Primary Health Care Needs-Based Resource Allocation through Financing of Health Regions

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A Lourenço, A Bicó, S Olim, M Reis, A Ferreira

Rate of potential years life lost (/100.000 inhab)
Outline

- Healthcare expenditure & financing
- Portuguese NHS organization and funding
- Recent changes in PHC financing
- Future challenges
Total, Public Health expenditure & expenditure on medication (%GDP)

OECD, 2009

Public & private health expenditure as a share of GDP 2008 (or latest year available)

Public & private health expenditure per capita, US$ PPP 2008 (or latest year available)

<table>
<thead>
<tr>
<th>Country</th>
<th>Public &amp; private health expenditure per capita, US$ PPP 2008</th>
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<tbody>
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<td>United States</td>
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<td>Norway</td>
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<td>Switzerland</td>
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<td>Slovak Republic</td>
<td>767</td>
</tr>
</tbody>
</table>

NHS pooling of funds

Ministry of Finance
Annually sets NHS budget based on historical spending and on plans presented by the Ministry of Health. Beveridgean model, financed through general taxation.

Ministry of Health
Receives a global budget for the NHS which is then allocated to the many institutions within the NHS (Hospitals, Regional Health Administrations - RHA and Special Programmes)
Controls all capital expenditure

ACSS
Proposes budget allocation to each RHA for the provision of Primary Health Care (PHC) to the population, according to geographic defined areas.
Defines Hospital & LHU funding models

Reform started in 1996 intended to increase the “purchasing role” in order to gradually achieve a payer-provider split

NHS Funding
For 2010 the NHS’s budget represents €8.150 M of which approx. 50% relates to public hospitals & LHU funding, through contracts signed by RHA with public providers
NHS health care provision organization – 2010

The health service in Portugal is organized in three layers: recent developments include PHC & LTC reforms, the creation of LHU (primary and secondary healthcare integration) and Hospital Centers.

**Primary Healthcare**
- **ACES**
  - 68 ACES organized in 5 Regional Health Administrations
  - 243 USF; 4,851 health professionals; 3,051,604 patients

**Secondary Healthcare**
- **Hospital Centres**
  - 18,537 acute beds

**Specialized Healthcare**
- **Oncology Institutes**
  - 795 acute oncology beds

**Skilled Nursing Homes**
- 3,948 beds

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**Payment models development**

**Funding Primary Health Care Structures**

**Budget**
- **Health Care Centre**
- **USF Model A**
- **USF Model B**

**Budget + Incentives (P4P)**
- **Health Care Centre**
- **USF Model A**
- **USF Model B**

**Budget + Incentives (P4P)**
- **Health Care Centre**
- **USF Model A**
- **USF Model B**

**Salary + EH**
- **Health Care Centre**
- **USF Model A**
- **USF Model B**

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1 ACES Health Care Centers Groups
2 USF: Family Health Unit
PHC funding model – rational for change

- Until 2009 - PHC financial resources allocation criteria:
  - Supply-oriented
  - Driven mainly by historical path (lack of scientific scrutiny)
  - Limitations: planning, efficiency, sustainability and equity

- 2010 – PHC founding:
  - Includes "health determinants" component
  - Financial adjustment path: from regions over-funded to regions under-funded (related to respective population’s health needs)
  - Normatively driven: efficient (health promotion), sustainable, equitable

Regional Health Authorities funding

- Portugal (Mainland): 278 Municipalities
- 74 ACES in 5 Regions
- 62 ACES observed during the quantil regression aggregated, in the 5 Regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of ACES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARS NORTE</td>
<td>26 ACES</td>
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<tr>
<td>ARS CENTRO</td>
<td>16 ACES</td>
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<tr>
<td>ARS LVT</td>
<td>22 ACES</td>
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<tr>
<td>ARS ALENTEJO</td>
<td>6 ACES</td>
</tr>
<tr>
<td>ARS ALGARVE</td>
<td>3 ACES</td>
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</table>
PHC financing model – Regional Risk
Alternatives – Decision tree

PHC financing model – Regional Risk
Model’s technical description

- Objective variable:
  COSTS (HR + AUXILIARY_EXAMS + MEDICATION) per capita

- Explanatory variables:
  - Education: Proportion (%) of resident population with, at least, mandatory education (2001);
  - Purchasing power index: Purchasing power index indicator, per capita (2007);
  - Total dependency ratio: Relation between young + old population, and active population (2008);
  - Gender ratio: Proportion (%) of women in total population (2008);
  - Potential years of life lost (PYLL) per 100.000 habitants (2008);
  - Unemployment: Unemployment rate registered, in % of the population between 25-64 years old (2008).

- Adjustment quality: Pseudo $R^2 = 0.4411$
## PHC financing model – Regional Risk
### Individual Analysis (cross sectional)

### Dependent variable (cost) and predictor variables

| Per capita costs                  | Coeff.  | Std. Err. | t   | P>|t| | [95% Conf. Interval] |
|-----------------------------------|---------|-----------|-----|-----|----------------------|
| Total dependency ratio (%)        | 546.56  | 102.51    | 5.33| 0.00| 341.12 - 751.99      |
| Education(%)                      | -84.89  | 80.91     | -1.05| 0.30| -247.04 - 77.25     |
| Purchasing power index            | -0.18   | 0.25      | -0.74| 0.46| -0.68 - 0.31        |
| Gender ratio (%)                  | -241.64 | 911.86    | -0.26| 0.79| 2.069,05 - 1.585.76  |
| Unemployment rate (%)             | 266.99  | 232.74    | 1.15| 0.26| -199.42 - 733.41    |
| Potential years of life lost (PYLL) (%)| 0.01     | 0.01      | 1.17| 0.25| -0.01 - 0.02        |
| Constant                          | 58.14   | 463.63    | 0.13| 0.90| -870.99 - 987.27    |

### 2011 Model

#### Primary Health Care regional funding

- Health Needs 50%
- Health Determinants
- Population based Utilization rates

#### Hospital Care regional funding

- Health Needs 50%
- Health Determinants
- Net treatments between regions

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Challenges for PHC financing model – Individual Risk

Ensure conditions for registering information of morbidity

Create individual indicators of prevalence

Create an aggregated observatory of those indicators

Define the indicators of average cost or complexity / panel of experts / political will

Choice of algorithm and respective supplier

Capitation adjusted by individual risk, using the following formula:

\[ \text{Cost of wearer}_i = \sum_j \text{Prevalence}_ij \times \text{Average cost}_j + \text{error}_i \]

With \( j \) = \( j \)th disease and \( i \) = \( i \)th wearer

Individual & Population based risk

Demographics
- Age
- Gender

Clinical profile
- Diagnostics data (ICD10)
- Medication prescription data
Thank you.

alourenco@acss.min-saude.pt