MULTI-USE OF HEALTH INDICATORS FOR PUBLIC POLICY

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OBJECTIVES OF HEALTH INDICATORS

• Utility for policy:
  • Go beyond merely description
  • Understanding dynamics of population health for action
  • Maximising the performance of health system

Supportive to (transferability to policy):
  • Set priorities
  • Develop policy goals
  • Benchmark
  • Assess impact of policy
  • Improving health, wellbeing and health care
  • ....

• Health literate public health institute
OVERVIEW

- Care trajectories in primary care
- From Registries towards cohorts
- Surveys linkage to administrative data
- Important changes in data source structures
Do the national care trajectories diabetes and chronic kidney disease in Belgium improve the quality of care?

- **Aim**
  - Facilitate self-management & planned pro-active multidisciplinary care (GP, specialist, other care providers)
  - GP central role
  - Optimize quality of care
- 2 chronic conditions:
  - Diabetes type 2 (DM2) (start: 01/09/2009)
  - Chronic kidney disease (CKD) (start 01/06/2009)
- Contract between patient – GP – specialist
- Support by local multidisciplinary networks (LMN)
  - Enhance collaboration between care providers at local level
- Incentives and obligations for patient and GP/specialist
CT program increases the frequency of monitoring of numerous parameters

Evolution of HbA1c measurement before and after the official start of the DM2 CT programme (01/09/2009), compared to other groups of diabetes patients (IMA, 2006-2010)
CT programme improves certain clinical and biological outcome parameters

From registry to registry-cohort: HIV cohort

- Surveillance of new HIV diagnoses initially focused on new HIV diagnoses, AIDS and death reports
- In Belgium HIV surveillance by WIV-ISP since 1985
  - New diagnoses: 1039 in 2014
  - Reduction in nr of deaths
  - Increase in nr of PLHIV
  - Need to monitor the outcomes of the HIV-infected people

- A cohort of the HIV-infected patients in medical care was initiated in 2006 (limited to mortality and lab information (CD4))
The Belgian HIV Cohort

Objectives
- To consolidate the HIV/AIDS surveillance
- To identify issues and opportunities to improve the delivery of services to PLWHA across the continuum of care
  ➢ In order to contribute to a more effective response to the HIV/AIDS epidemic in Belgium

Organization: Data collected from
- **8 AIDS Reference Laboratories**: Nr and socio-demographic characteristics of all HIV patients in care in Belgium
- **11 AIDS Reference Centres**: ART, immunological evolution, causes of death and other clinical data, PROMS & PREMS
Number of HIV patients in medical care and proportion on ART per year of follow-up
Survey and administrative data

GALI (Global activity limitation indicator)

For at least the past 6 months, to what extent have you been limited because of a health problem in activities people usually do? Would you say you have been…

severely limited / limited but not severely or / not limited at all?

Measure of disability :
Participation => reflects best ICF
Health part of the Healthy Life Years, a disability free life expectancy
=> Health policy : Active and Healthy Ageing
=> Other : EU-economic strategy : Lisbon agreement
United Nation Convention on the Rights of People with Disabilities
GALI / HLY and policy

• Monitoring: trends over time / benchmarking
  • Country reports in local language
  • Interpretation guide
    => Sufficient to enhance health literacy ???

• GALI => link survey data to health care use data

• HLY by smoking: link survey data to mortality

• HLY by social position: link of survey data to mortality (census, health interview survey, SILC)
Health Expectancy in Austria

What is health expectancy?

Health expectancies were first developed to address whether or not longer life is being accompanied by an increase in the time lived in good health (the compression of morbidity scenario) or in bad health (expansion of morbidity). So health expectancies divide life expectancy into life spent in different states of health, from say good to bad health. In this way the add a dimension of quality to the quantity of life lived.

How is the effect of longer life measured?

The general model of health transitions (WHO, 1984) shows the differences between life spent in different states: total survival, disability-free survival and survival without chronic disease. This leads naturally to life expectancy (the area under the ‘mortality’ curve), disability-free life expectancy (the area under the ‘disability’ curve) and life expectancy without chronic disease (the area under the ‘mortality’ curve).

Further details on the MEHM, the European surveys and health expectancy calculation and interpretation can be found on www.eurobar.eu

What is in this report?

This report is produced by the Joint Action European Health and Life Expectancy Information System (EHLIS) as part of a country series. In each report we present:

- life expectancies and Healthy Life Years (HLY) at age 65 for the country of interest and for the overall EU27 population, measured using the SIC question on long term health related disability, the known as the GAI (Global Activity Limitation Indicator), from 2005 to 2011. The wording of the question has been revised in 2008. When available, we provide previous HLY series based on the disability question of the 1995-2001 European Community Household Panel (ECHP);
- health expectancies based on the two additional dimensions of health (chronic morbidity and self-perceived health) for the country of interest, based
GALI as a predictor of health expenditure: survey & health insurance data

Figure 1. Mean annual health expenses (in euro) in function of activity limitation

Table 1 Cost ratios (CR) of health expenses by activity limitations and chronic conditions, adjusted for age, gender, education, income, nationality, household type and degree of urbanisation, in function of payment modalities*

<table>
<thead>
<tr>
<th>Activity limitations and chronic conditions combined</th>
<th>Covered by health insurance</th>
<th>Out of pocket</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 95% CI</td>
<td>CR 95% CI</td>
<td></td>
</tr>
<tr>
<td>No activity limitation - no chronic condition</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>No activity limitation - chronic condition</td>
<td>2.24 (1.95-2.59)</td>
<td>2.07 (1.84-2.33)</td>
</tr>
<tr>
<td>Moderate activity limitation - no chronic condition</td>
<td>2.47 (1.74-3.50)</td>
<td>1.80 (1.34-2.41)</td>
</tr>
<tr>
<td>Moderate activity limitation - chronic condition</td>
<td>4.24 (3.49-5.16)</td>
<td>3.18 (2.73-3.71)</td>
</tr>
<tr>
<td>Severe activity limitation - no chronic condition</td>
<td>4.37 (2.34-8.16)</td>
<td>2.82 (1.66-4.79)</td>
</tr>
<tr>
<td>Severe activity limitation - chronic condition</td>
<td>7.37 (5.72-9.51)</td>
<td>4.14 (3.30-5.18)</td>
</tr>
</tbody>
</table>

Activity limitations adjusted for chronic conditions

<table>
<thead>
<tr>
<th>CR 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>No limitation</td>
</tr>
<tr>
<td>Moderate activity limitation</td>
</tr>
<tr>
<td>Severe activity limitation</td>
</tr>
</tbody>
</table>

Chronic condition adjusted for activity limitations

<table>
<thead>
<tr>
<th>CR 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>No chronic disease</td>
</tr>
<tr>
<td>At least one chronic disease</td>
</tr>
</tbody>
</table>

*Defined as: having suffered in the past 12 months from at least one of the following health problems: asthma, chronic bronchitis, myocardial infarction, coronary heart disease, hypertension, osteoarthritis, neck disorder, depression, peptic ulcer, problem large bowel, diabetes, thyroid problems, kidney problems except for kidney stones, cancer
Table 4 Comparison of the life expectancy (LE) and healthy life years (HLY) calculated using mortality rates based on the Census 2001-2004, the HIS 2001-2010, and the SILC 2004-2009, males, aged 25 years, Belgium

<table>
<thead>
<tr>
<th>Education</th>
<th>Mortality HIS/Morbidity HIS</th>
<th>Mortality Census/Morbidity HIS</th>
<th>Diff HIS-Census</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LE</td>
<td>HLY</td>
<td>HLY 95%</td>
</tr>
<tr>
<td>Primary education</td>
<td>46.7</td>
<td>34.0</td>
<td>30.4-37.5</td>
</tr>
<tr>
<td>Lower secondary</td>
<td>51.7</td>
<td>36.6</td>
<td>34.6-38.6</td>
</tr>
<tr>
<td>Higher secondary</td>
<td>54.3</td>
<td>43.1</td>
<td>41.1-45.1</td>
</tr>
<tr>
<td>Higher education</td>
<td>56.3</td>
<td>43.5</td>
<td>41.4-45.6</td>
</tr>
<tr>
<td>Difference highest-lowest (p-value)</td>
<td>9.6</td>
<td>9.5 (p &lt; 0.05)</td>
<td></td>
</tr>
</tbody>
</table>

Source of data: mortality follow-up of the HIS 2001-2010 and mortality follow-up of the Census 2001-2004

Table 4 Comparison of the life expectancy (LE) and healthy life years (HLY) calculated using mortality rates based on the Census 2001-2004, the HIS 2001-2010, and the SILC 2004-2009, females, aged 25 years, Belgium

<table>
<thead>
<tr>
<th>Education</th>
<th>Mortality SILC/Morbidity SILC</th>
<th>Mortality Census/Morbidity SILC</th>
<th>Diff SILC-Census</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LE</td>
<td>HLY</td>
<td>HLY 95%</td>
</tr>
<tr>
<td>Primary education</td>
<td>49.9</td>
<td>31.7</td>
<td>28.6-34.8</td>
</tr>
<tr>
<td>Lower secondary</td>
<td>50.7</td>
<td>34.2</td>
<td>31.2-37.2</td>
</tr>
<tr>
<td>Higher secondary</td>
<td>53.0</td>
<td>38.0</td>
<td>36.0-39.9</td>
</tr>
<tr>
<td>Higher education</td>
<td>58.1</td>
<td>44.7</td>
<td>42.4-47.1</td>
</tr>
<tr>
<td>Difference highest-lowest (p-value)</td>
<td>8.2</td>
<td>13.0 (p &lt; 0.01)</td>
<td></td>
</tr>
</tbody>
</table>

Source of data: mortality follow-up of the SILC 2004-2009 and mortality follow-up of the Census 2001-2004
### Table 4 Disability Free Life Expectancy (DFLE\(_{30}\)), (Severe) Disability Life Expectancy (DLE\(_{(-S)}_{30}\)), Life Expectancy (LE\(_{30}\))

and the % of remaining life without disability (% DFLE/LE\(_{30}\)) at age 30 by smoking status, Health Interview Survey 1997 and 2001 and follow-up until respectively 31/12/2007 and 31/12/2010, Belgium

<table>
<thead>
<tr>
<th>Smoking status</th>
<th>DFLE(_{30})</th>
<th>DLE(_{30})</th>
<th>DLE(<em>{(-S)}</em>{30})</th>
<th>LE(_{30})</th>
<th>%DFLE/LE(_{30})</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>38.30</td>
<td>128.9</td>
<td>3.00</td>
<td>51.19</td>
<td>74.82</td>
</tr>
<tr>
<td>(36.86; 39.87)*</td>
<td>(11.46; 14.71)</td>
<td>(2.17; 4.14)</td>
<td>(49.62; 53.10)</td>
<td>(71.82; 77.38)</td>
<td></td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>35.28</td>
<td>132.3</td>
<td>2.42</td>
<td>48.51</td>
<td>72.72</td>
</tr>
<tr>
<td>(34.28; 36.27)</td>
<td>(12.34; 14.19)</td>
<td>(1.97; 2.87)</td>
<td>(47.33; 49.69)</td>
<td>(70.97; 74.39)</td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td>31.50</td>
<td>118.2</td>
<td>1.73</td>
<td>43.32</td>
<td>72.72</td>
</tr>
<tr>
<td>(30.47; 32.65)</td>
<td>(10.76; 12.95)</td>
<td>(1.29; 2.32)</td>
<td>(42.27; 44.56)</td>
<td>(70.54; 74.82)</td>
<td></td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never smoker</td>
<td>36.99</td>
<td>1921</td>
<td>5.51</td>
<td>56.20</td>
<td>65.82</td>
</tr>
<tr>
<td>(36.06; 37.90)</td>
<td>(18.05; 20.65)</td>
<td>(4.78; 6.37)</td>
<td>(54.90; 57.71)</td>
<td>(63.95; 67.37)</td>
<td></td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>34.09</td>
<td>1952</td>
<td>4.53</td>
<td>53.60</td>
<td>63.59</td>
</tr>
<tr>
<td>(32.75; 35.38)</td>
<td>(17.93; 21.45)</td>
<td>(3.55; 5.91)</td>
<td>(51.99; 55.73)</td>
<td>(61.05; 66.04)</td>
<td></td>
</tr>
<tr>
<td>Smoker</td>
<td>30.73</td>
<td>1729</td>
<td>3.28</td>
<td>48.02</td>
<td>64.00</td>
</tr>
<tr>
<td>(29.12; 32.59)</td>
<td>(15.36; 20.52)</td>
<td>(2.06; 5.60)</td>
<td>(46.31; 51.28)</td>
<td>(59.69; 67.43)</td>
<td></td>
</tr>
</tbody>
</table>

* 95% confidence interval.
Data sources: no single!!!

- General population: surveys / cohorts
- Health care use:
  - Registries
  - Sentinel: clinicians / laboratories
    => HEALTH DATA.BE
- Administrative data (in and out of health care sector)
  - DRG
  - Health insurance data => PERMANENT SAMPLE (EPS (1/40))
  - Cross Road database of social security
  - …..
Data validation using different sources

- HIS sample versus EPS sample
- Self-reported use versus register-based use

- Self-reported use of health care in HIS sample
- Register-based use of health care in HIS sample
- Register-based use of health care in EPS sample
- Selection bias
- Reporting bias
- Selection and reporting bias
Probability of contact with health service/professional: selection vs reporting bias

- EPS/register-based
- HIS/register-based
- HIS/self-reported

Gen Pract (< 12 m)  Specialist (< 12 m)  Dentist (< 12 m)  Dentist (< 6 m)  Physio (< 12 m)  Inpatient (< 12 m)  Day pat (< 12 m)
HEALTHDATA.BE: Minimalisation registration burden, Maximalisation Return On Information

- Legal framework

- Facilitate data exchange between healthcare professionals and researchers according to only once principle and re-use of data, in order to increase public health knowledge and to adjust health care policy, with respect for privacy of patient, healthcare professional and medical confidentiality.

- Intergovernmental services for both federal and community/regional governments responsible for health and healthcare, and private legal bodies (indirectly);

- 2014-2017: focus on uniformisation of 42 existing registers managed by WIV-ISP and RIZIV.
healthdata.be: the end-to-end process

0. Registration in Primary System
1. Data Captation
2. Secure Data Transfer
3. Data Monitoring
4. Data Validation
5. Data Storage
6. Analysis
7. BI-Reporting

Data Collection supported by healthdata.be
Data Management & BI-Reporting supported by healthdata.be