Medicine
2. Twice That Of Most Surgical Disciplines & Neurology
3. 5X That Of Psychiatry

THANK YOU

