# Evidence based assessment of the value of innovation: pricing solutions and prospects

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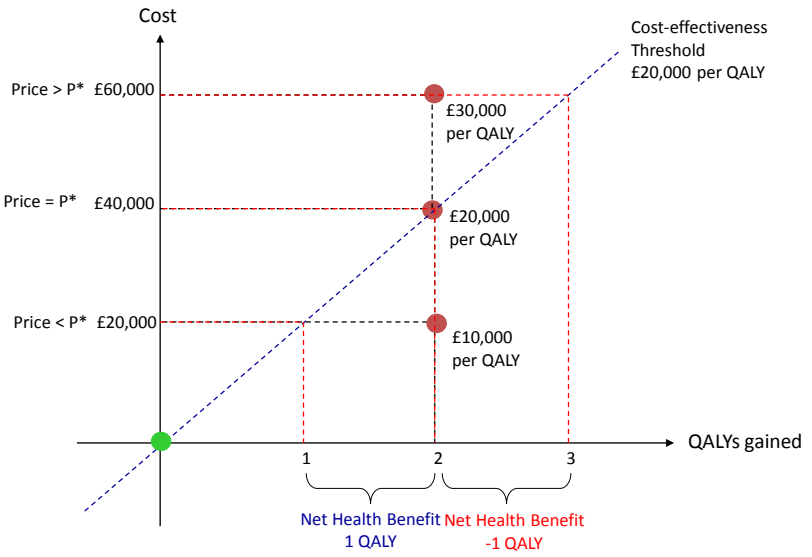
## How much can we pay for innovation?

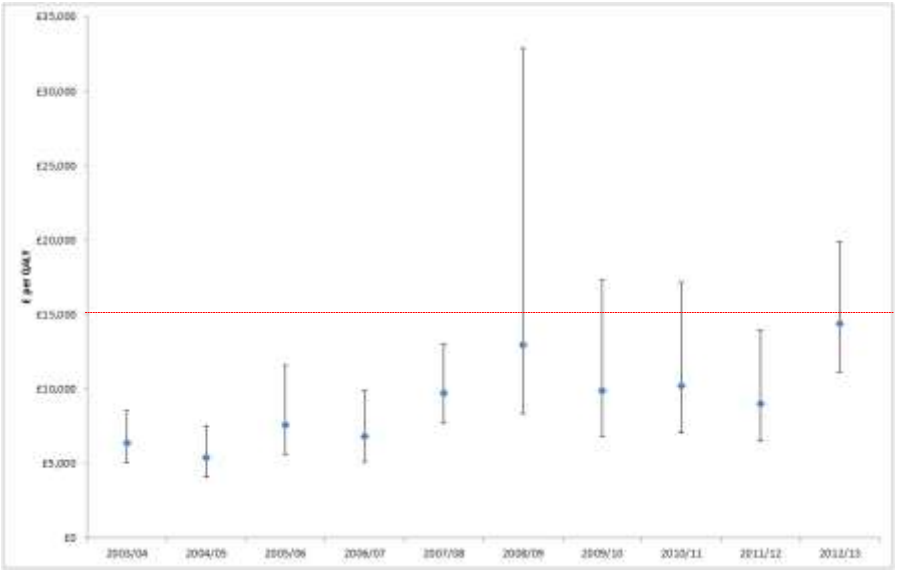


## Recent UK estimates

- Scale of health opportunity costs
- Type of health effects (mortality, survival and morbidity)
- Where these are likely to occur (disease, age, gender)
- Severity of disease (burden, absolute and proportional)
- Net production effects (marketed and non marketed)
- Impact on health inequality
- Affordability and the scale of budget impact
- Re-estimating for subsequent waves of data


- Claxton, K., Sculpher, M., Palmer, S., et al. (2015). Causes for concern: is NICE failing to uphold its responsibilities to all NHS patients? Health Economics, 2015; 24: 1–7.
- Love-Koh J, Cookson R, Claxton K, Griffin S. Who gains most from public healthcare spending? Estimated health impacts of changes in English NHS expenditure by age, sex and socioeconomic status. Submitted to Social Science and Medicine August 2016.
- Lomas J, Claxton K, Martin S and Soares M. Resolving the 'cost-effective but unaffordable' 'paradox': estimating the health opportunity costs of non-marginal changes in available expenditure. Submitted to Value in Health, November 2016


## Re-estimated for all waves of data




https://www.york.ac.uk/che/research/teehta/health-opportunity-costs/re-estimating-health-opportunity-costs/#tab-2

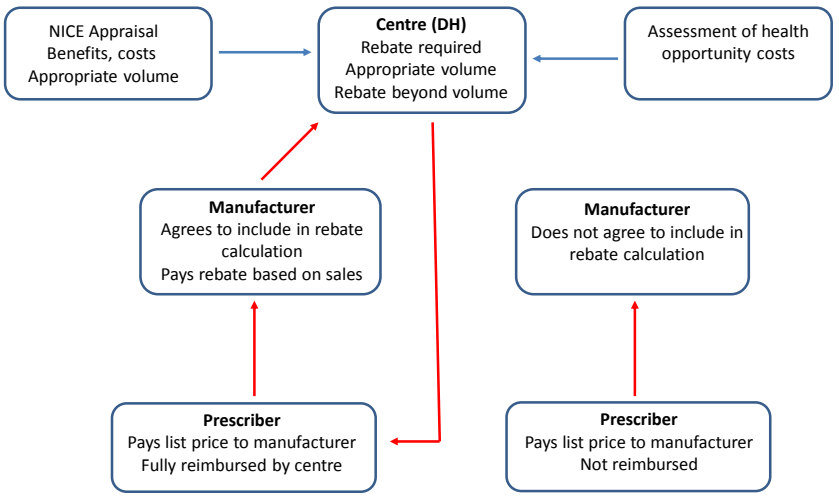
## Are we paying too little for innovation?

- For every £10m of additional NHS costs

| Cost-effectiveness of a new drug | Health gained (QALYs) | Health lost (QALYs) | Net harm to NHS patients |
|---|---|---|---|
| £20,000 per QALY | 500 | 773 | -273 |
| £30,000 per QALY | 333 | 773 | -440 |
| £40,000 per QALY | 250 | 773 | -523 |
| £50,000 per QALY | 200 | 773 | -573 |


- Claxton, K., Sculpher, M., Palmer, S., et al. (2015). Causes for concern: is NICE failing to uphold its responsibilities to all NHS patients? Health Economics, 2015; 24: 1–7.


## Can we fix it? …….



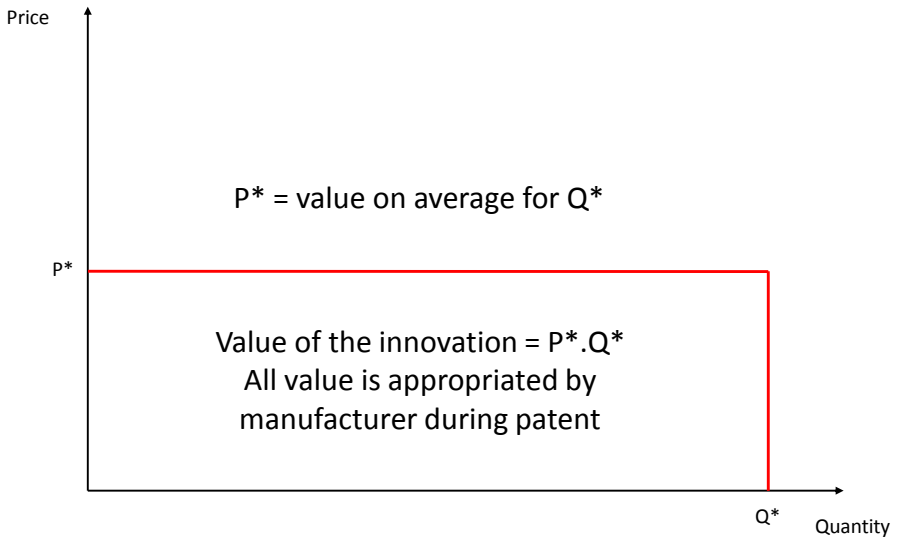


- Claxton K. Pharmaceutical pricing: early access, the cancer drugs fund and the role of NICE. Centre for Health Economics, University of York. 2016 Mar, CHE Policy & Research Briefing.
- Claxton K., Briggs A., Buxton MJ., Culyer AJ, McCabe C., Sculpher MJ., and Walker S. Value-Based Pricing for NHS Drugs: an Opportunity Not to be Missed? British Medical Journal, 2008; 336:251-254

## Essentials

- Evidence based assessment of additional effects and costs
- Assessment of eligible population (max volume)
- Evidence based assessment of health opportunity costs
- Recalculate rebates when patent of any comparator expires
- Rebate to increases to price paid if exceed max volumes
- Reimburse prescribers (at price paid)
- Different rebates for different indications and subgroups

## Why allow indication based pricing?



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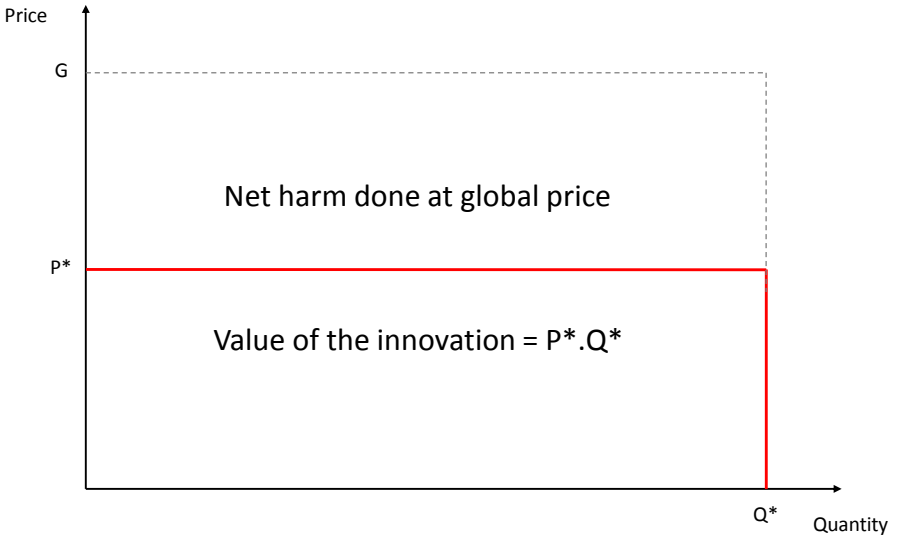


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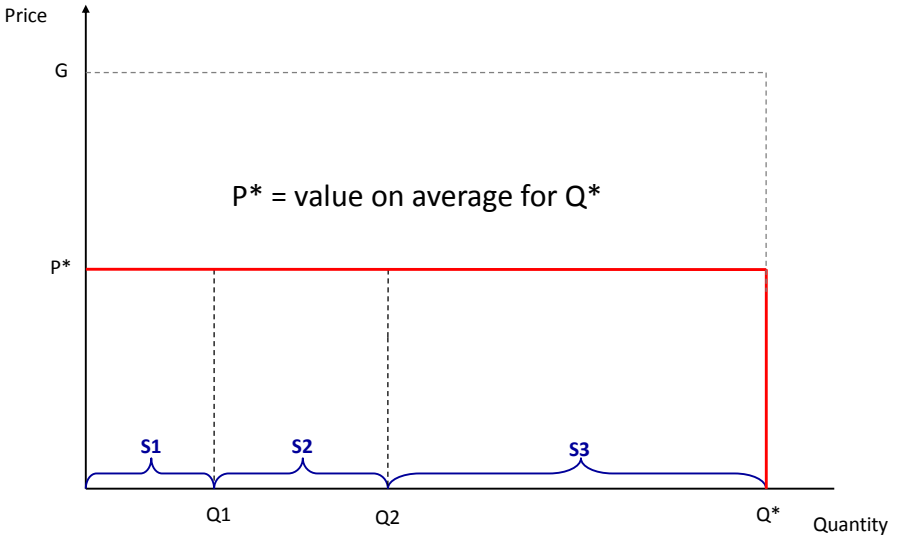

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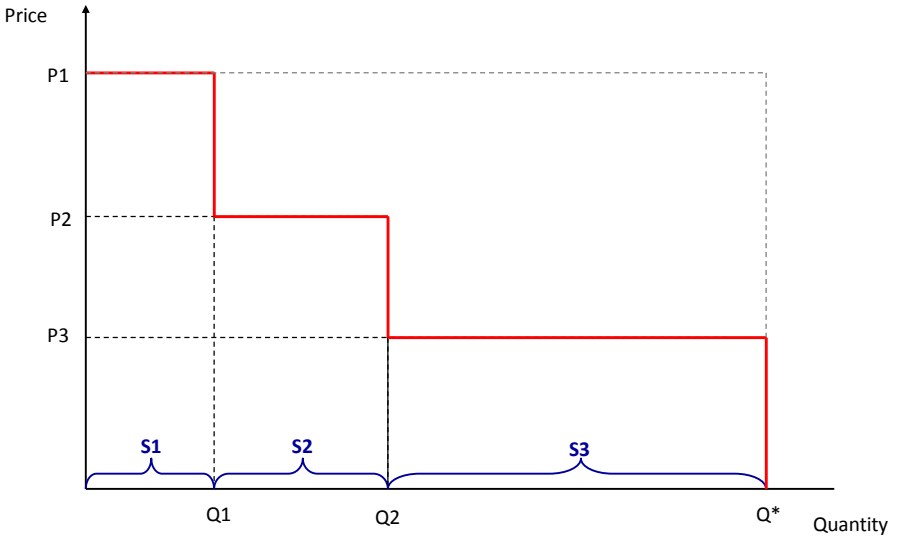
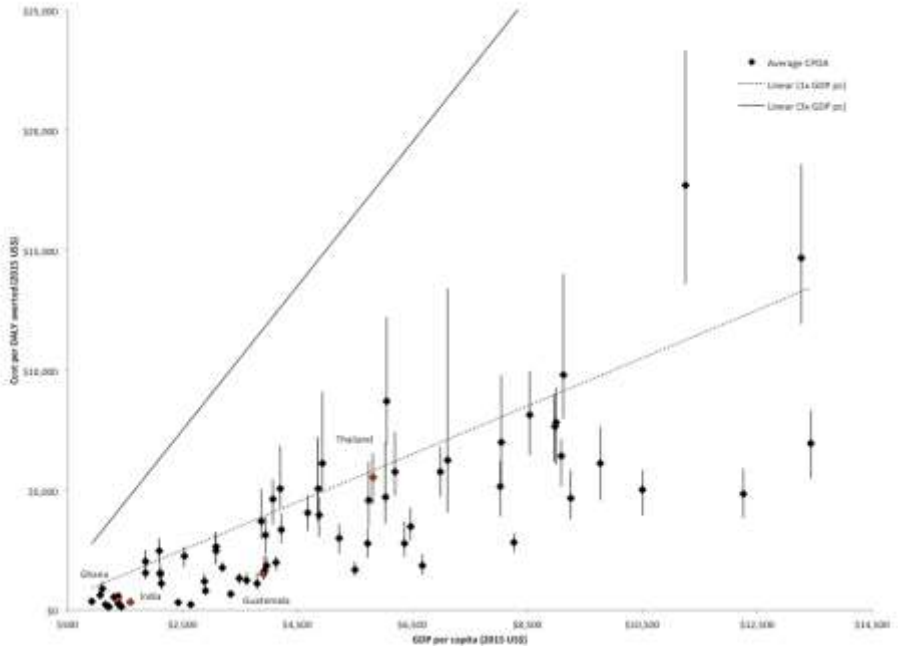


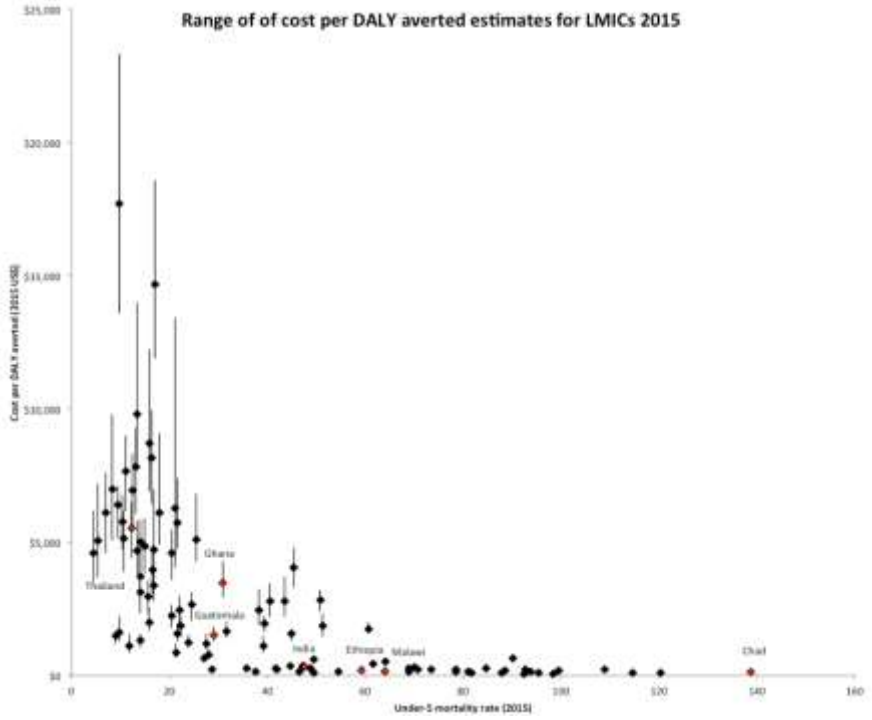

## What about other health care systems?

- Other high income countries
  - Norway, Australia, Spain, Netherlands, Canada, France,…US
- Low and middle income
  - Indonesia, South Africa, India …
- Mortality effect of health expenditure cross country data
  - Population (age and gender), mortality rates (age and gender), conditional life expectancies (age and gender), total health care expenditure
  - Country specific cost per life year and costs per DALY
  - Directly re-estimate for direct effects on YLL, YLD and DALY

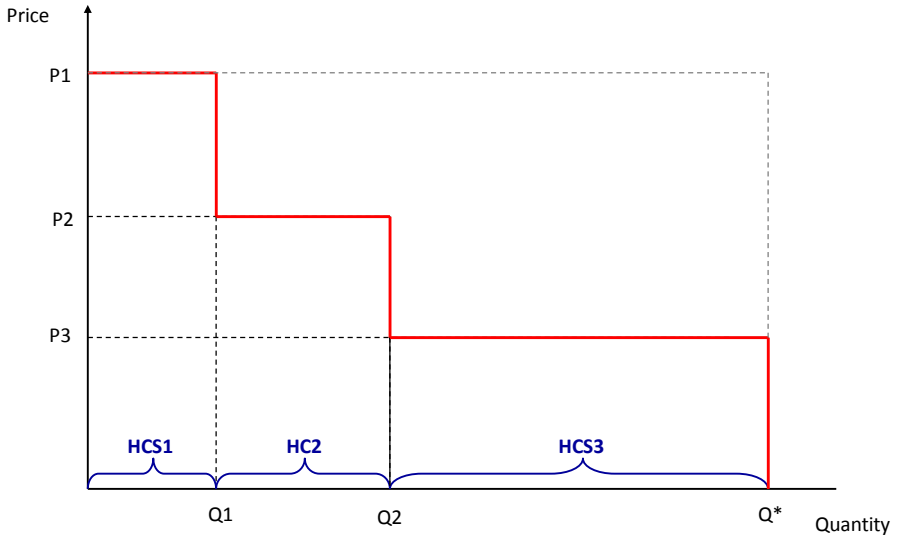
Range of cost per DALY averted estimates for MICs 2015




Range of of cost per DALY averted estimates for LMICs 2015



## International price discrimination




## Are we giving away 'too much'?

- Pay the monopoly price but no more during patent
  - Respects patents and intellectual property rights
  - Rebates benchmarked to generic entry
  - Encourage generic entry or reference price generics
- Price discrimination between and within HCS
  - NHS and manufacturers better off even at £13,000 per QALY
  - Encourage evidence about heterogeneity
- Enabling access really does matter
  - Danger of private top up insurance market
  - Abandon respect for patents
- Global benefits
  - Maximum global revenue for manufacturers
  - LMICs enter the market signal demand
  - Respect intellectual property rights
  - Best use of donated funds

## Is this 'enough'?

- Everyone pays their fare share
  - Maximum can afford to pay for the benefits during patent
- Share is/should be with current patent protections
  - How do shares differ by types of product
- Is current protection and shares sufficient?
  - Public health not a welfare objective
  - Theoretical and empirical work
- Are the better way to encourage innovation
- What are the other dynamic benefits
  - Compared to other sectors, including public
- How are they distributed

## Implications and prospects?

- UK policy (renegotiation of PPRS)
  - DH, NHSE, NICE, ABPI, other manufacturers
- Other high income countries
  - Australia, Spain, Norway Netherlands, Canada, France,…US
- Low and middle income
  - Malawi, Indonesia, Thailand, South Africa, India …
- Global bodies
  - Development decisions (Gates Foundation)
  - Recommendations (World Health Organisation)
  - Purchasing decisions and differential pricing (Global Fund)
- Contribute to accountability of current arrangements
  - International, national and local
  - In low, middle and high income countries