HealthBASKET – rationale, key findings and policy implications

Reinhard Busse for the HealthBASKET project partners
• **The policy question:** Why do costs of health services differ among EU countries at the micro level?

• **Our research questions:** What is a “health service“? Do prices/ reimbursement rates really differ? Why? Are differences explained by systematic factors (e.g. capital), differences in service intensity or costs per service?
Health Benefits and Service Costs in Europe
A European Research Project
April 2004 – March 2007
Countries involved in study

- United Kingdom
- Nederland
- Danmark
- Polska
- Magyarország
- España
- Italia
The first nine patients sent to France by the English NHS (not shown: the 40 journalists who accompanied them)

ARE THESE DATA REALISTIC? ARE THEY REPRESENTATIVE? HOW CAN THE DIFFERENCE BY EXPLAINED?
Country A

Benefit Package A using Service Taxonomy A and Fee Schedule A
Accessiblity A_x
Quality of service A_x

Country B

Benefit Package B using Service Taxonomy B and Fee Schedule B
Accessiblity B_x
Quality of service B_x
Overall Objectives (1)

- To collect and describe how different countries define the services covered and provided within the system;
- To explore the possibilities of building a European taxonomy of benefits, based on that analysis combined with relevant existing classifications, to enable a common language for cost (and quality) comparisons;
Overall Objectives (2)

- To review methodologies used to assess costs and prices of individual services across EU Member States;

- To identify ‘best practice’ in the analysis of costs at the micro-level with the scope of international comparability;

- To assess costs variations within and between Member States using a selection of both in-patient and out-patient services.
Phase 1 - Service definition:
- Individual Country Analyses
- Synthesis Report
- Exploration of the possibilities of building a European taxonomy of benefits

Phase 2 - A review of methodologies to assess costs
- Country Analyses
- Systematic Review to identify best practice in the analysis of costs
Phase 3: An empirical exercise of cost assessment of a selection of services from the in-patient and from the out-patient setting

- Country Analyses to assess costs of individual health services using a selection of “case-vignettes”
- Synthesis Report

Phase 4: The final synthesis of the results and policy recommendations
Phase I - country case studies

• **Overview on benefit basket in country** On which level are entitlements regulated? For how many different sectors of health care (and/or how many regions and/or how many statutory schemes) exist different regulatory regimes? Which is the role of the central government in cases of delegation/devolution to local and/or self-regulating actors? Which types of benefit categories are excluded? …

• **Definitions of entitlements and benefits by sector** Who are the actors responsible for defining benefits for this sector and what is their respective role? Who are the actors responsible? Are the benefits defined explicitly, implicitly or as mixture of both? Is the definition of benefits specific or rather vague? Are they defined in a positive or negative way? Are the included benefits simple enumerations of procedures or goods or are they linked to patients’ conditions/indications? How are benefits classified? …

• **Description of benefit catalogues, involved actors and decision criteria** …
Taxonomy

theoretical study of classification, including its basic principles, procedures, and rules –
“the science of classification”

Diseases: ICD;
Functional impairments: ICF;
Health care providers: System of Health Accounts;
Health services and goods: ???
Functional Classification

HC.1 Services of curative care
  HC.1.1 In-patient curative care
  HC.1.2 Day cases of curative care
  HC.1.3 Out-patient care
    HC.1.3.1 Basic medical and diagnostic services
    HC.1.3.2 Out-patient dental care
    HC.1.3.3 All other specialised health care
    HC.1.3.9 All other out-patient curative care
  HC.1.4 Services of curative home care

HC.2 Services of rehabilitative care
  HC.2.1 In-patient rehabilitative care
  HC.2.2 Day cases of rehabilitative care
  HC.2.3 Out-patient rehabilitative care
  HC.2.4 Services of rehabilitative home care

HC.3 Services of long-term nursing care
  HC.3.1 In-patient long-term nursing care
  HC.3.2 Day cases of long-term nursing care
  HC.3.3 Long-term nursing care: home care

HC.4 Ancillary services to health care
  HC.4.1 Clinical laboratory
  HC.4.2 Diagnostic imaging
  HC.4.3 Patient transport and emergency rescue
  HC.4.9 All other miscellaneous services

HC.5 Medical goods dispensed to out-patients
  HC.5.1 Pharmaceuticals and other medical non-durables
    HC.5.1.1 Prescribed medicines
    HC.5.1.2 Over-the-counter medicines
  HC.5.2 Therapeutic appliances and other medical durables
    HC.5.2.1 Glasses and vision products
    HC.5.2.2 Orthopaedic appliances and other prosthetics
    HC.5.2.3 Hearing aids
    HC.5.2.4 Medico-technical devices, incl. wheelchairs
    HC.5.2.9 All other miscellaneous medical durables

HC.6 Prevention and public health services
  HC.6.1 Maternal and child health; family planning …
  HC.6.2 School health services
  HC.6.3 Prevention of communicable diseases
  HC.6.4 Prevention of non-communicable diseases
  HC.6.5 Occupational health care
  HC.6.9 All other miscellaneous public health services
Torbica & Fattore: The “Essential Levels of Care” in Italy: when being explicit serves the devolution of powers. Eur J Health Econ 2005; 6: S46-s52
Figure 1: Taxonomy of the Royal Decree. 63/1995

1. Primary health care
2. Specialised attention
3. Pharmaceutical services
4. Complementary Services
5. Health information and documentation services

6 subdivisions
24 subdivisions

4.1. Orthoprosthetic service
4.2. Ambulance services
4.3. Complex Diet Therapy
4.4. Oxygen Therapy at Home

7 subdivisions

Source: Own elaboration.

Figure 2: Taxonomy of LAW 16/2003

1. Public health care
2. Primary health care
3. Specialised health care
4. Long term care

8 subdivisions
9 subdivisions
8 subdivisions

4.1. Long term care
4.2. Convalescence
4.3. Rehabilitation in patients with recoverable functional deficit

Source: Own elaboration.
Phase I findings (1)

• **clear trend** towards a more explicit definition of benefit baskets and benefit catalogues in European health care systems.

• only minor variations exist between countries if covered benefits are analysed by categories.

• **Taxonomy** differs largely from country to country – even if most tend to sort ambulatory care by physician specialty and inpatient care by diagnosis and procedure (DRGs/ HRGs/ DBCs …)
Phase I findings (2)

• motivation to establish an explicit benefit basket of services is not always cost-containment or rationing but e.g. to assure equity among the regions

• Conclusion: a uniform taxonomy (“European Classification of Health Services“) to explore and describe differences (not to standardise the baskets!) is urgently needed for both practical and scientific purposes
Phase II - country case studies

Are there official prices or tariffs? What are the main characteristics of price regulation in health care structured by health-care sectors? What is the unit for payment (i.e. level of aggregation)? At which level are prices set or negotiated? Is it possible for a provider to get different prices/payments from different purchasers (health authorities/ sickness funds/ governments)? Is it possible for a purchaser to pay different prices to different providers? Which actors are involved in the establishment of prices?

How are prices updated? Are there fixed update appointments? Do providers or purchaser have the possibility to request update of prices? How accurate are updates done? What is the major drive behind price upgrades?

How are costs of services established in the participant countries? Which units are used to quantify resource consumption? Which sources are used to assess resource consumption? Which sources are used to establish unit monetary value? How accurate are cost assessments? Which actors perform and/or use cost assessment?
## Example: The Netherlands

<table>
<thead>
<tr>
<th>Healthcare services</th>
<th>Cost assessment</th>
<th>Price setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Used?</td>
<td>Units of resource usage</td>
</tr>
<tr>
<td>Curative care in hospitals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* List A DBCs</td>
<td>yes</td>
<td>DBCs and intermediate healthcare services</td>
</tr>
<tr>
<td>* List B DBCs</td>
<td>yes</td>
<td>idem</td>
</tr>
<tr>
<td>Outpatient curative care</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* GP care</td>
<td>Incidental</td>
<td>patients and patient contacts</td>
</tr>
<tr>
<td>* dental care</td>
<td>Incidental</td>
<td>technical services/ interventions</td>
</tr>
<tr>
<td>* paramedical care</td>
<td>Incidental</td>
<td>patient contacts</td>
</tr>
<tr>
<td>* physiotherapy</td>
<td>Incidental</td>
<td>patient contacts</td>
</tr>
<tr>
<td>Curative home care</td>
<td>no</td>
<td></td>
</tr>
</tbody>
</table>
Phase II findings

- Most countries have already installed performance-/activity-based remuneration schemes for in- and outpatient services, while they are often lacking for long-term care, rehabilitation etc.

- There is a clear trend towards the use of micro-costing data (especially for inpatient services) to determine remuneration rates, reflecting the real costs of providers

- problems:
  - insufficient quality of data delivered by providers
  - recommendations in methodological guidelines vary
Phase III

- Do costs (and prices/ reimbursement rates) really differ? If yes, by how much?

- Why?
  - Systematic differences in calculation (e.g. capital costs included/ not included)?
  - Differences in technologies used or service intensity (e.g. time spent with patient)?
  - Cost/ resource unit?

Methodology: Case vignettes
• 10 case vignettes ("service packages") were designed around episodes of care

• To ensure homogeneity within case vignettes (i.e. to avoid risk adjustment), health status and indication of each patient was defined in detail for each vignette.

• To ensure comparability across vignettes, each was divided into detailed path components e.g. diagnostic procedures, care before operation etc.

• Partners in each country documented technology use, service intensity and costs (prices) for case vignettes with data from at least 5 representative providers.

  -> Finally, costs (and prices) were compared and differences are analysed.
## Case vignettes

<table>
<thead>
<tr>
<th>Need for care</th>
<th>Age group</th>
<th>Type of Care</th>
<th>ECHI*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendectomy</td>
<td>14-25</td>
<td>In-patient</td>
<td>Surgery</td>
</tr>
<tr>
<td>Normal delivery</td>
<td>25-35</td>
<td>In-patient</td>
<td>Obstetrics</td>
</tr>
<tr>
<td>Hip-replacement</td>
<td>65-75</td>
<td>In-patient</td>
<td>Surgery</td>
</tr>
<tr>
<td>Cataract</td>
<td>70-75</td>
<td>Out-patient (day case)</td>
<td>Surgery</td>
</tr>
<tr>
<td>Stroke</td>
<td>60-70</td>
<td>In-patient</td>
<td>Medical</td>
</tr>
<tr>
<td>AMI (PTCA)</td>
<td>50-60</td>
<td>In-patient</td>
<td>Medical</td>
</tr>
<tr>
<td>Cough</td>
<td>2</td>
<td>Out-patient</td>
<td>Paediatrics/GP</td>
</tr>
<tr>
<td>Colonoscopy</td>
<td>60-70</td>
<td>Out-patient</td>
<td>Diagnostic</td>
</tr>
<tr>
<td>Tooth filling</td>
<td>25-35</td>
<td>Out-patient</td>
<td>Dental</td>
</tr>
<tr>
<td>Physiotherapy (knee)</td>
<td>12</td>
<td>Out-patient</td>
<td>Rehabilitative</td>
</tr>
</tbody>
</table>

*ECHI: related to European Community Health Indicators set (+ yes/ - no)
An example: Hip replacement

Female, 65-75 years old, with hip osteoarthritis requiring hip replacement because of considerable impairment is finally (after waiting time if normal in the hospital) admitted for her first hip replacement (one side).

The patient is without co-morbidity (i.e. expensive drugs due to treating co-morbidity should be excluded), the surgeon uses the most frequently used implant for female patients; the operation is without severe complications.

End of case vignette: discharge (home or to separate rehabilitation institution).
<table>
<thead>
<tr>
<th>Phase</th>
<th>Elements</th>
<th>Units</th>
<th>No. of units used/patient</th>
<th>Unit Cost</th>
<th>Total costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-operative (admission and planning)</td>
<td><strong>Diagnostic Procedures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Imaging (e.g. X-Ray)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Imaging (e.g. ultrasound)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Imaging (e.g. CT)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laboratory (e.g. blood count)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laboratory (e.g. blood coagulation, C-reactive protein (CRP), etc.)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other (ECG, lung-function, etc.)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Care before OP</td>
<td>Surgeon/Physician input</td>
<td>Patient days*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nursing input</td>
<td>Patient days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other (paramedical)</td>
<td>Patient days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Drugs, infusions, injections, etc.</strong></td>
<td>DD**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drug A, Drug B, etc.</td>
<td>DD**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td><strong>Devices (type of implant, stent, etc.) total price paid by hospital</strong></td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OP-Team (altogether or separately)</td>
<td>Min.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surgeon</td>
<td>Min.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaesthetist</td>
<td>Min.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OP-nurses etc.</td>
<td>Min.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drugs (anaesthetics, other?)</td>
<td>DD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OP-Theatre running costs (e.g. sterilisation)***</td>
<td>Min.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wake-up room***</td>
<td><strong>Intensive Care Unit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surgeon/Physician</td>
<td>Patient days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nursing</td>
<td>Patient days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Patient days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drugs</td>
<td>DD**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diagnostic Procedures (e.g. imaging, laboratory)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Therapeutic Procedures (e.g. punctures, drainages, special wound dressing)</td>
<td>No.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-operative</td>
<td><strong>Normal Ward</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“Profit“-making explainable through comparatively low case complexity
Results from other studies

<table>
<thead>
<tr>
<th></th>
<th>Italy (N=5)</th>
<th>Germany (N=8)</th>
<th>France (N=5)</th>
<th>Denmark (N=2)</th>
<th>England (N=2)</th>
<th>Netherlands (N=7)</th>
<th>Spain (N=5)</th>
<th>Poland (N=6)</th>
<th>Hungary (N=2)</th>
<th>Length of stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract</td>
<td>6981.90</td>
<td>6364.20</td>
<td>6101.09</td>
<td>5932.24</td>
<td>5920.94</td>
<td>5690.94</td>
<td>5604.92</td>
<td>2125.36</td>
<td>1297.90</td>
<td>8.2</td>
</tr>
<tr>
<td>Hip</td>
<td>4524.02</td>
<td>5465.98</td>
<td>5683.11</td>
<td>4011.32</td>
<td>4457.22</td>
<td>4069.98</td>
<td>3779.64</td>
<td>1508.59</td>
<td>1289.71</td>
<td>16.2</td>
</tr>
</tbody>
</table>

Average length of stay:

- Italy: 8.2
- Germany: 16.2
- France: 9.3
- Denmark: 5.9
- England: 7.1
- Netherlands: 5.9
- Spain: 7.0
- Poland: 11.8
- Hungary: 12.9

Other studies:

- Sweden 2000: £9740
- USA 1993-96: £8646.00, £5332.90
- Canada 1988: £6927.00, £754.00
- UK 1996/1997: £5380
Acute myocardial infarction: Hospitals performing PTCAs, Stenting and/or Lysis

> factor 4: value for money?
Our current analyses suggest that …

- use of technology is a major explanation for certain vignettes (hip replacement, acute myocardial infarction, appendectomy …)
- skills mix and usage intensity may make a difference (delivery …)
- length of stay plays a role (especially if shortened by early discharge to rehabilitation; e.g. stroke)
- costs per resource unit (especially for human resources) do differ) – depending on vignette as much or more than technology usage *(7th FP project)*
- …
- difference may be due to unresolved methodological questions (allocation of overheads …)
Policy recommendations (1)

- International comparison is an important tool for learning from each other and developing best practice. However, service, cost and quality data are currently not routinely available for such comparisons.
- Countries should be explicit about what they provide and what not.
- Common taxonomy necessary (“European Classification of Health Services“): possibly to be developed as expansion of OECD classification; usefulness of EN 1828 on coding systems in health care and EN 1068 on surgical procedures coding systems to be discussed.
- Regular monitoring of benefit baskets and decision criteria on EU level.
Policy recommendations (2)

• Issues of adopting common standards to decide about benefits in the baskets of the EU countries and possibly constructing a uniform European benefit basket (possibly initially restricted to certain indications with a clear European value-added, such as Orphan diseases) will appear on the European agenda. Policy-makers are well-advised to anticipate such discussions.

• Cost-effectiveness/ value for money considerations need solid cost data, based on comparable methodology which is currently not available.

• Our approach by using standardised vignettes is feasible.

• Prerequisite of international cost comparison are: mutually accepted methodological guidance (standard costing method) and reasonably good compliance with it.
Policy recommendations (3)

- Harmonisation of methodologies not sufficient to ensure meaningful comparability; accounting systems both at provider level and at national level should be coordinated and standardised. -> serious dilemma: standardised “European” accounting methodology right down to provider level might be well-justified and “necessary” but enforcing one methodology conflicts with the principle of subsidiarity.

- Intermediate option: „Benchmarking club“ of hospitals

- Once such comparative data are available, European countries need to honestly revisit their common assumption that their respective health systems work so differently that all different regulation and financing systems are justified.
HEALTH BASKET

Participants

Health Benefits and Service costs in Europe (HealthBASKET)

HealthBASKET is a part of the Specific Targeted Research or innovation project in the European Commission’s 6th Framework programme (Grant: SP21-CT-2004-501500).

The project was launched in April 2004 and was completed in March 2007. The participating countries included Denmark, France, Germany, Hungary, Italy, Poland, Spain, The Netherlands, and the United Kingdom.

Click here to download the project brochure.

Project Overview and Objectives

The Kohll/Decker judgments of the European Court of Justice and more recently the Garastz-Smits/Peerbooms cases have demonstrated that health services can no longer be regarded as operating in isolation from other EU Member States. Increasingly there are flows of patients from one Member State to another, sometimes as a matter of individual choice, sometimes organised at national level through Ministries of Health.

For rational decision-making, national and EU policy-makers need reliable comparisons about available health services, how these are defined, what their costs are and which prices they will have to pay for them. The HealthBASKET project will address these needs of knowledge in a clear
European Commission identified the European Diagnosis-related groups system as a future research area to be funded under the 7th FP (HEALTH-2007-3.2-8).

The aim of this proposed research project will be to explore and develop ways to establish a EURO-DRG system that achieves comparability of costs and prices between and within Member States for in-patient services, considers the structural differences among the Member States as well as the differences in medical practice and different preferences towards the implementation of new technologies.

It also aims to address the possible trade-off between costs and the quality of care to ensure that a European DRG system provides the intended incentives.
**patient factors**
- demography, diagnoses

**hospital / medical decision factors**
- procedures, technologies, human resources, intensity

**structural parameters**
- national / regional hospital-specific factors

**comparable transnational data set** (WP A)

**For selected episodes of care**: development of a uniform transnational classification system or use of a national system (WP C)

**DRG reimbursement** = **relative weight** × **base rate**

use of the classification system for quality assurance (WP F)

* Development of full system is beyond scope of project

**The Euro-DRG project 2008/2010**