
eurhobop
The EURHOBOP Project
Executive Agency for Health and Consumers
Health Programme 2008-2013
Together for Health
eurhobop

The EURHOBOP brochure

Discover how you can benchmark the performance of your hospital in total confidentiality!

The project

EURHOBOP, acronym of **EUR**opean **HO**spital **B**enchmarking by **O**utcomes in acute coronary syndrome **P**rocesses, is a project co-funded by the European Commission's *Executive Agency for Health and Consumers* in the frame of the *Health Programme 2008-2013*.

It has the general objective to promote both the reduction of health inequalities and the dissemination of information on management facts of a very frequent disease, the cardiovascular and coronary artery disorders.

In this context, EURHOBOP provides the European Union with **standardized assessment systems of outcome and severity indicators.**

These systems are used in validated benchmarking functions adjusted for possible confounders that allow hospitals to **rank the quality** of coronary artery disease management in key procedures used for the care of these diseases.

The cardiovascular pilot study of a previous project (EUPHORIC, DG SANCO 2004-2008) defined a set of in-hospital outcome indicators determining the quality of health care in acute coronary syndrome patients.

With EURHOBOP, the set of functions generated in EUPHORIC has been validated and tested on real life data by enrolling a large sample of hospitals.

The final objective was to develop a set of **benchmarking models** that can consider also severity data available in administrative records. This set of mathematical functions allows to **assess the hospital performance and compare it in a European ranking**.

Did you know?

Coronary artery disease is the leading cause of death worldwide.
There are 2.000.000 coronary artery diseases in Europe every year. The number of new cases is 700.000 among the population aged 35 to 64 years, whereas the 28-day case fatality is > 30%. A large part of which is due to inappropriate early management…

The benchmarking functions are available on the project web site: any hospital interested in the analysis can use them to benchmark itself in total confidentiality by entering summarized patient characteristics and some features from the hospital. There is also the possibility to validate the obtained results by sending data of 200 consecutive acute coronary syndrome patients to the project principal investigator team (details on www.eurhobop.eu).

Hospital performance objective information is a key instrument to improve the quality of the health care provided and to ensure competitiveness: self-benchmarking allows the hospital to detect failures affecting, in the EURHOBOP case, its management of acute coronary syndrome patients and, eventually, to correct them.

Partners and recruited hospitals

The project is coordinated by the **Institut Municipal d'Assistència Sanitària - Institut Municipal d'Investigació Mèdica** (Spain) and involves **eight institutions** from seven European countries (Belgium, Finland, France, Germany, Greece, Italy and Portugal).

EURHOBOP has obtained the endorsement of **European Society of Cardiology** (ESC) representing more than 70.000 cardiology professionals across Europe. During the project activities, EURHOBOP has cooperated also with a technological partner, the **CASPUR Consortium**, for the informatics procedures development.

The project involved **70 healthcare institutions and hospitals** - from the participating countries ("associated collaborating partners") - and French database the "Programme de médicalisation des systémes d'information", both provided the real life data to validate and test the benchmarking functions. But the list is not closed and one of the major results of the project was **its ability to enroll new partners along the way**. This was the case with the "affiliated collaborating partners": these organizations contributed to the project development on a voluntary basis (see the map).

The benchmarking functions

To allow comparability among hospitals, EURHOBOP has standardized the measurement of in-hospital case fatality as an outcome indicator in several procedures used in acute coronary syndromes. This achievement gives the European hospitals the opportunity of self-benchmarking and paves the way for an **objective certification**.

EUPHORIC cardiovascular pilot developed several benchmarking functions with different levels of complexity using data of more than 27.000 patients, but these were just barely representative of European hospitals.

Thanks to EURHOBOP:

- those preliminary benchmarking functions have been validated with a new cohort of more than 15.000 patients recruited in 70 hospitals from Finland, France, Greece, Germany, Italy, Portugal and Spain and with the data from more than 450 affiliated hospitals from France, Poland, Hungary and Sweden;
- severity factors were included for further adjustment, generating a new set of benchmarking functions.

EURHOBOP allows benchmarking for the following procedures:

1. coronary angiography,
2. percutaneous intervention,
3. general management of myocardial infarction.

The proposed functions take into account various country and hospital features and have a wide applicability because they consider also the following severity patients' characteristics: *acute pulmonary oedema*, *cardiogenic shock* and *kidney disease*.

Therefore only **quite simple data**, mostly collected from administrative electronic records available in a vast majority of European hospitals, **are needed to ensure comparability of outcome** among European hospitals.

*What do you need to use the **EURHOBOP** functions?*

To use the EURHOBOP functions, the following information are requested:

1. **Country characteristics** automatically available for the countries listed in the function menu retrieved from "WHO" web site: gross national product per capita, life expectancy at birth, age-standardized coronary heart disease mortality rates.
2. **Hospital characteristics** like university hospital, on-site catheterization laboratory, on-site cardiac surgery and coronary care unit existence.
3. **Patient characteristics** calculated on a basis of minimum 200 consecutive acute coronary syndrome patients admitted within the last 3 years:
   a) *Basic*: mean age, proportion of women, proportion of patients with diabetes, proportion of patients with hypertension and (optionally) proportion of patients with history of cardiovascular diseases.
   b) *Advanced*: acute pulmonary oedema, cardiogenic shock and kidney disease.

Two other topics:

cost analysis and gender differences

Next to the benchmarking, EURHOBOP has investigated also the costs associated to the acute coronary syndrome management patients and the role of gender in the access to optimal care and in the outcome, trying to answer the following questions:

Is it possible to improve quality of care in the treatment of acute coronary syndrome patients without increasing treatment costs?

Based on hospital length of stay and use of procedures, there are considerable and statistically significant variations in costs between hospitals and within countries. Nevertheless there is no evidence of cost-quality trade off: the association between cost and quality is inconsistent and prevails only in some patient groups, indicating potential for improving performance by containing costs or improving quality without increasing costs.

Are there gender differences in acute myocardial infarction outcomes?

In all the countries and the hospitals enrolled in the project, in-hospital mortality is not different between men and women. However women are less likely to receive the treatment in the due time after admission than men.

The main results

The development and validation of the benchmarking functions is the main result of the project: they have been implemented on the EURHOBOP web site for self-assessment by hospitals, policy makers and other stakeholders who have access to hospitals and their patients' features.

Given the country, hospital characteristics and patient characteristics, the benchmarking position is provided as the comparison of the actual in-hospital case fatality to the expected percentile distribution for a particular procedure.

What you get from the web site

If you decide to use the benchmarking functions available on the website, you will be requested to input a set of information. Your anonymity is guaranteed because you don't need to register yourself and you don't need to input your case fatality rate. The self-benchmarking system is free of charge. It allows an in-house evaluation, but it could be also used in the context of external assessment, upon following methodological guidelines available on the website.

How to read the picture?

Percentil distribution of European hospitals	Outcome risk
5%	6.6%
10%	7.4%
25%	8.9%
50%	**10.9%**
75%	13.4%
90%	15.9%
95%	17.6%
Model AUC	
AUC	89
AUC CI95% lower	87
AUC CI95% upper	91

Using the benchmarking functions available on the website you will obtain, for every selected procedure, an output like this one.
Reading the picture, you can compare your in-hospital case fatality rate for the selected procedure with the distribution shown in the output.
If your rate falls in first part of the graph (up to the green area – 50%) your hospital is performing better than an average hospital of your country having the same characteristics than yours.

What you get if you submit a database of 200 consecutive acute coronary syndrome patients

If you decide to send a set of 200 consecutive acute coronary syndrome patients, you will receive a report where the benchmarking information is statistically reported for every selected procedure. Also in this case, your anonymity is guaranteed because no data identifying the hospital are required.

How to read the picture?

Chart n.1 (Hospital A)

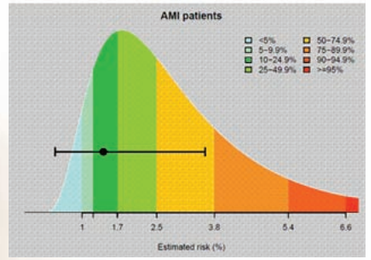
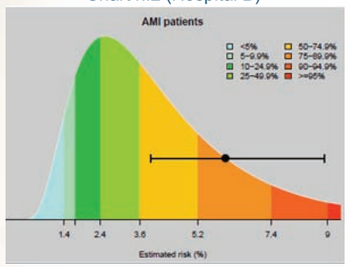


Chart n.2 (Hospital B)



The colored areas represent the proportion of hospitals with the selected characteristics in the selected country having a specific range of in-hospital mortality risk.
The black dot is the mortality risk of the hospital and the black line shows the confidence interval (95%).
If the dot falls in the first part of the curve (up to the green area) the hospital performs better of the average (as in the case of chart n.1), otherwise if the dot falls in the second part of the curve (from the yellow to the red areas) the hospital performs worse than the average (as in the case of chart n.2).
So, looking at the two charts, that show the results of two different institutions for the same procedure, it is possible to say that the first hospital (hopital A) has a better management of patients with acute myocardial infarction (AMI patients) than the second one (hospital B).

Policy makers

can explore and compare the hospitals' performance in one or several health care systems, whenever a data set with the required information can be obtained from routinely collected electronic data.

Individual hospitals

can receive clear and simple straight forward reports while remaining anonymous.

What can you do with the EURHOBOP functions?

European organizations

interested in assessing the quality of acute coronary syndromes in a comparative way have the opportunity to organize a large scale operation in Europe with databases containing the set of required data, obtained from various countries of the European Union.

Individual patients and patient associations

can use this system to obtain valuable information in the European or national context, if hospitals decide to make public their ranking position.

EURHOBOP will not end with the activities described in this brochure and is ready to enroll new organizations to contributing to the project on a voluntary basis. Moreover the team plans to:

SUPPORT public health institutions to be granted with the permission to use the functions to assess the hospitals by retrieving the necessary data from medical records and ensuring consecutiveness and contemporariness of the included patients and veracity of hospital characteristics data. Partners in this effort will include:

- the *European Scientific societies*, such as the European Society of Cardiology,
- the *European Hospitals and Healthcare Federation (HOPE)*;
- the *Organisation for Economic Co-operation and Development (OECD)*, in particular with the Health Care Quality Indicators project, initiated in 2002, aimed at measuring and comparing the quality of health service provision in the different countries;
- the *European Heart Network* which gathers patients and professionals in a large number of national organizations promoting cardiovascular health.

DISSEMINATE EURHOBOP results both at the international and national level and in the scientific and professional contexts (journals and meetings) as well as towards the institutions (EU Commission, Ministries of health, public health institutions, scientific and professional societies).

SHARE the acquired know-how with other European projects focusing on the same topic like, for example, the DUQuE project (**D**eepening our **U**nderstanding of **Qu**ality improvement in **E**urope), funded within the EU Seventh Research Framework Programme and aimed at studying the effectiveness of quality improvement systems in European hospitals.

IMPLEMENT a new project which has been already selected to be financed under the Second Health Programme (2008-2013) of the European Commission. EUROTRACS (**EURO**pean **T**reatment & **R**eduction of **A**cute **C**oronary **S**yndromes cost analysis) will be carried on by the same team and will use the same database feeded by the data gathered in EURHOBOP. Its aim is to examine the cost-effectiveness of integrated approaches to chronic diseases prevention with a particular focus on diabetes, cardiovascular diseases or respiratory diseases.

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