HEALTH AND FINANCIAL SUSTAINABILITY

THE ROLE OF ECONOMIC EVALUATION OF MEDICAL TECHNOLOGIES

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The issue in newspapers

El País 17/11/2009

The health system is not sustainable as it is
Las costuras de la sanidad revientan
La crisis pone a prueba el sistema nacional de salud - Sin cambios, el modelo, aquejado de déficit crónico, puede zozobrar

FEATURE: Life & Arts SUSTAINABILITY OF THE STATE OF WELFARE 1. HEALTH
Health seams burst
The crisis is testing the national health system - No change, the model suffers from chronic deficit, can capsize
Definition (1)

Sustainability is not a well defined concept. Often unsustainable = growth in public spending higher than the growth of GDP.

When is this growth “unsustainable”? 

OECD
The debt ratio will increase indefinitely if the real interest rate exceeds real GDP growth unless the primary budget is sufficient. The country needs to issue an ever increasing new debt to repay old debt and to finance interest payments. This is unsustainable. Thus, in order to reduce the public debt ratio, the primary surplus must be larger than debt servicing.
Definition (3)

In the case of public debt:

- We understand the conditions that tend to increase the ratio debt/GDP without limit.
- We understand what we have to do in order to meet these conditions.

Sustainability requires: a) understanding why expenditures are growing, b) to having the tools to modify this tendency, c) to using these tools….We then control expenditure (not viceversa).

Expenditures are sustainable when we are in control (≠constant).
In Spain the health system has a deficit of 11,000M€….and the problem seems to be chronic:

"There has always been a difference between actual expenditure and the budget of about 10%," Jose Martínez Olmos, General Secretary of Health (El País, 12/04/2010).

The system does not seem to have mechanisms to keep expenditures under control. In this sense we can say that the system in unsustainable.
Cost Drivers (1)

HEALTH CARE

Demographic drivers

- Change in the population structure
- Cost of non-survivors (Death-related costs)
- Health status of survivors

Non-demographic drivers

- Income effect
- The residual: technology, relative prices, policies

Source: OECD (2006)
Some literature


Cost Drivers (2)

- Non-demographic drivers are far more important than factors as ageing or inmigration:
  - in Hagist&Kotlikoff 11% of growth in health expenditures is explained by demographic factors and 89% by non-demographic factors.
  - According to Jones is 75%.


Public health care spending as %GDP in 2007 (EU27)=6.7

Forecast 2060 with medical technology: ↑6.3.
Forecast 2060 without medical technology: ↑1.5.
Medical technology

• Problem for the sustainability of a public health system: medical technology not follow a predictable pattern that can be “linked” to national income (GDP).

• “There are no scientifically reliable forecasts of the future developments in the medical technology. Consequently, the only feasible way to project future evolution of spending driven by technological factors seems to be an extrapolation of the past trends.” (D&P, 2010)

• How can the system be in control of something that it is so erratic?
The need of cost-effectiveness (1)

- “Given its relevant contribution to growing longevity and improving health status, the role of technology is considered as positive and any attempt to contain its development must be based on objective cost-effectiveness analysis.”

- Dybezak&Przywara (2010)
The need of cost-effectiveness (2)

- Economic evaluation of health care technologies (EEHT) can help make the system sustainable in (at least) two different ways:
  1. Ranking health technologies according to their cost-effectiveness.
  2. To establish when a health technology is cost-effective.
- Helps to decide if a new medical technology can be provided.
What is Economic Evaluation?
Is it really useful?
Is it useful?

- Yes if decision-maker

1. Understands what it is
2. Is willing to accept the (political) consequences of using the recommendations of this technique in order to make decisions.
An innocent man
EE: The identification, measure, and comparison of the costs
(i.e. resources consumed) and outcomes (clinical, economic,
and humanistic) of interventions (pharmaceuticals, non-drug
therapies, public health programs) [Drummond et al]
THE ICER

Incremental Cost-Effectiveness Ratio

\[
\text{ICER} = \frac{\text{TC}_1 - \text{TC}_2}{\text{E}_1 - \text{E}_2}
\]

- \(\text{TC}_1\) = total cost of treatment for Drug A
- \(\text{TC}_2\) = total cost of treatment for Drug B
- \(\text{E}_1\) = effectiveness of Drug A
- \(\text{E}_2\) = effectiveness of Drug B
The QALY

- It is the most useful measure of effectiveness in economic evaluation.

- Metric for measuring or estimating the value of health scenarios or outcomes.

- Equals the value of a healthy life year or an outcome equivalent to that.

- Values all health outcomes on a common scale. Can compare CE ratios of different medical treatments.
GRAPHICALLY

Utility weights

Time (y)

Increased QALYs

With treatment

Without treatment
CUA of two alternatives

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost ($)</th>
<th>Effectiveness (Life Expectancy)</th>
<th>Health State (Utility)</th>
<th>QALYS</th>
</tr>
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<tbody>
<tr>
<td>Drug A</td>
<td>10,000</td>
<td>3.5</td>
<td>0.72</td>
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<tr>
<td>Drug B</td>
<td>20,000</td>
<td>4.5</td>
<td>0.60</td>
<td>2.7</td>
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</table>

Incremental cost-effectiveness ratio = \[
\frac{\$20,000 - \$10,000}{4.5 - 3.5} = \$10,000/\text{life-year gained}
\]

Incremental cost-utility ratio = \[
\frac{\$20,000 - \$10,000}{2.7\text{QALYs} - 2.5\text{QALYs}} = \$50,000 \text{ per QALY gained}
\]

Bootman, Townsend, McGhan, Principles of Pharmacoconomics 2nd Edition
## LEAGUE TABLE

<table>
<thead>
<tr>
<th>Programme</th>
<th>C/E Ratio ($/QALY)</th>
<th>Cost of programme ($000)</th>
<th>QALYs gained by programme</th>
<th>Total costs ($000)</th>
<th>Total QALYs</th>
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<tbody>
<tr>
<td>E</td>
<td>500</td>
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<tr>
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<td>400</td>
<td>2000</td>
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<td>200</td>
<td>15 750</td>
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</table>

**QALY Shadow Price**

**Closed budget vs Flexible budget**
## INCREMENTAL COST PER ADDITIONAL LIFE-YEAR GAINED LEAGUE TABLE

<table>
<thead>
<tr>
<th>Number</th>
<th>Incremental cost per additional life-year gained at 1998/1999 prices ($AU)</th>
<th>PBAC decision</th>
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<tbody>
<tr>
<td>1</td>
<td>5517</td>
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<td>39821</td>
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<td>15</td>
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<td>23</td>
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<td>24</td>
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<tr>
<td>25</td>
<td>231650</td>
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<tr>
<td>26</td>
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</tbody>
</table>

$\text{AU}$ = Australian dollars. The average interbank exchange rate to US dollars for 1998/1999 was 0.63772 (range 0.68760 to 0.54850).

PBAC = Pharmaceutical Benefits Advisory Committee.

SUSTAINABILITY

- How can it help to make the system sustainable?

1. Fixed budget: is the new technology more or less cost-effective than other alternatives already in the system?
2. Flexible budget: we can finance the new technology if the cost/QALY ratio is below the monetary value (shadow price) of the QALY.
SOME PROBLEMS

• Technical problems vs Political Problems
• Technical problems: economists do not fully agree on:
  – The discount rate
  – If indirect costs should be included
  – If costs associated to the increase in life expectancy should be included
  – The monetary value (shadow price) of a QALY.
  – If it is constant for every health problem.
THE NEED OF POLITICS

• A technology can be cost-effective because it is highly effective and highly costly.
• The main objective of EE is not to control costs but to maximize health.
• Somebody (politician, administrator) has to take the decision about how to fund this hypothetical new (cost-effective) treatment.
• Economic Evaluation is a decision AID that can help to make the health system sustainable. However,..... it does not avoid the need of taking (tough) political decisions: to cut back from other areas -health or non-health-, co-payments, taxes...
THE NEED OF POLITICS

• EE as consultancy. Prescriptions take the form of advice about how the manager can best achieve *its own* objectives.

• The manager has to specify his/her objectives. The objective of EE is to maximize health. If the manager does not want to maximize health, what other objectives can justify a decision that does not maximize health?
CONCLUSIONS

• So Economic Evaluation:

1. Is not a technique aimed at controlling costs.
2. Does not avoid the need of making problematic decisions.
3. Reduces the degree of arbitrariness of decision makers. Easier to evaluate their decisions.

• On the positive side, it introduces some elements of economic rationality in decision making. In this respect, it can help to make the system sustainable.
Fortunately....

Most managers and politicians really want to maximize the health of their fellow citizens. They will use more and more economic evaluation to regulate the use of medical technologies making the health system more sustainable ....after all...
An innocent man
Cátedra de economía de la salud

THANKS!!!

“It is clear that much of the growth in health care expenditures during the post-World War II period has resulted not from increased prices for existing technologies, but from the price for new technologies” p. 546
Is this used?

• Economic evaluation is widely used (Canada, Australia, UK, Sweden, The Netherlands, Portugal…) at least for the regulation of pharmaceutical products.