

# Cost effectiveness studies in healthcare

Maria Luch



# ICER I

Incremental Cost Effectiveness Ratio  
(ICER)

Compares two treatments:

New treatment (N): Cost N & Effectiveness N

Old treatment (O): Cost O & Effectiveness O

$$\text{ICER} = \frac{C_N - C_O}{E_N - E_O}$$

# Costs

Direct costs

Indirect costs

Intangible costs

# Direct Costs (*healthcare costs*)

Buildings

Equipment

Prevention

Promotion

Medical treatment

Rehabilitation

Training

Staff personnel

Volunteers

# Indirect costs (*societal costs*)

Lower productivity in workplace

Sickness absence

Reduced career opportunities

Early retirement

Social welfare benefits

Help and support from family members

# Intangible costs

Value placed on reduced quality of life/  
pain etc

Other impacts e.g. impact of social  
exclusion, discrimination, stigma

# Other issues about costs

- Different ways of identifying cost information: data sets; questionnaires for patients and families; insurance system data etc
- Quantify resources used – drugs, staff time, carer time, work absence
- Attach unit costs to resources used to identify total costs
- Consider implementation costs - staff training; new equipment etc
- Costs vary with size - may be lower if delivered on larger scale
- Costs (and health outcomes) today usually are given a higher value than costs (and health outcomes) incurred many years in the future (discounting)

We measure healthcare interventions



# Caution with cross—country comparisons

- Beware cost data collected across countries
- Resource use differs between countries: different staff mix; primary versus secondary care;
- Country- specific treatment patterns: different drug use patterns; non-pharmacological treatments
- Treatment patterns may be influenced by national guidelines/protocols
- Country- specific unit costs



# Unit costs in PURSUIT economic sub-study (€s)

## (1)

| <i>Items</i>                 | <i>France</i> | <i>Germany</i> | <i>Italy</i> | <i>Spain</i> | <i>Netherlands</i> | <i>UK</i> |
|------------------------------|---------------|----------------|--------------|--------------|--------------------|-----------|
| <i>Per Diem ICU</i>          | 951           | 967            | 1098         | 696          | 1039               | 1342      |
| <i>Per diem CCU</i>          | 499           | 1032           | 315          | na           | 945                | 744       |
| <i>Per diem regular ward</i> | 176           | 264            | 211          | 203          | 337                | 297       |
| <i>IABP</i>                  | 812           | 1714           | 1260         | 1341         | 1500               | 979       |
| <i>MRI Scan</i>              | 335           | 188            | 175          | 266          | 191                | 287       |
| <i>CT Scan</i>               | 170           | 87             | 88           | 109          | 143                | 138       |
| <i>Groin bleed</i>           | 576           | 657            | 478          | 452          | 1159               | 232       |

# Unit costs in PURSUIT economic sub-study (€s)

## (2)

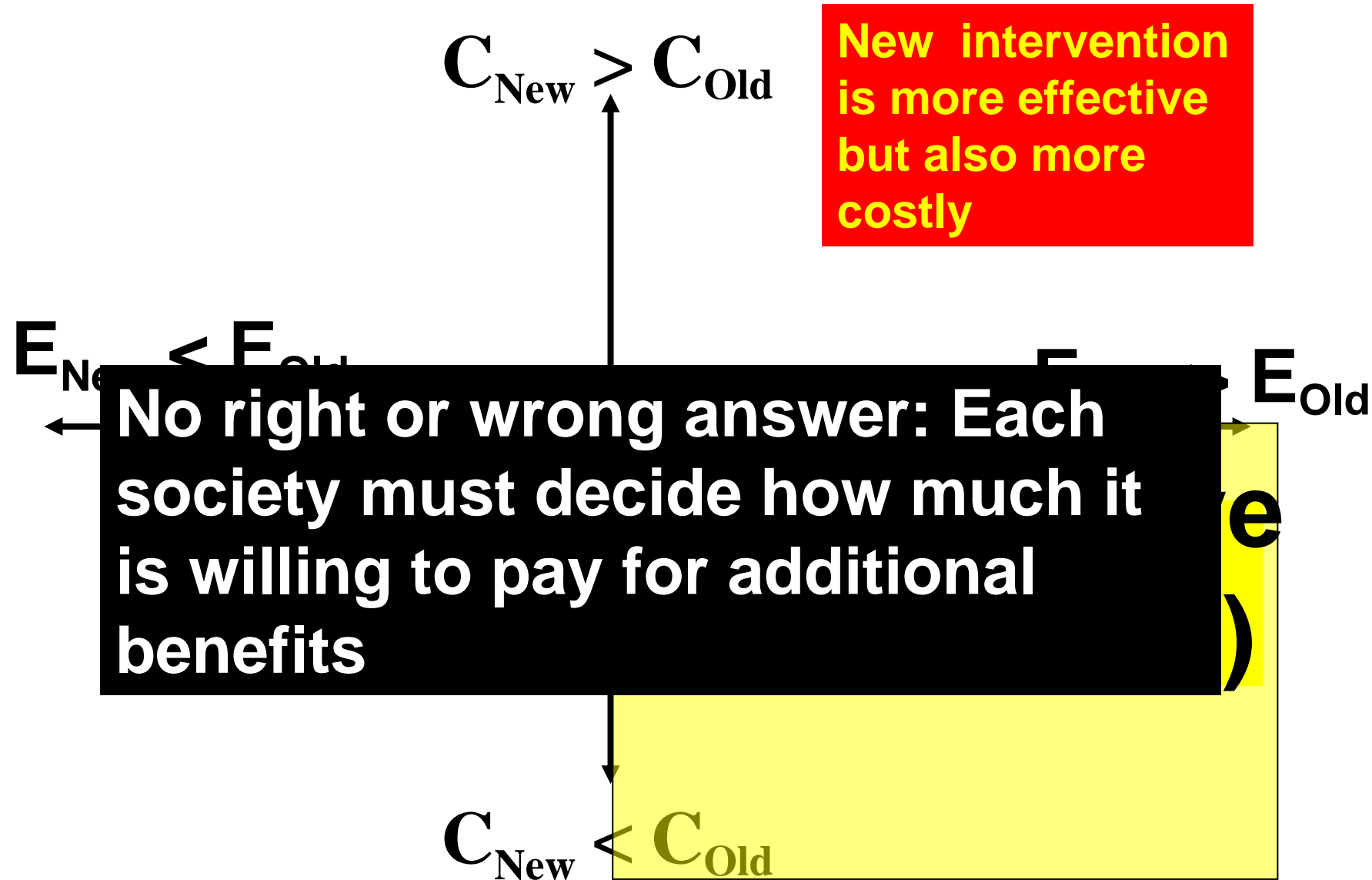
| <i>Items</i>                  | <i>France</i> | <i>Germany</i> | <i>Italy</i> | <i>Spain</i> | <i>Netherlands</i> | <i>UK</i> |
|-------------------------------|---------------|----------------|--------------|--------------|--------------------|-----------|
| <i>Transfusion</i>            | 66            | 108            | 98           | 89           | 81                 | 69        |
| <i>Stress test, treadmill</i> | 77            | 24             | 1            | 15           | 129                | 131       |
| <i>Stress test, thallium</i>  | 253           | 171            | 185          | 96           | 316                | 383       |
| <i>PTCA</i>                   | 3998          | 3305           | 2437         | 1850         | 3209               | 2620      |
| <i>PTCA+stent</i>             | 7264          | 4121           | 2734         | 3172         | 5150               | 4512      |
| <i>CABG</i>                   | 8689          | 5824           | 4400         | 1401         | 12152              | 4578      |
| <i>Diagnostic Cath</i>        | 695           | 887            | 432          | 86           | 1898               | 1143      |

# Unit costs in PURSUIT economic sub-study (€s)

## (3)

| <i>Items</i>                     | <i>France</i> | <i>Germany</i> | <i>Italy</i> | <i>Spain</i> | <i>Netherlands</i> | <i>UK</i> |
|----------------------------------|---------------|----------------|--------------|--------------|--------------------|-----------|
| <i>Atherectomy</i>               | 1744          | 3305           | 5950         | 2056         | 6992               | Na        |
| <i>Permanent peacemaker</i>      | 4556          | 5099           | 2423         | 3844         | 8478               | 3595      |
| <i>Temp peacemaker</i>           | 538           | na             | 370          | 854          | 478                | 283       |
| <i>Streptokinase 1.5MU</i>       | 75            | 171            | 54           | 129          | 205                | 131       |
| <i>t-PA 50mg</i>                 | 491           | 961            | 823          | 857          | 1136               | 1154      |
| <i>Stroke follow-up 6 months</i> | 5792          | 16714          | 41800        | 22700        | 6388               | 31585     |
| <i>Exchange rate per EURO</i>    | 6.56          | 1.96           | 1936         | 166.4        | 2.20               | 0.656     |

# Cost-Effectiveness Possibilities



# ICER Thresholds and C-E

## Zones

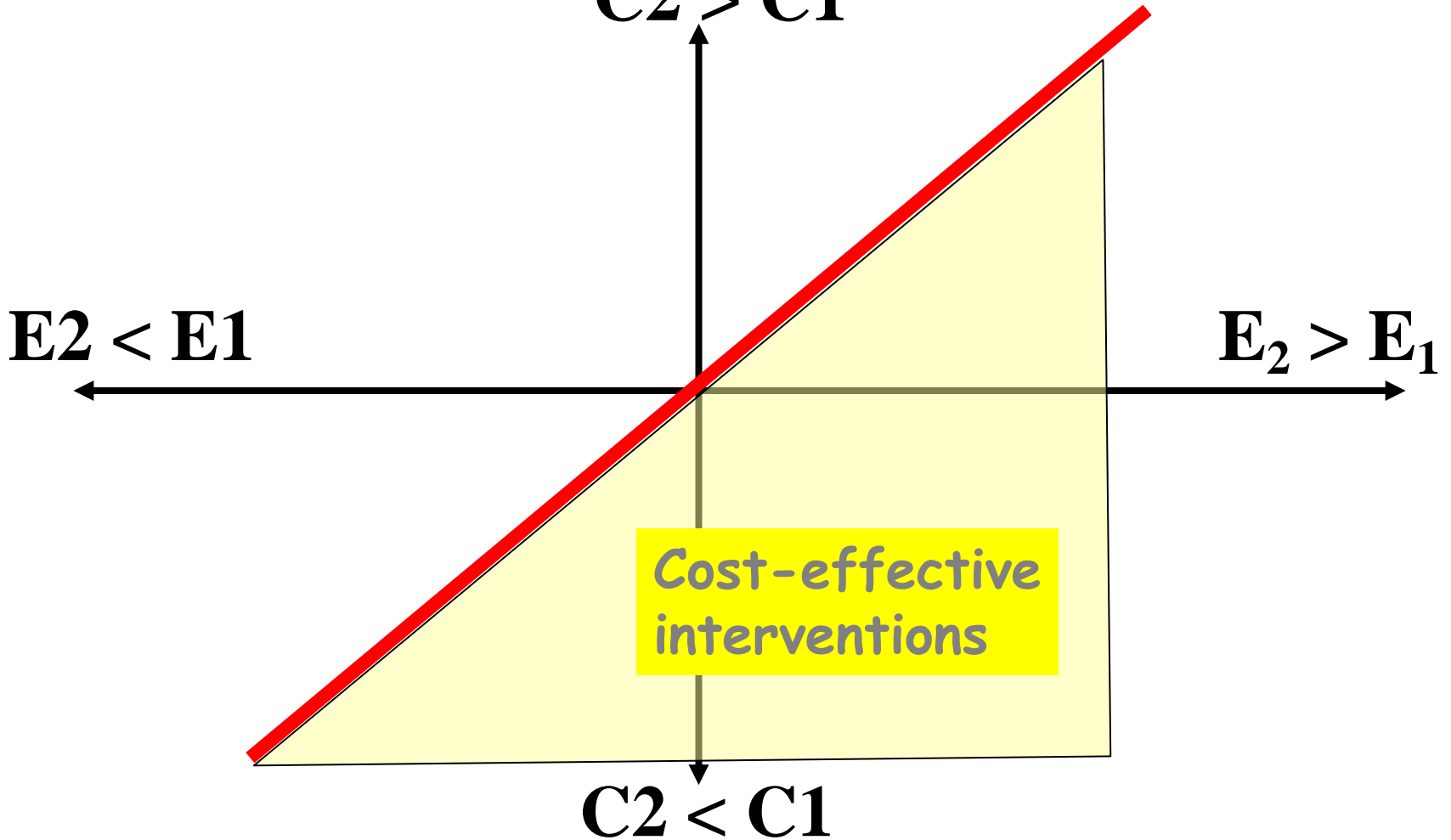
$C_2 > C_1$

$E_2 < E_1$

$E_2 > E_1$

Cost-effective  
interventions

$C_2 < C_1$



# Perspective in economic evaluation

- Different perspectives adopted on costs
- Narrow health and social care view
- 'Public purse' view - all public expenditure
- Perspective of service users/families
- Societal - impacts on everyone in society
- Most reimbursement decisions made on health and social care and/or public purse view
- Innovative value of the technology