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The Economics of Healthcare

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Healthcare and Economics

This lecture will consider:

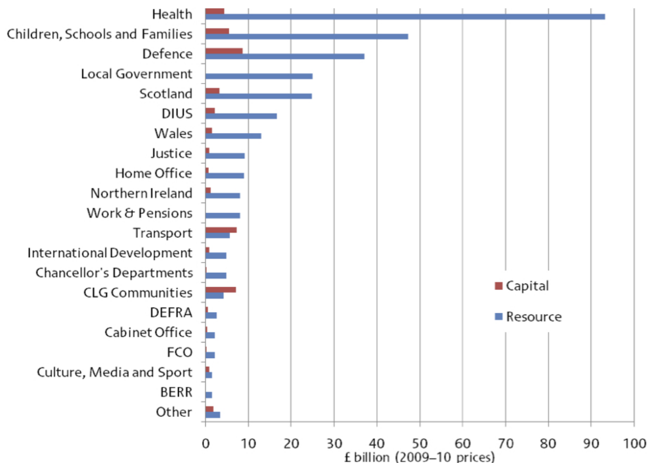
1. Why you as economists should care about healthcare.
2. How the provision of healthcare differs across countries.
3. Major developments in the economics of healthcare since 1990.

1. Health is valued very highly

- Estimates for the value of a quality adjusted life year (QALY) range from £20,000 to several hundred thousand pounds
- Politically contentious (to say the least)
- Health is an input or component of human capital
- Important when studying individual or social welfare

2. Healthcare is Expensive

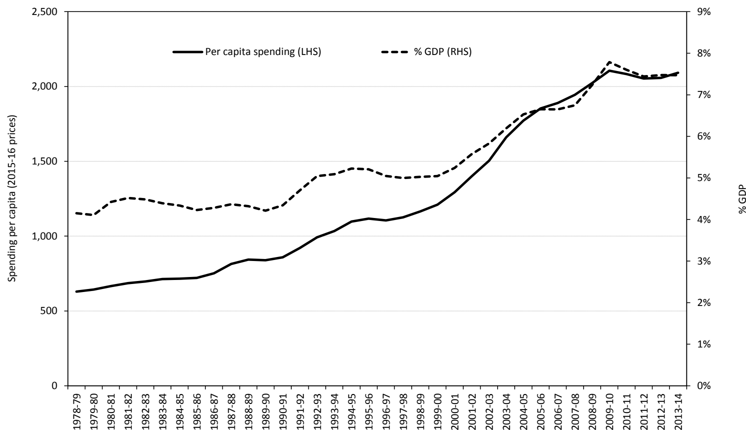
Figure: Departmental expenditure limits for each department, 2008–09



Source: HM Treasury, Public Expenditure Outturn Update, July 2009

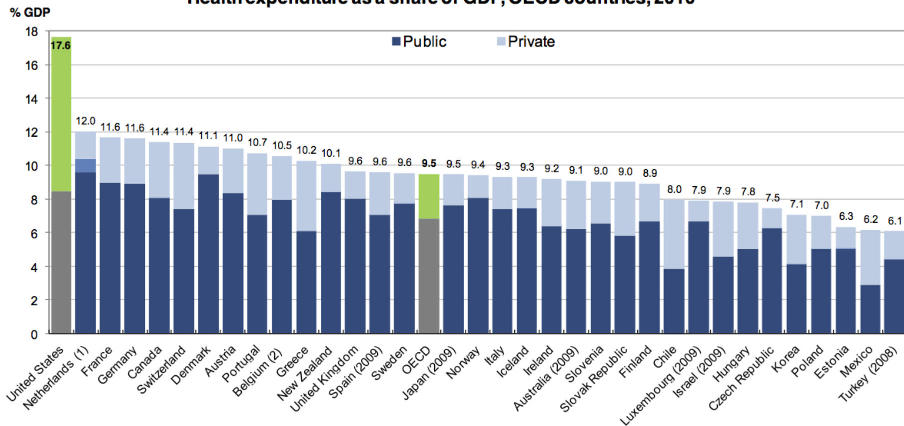
(http://www.hm-treasury.gov.uk/d/press_66_09.pdf).

Figure: UK public health spending, GBP per capita (2015/16 prices) and as a percentage of GDP, 1978/79 - 2013/14



Source: Crawford and Stoye (2015)

2. Healthcare is Expensive



Source: OECD Health Data (2012) - How does the United States Compare

http://www.oecd.org/unitedstates/BriefingNoteUSA2012.pdf

3. It's complicated!

- There are a number of reasons why we need to think especially carefully about how to provide medical care
- Kenneth Arrow wrote the seminal paper on this topic in 1963
  - 'Uncertainty and the Welfare Economics of Medical Care' (*American Economic Review*)
- Arrow (1963) highlights a number of reasons why we might not want to leave the provision of medical care to the market
  - Adverse Selection (problems in correctly pricing risk)
  - Moral Hazard (incentives to seek excess treatment under full insurance)
  - A range of other features of the health care industry that do not belong to the standard competitive equilibrium model

Healthcare - a competitive market?

Factors that improve market efficiency

1. A large number of buyers and sellers

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2. Free entry and exit

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International differences

- We have already seen that there is a great deal of variation in the amount spent on healthcare in different countries
  - Overall spending
  - % of spending which is public
- The way in which healthcare is provided also varies drastically
- We will focus on three different types of systems
  - Beveridge
  - Bismarck
  - USA (hard to classify!)

Beveridge systems

- Countries such as the UK, Australia, Canada and Sweden have 'Beveridge' systems
- Universal insurer (a single payer)
  - In the UK case this is the NHS
- Healthcare is mostly provided by the public sector
  - Public hospitals and public sector workers
- Importantly: healthcare is free at the point of use
  - No insurance premiums, fees etc
  - Rationing occurs based on 'need' rather than ability to pay

Bismarck systems

- Countries such as Germany and France have a different type of healthcare system
- Universal insurance is provided through two channels:
  - Employer sponsored plans
  - Government (for unemployed etc)
- Individuals pay mandatory insurance premiums
  - Often through payroll taxes
  - Premiums are 'community-rated', so are independent of medical risk
- Providers of healthcare are private
  - Private hospital, privately employed staff
  - Prices are heavily regulated by the government

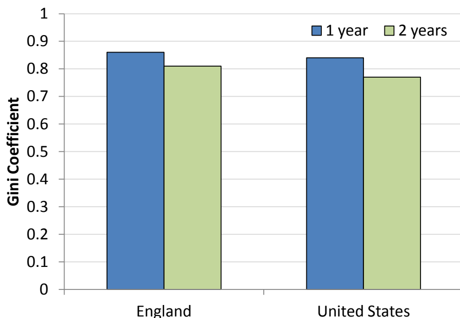
USA - a combination of systems

- The US is difficult to categorise into one of these systems.
- Some healthcare is funded publicly:
  - Medicaid (low income)
  - Medicare (elderly)
- For everyone else:
  - Employer-provided insurance
  - Privately-purchased insurance
  - Remain uninsured
- There are a range of different types of insurance provided
  - A whole strand of the economic literature is dedicated to examining the benefits of each type of insurance plan!

International comparisons

- Beveridge systems have a single (public) insurer, compared to multiple insurers under the Bismarck system
- Beveridge systems are mainly served by public providers
  - Less choice of provider than in Bismarck system
  - Bismarck system relies on the existence of prices
- Greater role for the GP in Beveridge systems
  - Gatekeepers / ration services according to needs
- Countries with Beveridge systems typically spend less on healthcare (and it is not clear that they get worse outcomes!)
- The US presents a complex mix of these systems, and has two causes for concern:
  - Large costs (inspired reforms such as 'Obamacare')
  - Potential for parts of the population to remain uncovered by insurance

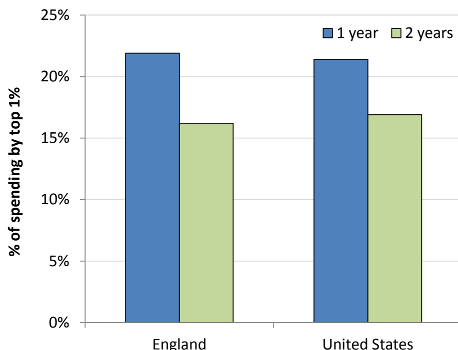
Figure: **Gini coefficient on medical spending for the 65+ population, UK and US**



Sources: Kelly et al. (2015) and DeNardi et al. (2015)

- UK and US gini coefficients very similar despite large differences in levels

Figure: **Spending by the top 1% of spenders, UK and US**



Sources: Kelly et al. (2015) and DeNardi et al. (2015)

- Concentration again very similar in the UK and US

Features of UK healthcare policy since 1990

1. Purchaser-provider split
2. Competition over price vs quality
3. Patient choice

Purchaser/Provider Split

- Reforms in 1991 created an "internal market" within the NHS
- The market was created by separating the roles of financing and supplying (secondary) healthcare services
- **Providers** - provide healthcare (supply)
- **Purchasers/Commissioners** - (demand)

Providers

- Hospitals or groups of hospitals are known as Acute Trusts - supply secondary healthcare
- Most are now "Foundation Trusts" - more autonomy

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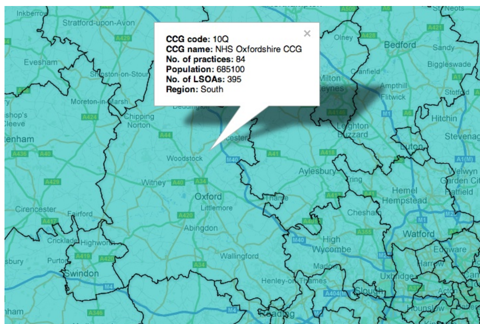
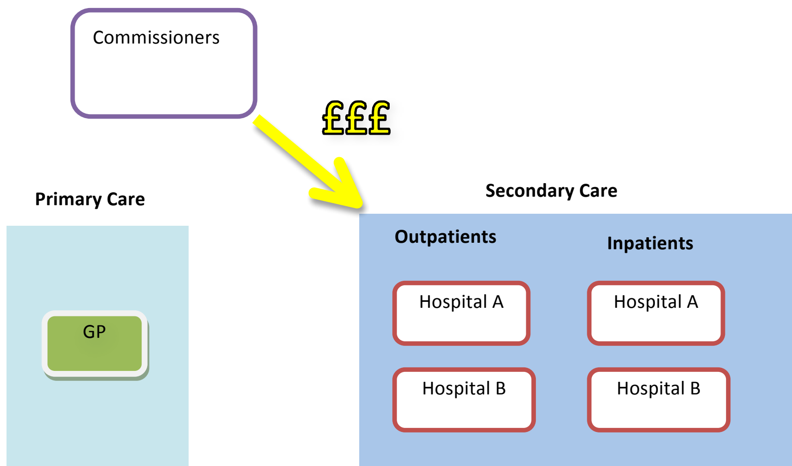
Commissioners

- Allocated money from general taxation to purchase healthcare for their population
- Names change regularly: District Health Authority & GP Fundholders $\Longrightarrow$Primary Care Trusts (PCTs) $\Longrightarrow$Enlarged PCTs $\Longrightarrow$Clinical Commissioning Groups (CCGs) $\Longrightarrow$?



Stylised structure of the NHS



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Price vs Quality Competition

- In most markets consumers observe price and quality, and firms compete on both
- In healthcare, quality may be poorly observed
- When costs are constant in quantity, but increasing in quality, the equilibrium quality is given by the Dorfman-Steiner condition (Gaynor, 2006):

$$Quality = \frac{p}{d} \cdot \frac{\varepsilon_z}{\varepsilon_p}$$

- where p is the price paid to the hospital, d is the marginal cost of quality, ε_p and ε_z are the elasticities of demand with respect to price and quality

Dorfman-Steiner Implications

$$Quality = \frac{p}{d} \cdot \frac{\varepsilon_z}{\varepsilon_p}$$

Implications

- The amount spent on quality relative to sales should increase if ε_z increases relative to ε_p
- A rise in competition should lead to $\Uparrow \varepsilon_p$ and $\Downarrow p$. Unless $\Uparrow \varepsilon_z$ quality will fall
- If consumers have better information about price than quality, it is likely that quality will fall
- When prices are regulated and fixed, firms compete for consumers on non-price dimensions. If price is set above MC at some baseline quality, firms will increase quality to try and gain market share
- Equilibrium quality is then increasing in the number of firms in the market, and in the regulated price

Competition in the Internal market

- Under the internal market (1991-1997), purchasers could negotiate with providers on the basis of price and quality
  - **Price** - lower prices meant that purchasers could afford to buy more elective care
  - **Quality** - measures of hospital quality were not publically available. Information was instead based on word of mouth and local reputation
- Purchasers therefore had a much stronger incentive to negotiate on prices than on quality
- Providers were not allowed to carry forward surpluses or deficits to future years

Hospital quality and the internal market

- Propper et al. (2008) consider the impact of the internal market on hospital quality
- Quality outcomes: waiting lists, 30 day mortality rate from Acute Myocardial Infaction (AMI) or heart attacks (emergency)
- Effects are identified by exploiting geographical differences in potential competition between hospitals (difference in difference)

$$m_{jt} = \alpha + \beta[I(PolicyOn)_t \times Comp_j] + \gamma_t + \mu_j + \delta X_{jt} + \varepsilon_{mj}$$

- where m_{jt} is hospital level quality (e.g, death rates); $I(PolicyOn)_t$ is an indicator for the internal market period; $Comp_j$ is a measure of the extent of competition; γ_t and μ_j are time and hospital dummies; X_{jt} are time varying hospital characteristics; and ε_{mj} is the error term. Coefficient of interest = β
- Data from 1991 to 1999. Competition possible 1992-1997

Hospital quality and the internal market - results

- **Hospital quality**
  - Waiting lists fell (observable to purchasers)
  - Death rates from heart attacks increased (not published until 1999)
  - Trusts could not save or borrow - any deficits had to be met through cost savings
- **Strategic planning**
  - Most contracts between purchasers and hospitals were very short term (<1 year), making long-term strategic planning difficult
- **Knowledge exchange**
  - British Medical Association expressed concerns that competition limited the diffusion of knowledge about medical breakthroughs.

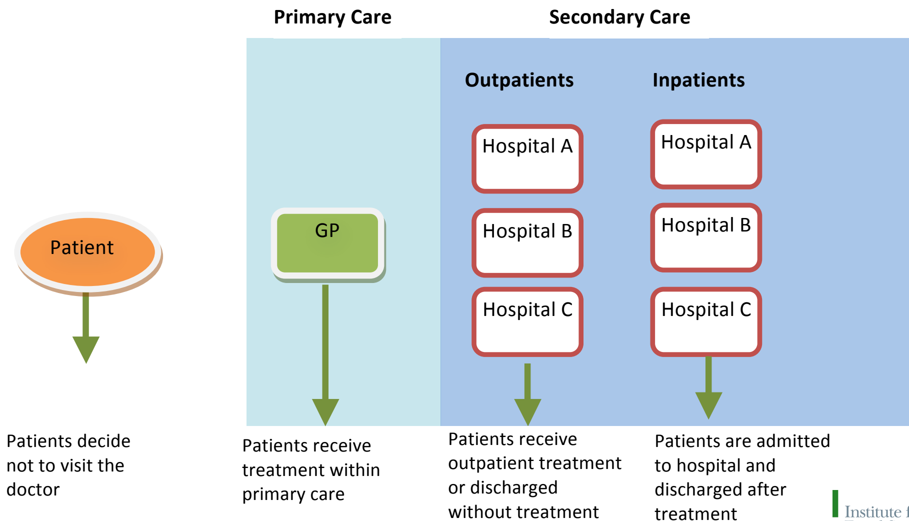
Lessons

- Competition on the basis of price has an ambiguous effect on quality
- Quality measures should be publically available
- Some regulation is needed to ensure that best practices are followed

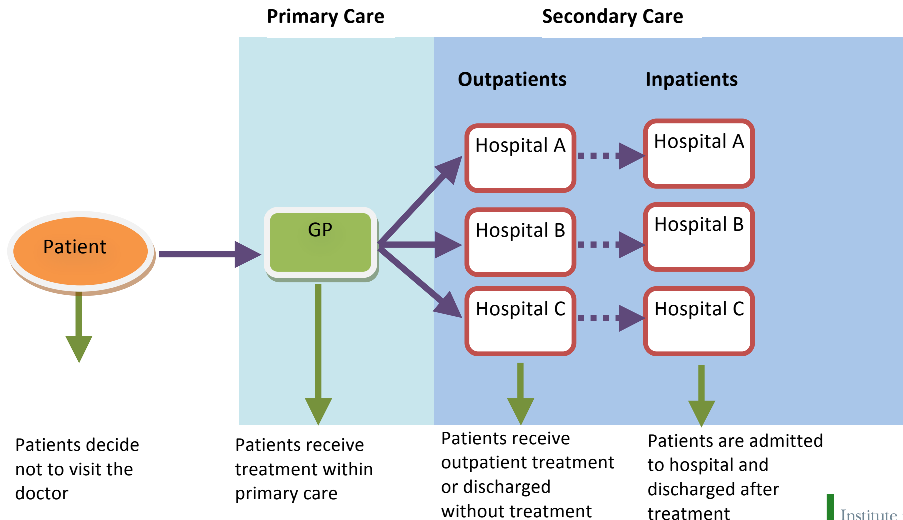
Why Choice?

- First introduced in 2006
- Motivations for giving patients choice:
  - Patients intrinsically value the option to choose
  - Choice provides a quasi-market mechanism for directing resources towards higher quality healthcare providers
- Requirements for choice to increase quality (Burgess et al., 2005):
  - Financial consequences for providers of declines in patient numbers
  - Spare capacity in the system

What choice?



What choice?



Institutional Setting

- **Money follows patients** - Hospitals paid per patient and procedure ("Payments by Results")
- **Competition on the basis of quality** - payments to hospital fixed by procedure group
- **Greater Hospital Autonomy** - NHS hospitals could apply to become Foundation Trusts - giving greater fiscal, clinical and managerial autonomy. This included the ability to borrow and reinvest surpluses across years.

Impact of Choice

- The choice policy was introduced nationwide, providing no natural control group
- Attempts to identify the impact of choice have used variation in potential competition between hospitals
- Principal measure of quality = 30 day mortality rate from heart attacks
- Cooper et al. (2011) - Higher competition (number/concentration of providers) associated with a faster decrease in 30 day mortality rate for heart attacks after 2006
- Gaynor et al. (2010) - **"Death by Market Power"**- NHS reforms resulted in significant improvements in mortality and reductions in length-of-stay without changes in total expenditure or increases in expenditure per patient

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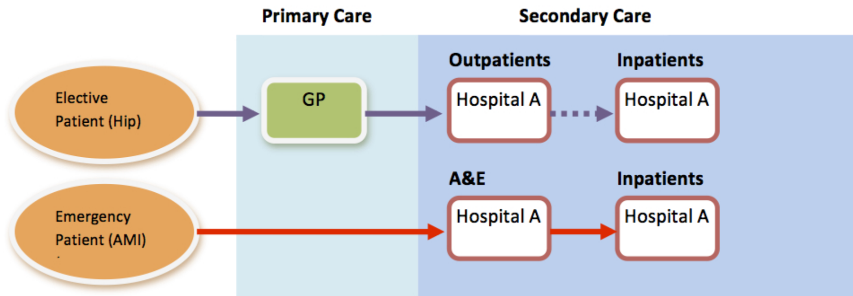
Figure: Patient choice and measurement of hospital quality



Unanswered Questions

1. Are all patients offered a choice?
2. What are the relative roles of GPs and patients in making choices?
3. Through what mechanisms does choice of a first outpatient appointment affect the quality of emergency hospital care?
4. How will impact of choice develop with the introduction of new (private) providers to NHS elective markets?

Key things to take away

1. Competition on the basis of price has an ambiguous impact on quality
2. Competition on the basis of quality (with prices fixed) should increase quality
3. Empirical evidence suggests that this competition, when combined with patient choice, has raised quality (but does not reduce costs)

Thank you

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