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## Incentives and diffusion of medical technology

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### Abstract

#### Background

Medical Technology (MT) diffuses following a wide variation of patterns across different countries, and within the same country for different MTs. This fact suggests a complex interaction of factors and the lack of consistent policies on assessment, implementation, and financing MTs. To explore these factors, a study on the diffusion of five technologies across the 24 OECD (Organization for Economic Cooperation and Development) countries was carried out. This paper refers to Spain, as a case study about the role of economic incentives on MT diffusion.

#### Methods

The study compares the distribution of Extracorporeal Shock Wave Lithotripters (ESWL) and Linear Accelerators (LA) installed across the 24 OECD countries at the end of 1990. Data were collected from the multinational manufacturing industry, national and international institutions, and literature. Information was subject to reliability and validity analyses. As a case study, we analyzed the effect that economic incentives have for non-for-profit (public) and for-profit (private) centers on the diffusion and distribution of ESWLs and LAs in Spain.

#### Results

Spain ranks 20 within the OECD countries in terms of Gross Domestic Product (GDP) per capita and Health Care Expenditure (HCE) per capita. However, in ESWL, Spain ranks fifth in machines per million inhabitants (pmi) (1.8 times the OECD average), first in ESWLs per dollar of GDP (2.3 times the OECD average), and second in ESWLs per dollar of HCE (2.4 times the OECD average). In contrast, Spain has 0.3, 0.4, and 0.5 times the OECD average in LAs pmi, per dollar of GDP, and per dollar of HCE respectively. The percentage of machines owned by the private sector was 72% for ESWLs and 16% for LAs. In addition, linear correlation does exist between regional wealth (regional GDP per capita) and ESWLs pmi ( $r=0.66$ ;  $p<0.01$ ), but there is no correlation in the case of LAs. The study showed that the current reimbursement policy allowed an average profit per private ESWL unit of \$650,000 during 1990. In the case of LAs there was no profit.

#### Conclusions

- 1) The high number of ESWL machines in Spain, their strong presence in the private sector, and their correlation with the Spanish regional wealth, could be related to positive financial incentives for private providers.
- 2) The low number of LAs, their weak presence in the private sector, and their independence of the regional wealth, could be related to the lack of incentives for private providers in Spain.
- 3) To avoid these distortions, financial incentives should be associated to the appropriateness of medical care.

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