Housekeeping rules

• Please put all phones on **MUTE**
• This is an interactive session and questions can be asked via the messaging system
• Everyone can see your questions so behave
• During natural breaks throughout the presentation we will answer your questions
• Any remaining questions will be answered in the comprehensive feedback (Q&A)
• We will circulate the Q&A and the video link after the session
Content

1. Overview

2. Efficiency and Equity

3. Building Blocks in Economic Evaluations

4. ROI & Tools

5. Training
Objective of the session

To raise awareness of economic principles and arguments and to understand what is possible and what is not when using economic evaluations in decision making.
Overview
The basic economic problem

Why don’t we all drive Ferraris?
Economics

- The science of scarcity… there is not enough to go round

- Unfortunately this is also the case for the world of healthcare

- Tough choices have to be made

A branch of economics concerned with issues related to scarcity in the allocation of health and health care
Health economics is a sub-discipline of economics and covers:

- needs, demands and wants
- value – theory and how we quantify it
- the nature of health and social care
- utility
- economic evaluation
- efficiency, equity, priority-setting and resource allocation
- organisation, funding and regulation of health and social care
Health economics can answer questions ......

- What is the most cost-effective way to improve physical activity levels in children?

- How can informal carer’s time be costed?

- What do we know about the implications for quality in health and social care in different regulatory regimes?
Health economics can help us to prioritise

- **NHS spending is protected**
  - But NHS inflation runs higher than general inflation

- **Demand is increasing**
  - due to risk factors such as obesity, alcohol, ageing population with more long terms conditions, population more demanding

- **Council spending has fallen and there has been recent cuts to the PH grant**
  - Council spending has fallen by nearly a third since 2010
Opportunity Cost

‘Remember, you can only spend it once’

‘The loss of other alternatives when one alternative is chosen.’

‘The benefits you could have received by taking an alternative action.’
Example of opportunity cost – difference between accounting and economics…

- I make my child work for me in my laundry business
- I make £40 profit per week (minus normal costs)
- \( = £40 \text{ ACCOUNTING PROFIT} \)
- What if I got my kids to work in a coal mine?
- They would make £50 wages per week
- THIS IS THE OPPORTUNITY COST OF MY KIDS WORKING FOR THE BUSINESS
- \( = £10 \text{ ECONOMIC LOSS!} \)
There are two main objectives when spending public money

Within a publicly provided health system two main objectives predominate:

**Efficiency**
- Maximising health benefits from the available resources
- Two parts to Efficiency: Technical and Allocative

**Equity**
- Ensuring ‘fairness’ in the distribution of those benefits
Allocative efficiency
‘doing the right things’

- a broader concept; requires all resources to be put to their most rewarding use in society
- appropriate issue when a new intervention is more costly and more effective

‘Achieving the right mixture of healthcare programmes to maximise the health of society’

How much should be spent on:
Pathway: prevention, screening, treatment, palliative care?
Groups: children, elderly, women?
Public Sector: NHS, Defence, Education, upgrading the railways?
Spend and outcome tool: Quadrant chart

- Organisation: Liverpool
- Type: LA
- Weighted
- Period: 2014

Interpreting the chart:
Each dot represents a programme budget category. The outcome measures on the chart have been chosen because they are reasonably representative of the programme as a whole. This means that for Other and Total programmes no outcome data is available. The source data for the outcome measures shown on the chart can be found in the Spend and Outcome Tool.

A programme lying outside the solid +/- 2 z scores box, may indicate the need to investigate further. If the programme lies to the left or right of the box, the spend may need reviewing, and if it lies outside the top or bottom of the box, the outcome may need reviewing. Programmes outside the box at the corners may need a review of both spend and outcome. Programmes lying outside the dotted thin +/- 1 z score box may also warrant further exploration.

Local authority quadrant chart key:
- Adult: Social Care (Adult)
- Cent: Central
- Child: Social Care (Children)
- Cult: Cultural
- Edu: Education
- Env: Environment & Regulatory
- Hse: Housing
- Hwy: Highways
- Oth: Other
- PH: Public Health
- Plan: Planning
- Tot: Total

Z score:
A z score essentially measures the distance of a value from the mean (average) in units of standard deviations. A positive z score indicates that the value is above the mean, whereas a negative z score indicates that the value is below the mean. A z score below -2 or above +2 may indicate the need to investigate further. Each dot represents a programme budget category.
Technical efficiency

‘doing things right’

- Achieving the maximum output from a given combination of inputs
- Objective: To determine whether a new intervention is less costly and at least as effective as the comparator

E.g. Looking at staff costs, training, materials, drugs
Interpreting the chart:

The red diamond represents the selected organisation, with the orange circles representing organisations within the selected organisation's chosen comparator group. The green dots represent the spread of all organisations in England.

A programme lying outside the solid +/- 2 z scores box, may indicate the need to investigate further. If the programme lies to the left or right of the box, the spend may need reviewing, and if it lies outside the top or bottom of the box, the outcome may need reviewing. Programmes outside the box at the corners may need a review of both spend and outcome. Programmes lying outside the dotted thin +/- 1 z score box may also warrant further exploration.

What is a Z score?

A z score essentially measures the distance of a value from the mean (average) in units of standard deviations. A positive z score indicates that the value is above the mean, whereas a negative z score indicates that the value is below the mean. A z score below -2 or above +2 may indicate the need to investigate further. Each dot represents a programme budget category.
The law of diminishing returns

benefit

Quantity of cars
The law of diminishing returns

benefit

Marginal benefit

Quantity of cars

Quantity of cars
So...

- In order to be efficient we have to prioritise
- We have to do things right and do the right things
- Considering opportunity cost is key to doing the right things
- Marginal benefit must be considered because of diminishing marginal returns
- But efficiency will not necessarily deliver an equitable solution!
Building blocks in economic evaluations

Alcohol – Identification and Brief Advice
### 1. Rationale

- Why should we be using tax payers money to pay for alcohol interventions?

**Externalities of alcohol consumption**

**Market Failure – supply and demand of alcohol**

**Government Intervention – internalise the externality**
2. Health Outcome of Intervention

What is the impact of an intervention on a person’s health

- Impact of identification and brief advice on a person drinking alcohol at harmful levels

Cost per unit of alcohol consumed that is reduced

Cost per QALY

Adding years to life

Quality

Adding life to years

Quantity

QALY

Quality-Adjusted Life Year
3. Clinical effectiveness

Is the intervention achieving the outcome effectively?

What is the evidence around Identification and Brief Advice – how effective is it?

- **Types of studies:**
  - RCTs
  - Systematic Reviews/Meta-Analysis
  - Modelling

A meta-analysis of 22 RCTs showed that, compared to a control intervention, IBA reduced the quantity of alcohol consumed per week by 38 grams = 4-5 units.
4. Costs and Benefits

Considering the cost of the intervention against the benefits

- Financial Cost – the price of the intervention
- Economic Cost – capturing the hidden costs…

Opportunity Cost

- Crime caused by excessive drinking
- Effect on children
- Give another example…?
Cost/Benefit Ratio

- High benefit
  - £30,000 per QALY
- Low benefit
  - £20,000 per QALY

- High cost
- Low cost

Cost /Benefit Ratio

√

Health Economics: South West Webinar Series

healtheconomics@phe.gov.uk
5. Perspective

Whose point of view is important to inform the decision

Different viewpoints:

**NHS**
- Only direct costs and savings to NHS considered
- E.g. reduced hospital beds from alcohol attributable harms

**Local Authority**
- Costs and savings impacting on LA budgets considered
- E.g. reduced number of social workers due to drop in children harmed by parents drinking at harmful levels

**Social Perspective**
- Seeks to include a measure of the indirect costs
- Includes impacts directly felt by the patient
- E.g. productivity losses from sick leave induced by alcohol
6. Economic Evaluation

‘Provides a straightforward (sometimes!), systematic and objective framework which allows you to clearly compare the costs of a new healthcare interventions against the benefits the new intervention may bring’

CBA  Cost Benefit Analysis
CMA  Cost Minimisation Analysis
CEA  Cost Effective Analysis/Cost-Utility Analysis

Does the benefits of IBA outweigh the costs?
Is IBA better than other interventions?
**Time Scale**

Short term = Less than 5 years  
Medium term = 5-10 years  
Long term = 10+ years
Is IBA cash-releasing?

- Bed Days?
- Hard Cash?
- Savings to NHS?

Cash releasing interventions
Cash saving interventions
Cost effective interventions
Affordability

• A significant number of public health interventions are cost-effective.

• However, this does not make them affordable.

• The majority of interventions cost more but the additional benefits from the intervention outweigh the additional cost.
Return on Investment

‘ROI is one way of measuring and communicating public health effectiveness in a manner that is particularly salient for policymakers, administrators, general public’

‘What bang are we getting for our buck?  
Are we making the right investment?  
Are we becoming more efficient?

Compares the cost of an intervention with its benefits in financial terms over time
Optimity Matrix Commission

This project supported PHE’s commitment to “…develop a much clearer focus on the economic case for prevention, being clear on the return on investment in the public’s health, including the practicalities of how to implement and how to ensure the expected returns are realised and savings cashed”.

The review covers the areas identified by PHE as priorities in *From Evidence into Action*. These are:

1. Tackling obesity;
2. Reducing smoking;
3. Reducing harmful drinking;
4. Ensuring the best start in life;
5. Reducing dementia risk.

The review focuses on interactive tools, designed to be used to simulate policy options, rather than bespoke, economic models which have been built to support specific cost effectiveness research.

Outputs: Executive summary, full report with definitions, slidepack of all reviewed ROI tools.
Tools

An ROI tool enables the user to...

- evaluate the quality of a **portfolio of interventions** in their geographical area (e.g. region, county or local authority) and models the economic returns that can be expected in different **payback timescales**.

- The different interventions included in a tool can be mixed and matched to see which intervention portfolio or package provides the **best 'value for money,'** compared with no package or a different package.

- In some tools, custom interventions can be created for interventions that have not been included in the model.

There is a Special Point of Contact (SPOC) available in each KIT to support use of tools.
# Tools included in the review

<table>
<thead>
<tr>
<th>Tackling obesity</th>
<th>Reducing smoking</th>
<th>Reducing alcohol drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>• NICE ROI – Physical Activity Tool</td>
<td>• NICE ROI – Tobacco Tool</td>
<td>• NICE ROI – Alcohol Tool</td>
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<tr>
<td>• NSMC - Behaviour Change Value for Money Tool – Obesity</td>
<td>• NICE - Brief interventions and referral for smoking cessation.</td>
<td>• NSMC- Behaviour Change Value for Money Tool - Alcohol</td>
</tr>
<tr>
<td>• NICE PH 41 Walking and Cycling – Costing Template</td>
<td>• NICE - Varenicline for smoking cessation</td>
<td>• Services for the identification and treatment of hazardous drinking, ... - Commissioning and benchmarking tool</td>
</tr>
<tr>
<td>• Weight Management Economic Assessment Tool</td>
<td>• NICE - Workplace interventions to promote smoking cessation</td>
<td>• NSMC- Behaviour Change Value for Money Tool – Tobacco</td>
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<tr>
<td>• Health Economic Assessment Tool (HEAT)</td>
<td>• NSMC- Behaviour Change Value for Money Tool – Breastfeeding</td>
<td>• Return on Investment calculator, BTS</td>
</tr>
<tr>
<td>• Sport England Model for Estimating the Outcomes and Values in the Economics of Sport (MOVES)</td>
<td></td>
<td>• PHE Alcohol Ready Reckoner</td>
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<tr>
<td></td>
<td></td>
<td>• Alcohol System Model, NHS East of England</td>
</tr>
</tbody>
</table>

### Ensuring the best start in life

- NICE ROI Children and Young People
- NSMC- Behaviour Change Value for Money Tool - Breastfeeding

### Reducing dementia risk

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### NHS Health Checks

- Health Checks Ready Reckoner

### General tools

- Health England Leading Prioritisation (H.E.L.P.) online tool
- Greater Manchester Cost Benefit Analysis tool
- Socio-Technical Allocation of Resources tool (STAR)
- Informing Investment to reduce health Inequalities (III)
### NICE ROI – Tobacco Tool

https://www.nice.org.uk/about/what-we-do/into-practice/return-on-investment-tools/tobacco-return-on-investment-tool

<table>
<thead>
<tr>
<th>Authors/owners</th>
<th>Health Economics Research Group, Brunel University, in association with Lelan Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year tool was built or updated</td>
<td>June 2014</td>
</tr>
<tr>
<td>Country of use</td>
<td>England</td>
</tr>
<tr>
<td>Purpose of the tool</td>
<td>This tool is intended to help users understand the return on investment of their chosen package of tobacco control interventions. Where relevant, the comparative figures are based on two different ‘packages’ of interventions, one of which could be ‘baseline’ defined as a hypothetical situation where ‘there is no tobacco control programme’ at present. It is left to users to select which interventions will make up a package and decide which packages of interventions they would like to compare.</td>
</tr>
<tr>
<td>Types of economic analysis</td>
<td>Cost-effectiveness, cost utility and cost benefit analysis. A number of cost savings and ROI metrics are included in the tool. These are: net present value (NPV), net cost-savings, benefit-cost ratios, cost per death avoided, cost per life year gained, incremental cost effectiveness ratios (ICER) and population metrics (or indicators showing burden of disease): QALYs gained per 1000 population</td>
</tr>
<tr>
<td>delivered by the tool</td>
<td></td>
</tr>
<tr>
<td>Interventions</td>
<td>There are a total of 28 Tobacco control interventions in the tool</td>
</tr>
<tr>
<td>Health outcomes</td>
<td>Productivity gains per smoker and NHS cost per smoking related death averted; NHS cost per life year gained; and NHS cost per QALY gained</td>
</tr>
<tr>
<td>Health and/or wellbeing</td>
<td>The number of QALYs averted per 1000 population</td>
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<td>utility metrics</td>
<td></td>
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<tr>
<td>Gaps of the tool</td>
<td>Due to the scope of the tool, this version of the model does not include population subgroups by sex, age, ethnicity and socioeconomic factors.</td>
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The tool can be used to plan and evaluate social marketing and other interventions. This tool is aimed at minimising smoking use. Cost-effectiveness, cost-utility and cost benefit analysis. A number of cost and health metrics are included in the tool. These are: Years of life lost (YLL), cost savings, Incremental Cost Effectiveness Ratio (ICER), net cost to public sector, net cost per health gain and health impact (QALY).

The user is required to input intervention information including input cost, outcome data and values concerning the intervention to be reviewed. A range of health outcomes, including health impact (QALY), Net cost per health gain (£/QALY), QALY per quitter, Deaths Avoided, Years of Life Lost (YLL), Years of life lived with disability (YLD).

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<td>Gaps of the tool</td>
<td>QALYs, YLD, YLL, DALYs, Deaths</td>
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Potential Issues with ROI tools

- Scope
- Perspective
- Incentives
- Assumptions
- False sense of accuracy in results
- Not updated eg PCT to LAs
- Usability
- Cashable vs non-cashable
Current and future work on ROI

1. ROI commission on wider determinants of health

2. Other commissioned work

3. PHE database storing tools and resources

**PHE Alcohol and Drug Tools:**
- Cost Calculator deadline extended to 30th October
- Families Tool Kit: End of the month
- Commissioning Tool: End of November
- SROI Tool: In the New Year
Training

Bitesize training sessions
2 hours – all PHE staff

1 day health economics training course for local authority staff

5-day modular health economics course for PHE staff to build internal capacity

SW Training Day (Bristol) – 1st Feb
Thank you for listening!

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For more information about the Optimity Matrix report, go to