MAFEIP-Tool
Conceptual Framework, analytic approach & implementation

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The views expressed are those of the author and may not in any circumstances be regarded as stating an official position of the European Commission!
# CONTEXT for MAFEIP

<table>
<thead>
<tr>
<th>Action Group</th>
<th>Action Group Theme</th>
<th>Participating Commitments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Better prescription and adherence to medical plans for older patients</td>
<td>68</td>
</tr>
<tr>
<td>A2</td>
<td>Personalized health management, starting with a falls prevention Initiative</td>
<td>68</td>
</tr>
<tr>
<td>A3</td>
<td>Prevention and early diagnosis of frailty and functional decline, both physical and cognitive, in older people</td>
<td>131</td>
</tr>
<tr>
<td>B3</td>
<td>Replicating and tutoring integrated care for chronic diseases, including remote monitoring at regional level</td>
<td>125</td>
</tr>
<tr>
<td>C2</td>
<td>Development of interoperable independent living solutions, including guidelines for business models</td>
<td>59</td>
</tr>
<tr>
<td>D4</td>
<td>Innovation for age friendly buildings, cities and environments</td>
<td>66</td>
</tr>
</tbody>
</table>

Sources: EC. 2011; Abadie et al. 2014
MAFEIP in a nutshell

**Step 1**
Develop a conceptual framework for monitoring and assessing EIP on AHA outcomes

**Step 2**
Create a shortlist of indicators to quantify relevant outcomes on intervention level

**Step 3**
Build a generic model to link diverse outcomes on intervention level to indicators on Partnership level

**Step 4**
Implement the model in a way that allows remote data input and assessment throughout entire life cycle of a technology
Step 1

Conceptual framework for monitoring and assessing EIP on AHA outcomes
Economic evaluation in health....

....is the comparative analysis of alternative courses of action in terms of both*...

...their costs

\[
\text{Cost}_{\text{intervention}} - \text{Cost}_{\text{comparator}} = \Delta C
\]

...and consequences

\[
\text{Effect}_{\text{intervention}} - \text{Effect}_{\text{comparator}} = \Delta E
\]

\[
\text{ICER} = \frac{\Delta C}{\Delta E}
\]

(Accept intervention if ICER < WTP for health gain (λ)

Conceptual framework

**Step 1**

ICER = \( \Delta C / \Delta E \)

Accept intervention if ICER < WTP (\( \lambda \))

- **Dominated**
  - (more expensive & worse)
- **Better but more expensive**
- **Dominant**
  - (cheaper & better)

\( \lambda_1 \), \( \lambda_2 \), \( \lambda_3 \)
Identify all feasible treatment options for a given patient group

Estimate the costs and health effects of each and plot on graph

---

**Cost (€)**

7,000

3,000

**Effect**

0.3

0.4

Economic evaluation in health....a bit more formally
Step 1

Conceptual framework

<table>
<thead>
<tr>
<th>Cost (€)</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000</td>
<td>0.3</td>
</tr>
<tr>
<td>7,000</td>
<td>0.4</td>
</tr>
</tbody>
</table>

- 2 costs €10,000 per unit of health outcome compared with 1
- 3 costs €40,000 per unit of health outcome compared with 2
• Suppose we will pay up to €20,000 per unit of outcome, but no more.

\[ WTP (\lambda) = \frac{\text{€20k}}{\text{outcome unit}} \]
2 is cost-effective compared with 1, as it costs €10,000 more per unit of health outcome and we would pay up to €20,000.

- So we can rule 1 out.

- And 2 becomes the new baseline for comparison.
Step 1: Conceptual framework

- 3 is not cost-effective compared with 2.
- So 3 is ruled out and we are left with 2.
To sum up:

- MAFEIP builds up from the principles of health economic evaluation
- The tool allows a comparative assessment of a certain health technology relative to a suitable standard care scenario
- It needs to be highlighted, however, that it is not the intention to compare commitments or Action Groups in terms of their outcomes!
- As the standard care scenario will differ for each technology under evaluation:
  - commitments can use the tool to assess whether they are providing benefit to patients and healthcare systems and
  - the EC can estimate the overall impact generated through the activities of the EIP on AHA,
- However, direct comparison across commitments is not feasible (nor was it our mandate) as each assessment is, by definition, context specific!
Step 2

Shortlist of indicators to quantify relevant outcomes on intervention level
Step 2

Outcome indicators

**Headline Target**

+2 HLYs

**Triple Win**

- Quality of Life
- Sustainability
- Innovation & Growth

**Outcome indicators on intervention / commitment level**

- ?
- ?
- ?
- ?
- ?
- ?
- ?
- ?

**Indicators should be:**

- Legitimate
- Credible
- Salient
Step 2

Outcome indicators

Activities to shortlist potential outcome indicators:

1. Input from Action Groups & experts to compile a long-list of potential indicators (June – August 2012)

2. Review of 71 Reference Sites' good practices (April 2013)

3. Review of macro-level and intermediary indicators from international databases (April – June 2013)

4. Clustering of indicators by Action Groups (October 2013)

5. Literature review on outcome indicators used in Action Groups' scientific domains (April – Dec. 2013)

6. Outcome indicator survey amongst EIP on AHA commitments (April – June 2014)
Outcome indicators

Step 2

Headline Target
- Interval properties
- Non-discriminatory
- Additive

+2 HLYs

Triple Win
- QALYs
- Health, care expenditure
- Innovation & Growth

Outcome indicators on intervention / commitment level
- HRQoL
- Mortality
- Risk factors
- Physical Activity
- Adherence
- Frailty
- Functional status
- Falls
- Nutrition
- Mental health
- Cognitive decline

Incremental change in resources used

(Local) unit cost for resources

Nr. of implemented technologies

Nr. of users of new technologies

Nr. of created jobs

Nr. of new SMEs
Step 3

Building a generic model to link diverse outcomes on intervention level to indicators on Partnership level
The appeal of DAM for MAFEIP is its tremendous flexibility as the approach:

"pulls together the many needed pieces of information from multiple sources and then stitches them together into a (hopefully) cohesive whole" (O'Brien, 1996*)

DAM allows for the 'maximum of consistency with the minimum of duplicative efforts' (Steuten et al., 2008**)
Hence, the model essentially consists of:

- **Health states** a target patient is currently in or may experience in the future
- **Probabilities** to move from one health state to another, and for each health state
- **Costs** (resource use valued in monetary units), and
- **Values** or utilities for health outcomes
Step 4

Implementing the model in a way that allows remote data input and assessment throughout entire life cycle of a technology
Web-implementation

- Implementation of MAFEIP-model as web-based tool

- Aim is remote data-entry by stakeholders from commitments

- The tool provides background data to populate (some) parameters with baseline estimates

- User-friendly web-interface, validity checks, background information and guidance by IPTS should facilitate this process
Web-implementation

Validity / Quality control over data inputs

Coverage of commitments

Data collection exclusively by IPTS

Web implementation
Model input

The data to be used in the model should be provided here. The parameters required are divided into four sections: (1) model analysis, (2) costs associated with health states and intervention costs, (3) transition probabilities for moving between health states with and without the intervention, and (4) utilities (also called quality of life weights) that are associated with each health state. A value has to be selected for each input parameter in order to run the model. Each section provides you additional information on the respective parameters.

Set-up

Probabilities

Costs

Utilities

Health-related quality of life weights associated with baseline health and deteriorated health should be provided here.

Health-related quality of life (HRQoL)

The HRQoL, as expressed through a quality of life weight (utility), represents a particular health outcome. The higher this utility value, the higher the quality-of-life associated with that health outcome. A utility of 0 indicates no quality of life or dead, whereas a utility of 1 indicates quality-of-life in perfect health.

<table>
<thead>
<tr>
<th>Baseline health</th>
<th>Control group</th>
<th>Intervention group</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>0.811</td>
<td>0.811</td>
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</table>

<table>
<thead>
<tr>
<th>Deteriorated health</th>
<th>Control group</th>
<th>Intervention group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.755</td>
<td>0.755</td>
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</table>
Using the tool across the entire life cycle

'Simply speaking, an early health economic model is a standard economic model applied to an early stage of development'*

*IJzerman & Steuten, Appl. Health Econ & Health Pol. 2011*
Using the tool across the entire life cycle

• Due to the early stages of EIP on AHA data is generally scarce and scattered

• This does not mean, however, that monitoring and assessment of the technologies developed and carried out within the EIP on AHA is not possible

• The MAFEIP-tool allows synthesizing the best information currently available from multiple sources for a particular health technology

• This, in turn, allows performing an early assessment of a technology even before it has been clinically tested

• The resulting evidence may help to inform decisions about the future design of the technology, and to estimate its overall market potential at an early stage during the product life cycle
Developmental Uncertainty**

includes details of design and manufacture, and specification of the performance of the product

Postmarket uncertainty**

Includes aspects of commercial performance after launching the product, e.g. sales volume, reimbursement / coverage decisions, target price etc.

*Adapted from IJzerman & Steuten, Appl. Health Econ & Health Pol. 2011

**Adapted from Girling et al. Value in Health 13(5), 2010
Discussion