ATHEROSCLEROSIS: THE COST OF ILLNESS IN PORTUGAL

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OBJECTIVE

- Atherosclerosis (AS) is the most common pathophysiologic process underlying cardiovascular disease.
- Estimates indicate that the different clinical presentations of AS affect around 740,000 adults in Portugal.
- The objective of this study was to estimate the direct and indirect costs associated to AS in Portugal, for 2016 and considering a societal perspective.

METHODS

Prevalence

- A prevalence-based approach was adopted to estimate costs associated to AS.
- Prevalence of the different AS clinical presentations were considered: acute myocardial infarction (AMI), stable angina, ischemic heart failure (IHF), ischemic cerebrovascular disease (ICVD) and peripheral artery disease (PAD) (Table 1).

Table 1. AS prevalence data.

AS clinical presentations	Prevalence data source
AMI	Microdata of the 2014 National Health Survey[1]
Stable angina	
ICVD	
IHF	Microdata of a national community-based epidemiological survey on HF prevalence - EPICA study[2]
PAD	National PAD prevalence study[3]

- A primary care regional database was used to estimate the overlap of different AS clinical presentations.[4]

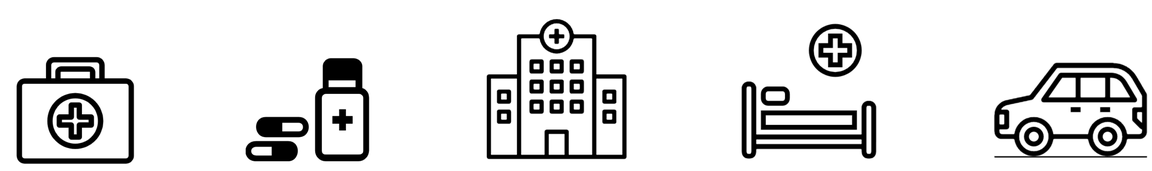
Direct costs

- Primary care costs were estimated using a comprehensive administrative database, with records of medical resource use for 318,692 patients with AS in 2016 in Lisbon and Tagus Valley Health Region.[4]
- This database includes drug costs in ambulatory care, regardless of prescription site (primary care or hospital ambulatory).
- Other resource use in hospital ambulatory care including emergency episodes was estimated based on experts' opinion.
- Inpatient resource use was estimated using national 2016 DRG microdata.[5] Episodes of interest were identified through the International Classification of Diseases, Ninth and tenth Revisions, Clinical Modification.
- Nonmedical costs (transportation for each visit and rehabilitation session) were also considered.
- Unit costs were based on the official NHS tariffs.[6,7]

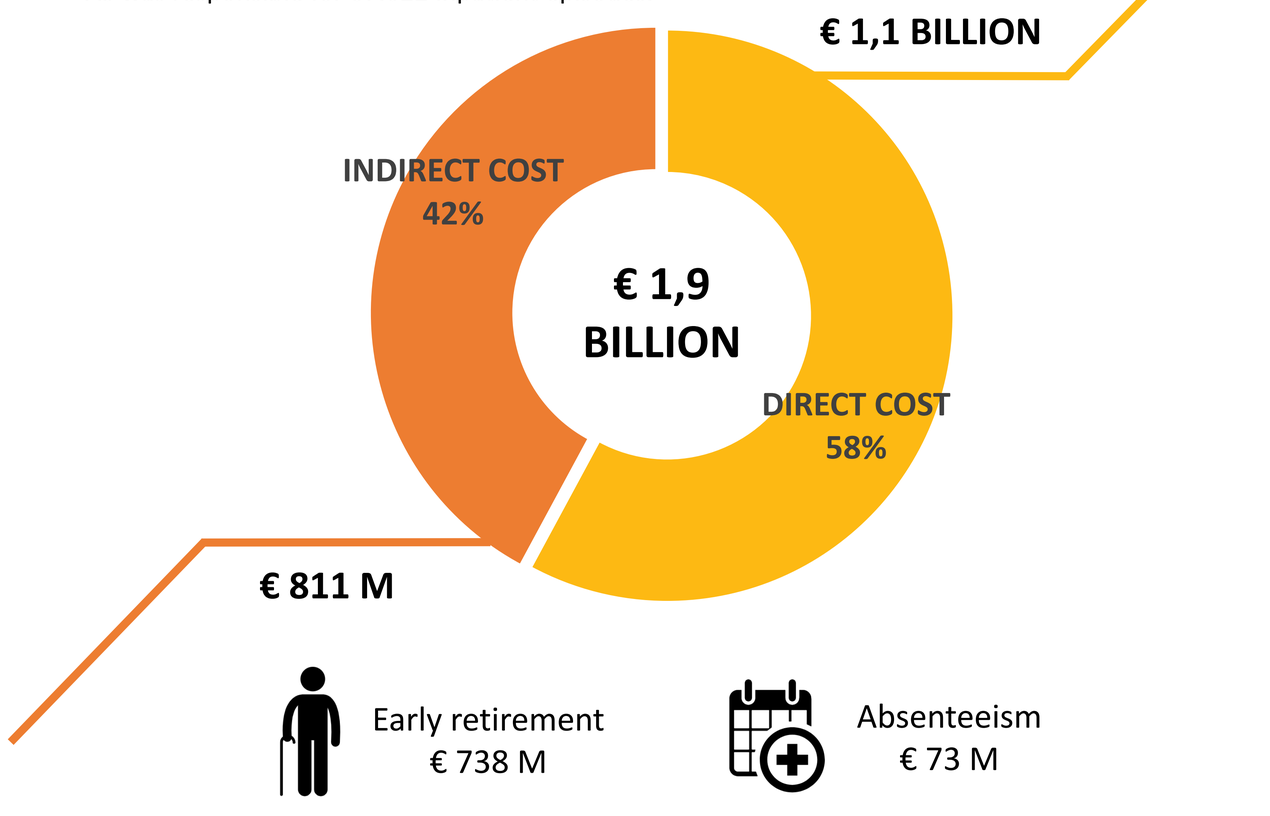
Indirect costs

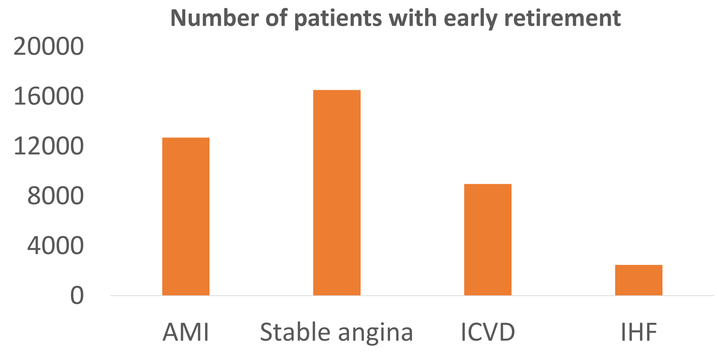
- Indirect costs associated with patients' absenteeism and early exit from the labour force were estimated using the Human Capital approach and compensation information from the Employment Ministry. [8,9]
- Estimates of the employment rates were based on National Health Survey 2014 microdata. The impact of AS was estimated by the difference between the employment rate of individuals under 65 with a self-reported history of AMI, stable angina or ICVD and the employment rate of the population without those diseases with the same distribution by sex and age groups. It was conservatively assumed that there were no differences in PAD patients' employment rate compared with the general population.[10]
- Absenteeism due to hospitalization, post-discharge recovery, exams, ambulatory procedures and medical visits was also considered.

RESULTS



- Medications were the main medical expense (30%).
- Visits were 75% of primary care costs with exams being the remaining 25%.
- ICVD was associated with higher hospital ambulatory costs, mainly due to rehabilitation.
- AS was responsible for 67.622 inpatient episodes.





- The largest employment rate reduction was observed in AMI patients (21% in men and 35% in women).

740,000 adult patients with **AS clinical manifestations**

Average Costs:
2,592 €/ symptomatic AS patient
237€/ portuguese adult

CONCLUSIONS

- In addition to direct costs, AS is associated with significant indirect costs (42% of total).
- The overall costs of AS were estimated at € 1,9 billion, about 1% of Portuguese GDP and 11% of all Portuguese health spending in 2016.
- AS is a costly condition and, as such, it should receive adequate attention from the Portuguese health policy makers.

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