Quality Management in Primary Care – A European Approach

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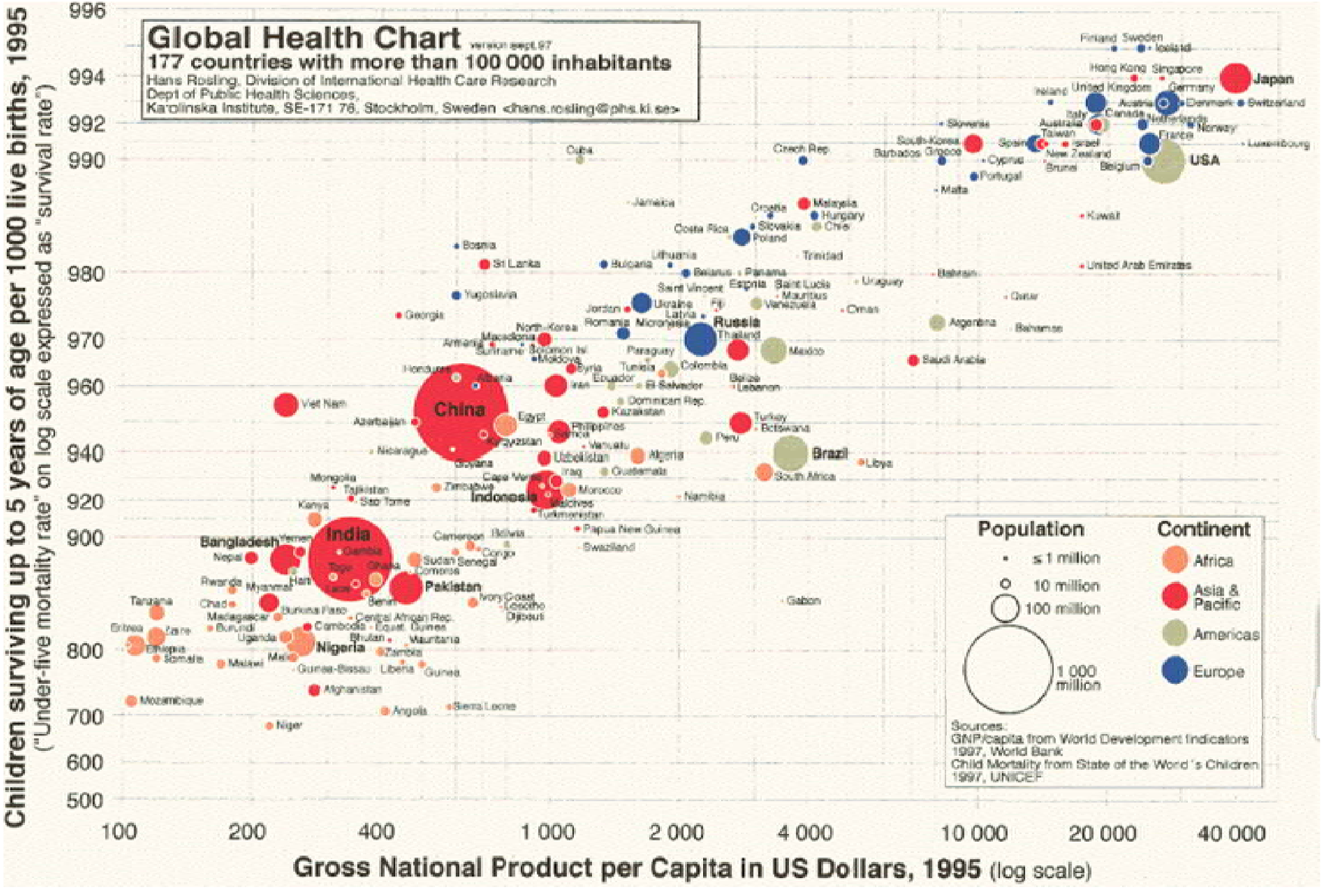

Source: Karolinska Institute: www.whc.ki.se/index.php.

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IC 2941

A primary care focused health system improves health outcomes.

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OU 2910

Primary Care Orientation and Population Health Status

Starfield 10/02
PC 2239

Average Rankings* for Health Indicators in Infancy, for Countries Grouped by Primary Care Orientation

	Low Birth Weight (1993)	Neonatal Mortality (1993)	Postneonatal Mortality (1993)	Infant Mortality (1996)
Worse primary care (Belgium, France, Germany, US)	**9.5**	**7.8**	**11.5**	**8.8**
Better primary care (Australia, Canada, Japan, Sweden, Denmark, Finland, Netherlands, Spain, UK**)	**5.9**	**6.7**	**5.0**	**6.2**

*Best level of health indicator is ranked 1; worst is ranked 13; thus, lower average ranks indicate better performance.

**England and Wales only

Based on data in Starfield & Shi, Health Policy 2002; 60:201-18.

Average Rankings for Child Deaths (Ages 1-14) Due to Injury for Countries Grouped by Primary Care Orientation

Lowest	**9.8**
(Belgium, France, Germany, US)	
Middle	**8.0**
(Australia, Canada, Japan, Sweden)	
Highest	**4.0**
(Denmark, Finland, Netherlands, Spain)	

Source: UNICEF. Innocenti Report Card 2, 2/2001.

Average Rankings* for YPLL in Countries Grouped by Primary Care Orientation

	Suicide		All Except External	
	Female	Male	Female	Male
Worse primary care (Belgium, France, Germany, US)	7.3	8.3	8.8	10.8
Better primary care (Australia, Canada, Japan, Sweden, Denmark, Finland, Netherlands, Spain, UK**)	6.9	6.3	6.2	5.4

*Best level of health indicator is ranked 1; worst is ranked 13; thus, lower average ranks indicate better performance.

**England and Wales only

Calculated from: OECD Health Data 1998. Starfield & Shi, Health Policy 2002; 60:201-18.

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Average Rankings* for Life Expectancy at Ages 40, 65, and 80, for Countries Grouped by Primary Care Orientation

	Age 40		Age 65		Age 80	
	Female	Male	Female	Male	Female	Male
Worse primary care (Belgium, France, Germany, US)	**7.8**	**9.5**	**8.0**	**8.0**	**7.4**	**6.9**
Better primary care (Australia, Canada, Japan, Sweden, Denmark, Finland, Netherlands, Spain, UK**)	**6.7**	**5.9**	**6.6**	**6.6**	**6.8**	**7.1**

*Best level of health indicator is ranked 1; worst is ranked 13; thus, lower average ranks indicate better performance.

**England and Wales only

Calculated from: OECD Health Data 1998. Starfield & Shi, Health Policy 2002; 60:201-18.

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Average Rankings for World Health Organization Health Indicators for Countries Grouped by Primary Care Orientation

	DALEs	Child Survival Equity	Overall Health
Worse primary care (Belgium, France, Germany, US)	**16.3**	**22.5**	**36.3**
Better primary care (Australia, Canada, Sweden, Japan, Denmark, Finland, Netherlands, Spain, UK)	**11.0**	**15.8**	**29.1**

DALE: Disability adjusted life expectancy (life lived in good health)
Child survival: survival to age 2, with a disparities component
Overall health: $\frac{\text{DALE minus DALE in absence of a health system}}{\text{Maximum DALE for health expenditures minus same in absence of a health system}}$

Source: Calculated from WHO, World Health Report 2000.

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IC 2952

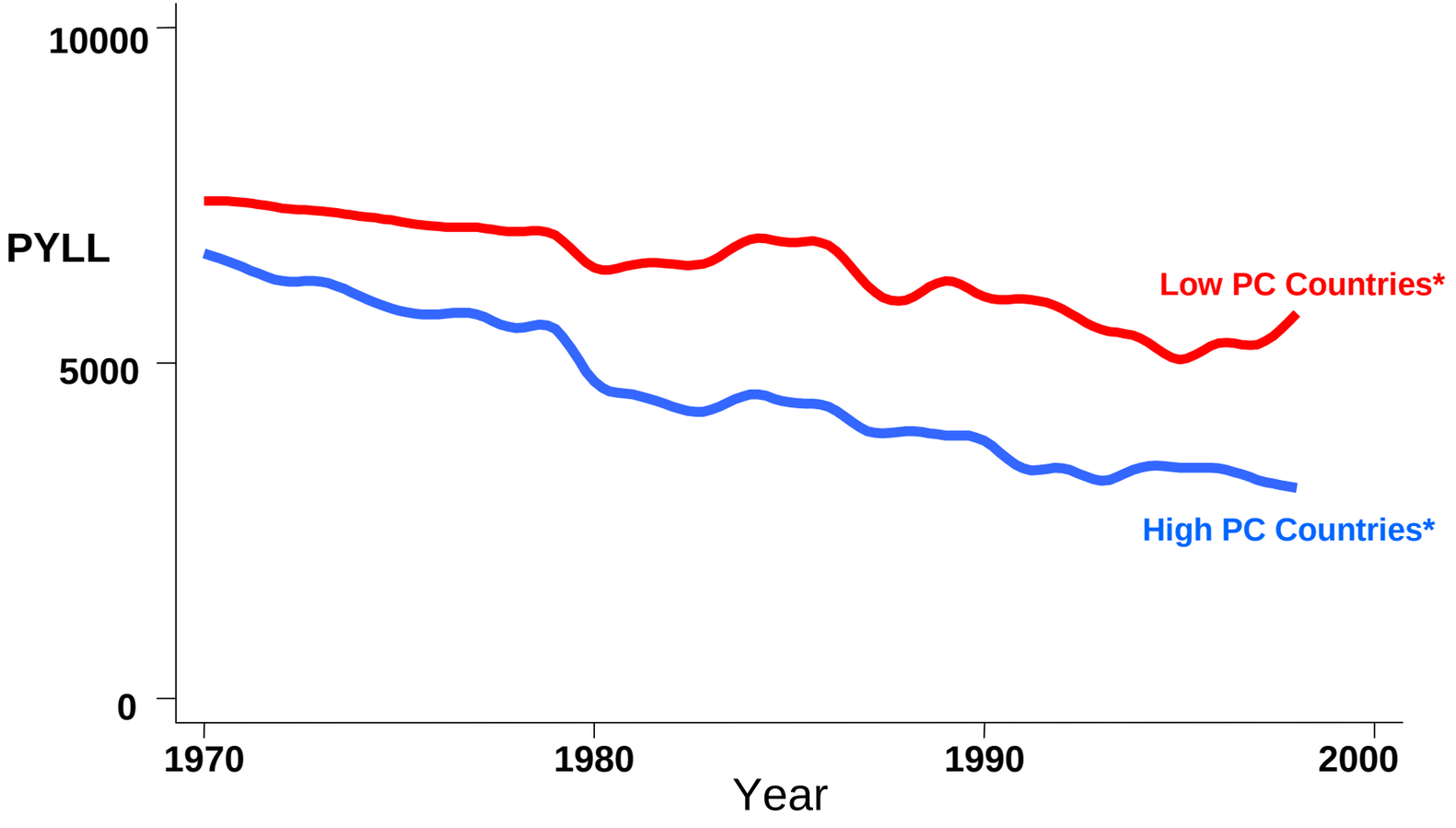
Primary Care Score and Health Outcomes

Health Outcome	Association with Primary Care Score*	
	In Males	In Females
All-cause mortality	√	
Life expectancy	√	
Infant Mortality Rate	√	
PYLL (all causes)	√	√
PYLL (pneumonia & influenza)	√	√
PYLL (asthma & bronchitis)	√	√
PYLL (cerebrovascular disease)	√	√
PYLL (heart disease)	√	√

*Primary care coefficient significant at $p<0.05$ level and estimated by fixed effects, using pooled cross-sectional time series design. Analysis controlled for GDP, percent elderly, doctors/capita, average income (ppp), alcohol and tobacco use. R^2(within) averaged from to .36 to .84.

Source: Macinko et al, Health Serv Res 2003; 38:831-65.

Primary Care Strength and Premature Mortality in 18 OECD Countries



*Predicted PYLL (both genders) estimated by fixed effects, using pooled cross-sectional time series design. Analysis controlled for GDP, percent elderly, doctors/capita, average income (ppp), alcohol and tobacco use. R^2(within)=0.77.

Source: Macinko et al, Health Serv Res 2003; 38:831-65.

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Within-Country Studies

- Ecological analyses: Effect of primary care doctor to population ratios (US, UK)
- Case control studies (US)
- Hospitalizations for avoidable conditions or complications (US, Spain)
- Survey data on impact of affiliation with a primary care doctor (US, Spain)
- Path analyses at state and local levels (US)

In England, each additional primary care physician per 10,000 (about a 20% increase) is associated with a decrease in mortality of about 5%, adjusting for limiting long-term illness and for various demographic and socioeconomic characteristics.

Source: Gulliford, J Public Health Med 2002; 24:252-4, and personal communication 9/04.

Major Determinants of Outcomes*: 50 US States

Specialty physicians:	More: all outcomes worse
Primary care physicians:	Fewer: all outcomes worse
Hospital beds:	More: higher total, heart disease, and neonatal mortality
Education:	No relationship
Income:	Lower: higher heart and cancer mortality
Unemployment:	Higher: higher total mortality, lower life span, more low birth weight
Urban:	Lower mortality (all), longer life span
Pollution:	Higher total mortality
Life style:	Worse: higher total and cancer mortality, lower life span
Minority:	Higher total mortality, neonatal mortality, low birth weight, lower life span

Note: All variables are ecologic, not individual.
*Overall mortality; mortality from heart disease, mortality from cancer, neonatal mortality, life span, low birth weight.

Source: Shi, Int J Health Serv 1994; 24:431-58.

Relationship between Primary Care and Age-Standardized Mortality in US States, 1980, 1985, 1990, 1995

Controlling for income inequality,

a 20% increase in the number of primary care physicians is associated with a 5% decrease in mortality (40 fewer deaths per 100,000).

The effect is greatest if the increase is in family physicians. One more family physician per 10,000 (estimated 33% increase) people is associated with 70 fewer deaths (estimated 9% decrease) per 100,000.

In contrast an estimated 8% increase in the number of specialist physicians is associated with a 2% increase in mortality.

NOTE: Uncontrolled for sociodemographic factors

Source: Calculated from Shi et al, J Am Board Fam Pract 2003; 16:412-22.

Primary Care and Infant Outcomes

The greater the supply of primary care physicians, the lower the infant mortality and low birth weight percentage. An increase of one PCP/10,000 is associated with a 2.5% reduction in infant mortality and a 3.2% reduction in low birth weight.

State-level; controlled for income inequality, education, unemployment, racial/ethnic composition, urban/rural. Time series analysis (same year, 1, 3, 5, year lags).

Source: Shi et al, J Epidemiol Community Health 2004; 58:374-80.

Primary Care and Stroke Mortality (US)

The greater the supply of primary care physicians, the lower the stroke mortality. An increase of one PCP/10,000 is associated with a 1.5% reduction in stroke mortality in the same year, but 3.6% reduction with a 3-year lag.

State-level; controlled for income inequality, education, unemployment, racial/ethnic composition, urban/rural. Time series analysis (same year, 1, 3, 5, year lags).

Source: Shi et al, Stroke 2003; 34:1958-64.

Physician Supply and Early Detection of Breast Cancer, Florida, 1994

Each 10% increase in primary care MD supply is associated with a 4% higher odds of early stage diagnosis.

Other studies show similar findings for colorectal cancer, cervical cancer, and melanoma.

Sources: Ferrante et al, J Am Board Fam Pract 2000; 13:408-14. Roetzheim et al, J Am Acad Dermatol 2000; 43:211-8. Roetzheim et al, J Fam Pract 1999; 48:850-8. Campbell et al, Fam Med 2003; 35:60-4.

Health Care Expenditures and Mortality 5 Year Followup: United States, 1987-92

- Adults (age 25 and older) with a primary care physician rather than a specialist as their personal physician
  - had 33% lower cost of care
  - were 19% less likely to die (after controlling for age, gender, income, insurance, smoking, perceived health (SF-36) and 11 major health conditions)

Source: Franks & Fiscella, J Fam Pract 1998; 47:105-9.

Primary Care and Infant Mortality Rates, Indonesia, 1996-2000

	1996-1997	1997-1998	1998-1999	1999-2000
Primary care spending per capita*	10.3	9.6	8.5	8.2
Hospital spending per capita*	4.1	4.4	4.6	5.3
Infant mortality	20% improvement (all provinces) (1990-96)			14% worsening (22 of 26 provinces)

*constant Indonesian rupiah, in billions

Source: Simms & Rowson, Lancet 2003; 361:1382-5.

Starfield 05/03
WC 2499

Primary Care Physicians and Specialists

Starfield 04/04
GS 2827

The greater the supply of primary care physicians, the lower the total mortality, heart disease mortality, and stroke mortality at the US county level.

In 35 analyses dealing with differences between types of areas (7) and 5 rates of mortality (total, heart, cancer, stroke, infant), the greater the primary care physician supply, the lower the mortality for 28. The higher the specialist ratio, the higher the mortality in 25.

Controlled only for income inequality

Source: Shi et al, J 1980-1995. J Am Board Fam Pract 2003; 16:412-22.

Physician Supply and Odds of Early Stage Diagnosis of Melanoma,** Florida, 1994

	Adjusted odds ratio
Family practice	1.21*
General internists	0.90*
Dermatologists	1.39*
OB/gyn	0.98
Other specialists	1.00

*Statistical significance p<.01
**Adjusted for age, gender, race/ethnicity, income, education, co-morbidity, type of health insurance

Sources: Roetzheim et al, J Am Acad Dermatol 2000; 43:211-8..

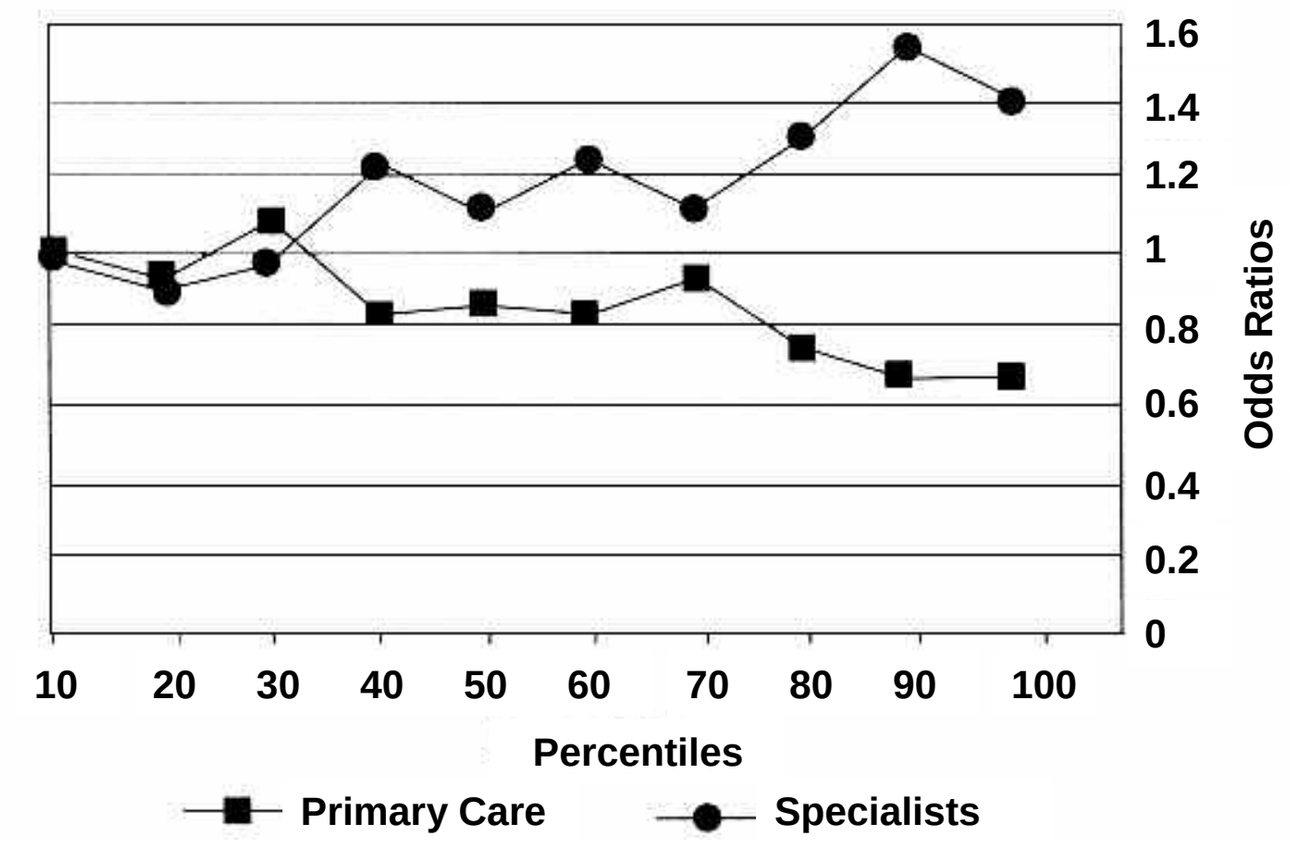
Starfield 04/04
WC 2850

In regression analyses that adjust for sociodemographic characteristics at the county level, each one-third increase in the supply of family physicians decreases the incidence of invasive cervical cancer by 10%, and the mortality from cervical cancer by 20%.

There is no effect of non primary care physicians.

Sources: Campbell et al, Fam Med 2003; 35:60-4.

The Regional Primary Care and Specialty Physician Supply and Odds of Late-stage Diagnosis of Colorectal Cancer



Source: Roetzheim et al, J Fam Pract 1999; 48:850-8.

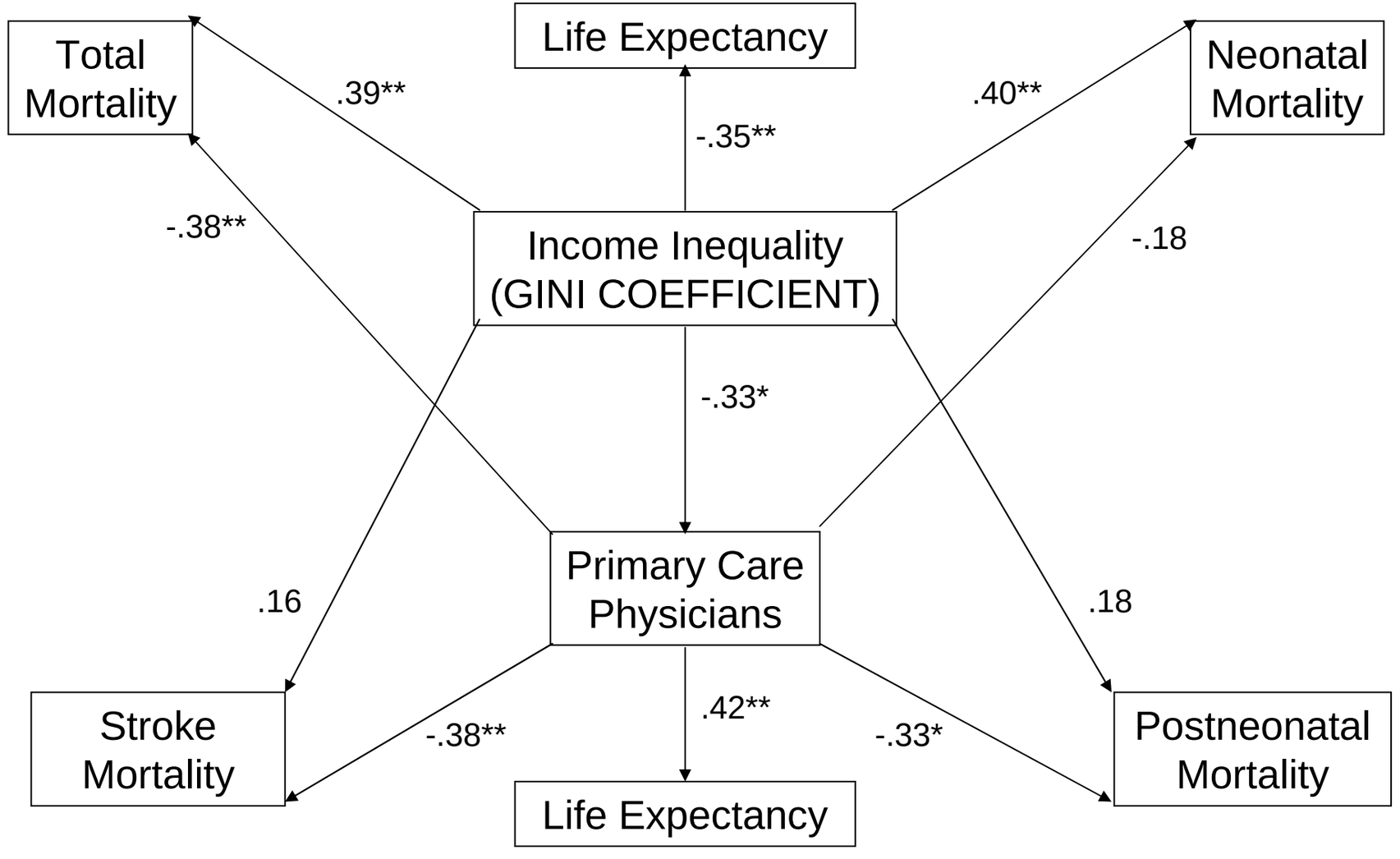
Starfield 08/02
WC 2179

Patients receiving care from specialists providing care outside their area of specialization have higher mortality rates for community-acquired pneumonia, acute myocardial infarction, congestive heart failure, and upper gastrointestinal hemorrhage.

Source: Weingarten et al, Arch Intern Med 2002; 162:527-32.

Does primary care reduce disparities in health across population subgroups?

Path Coefficients for the Effects of Income Inequality and Primary Care on Health Outcome (50 US States, 1990)



Source: Shi et al, J Fam Pract 1999; 48:275-84.

*p<.05; **p<.01.

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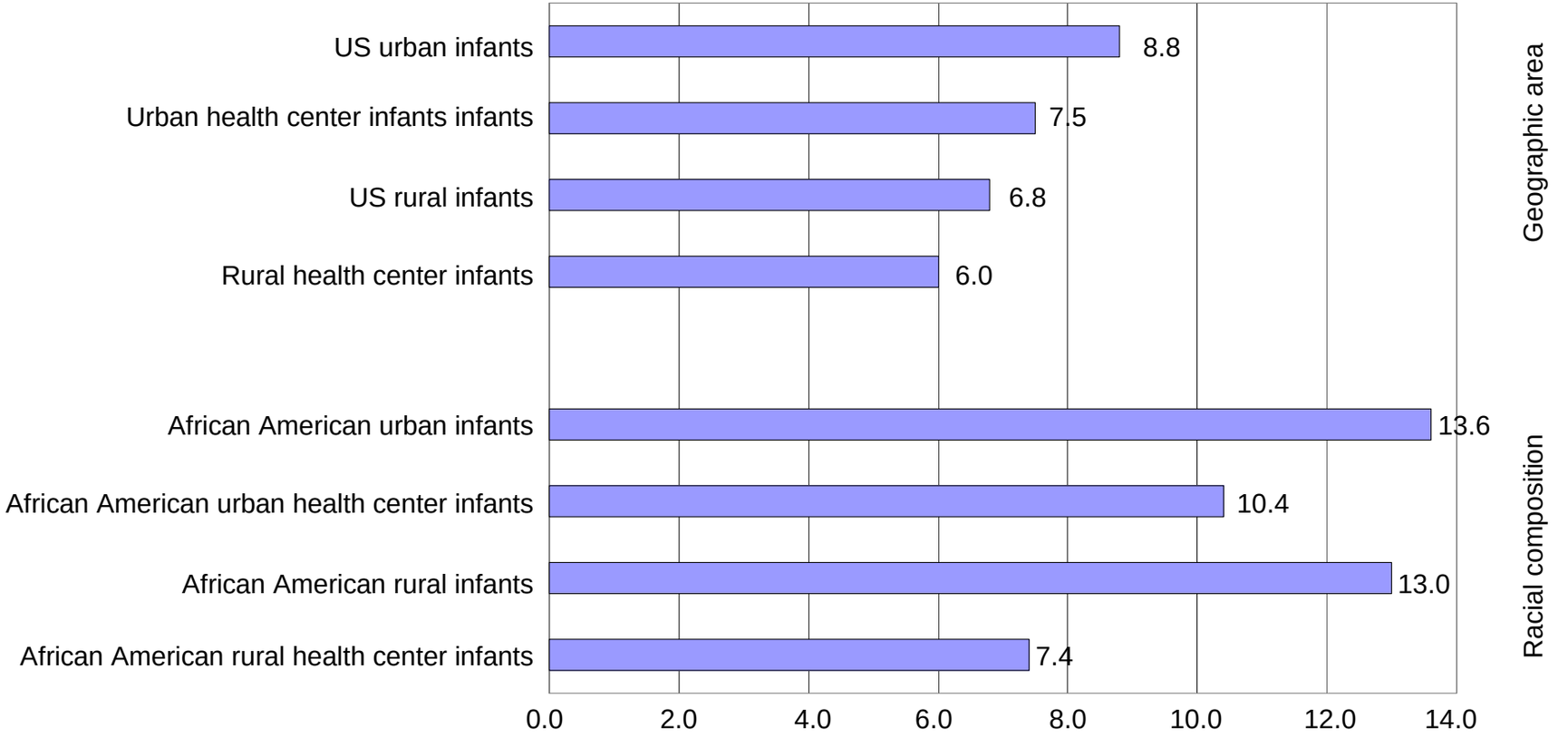
PC 1768

Low Birth Weight among US Rural, Urban, and Primary Care Health Center Infants



Source: Politzer et al, Med Care Res Rev 2001; 58:234-48.

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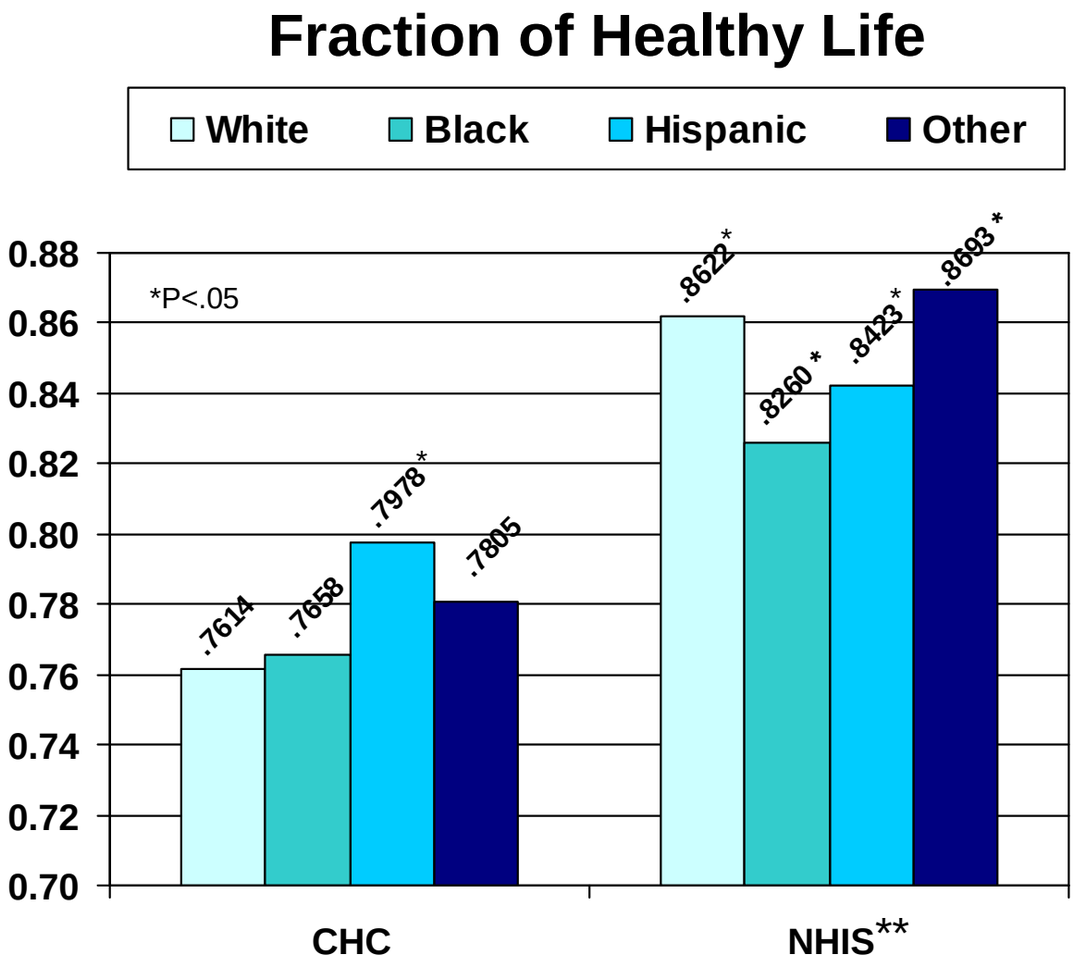
WC 2637

Association of Primary Care with Reduced Racial Disparities in Healthy Life



Health Center patients experience lower levels of healthy life across all racial/ethnic groups.

Significant racial/ethnic disparities exist in the nation's low-income individuals.

Health Center Hispanic patients experience greater healthy life, no Black/White differences.

**people under poverty level with at least one doctor visit

Source: Shi et al, Int J Health Serv 2001; 31:567-82.

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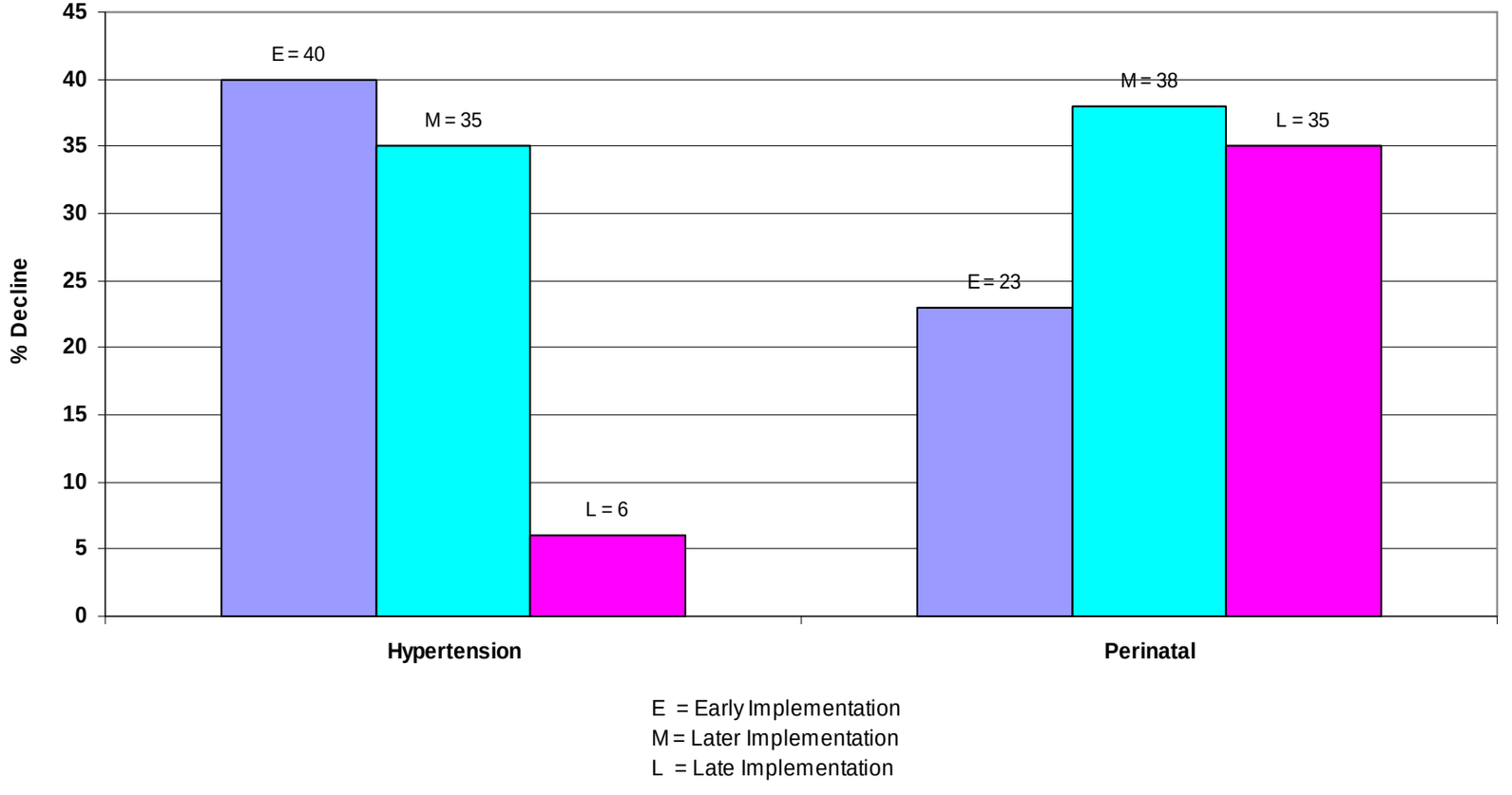
WC 2968

Primary Care Reform, 1984-90 to 1994-96, Percent Decline in Mortality - Various Causes, Barcelona, Spain



Source: Villalbi et al, Aten Primaria 1999; 24:468-74.

Starfield 11/00
WC 1800

Does Primary Care Reduce Inequity in Health in Developing Countries?

So far, the evidence for the benefits of primary care has come from industrialized countries. What about developing countries? Although there have been very few studies of this subject in developing countries, the conclusion is the same: better primary health care, more equity in health services and health outcomes.

Share of Public Spending on Health among Countries with Similar GNP per Capita But Very Disparate Child Survival (to Age 5) Rates, 1995

Ratio*: percent of expenditures for health from the government to poorest 20% vs. richest 20% of population				
High child survival		Low child survival		Additional children lost per 1000
Sri Lanka	1.1	Ivory Coast	0.3	150
Malaysia	2.6	Brazil	0.4	45
Costa Rica	2.1	South Africa	0.9	55
Jamaica	3.3	Ecuador	0.2	25
Nicaragua	1.0	India	0.3	50
Egypt	0.6	Ivory Coast	0.3	100

*Ratios of one or more signify a greater share of government expenditures to poorest segment of population.

Sources: Calculated from Karolinska Institute, Global health chart, www.whc.ki.se/index.php. Victora et al, Lancet 2003; 362:233-241. Castro-Leal et al, Bull World Health Organ 2000; 78:66-74. Carr. Improving the Health of the World's Poorest People. Population Health Bureau, 2004.

Starfield 04/04
IC 2854

In 7 African countries

- The highest 1/5 of the population receives well over twice as much financial benefit from overall government health spending (30% vs 12%).
- For primary care, the poor/rich benefit ratio is much lower (23% vs 15%).

“From an equity perspective, primary care represents a clear step in the right direction.”

Source: Gwatkin, Int J Epidemiol 2001; 30:720-3, based on Castro-Leal et al, Bull World Health Organ 2000; 78:66-74.

Why Primary Care Is Better for Population Health Outcomes Than Specialty Care

- Generic outcomes are better (no study shows otherwise).
- Primary care is more effective.
- Primary care is more efficient.
- Primary care is more equitable.

Why Specialty Care Is Not a Population Health Strategy

- Specialists are trained to look for zebras instead of horses. As a result, they do more tests, which lead to the cascade effect and consequently greater likelihood of adverse effects, including death.
- Equity of access to specialists, even for horizontal equity, is much poorer than equity of access to primary care physicians.

Why Specialty Care Is Not a Population Health Strategy

- Specialists cannot deal with co-morbidity. They may do better on adhering to guidelines, but guidelines are for people without co-morbidity. Consideration of the impact of co-morbidity on financing and delivery mechanisms needs to be undertaken.

Imperatives for Research in Primary Care/Specialty Care

- The impact of co-morbidity on development of clinical and preventive care guidelines
- New strategies to better plan for relationships between primary care physicians and specialists.
- Cross-country and cross-area variations in referral rates and variations in care-seeking from primary care physicians and specialists demands a new approach to designing more appropriate roles of the two types of physicians.

Implications for Information Systems

- Information systems need to be oriented towards person-focused care (not episodes of diseases) and to follow patients across different levels of care.
- Information systems need to be population-oriented, with due consideration for safeguarding privacy and confidentiality through security systems.

Primary care physicians must lead, not follow, in identifying the important issues in population health. “Defending turf” is not enough.