THE UNIVERSITY of York

The Department of Health Sciences

# Addiction Treatment: Do economists contribute to the policy debate?

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# Aim

- Reflect on contribution of economics – specifically economic evaluation techniques – to treatment policy
- Illustrated by research findings, specifically those conducted with SSA colleagues over the last 25 years
- Compare and contrast tobacco, alcohol and illicit drugs

# Definition of economic evaluations

- Identify, measure, value and then compare the costs and consequences of alternative interventions/ policy choices
- Three main parts:
  - Costs of interventions
  - Individual effects of interventions
  - Value of other consequences – negative or positive

# Undertaking economic evaluations

- Two main rigorous methods used
  - Economic evaluation alongside RCT – yields patient level data but short follow-ups
  - Modelling study based on systematic reviews of effectiveness evidence – based around sets of "average" parameters (although can get sophisticated statistical modelling) – usually modelling pseudo cohorts over a lifetime – allows to model long term effects and chronic pathways but lots of assumptions and data needed

# Outline

- Some reflections on the past
  - Should treatment be part of policy?
  - Is treatment worthwhile?
  - Does the individual user matter?
  - Which social costs count?
  - Which individual outcome?

# Economic research in the future

- Future challenges
  - Time horizon –short or long?
  - Choices between treatments – stretching available knowledge too far?
  - Link between practice and research
  - Sub groups

# Should treatment be part of policy?

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- Early economic research indicated large social costs associated with alcohol, tobacco and more recently illicit drugs
- Different conclusions drawn for different substances.
  - Alcohol – expensive treatments seen as large part of policy response but such treatments seen as having low effectiveness
  - Drugs – enforcement activities seen in same light
  - Tobacco – little treatment available. Strong focus on population level strategies with known effectiveness to reduce the then comparatively high levels of smoking

# An example: Smoking cessation clinics

- Economic model as part of guideline development – aimed at commissioners so figures set in local average terms
- Parrott et al (1998) – indicated specialist services could be cost-effective BUT also they would not have a major impact on POPULATION rates of smoking – 0.3% quit rate for clinics
- Godfrey et al (2005) – economic evaluation in practice still cost-effective
- Other NICE reviews but still value of smoking treatment questioned

# Alcohol and drug treatment

- Considerable US research – CALDATA – Gerstein et al (1994) – potential for community treatments to be important plank in alcohol and drug policy
- Modelling of NTORS data Godfrey et al (2005) considerable saving in social costs (through crime reduction)
- £3-4 billion saved in 2000 prices from increasing treatment expenditure but small reduction only in number of problem drug users (5,000 – 13,000)

# Simulated changes in total social costs from increased drug treatment numbers £m, 2000

| Scenario (nos; effect rate) | Savings | Treatment | Net savings |
|---|---|---|---|
| 10,000 p.a. (5%) | 3,470 | 138 | 3,331 |
| 10,000 p.a. (10%) | 3,586 | 134 | 3,452 |
| 15,000; 13,000 … (5%) | 4,250 | 168 | 4,083 |
| 10,000; 11,000 (5%, 6% …) | 4,076 | 161 | 3,915 |

# Is treatment worthwhile?

# Is treatment worthwhile?

- Large body of research in US especially concerning alcohol treatment and led by Harold Holder – cost-offset
- Question of whether supplying specific alcohol treatment through health insurance can be shown to be offset by future healthcare savings
- Importance of policy and country context. In US different health care treatment at this time where alcohol treatment excluded from many schemes
- Interesting early use of administrative data

# NICE – Brief interventions

- More recent example is modelling work undertaken by University of Sheffield for NICE guidance on prevention of alcohol use disorders – currently out for consultation
- Modelled range of brief intervention simulations against no brief interventions.
- Results suggest in the majority of cases brief intervention strategy dominates no action – that is improves quality of life and saves money. Also show coverage of population of different strategies.

# Does the individual matter?

# Do individual drug and alcohol users count?

- Earlier reviews of alcohol and drug treatment economic studies (e.g. Cartwright, 2000) indicate that most studies compared costs of treatment intervention with social cost savings – any individual effect good or bad ignored.
- Similar omission of discussion of impact of treatment on quality and quantity of life of alcohol and drug misuser in McCollister and French (2003)
- US versus European? Or different underlying economic theories – libertarian versus equalitarian (Godfrey, 2006)
- Implication in practice is that individual drug users have no value in evaluation and an intervention that has impact on say crime may be preferred to one that improves well-being of drug and alcohol user

# Which social costs count?

# Does perspective matter?

- Societal perspective would include all costs and consequences whoever bears the costs
- Decision makers e.g. health care funders may only be concerned with the costs they have to bear and not want to prioritise their scarce resources by factors outside their control – e.g. productivity gains
- Different countries developing different guidelines
- NICE technical appraisals limited to health and personal social service perspective; public health guidance often considers other public sector resource costs but would exclude victim values

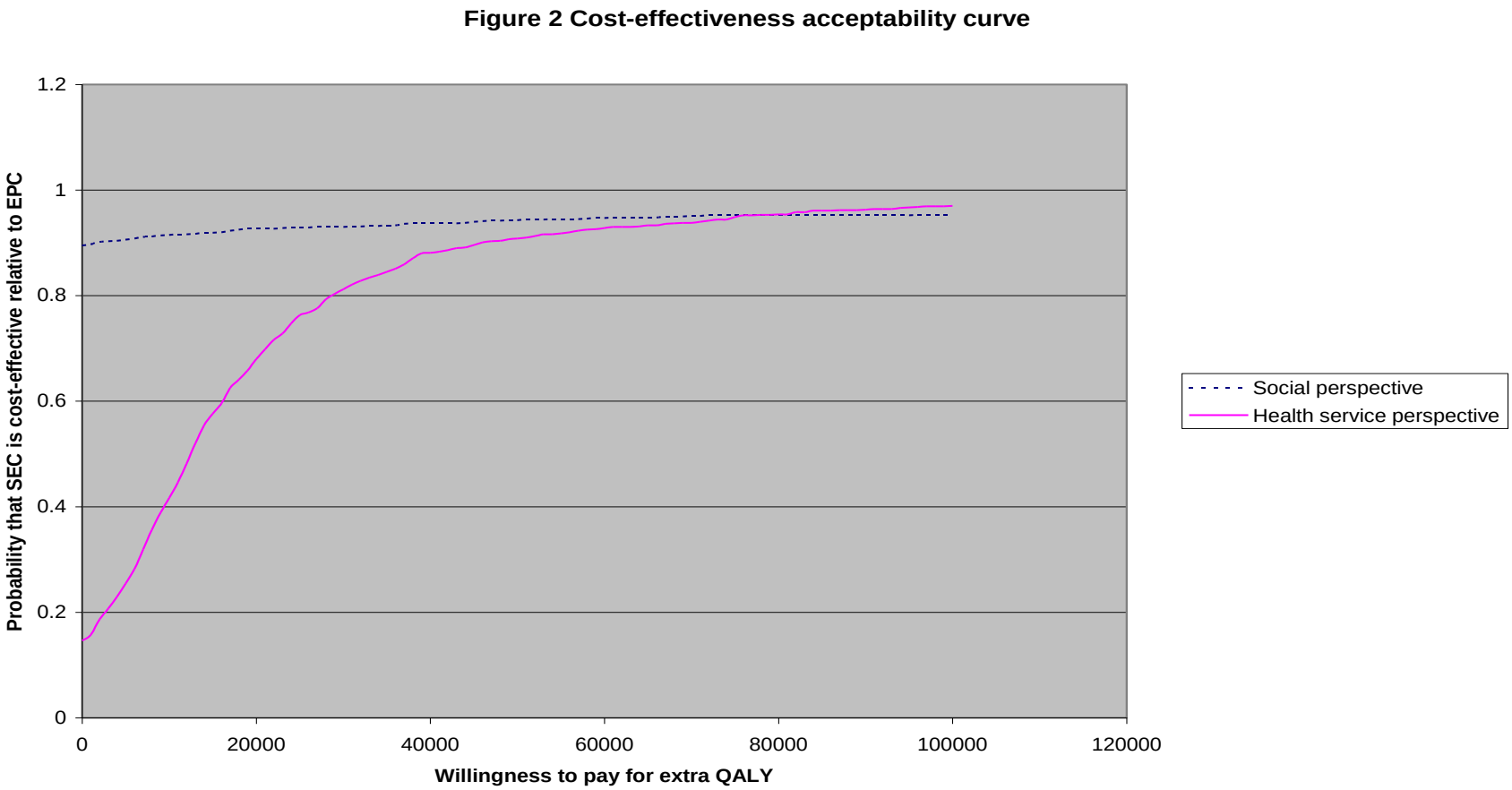
# Consequences of drug interventions: Resource savings

- Health care costs
- Criminal justice expenditure
- Social care and other welfare services
- Addiction treatment and responses

# Consequences of drug interventions: Other value created

- Productivity
- Victim costs of crime
- Community impacts
- Less any adverse consequences – e.g. spill over impacts of one policy

# Perspective could matter HEP C example



# What do different drinkers cost the NHS?

| Study | Health Care Costs – 6 months £ 2000/01, baseline |
|---|---|
| BUHD | 428 |
| Stepwice | 493 |
| UKATT | 1151 |
| OSCA | 1050 |

# Other consequences large and variable - IDUs

| MEAN (S.D) BY TYPE OF COST | LARGE CITY (N=28) | MEDIUM TOWN (N=25) | RURAL (N=22) |
|---|---|---|---|
| Health Service | 1,419 (5,892) | 559 (992) | 734 (1726) |
| Addiction treatments | 719 (841) | 891 (2912) | 436 (594) |
| Crime | 3,867 (4,756) | 2,018 (4222) | 6,914 (23,362) |
| Social and other welfare services | 294 (475) | 95 (220) | 86 (292) |
| **TOTAL** | **6,299 (7,141)** | **3,563 (5563)** | **8,170 (23,236)** |

# UKATT resource use in the 6 months before randomisation

| | MET | SBNT |
|---|---|---|
| Health | £1121 | £1192 |
| Social | £50 | £87 |
| Alcohol treatment | £502 | £621 |
| Legal | £519 | £685 |
| **TOTAL** | **£2192** | **£2585** |

# UKATT - Resource use in the in 7 – 12 months after randomisation

| | MET | SBNT |
|---|---|---|
| Health | £900 | £912 |
| Social care | £34 | £63 |
| Alcohol treatment | £186 | £290 |
| Legal | £351 | £301 |
| **TOTAL** | **£1469** | **£1565** |

# Resource savings

| | MET | SBNT |
|---|---|---|
| Health | £221 | £280 |
| Social | £16 | £24 |
| Alcohol treatment | £316 | £331 |
| Legal | £168 | £384 |
| **TOTAL** | **£722** | **£1020** |

# PUTTING THE RESULTS TOGETHER FOR UKATT

- Cost effectiveness ratio is ratio between net costs (SBNT and MET) and net health gains
- QALY difference (SBNT – MET) = - 0.0113 (95% CI –0.0532 to +0.0235)
- SBNT treatment (including training) cost more than MET (£92)
- SBNT “saves” more resources than MET (£298)
- That is SBNT has lower net costs (£206) but MET has slightly higher health gains
- BUT from a NICE perspective (health service including other alcohol treatment) SBNT less resource saving, £74 compared to £298. MET on average therefore has both less cost and more health gain – BUT large variances and very difficult to recommend one rather than other treatment

# Can we predict the costs of drinking or changes in these costs

- Birmingham Untreated Heavy Drinkers – looking at predictors over a cohort – able to get some statistically valid models – work on-going but suggests self perceived benefits and drawbacks, age, health status, some drinking measures, whether employed or not - but not dependence or risk taking marital status or tenure - were predictors.

# What should be the individual outcome measure? QALYs or substance use measure?

# Consequences of interventions. Individuals and families

- Improved quality and quantity of life for the individual user
- Improved social and family functioning
- Improved earnings
- Direct impact on children and family members

# What are QALYs

- Quality Adjusted Life Years
- Based on health state descriptors, changes in these health states
- Valuation of different health states – usually between 0 death and 1 full quality life
- Estimate of how long the health state lasts – upto life expectancy

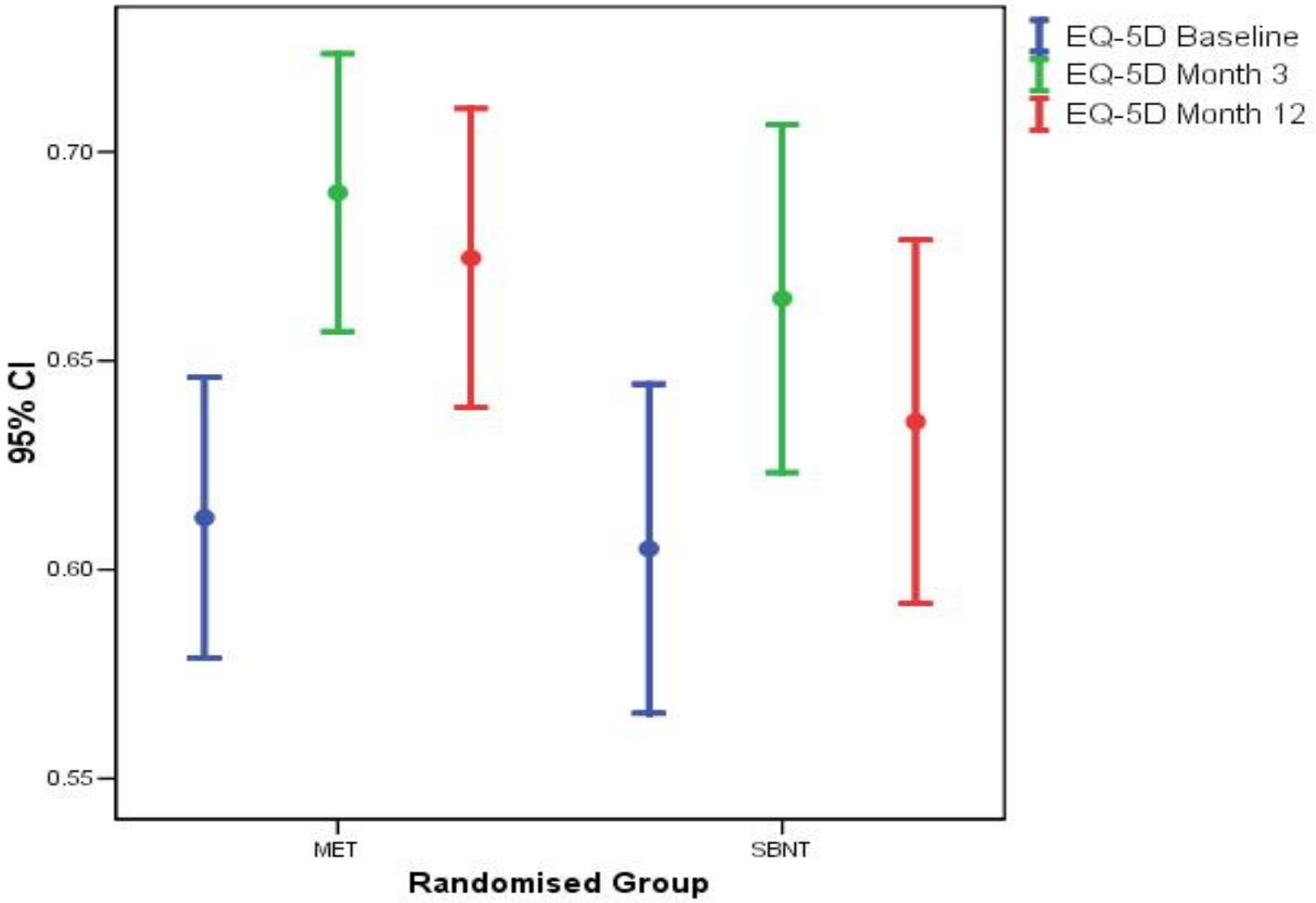
# What are the issues

- Dimensions and levels of health states
- Current favoured instrument EQ-5D – five health states, 3 levels – mobility; self care; usual activities; pain and discomfort; and anxiety or depression.
- Whose values – health economists and NICE suggest this should be general population values – not specific patient group.
- Is it sensitive to change among substance users in the short term – should we instead model from substance use changes over lifetime

# Examples of baseline EQ-5D data

| | | |
|---|---|---|
| UK population (35-44) | | 0.91 |
| UK population (45-54) | | 0.84 |
| STEPWICE [hazardous drinkers, primary care] | | 0.74 |
| UKATT [in-treatment alcohol population] | | 0.57 |
| OSCA [severe problem alcohol population] | Service 1 = | 0.45 |
| | Service 2 = | 0.31 |

# Changes in QALYs UKATT



# Quality of life for different substance misusers

| STUDY | MEAN BASELINE QALY SCORE |
|---|---|
| General population | 0.93 |
| HEPC | 0.84 |
| UKCBTMM | 0.73 |
| INJECTING | 0.64 |
| Large city | 0.65 |
| Medium town | 0.67 |
| Rural | 0.61 |

# Change in QALYs following intervention

| STUDY | INTERVENTION | | CONTROL | | DIFFERENCE |
|---|---|---|---|---|---|
| | Baseline | Follow-up | Baseline | Follow-up | |
| Hep C | 0.86 | 0.87 | 0.82 | 0.92 | -0.09 |
| UKCBT MM | 0.67 | 0.70 | 0.77 | 0.81 | -0.003 |

# From the past to the future

- Considerable development of methodology for both primary and modelling studies
- Questions being addressed going from the general – treatment versus no treatment – to the more specific – choice between treatments.
- Demand directly from policy makers for economic analyses rather than being directed by researchers

# From past to future

- Different policy and local contexts will impact on economic evaluations methods – particularly on perspective
- What is the current state of the art?
- A lot more primary studies and modelling studies but little consistency of methods

# Review of economic evaluations of alcohol treatment

- Recently published online – Barbosa et al (2009) in Alcohol and Alcoholism
- Methodological rather than evidence synthesis
- Only 27 full economic evaluations found in searches late 2008.
- Of these only 4 used cost/QALY (one additional study since published)

# Review of economic evaluation of alcohol treatment

- 19 primary studies – mainly economic evaluations alongside effectiveness studies
- Mainly cost-effectiveness with a range of different primary outcome measures
- 8 modelling studies taking longer term effects into account

# Recommendations

- Societal perspective preferable with NICE restricted view possible within this framework
- Should model longer term effects of alcohol treatment
- Should include individual impacts on drinker
- Should be based on broader range of individual outcomes than abstinence

# Recommendations

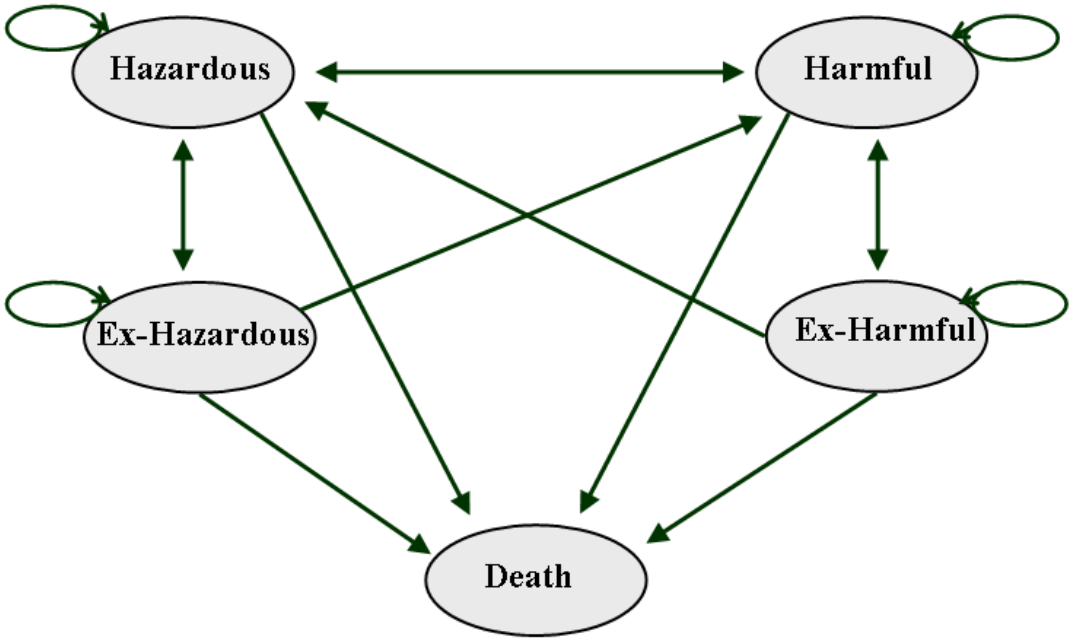
- Cost utility and cost benefit analyses, as they can include a broader range of effects, are preferred to cost-effectiveness studies
- More research needed but QALYs, because it facilitates comparison with other health care interventions which may compete for health care funds, are preferred as individual outcome measure.

# Short versus long-term – the use of modelling

# Alcohol economic modelling approaches

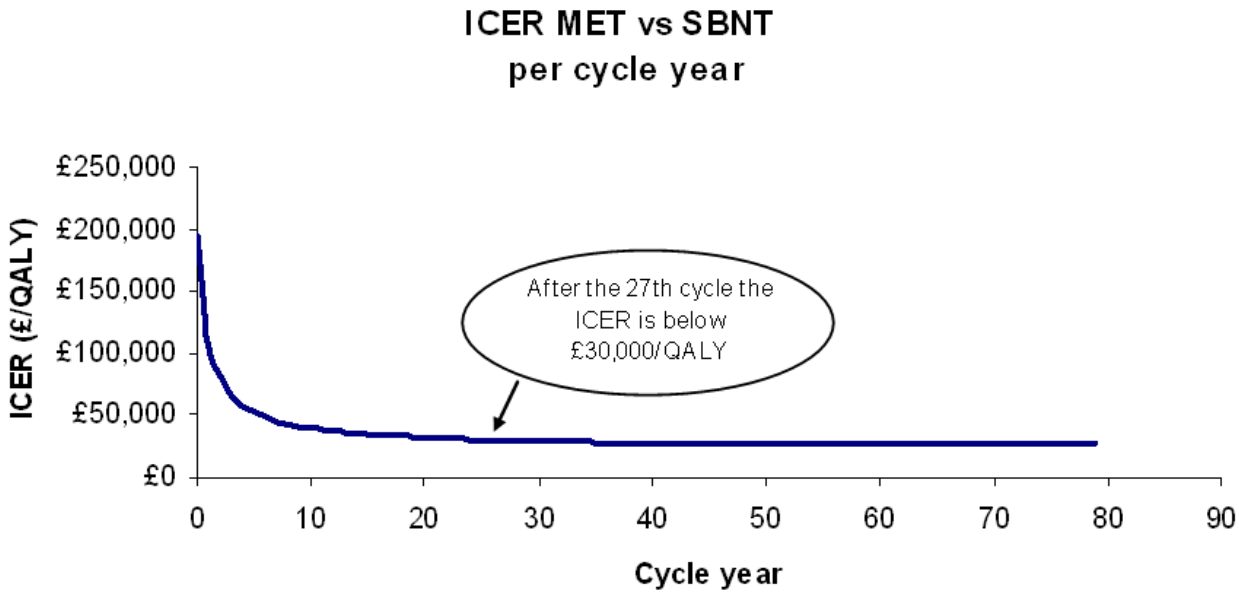
- WHO CHOICE project – country level, population simulation, population interventions of health outcomes and costs, life-time impacts – Chisholm et al (2004)
- Sheffield model – broad social outcomes based linking consumption changes for different sub groups to QALY and social outcome changes over 10 year horizon (Meier et al, 2008, 2009)
- Barbosa et al, forthcoming – dynamic life-time structure allowing for changes in drinking patterns and realistic relapses year by year for sub groups but currently limited to health outcomes

# Barbosa et al model, forthcoming




States represented by the ovals and transitions between the states represented by the arrows.
Arrows leading from a state to itself indicate that the patient may remain in that state in consecutive cycles.

# UKATT simulations




Barbosa et al, forthcoming

# Choosing between treatments – a step too far?

# Results from NICE modelling (age 50)
## Parrott & Godfrey, 2006

| Intervention (£/QALY) | Male | Female |
|---|---|---|
| GP advice | 829 | 745 |
| GP +NRT | 2390 | 2435 |
| GP + helpline | 318 - 434 | 324 - 443 |
| GP + materials | 419 | 727 |

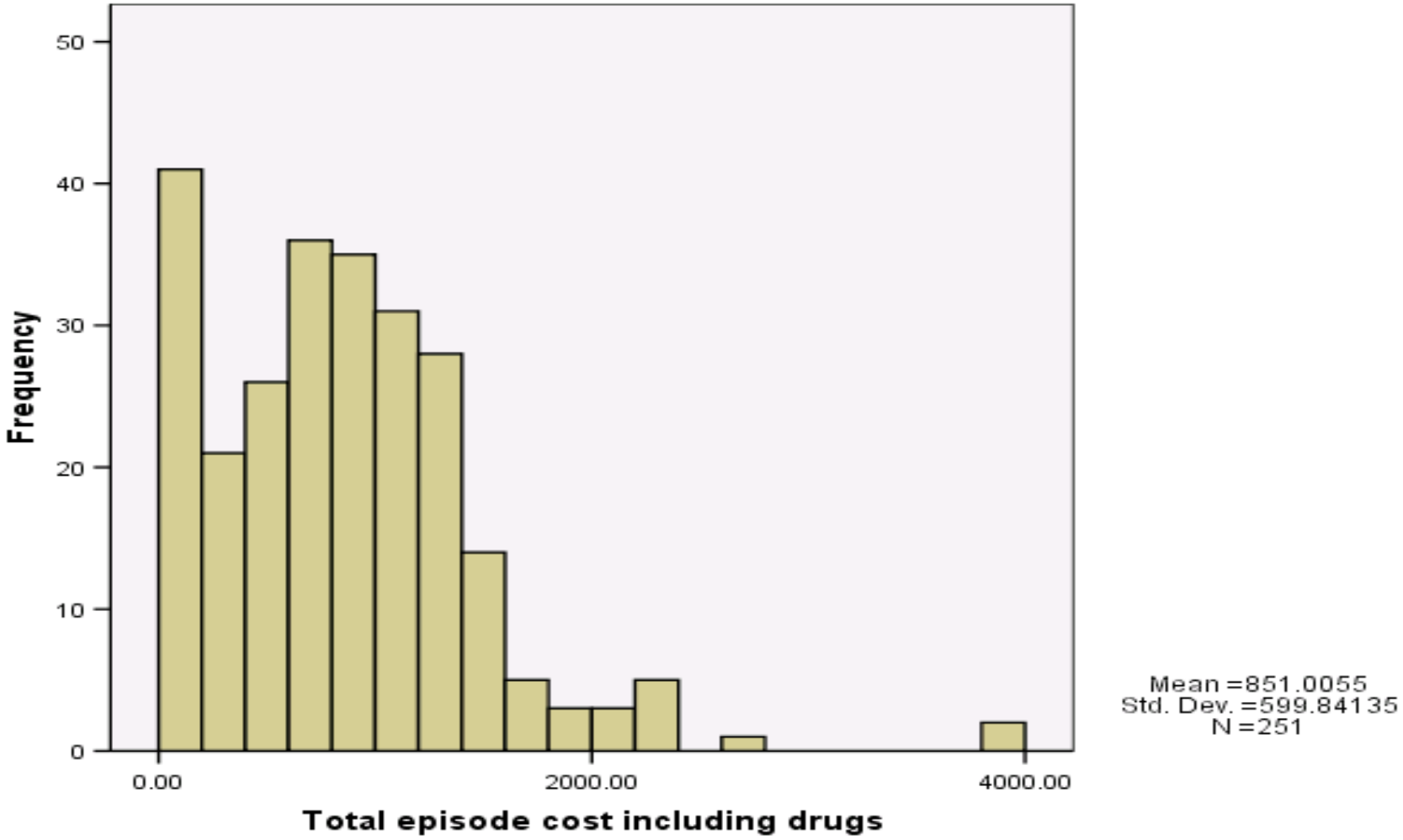
# Linking economic research to practice

# Research to practice

- Limitations of economic evidence from RCTs
  - Exclusion of complex individuals
  - Variation in practice compared to protocols
- Limits to modelling
  - Limited evidence and heroic assumptions
  - Complexity and “wet towels”

EVALUATION of practice against best expectation from research

# Costs of interventions in practice




Raistrick et al, 2007

# Cost-effectiveness by sub-group

# UKATT and gender

- From economic analysis alongside RCT – evidence that for women ICER is £18,116 per QALY for SBNT compared to MET (Cox, 2006)
- SBNT dominates MET for females in simulations using Barbosa et al (forthcoming) model
- Note model also suggests increasing proportion of hazardous drinkers to harmful drinkers makes MET more cost-effective

# Cost effectiveness by sub-group –smoking quitline

- Little evidence on consistent differentials within these interventions by social factors (gender, working or not, educational attainment, car ownership) when considered individually
- But overall characteristics of sample reached younger smokers than many health professional interventions may.

# Summary cost-effectiveness Smoking Quitline with proactive counselling

| | Intervention (n=472) | Control (n=443) |
|---|---|---|
| QALYs | 0.54 (1.43) | 0.50 (1.33) |
| Treatment | 25.48 (16.59) | 8.44 (15.54) |
| Other costs | 124.92 (169.61) | 112.26 (153.31) |
| All costs | 150.40 (175.24) | 120.69 (156.34) |
| ICER | £743 per QALY | |

# Cost-effectiveness by sub-groups

| | In paid work | | Not in work | |
|---|---|---|---|---|
| | I, n=272 | C, n=258 | I,n=195 | C,n=187 |
| QALYs | 0.67 | 0.54 | 0.38 | 0.45 |
| Treat | 25.39 | 7.36 | 25.47 | 9.92 |
| Other | 103.58 | 121.44 | 130.67 | 124.23 |
| Total | 146.83 | 110.94 | 156.15 | 134.15 |
| | £278 per QALY | | Control dominates | |

# Conclusions

- Economic evidence can be useful aid to decision makers
- Some evidence of impact of economic studies – often as support to policies already in favour – yes economists can and do contribute to the policy debate
- BUT in the future will it be used more routinely and without question?
- Economic evidence needs expert input

# Conclusions

- The application of economic evaluation techniques involves many values that all addiction scientists, practitioners and policy makers should be debating
- Addiction treatment in UK and other countries is being drawn into the mainstream regulatory framework which includes routine economic evaluation which has many advantages but also some dangers

# Personal reflections

- Big growth in economists interested in addiction economics, much more acceptance of economics by addiction specialists
- Many current studies will not only be of interest in themselves but also provide additional data to analyse
- Some of the most exciting potential research involves the combining of different study results – but these are difficult to fund

# Personal reflections

- Economists are potentially useful leeches
- They need to understand the complex processes behind treatments if their economic analyses are to make useful contributions
- Thanks to all those colleagues who have patiently attempted to address my endless questions
- Thanks to all my past and present colleagues at York who have of course done most of the work.
- Thanks to the SSA and all its members for their welcome to this particular “leech”