EXPENDITURE BY DISEASE, AGE & GENDER

15th meeting of the health accounts experts
Background and Objectives

- In 2007-08, project “Estimating Expenditure by Disease, Age and Gender under the System of Health Accounts (SHA) Framework”
  - Guidelines developed
  - Case studies of 6 countries

- Between 2011-2013, the follow-up project is launched to accelerate consistent and comparable health expenditure data by disease categories
  - Increase # of countries for hospital (i.e. inpatient care) sector
  - Expand the data collection beyond hospital expenditures to include outpatient (ambulatory) and pharmaceutical spending
  - Investigate the use of other sources when resources do not allow for a full expenditure study (e.g. activity data)
  - Assess the link between direct, indirect and intangible costs
SHA 2011 Framework

Characteristics of beneficiaries
(Disease, age, gender, income, etc)

Consumer health interface

Consumption
Functions ICHA-HC

SHA
Core accounting framework

Financing
Financing Schemes ICHA-HF

Financing interface
Financing Agents ICHA-FA
Revenues of financing schemes ICHA-FS

Provision
Providers ICHA-HP

Provision interface
Factors of provision ICHA-FP
External trade
Gross capital formation
## SHA Framework in Disease Accounts

**Cost of Illness = Direct costs + Indirect Costs + Intangible costs**

<table>
<thead>
<tr>
<th>Direct</th>
<th>Transfer payments¹</th>
<th>Indirect</th>
<th>Intangible</th>
</tr>
</thead>
<tbody>
<tr>
<td>expenditure on healthcare goods and services following increased demand for healthcare due to the specific illness Includes: hospital services, doctors, nurses, drugs, diagnostics, ambulances, ambulatory care, rehabilitation, long-term healthcare, etc Household production of healthcare is included in SHA if payment is involved</td>
<td>Payments made for temporary absence from work due to illness (e.g. from employer or government or social insurance. Purpose is income maintenance) Payments made for inability to work due to illness (e.g. from government or social insurance. Purpose is income maintenance) Reduced payments (e.g. due to early death). May be netted off</td>
<td>Formal labour market effects (i.e. reduced supply of labour due to illness) Can arise through premature mortality, absence due to morbidity, and 'presenteeism' due to morbidity</td>
<td>Pain and suffering and desire to avoid morbidity and premature mortality 'Caring externalities' Psychosocial costs</td>
</tr>
<tr>
<td>Allowances paid for household production of healthcare (e.g. by government or social insurance) Included in SHA if purpose is healthcare</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household production of social care</td>
<td>Allowances paid for household production of social care - e.g. by government or social insurance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other additional social care consumption due to the specific illness</td>
<td>Allowances may be paid to people who need to buy additional social care</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Includes compensation payments, transfers of resources or goods to the affected household or individual.
Example of Direct, Indirect and Intangible Costs

Direct (the National Health Service) + Indirect (ratio of indirect to direct costs) + intangible costs using WHO Global Burden of Disease data


Source: Department of Health, 2013
Top-down allocation of expenditures

SHA
Current Health Exp.

Partition into homogeneous cost units (HP, HC, HF)

Hospital in-patient
Hospital out-patient
GP offices
Dentist offices
Specialists

Use a cost unit specific **utilisation key** to allocate costs over dimensions (disease, age, gender)
Overall data availability

- Increased from 6 in 2008 to 16 countries in 2011-13
  - Mostly in hospital or inpatient spending
  - Australia, Canada, Czech Republic, England, Finland, France, Germany, Hungary, Israel, Japan, Korea, the Netherlands, Slovenia, Sweden, Switzerland, and the United States
  - Not all countries follow SHA framework (e.g. Germany, Korea and Netherlands v.s. England, Japan)
## Countries at different stages of production in disease accounts

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Countries</th>
<th>Disease Groups</th>
<th>Direct cost components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regularly producing</td>
<td>Regular (1-3 years)</td>
<td>Australia Canada Germany Netherlands Japan</td>
<td>Country-specific categories (all), but can be re-grouped to ICD-10/ISHMT</td>
<td>Direct costs by all HPs</td>
</tr>
<tr>
<td>Capable of producing</td>
<td>on an ad-hoc basis or on demand</td>
<td>Czech Republic Hungary Korea Sweden Finland Slovenia Israel Switzerland</td>
<td>ICD chapters, ISHMT</td>
<td>Direct costs by some HPs (mainly hospitals) or HCs (inpatient)</td>
</tr>
<tr>
<td>Producing but not official</td>
<td>Frequent (i.e. annual)</td>
<td>England</td>
<td>Country-specific categories or GBD only</td>
<td>Varies</td>
</tr>
</tbody>
</table>
• high share of spending on circulatory diseases in the inpatient sector in most countries (around 18% on average) with a range between below 15% in Australia and Korea and 25% or more in Japan and the Czech Republic
Chapter V, Mental and Behavioural Disorders, consists of dementia and other mild to severe mental health conditions, thus, further breakdown is preferable.

Higher share of spending on treatment of schizophrenia in Finland and Korea while mood disorders make up a higher share in Germany and the Netherlands.
• Hospitals are by far the common platform to provide care of those with mental health conditions, followed by long-term care institutions.

• Ambulatory sector plays a large role in caring of mental health patients in Czech Republic comparing to other countries.

• Per capita spending differs greatly from country to country. For example, hospital spending ranges from US$295 (NLD), $147 (DEU), $71.7 (KOR) and $36 (CZE).
Top spending in outpatient/ambulatory sector

- On average 25% of outpatient spending relates to Chapter XI (Digestive system) which includes expenditure on oral health.
- Between 6 and 10% on average, relate to Chapter XIII (Musculoskeletal), Chapter X (Respiratory) and Chapter XIV (Genitourinary).
- Challenges are that the sector combines separate data sources and the greater role of private financing.
- Availability of medical goods and particularly pharmaceuticals which typically account for around 90% of the category.

- Chapter IX: Circulatory disease accounts for 20% on average of pharmaceutical spending and more than twice the level of the next category, Chapter X: Respiratory system.
Challenges need to be addressed

- Difficulties in allocating across the SHA classification categories (e.g. different data sources, private spending)
- Unallocated amounts (0% in Korea and Germany up to 35% in Czech Republic for CHE)
- Allocation by provider versus function
- The lack of or reduction in resources in statistical offices and ministries
- Reason for identifying other ‘short-cuts’ through existing data (e.g. activity data such as hospital discharge, etc)
• **Question**: Is it possible to derive expenditures using the data from countries with good expenditure by disease data and health utilisation data (e.g. bed-days)?
  – Using per-diem (which assumes all bed-days for all diseases use are the same) not enough
  – Resource intensity is not homogeneous across treatment of different diseases
    • E.g. Diagnosis Related Groups (DRGs) classifying patient based on primary diagnosis used for reimbursement of hospital stays
Modeling inpatient expenditures using activity data (2)

- **Steps:**
  - Using country specific health utilisation data (e.g. bed-days by ICD), health spending and health data (e.g. morbidity and mortality)
  - Coming up with average weight by ICD by country [the ratio of the share of expenditures (as a percentage of all hospital spending) to the share of bed-days (as a percentage of all bed-days), by diagnostic category]
  - Fitting a regression model to see if we can actually ‘predict’ the level of spending (i.e.%)
  - Filling information gaps of countries that do not produce expenditure by disease category
Average weights (initial)
Modelling and filling information gaps

- Model 1: employed ICD chapter level data
- Model 2: employed ISHMT level data
- E.g. Canada - Results: predicted expenditure values, as expected, perform better than using straight bed-days as an allocation key
Expenditure on medical goods accounts for 23% of CHE across EU on average

Private spending data is limited (e.g. OTC medicines)

An inventory of pharmaceutical consumption and sales figures has also been compiled

Australia, Canada, Germany, Korea, and the Netherlands, are examples

Australia and the Netherlands reply upon national physician surveys. Korea from social insurance data. Canada and Germany from IMS

Mapping ATC to ICD needed
Options on mapping from ATC to ICD

• Derive a general, or average, mapping based on the data that is currently available for Australia, and the Netherlands based on the national samples of physicians.

• Derive a general, or average, mapping based on the data that is currently collected by IMS.

• Use the country-specific data that IMS collects in the 24 OECD countries. Under this option there further exists the option of using IMS’ data on expenditures or the available national data.
Linking Physician/Outpatient Spending to Disease

- Data: physician surveys or bottom up methods based on encounter data.
- Less variation in the intensity of services according to disease, particularly for basic GP consultations.
- A clear relationship between number of consultations per disease category and the resource costs of the associated health care services.
- In the absence of detailed costing data, the use of basic encounter information (i.e. ambulatory sector to total numbers of outpatient/physician and dentist consultations) can be used.
The Bettering the Evaluation and Care of Health (BEACH) programme continuously collects information about the clinical activities in general practice in Australia including:

- characteristics of the GPs
- patients seen
- reasons people seek medical care
- problems managed, and for each problem managed (direct link)

Data from BEACH were used to allocate private medical services provided by both GPs and specialists.
Overall recommendations

• Data is allocated according to ICD-10 chapters at minimum;

• Using International Hospital Morbidity Short List (ISHMT) to properly analyse the expenditures associated with specific diseases;

• All attempts should be made to allocate as possible; where data is lacking expenditures should remain unallocated; and

• The frequency of reporting needs to be standardised (3 years, for example).
Dissemination Plan (1)

• The OECD.Stat data warehouse as summary tables
  – The accessibility of the data and the transparency of the methodologies will act as a spur to improve the country coverage and comparability in the future.

• Dedicated page for health spending by disease will be created as part of the OECD SHA website.

• Health Working Paper comparing the methodologies and results of the available country data is planned to be released by Q1 2014.
The following tables and charts are expected to be made available:

- Current health expenditure by ICD chapter (age, gender) - NCU, % current health spending, per capita spending;
- Hospital/inpatient expenditure by ICD chapter (age, gender) - NCU, % total hospital/inpatient spending, expenditure by discharge / bed day;
- Outpatient/ambulatory expenditure by ICD chapter (age, gender) - NCU, % total outpatient/ambulatory spending;
- Medical goods expenditure by ICD chapter (age, gender) - NCU, % total medical goods spending.
In bubble charts

• More innovative and dynamic charts for countries and changes over time will be produced
The Secretariat invites participating experts to:

- **COMMENT** on the plans to disseminate available data;
- **REVIEW** the country data sources in Chapters 5, 7 and 8;
- **INFORM** the Secretariat of the intention to undertake expenditure by disease studies in the near future.