

Mapping healthcare systems: a policy relevant analytic tool

Neelam Sekhri Feachem^{a,*}, Ariana Afshar^b, Cristina Pruett^c and Anton L.V. Avanceña^d

^aGlobal Health Sciences and Department of Epidemiology & Biostatistics, School of Medicine, University of California, San Francisco, San Francisco, California, USA; ^bUniversity of California, San Francisco, San Francisco, California, USA; ^cGlobal Health Sciences, University of California, San Francisco, San Francisco, California, USA; ^dThe Global Health Group, University of California, San Francisco, San Francisco, California, USA

*Corresponding author: Tel: +1 510 735 4502; E-mail: neelam.feachem@ucsf.edu

Received 7 June 2016; revised 2 December 2016; editorial decision 12 January 2017; accepted 27 February 2017

Background: In the past decade, an international consensus on the value of well-functioning systems has driven considerable health systems research. This research falls into two broad categories. The first provides conceptual frameworks that take complex healthcare systems and create simplified constructs of interactions and functions. The second focuses on granular inputs and outputs. This paper presents a novel translational mapping tool – the University of California, San Francisco mapping tool (the Tool) – which bridges the gap between these two areas of research, creating a platform for multi-country comparative analysis.

Methods: Using the Murray-Frenk framework, we create a macro-level representation of a country's structure, focusing on how it finances and delivers healthcare. The map visually depicts the fundamental policy questions in healthcare system design: funding sources and amount spent through each source, purchasers, populations covered, provider categories; and the relationship between these entities.

Results: We use the Tool to provide a macro-level comparative analysis of the structure of India's and Thailand's healthcare systems.

Conclusions: As part of the systems strengthening arsenal, the Tool can stimulate debate about the merits and consequences of different healthcare systems structural designs, using a common framework that fosters multi-country comparative analyses.

Keywords: Health financing, Health policy, Health systems, Health systems frameworks, Health systems research

Introduction

Since the publication of the World Health Report (WHR) 2000, the importance of strong and resilient health systems has gained prominence in global health discourse.^{1,2} Yet, the vulnerability of fragile health systems continues to echo through persistent global health challenges, such as the stress-test of the Ebola crisis.³ Health systems strengthening in low and middle-income countries remains a global priority in achieving the health-related Sustainable Development Goals (SDGs), particularly in the call for universal health coverage.^{4,5}

An international consensus on the value of well-functioning health systems has driven much-needed attention and some resources towards health systems policy research.⁶ Shakarishvili and colleagues classify this research into three broad categories.⁷ The first includes descriptive frameworks focused on

various components of health systems such as care delivery, provider payment mechanisms or regulatory structures. The second includes deterministic and predictive frameworks including actuarial or economic modeling. The final category takes a broader view to create analytical frameworks that describe health systems functions and their complex interactions. A gap in the literature exists, however, in translating these broad analytical frameworks into practical diagrams of the health system as a whole.⁷ In this paper we present a novel translational mapping tool that provides a macro-level visual representation of a country's healthcare financing and provision structure to enable clearer understanding of key policy choices, and offer a platform for multi-country comparative analyses. The University of California, San Francisco (UCSF) Healthcare Systems Mapping Tool (the Tool) provides another step in the 'concept-to-action roadmap'⁷ for health systems strengthening.

We initially published an early version of this tool in *Cross Border Health Insurance: An Overview*.⁸ Policymakers found it useful to better understand their national health systems, and for cross-country comparisons.^{9–20} In this paper we present for the first time, an advanced and updated version of the Tool, explain the methodology behind its development, and highlight the key policy questions it can be used to address. We conclude with an example of how to apply the Tool to compare the healthcare structure, organization, and high-level policy decisions made by two countries in Asia: India and Thailand.

Materials and methods

The UCSF Healthcare Systems Mapping Tool

The WHR 2000 defines the healthcare system as the ‘...provision of, and investment in, health services...whether directed to individuals or to populations.’² While acknowledging the enormous contribution of population health activities to health outcomes, the Tool concentrates on the macro-level structure for financing and delivering personal rather than non-personal or population health services. This domain accounts for the largest portion of healthcare expenditures and is significantly influenced by public policy choices.²¹

The Tool is based on the Murray and Frenk health systems framework.²² We focus specifically on two of the four functions described in the framework – financing and provision – which are highlighted in Figure 1. We recognize that stewardship and resource generation (the two other functions in Murray and Frenk’s framework), are essential to well-functioning health systems and provide the foundation for financing and delivery of healthcare. We find that policy decisions on the design of financing and provision are often the most politically contested when charting a path towards universal health coverage, and are a key focus of policymakers in any health systems reform.

The Tool provides a country-level perspective and highlights the high-level policy choices that governments implicitly or

explicitly make when deciding how they finance and deliver healthcare. It is designed to visually represent the foundational questions of any healthcare system structure: What are the funding sources? Who are the purchasers? What populations are covered? Who are the providers? And how are these entities related? The Tool does not attempt to depict all the factors that influence the performance of a healthcare system. Several factors that may be equally or more important, such as quality of care, are external to the structures represented in the healthcare system map generated by the Tool.

Figure 2 presents the general structure of the Tool. Health system entities fall along the horizontal x-axis. The vertical y-axis represents the functions of these entities.

The entities on the horizontal axis are categorized as either public (or publically mandated) or private. We classify public entities as those under the direct control of the government or quasi-government agencies and private entities as those outside of government control.²³ These two categories are differentiated by color in the map: red represents a public entity and blue, private. The color distinctions are carried throughout the map. The extent of public and private funding in the healthcare system overall is shown visually by the relative width of the header row under financing. This is based on the percentage of total healthcare spending in the country attributed to public vs private funding sources using WHO National Health Accounts definitions.²⁴ The map also includes health expenditures by source.

The vertical axis represents the functions of the entities. This structural skeleton follows the broad conceptual model outlined by Murray and Frenk²² and includes revenue collection, risk pooling, purchasing, populations served, and provision.

The first row in the map identifies revenue collection mechanisms. These are defined as the mobilization of resources from households, businesses, and external sources.²² These include public sources such as general taxation, social health insurance, and external (donor) funding; and private sources such as private health insurance (including community health insurance), and out-of-pocket spending (OOPS).²⁴

The second row indicates the level at which risk pooling occurs. Risk pooling is defined as ‘...the accumulation of revenues for the common advantage of participants’,²² with all those participating sharing financial risk for the costs of care.

The third row depicts the purchasing entities within the system. Purchasing is defined as the process of spending funds to pay providers for delivery of health services.²² Entities responsible for purchasing include public institutions such as government agencies and publically funded coverage schemes, and private ones such as insurers, or households.

The next row shows the populations who are beneficiaries of each of the schemes or purchasers. These various groups can include formal or informal sector workers, the elderly, low-income persons and dependents, the disabled, or civil servants. Populations are listed based on eligibility rather than actual use patterns.

Provision at the final level is defined as the delivery of healthcare services by institutions and practitioners.²² These groups include hospitals and clinics in the public sector and private providers such as faith-based organizations, non-governmental organizations, and private-for-profit entities.²⁵ There are also a

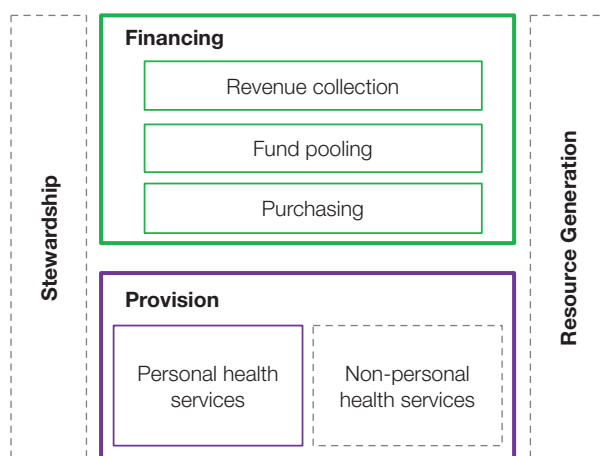


Figure 1. Murray and Frenk framework for health systems organization and functions.²² Complete health systems perform the functions of financing, provision, stewardship, and resource generation. Figure reproduced with permission of the Bulletin of the World Health Organization.

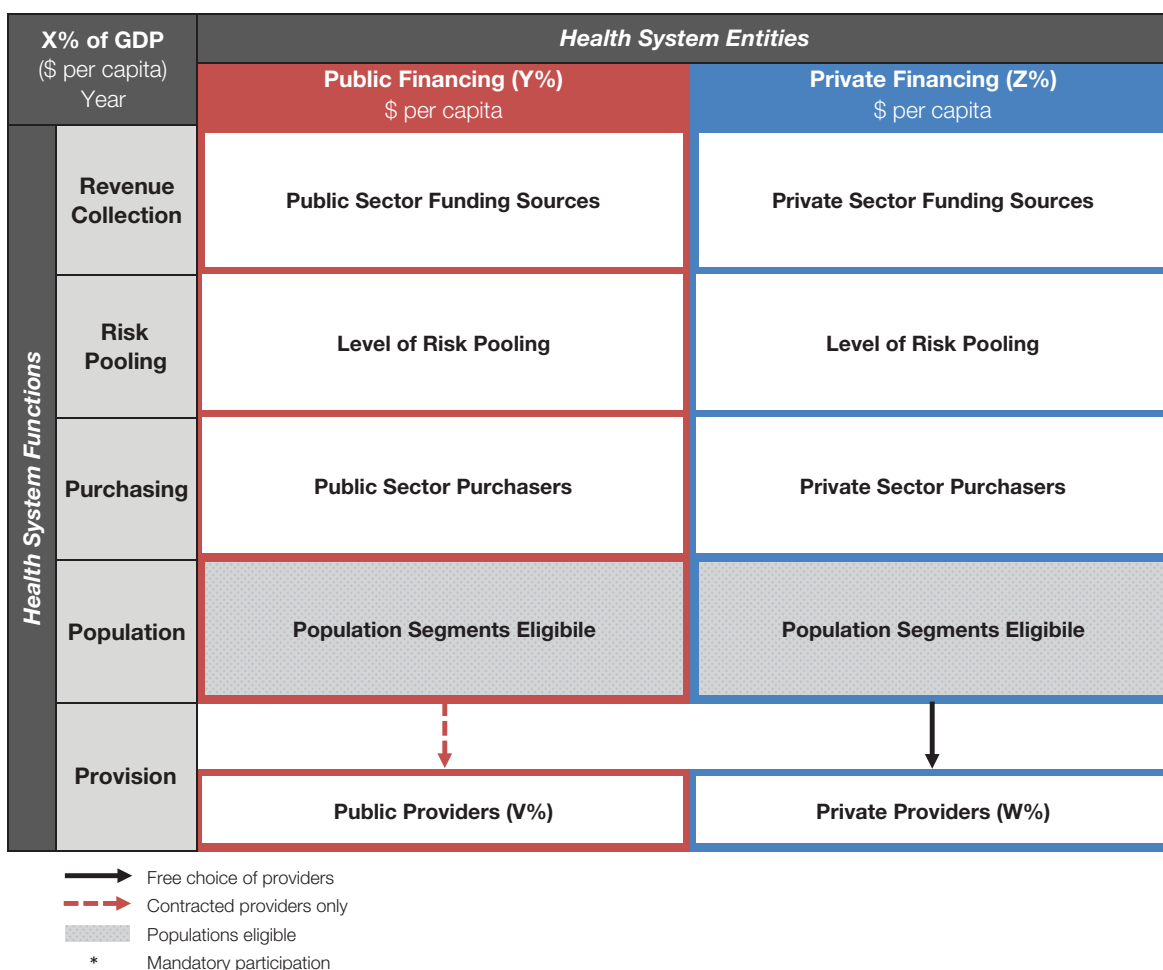


Figure 2. Basic structure of University of California, San Francisco (UCSF) Healthcare Systems Mapping Tool. Health system entities fall along the horizontal axis. The vertical axis represents the functions of these entities. Gray shading shows the populations eligible. X, Y, Z, V, and W should be filled in with the relevant numbers for the country. For ease of comparison between countries, we use US\$. GDP: gross domestic product.

myriad of informal providers in the private sector such as traditional healers and drug vendors. If data are available, the percentage of care delivered by public vs private providers can be included. However, in many countries public providers also practice in the private sector resulting in considerable overlap between these two sectors. Because of its macro-level focus, the map as we present it, does not include the organization of health services delivery or the relationship between different levels of care or the governance structures of hospitals and clinics. Sub-system maps can be created to diagram this level of detail using the Tool.

Relationships

Relationships between key structures, actors and mechanisms of the healthcare system can be understood by reading the map vertically. For example, in Figure 3, general taxes pay for services for the general population including the poor, elderly, disabled and informal workers; while social health insurance, financed by employer/employee taxes, covers only those in the formal sector.

We define vertical integration in the healthcare system as occurring when purchasing and provision are performed by the same entity.²² Vertical integration is indicated in the map through shading these entities (Figure 3). A common example of vertical integration is when general taxes allocated to a ministry of health flow through internal budgets to hospitals and clinics operated by that ministry. The opposite of this is a purchaser-provider split where the purchaser of care, such as a social insurance program, is organizationally separate from the providers of care.²⁶

More detailed coverage eligibility is indicated in the map with the use of arrows. Black arrows connect populations to providers from whom they are eligible to receive healthcare. Red dashed arrows connect populations to contracted providers. As depicted in Figure 3, formal sector workers who are funded through the social health insurance scheme are eligible to receive care from both public providers and contracted private providers. We use asterisks to denote if participation in a scheme is mandatory. In Figure 3 this is only true for the social health insurance scheme.

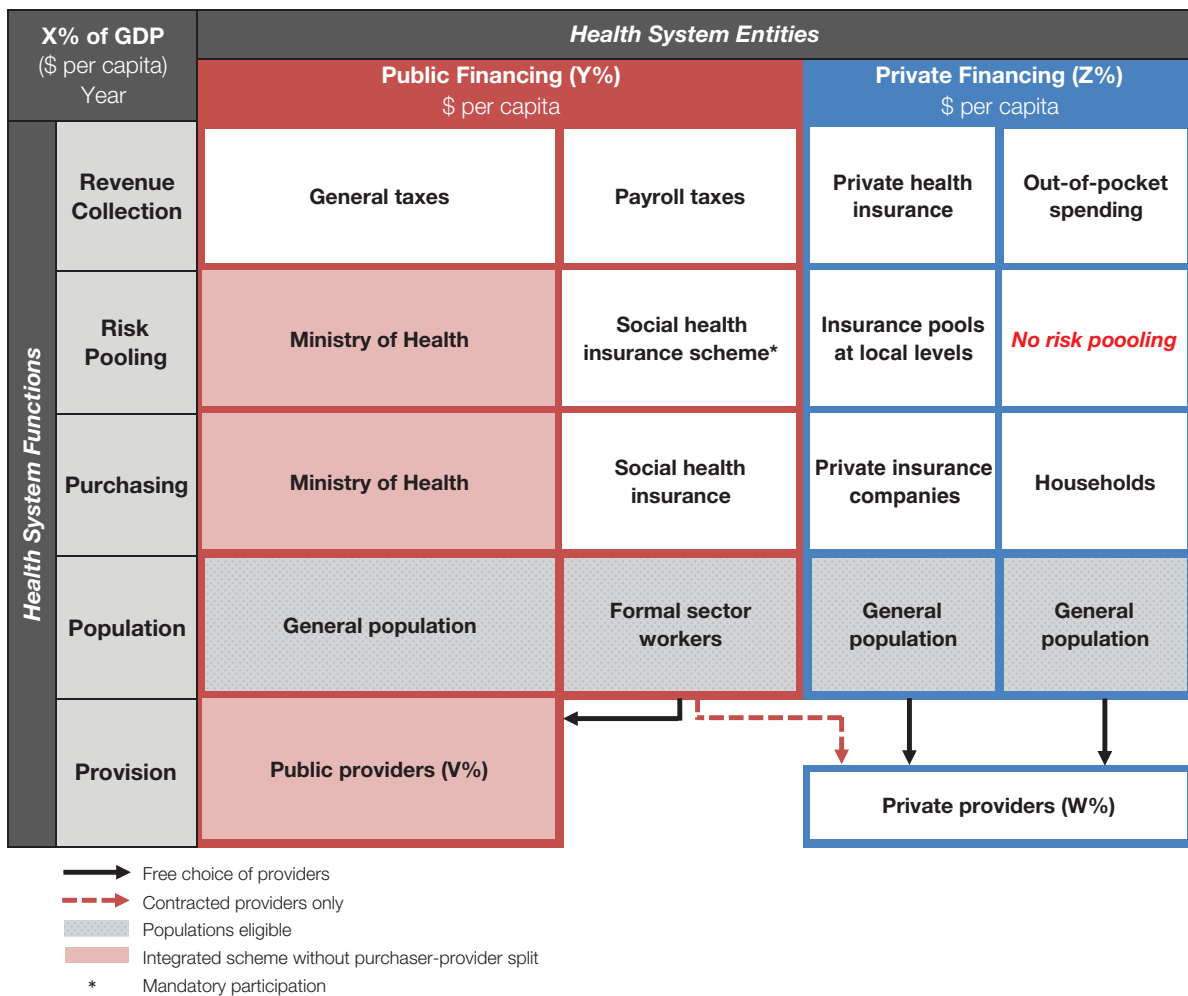


Figure 3. Example of the University of California, San Francisco (UCSF) Healthcare Systems Mapping Tool. A generalized application of the Tool where vertical integration is indicated by light red shading. Gray shading shows the populations eligible. Health system entities fall along the horizontal axis. The vertical axis represents the functions of these entities. X, Y, Z, V, and W should be filled in with the relevant numbers for the country. For ease of comparison between countries, we use US\$. GDP: gross domestic product.

Additional complexities in healthcare system structures

For some countries, parastatals provide a notable share of healthcare services. Parastatals are defined here as organizations controlled fully or partially by a government entity. They often operate their own healthcare facilities, generally for the benefit of employees, dependents, and retirees. Typical parastatals include railways and state-owned oil, gas or telecommunications firms. Parastatals in the map are shown as vertically integrated when they function as both purchasers and providers of healthcare. Large private employers may also provide a full range of healthcare for workers, families and communities. The Tool can be expanded to include these additional sectors across the x-axis.

Limitations

In its current form, the Tool provides a cross-sectional snapshot of a country’s healthcare system at a point in time. This

limitation can be addressed through creating a series of healthcare system maps to depict changes in structure over time, such as over a period of healthcare reform.

Perhaps the biggest limitation is how much can be depicted in a visual representation without it becoming too complicated for ease of understanding and comparison. As a result, the macro-level map is necessarily limited in representing subsystems. This is particularly evident in the critical area of care provision. For example, the macro-level map does not depict the crucial choices available for organizing the provision of healthcare services such as centralization or decentralization of care delivery, integration of care, governance of healthcare, or how different levels of care are organized.

Likewise, there are important decisions related to purchasing of care such as benefits packages, provider payment mechanisms, accreditation of providers, and prioritization of specific areas of care (such as prevention, primary and secondary), geographies or groups that will affect health systems performance.

However, in practice the Tool is flexible and provides a spring-board for the creation of more detailed subsystem representations. For example, focusing on the organization of care delivery; mapping state, regional, or local levels, focusing on specific areas such as public vs private services; or mapping the financing, purchasing and delivery of primary care vs hospital services.

The Tool is also limited by the extent and reliability of health systems data. The financing components of the Tool are supported by information in the National Health Accounts database.²⁷ Key indicators include total health expenditure and expenditure by financing agent. These are further divided by general government expenditure on health, which includes social security (social health insurance), and private expenditure on health. For countries with donor funding, the National Health Accounts separates the proportion of general government expenditure on health between external resources/rest of world funds, and those from domestic sources, which are referred to as 'public funds.'²⁸

As in all global health research using multi-country data, caution should be exercised in interpretation and analysis. The reliability of health data is dependent on the robustness of data collection methodologies and statistical systems in reporting countries, which vary widely.²⁹ Therefore data should be interpreted as indicative rather than precise. Additional sources may enhance reliability in analyses when data are contradictory.

Policy relevance

The map informs an array of policy decisions in the areas of financing and provision of healthcare. Some of the most important policy choices represented in the map are outlined below and summarized in Figure 4.

Public financing

Decisions about the sources and uses of public financing impact all aspects of the health system, and are described below.

Sources and amount of funds

At the most fundamental level countries must decide the amount of public monies spent on the health sector and the institutions for spending these monies. Most public monies are collected through some form of taxation, and these create the foundation for health system financing. Public policy choices include the amount of general taxes devoted to the health sector, the creation or expansion of social health insurance programs with mandatory contributions from employers and employees, and the implementation of other hypothecated taxes such as sin taxes (e.g., alcohol, gambling and tobacco) for health.

Decisions on the amount of public funding and the range of revenue sources will directly affect the extent of financial protection provided to the population.

Policy Arena	Key Policy Questions	Potential Domains of Health System Impact
PUBLIC		
Sources and Amount of Funds	Which institutional structures/sources will form the funding basis for public monies (e.g., general taxation, social health insurance, and other hypothecated taxes)? What is the relative mix of each source?	Financial Protection
	What amount of public monies will be devoted to the health sector from these various sources?	Financial Protection
Extent and Levels of Risk Pooling	To what extent will monies from various public or publically mandated revenue sources be combined into a single pool? Will risk pools be segmented by funding source?	Equity, Sustainability
Use of Public Funds	Will public monies only pay for public providers or will public monies be used to buy care delivered by a mix of public and private providers?	Access, Consumer Choice, Quality
Purchasing/ Provision Integration	Will the public sector focus on the delivery of care (the inputs of the health system) or will there be a purchaser-provider split in which the public sector purchases a package of services from providers based on outputs or outcomes?	Efficiency, Quality, Responsiveness
Coverage	To what extent will coverage programs focus on a universal package of services for the entire population; or will separate coverage schemes exist for different population segments?	Equity, Financial Protection, Access, Quality, Responsiveness
	To what extent will patients experience cost sharing? How will vulnerable populations be protected from catastrophic out-of-pocket spending?	Equity, Financial Protection, Cost
PRIVATE		
Private Risk Pooling	To what extent will risk pooling through private health insurance be encouraged or allowed?	Financial Protection, Equity, Efficiency, Access, Cost

Figure 4. Policy choices in healthcare systems design. A table of the key public and private sector policy questions and the relevant health system domain impact.

Extent and levels of risk pooling

Public or publically mandated funds can be combined in national (or subnational) risk pools or they can be separated by funding source or program. For example, contributions through social health insurance can be co-mingled with general tax revenues to provide services for the entire population in a national health insurance program, or they can remain in a separate pool to cover only those who contribute.

Decisions on the level at which funds are pooled will affect equity in financing for different population groups, the sustainability of risk pools, and the extent to which subsidies from general taxes, or cross-subsidies between programs, may be necessary to provide equity and stability.

Use of public funds

A critical policy question in use of funds is whether public monies will only pay for publically provided care or whether they will be used to buy a mix of services from both public and private providers. Historically, Bismarkian models such as Germany and France contract with both public and private providers to deliver healthcare using public funds, whereas Beveridge systems such as the UK have preferentially directed public monies to publically operated hospitals and clinics.³⁰

Decisions on how public funds will be used to purchase care from different provider sectors will affect geographic access to care, the size of the private delivery system, and consumer choice. They may also affect the quality of care, particularly in resource-poor settings.

Purchasing/provision integration

A related design decision is to what extent public purchasers will also deliver care (vertical integration) or whether there will be a purchaser-provider split in which the public sector buys a defined package of services from providers.

These policy decisions can affect the extent to which ministries of health focus their attention on inputs and production functions, rather than the outputs and outcomes of the health system.²¹ Extensive public management of healthcare delivery may impact efficiency and responsiveness.³¹

Coverage

Policymakers need to determine whether there will be a variety of public schemes to fund care for different populations, or whether there will be a universal scheme that provides care to the entire population.^{32,33} Different coverage schemes may have different rules regarding benefits and providers that can be accessed.

A corollary question is to what extent patients will be expected to contribute to the costs of their care either in the form of insurance premiums or through user fees. In all countries, public benefit packages cannot cover all healthcare needs, so some level of cost-sharing by patients for excluded services is expected. Coverage decisions should include how the vulnerable will be protected from excessive out-of-pocket expenditures.

Decisions in this arena will affect equity and the level of financial protection offered to each population group, if

coverage schemes vary. They may also affect access to care, and quality and responsiveness of services.

Private financing

By definition, monies spent outside of the government sector are private health expenditures.²⁴ The absolute amount of private financing for healthcare is dependent on a complex array of factors including the amount of public funds devoted to the health sector, whether public monies pay for private providers, the comprehensiveness of public coverage, the perceived quality of public and private providers, the level of cost-sharing in health services in publically covered facilities, and provider prices. The purchasing power of consumers and their demand for healthcare outside of the public spending envelope will also affect total private spending. Two areas in which public policy can impact private spending include:

Extent of private risk pooling

Public policy can directly influence the extent to which risk pooling is encouraged to promote financial risk protection, such as through the use of private health insurance including community-based health insurance. Decisions on whether to promote or allow a private health insurance market will affect, and can impact provider prices.³⁴ Depending on the robustness of regulatory structures, these decisions can also impact equity and access.³⁵

Medical savings accounts are an alternative to private health insurance that promote pre-payment (though not risk pooling) and offer a degree of financial protection in times of illness. Of note, Singapore is the only country where medical savings accounts are a significant source of healthcare financing.³⁶

OOPS

By default, private household spending on health that is neither risk-pooled nor prepaid is considered OOPS.²⁴ WHO suggests that if OOPS exceeds 15–20% of a country's total health financing, it will erode financial protection for the population and lead to higher rates of catastrophic health expenditures and household impoverishment, especially for the most vulnerable.³⁷

Results

Applying the Tool to India and Thailand

To demonstrate how the Tool can be applied to countries with very different financing and provision structures, we followed the methods described above to map and compare the healthcare systems of India and Thailand. We retrieved National Health Accounts data from the WHO Global Health Expenditure Database. We also conducted a review of peer-reviewed and grey literature to understand risk pooling and provision in these two countries.

The first section provides an overview of the healthcare system of each country and shows its respective healthcare system map. The second section provides a brief comparison of these maps.

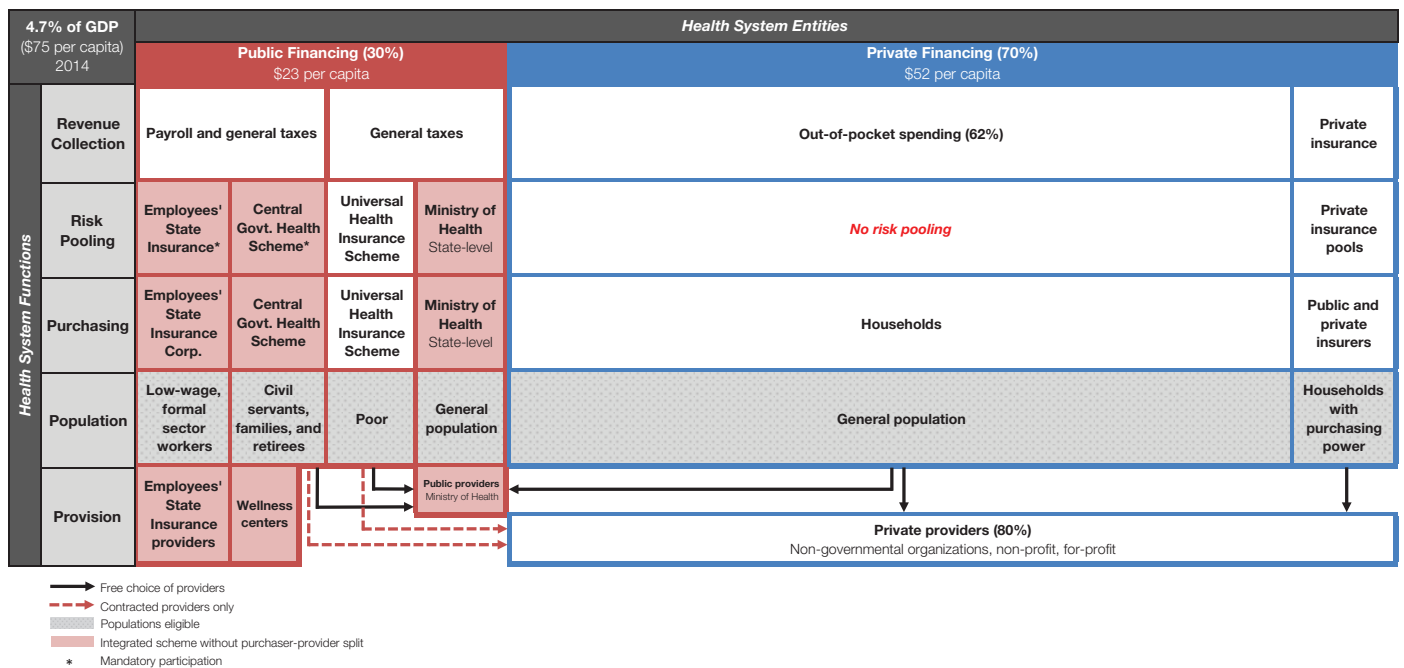


Figure 5. The University of California, San Francisco (UCSF) Healthcare System Map of India. Health system entities fall along the horizontal axis. The vertical axis represents the functions of these entities. Proportions may not add to 100% based on available National Health Accounts (NHA) data.³⁸ All currency is in US\$ at current exchange rate. GDP: gross domestic product.

India

Though India spends 4.7% of its gross domestic product (GDP) on health, only 30% of this is from public sources (Figure 5).³⁸ Public monies from general tax revenues are generated primarily from the States (78%) and are used to provide healthcare services in public facilities run by state ministries of health.^{39,40} General taxes also fund nationally mandated schemes such as a unique voluntary public insurance program for the poor known as the Universal Health Insurance Scheme (previously Rashtriya Swasthya Bima Yojna).^{39,41} This scheme requires cost-sharing from those covered. General taxes and payroll taxes jointly fund the Employee’s State Insurance Scheme for low-wage, formal sector workers and the Central Government Health Scheme for civil servants, their families, and government retirees.⁴² Donors and non-governmental organizations contribute a relatively small share of total health expenditure (less than 1%), often for specific programs or population groups.

Seventy percent of India’s health spending is from private sources, primarily through OOPS at the time of care.³⁸ Less than 2% of total health expenditure is spent on private health insurance premiums and about 1% is from parastatals such as the Indian Railways, and from major private employers.³⁸ Increasingly, states are developing their own state-based insurance programs funded through general taxes. Some states such as Andhra Pradesh have achieved high rates of coverage, while others, such as Punjab, are still largely privately financed.⁴³

Risk pooling occurs at the state level and may be further segmented by individual schemes within states. The majority of public monies are allocated to state ministries of health to

operate public hospitals and clinics. National and several state-based public insurance schemes also contract with private providers, though there are large variations by state.^{41,43} Over 75% of healthcare providers in India practice in the private sector.^{44,45} Most healthcare received from the large and diverse private health sector is paid for directly by patients through OOPS at the time of illness. Cost-sharing in public facilities also contributes to the significant share of OOPS in India. The low level of public spending and high cost-sharing, result in very high rates of catastrophic expenditures for the Indian people.^{39,46-50}

Thailand

Thailand spends 4.1% of its GDP on health, with the majority (86%) of this from public sources (Figure 6).³⁸ General taxes fund the Civil Servants Medical Benefits Scheme and the Universal Coverage Scheme. The Social Security Scheme, a social health insurance program for the formal sector, is funded by payroll contributions and topped up by general taxes by the Thai government, which provides a third of the scheme’s financing.³² These three public schemes provide health coverage to over 99% of the population.³² Funds are pooled at the national level but are segregated by scheme and not combined into a single risk pool, leading to disparities in financing across the three schemes.³²

All public schemes have a purchaser-provider split and contract with a mix of public and private providers to deliver healthcare to their beneficiaries.³² This has made strategic purchasing of healthcare possible and created an accountable public sector, enabling strong cost containment in a mixed system.⁵¹ There is

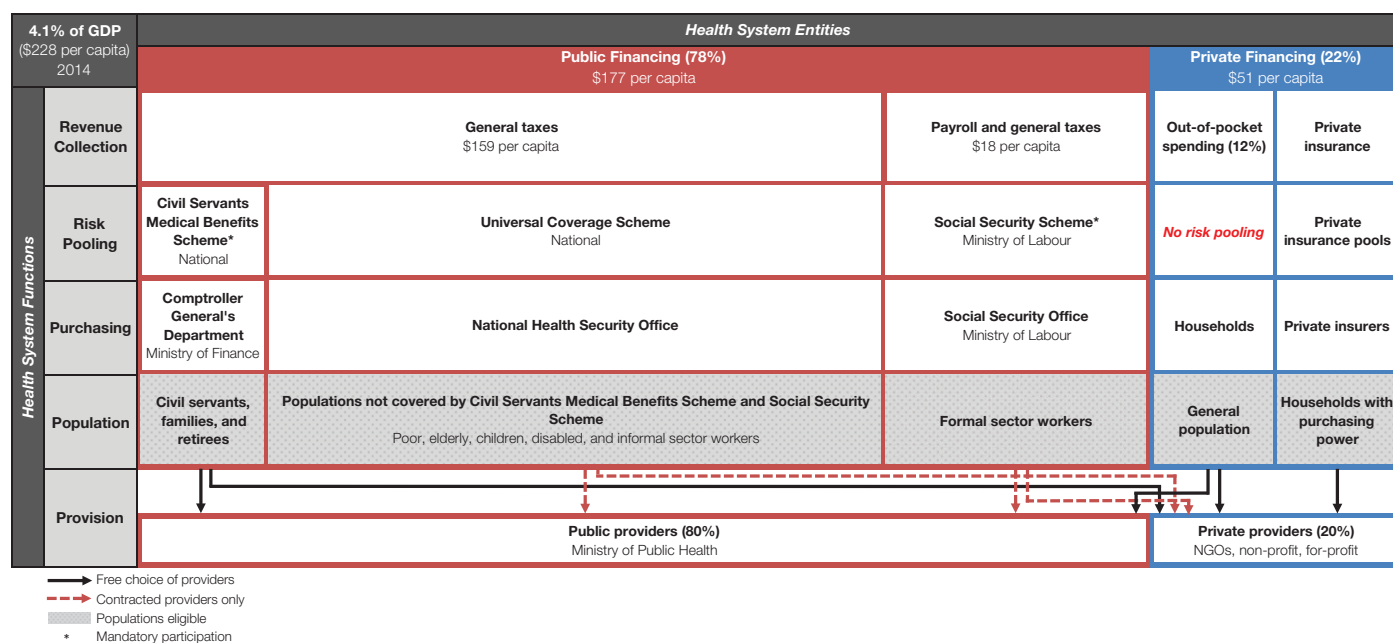


Figure 6. The University of California, San Francisco (UCSF) Healthcare System Map of Thailand. Health system entities fall along the horizontal axis. The vertical axis represents the functions of these entities. Proportions may not add to 100% based on available National Health Accounts (NHA) data.³⁸ All currency is in US\$ at current exchange rate. GDP: gross domestic product; NGOs: nongovernmental organizations.

a gatekeeping system in all three schemes that prevents individuals from seeking care from specialists (including those from the private sector) without a referral from a primary care practitioner.³² Bypassing this system results in beneficiaries having to pay for the full costs of their care out-of-pocket. Universal Coverage Scheme and Social Security Scheme members also bear the full cost of their care if they go out of the contracted network of public and private providers and facilities.

Eighty percent of providers in Thailand work in the public sector, although a small but growing private sector is present in urban centers, particularly the capital city of Bangkok. There are also providers who work in both sectors in larger cities.³² The development of a strong public sector has allowed broader access to care in areas where private providers might not choose to practice and has created leverage for tough negotiating with private providers on prices.

Private health spending is only 14% of total health expenditure, of which over half (54%) is from OOPS on services and products not covered by public insurance schemes, as well as expenses borne by individuals who choose to seek care in the private sector or who bypass the referral system described above.^{38,52} Thirty-five percent of private health spending goes to private health insurance, while the remaining proportion is spending by non-profit institutions serving households.³⁸

India–Thailand comparison

We compare the public policy decisions made by India and Thailand in structuring their healthcare systems using the policy choice framework above.

Sources and amount of funds

As a share of GDP, Thailand spends slightly less on health than India. In Thailand, the majority of health spending (78%) is from public sources, whereas in India the majority is in the form of OOPS. This results in low financial protection in India⁵⁰ and robust financial protection for the people of Thailand.^{52,53}

Thailand's public sources include a mix of general and payroll taxes, while India relies almost exclusively on general taxation. Use of multiple sources of financing has contributed to the expansion of Thailand's high coverage rates.⁵⁴

Extent and levels of risk pooling

In neither country are public revenue sources combined into a national pool that covers the entire population. In India, funding is largely at the state level and funds are risk pooled within states, which creates large disparities across states.⁵⁰ In Thailand, risk is pooled by scheme, but general taxes are used to ensure sustainability and promote equity across the schemes. Despite this, some schemes still spend considerably more per beneficiary than others, creating inequities between schemes.³²

Use of public funds

India's healthcare system initially resembled a Beveridge model based on its colonial past, in which public funds were used only to pay for hospitals and clinics operated by ministries of health. This is still how the largest proportion of public monies is spent, though the recent expansion of insurance programs has expanded provision to include some contracted private providers.^{39,41,43} In contrast, Thailand has more fully evolved to a

mixed system where public funding is directed to both contracted private and public providers. This has increased access to providers for the population in both rural and urban areas.^{55,56}

Purchasing/provision integration

In India, since most public money is directed towards public facilities, there is no purchaser–provider split and ministry of health attention is largely focused on delivering care. However, insurance schemes are emerging and changing the landscape by creating a purchaser–provider split. In contrast, all schemes in Thailand have a purchaser–provider split, which is credited with allowing the ministry of health to focus its attention on improving outcomes, efficiency and accountability rather than on the production function of care delivery.⁵¹

Coverage

Public schemes in both India and Thailand cover distinct segments of the population, though overall coverage rates differ considerably. In Thailand, near universal coverage has been achieved, while in India significant portions of the population are left without adequate health coverage.^{50,51} To better understand the differences presented by the maps, additional research reports that in India there is significant cost-sharing by patients even in public insurance programs, and payment at the point of care is common. In Thailand, care is free at the point of service if patients follow the gatekeeper system and seek care within the provider network.

The high level of cost-sharing by patients in India results in a large proportion of the population facing catastrophic health-care costs, as high as 64% among the poorest, in some states.⁴¹ In Thailand it is below 5%.⁵¹

Extent of private risk pooling

Neither country has a large private health insurance sector. India's policies, however, are resulting in more rapid growth of its largely unregulated private health insurance market. In both countries, private health insurers tend to enroll the most well-off.^{32,39,57}

OOPS

Due to the small amount spent by the public sector in India, most Indians pay out-of-pocket for care, generally at the point of service. Much of this care is provided by private providers either because patients believe them to be of higher quality, or because they are more accessible than public facilities, as reported in published research on this topic.^{43,58,59} Even in public facilities, user charges at the point of service can be significant; according to the 2015 National Health Policy, '...almost all hospitalization even in public hospitals leads to catastrophic health expenditures...'.⁶⁰ By contrast, OOPS in Thailand is small and incurred from seeking services outside the prescribed network of providers.⁵²

Discussion

The financing and delivery of healthcare are complex and varied across all countries. Discussions at both the national and

international levels are prone to getting bogged down by the complexity of the detail and it is easy to lose sight of the important policy decisions that each country must take and the informative international comparisons that can be made by focusing on the macro structure of healthcare systems.

The UCSF Healthcare Systems Mapping Tool, described comprehensively for the first time in this paper, is an attempt to clarify and highlight select macro-level structural features of any country's healthcare system to allow meaningful policy debate and international comparison. Applying the Tool to map the healthcare systems of countries at various income levels has revealed a notable degree of convergence among high-income countries and a clear direction of movement by some middle-income countries towards high-income country models.

In this paper we have applied the Tool statically to examine the macro-level organization and structure of two countries. The Tool offers two more dynamic uses, which may be useful for policymakers.

First, it is possible to look back in time and apply the Tool through the recent history of a country either at particular intervals or during a period of reform. This application will reveal the evolution of the healthcare system over time and clarify the direction of progress, which in some cases may turn out to be very different from that intended in health policy plans.

Second, the Tool can be applied looking forward. Many countries will wish to consider their ideal healthcare financing and delivery structure, perhaps in the year 2030 as they move towards universal health coverage. There will be no common model for success. The ideal structure in 2030 for each country will depend on its history, its starting point today, its basic values on issues such as social solidarity and the likely trajectory of its overall economy. By clarifying the desirable future with a 2030 healthcare system map, policymakers may be able to build political consensus for this intended structure, and to visually chart the course of reform. Prospective time-series maps can enable deliberate policy shifts and purposeful actions to ensure that milestones are met on the journey towards the envisaged arrangements. Few countries engage in this critical exercise and as result, debates about the future shape of the healthcare system are quickly overwhelmed by a lack of common understanding of the current situation, ideological debates, and a focus on excessive detail too early in the political process.

Conclusions

As countries embark on the long, winding, and challenging road to universal health coverage, the UCSF Healthcare Systems Mapping Tool provides a novel way to visualize key public policy choices. As part of the health systems strengthening toolbox, it can stimulate debate about the merits and consequences of different system designs, using a common framework that fosters multi-country comparative analyses.

Authors' contributions: NSF conceived the study; NSF, AA, CP, and ALVA conducted the literature review; NSF, AA, CP, and ALVA wrote initial

drafts and the final manuscript. All authors read and approved the final version of the paper. NSF is the guarantor of the paper.

Acknowledgements: We extend our gratitude to Richard G.A. Feachem, Stefan Nachuk, Arian Hatefi, and Felix Holl for their helpful feedback on earlier versions of the manuscript and Tool. We also thank Stefan Nachuk (UCSF Global Health Group) and Viraj Tangcharoensathien (International Health Policy Program, Thailand Ministry of Public Health) for commenting on the Thailand healthcare system map and Nachiket Mor (Executive Director, Gates Foundation, India) on the India healthcare system map.

Funding: None.

Competing interests: None declared.

Ethical approval: Not required.

References

- Hafner T, Shiffman J. The emergence of global attention to health systems strengthening. *Health Policy Plan* 2013;28:41–50.
- WHO. The World Health Report 2000. *Health Systems: Improving Performance*. Geneva: World Health Organization; 2000.
- Kieny M-P, Evans DB, Schmets G et al. Health-system resilience: reflections on the Ebola crisis in western Africa. *Bull World Health Organ* 2014;92:850.
- Tangcharoensathien V, Mills A, Palu T. Accelerating health equity: the key role of universal health coverage in the Sustainable Development Goals. *BMC Med* 2015;13:101.
- Vega J. Universal health coverage: the post-2015 development agenda. *Lancet* 2013;381:179–80.
- Sundewall J, Swanson RC, Betigeri A et al. Health-systems strengthening: current and future activities. *Lancet* 2011;377:1222–3.
- Shakarishvili G, Atun R, Berman P et al. Converging health systems frameworks: towards a concepts-to-actions roadmap for health systems strengthening in low and middle income countries. *Glob Health Gov* 2010;3:1–17.
- Sekhri N, Gomez O, MacDonald T. *Cross-border health insurance: an overview*. Oakland: California Healthcare Foundation; 1999.
- Jaafar S, Noh KM, Muttalib KA et al. Malaysia health system review. *Health Syst Transit* 2013;3:1–103.
- Belló M, Becerril-Montekio VM. Sistema de salud de Argentina. *Salud Pública México* 2011;53:96–108.
- Acosta M, Sáenz M del R, Gutiérrez B et al. Sistema de salud de El Salvador. *Salud Pública México* 2011;53:188–96.
- Muiser J, Sáenz M del R, Bermúdez JL. Sistema de salud de Nicaragua. *Salud Pública México* 2011;53:S233–42.
- Bonvecchio A, Becerril-Montekio V, Carriedo-Lutzenkirchen Á et al. Sistema de salud de Venezuela. *Salud Pública México* 2011;53:S275–86.
- Becerril-Montekio V, de Dios Reyes J, Manuel A. Sistema de salud de Chile. *Salud Pública México* 2011;53:S132–43.
- Dantés OG, Sesma S, Becerril VM et al. Sistema de salud de México. *Salud Pública México* 2011;53:S220–32.
- Lucio R, Villacrés N, Henríquez R. Sistema de salud de Ecuador. *Salud Pública México* 2011;53:S177–87.
- Sáenz M del R, Acosta M, Muiser J et al. Sistema de salud de Costa Rica. *Salud Pública México* 2011;53:S156–67.
- Bermúdez-Madriz JL, Sáenz M del R, Muiser J et al. Sistema de salud de Honduras. *Salud Pública México* 2011;53:S209–19.
- Becerril-Montekio V, López-Dávila L. Sistema de salud de Guatemala. *Salud Pública México* 2011;53:S197–208.
- Alcalde-Rabanal JE, Lazo-González O, Nigenda G. Sistema de salud de Perú. *Salud Pública México* 2011;53:S243–54.
- Musgrove P. *Public and private roles in health: theory and financing patterns*. Washington, DC: The International Bank for Reconstruction and Development / The World Bank; 1996. <https://openknowledge.worldbank.org/bitstream/handle/10986/13656/292900Musgrove0public1private1whole.pdf?sequence=1> [accessed 7 May 2016].
- Murray CJ, Frenk J. A framework for assessing the performance of health systems. *Bull World Health Organ* 2000;78:717–31.
- Organisation for Economic Co-operation and Development. *A system of health accounts: version 1.0*. Paris: OECD; 2000.
- Organisation for Economic Co-operation and Development, World Health Organization, Eurostat. *A System of Health Accounts: 2011 Edition*. Paris: OECD Publishing; 2011.
- Brugha R, Zwi A. Improving the quality of private sector delivery of public health services: challenges and strategies. *Health Policy Plan* 1998;13:107–20.
- Figueras J, Robinson R, Jakubowski E (editors). *Purchasing to Improve Health Systems Performance*. New York: Open University Press; 2005.
- WHO. Data explorer. Global health expenditure database. Geneva: World Health Organization; 2016. <http://apps.who.int/nha/database> [accessed 11 May 2016].
- WHO. General statistical procedures used to construct WHO health expenditure database. Geneva: World Health Organization; 2012. <http://apps.who.int/nha/database/DocumentationCentre/GetFile/50534721/es> [accessed 6 May 2016].
- WHO. Indicator code book. National health accounts - national health accounts. Geneva: World Health Organization; 2015. <http://apps.who.int/nha/database/DocumentationCentre/GetFile/52869001/en> [accessed 6 May 2016].
- Bump JB. The long road to universal health coverage: historical analysis of early decisions in Germany, the United Kingdom, and the United States. *Health Syst Reform* 2015;1:28–38.
- Bailey SJ, Davidson C. The purchaser—provider split: theory and UK evidence. *Environ Plan C Gov Policy* 1999;17:161–175.
- Jongudomsuk P, Srithamrongswat S, Patcharanarumol W et al. *The Kingdom of Thailand Health System Review*. Geneva: Asia Pacific Observatory on Health Systems and Policies; 2015.
- Green D, Irvine B, Clarke E et al. *Healthcare systems: France*. London: Civitas; 2012. <http://www.digitalezorg.nl/digitale/uploads/2015/03/France-Health-system.pdf> [accessed 1 September 2015].
- Colombo F, Tapay N. *Private health insurance in OECD countries*. Paris: 2004. http://www.oecd-ilibrary.org/social-issues-migration-health/private-health-insurance-in-oecd-countries_527211067757 [accessed 2 May 2016].
- Sekhri N, Savedoff W. Regulating private health insurance to serve the public interest: policy issues for developing countries. *Int J Health Plann Manage* 2006;21:357–92.
- Haseltine WA. *Affordable excellence: the Singapore healthcare story*. Washington, D.C.: Brookings Institution Press; 2013.
- Xu K, Saksena P, Jowett M et al. Exploring the thresholds of health expenditure for protection against financial risk. Geneva: World Health Organization; 2010.

- 38 WHO. NHA indicators. Global Health Expenditure Database; Geneva: World Health Organization; 2014. <http://apps.who.int/nha/database/ViewData/Indicators/en> [accessed 3 April 2016].
- 39 Reddy KS, Selvaraj S, Rao KD et al. A critical assessment of the existing health insurance models in India. New Delhi: The Planning Commission of India; 2011. http://www.planningcommission.nic.in/reports/sereport/ser/ser_heal1305.pdf [accessed 19 January 2016].
- 40 WHO. The data repository. Geneva: World Health Organization; 2016. <http://who.int/gho/database/en/> [accessed 3 April 2016].
- 41 Basu R. Rashtriya Swasthya Bima Yojana: pioneering public-private partnership in health insurance. Nugegoda, Sri Lanka: Network of Asia Pacific Schools and Institutes of Public Administration and Governance; 2014. http://www.napsipag.org/PDF/RUMKI_BASU.pdf [accessed 19 January 2016].
- 42 Prinja S, Kaur M, Kumar R. Universal health insurance in India: ensuring equity, efficiency, and quality. *Indian J Community Med* 2012;37:142–9.
- 43 Katyal A, Singh PV, Bergkvist S et al. Private sector participation in delivering tertiary health care: a dichotomy of access and affordability across two Indian states. *Health Policy Plan* 2015;30:i23–31.
- 44 Garg P. A review of literature to understand the complexity of equity, ethics and management for achieving public health goals in India. *J Clin Diagn Res* 2014;8:1–6.
- 45 De Costa A, Diwan V. ‘Where is the public health sector?’ Public and private sector healthcare provision in Madhya Pradesh, India. *Health Policy* 2007;84:269–76.
- 46 Misra S, Awasthi S, Singh JV et al. Assessing the magnitude, distribution and determinants of catastrophic health expenditure in urban Lucknow, North India. *Clin Epidemiol Glob Health* 2015;3:10–6.
- 47 Brinda EM, Kowal P, Attermann J et al. Health service use, out-of-pocket payments and catastrophic health expenditure among older people in India: The WHO Study on global AGEing and adult health (SAGE). *J Epidemiol Community Health* 2015;69:489–94.
- 48 Pal R. Measuring incidence of catastrophic out-of-pocket health expenditure: with application to India. *Int J Health Care Finance Econ* 2012;12:63–85.
- 49 Raban MZ, Dandona R, Dandona L. Variations in catastrophic health expenditure estimates from household surveys in India. *Bull World Health Organ* 2013;91:726–35.
- 50 Patel V, Parikh R, Nandraj S et al. Assuring health coverage for all in India. *Lancet* 2015;386:2422–2435.
- 51 Tangcharoensathien V, Limwattananon S, Patcharanarumol W et al. Achieving universal health coverage goals in Thailand: the vital role of strategic purchasing. *Health Policy Plan* 2015;30:1152–61.
- 52 Tangcharoensathien V, Pitayangsarit S, Patcharanarumol W et al. Promoting universal financial protection: how the Thai universal coverage scheme was designed to ensure equity. *Health Res Policy Syst* 2013;11:25.
- 53 Prakongsai P, Vongmongkol V, Panichkriangkrai W et al. Public health insurance and financial risk protection: lessons from Thailand. London: Consortium for Research on Equitable Health Systems; 2010.
- 54 Evans TG, Chowdhury AMR, Evans DB et al. Thailand’s universal coverage scheme achievements and challenges: An independent assessment of the first 10 years (2001–2010). Nonthaburi, Thailand: Health Insurance System Research Office; 2012.
- 55 Ruangratanatrai W, Lertmaharit S, Hanvoravongchai P. Equity in health personnel financing after Universal Coverage: evidence from Thai Ministry of Public Health’s hospitals from 2008–2012. *Hum Resour Health* 2015;13:59.
- 56 Campbell J, Buchan J, Cometto G et al. Human resources for health and universal health coverage: fostering equity and effective coverage. *Bull World Health Organ* 2013;19:853–63.
- 57 Shijith VP, Sekher TV. Who gets health insurance coverage in India? New findings from nation-wide surveys. Paris: International Union for the Scientific Study of Population; 2013. http://iussp.org/sites/default/files/event_call_for_papers/shijith_health_insurance.pdf [accessed 30 April 2016].
- 58 Sengupta A, Nundy S. The private health sector in India. *BMJ* 2005;331:1157–8.
- 59 The World Bank. World development report 2004: Making services work for poor people. Washington, D.C: World Bank and Oxford University Press.
- 60 Department of Health & Family Welfare. National health policy 2015 draft. New Delhi: Ministry of Health & Family Welfare Government of India; 2014. <http://www.mohfw.nic.in/showfile.php?lid=3014> [accessed 30 April 2016].

Getting more for their dollar: a comparison of the NHS with California's Kaiser Permanente

Richard G A Feachem, Neelam K Sekhri, Karen L White

Abstract

Objective To compare the costs and performance of the NHS with those of an integrated system for financing and delivery health services (Kaiser Permanente) in California.

Methods The adjusted costs of the two systems and their performance were compared with respect to inputs, use, access to services, responsiveness, and limited quality indicators.

Results The per capita costs of the two systems, adjusted for differences in benefits, special activities, population characteristics, and the cost environment, were similar to within 10%. Some aspects of performance differed. In particular, Kaiser members experience more comprehensive and convenient primary care services and much more rapid access to specialist services and hospital admissions. Age adjusted rates of use of acute hospital services in Kaiser were one third of those in the NHS.

Conclusions The widely held beliefs that the NHS is efficient and that poor performance in certain areas is largely explained by underinvestment are not supported by this analysis. Kaiser achieved better performance at roughly the same cost as the NHS because of integration throughout the system, efficient management of hospital use, the benefits of competition, and greater investment in information technology.

Introduction

The NHS Plan for 2000 states: "The NHS is effective and efficient at meeting its goals. The NHS gets more and fairer health care for every pound invested than most other health care systems."¹

We examined this claim by comparing the costs and performance of the NHS with those of a non-profit health maintenance organisation (Kaiser Permanente) in California. We compared the NHS and Kaiser Permanente on a macro level to identify any large scale differences in efficiency and operational effectiveness that would be relevant to policy and to identify topics for further research. We have not examined the merits of the overall healthcare systems in the two countries.

Comparisons among health systems are difficult because of the complexity of the systems and their contextual specificity. Several authors have made

country-level international comparisons using data from the Organisation for Economic Cooperation and Development (OECD)² or the World Health Organization.³ Comparative studies usually conclude that the United States has high costs and poor population health outcomes. Beneath this accurate overall observation, however, lies the multiplicity of different healthcare systems operating and often competing within the United States.⁴

In many ways Kaiser Permanente is like the NHS, providing a similar range of services for a population equivalent to that of a small country. Founded in 1945, it is roughly the same age as the NHS and has had the same amount of time to evolve and adapt to new circumstances. Kaiser Foundation Health Plan and Hospitals are integrated with independent physician group practices called Permanente Medical Groups. The health plan is the insurance arm of the organisation, while the hospitals and medical groups provide all clinical services. To the public these entities are seen as one organisation, which is commonly referred to as Kaiser. Kaiser has 8.2 million members: 6.1 million in California and the remainder in Colorado, Georgia, Hawaii, Maryland, Ohio, Oregon, Virginia, Washington, and the District of Columbia.⁵ We compared Kaiser's California region with the NHS because it represents the model most similar to the NHS. In California, doctors in the Kaiser system (both primary care and specialist) are shareholders or partners and salaried employees of the medical groups, and Kaiser owns and operates most of its own ambulatory facilities and hospitals. Unlike the NHS, Kaiser specialists cannot work outside the system.

Methods

We focused on cost and performance. We measured cost by determining the total operating costs of each system and by adjusting the benefits offered, special circumstances not common to both systems, the relative costs of the medical environment in which the two systems operate, and the age and socioeconomic characteristics of the populations served. We measured performance by comparing inputs, access to services, responsiveness, and limited quality indicators.

In the 1940s the NHS inherited a large stock of hospitals and facilities whereas Kaiser has had to develop its infrastructure from scratch. While noting the different balance between maintenance and capital investment

Editorial by Smith

Institute for Global Health, University of California, San Francisco and Berkeley, CA 94105

Richard G A Feachem
director

Karen L White
programme development officer

Healthcare Redesign Group, Alameda, CA 94502

Neelam K Sekhri
chief executive officer

Correspondence to: R Feachem
rfeachem@psg.ucsf.edu

BMJ 2002;324:135-43

that this imposes, we did not take these factors into account in our analysis. Each system has had over 50 years to manage its capital as it thought appropriate.

We used sources with the broadest range of comparative data (such as the OECD dataset for 2000).⁶ Much of the data on the NHS come from the official NHS website.⁷ Kaiser data come from the health plan employer data and information set for 2000⁸ and directly from Kaiser sources.

In comparing the per capita costs of two systems we adjusted for age and socioeconomic status. The adjustment for age is straightforward because breakdown of cost by age is available. The adjustment for socioeconomic group is more difficult because of a lack of age adjusted comparative data on the healthcare costs of various socioeconomic groups. We used data from the Office for National Statistics to adjust for potential socioeconomic differences.⁹

In comparing performance between the two systems, we adjusted only bed day use for age. To adjust accurately for each performance indicator we would need detailed case mix data, which were not available. Also for some of the performance indicators it is not obvious what specific adjustments would be appropriate even if the data were available.

Results

Costs

Table 1 shows the comparison of costs between the two systems with details of the adjustments made to arrive at the final adjusted per capita expenditure.

Package of benefits and special circumstances

Kaiser and the NHS both provide comprehensive health services, including hospital admission, ambulatory and preventive care, accident and emergency, optometry, subacute care, rehabilitation, and home health care. For drugs used outside hospital, in the NHS people under 16 years (or under 25 years in

Wales), over 60 years, and with special exemptions do not pay for prescriptions (about 80% of all prescription items) while others pay £6.10 (about \$10). Most Kaiser members pay \$5 per prescription. Drugs given to inpatients are free of charge in both systems

The NHS provides greater coverage than Kaiser in dental and long term psychiatric care services. For other services, specifically long term care, precise comparison is difficult. Kaiser covers up to 100 days per year of subacute care, including rehabilitation and other medical services requiring skilled nursing care. It also covers home health care, including skilled nursing, speech and physical therapy, social services for the housebound, and hospice care. The NHS also covers medical long term care and home health services. Non-medical residential care is provided outside the NHS budget and is not covered by Kaiser. Table 1 shows the amounts deducted from costs for particular services.

We examined whether either system incurs special costs or benefits by virtue of its environment that would considerably bias the cost comparison between the two systems. For example, the NHS spends over 6% of its budget on obligations such as education and training, research and development, statutory and national bodies, research, European economic area medical costs, medical, scientific and technical services, grants, and other miscellaneous services. Equivalent items in the Kaiser budget account for about 3.5% of expenditure. Kaiser also has considerable administrative costs such as sales, marketing, high malpractice insurance, and risk adjusted pricing, which account for about 4% of its budget.

Private health care

In the United Kingdom about seven million people (12%) have private medical insurance, making the private insurance market worth around £2.6b.¹¹ Private insurance serves primarily as a safety valve to provide more rapid access to specialists and non-emergency surgeries. Few Kaiser members buy duplicate insurance.

In addition to private health insurance, out of pocket spending (that is, paid for directly by the patient) is important in the United Kingdom, where about 20% of all private operations are paid for this way.¹⁴ However, as we cannot accurately estimate the amount of such spending for services that are not covered by either system (such as alternative therapies, some cosmetic surgery, and certain drugs) we have not adjusted for it. We have included costs such as copayments and direct payments for non-covered drugs in Kaiser's overall costs (table 1).

Medical cost environment

After we derived per capita costs for each system we adjusted for the purchasing power parity of each system's currency in the health sector to correct for underlying price differences in medical inputs—that is, if the NHS operated in California, or if Kaiser operated in Kent, what would be their respective per capita costs adjusted for the relative price of inputs? We can illustrate why this is necessary by comparing two major inputs: doctors' salaries and pharmaceutical costs. For general practitioners (primary care physicians) Kaiser's average starting salaries are 43% higher than average

Table 1 Comparison of costs in the NHS and Kaiser

Category	NHS (2000/2001)	Kaiser, California (2000)
Gross expenditures/revenue	£58 500m	\$14 200m
Less capital depreciation	£1 000m	\$557m
Less profit	0	\$668m
Operating expenditures	£57 500m	\$12 975m
Adjustment for differences in benefits and special circumstances:		
Dental	£1 190m	\$10m
Long term psychiatric care	£3 250m	Not covered
Special circumstances	£3 587m	\$1 065m
Supplementary private health insurance	£2 630m	0
Net expenditure after adjustments	£52 103m	\$11 900m
Per capita expenditure (59.5 million people for NHS; 6.1 million people for Kaiser)	£876	\$1951
Conversion to dollars*	\$1402	\$1951
Adjustment for PPP (1.52)†	\$2130	\$1951
Adjustment for age (decreases NHS costs by 12.2%) and socioeconomic group (decreases NHS costs 5%)	\$1764	\$1951
Final adjusted per capita expenditure	\$1764	\$1951

Sources: Lakin,⁹ Department of Health,¹⁰ Laing & Buisson,¹¹ OANDA,¹² World Bank,¹³ and unpublished data from Kaiser.

*Uses average exchange rate for the 1990s of 1.6.

†Purchasing power parity: rate of currency conversion that equalises purchasing power in health sector of different currencies.

Table 2 Age distribution of members of Kaiser California and UK population, 2000

Age (years)	Kaiser (%)	UK (%)	NHS Costs per capita* (£)
0-4	6.0	6.0	504
5-15	15.0	14.3	131
16-44	43.1	40.8	264
45-64	25.7	23.4	363
65-74	6.3	8.2	696
75-84	3.2	5.4	1246
≥85	0.7	1.9	1993

Sources: Department of Health,¹⁰ Office for National Statistics,¹⁹ and unpublished Kaiser data.

*NHS per capita costs for the Hospital and Community Health Services component of the NHS budget.

NHS salaries. For consultants (specialists) starting salaries are 115% higher in Kaiser (Kaiser, unpublished data).¹⁵ A standard basket of pharmaceuticals has been variously estimated to cost 20%,¹⁶ 55%,¹⁷ and 60%¹⁸ more in the United States than in the United Kingdom. Overall, prices in the US health sector have been estimated to be 52% higher by the World Bank¹³ and 56% higher by the Organisation for Economic Cooperation and Development⁶ than in the UK sector. We used the lower World Bank ratio of 1.52 to adjust for purchasing power parity in table 1.

Populations served

One of the most difficult tasks in comparing health systems is to determine whether the populations served by the two systems are similar. It is impossible to account for every variable that distinguishes one population from another. We adjusted for age and socioeconomic status, both of which may significantly affect healthcare costs.

The NHS serves the entire population of the United Kingdom. Kaiser serves its members, 93% of whom become members through health plans sponsored by employers or the government (Kaiser, unpublished data). Kaiser members who join through employer schemes or through government programmes for indigent and elderly people cannot be rejected because of previous illness. Membership cannot be withdrawn if a member becomes chronically or seriously ill.

Sixteen per cent of UK citizens and 10% of Kaiser members are aged over 65 years. California is a young state (11% aged > 65 years) and the United States is a young country (13% > 65 years) compared with the United Kingdom (Kaiser, unpublished data).¹⁹⁻²⁰ In the United States people over 65 are provided health coverage through Medicare, a federal programme for elderly people. They can choose to receive services through managed care organisations or on a fee for service basis. Many select the Kaiser system because of the comprehensive package of services it offers. Table 2 shows the age distributions of the two populations. We have used age specific per capita costs¹⁰ and adjusted NHS costs for what they would be if the United Kingdom had Kaiser's age distribution. This results in a 12.2% decrease in NHS per capita costs (table 1).

The NHS covers all socioeconomic groups. Kaiser members tend to come from middle to mid-lower socioeconomic groups because wealthier families mostly opt for more flexible and more expensive healthcare options. By US standards, Kaiser is regarded as a "working class" system.

Few Kaiser members are very poor. About 3.5% are in Medi-Cal (Kaiser, unpublished data), the government financed programme for indigent and very low income families in California. About 15% of California's population are in Medi-Cal. Contrary to common perception, however, people in Medi-Cal cost less per capita than the general population because they tend to be younger (71% < 35 years *v* 53% < 35 years for the general California population) and are lower users of health care.²⁰⁻²¹ Medi-Cal's total per capita costs in 1998 were \$2011 compared with \$3370 for overall per capita healthcare costs in California.²¹ Although Kaiser does not serve a representative proportion of Medi-Cal members, those who enrol receive full benefits, which in some cases are more comprehensive than for commercial members.

By definition all Kaiser members are insured. About 24% of California's population is uninsured.²² Kaiser does, however, provide care to non-members, who make up 5% of all admissions to Kaiser community hospitals. Many of these patients are uninsured. In examining the healthcare costs of uninsured people, it is important to note that almost none are aged over 65 years because they are eligible for Medicare. About 81% of uninsured people are employees and their families, and 62% are aged under 40 years.²²

It can therefore be argued that the lower representation of poor and uninsured people among Kaiser's members does not give Kaiser a cost advantage relative to a system that covers the entire population. However, we wanted to ensure that we accounted for any possible bias arising from the NHS having to provide care to all socioeconomic groups. According to the Office for National Statistics, NHS overall per capita costs would be about 5% lower if it did not provide services to the poorest half of all the UK population under the age of 65 years.⁹ We therefore adjusted per capita costs for the NHS down by 5% (table 1). We have not adjusted for potential socioeconomic differences of people above retirement age because a representative portion of Kaiser members are retired (aged over 65 years) and are insured through Medicare.

After all adjustments the NHS (\$1764) and Kaiser (\$1951) costs per capita were similar.

Performance

We compared the NHS and Kaiser on selected measures of performance from preventive services to highly specialised interventions.

Input and use

Primary care services are organised differently in the two systems. In the NHS, primary care is provided by general practitioners, often with only a modest level of support from other healthcare providers. In general, three full time general practitioners use one full time equivalent practice nurse. This nurse may perform only basic medical care and is responsible for administrative functions as well, though increasing numbers of NHS practice nurses are gaining additional skills. Most general practices have a pharmacy close by, and about a quarter have pharmacies on site (NHS, unpublished data). Physiotherapy and mental health services are often available on site for a limited time during the week (table 3).

Table 3 Comparison of inputs and use in NHS and Kaiser, 2000

Inputs	NHS	Kaiser, California
Specialists per 100 000 people		
Pediatricians	4.9*	12.3
Obstetricians-gynaecologists	4.1*	8.3
Oncologists	0.9*	1.7
Radiologists	4.3*	6.0
Cardiologists	0.8†	2.4
Primary care facilities		
Percentage of primary care physicians in single handed practices	9%‡	0%
Average No of primary care physicians per office	3-5‡	20-40
Percentage of primary care physicians with laboratory, imaging, or pharmacy on site	25%-pharmacy (few with other services)	>95%
Percentage of primary care physicians connected to clinical IT system	100% by 2002	>95% today
Use		
Average acute length of stay (days)	5.0§	3.9
Acute bed days per 1000 per year	1000	270

Sources: NHS plan,¹ OECD,⁶ HEDIS,⁸ unpublished Kaiser data, Department of Health,^{23 24} Office of Health Economics.²⁵

*1999 Includes registrars as well as consultants for England.

†1998 Consultants for England.

‡1998 data.

§1996 latest OECD data.

¶1997 latest OECD data.

In Kaiser, primary care physicians include doctors accredited in family medicine, internal medicine, paediatrics, and obstetrics and gynaecology. As a result physicians in the primary care setting are able to perform more complicated procedures, freeing up referral specialists to focus on more complex cases. These primary care doctors work in multi-specialty centres that employ between five and 40 doctors and are supported by physician assistants and nurse practitioners, who have their own lists of patients and are able to conduct clinical examinations, make diagnoses, and prescribe some medications. These “physician extenders” increase the number of available clinical staff by almost two thirds. Laboratory, radiology, and pharmacy services are usually available on site. Some centres also have physiotherapy and mental health services, while others include various specialist services

in the same building. In addition, these facilities are open in the evenings and weekends for urgent visits (table 3).

Specialists are categorised somewhat differently across the two systems. For example, the United Kingdom has many hospital based “general medicine” specialists. These are most similar to “hospitalists” within the Kaiser system, though some primary care physicians also follow their patients in the hospital setting. It is clear from table 3, however, that Kaiser has considerably more specialists per 100 000 population than the NHS, even when registrars are included in the NHS specialist numbers. For example, Kaiser has twice the concentration of obstetricians-gynaecologists and three times the concentration of cardiologists than in the NHS. This results in much shorter waiting times for specialist referrals and surgical procedures.

There were nearly four times the number of acute bed days per 1000 population per year in the NHS than in Kaiser (table 3), reflecting large differences in the management of admissions and lengths of stay. The Kaiser average of 270 acute bed days per 1000 population is made up of 193 days for those aged under 65 years and 1031 days for those aged over 65 years (Kaiser, unpublished data). The figure for the NHS of 1000 per 1000 population is for all age groups.⁶ If Kaiser had the age distribution of the United Kingdom its acute bed days would be 327, still only one third of the NHS figure. Kaiser acute bed days are low by US standards but not unique.²⁶

Access and responsiveness

The NHS Plan (2000) states: “The public’s top concern about the NHS is waiting for treatment. Waiting to see a GP, waiting to be seen in a casualty department, waiting to get into hospital and, sometimes, waiting to get out of hospital.”²¹ On 28 February 2001, 45 500 people in England alone had been waiting for more than one year for admission to hospital.²⁷

Table 4 shows various comparisons of responsiveness to patients. Access to primary care is similar in both systems, though primary care physicians in Kaiser spend longer with each patient. More time spent with

Table 4 Comparing responsiveness of NHS and Kaiser to consumers, 2001

Measure	NHS	Kaiser, California
Primary care		
Time to see a primary care doctor	2001: average 3 days; <48 hour by 2004	Urgent: <24 hours; routine: 80% <7 days
Telephone helpline and associated services	NHS Direct helpline available. By 2004, NHS Direct will provide one stop gateway to advice, appointments, and out of hours care	24 hour hotline available for advice and appointments. Appointments can also be made on line
Repeat prescription available without calling or visiting a doctor	Available nationwide by 2004	Available today
Time spent with primary care doctor	8.8 minutes*	Medical: 20 minutes; obstetrics/gynaecology: 15 minutes; paediatrics: 10 minutes
Specialist referral		
Waiting time to see specialist	2001: 36% <4 weeks, 20% >13 weeks, 4% >6 months; by 2005, average 5 weeks and maximum 3 months	2001: 80% <2 weeks
Waiting time for inpatient treatment or surgery	2001: 41% <13 weeks, 33% >5 months, 7% >12 months; by 2005: average 7 weeks and maximum 6 months	2001: 90% <13 weeks
Patient convenience		
Patients’ ability to book appointments and admissions to suit own schedule	2001: minimal; by 2005: universal	To a high degree
Availability of translation services	By 2003: available by telephone	Available on site and by telephone

Sources: NHS Plan,¹ Office of Health Economics,²⁵ Department of Health,²⁸ and unpublished Kaiser data.

*1992/93 survey.

Table 5 Comparison of quality in the NHS and Kaiser, 1999

Measure	NHS	Kaiser, California
Vaccination		
Children who received various immunisations by age 2 years	DTP=95%; MMR=88%; Hib=94%	DTP=91%*; polio=93%*; MMR=94%*; Hib=91%*; hepatitis B=86%*; chicken pox 83%*
Cancer screening		
Breast	69% of women aged 50-64 years had mammogram in past 3 years†	78% of women aged 52-69 years had ≥1 mammograms in past 2 years*
Cervical	84% women aged 25-64 years screened at least once in past 5 years‡	80% of women aged 21-64 years screened at least once in past 3 years*
Diabetic care		
People with diabetes who received annual retinal examination	60%	70% for <65 years; 80% for ≥65 years
Cardiovascular care		
Patients with acute myocardial infarction who received β blockers	42%‡	93%
Coronary revascularisation procedures per 100 000:		
Angioplasty	38§	116
Bypass graft	47§	127
Transplantation per 100 000		
Heart	0.5	0.5
Kidney	2.7	4.8

Sources: OECD,⁶ HEDIS,⁸ Department of Health,²³ Barakat,³³ NHS,³⁴ CCHRI,³⁵ Ayanian and Quinn,³⁶ and unpublished Kaiser data.

*Data from Kaiser US (not California).

†2000, England.

‡1997, England.

§1998, England.

patients is associated with improved patient satisfaction and diagnostic accuracy.²⁹ Table 4 also shows how the Kaiser system provides much more rapid access to specialists and hospitals than the NHS. For example, in the NHS 80% of patients referred to a consultant are seen within 13 weeks whereas in Kaiser 80% are seen within two weeks. One third of NHS patients wait more than five months for hospital admission whereas in Kaiser 90% are admitted within three months.

Quality

Comparisons of Kaiser with other healthcare providers in California and the United States have found Kaiser's quality and outcomes to be average or better.³⁰⁻³¹ Clinical outcomes for certain diagnoses in the United States are better than in the United Kingdom. For example, the five year survival for men with lung cancer in the United States is twice that in the United Kingdom, and the five year survival for woman with breast cancer is 24% higher.³²

Table 5 shows that rates of childhood immunisation and screening for cancer in women are similar, as are rates of heart transplantation, though Kaiser undertakes 78% more kidney transplants. Kaiser patients are far more likely to receive appropriate treatment and intervention for diabetes and heart disease.

It is difficult to compare population health outcomes within the two systems. California's population health outcomes, however, are the same as those in the United Kingdom: life expectancy in men is 75 years and in women is 80 years, and the infant mortality is six per 1000 live births.^{6, 37} Kaiser members have similar population health statistics to the California population (Kaiser, unpublished data) and therefore to the UK population.

Discussion

In this comparative study of the NHS and Kaiser we have shown that though per capita costs of the two systems are similar there are large differences in some measures of performance, particularly in access to

specialists, waiting times, and other aspects of responsiveness to patients. The validity of our findings could be criticised in four main ways.

Does Kaiser provide as comprehensive a service as the NHS?—Eight million Kaiser members receive all their health care in the Kaiser system, and the services offered by the two systems are surprisingly similar. Where there are differences, for example in long term psychiatric care and dental care, we have adjusted the NHS per capita costs.

Does Kaiser cover a healthier or richer population than the NHS?—Few Kaiser members are rich or very poor. We have discussed the likely affects of this, which we believe to be neutral. To avoid any socioeconomic bias, however, we adjusted costs by an amount that would be equivalent to the NHS not covering the poorest half of the UK population aged under 65 years. We believe that this is an over-adjustment. We did not adjust for those aged over 65 years as elderly people have universal health coverage through Medicare and are appropriately represented in the Kaiser membership.

Are Californians healthier than UK citizens?—There is no basis for this belief. The life expectancies in California and the United Kingdom are identical. Both populations live in temperate climates, share similar risk factors, and have many occupational and cultural similarities. If there are differences in the rates of specific diseases these can be partly attributed to the relative effectiveness of the healthcare systems.

Can Kaiser exclude or terminate membership of sick people?—About 93% of Kaiser members join through groups or government programmes such as Medicare, where all participants and family members are accepted regardless of health and history. Furthermore, according to California state law, health plans or insurers cannot terminate membership because of illness.³⁸

A major potential influence on costs for which we have not adjusted is patient and medical culture. Compared with the United Kingdom there is ample evidence that US patients are more demanding and that US doctors are more interventionist. Adjustment

for these differences would lower Kaiser costs relative to the United Kingdom and make our comparison more robust.

Findings to promote further research

The comparison of bed days is the most striking difference between Kaiser and the NHS. This difference explains, to a large extent, how Kaiser can provide more and better paid specialists and perform more medical interventions with much shorter waiting times than the NHS for roughly the same per capita cost. Hospital bed days are the most expensive component of any health system. Inefficient use of beds leads to long waiting times. Limiting the number of beds permits large sums of capital to be freed up to fund improved information technology, comprehensive and convenient primary care facilities, ambulatory surgery centres, and other facilities. Also, scarce clinical resources (such as physicians and nurses) can be used more effectively for prevention, chronic disease management, home care services, and support services to keep people healthy and functioning independently.

If the NHS had Kaiser's acute bed day average (adjusted for the higher proportion of the population aged over 65 years) it could save up to 40 million hospital days or £10bn per year (assuming a cost of £250 per bed day). These savings represent more than 17% of the NHS budget and could be spent on more and better paid staff, better equipment and facilities, and improved information technology. Kaiser, like most US health plans, focuses much attention and many resources on monitoring admissions, reducing lengths of stay, creating disease management programmes for chronic conditions, and opening doctors offices in the evenings and weekends to reduce the use of emergency rooms for non-emergency care.

A second striking difference is in the availability of specialists. Kaiser has fewer specialists per 100 000 population than the US, it provides two to three times the concentration of oncologists, paediatricians, obstetricians, and cardiologists than the NHS. Given the age distribution of the United Kingdom and the higher disease burden of elderly people the NHS would have even lower concentrations of specialists per thousand population on an age adjusted basis than Kaiser.

Some of the differences in numbers of specialists reflect variations in medical practice between the two countries, which, some would argue, do not adversely affect quality of care. For example, in the United States every patient with cancer is managed by an oncologist, and in the Kaiser system obstetricians, rather than midwives or family practitioners, deliver babies. In other cases, however, the shortage of specialists increases waiting times for patients in the NHS and adversely affects quality of care.

As a direct result of the two factors above, large differences in access to care are experienced between NHS and Kaiser patients. Waiting times to see a specialist are over six times as long in the NHS, and even by 2005 the NHS will not come close to Kaiser's access standards. Waiting times for non-emergency admissions are over twice as long and again will not meet Kaiser's average by 2005.

Conclusions

Managed care, of which the Kaiser system is one manifestation, is now the norm in the United States,

covering 92% of all those with health insurance sponsored by an employer.³⁹ Despite this, managed care has recently been criticised by the public, healthcare professionals, and politicians. Indeed, managed care companies rate above airlines, drug companies, and oil companies and alongside the tobacco industry in the degree of public disapproval.⁴ Most members of health maintenance organisations, however, report satisfaction with their own health plans.⁴⁰

Our overall conclusion is that healthcare costs per capita in Kaiser and the NHS are similar to within 10% and that Kaiser's performance is considerably better in certain respects, particularly access to specialist diagnosis and treatment and hospital waiting times. We think that there may be several explanations for why this is so.

Achieving real integration—Kaiser has achieved real integration through partnerships between physicians and administration and can exercise control and accountability across all components of the healthcare system. This allows it to manage patients in the most appropriate setting, implement disease management programmes for chronic conditions, and make trade-offs in expenditures based on appropriateness and cost effectiveness rather than artificial budget categories.

Treating patients at the most cost effective level of care—Kaiser members spend one third of the time in hospital compared with NHS patients. There is ample evidence that reduced length of hospital stay does no harm⁴¹ and, in view of the risks of staying in hospital, may be beneficial.⁴² As a direct result of its integration Kaiser is effective in controlling admission rates and lengths of stay and therefore has fewer acute bed days per unit of population.

Benefits of competition and choice—Bulk purchasers of health care in the United States, such as federal and state government, large employers, and consortia of small employers, can and do bargain hard on price and quality. Individual members in the United States (whether enrolled through their employer, Medicaid, or Medicare) are offered a choice of health plans and can move each year without penalty. Satisfaction and loyalty of members therefore matter. Kaiser members are a representative subset of the US population and particularly the Californian population. This population has high expectations and will not settle for less.

Information technology—The more advanced parts of the Kaiser system have sophisticated and efficient information technology systems that reduce administrative time, particularly clinician's time spent taking medical histories, dictating letters, and locating patient records. Kaiser plans to invest a further \$2b over the next five years (2% of total budget) to extend this virtually paperless patient care system to 423 outpatient centres and over 11 000 clinicians.⁴³ The NHS plans to spend about 0.5% of its budget over the next few years on development of information technology and hopes to have all general practitioners and specialists connected to NHSNet by 2005.¹

Of these four overall factors that may explain Kaiser's performance, the NHS is already pursuing reforms in integration and information technology and can continue to do so with no major restructuring. There is also scope within the current structure of the NHS for more efficient use of hospitals, and further

analysis of Kaiser operations and methods may prove beneficial. Competition, however, clearly has more radical implications for the NHS. Creating a truly competitive environment would entail ending or seriously eroding the current monopsony power of the NHS. This would have far reaching consequences requiring greater thought to avoid potential negative effects. Though our findings are not exhaustive they point to the value of comparing healthcare systems. We hope that they will encourage further analysis and policy debate.

We thank David Ainsley, Alastair Connell, Robert Crane, Penny Dash, David Green, Nicholas Hicks, Paul Hodgkin, Nap Hosang, John Peabody, Brian Raymond, Clive Smee, Jed Weissberg, Mathew Young, and Les Zindle for their valuable help and advice.

Contributors: This study was conceived by RF and NS. All authors participated in the data collection, analysis, and writing. RF is the guarantor.

Funding: The posts of RGAF and KIW are funded by the University of California. NKS is an independent consultant.

Competing interests: All authors have been affiliated at one time, in some manner, with at least one of the institutions compared in this paper. RGAF used the NHS between 1948 to 1995. NKS was an employee of Kaiser Permanente from 1981 to 1994 and consulted with Kaiser intermittently until 1998. KIW was a member of Kaiser Permanente for one year during 1998-9.

- Department of Health. *The NHS plan. A plan for investment, a plan for reform*. London: Stationery Office, 2000. www.doh.gov.uk/nhsplan/contents.htm
- Anderson G, Hussey PS. Comparing health system performance in OECD countries. *Health Aff* 2001;20:219-32.
- World Health Organization. *World health report 2000—health systems: improving performance*. Geneva: WHO, 2000.
- Sekhri N. Managed care: the US Experience. *Bull WHO* 2000;78:830-44.
- Kaiser Permanente. www.kaiserpermanente.org
- Organisation for Economic Cooperation and Development (OECD). *Health data 2000. A comparative analysis of 29 countries*. [CD-Rom] Paris: OECD, 2000.
- Department of Health. www.doh.gov.uk/
- HEDIS 2000 (Health Plan Employer Data and Information Set) (US). *Making an informed choice with HEDIS 2000 performance measures. Kaiser Permanente program overview*. www.kaiserpermanente.org.
- Lakin C. *The effects of tax and benefits on household income, 1999-2000*. London: Office for National Statistics, 2001.
- Department of Health. *The government's expenditure plans 2001-2002*. London: Department of Health, 2001. www.doh.gov.uk/dohreport/
- Laing & Buisson. *Private medical insurance UK market sector report 2001*. www.laingbuisson.co.uk/
- OANDA The currency site. www.oanda.com
- World Bank. *World development indicators 2000*. Washington, DC: World Bank, 2001.
- Association of British Insurers. *The private medical insurance market*. www.abi.org.uk/INDUSTRY/market/pmi/pmi.asp
- British Medical Association. *2000 DDRB award—key facts*. www.bma.org.uk/public/polsreps.nsf/6439b0e107c81a8480256913002e3831/64fc4c44139fe492802568e3004621cb?OpenDocument
- Danzon PM, Chao LW. Cross-national price differences for pharmaceuticals: how large, and why? *J Health Econ* 2000;19:159-95.
- Corvari RJ. *Trends in patented drug prices*. Ottawa: Patented Medicine Prices Review Board, 1998.
- US General Accounting Office. *Prescription drugs: companies typically charge more in the United States than in the United Kingdom. Report to the chairman, US House of Representatives subcommittee on health and the environment, Committee on Energy and Commerce, House of Representatives*. Washington, DC: US General Accounting Office, 1992.
- Office for National Statistics. *Statbase datasets*. www.statistics.gov.uk/statbase/expodata/spreadsheets/d41166.xls
- RAND California. *Population and demographics statistics*. <http://ca.rand.org/stats/popdemo/popdemo.html>
- Health Care Financing Administration (HCFA). *1980-1998 State health care expenditures*. Washington, DC: Department of Health and Human Services. www.hcfa.gov/stats/nhe-oact/stateestimates/
- California HealthCare Foundation and Field Research Corporation. *To buy or not to buy: a profile of California's non-poor uninsured*. Oakland, CA: California HealthCare Foundation, 1999. www.chcf.org/uninsured/view.cfm?itemID=1371
- Department of Health. *Statistics division*. www.doh.gov.uk/public/stats5.htm
- Department of Health. *Hospital, public health medicine and community health services medical and dental staff in England: 1989-1999. Bulletin 2000/9*. London: Department of Health, 2000.
- Office of Health Economics. *Compendium of health statistics*. 12th ed. London: OHE, 2000.
- Robinson J, Casalino L. Reevaluation of capitation contracting in New York and California. *Health Aff* 2001 May/June. www.healthaffairs.org

What is already known on this topic

Comparisons of healthcare systems in different countries have to be undertaken with great care but can be instructive

The overall healthcare system in the United States is more expensive than the NHS and population health outcomes are no better

The US healthcare system comprises many discrete and unique subsystems, including the health maintenance organisations

What this paper adds

An integrated, non-profit health maintenance organisation in California (Kaiser Permanente), with over six million members, costs about the same as the NHS but performs considerably better

Kaiser's superior performance is mainly in prompt and appropriate diagnosis and treatment

These findings challenge the widely held view that the NHS is efficient and that its inadequacies are mainly due to underinvestment

- Department of Health. *Statistical press notice. NHS waiting lists—February 2001*. London: Department of Health, 2001. <http://tap.cta.gov.uk/doh/intpress.nsf/page/2001-0180?OpenDocument>
- Department of Health. *The NHS executive, waiting times data. Government statistical service*. London: Department of Health, 2001. www.doh.gov.uk/waitingtimes/booklist.htm (accessed 30 June 2001).
- Peabody JW, Luck J. How valuable is talking to our patients? A closer look at taking the history. *J Gen Intern Med* 2001;16(suppl 1):153.
- US News Online. *1999 HMO honor roll*. www.usnews.com/usnews/nycu/health/hehmo.htm
- Pacific Business Group on Health. *Pursuit of high quality care recognized by PBGH—Kaiser Foundation Health Plan and Nine Medical Groups given blue ribbon awards* [press release]. San Francisco, CA: PBGH, 2000. www.pbgh.org/news.asp#release1
- Emmerson C, Frayne C, Goodman A. *Pressures in UK healthcare: challenges for the NHS*. London: Institute for Fiscal Studies, 2000.
- Barakat K, Wilkinson P, Suliman A, Ranjadayalan K, Timmis A. Acute myocardial infarction in women: contribution of treatment variables to adverse outcome. *Am Heart J* 2000;140:740-6.
- National Health Service. *An overview of models for a national programme: NSC diabetic retinopathy screening*. www.diabetic-retinopathy.screening.nhs.uk/overview-of-screening-models.html
- California Cooperative Healthcare Reporting Initiative. *2000 Report on quality. California health plan performance results*. San Francisco, CA: CCHRI, 2000.
- Ayanian JZ, Quinn TJ. Quality of care for coronary heart disease in two countries. *Health Aff* 2001;20:55-67.
- Center for Health Statistics Health Information and Strategic Planning, California Department of Health Services. *Leading health indicators for California*. Sacramento, CA: Health and Human Services Agency, 1999.
- Insure.com. *Health insurance laws and benefits tool*. www.insure.com/health/lawtool.cfm
- Dudley RA, Luft HS. Health policy 2001, managed care in transition. *N Engl J Med* 2001;344:1087-92.
- Blendon RJ, Benson JM. Americans' views on health policy: a fifty-year historical perspective. *Health Aff* 2001;20:33-46.
- Miller RH, Luft HS. Does managed care lead to better or worse quality of care? *Health Aff* 1997;16:7-25.
- Kohn L, Corrigan J, Donaldson M, eds. *To err is human: building a safer health system*. Washington, DC: National Academy Press, 2000.
- Gantenbein D, Stepanek M. Kaiser takes the cyber cure. *Business Week Online* 2000. www.businessweek.com/2000/00_06/b3667061.htm

Correction

Collaborative meta-analysis of randomised trials of antiplatelet therapy for prevention of death, myocardial infarction, and stroke in high risk patients

In this paper by the Antithrombotic Trialists' Collaboration (12 January, p 71) a missing two letters make a world of difference to the meaning of the last sentence. The very last word should be "inappropriate" (rather than "appropriate"), so that the sentence reads: "For most healthy individuals, however, for whom the risk of a vascular event is likely to be substantially less than 1% a year, daily aspirin may well be inappropriate." We apologise for this error.

Commentary: Funding is not the only factor

Jennifer Dixon

Health Care Policy Programme, King's Fund, London W1G 0AN
Jennifer Dixon
director

If there ever was a time when there was a political imperative in the United Kingdom to improve public services, this is it. In the case of the NHS, the reason for suboptimal performance has most frequently (and conveniently) been thought of as due to chronic lack of funding. Discussions on how to improve services have therefore usually centred on levels and methods of financing the service. Though funding is obviously important, what other factors are also crucial?

Feachem et al have presented an interesting comparison of the costs and performance of two health systems—Kaiser Permanente and the NHS. Any study of this type stands or falls by the accuracy of the comparisons, in particular in comparing like with like across both systems. The authors go some way in this respect, with adjustment for numerous factors. The two chief adjustments made in the comparison of costs—to ensure that the age, socioeconomic status, and illness levels of the populations served are comparable and to ensure that the benefits offered in both systems are similar—are broadly addressed and discussed by the authors, including their limitations. It is, of course, possible to challenge the details of such adjustments and the assumptions (and data) on which they are based. The main question is, would such debate change the broad findings—similar per capita costs between the two systems yet some clear differences in performance? I suspect not.

Such findings are important for debate, in particular to shift thinking from ever sterile discussion over what is the “right” level of funding or method of financing for the NHS to thinking about improving performance. But to be useful as a starting point for shaping policy for the

NHS, clearly much more work would need to be done to compare the two systems in a more detailed way and to examine further the arguments and data that have been used in the paper. If the broad messages stand as presented, a fundamental question to ask would be why Kaiser can apparently provide care to a higher performance at similar cost? The authors rather modestly suggest four main reasons: better integration of care; treatment of patients at the most cost effective level of care; the benefits of competition and choice; and better information technology. But the truth could be a far bigger set of factors. Specific factors could include the form of organisation, the level and type of financial incentives operating, the extent that power and decision making concentrates at the top of the organisation, and the number and training of staff. Other and possibly more important factors could include the type of leadership, the quality of management, the ethos of service in the organisation, how staff are valued and promoted, and the extent of party political involvement in management. We simply do not know enough, and the science of inquiry into these areas is hardly even in its infancy. Meantime in the NHS, time is short and so politicians tend to fall back on to fad or ideology to shape the service rather than science (such as it is) or even experience. If I were in their shoes, I would pore over Feachem's paper, encourage a few seasoned chief executives in the NHS with a good track record to go to study Kaiser, take time to learn the lessons, and genuinely follow the maxim “what counts is what works.”

Competing interests: None declared.

Commentary: Same price, better care

Donald M Berwick

Institute for Healthcare Improvement, 375 Longwood Avenue, Boston, MA 02215, USA
Donald M Berwick
president and chief executive officer
dberwick@ihi.org

A conviction of scarcity abounds in the NHS. To question that claim is perilous, but the paper by Feachem et al runs the risk. Their conclusions, if believed, are blockbusters. They find that the per capita costs in Kaiser and the NHS “are similar to within 10%” and that Kaiser's performance in several important areas, including key preventive practices and the strategically crucial dimension of access to care, is “significantly better.”

Should we believe it? The adjustments needed to allow an “apples to apples” comparison are tough, but the methods in this paper are good enough to sustain the basic point. Most crucially, the paper is believable primarily because of one key difference between the systems that can almost alone explain a great deal of what else the authors find—namely, that the NHS today uses about three times as many days of hospital admission per capita than the best American care systems do, with age adjusted figures of 1000 bed days per 1000 population compared with Kaiser's 327.

This leads to the question of why Kaiser patients get “more for their money” than NHS patients do. The

key answer is that the systems differ in their capacity to configure care according to the needs of the patient throughout an episode of illness or, in the case of chronic illness, the patient's life. Kaiser integrates care much more reliably than the NHS does.

Kaiser achieves both its favourable cost structure and its superior performance largely through its enormous capacity to help to manage a constructive patient journey from the outpatient arena to hospital and specialty services and back. This vision—one integrated patient “journey”—is the right one for the NHS to seek, and yet, strikingly and paradoxically, the healthcare system in the world best positioned to manage care often does not. The results include an unnecessarily log jammed hospital sector, long waits, and a sense of scarcity.

This could change. The NHS could become the integrated care system it should be. Well designed care for populations must always align the concerns of hospitals and specialists with the objective of treating patients at the appropriate level of care. Hospitals must regard an unneeded day of stay in hospital as a defect,

and specialists must understand that their primary job is to include participation in coordinated care, not just to render care. The challenge goes far beyond mere cooperation between primary care clinicians, hospitals, and hospital based specialists. It requires development and implementation of a systemic vision of the configuration and resources needed for a care system at the population level. Rates of hospital use are a litmus test for integration of care.

I suggest that a social experiment would help the NHS. Let one area with one or two million citizens, under the guidance of a strategic health authority and with the support of the primary care trusts and hospital trusts within it, undertake a bold, four year effort to redesign patient flow and resources to aim for the Kaiser system benchmarks. With the same resources as

at present, plus its share of the government's new investment, let that area aim for a 50% reduction in hospital bed day use per capita as a sentinel effect of integrated care, reallocating capital and operating funds as needed to achieve that from hospital care to outpatient specialty care, supportive information technology, care coordination processes, and enhancements of support to the primary care clinicians. Let its performance goals include dramatic reductions in waiting times for necessary hospital beds and specialty services. Let it tolerate no harm at all accruing to patients as it pursues this aim. On the contrary, let it promise its patients a level of continuity and safety in their care never before experienced.

Competing interests: None declared.

Commentary: Competition made them do it

Alain C Enthoven

One can always argue over details in such an analysis, but I believe Feachem et al got it about right: Kaiser Permanente produces more value for the resources used than the NHS does. The reduction of two thirds in hospital use is particularly striking, as is the greatly increased availability and accessibility of specialists. And I think the authors got the basic explanatory factors right. British people ought to think about how and why Kaiser does it.

Kaiser exists in an extremely competitive market. Every member can change health plans once a year, and in California they have good alternatives. The programme attracts the loyalty, commitment, and responsible participation of its physicians. Primary care physicians are partners of the specialists, and they work together in the same facilities. As Feachem et al observe, the system is an integrated whole.

How can the United Kingdom obtain the advantages of a more efficient healthcare system? As secretary of state Alan Milburn has apparently and recently come to realise, consumer choice and competition are absolutely critical.^{1 2} One possible way forward would be to create a "wide open market" for hospital services in which private hospitals in Britain and European hospitals can compete to serve NHS patients. (This can be contrasted with the comparatively timid "internal market" that envisioned competition mainly among NHS hospitals.^{3 4}) Next, primary care trusts should be helped to develop the information, skills, and methods to purchase services from private sector and European hospitals. The NHS should seek to become a reliable business partner to attract investment to care for NHS patients. The present strong bias in favour of NHS hospitals, with others used only as a last resort, should be removed.

Primary care trusts would still be in monopoly positions with little or no incentive to improve services or allocation of resources. In large metropolitan areas patients should be given the choice of primary care trusts, with the ability to take their risk adjusted capitation payment with them to the trust of their choice. Moreover, trusts could hire their own secondary care

specialists, if they found it economical, letting them grow gradually into multispecialty group practices.

For a truly efficient competitive market to evolve the government must be sure that key foundations are being built.⁵ As Margaret Thatcher said, "Money must follow patients" so that hospitals that succeed in attracting more patients don't get more work without the appropriate increase in resources. The corollary is that less money flows to hospitals that do not attract patients. Real competition can be brutal. Through educating the public the government must create political space for the market to work. It must press forward aggressively with its information agenda so that risk adjusted outcomes, waiting times, and data on patient satisfaction are available to patients and referring general practitioners. (Similar information requirements should apply to private sector and European hospitals.)

Hospitals need to do a better job of understanding hospital costs. Primary care trusts must have complete freedom to purchase from the best suppliers (where "best" depends on the preferences and characteristics of each patient). The government should encourage a competitive hospital sector and block, or even reverse, mergers that substantially reduce competition. The government needs to operate a competitive capital market for NHS hospitals in which capital follows patients. Finally, there needs to be a common language and currency for buying and selling the many complex services that go into health care so that comparisons are easy to make and transaction costs kept low.

Competing interests: ACE has been a consultant to Kaiser Permanente for 28 years. He does not believe that his conclusions will affect their financial results.

Graduate School of Business, Stanford University, Knight 214, Stanford, CA 94305-5015, USA
Alain C Enthoven
professor
enthoven_alain@gsb.stanford.edu

- 1 Milburn unveils his vision for a competitive future. *Health Serv J* 25 October 2001.
- 2 Department of Health. New scheme for sending groups of patients abroad—Milburn. London DoH, 2001. (Press release, 15 Oct.)
- 3 Secretaries of State for Health, Wales, Northern Ireland, and Scotland. *Working for patients*. London: HMSO, 1989.
- 4 Enthoven C. *Reflections on the management of the National Health Service: an American looks at incentives to efficiency in health services management in the UK*. London: Nuffield Provincial Hospitals trust, 1985. (Occasional paper No 5.)
- 5 Enthoven AC. *In pursuit of an improving national health service*. London: Nuffield Trust, 1999.