Economic evaluation of drugs for rare diseases

K Claxton, C McCabe, A Tsuchiya

Centre for Health Economics and Department of Economics,
University of York,
and ScHARR, University of Sheffield

CENTRE FOR HEALTH ECONOMICS
THE UNIVERSITY of York

Outline

- Economic rationale for orphan status
- Existing methods of evaluation and appraisal
- Evidence requirements
- Justification for special treatment
  - Cost of production
  - Valuation of benefits
    - Objective of health care
    - Measurement of health gain
    - Equity weights
- Conclusions

Economic rationale for orphan status?

- "Non commercial therapies"
  - Prevalence too low to provide an adequate return to R+D expenditure
  - Ability to pay (society) too low
- Support already provided
  - Direct research funding
  - Tax allowances
  - Lower evidential threshold at licence
  - Additional market exclusivity
- Justification?
  - Development of a promising drug is in the "public interest"
  - People with rare diseases have are entitled to same quality of treatment

Existing evaluation and appraisal

- Estimating costs and effects:
  - Synthesise evidence from a variety of sources
  - RCTs, observational studies and judgement
  - Reflect the uncertainty surrounding estimates
  - Combine in a formal decision framework
  - Estimate cost-effectiveness and the uncertainty surrounding the decision

- Is evidence sufficient to support decisions?
  - Assessment of the consequences of decision uncertainty
  - Formal valuation methods
  - Value of information and evidence requirements will be lower for a smaller patient population
  - Lower evidential standard (other things equal) for orphan drugs

Implications

- Existing methods and process:
  - Can estimate costs and effects using available evidence
  - Lower standards of evidence (more decision uncertainty) will be acceptable

- Orphan drug debate is about values not methods
  - Cost of production
    - Innovation and public interest
  - Valuation of benefits
    - Objective of health care
    - Equity weights

Cost of production

- Question?
  - Should society encourage the private sector to invest in the development of therapies where the cost of production exceeds the value we place on that health gain?

- But is there market failure?
  - Innovation now will lead to future valuable developments
    - Social time preference is less than private (public interest)
    - Property rights public good and free riding
  - Is there any evidence?
    - Directly fund the fundamental research – already done
    - Value and correct the externality – already done
    - Not specific to orphan status

Valuation of benefits

- Objective of health care and clinical “need”
  - Maximise health gain?
    - Capacity to benefit
  - Alternatives
    - Equality of health outcome
    - Equality of resource use
    - Severity of ill health
  - Implications beyond orphan indications
  - Sacrifice health gain

Valuation of benefits

- Inadequate measures of health gain
  - No alternative intervention
  - Poor prognosis/medical rescue
  - Irreversibility and regret
  - Statistical vs known lives (Heredity)

  - Not specific to orphan status
  - Empirical questions apply to all indications – not just rare ones

Valuation of benefits

- Equity issues?
  - Veil of ignorance
    - Value health gain equally

- Equity and rarity?
  - Patients p,q (prevalence of 1 per 20,000 and 1 per 4,000 respectively)
  - Same characteristics, prognosis without intervention and capacity to benefit
  - Acceptable that p does not get treatment?
  - Costs of treating p=10, costs of treating q=1, budget = 10
  - Choose to treat 1p rather than 10q?
  - if yes then outcome for p is valued at least 10x higher than q
  - Premium for rarity is #q/#p where indifferent

Conclusions

- Existing evaluation and appraisal methods
  - Can estimate cost-effectiveness
  - Can assess whether evidence is sufficient
  - Without arbitrary definitions of orphan/ultra orphan
- Cost of production are not sufficient justification
- Valuation of benefits
  - Different concepts of clinical need are not specific to orphan status
  - Inadequacy of measures of health gain are not specific to orphan status
- Equity issue – is there a premium for rarity alone?
  - Empirical question (if so what is the premium?)
  - Adjust the value of health outcome rather than changing the cost-effectiveness threshold

Dangers of orphan status

- Incentives
  - Reclassify drug indications
  - Reclassify diseases (phamacogenomics)
  - Multiple indications?
  - Skew future R&D towards ‘orphan’ indications
- Lower requirements for effectiveness and cost
  - Retirement home/fall back for failed therapies
- Open ended commitment
  - “Entitlement to the same quality of treatment”
  - What will be displaced in the longer run

Some suggestions

- Reiterate that evaluation and appraisal should only support provision of therapy which produces health gains valued at least as highly as those they displace
- Acknowledge that the ‘instinct’ to say yes is real but identify the underlying values and apply them consistently
- Where claims are made for a higher valuation of benefits (orphan indication or other issues) the existence and magnitude of any additional weight must be demonstrated empirically
- Research, development and appraisal placed within an explicit and transparent decision framework
- Acknowledge that explicitness, transparency and consistency are prerequisites for legitimate social decision making