

Analysis of **cost discriminating factors** by patient profile

ECONOMIC BURDEN OF HOSPITALIZATION FOR **HEPATIC ENCEPHALOPATHY** IN FRANCE

OBJECTIVES

This study was performed to assess the French annual economic burden of hospitalizations for Hepatic Encephalopathy (HE). Social security payer perspective was chosen using PMSI Database 2012 and 2013 (exhaustive French health claims database). Discriminatory factors of HE hospitalization costs were analyzed by studying patients’characteristics.

METHODS

STUDY POPULATION

A retrospective cohort was performed from national PMSI database 2012 and 2013. The code for clinical hepatic encephalopathy, ICD-10 K72 * “Hepatic insufficiency, not classified elsewhere”, lacks specificity. A selection algorithm for inpatient with HE was implemented by medical expertise, according to the expression of the disease main symptoms.

ADVANCED STATISTICAL ANALYSIS

UNIVARIATE STATISTICAL TESTS

Student t test

Mean difference

χ² test

Proportion test

MULTIVARIATE ANALYSIS

Log-linear regression

Model HE hospitalization

costs per patient by

exploring variables.

Exploring variables

- ✓ **Patients’ features:** Age & Gender
- ✓ **Comorbidities:** malnutrition, renal insufficiency, bacterial infection and respiratory diseases
- ✓ **Clinical pathway:** stays in reanimation, intensive care units and death.

RESULTS

COHORT CHARACTERISTICS

The study collected **27,156 patients hospitalized with HE** over 2 years (34,492 stays) (*Table 1*). More than **5,000 patients hospitalized for HE as a main reason of hospitalisation** (7,000 stays) annually in 2012 and 2013 (*Table 2*). Men were over represented (**70%**) and mean age was **62** (± 12) years. Women were older than men. Mean length of stay was **11** (± 14) days.

Annual economic burden of HE hospitalizations amounted to **€ 40 million**. More than **70%** of these annual cost was accounted by **47% of patients with a level 3 or 4 severity DRG** (Diagnosis Related Group) (*Figure 1*). Each patient's stay is classified by Diagnosis Related Group (DRG) according to the information documented by the physician (Diagnoses are coded using ICD-10 and procedures by CCAM)

Main result: Annual economic burden of HE hospitalisations represents 40 million €. Patients with a level 4 severity DRG induced 33% of costs (€ 13 million in 2012 and € 14 million in 2013).

ADVANCED STATISTICAL ANALYSIS

A log linear model was performed on **5,267 patients hospitalized** in 2012 and followed one year: it explained **78% of hospitalization costs**. Age had a concave effect with costs increasing until a 50 years threshold. Beyond this threshold, age had a negative effect on costs. Gender had no impact on costs of support stays. Hospitalization of patient with a **renal insufficiency** increased costs of **11%**, **6.8%** with a **bacterial infection**, **8.1%** with a **respiratory disease** and **7.5%** with a **malnutrition**. Finally costs increased with of **1.2% for each supplementary day**, **3.4% for each passage in intensive care unit** and 7% for death (*Figure 2*).

Main result : Comorbidities significantly increased costs.

TABLE 1:
COHORT OF HOSPITALIZED PATIENTS WITH HE

	2012	2013
Patients	13,484	13,672
Hosp. / patient	1.2 ± 1.7	1.3 ± 1.8
Stays	17,001	17,491

TABLE 2:
COHORT OF HOSPITALIZED PATIENTS FOR HE

	2012	2013
Patients	5,391	5,141
Stays	7,345	7,248
Mean cost	5,473 (± 6,215)	5,598 (±6,604)
Total Cost	€ 40,202,036	€ 40,577,313

FIGURE 1:
DISTRIBUTION OF HE HOSPITALIZATION COST

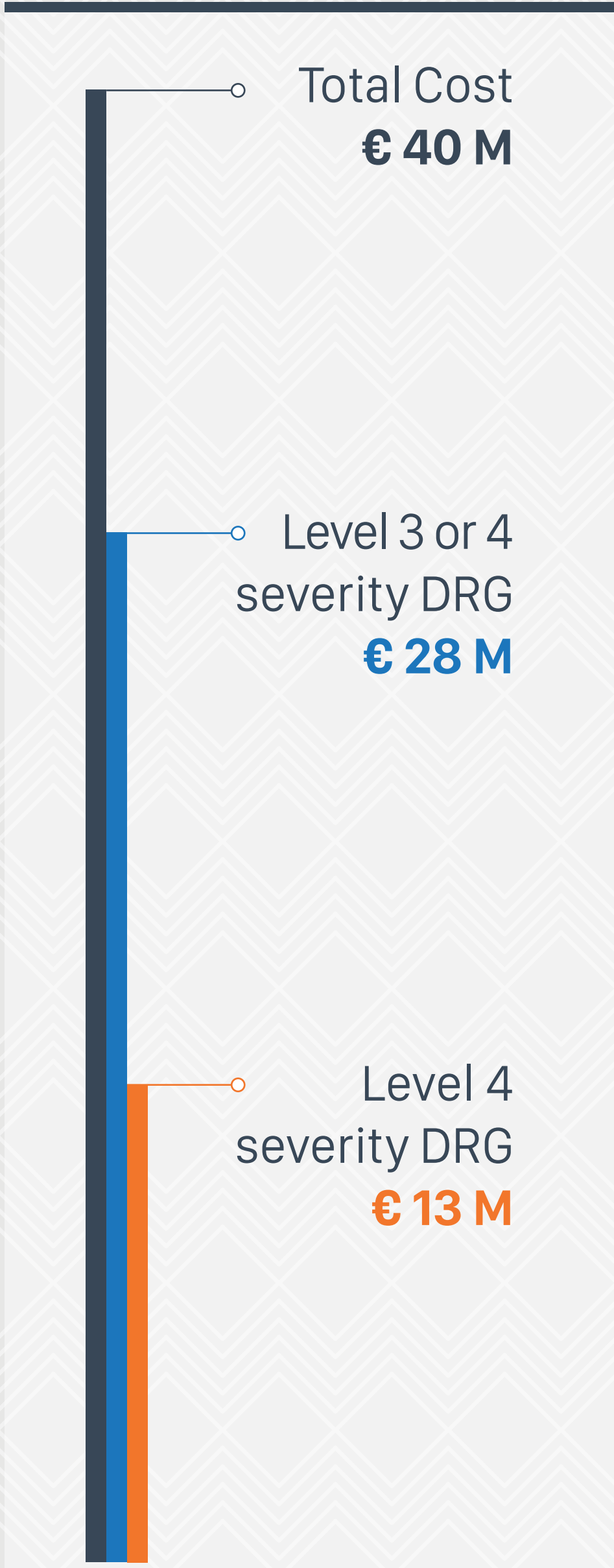
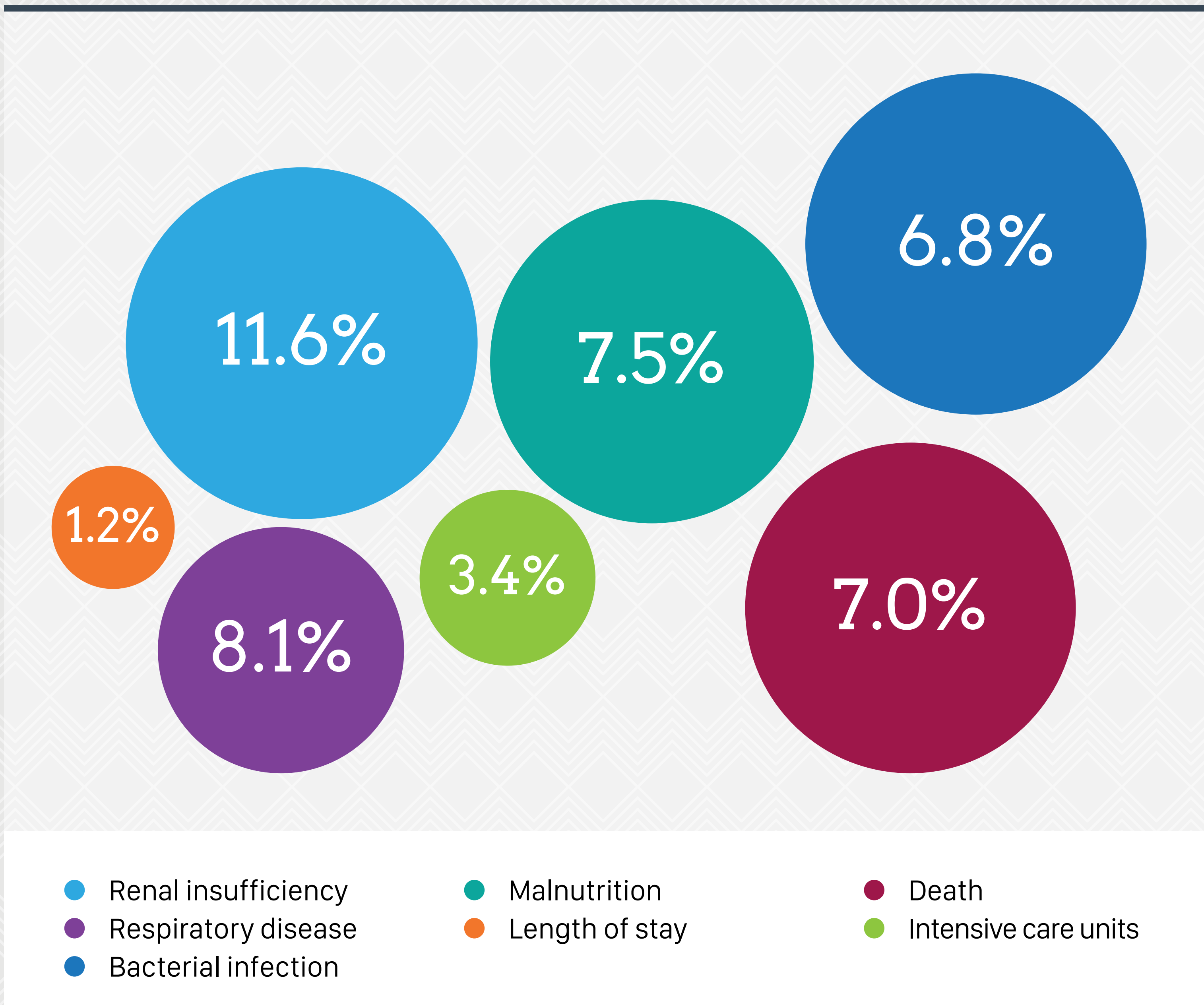


FIGURE 2:
COST IMPACT OF EXPLORING VARIABLES



CONCLUSION

More than **40 million euros** are spent per year by Social Security in France for HE hospitalizations with a mean cost of **€ 5,535 (±SD € 6,411)**.

HE patients with a **level 4 severity DRG** represent **33% of total cost**. Discriminant patient profiles were defined depending on levels of severity DRG and comorbidities.

