The Effectiveness of Primary Care

Barbara Starfield, MD, MPH

Primary Care Course
(Based on Cape Town, South Africa, 2007; and Barcelona, Spain, 2009)
This presentation provides evidence from the 1990s and early 2000s (concomitant with the growth of interest in primary care in the world) concerning the impact of primary care-oriented health systems on population health outcomes and on distribution of these outcomes ("equity") from cross-national and selected within-nations studies.
Life Expectancy Compared with GDP per Capita for Selected Countries

Country* Clusters: Health Professional Supply and Child Survival

*186 countries
The global imperative is to organize health systems around strong, patient-centered, i.e., Primary Care.

A disease-by-disease approach will not address the most serious shortfall in achieving the health-related Millennium Development Goals. It will also worsen global inequities. Those exposed to a variety of interacting influences are vulnerable to many diseases. Eliminating diseases one by one will not materially reduce the chances of others.

... Strongly reaffirming the values and principles of primary health care, including equity, solidarity, social justice, universal access to services, multisectoral action, decentralization and community participation as the basis for strengthening health systems ... URGES member states:

1. to ensure political commitment at all levels ... 
2. to accelerate action towards universal access to primary health care by developing comprehensive health services and by developing national equitable, efficient and sustainable financing mechanisms ... 
3. to put people at the centre of health care ...
4. to promote active participation … empowering communities, especially women, in the processes of developing and implementing policy and improving health and health care, in order to support the renewal of primary health care

5. to train and retain adequate numbers of health workers, with appropriate skill mix, including primary health care nurses, midwives, allied health professionals, and family physicians … in order to respond effectively to people’s health needs

6. to encourage that vertical programs (be) … integrated and implemented in the context of integrated primary health care
7. to improve access to appropriate medicines, health products, and technologies, all of which are required to support primary health care

8. to develop and strengthen health information and surveillance systems, relating to primary health care … to facilitate evidence-based policies and program and their evaluation

9. to strengthen health ministries, enabling them to provide inclusive, transparent and accountable leadership of the health sector and to facilitate multisectoral action as part of primary health care …
### Aspects of Care That Distinguish Conventional Health Care from People-Centred Primary Care

<table>
<thead>
<tr>
<th>Conventional ambulatory medical care in clinics or outpatient departments</th>
<th>Disease control programmes</th>
<th>People-centred primary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on illness and cure</td>
<td>Focus on priority diseases</td>
<td>Focus on health needs</td>
</tr>
<tr>
<td>Relationship limited to the moment of consultation</td>
<td>Relationship limited to programme implementation</td>
<td>Enduring personal relationship</td>
</tr>
<tr>
<td>Episodic curative care</td>
<td>Programme-defined disease control interventions</td>
<td>Comprehensive, continuous and person-centred care</td>
</tr>
<tr>
<td>Responsibility limited to effective and safe advice to the patient at the moment of consultation</td>
<td>Responsibility for disease-control targets among the target population</td>
<td>Responsibility for the health of all in the community along the life cycle; responsibility for tackling determinants of ill-health</td>
</tr>
<tr>
<td>Users are consumers of the care they purchase</td>
<td>Population groups are targets of disease-control interventions</td>
<td>People are partners in managing their own health and that of their community</td>
</tr>
</tbody>
</table>

Primary **health** care is primary care applied on a population level. As a population/public health strategy, it requires the commitment of governments to develop a population-oriented set of primary care services in the context of other levels and types of services.
Primary care is the provision of first contact, person-focused, ongoing care over time that meets the health-related needs of people, referring only those too uncommon to maintain competence, and coordinates care when people receive services at other levels of care.
Why Is Primary Care Important?

Better health outcomes
Lower costs
Greater equity in health
Evidence for the benefits of primary care-oriented health systems is robust across a wide variety of types of studies:

• International comparisons
• Population studies within countries
  – across areas with different primary care physician/population ratios
  – studies of people going to different types of practitioners
• Clinical studies
  – of people going to facilities/practitioners differing in adherence to primary care practices

## Primary Care Scores, 1980s and 1990s

<table>
<thead>
<tr>
<th>Country</th>
<th>1980s</th>
<th>1990s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>0.8</td>
<td>0.4</td>
</tr>
<tr>
<td>France*</td>
<td>-</td>
<td>0.3</td>
</tr>
<tr>
<td>Germany</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>United States</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>Australia</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Canada</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Japan*</td>
<td>-</td>
<td>0.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.5</td>
<td>1.7</td>
</tr>
<tr>
<td>Finland</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Spain*</td>
<td>-</td>
<td>1.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.7</td>
<td>1.9</td>
</tr>
</tbody>
</table>

*Scores available only for the 1990s
Primary Care Orientation of Health Systems: Rating Criteria

• Health System Characteristics
  – Type of system
  – Financing
  – Type of primary care practitioner
  – Percent active physicians who are specialists
  – Professional earnings of primary care physicians relative to specialists
  – Cost sharing for primary care services
  – Patient lists
  – Requirements for 24-hour coverage
  – Strength of academic departments of family medicine

## System Features Important to Primary Health Care

<table>
<thead>
<tr>
<th>Resource Allocation (Score)</th>
<th>Progressive Financing*</th>
<th>Cost Sharing</th>
<th>Comprehensive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>US</td>
<td>0</td>
<td>0**</td>
<td>0</td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Canada</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Japan</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sweden</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Denmark</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Spain</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>UK</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*0=all regressive
1=mixed
2=all progressive
**except Medicaid

Key system factors in achieving primary health care in both developing and industrialized countries are:

• Universal financial coverage, under governmental control or regulation
• Efforts to distribute resources equitably (according to degree of need)
• No or low co-payments
• Comprehensiveness of services

Sources: Starfield & Shi, Health Policy 2002; 60:201-18.
Gilson et al, Challenging Inequity through Health Systems
Primary Care Orientation of Health Systems: Rating Criteria

- Practice Characteristics
  - First-contact
  - Person-focus over time
  - Comprehensiveness
  - Coordination
  - Family-centeredness
  - Community orientation

• First contact avoids unnecessary specialist visits.
• Person-focus over time avoids disease-focused care (makes care more effective).
• Comprehensiveness avoids referrals for common needs (makes care more efficient).
• Coordination avoids duplication and conflicting interventions (makes care less dangerous).
System (PHC) and Practice (PC) Characteristics Facilitating Primary Care, Early-Mid 1990s

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

Based on data in Starfield & Shi, Health Policy 2002; 60:201-18.
Primary Care Score vs. Health Care Expenditures, 1997

Based on data in Starfield & Shi, Health Policy 2002; 60:201-18.
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. R²(within)=0.77.

Adapted by CTLT from Macinko et al, Health Serv Res 2003; 38:831-65.
Primary Care Oriented Countries Have

- Fewer low birth weight infants
- Lower infant mortality, especially postneonatal
- Fewer years of life lost due to suicide
- Fewer years of life lost due to “all except external” causes
- Higher life expectancy at all ages except at age 80

Primary health care oriented countries

• Have more equitable resource distributions
• Have health insurance or services that are provided by the government
• Have little or no private health insurance
• Have no or low co-payments for health services
• Are rated as better by their populations
• Have primary care that includes a wider range of services and is family oriented
• Have better health at lower costs

Sources: Starfield and Shi, Health Policy 2002; 60:201-18.
## Comparisons of Policy (PHC) and Clinical (PC) Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Canada</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System characteristics related to primary care</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of system</td>
<td>1.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Financing</td>
<td>2.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Cost sharing for primary care</td>
<td>2.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Primary care practice characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First contact</td>
<td>1.0</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Longitudinality</td>
<td>1.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Comprehensiveness</td>
<td>2.0</td>
<td>2.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Coordination</td>
<td>0.5</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Family-centeredness</td>
<td>1.0</td>
<td>2.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Community orientation</td>
<td>0.5</td>
<td>2.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

## Health “Outcomes”: Canada vs. US*
(Rank among OECD Countries, 2004-5)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Canada vs. US</th>
</tr>
</thead>
<tbody>
<tr>
<td>LE birth</td>
<td>9 vs 25</td>
</tr>
<tr>
<td>LE age 65 (males)</td>
<td>4 vs 8</td>
</tr>
<tr>
<td>LE age 65 (females)</td>
<td>4 vs 14</td>
</tr>
<tr>
<td>PYLL (age 70)</td>
<td>13 vs 21</td>
</tr>
<tr>
<td>IHD mortality (males)</td>
<td>7 vs 5</td>
</tr>
<tr>
<td>IHD mortality (females)</td>
<td>7 vs 9</td>
</tr>
<tr>
<td>Stroke mortality (males)</td>
<td>2 vs 4</td>
</tr>
<tr>
<td>Stroke mortality (females)</td>
<td>3 vs 6</td>
</tr>
<tr>
<td>All cancer mortality (males)</td>
<td>12 vs 7</td>
</tr>
<tr>
<td>All cancer mortality (females)</td>
<td>22 vs 23</td>
</tr>
<tr>
<td>Infant mortality</td>
<td>24 vs 26</td>
</tr>
<tr>
<td>Asthma mortality ages 5-39</td>
<td>18 vs 21</td>
</tr>
</tbody>
</table>

*age standardized where appropriate

Sources: OECD Health data 2009.
Starfield, Health Aff 2010;29:1030-6.
Why Does Primary Care Enhance Effectiveness of Health Services?

- Greater accessibility
- Better person-focused prevention
- Better person-focused quality of clinical care
- Earlier management of problems (avoiding hospitalizations)
- The accumulated benefits of the four features of primary care

Is Primary Care as important within countries as it is among countries?
State Level Analysis:
Primary Care and Life Expectancy


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WCUS 5835 n
In Ontario, Canada, the supply of GPs (less than 7 per 10,000 versus 7 or more) is associated with higher likelihood of early diagnosis and higher 5 year survival for breast cancer.*

A loss of GPs during the 1990s was associated with a lower likelihood of early diagnosis and 5-year survival.*

*All analyses controlled for age and area income.

Source: Gorey et al, Cancer 2009;115:3563-70.
# Primary Care and Infant Mortality Rates, Indonesia, 1996-2000

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care spending per capita*</td>
<td>10.3</td>
<td>9.6</td>
<td>8.5</td>
<td>8.2</td>
</tr>
<tr>
<td>Hospital spending per capita*</td>
<td>4.1</td>
<td>4.4</td>
<td>4.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Infant mortality (all provinces) (1990-96)</td>
<td>20% improvement</td>
<td>14% worsening</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant mortality (22 of 26 provinces)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*constant Indonesian rupiah, in billions

Impact of PSF Coverage on Infant Mortality in Brazilian States, 1990-2002: Marginal Effects*

*Based on 2-way fixed effects model of Brazilian states, 1990-2002, n=351 R^2=0.90. Non-significant (p>0.05) control variables, including physician and nurse supply and sewage not shown.

Many studies done WITHIN countries, both industrialized and developing, show that areas with better primary care have better health outcomes, including total mortality rates, heart disease mortality rates, and infant mortality, and earlier detection of cancers such as colorectal cancer, breast cancer, uterine/cervical cancer, and melanoma. The opposite is the case for higher specialist supply, which is associated with worse outcomes.

What We Already Know

A primary care oriented system is important for

• Improving health (improving effectiveness)
• Keeping costs manageable (improving efficiency)
Does primary care reduce inequity in health?
In the United States, an increase of 1 primary care doctor is associated with 1.44 fewer deaths per 10,000 population.

The association of primary care with decreased mortality is greater in the African-American population than in the white population.
A comparison of age-adjusted survival from breast cancer showed that

- Low SES is strongly associated with decreased survival in US, but not Canada.
- The survival advantage in Canada is present in low income areas only.
- The survival advantage in Canada is much larger at ages under 65.
- The Canadian survival advantage is larger for later stage diagnosis. That is, there is almost certainly a medical care benefit to equity in the Canadian context.


<table>
<thead>
<tr>
<th>Quintile</th>
<th>Rate Reduction</th>
<th>Policy Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile (1)</td>
<td>44</td>
<td>1989 At least one primary care health center for each rural village</td>
</tr>
<tr>
<td>(2)</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>(3)</td>
<td>22</td>
<td>1993 Government medical welfare scheme: all children less than 12, elderly, disabled</td>
</tr>
<tr>
<td>(4)</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Richest</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quintile (5)</td>
<td>13</td>
<td>2001 Entire adult population insured</td>
</tr>
<tr>
<td>Rate ratio (Q1/Q5)</td>
<td>55</td>
<td>Activities of Rural Doctors’ Society</td>
</tr>
<tr>
<td>Absolute difference (Q1-Q5)</td>
<td>61</td>
<td></td>
</tr>
</tbody>
</table>

Primary Care and Reduced Inequity in Health: Low and Middle Income Countries

• Studies of primary care intervention areas compared with comparisons areas:
  – Haiti, Bangladesh, India, Liberia, Zaire, Bolivia

• Studies of country-wide experiences (before/after)
  – Thailand, Indonesia

Why Does Primary Care Enhance Equity in Health?

• Greater comprehensiveness of services (especially important in the presence of multimorbidity)
• Person-focused care over time (better knowledge of patient and better recognition of problems)
• Greater accessibility of services
• Better coordination, thus facilitating care for people of limited flexibility
• Better person-focused prevention

THAT IS: PRIMARY CARE IS PERSON-FOCUSED, NOT DISEASE ORIENTED. DISEASE-ORIENTED CARE IS INHERENTLY INEQUITABLE.

Primary Care and Health: Evidence-Based Summary

- Countries with strong primary care
  - have lower overall costs
  - generally have healthier populations
- Within countries
  - areas with higher primary care physician availability (but NOT specialist availability) have healthier populations
  - more primary care physician availability reduces the adverse effects of social inequality
How Much Does PHC Cost?

- A study in Africa found primary care oriented health services cost about US$8.57 per person.
- The Family Health Program in Brazil costs about $25 per person/year; it has no co-pays, and most drugs (anti-hypertension, HIV, TB, antibiotics) are free of charge.
- The World Bank estimates that $34 per capita is required for full health center support.

## Primary Care Supply and All-Cause Mortality, by Race, United States

<table>
<thead>
<tr>
<th>Unit of Analysis</th>
<th>Years</th>
<th>Outcome</th>
<th>% Change with Increase of 1 PC doc/10,000*</th>
</tr>
</thead>
<tbody>
<tr>
<td>States (all)</td>
<td>85-95</td>
<td>All-cause mortality (Blacks)</td>
<td>-3.81%</td>
</tr>
<tr>
<td>States (all)</td>
<td>85-95</td>
<td>All-cause mortality (Whites)</td>
<td>-1.28%</td>
</tr>
</tbody>
</table>

*statistically significant at p<0.05 level and derived from multiple regression analyses controlling for % elderly, % African-American, % poverty and/or income, unemployment, % completed high school, and income inequality (Gini).

### Predicted Impact of Improved Primary Care Supply on Mortality, USA

<table>
<thead>
<tr>
<th>Unit of Analysis</th>
<th>Years</th>
<th>Outcome</th>
<th>Deaths Potentially Averted with Increase of 1 PCP/10,000*</th>
</tr>
</thead>
<tbody>
<tr>
<td>States (all)</td>
<td>85-95</td>
<td>All-cause mortality</td>
<td>127,617</td>
</tr>
</tbody>
</table>

*Average effect size of 5.3 % reduction obtained by combining results from 10 studies, all controlling for confounders (e.g. income, education)

Conclusion

Although sociodemographic factors undoubtedly influence health, a primary care oriented health system is a highly relevant policy strategy because its effect is clear and relatively rapid, particularly concerning prevention of the progression of illness and effects of injury, especially at younger ages.
Good Primary Care Requires

• Health system POLICIES conducive to primary care practice: What can we learn from other countries about the relative merits of direct provision of services rather than just financing of services?
• Health services delivery that achieves the important FUNCTIONS of primary care: What can be done to enhance practitioners’ recognition of and responsiveness to patients’ problems (patient-focus) rather than on the professional priorities of diagnoses (diagnosis-focus)?
Strategy for Change in Health Systems

- Achieving primary care
- Avoiding an excess supply of specialists
- Achieving equity in health
- Addressing co- and multimorbidity
- Responding to patients’ problems: using ICPC for documenting and follow-up
- Coordinating care
- Avoiding adverse effects
- Adapting payment mechanisms
- Developing information systems that serve care functions as well as clinical information
- Primary care-public health link: role of primary care in disease prevention
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.
PCAT
(Primary Care Assessment Tool)

• First-contact (access and use)
• Person-focused care over time
• Comprehensiveness (services available and provided)
• Coordination

• Family centered
• Community oriented
• Culturally competent

website: http://www.jhsph.edu/pcpc/pca_tools.html
Primary Care Scores by Data Source, PSF Clinics

There is no such thing as a “primary care service”. There are only primary care functions and “specialty care” functions. We know what the primary care functions are; they are evidence-based. Payment should be based on their achievement over a period of time. Any payment system that rewards specific services will distort the main purpose of medical care: to deal with health problems effectively, efficiently, and equitably.
# Primary Care

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| First Contact     | • Accessibility  
                    • Use by people for each new problem                                     |
| Longitudinal      | • Relationship between a facility and its population  
                    • Use by people over time regardless of the type of problem; person-focused character of provider/patient relationship |
| Comprehensive     | • Broad range of services  
                    • Recognition of situations where services are needed                      |
| Coordination      | • Mechanism for achieving continuity  
                    • Recognition of problems that require follow-up                          |
Structural and Process Elements of the Essential Features of Primary Care

- **Capacity**
  - Accessibility
  - Eligible population
  - Range of services
  - Continuity

- **Essential Features**
  - First-contact
  - Longitudinality
  - Comprehensiveness
  - Coordination

- **Performance**
  - Utilization
  - Person-focused relationship
  - Problem recognition

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EVAL 5107 an
Structural and Process Elements of the Essential Features of Primary Care

Capacity
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- Eligible population
- Range of services
- Continuity

Essential Features
- First-contact
- Longitudinality
- Comprehensiveness
- Coordination

Performance
- Utilization
- Person-focused relationship
- Problem recognition

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