Johns Hopkins Bloomberg School of Public Health

Inaugural Barbara Starfield Memorial Lecture

Wonca World Conference
Prague, June 29, 2013

Improving Coordination between Primary and Secondary Health Care through Information

Karen Kinder

Johns Hopkins Bloomberg School of Public Health

Baltimore, Maryland USA

kkinder@jhsph.edu

Presented June 29, 2013 at the
Wonca 2013 Prague 20th World Conference

Primary Care/Specialty care in an Era of Mutimorbidity

Barbara Starfield, MD, MPH

19th Wonca World Conference
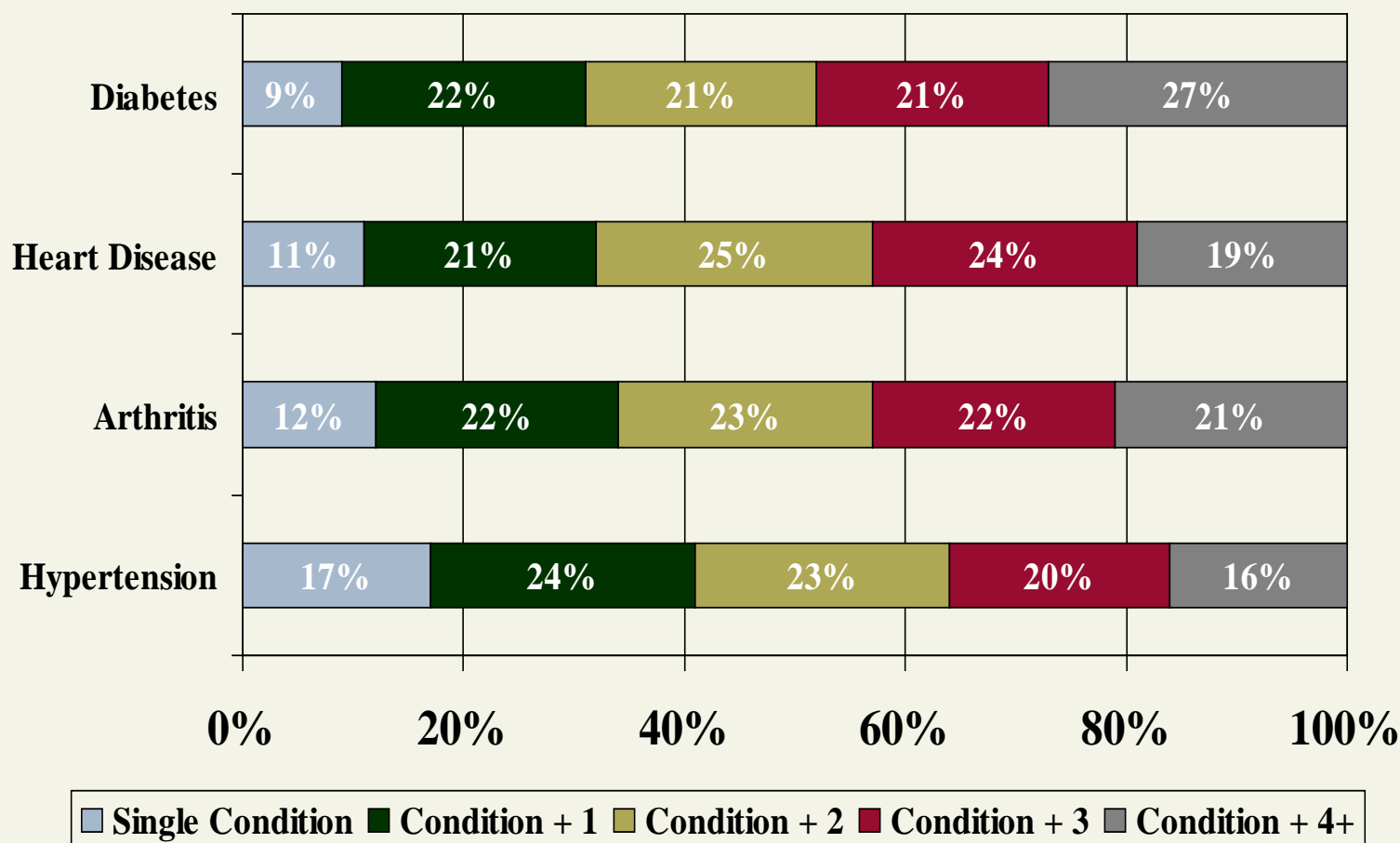of Family Doctors
Cancun, Mexico
May 23, 2010

The Situation

- Fragmented, sub-specialized environment

- Ageing population

- Increasing multi-morbidity

- Limited resources

THEREFORE NEED HEALTH CARE THAT IS COORDINATED

Multimorbidity is the norm

Condition	Single Condition	Condition + 1	Condition + 2	Condition + 3	Condition + 4+
Diabetes	9%	22%	21%	21%	27%
Heart Disease	11%	21%	25%	24%	19%
Arthritis	12%	22%	23%	22%	21%
Hypertension	17%	24%	23%	20%	16%

Source: Partnership for Solutions

These patterns are linked to the prevalence of chronic co-morbidities

# Chronic Co-morbidities	% Pop.	Relative Cost (Per Pt.)	Est. % of Total Medicare Costs	Avg. # Unique MDs/Yr.	Avg. # Filled Rx / Yr.
5+	20%	3.2	66%	13.8	49
3-4	27%	.9	23%	7.3	26
0-2	53%	.1	11%	3.0	11

Data Source: G. Anderson et. al., Johns Hopkins Univ. 2003. (Derived from US Medicare claims and beneficiary survey.)

The more common a single condition in primary care visits, the less the likelihood of referral, even after controlling for a variety of patient and disease characteristics.

Source: Forrest & Reid, J Fam Pract 2001;50:427-32.

With high morbidity burden, the number of different physicians seen rises, for both primary care and secondary care.

Therefore, coordination of care is a major challenge for those with high morbidity burden.

The more DIFFERENT generalists seen (less continuity): the higher the total costs, diagnostic tests and interventions.

The more different generalists seen, the more DIFFERENT specialists seen among patients with high morbidity burdens. That is, the benefits of primary care are greatest for people with the greatest burden of illness.

The more DIFFERENT specialists seen: the higher the total costs, diagnostic tests and interventions, and types of medication.

*Using the Johns Hopkins Adjusted Clinical Groups System (ACGs)

Source: Starfield et al, J Ambul Care Manage 2009;32:216-25.

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

- Redundant investigations
- Harmful drug interactions
- Lower patient satisfaction
- Higher costs
- Lower quality of care

Country	One doctor	4 or more doctors
Australia	12	37
Canada	15	40
Germany	14	31
New Zealand	14	35
UK	12	28
US	22	49

Source: Schoen et al, Health Affairs 2005; W5: 509-525.

THE ROLE OF INFORMATION

The application of computers and other digital technology to the delivery and management of health care and public health services.
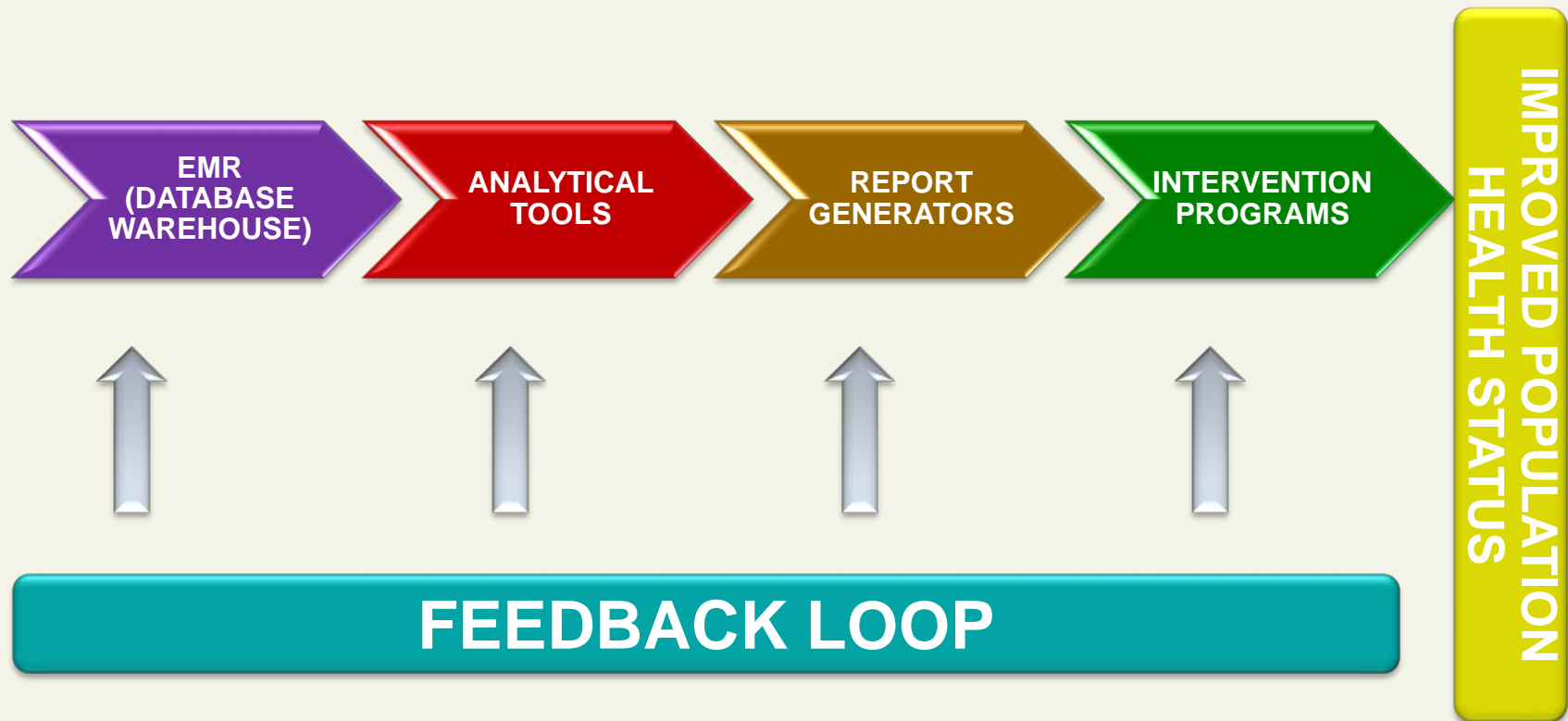
- To increase efficiency and eliminate waste within care settings and across the system
- To improve patient safety and minimize errors
- To increase quality improvement and improve outcomes
- To increase patient involvement in "person-centered" care
- To increase evidence base and knowledge

Information is key to improving the delivery of primary health care

EMR (DATABASE WAREHOUSE) → ANALYTICAL TOOLS → REPORT GENERATORS → INTERVENTION PROGRAMS → IMPROVED POPULATION HEALTH STATUS

FEEDBACK LOOP

Computerized summaries of information on problems, tests, and therapies which improves recognition of important patient information from one visit to another, especially if the inter-visit duration is long and the practitioner changes from one visit to the next. The objective is that doctors have easy access to comprehensive patient information.

NOT A SUBSTITUTE FOR CLINICAL JUDGEMENT – BUT A SUPPLEMENT

- International Classification of Diseases, versions 9 and 10 (ICD-9, ICD-10)
- Read codes (in the UK and New Zealand)
- International Classification for Primary Care (ICPC) developed by Wonca and acknowledged by the WHO
- In addition, numerous local variations

- Anatomical, Therapeutic, Chemical (ATC)

- local coding systems such as
    National Drug Codes (NDC) in the US
    British National Formulary (BNF) in the UK
    Pharmazeutralnummer (PZN) in Germany

- as well as numerous others.

Case mix (risk adjustment) is the process by which the health status (morbidity profile) of a population is taken into consideration when setting budgets or capitation rates, evaluating professionals' performance, or assessing outcomes of care.

- Individual diagnoses are less important than are disease patterns and overall burdens of morbidity.

- Models of care need to be based on overall morbidity burdens rather than on specific diagnoses.

- Assessing the appropriateness of care needs to be based on patterns of morbidity rather than on specific diagnoses

acg

What Can Be Achieved by Understanding Individual & Population Morbidity Burden?

22

Predictive Modeling
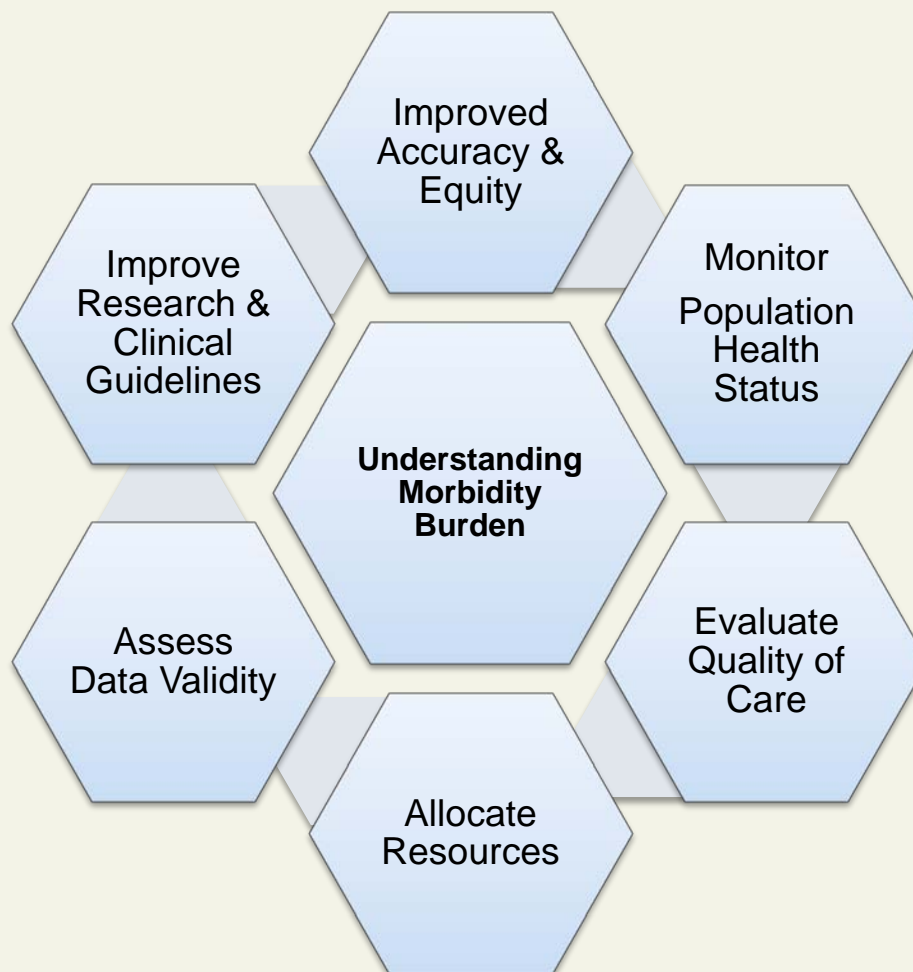
- Targeting patients for chronic care management.
- Identifying patients at risk of high future need of healthcare resources.
- Assessing the patients at risk of hospitalization
- Finding those patients at risk of unusual high use of pharmaceuticals
- Identifying patients at risk of poorly coordinated care.
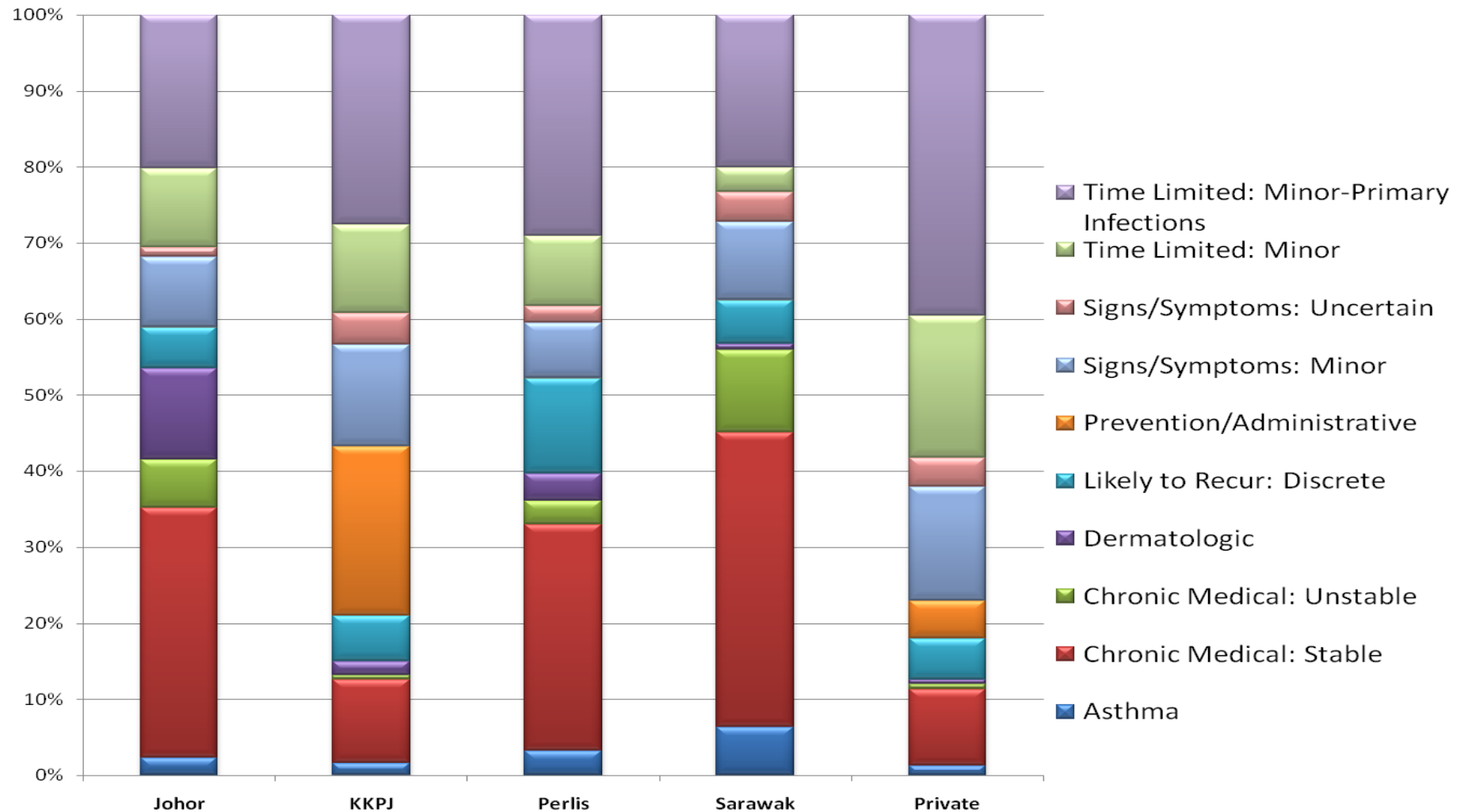
Understanding population-based morbidity

- Understanding population risk and overall morbidity patterns

- Detection of life style issues that may lead to health problems

- Ability to identify trends in population health

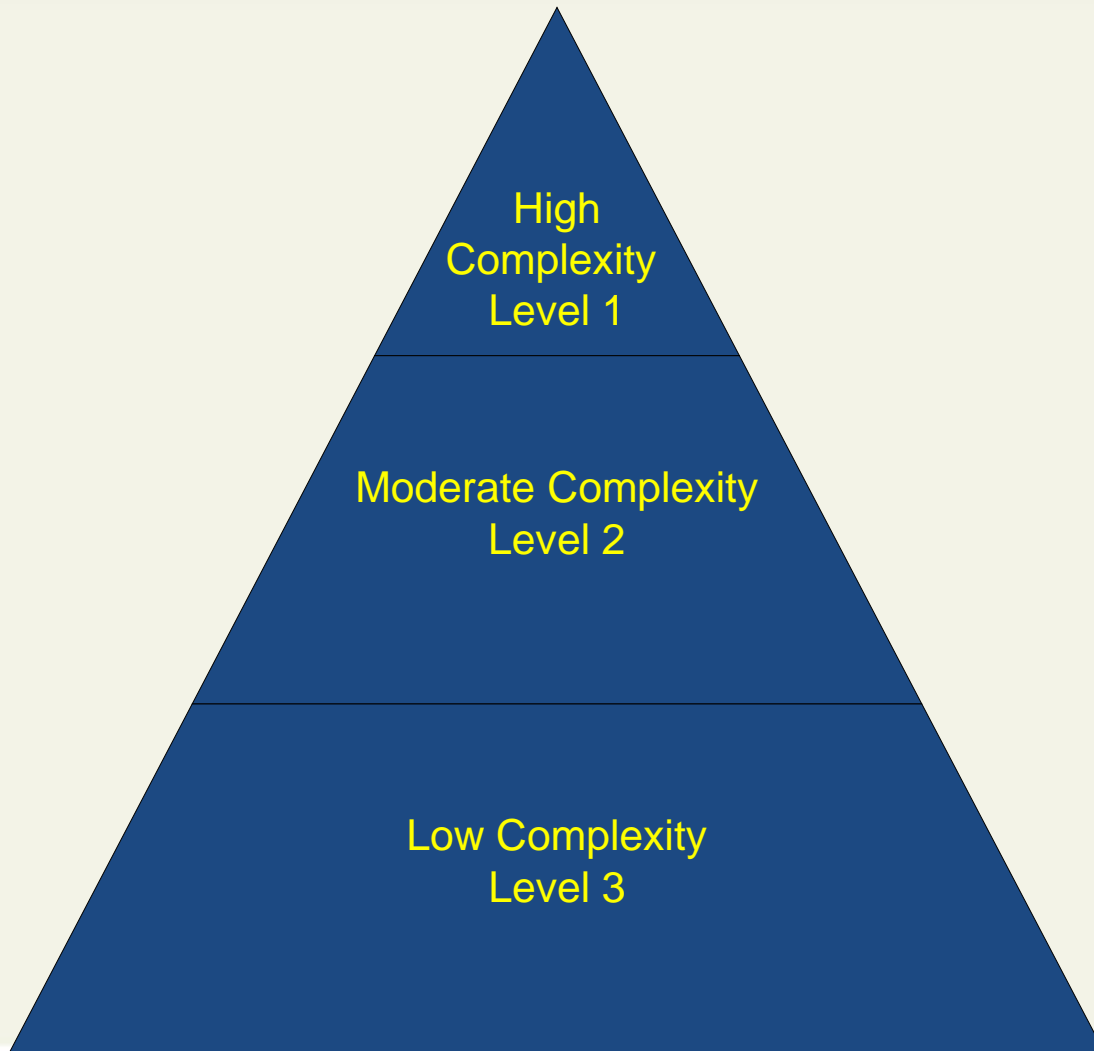- Development of education or outreach programs

Care Management

High
Complexity
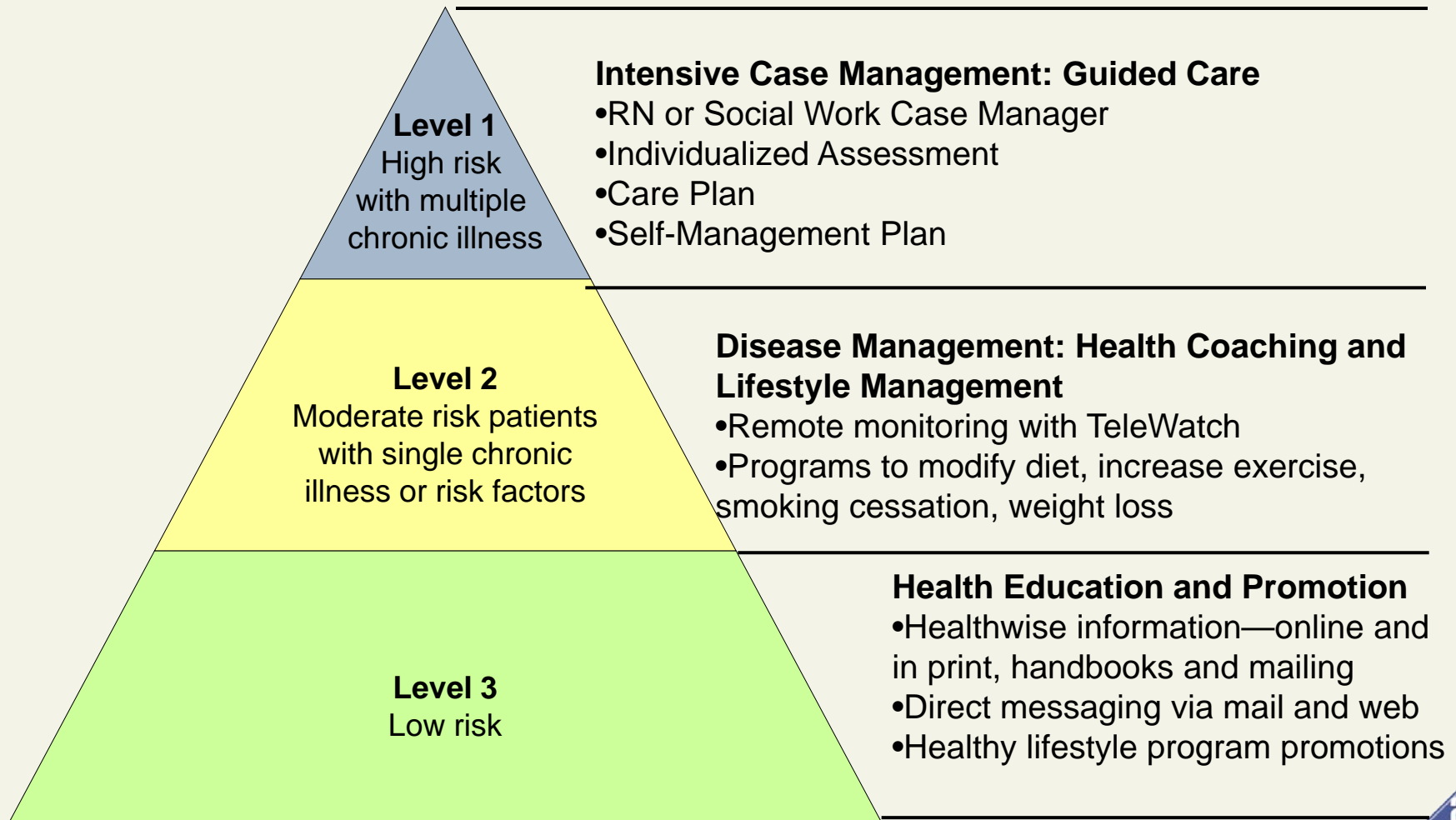Level 1

Moderate Complexity
Level 2

Low Complexity
Level 3

Our goal:

1. *Identify* all persons with diabetes, and

2. *Stratify* them into three levels of complexity, and

3. *Intervene* appropriately. Each level of complexity has an appropriate level of care management intervention

Level 1
High risk with multiple chronic illness

Intensive Case Management: Guided Care
- RN or Social Work Case Manager
- Individualized Assessment
- Care Plan
- Self-Management Plan

Level 2
Moderate risk patients with single chronic illness or risk factors

Disease Management: Health Coaching and Lifestyle Management
- Remote monitoring with TeleWatch
- Programs to modify diet, increase exercise, smoking cessation, weight loss

Level 3
Low risk

Health Education and Promotion
- Healthwise information—online and in print, handbooks and mailing
- Direct messaging via mail and web
- Healthy lifestyle program promotions
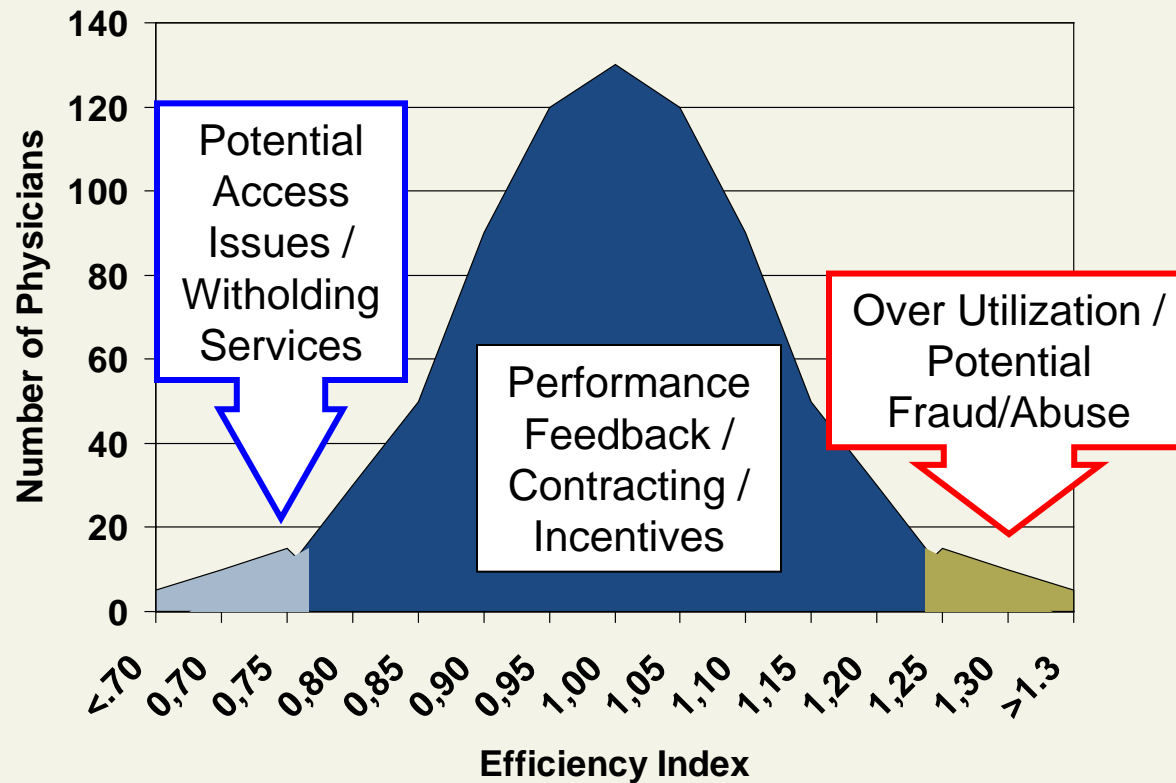
- To identify persons for inclusion in care management programs:

    - multi-disease (case-management) and

    - single disease (DM) programs.

    - person-oriented education/outreach programs.

- To provide comprehensive information to clinicians to help manage the ongoing care of their patients.

Performance Assessment

Comparison of ACG- and Age/Gender-Based O/E Ratios
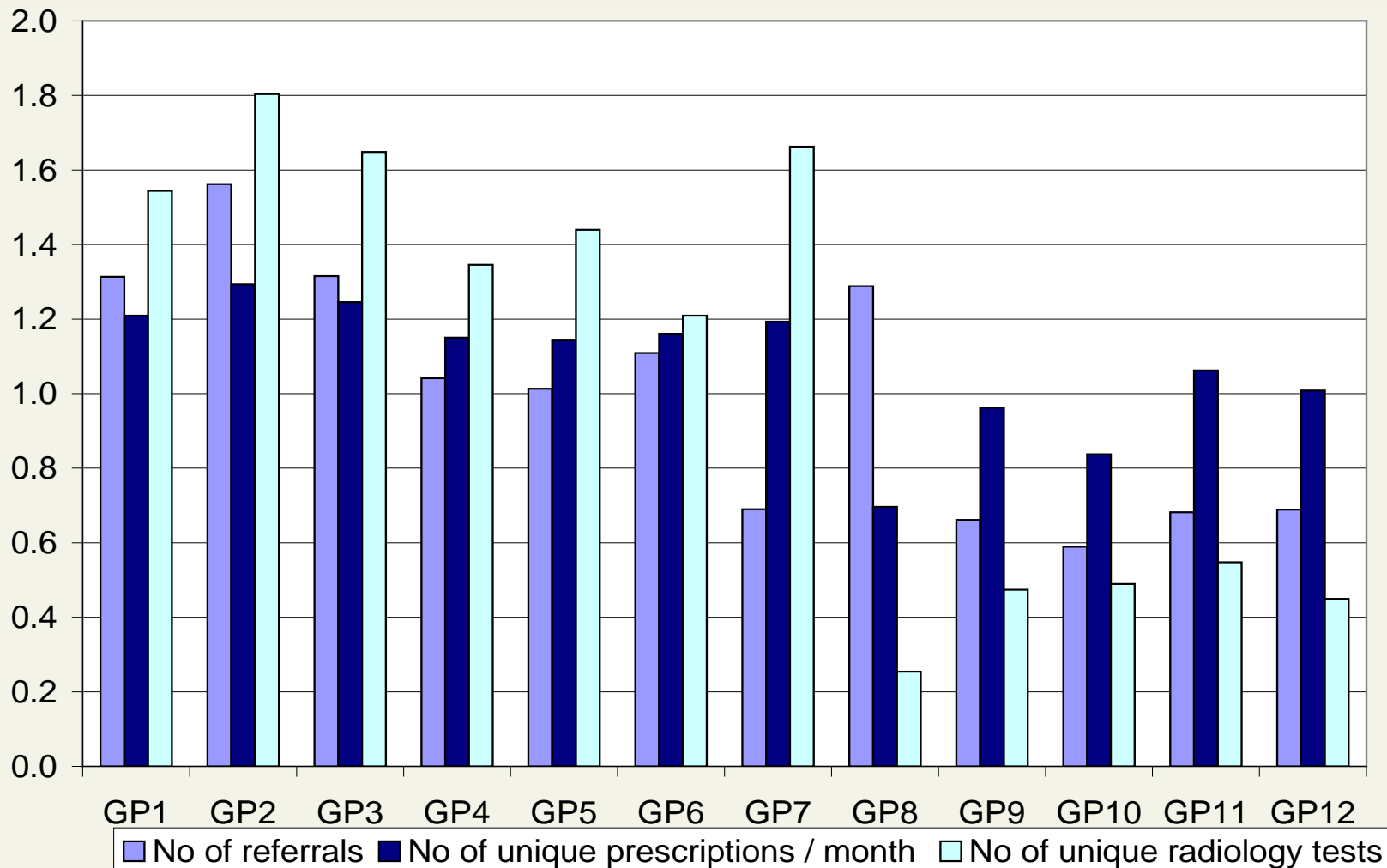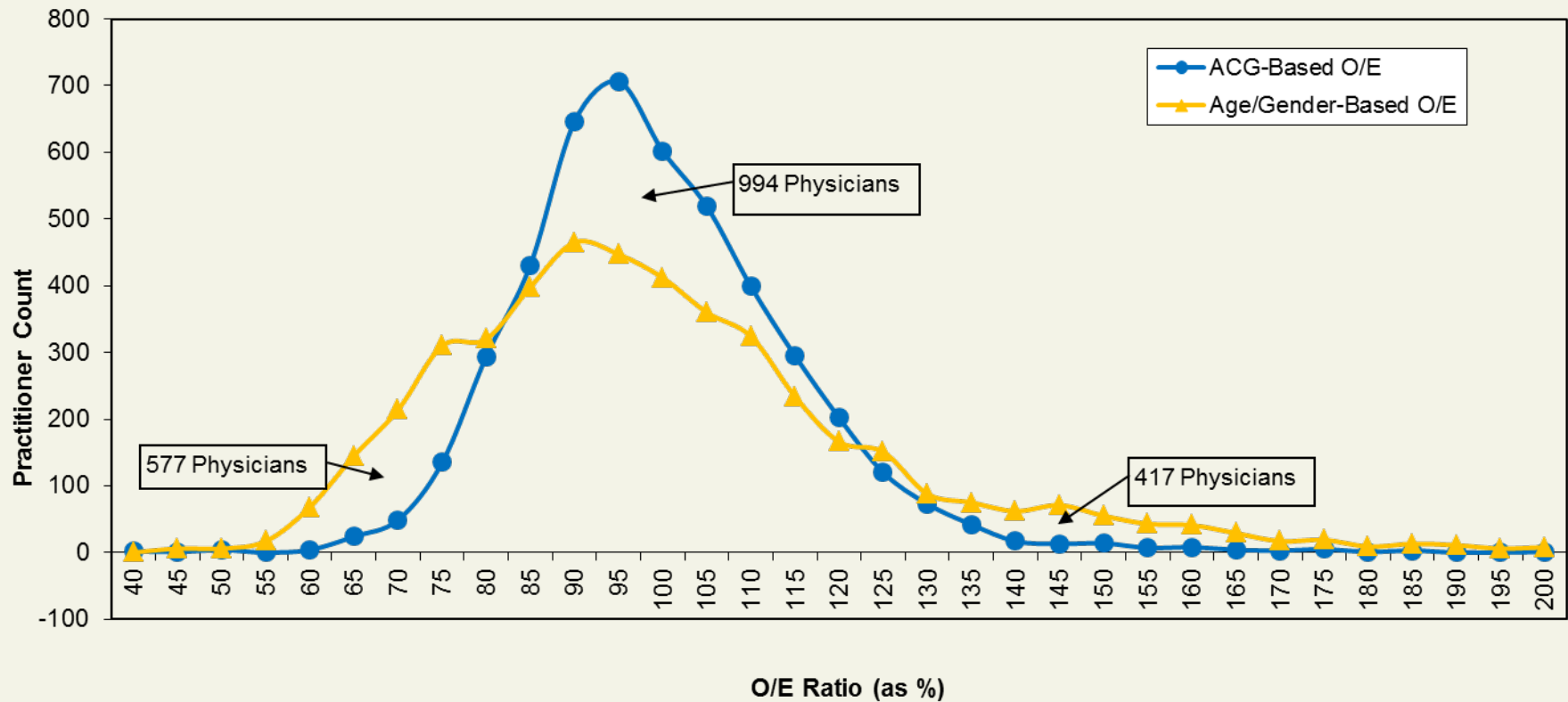Practices of All Physicians

Based on British Columbia Ministry of Health practitioner profiles data from calendar 2000

Assessing Coordination

In primary care,
- who refers
- which patients and
- why?

- **Majority Source of Care:** An assessment of the level of participation of each clinician that provided care to each patient.

- **Unique Provider Count**: A count of the number of unique clinicians that provided care to the patient.

- **Specialty Count**: A count of the number of specialty types that provided care to the patient.

- **Generalist Seen**: A marker indicating a generalist's participation in an individual's care.

EXAMPLE

38

Age	67	Gender	M
PCP Id	300*99199207	Product	HMO
Resource Utilization Band	5	Local Weight	9.55

Model		**Prior Costs**	
DxRx-PM - total cost - lenient dx -> total cost		Total Cost	$ 8,043
DxRx-PM - rx cost - lenient dx -> rx cost		Rx Cost	$ 506

Predictive Values

Probability High Total Cost	0.49
Predicted Total Cost Range	$20,000-$25,000
Probability High Rx Cost	0.03
Predicted Rx Cost Range	$500-$1,000
High Risk Unexpected Pharmacy	N

Coordination of Care

Chronic Condition Count	13
# Unique Providers Seen	13
# Specialty Types Seen	10
No Generalist Seen	N
% Visits Provided By Majority Source of Care	15
Frailty Flag	Y

Utilization

Outpatient Visits	48
ER Visits	4
Inpatient Admissions	3
Major Procedure Performed	N
Dialysis Service	N
Nursing Service	N

Likelihood of Hospitalization

Hospital Dominant Count	2
Probability Hospital Admission (6 mos)	0.56
Probability Hospital Admission (12 mos)	0.66
Probability ICU/CCU Admission	0.34
Probability Injury-related Admission	0.13
Probability Long-term Admission (12+ days)	0.35

Resource Allocation, Budgeting & Other Financial Issues

- **Available Budget**
- **Political Forces**
- **Actuarial Forecasts**

Size of the Healthcare Pie

Risk Adjustment
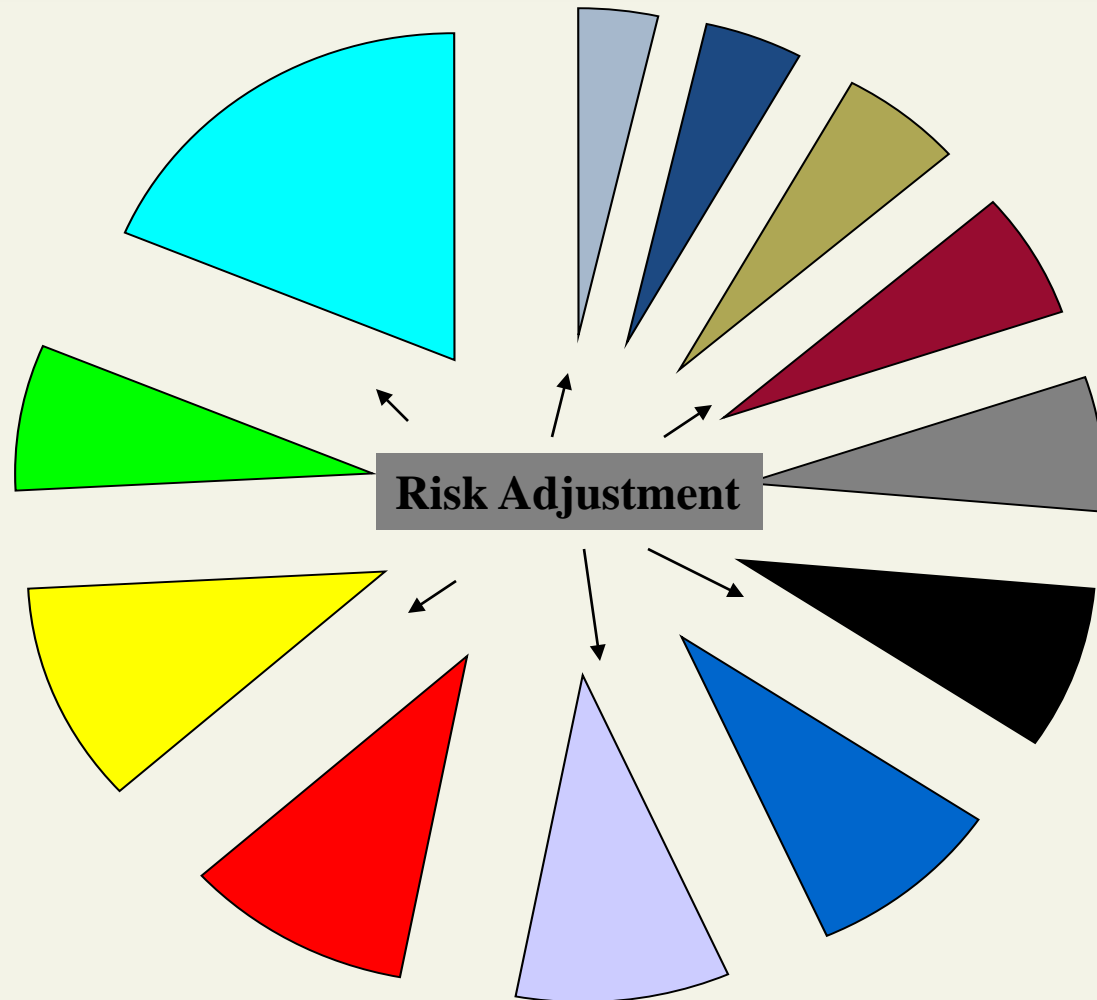
Reasons why Risk Adjusted Payment & Budgeting May Be Necessary

- Supporting clinicians that are selected by a costlier than average group of patients.

- Deterring clinicians from selecting healthier patients.

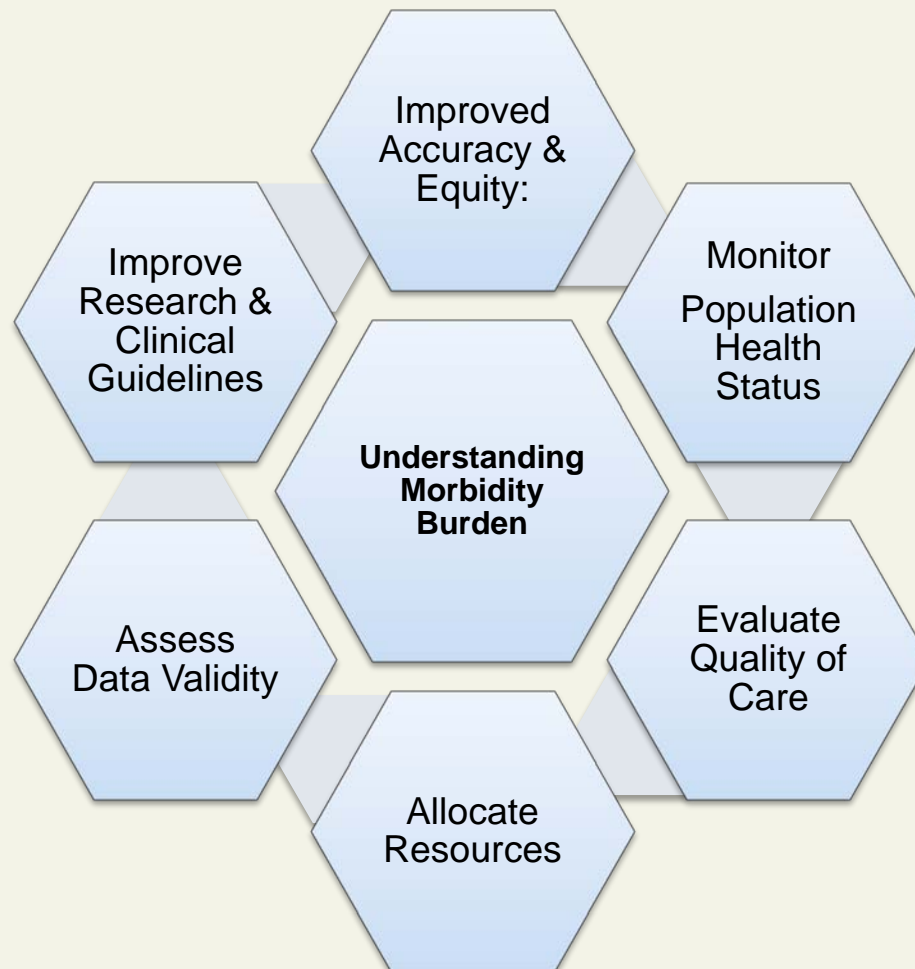- Facilitating clinicians attempts to specialize in treating people with certain illness or conditions.

- Confidentiality of data

- Data ownership (Information governance)

- Interoperability of information systems

- Silos of information

- Who pays for the investment

- Reimbursement of clinicians and aligning of incentives

- Integrating informatics into medical education

- Providing the necessary feedback to clinicians

Information enables:

- Improved Accuracy & Equity:
- Monitor Population Health Status
- Improve Research & Clinical Guidelines
- Understanding Morbidity Burden
- Assess Data Validity
- Evaluate Quality of Care
- Allocate Resources

Family Doctors' role:

- Ensure complete and accurate electronic records

- Apply the information feedback to them to their clinical practice

- Alter medical education programs to include information training

- Advocate for a national health information strategy

"We have instruments to assess the utility of health systems, the strength of primary care, and the outcomes as measured by morbidity burden. We need the political will to use them."

- *Barbara Starfield, Cebu, 2011*

The Barbara Starfield Scholarship supports doctoral students who focus their studies in health services research or health policy with priority given to those interested in the organization, delivery and outcomes of primary care and in understanding the impact of equity on health.