

PRODUCTIVITY LOSS AND LOCAL INDIRECT COSTS ASSOCIATED WITH ACUTE CORONARY SYNDROME AND STROKE IN SPAIN

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INTRODUCTION

- Cardio- and cerebrovascular (CV) diseases are a major cause of morbidity and premature death worldwide.
- Very few studies about productivity loss in CV patients have been carried out in Spain. These were mainly database studies investigating absenteeism only¹.
- Productivity loss in CV patients in Spain remains an under-researched area especially with regards to presenteeism and caregiver burden.

OBJECTIVES

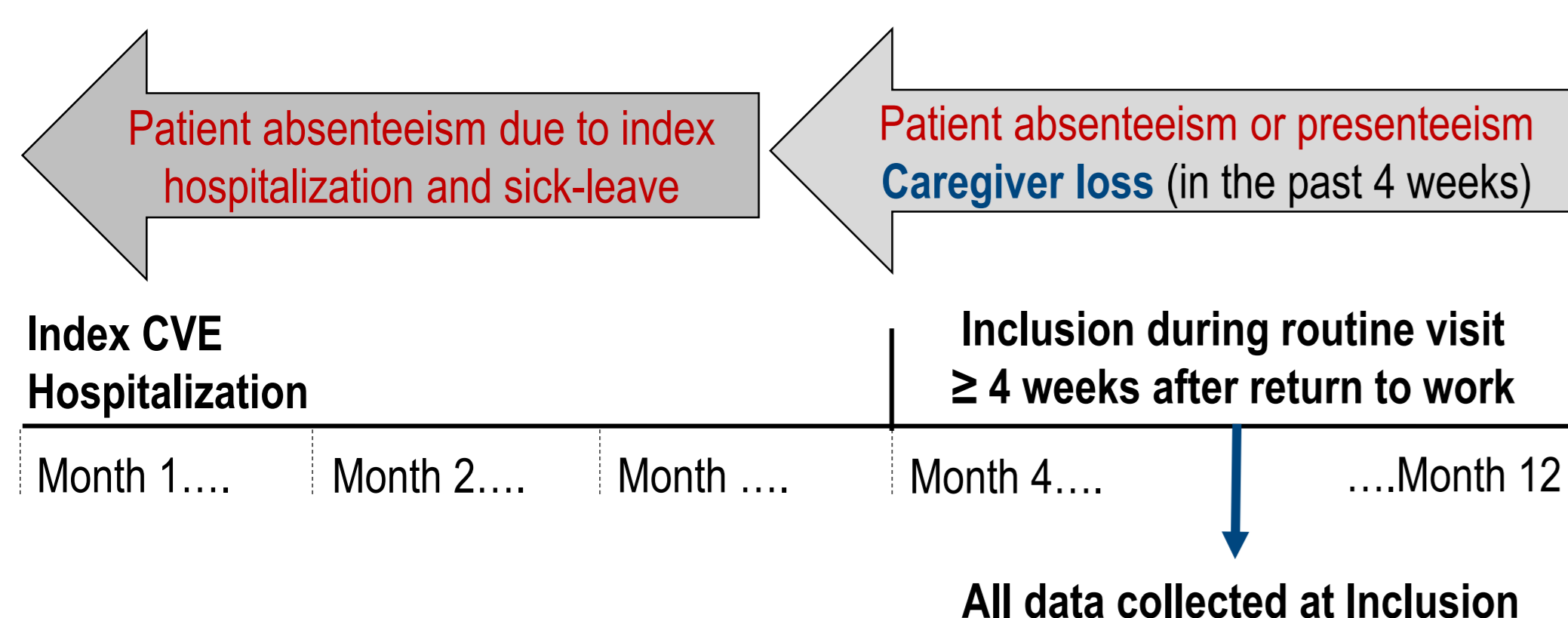
- To estimate productivity loss and indirect cost associated with patient absenteeism (absence from work), presenteeism (impaired productivity at work), and caregiver loss (e.g. family, friend) in the first year after an acute coronary syndrome (ACS) or a stroke in Spanish population included in a European cross-sectional productivity loss study.

METHODS

Study design and data collection

- Cross-sectional study conducted in Spain.
- Inclusion criteria: Patients were enrolled at a routine cardiologist or neurologist visit 3-12 months after index hospitalization for ACS or stroke, discharged with lipid modifying therapy, and returned to work for ≥ 4 weeks (Figure 1)².
- Productivity loss in the last 4 weeks collected via the Institute for Medical Technology Assessment (iMTA) Productivity Cost Questionnaire (iPCQ)³.
- Demographic and clinical characteristics retrieved from available medical records and recorded in an electronic case report form (CRF).

Figure 1. Study Diagram



Analysis

- Reported hours lost were averaged across patients, extrapolated to 1 year, combined with initial hospitalization and sick leave, and valued according to the Spanish labour cost (€21.4/hour; €2017⁴) (Figure 1) using Human Capital method⁵.

RESULTS

Population characteristics

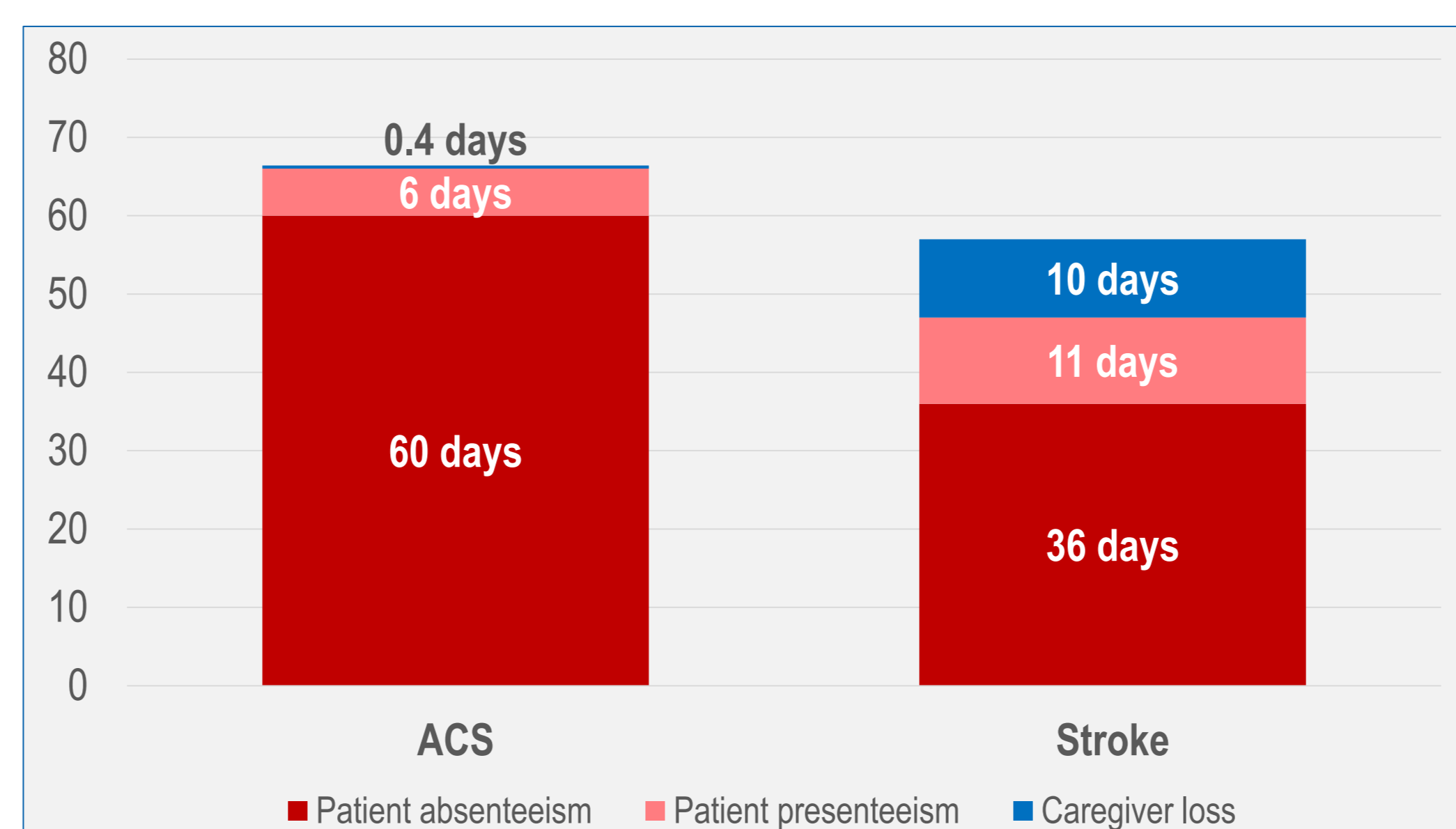
- The analysis included 33 ACS patients with mean age 49.6 years, 91% male, and mean left ventricular ejection fraction (LVEF): 57%; and 27 stroke patients with mean age 51.6 years, 81% male, and modified Rankin Scale (mRS) 0-1: 85% (Table 1).
- Low density lipoprotein (LDL) levels at discharge of index CVE hospitalization were > 100 mg/dL in 67% and 70% of ACS and stroke patients, respectively (Table 1).

Table 1. Patients baseline characteristics

	ACS (N=33)	Stroke (N=27)
Sex, male, n (%)	30 (91%)	22 (81%)
Age, years, mean (SD)	49.6 (5.6)	51.6 (8.5)
BMI, kg/m ² , mean (SD)	27.9 (3.5)	26.7 (3.5)
ACS type, n (%)		
Myocardial infarction	26 (79%)	NA
Unstable angina	7 (21%)	
LVEF %, mean (SD)	56.7 (9.9)	NA
Stroke type, n (%)		
Ischemic	NA	26 (96%)
Hemorrhagic		1 (4%)
mRS 0 or 1, n (%)	NA	23 (85%)
Current smoker, n (%)	22 (67%)	8 (30%)
Type 2 diabetes, n (%)	4 (12%)	3 (11%)
Hypercholesterolemia, n (%)	29 (88%)	21 (78%)
LDL ≥ 70 mg/dL (1.8 mmol/L)	28 (85%)	24 (89%)
LDL ≥ 100 mg/dL (2.5 mmol/L)	22 (67%)	19 (70%)
LMT at discharge, n (%)		
High intensity statin	29 (88%)	22 (81%)
Moderate intensity statin	4 (12%)	3 (11%)
Low intensity statin	0 (0%)	1 (4%)
Statin + other LMT	0 (0%)	1 (4%)
Hypertension (SBP ≥ 140 mmHg), n (%)	10 (30%)	12 (44%)
Multiple CVE, n (%)	8 (24%)	7 (26%)
CCI score, mean (SD)	1.3 (0.9)	1.4 (0.7)
Time since CVE, months, mean (SD)	8.8 (2.9)	6.6 (2.7)

Abbreviations: ACS: acute coronary syndrome; BMI: body mass index; CCI: Charlson comorbidity index; CVE: cardio- and cerebrovascular event; LDL: low-density lipoprotein; LMT: lipid modifying therapy; LVEF: left ventricular ejection fraction; mRS, modified Rankin Scale, SBP: systolic blood pressure; SD: standard deviation.

Figure 2. Patient and Caregiver productivity loss drivers for ACS and Stroke in the first year after the event



Productivity time loss and indirect costs

- ACS patients lost on average 66 (SD=52) working days, during the first year after the event (Figure 2).
- Stroke patients lost on average 48 (SD=38) working days, during the first year after the event. Additional 10 (SD=36) working days were lost by caregivers helping stroke patients (Figure 2).
- Reported productivity loss was independent of month of visit to the physician.
- Length of hospitalization and initial sick leave were the main drivers of productivity loss for both ACS and stroke patients (Figure 2).
- Estimated total indirect costs were €11,366 and €9,922 for ACS and stroke patients, respectively (Figure 3).

DISCUSSION

- Productivity loss was collected directly from patients who estimated time lost due absenteeism, presenteeism as well as time lost by caregivers.
- Risk of human recall bias was minimized by using validated tools specifically designed for collecting productivity loss data (iPCQ).
- The magnitude of indirect costs is comparable to average direct medical costs of CV disease management previously reported for Spain and may exceed by approximately 30-50% the costs for acute management of these patients⁶ (Figure 4).

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Figure 3. Indirect costs for ACS and stroke in the year after the event

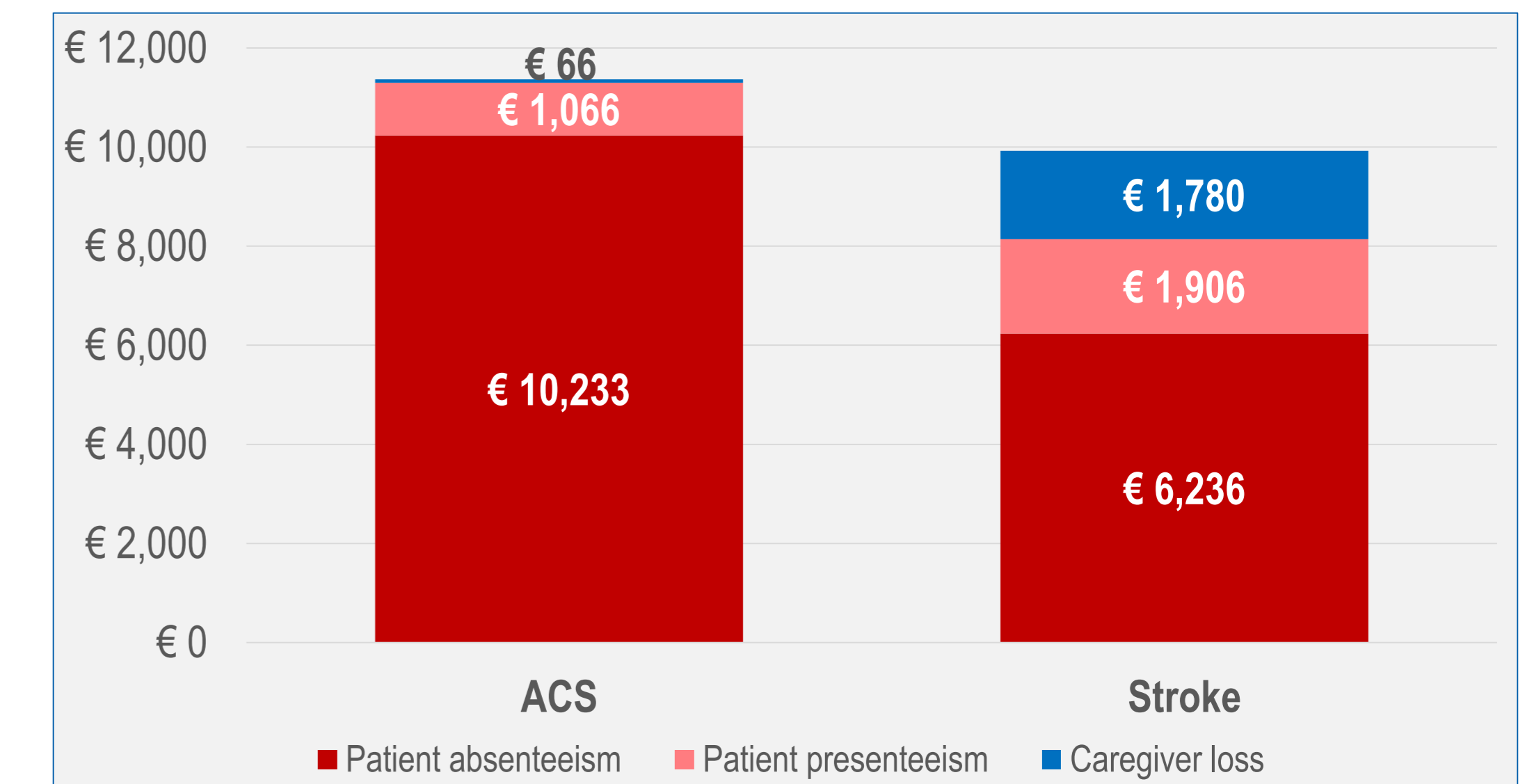
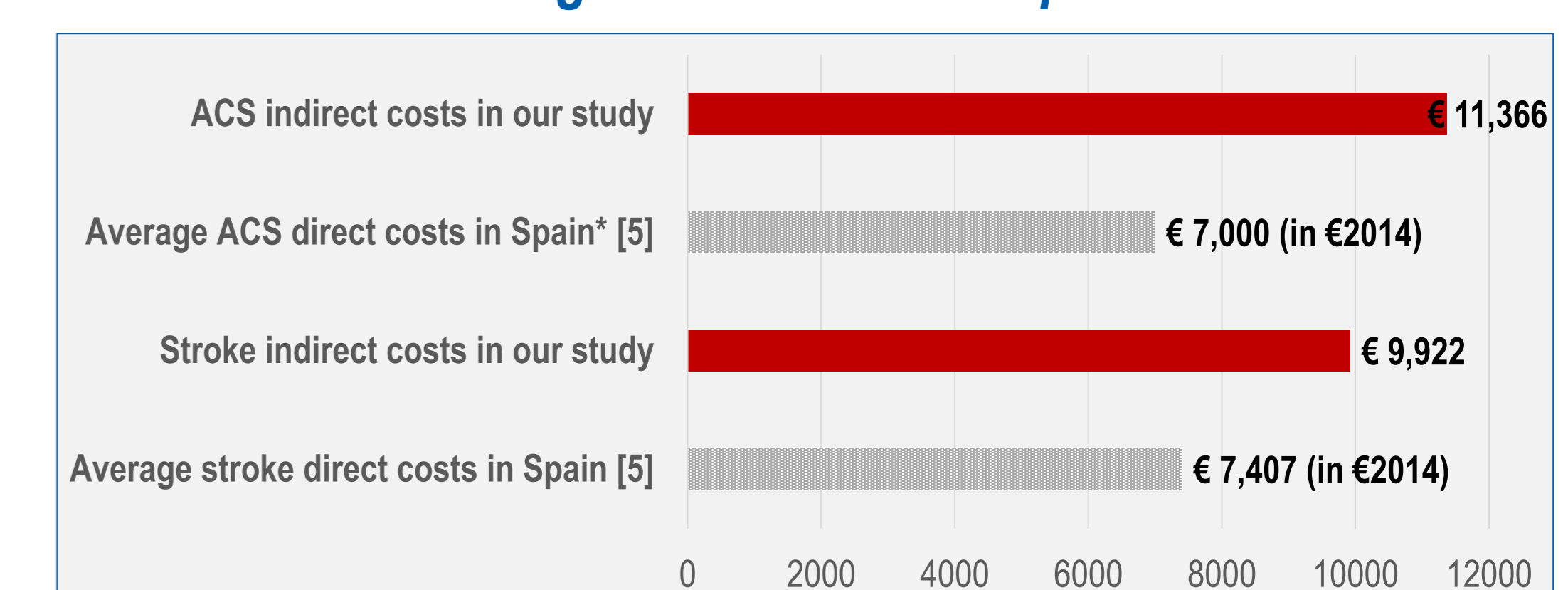


Figure 4. Comparison of indirect costs in the first year after event to average direct costs in Spain



*ACS direct costs only reflect myocardial infarction management (in the acute setting).

- Rural population was possibly under-represented because data was collected from three large tertiary-level hospitals.
- Average labour costs regardless of patient age were used for the estimation of indirect costs. The population included in our study was around 50 years of age on average, and is expected to have higher labour costs than the general population, thus providing potentially conservative estimates.
- Patients included had to be working within the first year post event and had experienced CV events with relatively mild consequences, hence estimated costs provided can be considered conservative.
- Absenteeism due to hospitalization and initial sick leave are the main causes of productivity loss, followed by presenteeism and caregiver loss.

CONCLUSIONS

- Productivity loss in Spain is substantial in the first year after an ACS or stroke amounting to approximately 25% of annual work-days lost by patients (58/244 work-days).
- Absenteeism immediately following the event is the main driver for productivity loss, especially in ACS patients.
- Caregivers helping stroke patients lost over 18% of their annual productive time, while ACS patients report scarce caregiving needs.
- The estimated economic burden associated to the management of ACS and stroke patients doubles when indirect costs are also considered, in addition to average direct medical costs.

DISCLOSURES

This study is funded by Amgen (Europe) GmbH.

ES is full time employee at Amgen (Europe) GmbH and owns Amgen stock options. IC and SG are full time employees at Amgen SA. IQVIA, employer of DG, receives consulting fees from Amgen (Europe) GmbH. CE, MA, AE, MDMF and JMG receive research support fees from Amgen (Europe) GmbH.