Cost of illnesses calculations, within the FRESHER framework

Data requirements document

CORTAREDONA Sébastien (sebastien.cortaredona@inserm.fr)

VENTELOU Bruno (bruno.ventelou@inserm.fr)

In order to estimate the cost of the seven chronic diseases selected in the FRESHER Project (heart disease, stroke, cancers (all locations, and in particular: lung, colorectal, stomach), diabetes, COPD, cirrhosis and major depression), a bottom-up approach was applied on a medico-administrative database (EGB) of the French National Health Insurance regime.

In a bottom-up design, utilizations of healthcare are observed at the patient level and are multiplied with a price for each unit of healthcare. All individual costs are then summed up to calculate total cost of the diseases that the agents suffer from. Compared to a top-down approach, in which total expenditure for a given area of care are divided toward various agents and diseases, the bottom-up approach provides a greater level of accuracy.

This data requirements document provides a detailed description of the data that are needed to perform the same analysis on other database than the French Insurance.

Type of database

In a bottom-up design, the statistical unit is the patient. **Therefore, the medico-administrative data should be available at the patient level.** Each record in the database should be an act of medical care or a healthcare reimbursement.

Health care consumption data

The medico-administrative database should be covering at least one year of health care consumption for a population that is representative of the general population (then, if possible, including individuals without any healthcare use) including:

- All primary care and specialists consultations
- Prescribed drugs (pharmacy data) with ATC codes of prescribed drugs
- Medical procedures
- Biological tests
- Medical devices
- Health care from other health care professionals
- Hospital stay data (with associated diagnosis using ICD-10 classification)
- Prescribed drugs during hospital stays with TC codes

The date of prescription (date of hospital stays for hospital data) and the cost associated with each health care consumption must be recorded in the database (amount paid by the patient and/or amount reimbursed by the health insurance; If not available, we can assume an average cost per procedure).

Knowledge of the diseases

The medico-administrative database should provide information about illnesses that each agent is suffering from. This information could be obtained in various manner, depending on the countries' specific information system. In our view, three complementary strategies can be followed to identify patients with the seven chronic conditions:

- A system of illness coding (with associated diagnosis using ICD-10 codes – if available) which could be maintained by the gatekeeper / family doctor (in France the "ALD" registry is made to signal to the Health Insurance that the patient suffers from a long and expensive disease, and is -for this reason- exempted of copayment)
- The drug prescription database (using ATC codes), in order to "trace" the diagnosis, when a clear and unique indication can be associated to pharmacy data
- Hospital discharge data (PMSI – DRG system)

These three sources of information could be redundant. The existence of the disease in (at least) one of the three will be considered as sufficient.

ATC codes of prescribed drugs and diagnosis (ICD-10 codes preferred) associated with consultations and/or hospital stays are mandatory. These codes are used to identify persons with the seven chronic diseases selected for the FRESHER project:

- **Diabetes**
- **COPD**
- **Stroke**
- **Heart disease**
- **Cancer**
- **Cirrhosis**
- **Depression**

Individual characteristics

In order to estimate the cost associated with each chronic disease, the following individual characteristics must be available in the database:

- Gender
- Age
- Health insurance provider (if available)
- Place of residence (ZIP code if available)
- Socioeconomic status (income, socio-professional category, level of education; …at least one of these three…)