

# Economic Burden of Malignant Pleural Mesothelioma in Europe: A Systematic Literature Review

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## INTRODUCTION

- Malignant pleural mesothelioma (MPM) is a rare but usually severe malignancy of the lining around the lungs.<sup>1</sup> MPM is poorly diagnosed and accounts for 90,000 deaths per year, globally<sup>2</sup>
- MPM mostly occurs in elderly men (median age of 70 years old) living in high-income countries; almost 50,000 deaths occurred in Europe (more than 50% of deaths worldwide) between 1994–2016<sup>3</sup>
- About 80% of cases are caused by asbestos exposure, with a median survival of 8–14 months from diagnosis<sup>4</sup>, and a 5-year survival rate of 12%.<sup>5</sup> The long latency of MPM (~40 years) along with its heterogenous pathology and diverse, non-specific symptoms often lead to delayed diagnosis, by which time it is often at advanced stages<sup>4, 6</sup>
- Controlling physical symptoms like pain, dyspnea and fatigue to maintain health-related quality of life is an important consideration for the management of MPM<sup>1</sup>
- The true global burden of MPM is still unclear, largely due to varied reporting methods across different countries. Despite the present treatment guidelines, the humanistic burden of MPM is high.<sup>1</sup> The economic burden of the disease remains under-studied

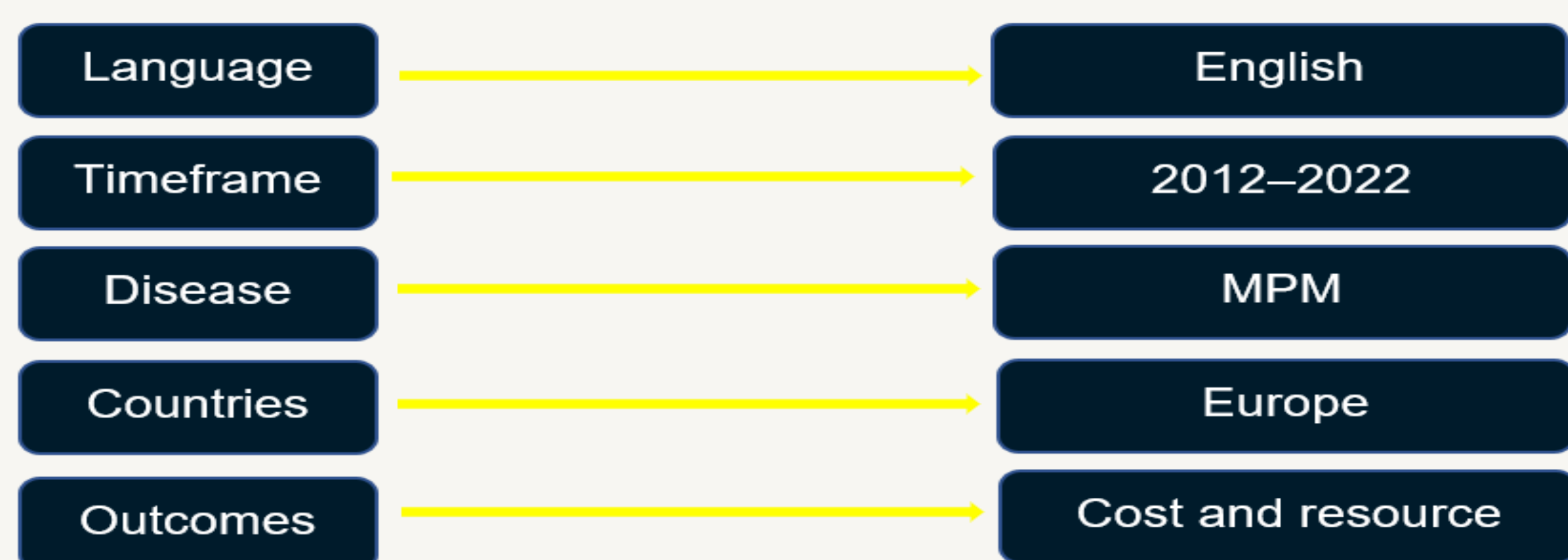
## OBJECTIVES

The objective of this systematic literature review (SLR) was to identify the cost and healthcare resource utilization associated with MPM in Europe

## METHODS

- A systemic literature search to identify English-language articles published between January 2012–June 2022 was performed in the MEDLINE® and Embase® databases, with a pre-defined inclusion criterion (Figure 1)
- Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were followed for reporting the SLR
- All the records retrieved from the literature search were screened per the pre-defined inclusion criteria, first based on the title and abstract and then on the full-text citations
- The eligibility of publications was assessed by two independent reviewers, with any discrepancy resolved by a third

Figure 1: Inclusion criteria

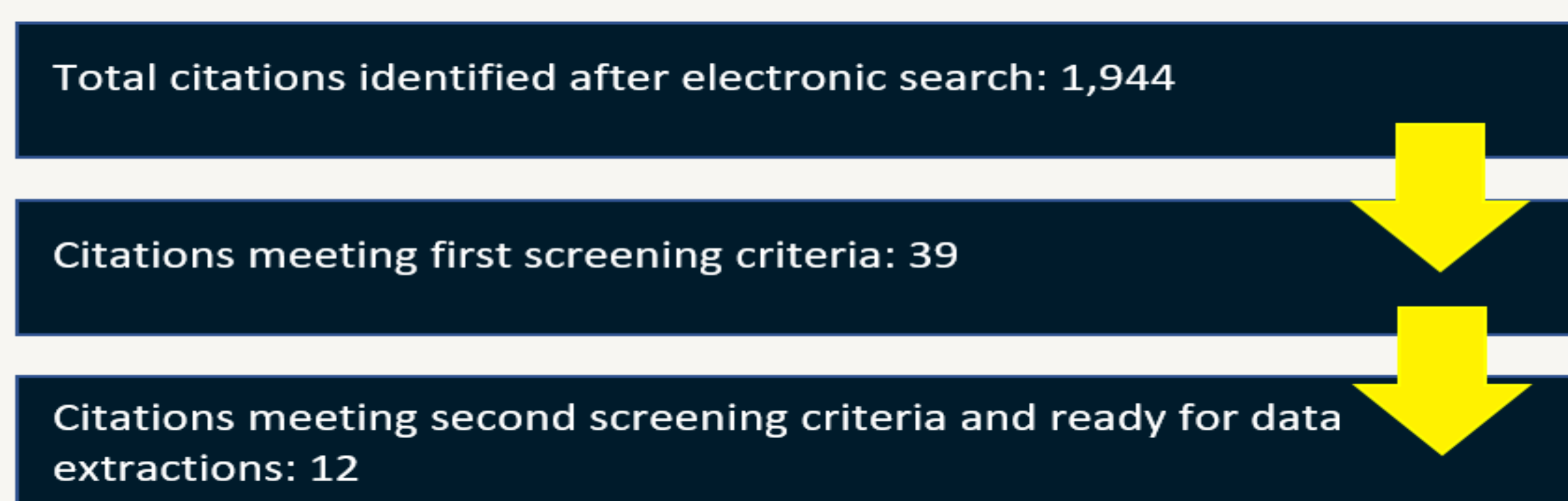


Key: MPM, malignant pleural mesothelioma.  
Note: adult patients with MPM.

## RESULTS

- A total of 1,944 records were screened using the pre-defined Population, Intervention, Comparison, Outcomes and Study-based criteria; 12 studies were identified that evaluated the economic burden of MPM in Europe were included (Figure 2)

Figure 2: Study flow diagram



### Cost data:

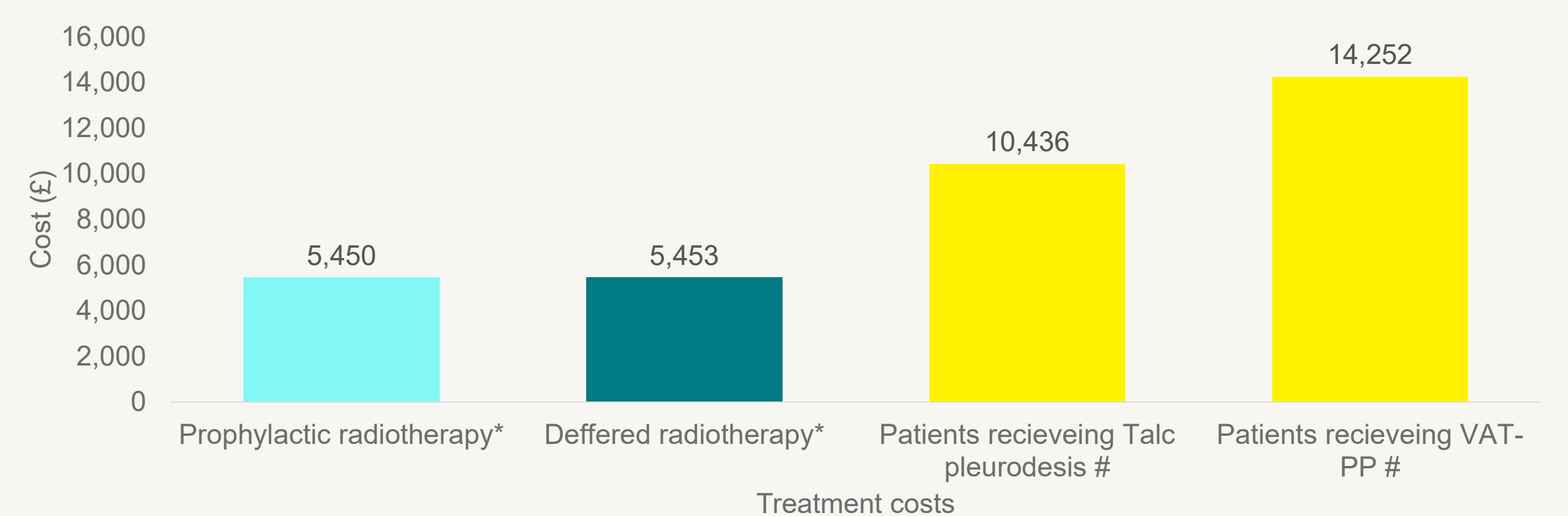
#### The UK:

- From the UK healthcare perspective, the mean total cost per patient per year ranged between €4,911.69–€5,470.93
- The mean (standard deviation [SD]) total costs per patient for prophylactic radiotherapy and deferred radiotherapy were €5,480.4 (7,039.6) and €5,461.4 (7,770), respectively
- The mean (standard error) total costs (cost year 2011) associated with talc pleurodesis and video-assisted thoracoscopic partial pleurectomy (VAT-PP) were £10,436 (14.4) and £14,252 (14.4), respectively (Figure 3)

#### Italy:

- From an Italian societal perspective, the mean cost per patient for medical care was reported to be €33,000

Figure 3: Total costs of treatment associated with MPM in the UK

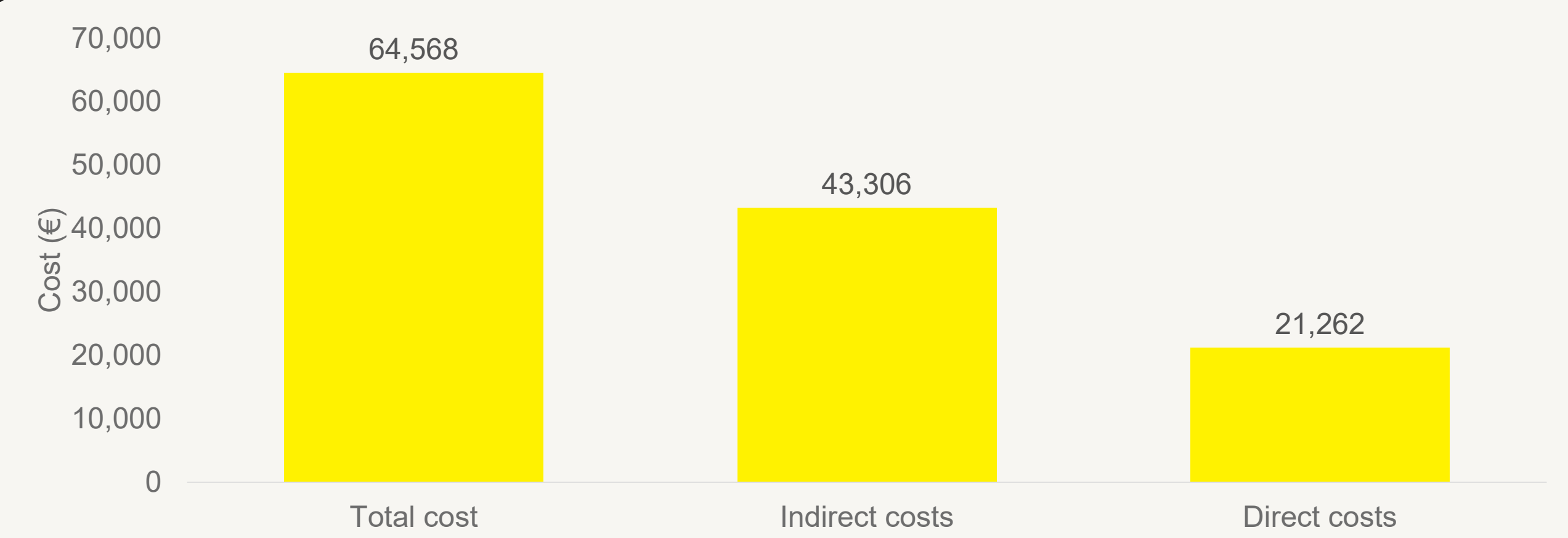


Key: MPM, malignant pleural mesothelioma.  
Notes: \*, Cost year 2015, reported in Euros (Stewart et al. 2018); #, Cost year 2011, reported in GBP (Rintoul et al. 2014)

#### France:

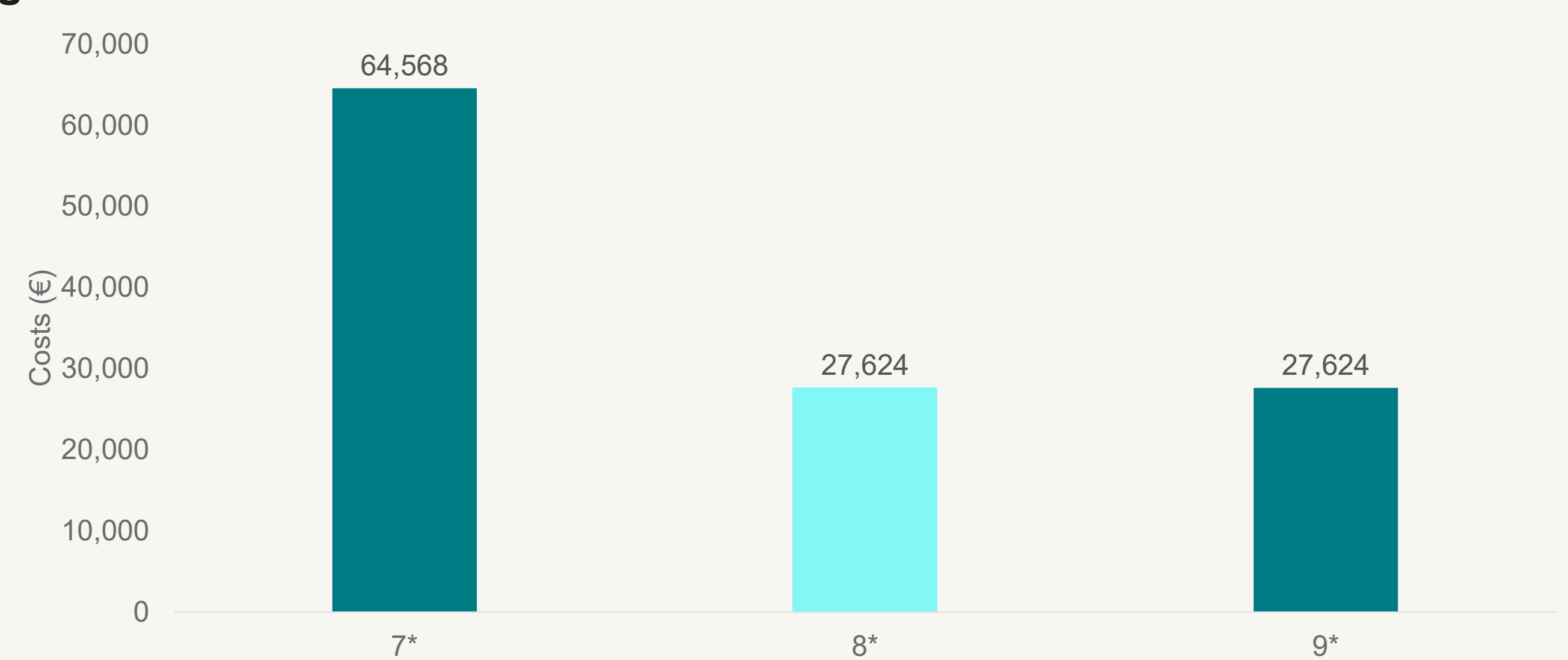
- The mean (SD) per-patient total costs of management of MPM were €27,624 (15,894) (cost year 2016). Costs of pemetrexed and bevacizumab accounted for 31% of this expenditure (Figures 4 and 5)
- Another French study reported a higher total per-patient per-year cost attributable to occupational risk factors for men (€52,381–€54,548) compared with women (€10,916–€11,290) (cost year 2010)

Figure 4: Total costs of treatment associated with MPM in the UK



Note: Cost year 2010. Source: Serrier et al. (2013)

Figure 5: Total costs associated with MPM in the France



Key: MPM, malignant pleural mesothelioma. \*Source/reference

### Resource use data:

#### The UK:

- The length of hospital stay associated with extended pleurectomy decortication for mesothelioma was reported to be 5–70 days; complications had a significant impact on hospital stays. In addition, hospital stays were also impacted by the choice of therapeutic options
- The hospital stay was longer in patients who received video-assisted thoracoscopic partial pleurectomy (5–11 days) compared with those who received talc pleurodesis (2–5 days) ( $p < 0.0001$ )
- Patients receiving extra-pleural pneumonectomy had a mean hospital stay of 19.5 days, for those receiving lung-sparing total pleurectomy it was 15.25 ( $p = 0.19$ )

#### Italy:

- Cytoreductive surgery and hyperthermic intraoperative intrapleural chemotherapy are a known option for MPM. In Italy, it was associated with a mean hospital stay of 7.8 days (6–10)

#### France:

- In France, the mean hospital stay was  $7.5 \pm 5.0$  (1–27) days for a surgical diagnosis of MPM

## CONCLUSIONS

- Overall, diagnosis, drug utilization costs and occupational risk factors were key cost drivers of the economic burden in patients with MPM. Healthcare resource utilization was reported to be impacted by therapeutic options
- Further measures are needed to enhance health security for patients with MPM to relieve the economic burden

## REFERENCES

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