

## **Health Care Planning: Lecture 6: Health Systems (October 29<sup>th</sup> 2012)**

### **Structures and Information requirements follow the core functions**

1. Understand concepts of routine data collection and population-based data (including vital statistics and census data and population denominators to calculate rates); link to Epidemiology and Statistics lecture
2. Understand the relationship between health system design and data collection
3. Understand the role of data in planning and planning norms
4. Critically examine information systems from the perspective of equity.

### **Relevance to policy developments**

London is planning to close 25% of its acute hospital beds and close up to a quarter of its A and E departments over the next two years. You have been asked to advise local residents as to what questions they might ask at the public meeting.

The health minister asks you to conduct a review of equity to inform planning in a low income country.

A parliamentary committee asks you for evidence as to why it matters that the NHS will no longer be provided by the public sector.

How would you approach these problems, how might you to develop a framework for analysis and what data and information would you require? See seminar topic

### **The goals and functions of universal health systems**

For more than six decades, in England's NHS, the Minister has had a duty to provide and secure comprehensive health care to all citizens. (I make no apology for starting with the UK NHS which, for more than 60 years, was the model maker for the rest of the world.) Given that the goal of the health system is universal access to comprehensive care on the basis of need and not ability to pay, then the systems of financing and funding must be designed accordingly. Everyone must be covered, government decides what resources are to be available (this is a political decision), and equity or fairness is key.

The delivery of services requires careful attention to planning and the creation of a technical bureaucracy using data to inform mechanisms capable of allocating resource on the principle of equity.

David Price in his lectures has shown how the raising of funds and distribution of resources within the system is crucial to equity. Just as funding must be progressive, i.e. raised from taxation with the goal of redistributing funds from

healthy and well to rich and poor, so too must great care be taken with the design of the system, so that resources flow through the system on the basis of need. A health care system has to be planned, just as water, rail, gas and telecoms distribution have to be planned, to ensure continuity of services and supply. In the case of the NHS it has to be there on the basis of need. Since 1948, a sophisticated and complex technical apparatus has been developed to inform planning. Bureaucracies, whether public or market, differ according to the goals and functions of the health service.

What parliament has voted for should be spent accordingly and not wasted unduly on administration, profits, marketing or on transaction costs such as billing or invoicing. To do so is both wasteful and runs counter to the principles of redistribution. The reimbursement system has been described in a previous lecture, and the way in which budgets were raised through taxation and funding flows through block budgets or grants allocated to administrative areas on the basis of proxy measures of need and population size in public systems compared with price or volume based funding in market systems. The connection between equity in resource allocation and planning is not at first obvious but it is crucial as I will show.

Service planning and resource allocation formulae more often than not take into account historic resource allocations, i.e. the historic distribution of hospitals and services, etc. Clearly, rich areas will have more than their fair share where the system that has evolved is based on the market systems or philanthropy. So, in reality there is never a clean slate - the creation of a universal health system has to take into account mal-distribution. Over time it is possible to manage resource allocation through the funding formulae so there is a levelling up and equalisation of resources on the basis of need (see *Whitehead*). This was the case in the NHS where there was great disparity and inequities in supply in 1948 and, over time, funding and planning was used to guide policy makers.

Of course powerful politicians may also find ways of manipulating allocation formulae so that inequities in resource allocation formulae can occur - that is not a problem of the technical allocation but of the political process.

### **Structures follow function**

This lecture is largely concerned with the structures and systems for planning that are required to follow the core functions of the health service. Universal systems such as the NHS, where the function is to provide services on the basis of need and equity, are very different from market systems where no such duty applies.

As previously described, the UK NHS from 1948 imposed a duty on the minister to provide and secure universal health care to all citizens. That duty for the purposes of administration is devolved to administrative areas which are geographic and contiguous. There must be no mechanism for excluding people, to do so would be unlawful.

This is why in most universal health care systems a country's health systems is divided into administrative units, often at three levels - regional, district and sub-

district . These administrative units will have different responsibilities for services. In most countries with universal public health care, the unit of administration and analysis is always a geographic population, the areas are contiguous (joined up) and with a variety of services which are under direct management control, albeit devolved from the Centre. Social Insurance funds are slightly different. There may be as many as four or five layers of administration:

- a) Regional areas cover large populations (perhaps 5-10 million) and receive resources for large populations on the basis of specialised services, rare conditions and people, not least where these services were expensive or economies of scale were needed, e.g. network services such as transport or blood transfusion or large specialised teaching hospitals, transplant services and IT developments.
- b) Districts and sub-districts would cover smaller populations (from 100, 000-300,000) and could include primary care, community services, polyclinics and secondary care services such as district general hospitals. In India for example there are up to four sub-districts (levels 1 to 4).
- c) In some countries such as Scandinavia responsibilities for health care may be divided between central government, city councils and Municipalities and this can lead to disputes over responsibilities and funding.

The administrative structure must be designed to encompass the whole population with mechanisms to ensure resources flow to services on the basis of need. These administrations are responsible for ensuring services are in place for the populations they are required to serve.

In market oriented systems, private insurance and even social insurance systems structures are not based on all people living in a geographic area but on membership. Any membership system has a high turnover as people enrol and dis-enrol (in the US because they lose their job or benefits or the insurer will no longer provide the benefits, or through choice). This means the population is neither representative of the area or the country and nor is it stable. It will be biased in some way. This is further compounded by the fact that insurers manage risk through selecting out or excluding patients with certain conditions, or leaving out certain treatments. This has implications for measuring equity and for the denominators used when comparing performance across insurance pools.

In insurance systems, the structures do not relate to geographic populations but rather pools of patients who belong by virtue of membership (like a club). The funds can exclude patients on the basis of their risks, costs and price by denying entry or excluding people by not providing services. The important thing to note is there is no geographic contiguous focus, patient can swim between insurance pools and drown for lack of coverage and access. The government argues that this is choice but in reality it is the insurance funds that exercise choice (see later lectures on risk selection methods).

### **Information: Routine data and Official statistics**

Where area based structures are in place and the resources are now set to flow equitably to each area the question is how should the system be designed to respond to needs of citizens? In the UK the NHS universal model was designed so

that no individual could be left out and everyone and everything would be counted. This meant building an administrative information system to record patient activity, service use (utilisation), contacts with the services, and to assist with service planning and services provision. Most countries have some administrative systems, but these vary. In England, data were collected on beds and hospitals in the interwar years as part of the Emergency Health System, and hospital data goes back to the 19<sup>th</sup> century and Florence Nightingale.

These data are known as routine administrative data which government requires of the system to ensure proper monitoring and parliamentary accountability for money raised through taxation. This also allows a universal health care system to develop rationally. The by products of administrative data can be used and are used for a multitude of purposes as follows:

- a) planning of services: workforce and staffing and new hospital and service planning; GPs, nurses, doctors, midwives, nurses, etc.
- b) needs assessment
- c) disease registers
- d) medical and nursing education planning
- e) clinical audits and confidential enquiries into deaths
- f) epidemiological studies
- g) child health immunisations, screening

Planning data are required on the population, staff, beds, services, processes of care, operations, procedures, disease codes, met and unmet need (including waiting lists and waiting time needs assessment) and monitoring of access and outcomes of care including mortality . Bed data in the NHS are collected as a midnight census count for example.

All health care systems collect administrative data but the nature and quality and comprehensiveness of the data are a reflection of the extent to which the goal of the system and its functions are universal access and comprehensive care. In the NHS there may be well over 100 different data collection systems and forms. In the US, where the system is fragmented and standardised data sets are a problem and data are not universally collected, survey data may well be used instead of routine data (see *Pollock and Rice: Monitoring health care in the US*).

Survey data are a problem because they are expensive, non-continuous and only estimate what is happening.

### **Types of administrative data**

#### **Inputs:**

- Finances, grant allocations, expenditure and costs, e.g. staff costs
- Beds and services, e.g. day centres : public, private and by sector and category of bed
- Staff: specialty, designation wte, fte

#### **Processes:**

- Activity; use; treatment rates, e.g. immunisation rates, screening, surgical treatments

- Contacts: child health, district nursing
- Interventions: diagnostics and interventions ICD 12 and OPS codes
- Waiting lists, waiting times
- Throughput, length of stay, bed occupancy

### **Outcomes of care:**

- Deaths (confidential enquiries)
- Quality of life measures and scores
- Patient satisfaction
- Activities of daily living
- Treatments
- Screening, immunisation

### **Planning for equity: using routine data**

One way of looking at equity is to look at provision provided by primary, secondary and tertiary care taking the number of staff or beds or interventions and relating it back to the geographic population to calculate rates of provision per hundred thousand and comparing it (see *Dartford Atlas of Variation*).

So aggregates of routine data are linked to denominators, usually of the population for which the funder is responsible, i.e. geographic or insurance pools, to calculate rates - these rates can in turn be standardised and adjusted to take account of age, sex and social class, etc. However the populations of a geographic area and those of an insurance pool will be very different. The former is representative of the country, the latter is not (see *Dismantling Signposts - Pollock, Macfarlane and Godden*).

A planned system which requires equity in resource allocation needs strong government control albeit decentralised and devolved.

In contrast, when markets are introduced, the reimbursement system changes - money follows the patient and money flows to services which are in open competition with each other. There are a number of consequences. Firstly, not all patients will be covered and have access - some will be left out so the coverage is no longer comprehensive. Secondly, when services are in competition providers compete for certain kinds of cases and patients which will inevitably destabilise much needed hospitals and services (even small shifts of funding will create deficits) - this undermines planning for need. Thirdly it is increasingly difficult to measure equity because information may be lost, disrupted or become increasingly inaccurate as, when providers are paid for by volume, there is a tendency to game and defraud the system by fraudulent billing and coding. If the ability to monitor the population is disrupted, what follows too are that the systems of data collection and information are also disrupted. It may no longer be possible to measure equity especially when the responsibility for a population shifts from a geographic area to an insurance pool. And even when it is possible responsibility is no longer at the geographic level.

More profound are the consequences of money following patients and 'choice' for the reimbursement system. Money can no longer flow to services on the basis of need or equity.

When services are mixed and the boundaries between what is private and what is public are blurred it becomes more difficult to measure and monitor access, use and unmet need.

### **Need and Unmet need: how is need determined and defined?**

So far, I have looked at service provision at population level using a normative framework of provision, i.e. rates of use, service treatments and per capita spend in an area. A crucial aspect for service planning is the idea that services should be responsive and adaptive to patients and clinical practice and this leads us to looking at met and unmet need and changes in clinical practice to inform the cycle of service planning. This, in itself, is a highly complex area not least because some of the measures I have used above are used as proxy measures of need. Needs assessment and rapid appraisals are complex and iterative. For those of you who are interested, I refer you to our access to services report for the SDO (*Macfarlane, Godden and Pollock*). Needs assessment is difficult - a bottom up approach involves asking patients and populations as well as the epidemiological assessments through surveys and other methods

Measures of unmet and met need can use:

- a) disease measures prevalence and incidence: routine data, mortality data, surveys and registers
- b) utilisation measures: activity rates and contact rates, treatment rates, immunisation rates, screening rates
- c) felt need or expressed need - survey measures
- d) unfelt need because disease is latent or dormant, e.g. BP or diabetes or cancers picked up through screening or GP consultation
- e) patient surveys to detect unexpressed need, because of barriers to care or health belief, e.g. charges, natural processes of aging; Post mortem and autopsies.

## Reading: Access to Care

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2. \*Dunnigan and Pollock: BMJ .  
[http://allysonpollock.co.uk/research/BMJ\\_2003\\_Dunnigan\\_DownsizingAcuteInpatientBeds.pdf](http://allysonpollock.co.uk/research/BMJ_2003_Dunnigan_DownsizingAcuteInpatientBeds.pdf)
3. Department of Health. *Delivering the NHS plan*. London: Department of Health, 2000.
4. \*[Are we on track - can we monitor bed targets in the NHS plan for England?](#) Macfarlane AJ, Godden S, Pollock AM. J Public Health (Oxf). 2005 Sep;27(3):263-9.
5. \*\*[Dismantling the signposts to public health? NHS data under the Health and Social Care Act 2012](#) Pollock, Allyson M., Macfarlane, Alison, Godden, Sylvia BMJ 344 April 2012 \*\*
6. \*\*Whitehead M., [Equity issues in the NHS: Who cares about equity in the NHS?](#) *BMJ* 1994;308:1284 Needs assessment methodologies
7. WHO 2007 Strengthening Health Systems  
[http://www.searo.who.int/LinkFiles/Health\\_Systems\\_EverybodyBusinessHSS.pdf](http://www.searo.who.int/LinkFiles/Health_Systems_EverybodyBusinessHSS.pdf)
8. \*\**Official health statistics: an unofficial guide, Chapter 8* Edited by Susan Kerrison and Alison Macfarlane Arnold: London, 2000, £16.99, ISBN 0 340 73132 X (PB)
9. Identification and evaluation of identification and evaluation of standardised data sets for measuring and monitoring access to health care  
[http://www.netscc.ac.uk/hsdr/files/project/SDO\\_FR\\_08-1210-027\\_V01.pdf](http://www.netscc.ac.uk/hsdr/files/project/SDO_FR_08-1210-027_V01.pdf)
10. \*The Dartmouth Atlas of Health care  
<http://www.dartmouthatlas.org/downloads/atlas/96Atlas.pdf>
11. \*\*Pollock AM and Rice Dorothy  
<http://pubmedcentralcanada.ca/pmcc/articles/PMC1381855/pdf/pubhealthrep00041->
12. \*[http://apps.who.int/globalatlas/docs/HRH/HTML/SASA\\_Aug08.htm](http://apps.who.int/globalatlas/docs/HRH/HTML/SASA_Aug08.htm)
13. \*\* Talbot-Smith A, Gnani S, Pollock AM, Pereira Gray, D. **Questioning the claims from Kaiser**, *British Journal of General Practice* 2004; 54: 415-421 Kaiser permanente

\*\* Essential Reading

\* Reading or viewing advised