A real-world data study regarding hospital resources use and costs associated with colorectal cancer in Spain

Laura Planellas[1], Míriam Solozabal[1], Carmen Barrull[1], Anna de Prado[1], Neus Canal[1], Vanessa Gómez[1]

[1]HEOR-RWI, IQVIA Spain

IMS Health & Quintiles are now
IQVIA™

BACKGROUND

• 34,331 new cases of colorectal cancer (CRC) were diagnosed in Spain in 2017, representing the most frequently diagnosed type of cancer among Spanish population. CRC is the third most prevalent type of tumour, in 2017 the 5-year prevalence was estimated in 89,635 in Spain. Concerning mortality, CRC was the second leading cause of death by cancer in Spain in 2016, with 15,802 deaths reported (1).

• Number of new CRC cases are expected to increase up to 52,732 from 2018 to 2040 according to Globocan's projections (2). Furthermore, given its high prevalence, tumours are the third cause of hospitalization in Spain, following circulatory and respiratory system diseases (1). Tumours have become one of the most relevant socioeconomic problems in Spain (3).

OBJECTIVES

• The aim of the study is **to describe hospital resources used and costs associated to CRC patients** who attended hospital during 2016 through a healthcare claim database (4).

METHODS

Study design and patients' selection

• Madrid is the 3rd most populated region in Spain with almost 6.5 million inhabitants (5), 52% female. Retrospective data from the Minimum Basic Data Set (MBDS) of the Ambulatory and Patient's Hospitalization database 2016 of Madrid (4) were extracted.

• Patients were included if they had at least one diagnosis for CRC (coded C18 for colon and C19-21 for rectum using the 10th revision of the ICD-10). Every single hospital contact, outpatient or inpatient, independently of the reason for visit, was collected in order to estimate the clinical and economic burden of disease. Longitudinal follow-up during 2016 for patients included was carried out.

Data extraction

• The following variables were recorded and analysed: 1) Socio-demographic information (age and sex); 2) Number of hospital contacts (inpatient and outpatient care); 3) Length of stay (days); 4) Main diagnoses; and 5) Procedures performed during hospitalization and outpatient care.

Statistical analysis

• A descriptive statistical analysis was performed and the following measures were calculated: mean, standard deviation (SD), rate per 100,000 inhabitants and percentage. In order to estimate the corresponding costs associated to each procedure performed, severity diagnosis-related groups (DRG) adjusted official prices and DRG weights were applied for inpatient and outpatient episodes, respectively (6). Total costs and per patient costs were calculated in Euros 2017. A sub-analysis was performed for patients who died during the year studied.

RESULTS

• 4,520 patients with CRC were identified, of which 60.4% were men and mean age (SD) was 68.3 (11.9). Rate per 100,000 inhabitants of patients who contact inpatient or outpatient care was estimated in 86.2, slightly higher than the Spanish incidence rate according to Globocan. Overall, 1,910 and 28,625 hospitalization and outpatient episodes were observed, respectively (Table 1).

**Table 1. Patient characteristics and episodes by type of care.**

Characteristics	Inpatient care (N=1,159)	Outpatient care (N=3,362)	Total (N=4,520)
Age, mean years (SD)	71.2 (12.3)	67.2 (11.6)	68.3 (11.9)
Sex – Men, n (%)	691 (59.6)	2,039 (60.6)	2,729 (60.4)
Number of episodes, n	1,910	28,625	30,535
Episode rate per 100,000 inhabitants*	36.4	546.2	1,788.7

*According to inhabitants in Comunidad de Madrid in 2016 (5)
N: number of patients; SD: standard deviation

• 180 (4.0%) patients died during a hospital episode. In that subpatient population, mean age (SD) at first episode was 75.5 (11.5) years and, overall, a total of 921 previous episodes were reported during 2016 before exitus, of which 311 were hospitalizations.

• Most frequent main diagnoses related to hospitalization and outpatient episodes are shown in figure 1; and most frequent procedures performed during the episodes are detailed in Figure 2.

• The average hospitalization episodes and outpatient contacts per patient were 0.4 and 6.3, respectively (Figure 3). The overall length of hospitalization was estimated in 21,867 days, and the average per patient came to 11.5 days. For the subpopulation of patients who died during 2016, the average hospitalization episodes and outpatient contacts per patient were estimated in 1.7 and 3.4 (Figure 3), and the average length of hospital stay per patient who died was 23.5.

• The overall healthcare costs including inpatient and outpatient care were estimated in €33,593,537, of which €14,044,804 corresponded to inpatient care and €19,548,733 to outpatient care. Cost per patient associated to the overall patient population included and to the patients who died during the study period are shown in Figure 3.

Figure 1. Most frequent main diagnoses in inpatient (A) and outpatient (B) care.
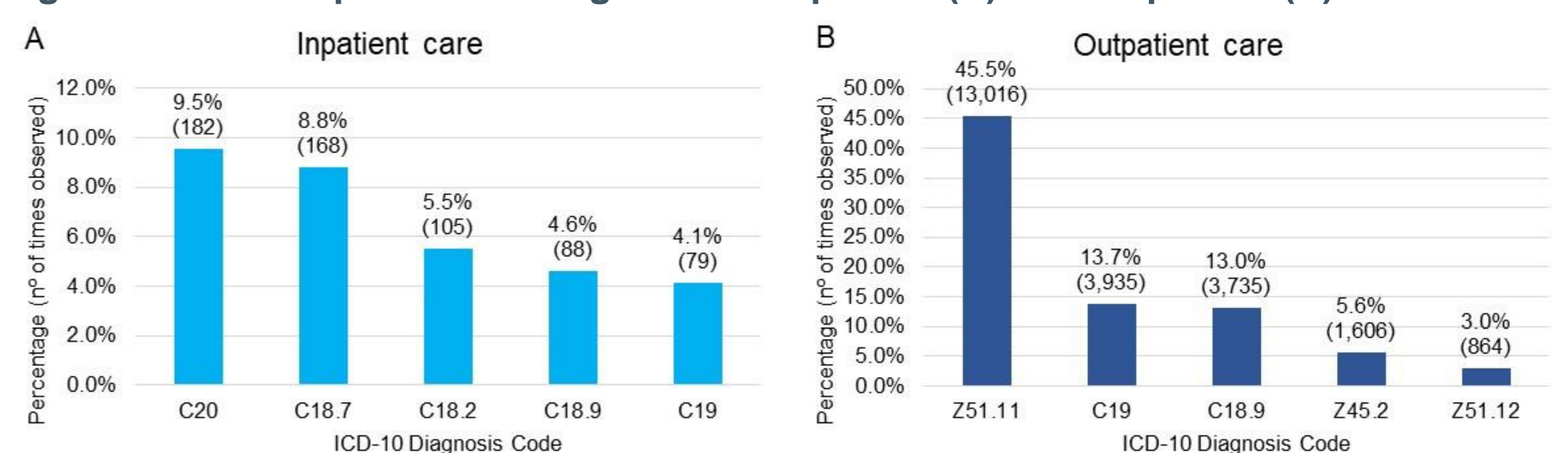

C18.2: Malignant neoplasm of ascending colon; C18.7: Malignant neoplasm of sigmoid colon; C18.9: Malignant neoplasm of colon, unspecified; C19: Malignant neoplasm of rectosigmoid junction; C20: Malignant neoplasm of rectum; Z45.2: Encounter for adjustment and management of vascular access device; Z51.11: Encounter for antineoplastic chemotherapy; Z51.12: Encounter for antineoplastic immunotherapy

Figure 2. Most frequent procedures during inpatient (A) and outpatient (B) care.
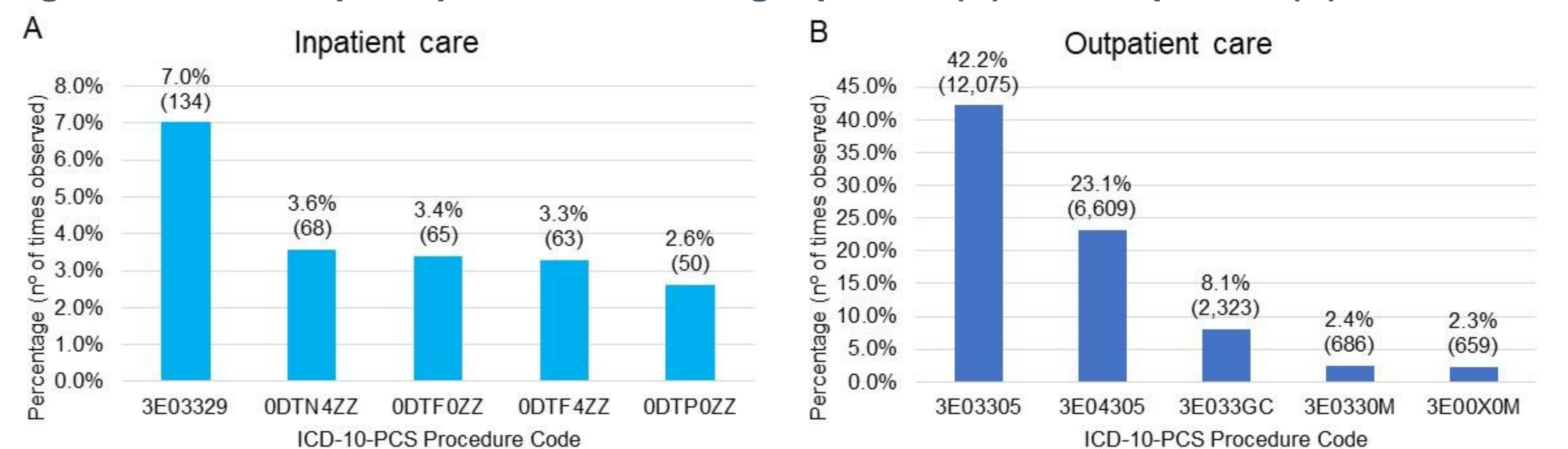
0DTF0ZZ: Resection of Right Large Intestine, Open Approach; 0DTF4ZZ: Resection of Right Large Intestine, Percutaneous Endoscopic Approach; 0DTN4ZZ: Resection of Sigmoid Colon, Percutaneous Endoscopic Approach; 0DTP0ZZ: Resection of Rectum, Open Approach; 3E03329: Introduction of Other Anti-infective into Peripheral Vein, Percutaneous Approach; 3E00X0M: Introduction of Monoclonal Antibody into Skin and Mucous Membranes, External Approach ; 3E03305: Introduction of Other Antineoplastic into Peripheral Vein, Percutaneous Approach; 3E0330M: Introduction of Monoclonal Antibody into Peripheral Vein, Percutaneous Approach; 3E033GC: Introduction of Other Therapeutic Substance into Peripheral Vein, Percutaneous Approach; 3E04305: Introduction of Other Antineoplastic into Peripheral Vein, Percutaneous Approach

Figure 3. Number of episodes and cost per patient by type of care and patient population
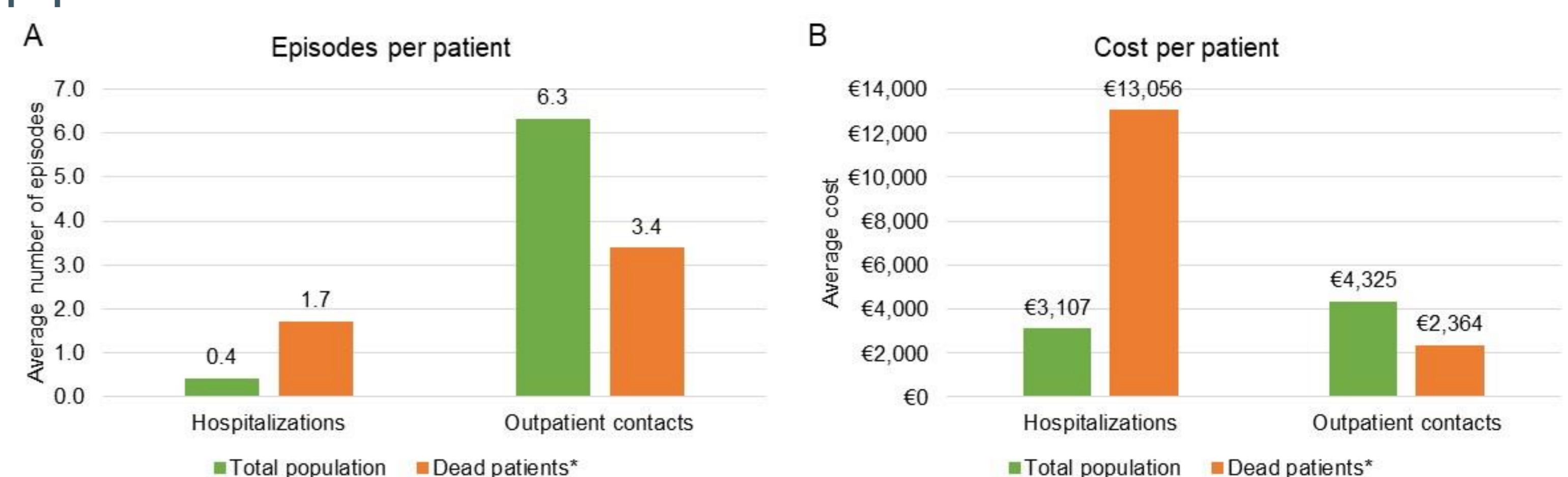
*Patients who died during the study period.

CONCLUSIONS

• CRC patients in Madrid attend inpatient or outpatient care more than 6 times per year, causing to the Health System more than €33 million. Patients who died during the study period presented an increased use of inpatient care compared to the overall patient population, leading to a relevant increase in the overall cost per patient.

• **Real-world data studies provide useful information regarding the use of healthcare resources for a range of diseases with regular contact to inpatient or outpatient care.**

• **CRC caused a relevant use of healthcare resources, corresponding to 0.45% of the overall health budget for 2016 in the region of Madrid (7).**

(1) Sociedad Española de Oncología Médica (SEOM). Las Cifras del Cáncer en España 2018 (2) Globocan. Global Cancer Observatory. Cancer tomorrow. Available at: https://gco.iarc.fr/tomorrow/ (3) Antoñanzas F et al. Cuadernos económicos del ICE. 2006: 281-309; (4) Comunidad de Madrid. Portal de transparencia. Datos Estadísticos. Accessed April 2018, available at: http://www.madrid.org/es/transparencia/informacion-economica/datos-estadisticos. (5) Series detalladas desde 2002. Resultados por Comunidades Autonomas. Accessed in August 2018, available at: http://www.ine.es/. (6) Boletín oficial de la Comunidad de Madrid. Lunes 21 de agosto de 2017. Septiembre 2013 (7) Presupuestos Generales comunidad de Madrid 2016. Accessed in October 2018, available at: http://www.comunidad.madrid/gobierno/transparencia/presupuestos-anteriores.

Laura.Planellas@iqvia.com