iPAAC
INNOVATIVE PARTNERSHIP
FOR ACTION AGAINST CANCER

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Report WP8 Task 1

Literature review for definition of neglected cancers

Author(s):	Lead author: Pamela Minicozzi Co-authors: Simone Bonfarnuzzo, Camilla Amati, Milena Sant and the task working group
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Abbreviations

CNS	Central nervous system
CR	Cancer registry
DOI	Digital Object Identifier
ENCR	European Network of Cancer Registries
ESMO	European Society of Medical Oncology
HR	High Resolution
iPAAC	Innovative Partnership for Action Against Cancer
JA	Joint Action
JRC	Joint Research Center
M/I ratio	Mortality/incidence ratio
PC	Pancreatic cancer
RS	Relative survival
WP	Work Package

Executive summary

One of the aims of The Innovative Partnership for Action Against Cancer (iPAAC) is to provide better efficacy for dealing with “neglected cancers”, through the development of new key indicators to assess clinical cancer pathways and health-related costs, with focus on pancreatic cancer (PC), as an example

A common understanding of the definition of “neglected cancer” is desirable and yet missing. To address this, we conducted a systematic literature review and an analysis on population-based data on solid cancers incidence, mortality, and survival. Five similar but distinct meanings of the term “neglected cancer” emerged: in all definitions, the concept coincided with that of cancers with high health impact, i.e., high incidence and mortality rates, and low survival due to either tumour biological aggressiveness, late diagnosis, or lack of effective treatments. By using age-standardised incidence, mortality and survival estimates available at the population level, it was possible to quantify the health impact of these cancers, to propose criteria for their definition, and develop a list of “neglected cancers”. In our analysis, tumours of the pancreas, gallbladder and biliary tract, stomach, liver, and brain and central nervous system, which are not rare, are characterised by moderate incidence and mortality rates (<20 per 100000), high (≥0.7) mortality/incidence (M/I) ratio, and low survival (relative survival ≤40% at 1 year, ≤30% at 3 or 5 years after diagnosis). The above cancers all highlight an emerging public-health problem: improvements in prevention, detection, and treatment are urgently required, especially for pancreatic cancer, showing the highest M/I ratio and the lowest survival at 1-year, 3 years and and 5 years after diagnosis.

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1 Introduction

The Innovative Partnership for Action Against Cancer (iPAAC) was funded within the Third Health Programme 2014–2020 with the general aim of developing innovative approaches to improve cancer control in Europe. One of its aims is to provide better efficacy for dealing with "neglected cancers", through the development of new key indicators useful to assess clinical cancer pathways and health-related costs, with focus on pancreatic cancer (PC).

A common understanding of the definition of "neglected cancer" is yet missing. It is known that, in Europe, PCs carries higher incidence and mortality than elsewhere [Ferlay J et al, 2013a; Ferlay J et al, 2013b]. It is also known that, from 2000 to 2007, PC incidence and survival increased slightly, particularly among the elderly and among women, with persisting low survival (≤8% at 5-year after diagnosis [Minicozzi P et al, 2018]), thus highlighting an emerging public-health problem.

Improvements in prevention, detection, and treatment are urgently needed.

Since 2011, the European Member States have been working on joint actions to reduce cancer incidence and mortality, and improve patient quality of life [European Commission, 2017]. Studies on PC patient pathways are crucial to produce recommendations, as well as for highlighting challenges and opportunities for better care and outcomes (e.g., improving detection, diagnosis and access to proper care). A description of the PC care pathway, from diagnosis to terminal care, may provide useful information to better understand deficiencies in diagnosis and treatment that impact quality of care and quality of life.

Work package 8 task 1 (WP8.1) of the iPAAC Joint Action (JA) aims to reach a scientific definition of "neglected cancers".

2 Materials and methods

In order to meet aim 1) we performed a systematic literature review and a population-based analysis of the latest available data on incidence, mortality, and survival, for all solid cancer entities.

2.1 Systematic literature review

The aim of the systematic literature review was to systematically explore the use and the meaning of the term "neglected cancer" in international literature. Therefore, we searched the PubMed and Scopus databases, without limitations on study design, date of publication, or language. We considered all articles published up to December 15, 2018 and including the

following keywords: “neglected” and “cancer” (or potential synonyms used in the literature). In particular, the search string was defined as follows: “[neglected] AND ([cancer*] OR [tumo*] OR [neoplas*] OR [carcin*])”, with “*” replacing zero or more characters, thus consenting to find word variations, and to include all possible suffixes.

The search was conducted in the title, abstract, and keyword fields of the databases.

The initial set of results was constituted by 3961 and 8467 publications in PubMed and Scopus, respectively. Out of the articles found in Scopus, 5555 had an identification number in PubMed, and 750 out of the remaining 2912 were trackable in PubMed by using the Digital Object Identifier (DOI). Thus, 6305 out of 8467 (74.5%) publications extracted by Scopus were also included in PubMed. To reduce the initial result, we used the proximinity function (indicating the distance between words, but not the order) available in Scopus as a filter. In conclusion, we analysed articles with a maximum distance of two words between “neglected” and “cancer” (or any of the above cited synonyms). Three-hundred and seventeen publications were found in Scopus, and all of them were read by PM (screening phase).

2.2 Population-based analysis

Considering that one of the possible meanings of the term “neglected cancer” found with the systematic revision was a cancer with a health impact in terms of high incidence, high mortality, and poor prognosis, the aim of the population-based analysis on solid cancers was to quantify the health impact and to identify cancers sharing therese characteristics to be included in the “neglected cancers” group. We analysed incidence and mortality for patients diagnosed up to 2012, and projected up to 2018, together with survival estimates for patients diagnosed in 2000–2007, and followed-up to the end of 2008. All three indicators were derived from population-based cancer registry (CR) data. Incidence and mortality data were accessed from the online ENCR-JRC (Joint Research Center) database [ECIS, 2017], survival data were accessed from the online EUROCARE database [EUROCARE, 1989].

For both the datasets, European estimates correspond to the 28 European and European Free Trade Association countries. Since we used two separate datasets of derived (not raw) data, we foresaw compatibility problems in the definition of cancer sites (Table 1) and number of CRs included. In the final analyses, we used data on 27 solid cancers with overlapping or very similar definitions (Table 1). Since the definition of haematological malignancies was based on the International Classification of Diseases for Oncology (ICDO [Friz et al, 2013]) topography

codes in the ENCR-JRC database but on ICDO morphology codes in the EUROCARE database, these entities were not considered for the analyses.

2.2.1 Statistical analyses

We accessed age-standardised (direct method) estimates of incidence, mortality, and survival. In order to provide a better rapresentation of the current European age structure compared to the European standard population of 1976 [EUROSTAT, 1976], incidence and mortality rates were age-standardised according to the European standard population introduced in 2013 [EUROSTAT, 2013].

One, 3-, and 5-year relative survival (RS) figures in 2000-2007 were estimated by using the complete cohort approach, together with the Ederer II method [Brenner et al.,1997] to account for background mortality not due to the cancer (which varies by country) [Rossi et al, 2015]. The mean European survival was available after weighting country-specific survival by the country population and age-standardising according to the International Cancer Survival Standard [Corazziari et al, 2004].

3 Results

3.1 Systematic literature review

The results of the screening and categorisation processes are illustrated in Figure 1.

Out of 317 papers, 124 (39%) referred to a field which was not relevant to our search (e.g., mutations, cancer mechanisms, and aspects of quality of life or sexuality). For a further 35 papers (11%) abstracts and full-texts were inaccessible, and for 15 papers (4%) we were not able to discern the meaning of the term “neglected cancer“.

Thus, 143 papers (listed in Annex 1) were finally categorised.

Figure 1. Flow chart illustrating the review selection process

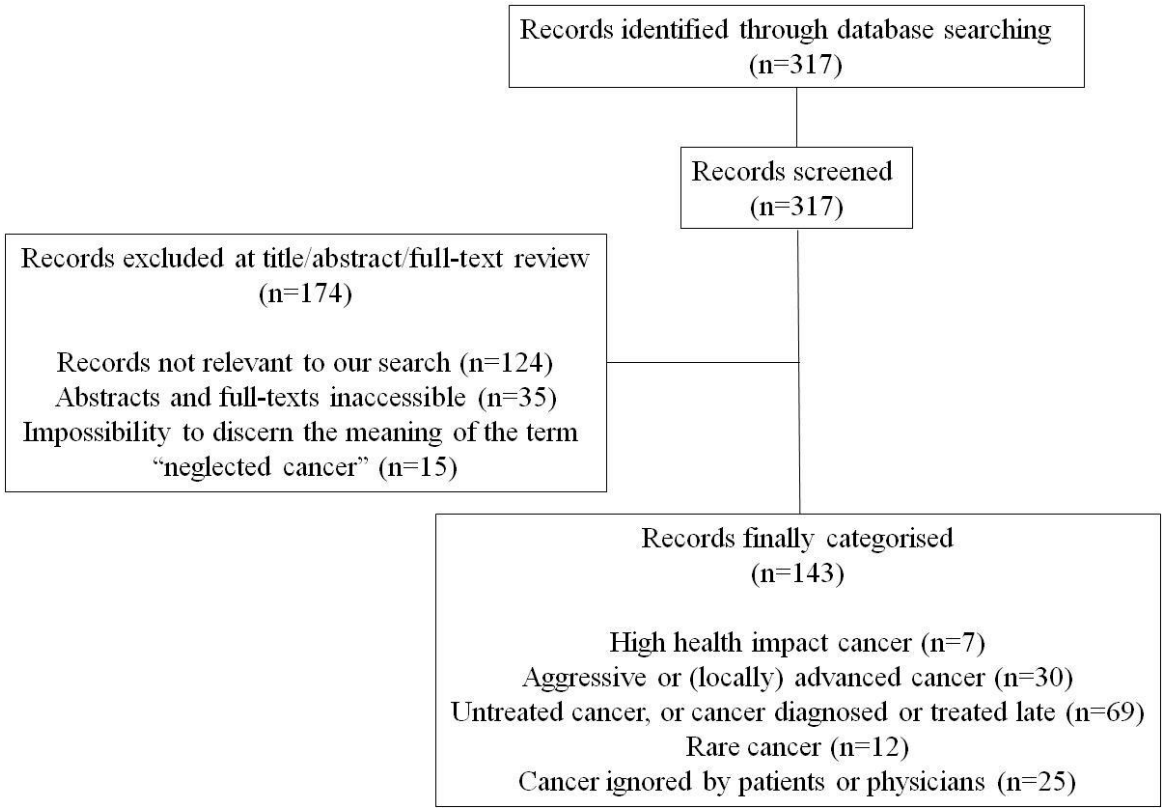


Figure 2. Distribution of publication years for papers including the term "neglected cancer"

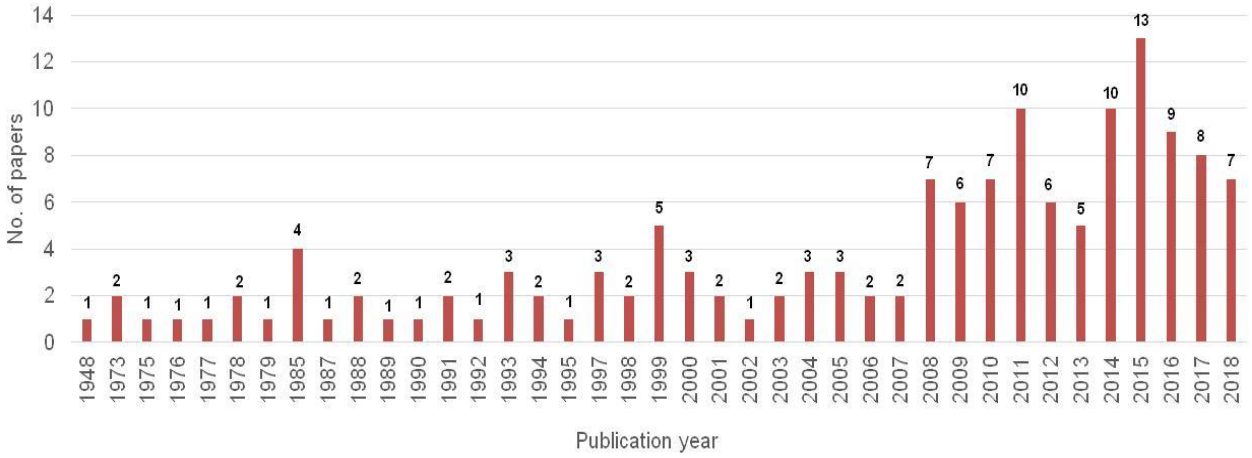
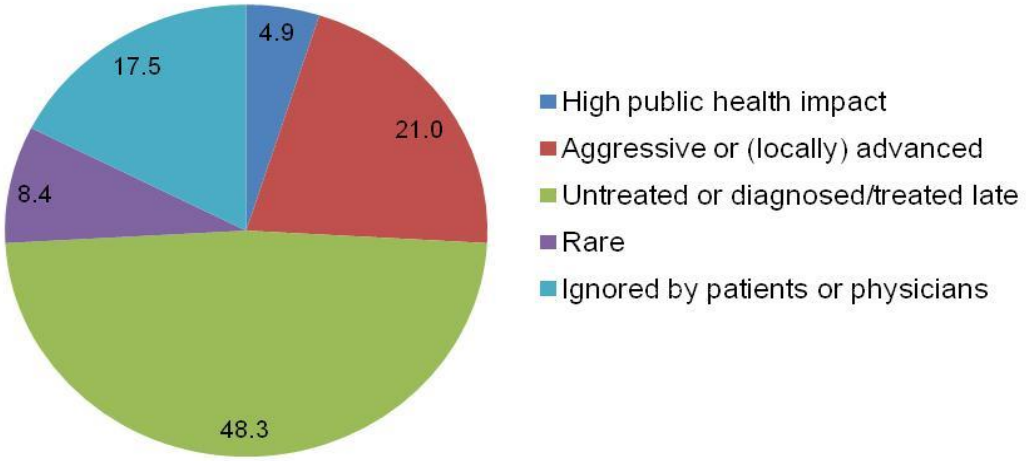


Figure 3. Distribution of meanings of the term “neglected cancer“



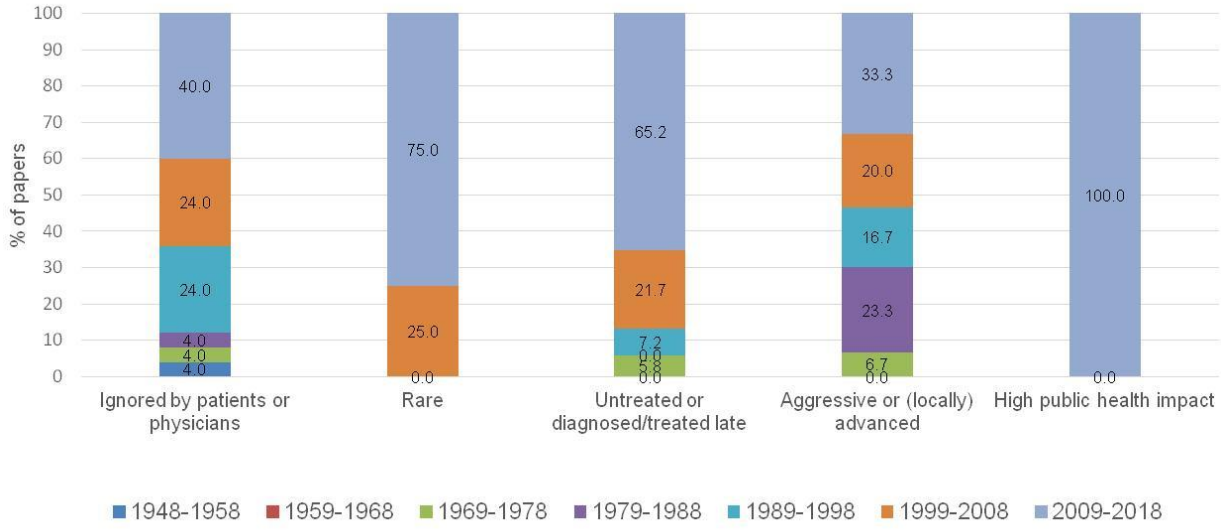
The number of publications including the term “neglected cancer“ (or synonyms) increased over the years (Figure 2).

We divided the papers according to 5 categories: cancers producing a high impact on health (high public health impact), aggressive or (locally) advanced cancers, untreated cancers (including cancers diagnosed or treated late), rare cancers, and cancers ignored by patients or physicians (Figure 3).

It emerged that in 21% of the papers, “neglected cancer” was either an aggressive or (locally) advanced cancer; in 48% the term referred to a cancer which either was untreated, or diagnosed/treated months or years late; in 8% the term referred to a rare cancer; in 18% the term referred to a cancer ignored by patients or physicians; and in 5% the term referred to a cancer defined as one with a major health impact, e.g. characterised by high incidence, or high mortality/poor prognosis (Figures 1 and 3).

The meaning of the term “neglected cancer” as a cancer with public health impact was used only in the last ten years, similarly to that of “rare cancer”, which was used only during ‘21s (Figure 4). The meaning as “aggressive or (locally) advanced” was quite homogenously distributed over the years 1990-2018. All five meanings were used in the last two decades.

Figure 4. Distribution of meanings of the term “neglected cancer“, by publication year



3.2 Population-based analysis

The mortality/incidence (M/I) ratio, and the 1-year, 3-year, and 5-year RS for men, women, and sexes combined are reported in Table 2 and Figure 5.

Focusing on Figure 5, a group of cancer entities is always placed in the lower right part of the Figure, for both men and women, both overall and separately. This group includes cancers of the pancreas, liver, gallbladder, stomach, oesophagus, lung, and brain and central nervous system (CNS), regardless of the years after diagnosis.

For all these cancers, the M/I ratio is 0.70 or higher (Table 2), with age-standardised incidence ranging from 5 to 19 per 100000 and mortality from 3.5 to 18 per 100000 (Annex 2), with the exception of lung cancer, for which age-standardised incidence and mortality rates were 69 and 56 per 100000, overall. As regards survival, for all cancers above, 1-year RS was 50% or lower, and 3-year or 5-year RS were 30% or lower (Table 2). Furthermore, the increase in 5-year RS from 1999 to 2007 was very small (3 absolute percentage points or lower, Annex 2). PC is characterised by the lowest M/I ratio and the lowest RS at 1 year, 3 and 5 years after diagnosis.

Other cancer entities were characterised by modest incidence and mortality rates, i.e., cancers of the ovary (incidence rate: 16 per 100000; mortality rate: 11 per 100000), cervix uteri and kidney (12; 5), and bladder (12; 4) in women, and of the larynx (10; 5), and lip, oral caviy, and

tongue (12; 4) in men. However, in these cases M/I was 0.4 or lower, except for ovarian cancers, characterised by 0.68 M/I ratio, but 70% RS at 1 year after diagnosis (Table 2).

Table 1. Cancer entities included in the incidence/mortality and survival databases, and analysed in the present work: site definitions follow the tenth revision of the International Classification of Diseases (ICD-10) and the third revision of the International Classification of Diseases for Oncology (ICDO-3), respectively.

Cancer entity	**Incidence/ mortality analyses (ICD-10)**	**Survival analyses (ICDO-3)**	**Included in the final analyses**
Lip, oral cavity	C00-06		No
Lip		C00	
Tongue and lingual tonsil		C01-02	
Oral Cavity		C03-06	
Salivary Glands	C07-08	C07-08	Yes
Oropharynx	C09-10	C09-10	Yes
Nasopharynx	C11	C11	Yes
Hypopharynx	C12-13	C12-13	Yes
Oesophagus	C15	C15	Yes
Stomach	C16	C16	Yes
Colo-rectum	C18-20	C18-21	Yes
Anus	C21		No
Liver, primary	C22	C22	yes
Gallbladder and biliary tract	C23-24	C23-C24	yes
Pancreas	C25	C25	yes
Nasal cavities and sinuses		C30-31	No
Larynx	C32	C32	yes
Lung, bronchus and trachea	C33-34	C33-C34	yes
Pleura		C384	No
Bone and cartilages		C40-41	No
Soft tissue		C380,C47,C49	No
Melanoma of skin	C43	C44	yes
Breast	C50	C50	yes
Vagina and vulva		C51,C529,C578,C579	yes
Vulva	C51		
Vagina	C52		
Cervix uteri	C53	C53	yes
Corpus uteri	C54	C54	yes
Ovary	C56		yes
Ovary and uterine adnexa		C569,C570-C574, C577	
Penis	C60	C60, C63	yes
Prostate	C61	C61	yes
Testis	C62	C62	yes
Kidney	C64-65		yes
Kidney (including renal pelvis)		C64-C66,C68	
Bladder	C67	C67	yes
Melanoma of choroid		C693	yes
Brain and central nervous system	C70-72	C71-721, C751, C753	yes
Thyroid gland	C73	C73	yes

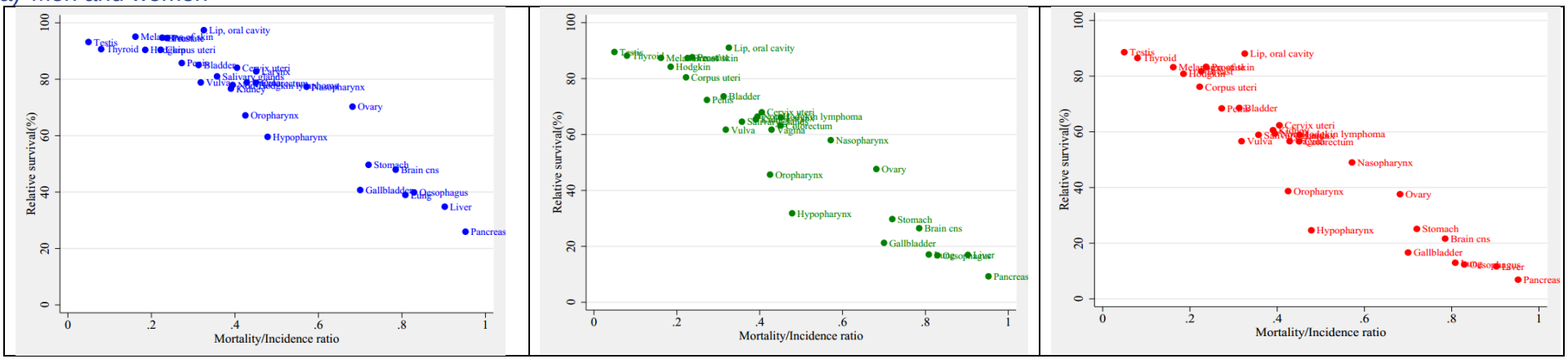
Table 2. Mortality/incidence (M/I) ratio in relation to 1-year, 3-year and 5-year relative survival (RS, %), by cancer entity and sex

	Men and women				Men				Women			
Cancer entity	**M/I**	**1-year RS (%)**	**3-year RS (%)**	**5-year RS (%)**	**M/I**	**1-year RS (%)**	**3-year RS (%)**	**5-year RS (%)**	**M/I**	**1-year RS (%)**	**3-year RS (%)**	**5-year RS (%)**
Pancreas	0.95	25.96	9.28	6.90	0.96	24.68	8.56	6.30	0.95	27.91	10.42	7.86
Liver	0.90	34.82	16.95	11.68	0.89	35.16	16.91	11.46	0.97	34.89	17.52	12.53
Oesophagus	0.83	39.89	16.78	12.37	0.85	39.66	16.28	11.86	0.82	41.76	19.47	15.47
Lung	0.81	38.99	17.09	12.99	0.85	37.63	15.87	11.97	0.75	42.84	20.67	15.87
Brain CNS‡	0.78	47.95	26.48	21.65	0.80	47.04	24.97	20.20	0.77	49.08	28.49	23.67
Stomach	0.72	49.66	29.76	25.14	0.72	48.89	28.40	23.74	0.73	51.10	32.27	27.68
Gallbladder	0.70	40.73	21.25	16.65	0.67	44.17	23.29	18.09	0.74	38.41	19.66	15.89
Ovary	0.68	70.28	47.66	37.60					0.68	70.28	47.66	37.60
Nasopharynx	0.57	77.33	57.99	49.01	0.55	76.32	56.18	47.17	0.50	80.20	63.12	54.73
Hypopharynx	0.48	59.58	31.83	24.64	0.47	59.31	31.26	23.93	0.40	63.36	35.73	28.90
Colorectum	0.45	78.74	63.20	56.57	0.47	78.66	62.84	55.79	0.44	79.05	63.85	57.66
Larynx	0.45	82.78	66.11	58.91	0.47	82.97	66.25	58.99	0.38	81.41	66.29	59.57
Oropharynx	0.43	67.17	45.66	38.71	0.48	65.59	43.43	36.41	0.30	72.54	55.03	48.60
Vagina	0.43	78.86	61.74	56.63					0.43	78.86	61.74	56.63
Cervix uteri	0.40	84.08	67.96	62.36					0.40	84.08	67.96	62.36
Kidney	0.39	76.67	65.40	60.60	0.41	76.33	64.66	59.78	0.37	77.53	67.00	62.35
Salivary glands	0.36	81.02	64.59	58.91	0.44	77.77	58.27	51.49	0.30	85.45	73.11	68.94
Vulva	0.32	78.86	61.74	56.63					0.32	78.86	61.74	56.63
Bladder	0.31	85.04	73.65	68.60	0.32	86.24	74.73	69.41	0.34	81.66	70.48	66.39
Penis	0.27	85.75	72.37	68.42	0.27	85.75	72.37	68.42				
Prostate	0.24	94.61	87.65	83.36	0.24	94.61	87.65	83.36				
Breast	0.23	94.73	87.36	81.75					0.23	94.76	87.39	81.78
Corpus uteri	0.22	90.45	80.46	76.19					0.22	90.45	80.46	76.19
Skin melanoma	0.16	95.08	87.40	83.22	0.19	93.87	84.18	79.16	0.13	96.14	90.13	86.58
Thyroid	0.08	90.66	88.20	86.52	0.16	87.75	83.78	81.17	0.05	91.62	89.65	88.26
Testis	0.05	93.19	89.52	88.60	0.05	93.19	89.52	88.60				

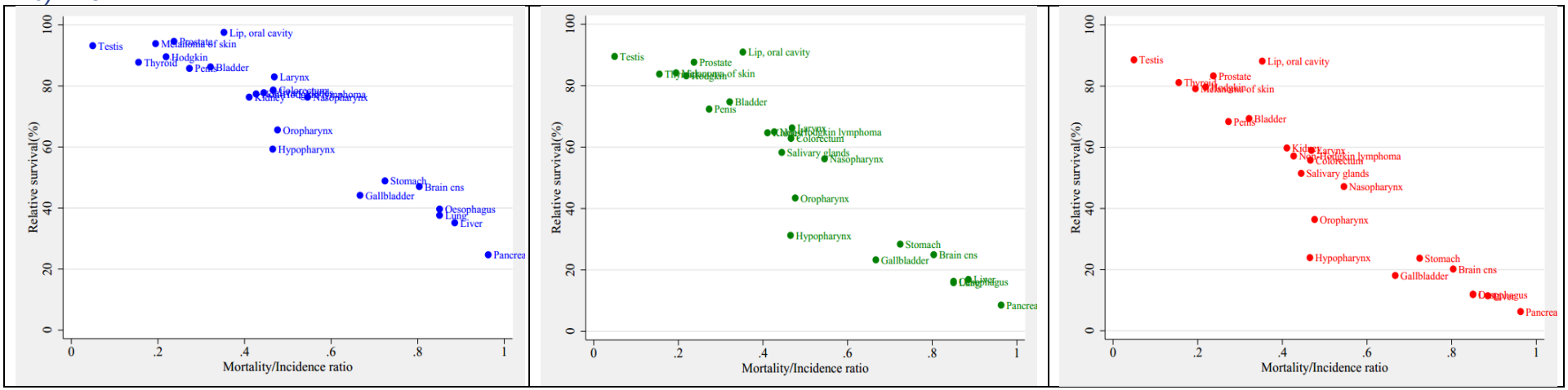
‡CNS, central nervous system;

Figure 5. Mortality/incidence ratio in relation to 1-year (blue), 3-year (green) and 5-year (red) relative survival, by cancer entity and sex.

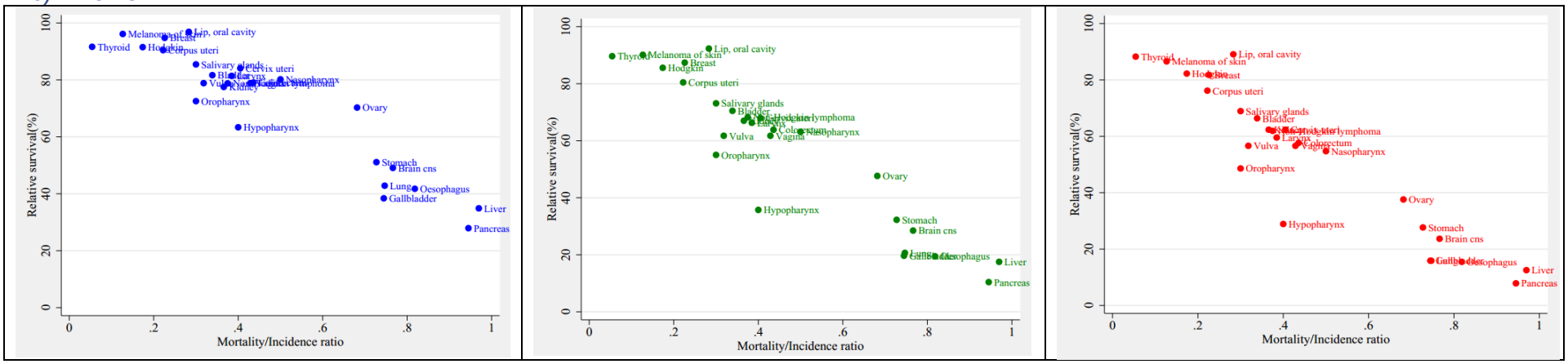
a) Men and women



b) Men



c) Women


Relative survival(%)
Mortality/Incidence ratio
Thyroid
Melanoma of skin
Lip, oral cavity
Breast
Hodgkin
Corpus uteri
Salivary glands
Cervix uteri
Bladder
Nasopharynx
Oropharynx
Ovary
Hypopharynx
Stomach
Brain cns
Lung
Oesophagus
Gallbladder
Liver
Pancreas
Vulva
Vagina
Colorectum
Larynx

4 Discussion

The work in WP8 task 1 comprises a systematic literature review, an analysis on population-based data on incidence, mortality, and survival for all solid cancer entities, as well as the building of a list of variables to be collected for possible studies on the PC care pathways and patients' outcomes, both at population and hospital level.

The systematic literature review and the analyses of the three indicators at the population level were usefull to reach a scientific definition of the term "neglected cancer".

Although the term did not have a uniform meaning in the literature, the various definitions share the same characteristics, thus consenting to define the "neglected cancers" as those cancers bearing a high health impact due to (modestly) high incidence and mortality and, low survival due to either tumour biological aggressiveness, late diagnosis, or lack of effective treatments.

In order to quantify the "modestly high" incidence and mortality rates, and the "low" survival, we carried out analyses of the three indicators at the population level.

We found that a restricted group of cancer entities had the following in common:

- M/I ratio equal to 0.7 or higher
- 1-year RS equal to 40% or lower
- 3-year and 5-year RS equal to 30% or lower

The group of cancer entities sharing these characteristics were:

- pancreatic cancer
- cancer of the liver
- cancers of the gallbladder and biliary tract
- stomach cancer
- cancer of the brain and CNS

Lung and oesophageal cancers were also included. However, age-standardised lung cancer incidence and mortality rates are higher than 20 per 10000, in contrast to all above cancers, whose incidence rates ranged from 5 to 19 per 100000, and mortality rates ranged from 3.5 to 18 per 100000. Additionally, improvements in clinical research leading to better understanding of molecular and immune mechanisms and development of new effective drugs for specific lung cancer subtypes occurred in the last few years [Herbst et al, 2018]. Since, this innovation regards a relatively small part of the whole lung cancer incidence, it may became evident in population-based statistics over the next years. Furthermore, screening in heavy smokers through spiral computed tomography may positively impact on lung cancer mortality. However,

primary prevention remains the most effective action through promotion of smoking avoidance or cessations expecially in the young population. For this reason, lung cancer falls out of the neglected cancers category.

To our knowledge, this is the first attempt to provide a scientific definition of the term “neglected cancer”, even if the exercise was limited to solid cancers.

One of the main concepts included in the “neglected cancers” definition is that these tumours are not rare tumours [RARECARENet, 2012]. For this reason, we excluded oeasopahageal cancers from the list. Additionally, as almost all haematological diseases are included in the rare cancers group, their omission did not bias the results of the population-based analysis we did, in support of the systematic literature review. Exceptions were Non-Hodgkin lymphomas and chronic lymphocytic leukaemias, which were not included in the analyses for compatibility problems related to ICD-O topography and morphology definitions adopted in the ENCR-JRC and EUROCARE databases, respectively.

The sytematic literature review involved, in the end, only the Scopus database. This should not be seen as a limit, as only 63% (3961 out of 6305) of the articles included in PubMed were initially extracted using the same search string to that applied in Scopus.

4.1 Conclusions

In conclusion, we propose the following definition: Neglected cancers are tumours with a high health impact in terms of incidence, mortality and survival. They are non rare cancers with

- incidence and mortality rate <20 per 100000 but high (≥0.7) M/I ratio
- low survival (RS ≤40% at 1 year, ≤30% at 3 or 5 years after diagnosis)

Mainly gastrointestinal tumours, brain and CNS tumours, and PC fall under the above definition. Of these, PC is the important and most representative, due to the highest M/I ratio and the lowest survival at 1, 3 and 5 years after diagnosis.

PC and the other neglected cancers represent an emerging public-health problem: improvements in prevention, detection, and treatment are urgently required, with the final aim to improve the poor prognosis that characterises them all.

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Sant M, Allemani C, Capocaccia R, Hakulinen T, Aareleid T, Coebergh JW, et al. Stage at diagnosis is a key explanation of the differences in breast cancer survival across Europe. Int J Cancer 2003;106:416-422.

Annex 1

List of articles identified through the Scopus database searching together with the corresponding assigned category

No.	Paper	Category
1	Ruiz-Cerda L, Asín-Prieto E, Parra-Guillen ZP, Troconiz IF. The long neglected player: Modeling tumor uptake to guide optimal dosing. Clin Cancer Res. 2018; 24: 3236-714.	Ignored by patients or physicians
2	Thavaneswaran S, Sebastian L, Ballinger M, Best M, Hess D, Lee CK, Sjoquist KM, Hague WE, Butow PN, Simes RJ, Thomas D. Cancer Molecular Screening and Therapeutics (MoST): a framework for multiple, parallel signal-seeking studies of targeted therapies for rar-,le and neglected cancers. Med J Aust. 2018; 209: 354-443.	high health impact
3	Bridges JFP, Janssen EM, Ferris A, Dy SM. Project Transform: engaging patient advocates to share their perspectives on improving research, treatment and policy. Curr Med Res Opin. 2018; 34: 1755-385.	aggressive or (locally) advanced
4	Kibbi N, Ortiz V, Perkins SH, Baldassarri RJ, Imaeda S, Holleck JL. Neglected basal cell carcinoma presenting with diffuse skeletal metastases. JAAD Case Rep. 2018; 4: 678-208.	rare
5	Huff C. A Neglected and Deadly Cancer. Manag Care. 2018; 27: 29.	aggressive or (locally) advanced
6	Alwahbi OA, Abduljabbar AS, Anwer LA. Cancer in an unexpected site post pouch surgery for familial adenomatous polyposis (FAP). Int J Surg Case Rep. 2018; 42: 266-321.	untreated or diagnosed/treated late
7	Beesetti S, Surabhi RP, Rayala SK, Venkatraman G. Mechanics of PAK1—A new molecular player in the arena of skin cancer. J Cell Physiol. 2018; 234: 969-719.	Ignored by patients or physicians
8	Ehteshami Bejnordi B, Lin J, Glass B, Mullooly M, Gierach GL, Sherman ME, Karssemeijer N, Van Der Laak J, Beck AH. Deep learning-based assessment of tumor-associated stroma for diagnosing breast cancer in histopathology images. IEEE Comput Soc Conf Comput Vis Pattern Recogn. 2017; : 929-367.	Ignored by patients or physicians
9	Weberpals JI, Lo B, Duciaume MM, Spaans JN, Clancy AA, Dimitroulakos J, Goss GD, Sekhon HS. Vulvar Squamous Cell Carcinoma (VSCC) as two diseases: HPV status identifies distinct mutational profiles including oncogenic fibroblast growth factor receptor 3. Clin Cancer Res. 2017; 23: 4501-447.	high health impact
10	Filho FB, Alves AO. Neglected tumor in a female with albinism. Pan Afr Med J. 2017; 28.	untreated or diagnosed/treated late
11	Pavan C, Bassetto F, Vindigni V. Psychological Aspects of a Patient with Neglected Skin Tumor of the Scalp. Plast Reconstr Surg, Glob Open. 2017; 5.	aggressive or (locally) advanced
12	Misiakos EP, Damaskou V, Koumarianou A, Gouloumi A-R, Patapis P, Zavras N, Machairas A. A giant squamous cell carcinoma of the skin of the thoracic wall: A case report and review of the literature. J Med Case Rep. 2017; 11.	untreated or diagnosed/treated late
13	Huber RM, Schmidberger H. Small cell lung cancer – a neglected disease. Onkologe. 2017; 23: 330-452.	aggressive or (locally) advanced
14	Mekonnen D, Derbie A, Biadglegne F, Adem Y, Zenebe Y, Mekonnen H, Gebeyaw A, Shumet A, Bereded F, Hailu D, Feleke BE, Mihret A, Sack U.	aggressive or (locally) advanced

	Knowledge and practice on magnitude, diagnosis, treatment and prevention strategies of Hepatocellular Carcinoma in Ethiopia: A Systematic review. Ethiop J Health Dev. 2017; 31: 44-385.	
15	Takai IU, Umar UA, Nggada HA, Bukar M, Audu BM. Bilateral synchronous benign ovarian neoplasm: A rare occurrence. S Afr J Obs Gyn. 2017; 23: 31-752.	untreated or diagnosed/treated late
16	Clancy AA, Spaans JN, Weberpals JI. The forgotten woman's cancer: Vulvar squamous cell carcinoma (VSCC) and a targeted approach to therapy. Ann Oncol. 2016; 27: 1696-22.	rare
17	Islam S, Shah J, Harnarayan P, Naraynsingh V. The largest and neglected giant phyllodes tumor of the breast—A case report and literature review. Int J Surg Case Rep. 2016; 26: 96-36.	rare
18	Collier NJ, Ali FR, Lear JT. The safety and efficacy of sonidegib for the treatment of locally advanced basal cell carcinoma. Expert Rev Anticancer Ther. 2016; 16: 1011.	untreated or diagnosed/treated late
19	Malec K, Brzewski P, Cenda P, Kuchta K, Gasiński M, Wojas-Pelc A, Modrzejewski M. Extensive, neglected basal cell carcinoma of the half of the face-surgical treatment and reconstruction with an anterolateral microvascular thigh flap. Postepy Dermatol Alergol. 2016; 33: 235-265.	untreated or diagnosed/treated late
20	Wani A, Raswan U, Malik N, Ramzan A, Lone I. Squamous cell carcinoma arising from neglected meningocele. Surg Neurol Intl. 2016; 7: S1147-161.	Ignored by patients or physicians
21	Swain SK, Sahu MC, Mishra S. An ulcerated giant pleomorphic adenoma of the parotid gland – A case report. Egypt J Ear Nose Throat Allied. 2016; 17: 111-31.	untreated or diagnosed/treated late
22	Eichelmann K, Garcia-Melendez ME, Tomás Vázquez-Martínez O, Ocampo-Candiani J. Neglected skin carcinomas: What should not be. J Eur Acad Dermatol Venereol. 2016; 30: 367-515.	aggressive or (locally) advanced
23	Żyluk A, Janowski P. Metastasis of renal cancer to the wrist and hand: a case report. Pomeranian J Life Sci. 2016; 62: 56.	untreated or diagnosed/treated late
24	Sarkar S, Kunal P, Kishore B, Ghosh K. Neglected basal cell carcinoma on scalp. Indian J Dermatol. 2016; 61: 85-45.	untreated or diagnosed/treated late
25	Vollbrecht C, Werner R, Walter RFH, Christoph DC, Heukamp LC, Peifer M, Hirsch B, Burbat L, Mairinger T, Schmid KW, Wohlschlaeger J, Mairinger FD. Mutational analysis of pulmonary tumours with neuroendocrine features using targeted massive parallel sequencing: A comparison of a neglected tumour group. Br J Cancer. 2015; 113: 1704-109.	high health impact
26	Rouleau C, Gianolio DA, Smale R, Roth SD, Krumbholz R, Harper J, Munroe KJ, Green TL, Horten BC, Schmid SM, Teicher BA. Anti-endosialin antibody-drug conjugate: Potential in sarcoma and other malignancies. Mol Cancer Ther. 2015; 14: 2081-1682.	rare
27	Ricci F, Paradisi A, Fossati B, Mancini M, Curatolo P, Guerriero C, Capizzi R. Giant neglected squamous cell carcinoma of the skin. Dermatol Ther. 2015; 28: 230-425.	untreated or diagnosed/treated late
28	Amici J-M, Beylot-Barry M. Locally advanced basal-cell carcinoma: Combined alternative treatments beyond surgery. Ann Chir Plast Esthet. 2015; 60: 321-897.	untreated or diagnosed/treated late
29	Saini R, Sharma N, Pandey K, Puri KJPS. Multiple skin cancers in a single patient: Multiple pigmented Bowen's disease, giant	untreated or diagnosed/treated late

	basal cell carcinoma, squamous cell carcinoma. J Cancer Res Ther. 2015; 11: 669-755.	
30	Siddiqui YS, Sherwani MKA, Khan AQ, Zahid M, Abbas M, Asif N. Neglected orthopedic oncology-Causes, epidemiology and challenges for management in developing countries. Indian J Cancer. 2015; 52: 325-121.	untreated or diagnosed/treated late
31	Bourke AG, McCreanor M, Yeo A, Weber D, Bartlett A, Backhouse A. Malignant phyllodes tumour presenting as a massive fungating breast mass and silent thrombo-embolism. Int J Surg Case Rep. 2015; 9: 78-1755.	untreated or diagnosed/treated late
32	Andersen RM, Lei U. A massive neglected giant basal cell carcinoma in a schizophrenic patient treated successfully with vismodegib. J Dermatol Treat. 2015; 26: 575-429.	untreated or diagnosed/treated late
33	Spyiounis PK, Karmiris NI. Lumbar BCC removal and reconstruction with a perforator plus flap. Eur J Plast Surg. 2015; 38: 503-246.	untreated or diagnosed/treated late
34	Bakardzhiev I, Chokoeva AA, Maximov GK, Wollina U, Lotti T, Gianfaldoni S, Tchernev G. Neglected giant spinocellular carcinoma of the lower lip. J Biol Regul Homeostatic Agents. 2015; 29: 865-679.	untreated or diagnosed/treated late
35	Block LM, Jee YM, Baskaya MK, Bentz ML, Poore SO. Denying the obvious: Four extreme cases of neglected tumors. Plast Reconstr Surg, Glob Open. 2015; 3.	untreated or diagnosed/treated late
36	Bartley GB, Albert DM. Neglected Basal Cell Carcinoma. Ophthalmology. 2015; 122: 1916-655.	untreated or diagnosed/treated late
37	Protopapas AD, Egri G. Extended upper sternectomy with curative intent for neglected papillary thyroid carcinoma in a fit 65-year-old man. J BUON. 2015; 20: 665-417.	untreated or diagnosed/treated late
38	Siddiqa A, Zainab M, Qadri I, Bhatti MF, Parish JL. Prevalence and genotyping of high risk human papillomavirus in cervical cancer samples from Punjab, Pakistan. Viruses. 2014; 6: 2762-325.	Ignored by patients or physicians
39	Nolan MT, Lowenthal RM, Venn A, Marwick TH. Chemotherapy-related cardiomyopathy: Aa neglected aspect of cancer survivorship. Intern Med J. 2014; 44: 939-348.	rare
40	Jargin SV. Chernobyl-related cancer and precancerous lesions: Incidence increase VS. late diagnostics. Dose-Resp. 2014; 12: 404.	untreated or diagnosed/treated late
41	Wiznia LE, Shanley KM, Federman DG. Advanced, neglected basal cell carcinoma. South Med J. 2014; 107: 242-81.	high health impact
42	Kulkarni P, Saxena U. Head and neck cancers, the neglected malignancies: Present and future treatment strategies. Expert Opin Ther Targets. 2014; 18: 351-322.	rare
43	Komatsu H, Yagasaki K. Are we ready for personalized cancer risk management? The view from breast-care providers. Int J Nurs Pract. 2014; 20: 39-75.	Ignored by patients or physicians
44	Louati D, Trigui K, Abid D, Kammoun S, Dermech M, Chaabane K, Amouri H. Bilateral atrophic squirrhus of breast in neglected breast cancer: Case report. Pan Afr Med J. 2014; 19.	aggressive or (locally) advanced
45	Patriarca C, Comperat E, Bollito E, Ussia A, Scola G, Cavallero A, Ferrari L, Giunta P, Conti G.	Ignored by patients or physicians

	Whorled urothelial cell carcinoma: A neglected variant. Int J Surg Pathol. 2014; 22: 408.	
46	Elouarradi H, Bencherif MZ. Conjunctival squamous cell carcinoma neglected a case report. Pan Afr Med J. 2014; 17.	untreated or diagnosed/treated late
47	Hudzik B, Polonski L. Neglected conditions: Cardiac tumours. CMAJ. 2014; 186: 452-29.	Ignored by patients or physicians
48	Kunath F, Krause SF, Wullich B, Goebell PJ, Engehausen DG, Burger M, Meerpohl JJ, Keck B. Bladder cancer - The neglected tumor: A descriptive analysis of publications referenced in MEDLINE and data from the register clinicaltrials.gov. BMC Urol. 2013; 13.	high health impact
49	Sira M, Malhotra R. Reconstruction of orbital exenteration defects by primary closure using cheek advancement. Br J Ophthalmol. 2013; 97: 201-145.	untreated or diagnosed/treated late
50	Har-Shai Y, Gil T, Mettanes I, Gal-Or N, Amir A. Interposition fascia lata sheet free graft and a composite V-Y advancement flap to correct functional incompetence of the oral sphincter. Eur J Plast Surg. 2013; 36: 261-687.	untreated or diagnosed/treated late
51	Karaaslan O, Sönmez E, Silistreli OK. An epidemiologic aspect on the neglected giant head and neck cancers. Turk Plast Rekonstr Estetik Cerrahi Derg. 2013; 21: 17-12.	untreated or diagnosed/treated late
52	Kumar A, Goel A, Sankhwar SN. Auto-Penectomy: A Devastating Complication of Advanced, Neglected Penile Carcinoma: Autopenectomy due to penile carcinoma. Indian J Surg Oncol. 2013; 4: 322.	untreated or diagnosed/treated late
53	Jargin SV. On the RET rearrangements in chernobyl-related thyroid cancer. J Thyroid Res. 2012; 2012.	untreated or diagnosed/treated late
54	Zehou O, Valeyrie-Allanore L, Ortonne N, Chazelas K, Hivelin M, Marchac A, Chosidow O, Wolkenstein P. Neglected skin tumors. Three cases. Ann Dermatol Venereol. 2012; 139: 194-870.	untreated or diagnosed/treated late
55	Fox CM, Rozen WM, Mirkazemi M, Ramakrishnan A, Baillieu C, Leong J. Microvascular reconstruction for neglected facial tumors in the third world: Bringing humanitarian aid home. Plast Reconstr Surg. 2012; 130: 214e-1097.	Ignored by patients or physicians
56	Svecova D, Havrankova M, Weismanova E, Babal P. Anogenital squamous cell carcinoma in neglected patient. Bratislava Med J. 2012; 113: 246-111.	untreated or diagnosed/treated late
57	Romanchishen AF, Bagaturiia GO, Kim II. Results of palliative operations in patients with "neglected" thyroid cancer. Vestn Khir Im I I Grek. 2012; 171: 71-227.	aggressive or (locally) advanced
58	Bible KC, Smallridge RC, Morris JC, Molina JR, Suman VJ, Copland JA, Rubin J, Menefee ME, Sideras K, Maples WJ, McIver B, Fatourechi V, Hay I, Foote RL, Garces YI, Kasperbauer JL, Thompson GB, Grant CS, Richards ML, Sebo T, Lloyd R, Eberhardt NL, Reddi HV, Casler JD, Karlin NJ, Westphal SA, Richardson RL, Buckner JC, Erlichman C. Development of a multidisciplinary, multicampus subspecialty practice in endocrine cancers. Am J Managed Care. 2012; 18: e162.	rare
59	Ginsburg OM, Love RR. Breast cancer: A neglected disease for the majority of affected women worldwide. Breast J. 2011; 17: 289.	high health impact
60	Bo B, Qun Y, Zheming P, Haitao X, Tianyi L. Reconstruction scalp defects after malignant tumor resection with anterolateral thigh	untreated or diagnosed/treated late

	flaps. J Craniofac Surg. 2011; 22: 2208-681.	
61	Jargin SV. Validity of thyroid cancer incidence data following the chernobyl accident. Health Phys. 2011; 101: 754-404.	untreated or diagnosed/treated late
62	Gregoire C, Adler D, Madey S, Bell RB. Basosquamous carcinoma involving the anterior skull base: A neglected tumor treated using intraoperative navigation as a guide to achieve safe resection margins. J Oral Maxillofac Surg. 2011; 69: 230-699.	untreated or diagnosed/treated late
63	Akhtar M, Akulwar V, Gandhi D, Chandak K. Is locally advanced breast cancer a neglected disease. Indian J Cancer. 2011; 48: 403-266.	untreated or diagnosed/treated late
64	Pagliarello C, Paradisi A. The perils of a defective medical communication: Fatal neglected squamous cell carcinoma arising in perineal hidradenitis suppurativa. Case Rep Dermatol. 2011; 3: 5-5061.	untreated or diagnosed/treated late
65	Otto F. Male breast cancer - Neglected tumour. Eur J Cancer. 2011; 47: S340.	rare
66	Baltogiannis D, Zotos K, Tsambalas S, Giannakis D, Sofikitis N. Penis auto-amputation and chasm of the lower abdominal wall due to advanced penile carcinoma: A case report. J Med Case Rep. 2011; 5.	untreated or diagnosed/treated late
67	Kloss B, Lapoint J, Dougher K. Auricular squamous cell carcinoma. Int J Emer Med. 2011; 4.	untreated or diagnosed/treated late
68	Craiglow BG, King BA. Neglected squamous cell carcinoma hiding under a toupee. Arch Dermatol. 2011; 147: 1338-460.	untreated or diagnosed/treated late
69	Dolbeault S, Flahault C, Baffie A, Fromantin I. Psychological profile of patients with neglected malignant wounds: A qualitative exploratory study. J Wound Care. 2010; 19: 513-46.	untreated or diagnosed/treated late
70	Jargin S. Chernobyl-related cancer: Re-evaluation needed. Turk Patoloji Derg. 2010; 26: 177-754.	untreated or diagnosed/treated late
71	Pancreatic cancer: A neglected killer? Lancet Oncol. 2010; 11: 1107-688.	high health impact
72	Gonzalez-Angulo AM, Hortobagyi GN. Inflammatory and locally advanced breast cancer. Mgmt of Breast Dis. 2010; : 391-41.	untreated or diagnosed/treated late
73	Dolbeault S, Flahault C, Fromantin I. What are the psychological characteristics of patients presenting neglected tumors? Results of an exploratory qualitative study. Psycho-Oncol. 2010; 4: 46-1297.	untreated or diagnosed/treated late
74	El Mostarchid B, Akhaddar A, Boucetta M. Giant skull and brain metastasis from a neglected thyroid papillary carcinoma. Can J Neurol Sci. 2010; 37: 515.	untreated or diagnosed/treated late
75	Koçoğlu H, Alan C. Squamous cell carcinoma caused by neglected giant bladder diverticulum stone. Cent Eur J Urol. 2010; 63: 200-1144.	untreated or diagnosed/treated late
76	Pinheiro PS, Sherman RL, Trapido EJ, Fleming LE, Huang Y, Gomez-Marin O, Lee D. Cancer incidence in first generation U.S. Hispanics: Cubans, Mexicans, Puerto Ricans, and New Latinos. Cancer Epidemiol Biomarkers Prev. 2009; 18: 2162-55.	aggressive or (locally) advanced

77	Dunn M, Morgan MB, Beer TW. Perineural invasion: Identification, significance, and a standardized definition. Dermatol Surg. 2009; 35: 214-293.	untreated or diagnosed/treated late
78	Bartoces MG, Severson RK, Rusin BA, Schwartz KL, Ruterbusch JJ, Neale AV. Quality of life and self-esteem of long-term survivors of invasive and noninvasive cervical cancer. J Women's Health. 2009; 18: 655-90.	Ignored by patients or physicians
79	Tseng WW, Doyle JA, Maguiness S, Horvai AE, Kashani-Sabet M, Leong SPL. Giant cutaneous melanomas: Evidence for primary tumour induced dormancy in metastatic sites? BMJ Case Rep. 2009; .	untreated or diagnosed/treated late
80	Monnier L, Even C, Cottu PH, Kirova YM. Locally advanced (neglected) breast cancer: The reality? Relevance of two cases and reflection how to optimise the multidisciplinary approach. Cancer Radiother. 2009; 13: 333-277.	aggressive or (locally) advanced
81	Thomas MB. CanLiv: Shining a light on cancer's neglected "orphans". Gastrointest Cancer Res. 2009; 3: 131-41.	rare
82	Ozgediz D, Smith EB, Zheng J, Otero J, Tabatabai ZL, Corvera CU. Basal cell carcinoma does metastasize. Dermatol Online J. 2008; 14.	untreated or diagnosed/treated late
83	Cao X, Maloney KB, Brusic V. Data mining of cancer vaccine trials: A bird's-eye view. Immunome Res. 2008; 4.	rare
84	Abed R, Younge D. Surgical management of very large musculoskeletal sarcomas. Ann New York Acad Sci. 2008; 1138: 77-1383.	untreated or diagnosed/treated late
85	Shah HA, Lee HBH, Nunery WR. Neglected basal cell carcinoma in a schizophrenic patient. Ophthalmic Plast Reconstr Surg. 2008; 24: 495-57.	Ignored by patients or physicians
86	Herrmann KA, Helmberger T, Bruns C, Reiser MF, Zech CJ. Solid pseudopapillary pancreas tumors - Often neglected. Radiologe. 2008; 48: 764-96.	rare
87	Papadopoulos O, Karypidis D, Chrisostomidis C, Konofaos P, Champsas G, Kazdaglis G. Use of the hemifrontal flap in reconstruction of the forehead. Br J Oral Maxillofac Surg. 2008; 46: 537-1021.	untreated or diagnosed/treated late
88	Watterson A, Gorman T, O'Neill R. Occupational cancer prevention in Scotland: A missing public health priority. Eur J Oncol. 2008; 13: 161-479.	Ignored by patients or physicians
89	Papadopoulos O, Konofaos P, Chrisostomidis C, Champsas G, Frangoulis M, Karakitsos P, Stratigos A, Gogas H, Katsambas A, Kostakis A. Nonmelanoma skin tumors involving the craniofacial region: Our 22 years of experience. J Craniofac Surg. 2007; 18: 1021-279.	aggressive or (locally) advanced
90	Hatano T, Suzuki K, Nagashima A, Yamaguchi Y, Sanuki K, Kishimoto K, Sunagawa Y, Harada J, Egawa S. Radiation therapy for bone metastasis from renal cell carcinoma with emphasis on local control. Acta Urol Jpn. 2007; 53: 687-859.	Ignored by patients or physicians
91	Papadopoulos O, Frantzoglou M, Chrisostomidis C, Konofaos P, Frangoulis M, Barlas G. Neglected squamous cell carcinoma of the frontal area: A clinical report. J Craniofac Surg. 2006; 17: 1015-537.	untreated or diagnosed/treated late
92	Iavazzo C, Efthimiou D, Valavanis C, Leontara J, Zarganis P, Vorgias G. Late diagnosis of a neglected cervical carcinoma in an elderly woman: A case report. Medgenmed Medscape Gen Med. 2006; 8.	untreated or diagnosed/treated late

93	Asilian A, Tamizifar B. Aggressive and neglected basal cell carcinoma. . 2005; 31: 1468-924.	untreated or diagnosed/treated late
94	Walling HW, Sniezek PJ, Friedrichs A, Christensen DR, Whitaker DC. Guiding sutures to promote optimal contraction of a large surgical defect prior to delayed grafting. Dermatol Surg. 2005; 31: 109-2057.	aggressive or (locally) advanced
95	Evangelou I, Koutsouflaniotis I, Skandalos I, Ditsias Th, Christodoulou A, Goutgidou S, Karamoschos K. Hartmann's procedure in colon surgery. Surg Chronicles. 2005; 10: 455-445.	aggressive or (locally) advanced
96	Yawn BP, Barrette BA, Wollan PC. Ovarian cancer: The neglected diagnosis. Mayo Clin Proc. 2004; 79: 1277-418.	untreated or diagnosed/treated late
97	Solum AM, Riffenburgh RH, Johnstone PAS. Survival of patients with untreated rectal cancer. J Surg Oncol. 2004; 87: 157-120.	aggressive or (locally) advanced
98	Chichevatov DA, Gorshenev AN, Sergeev IV. Prophylaxis and treatment of the incompetent stump of the primary bronchus and tracheobronchial anastomosis with using omentoplasty. Vestn Khir Im I I Grek. 2004; 163: 36-1696.	aggressive or (locally) advanced
99	Wax MK, Burkey BB, Bascom D, Rosenthal EL. The role of free tissue transfer in the reconstruction of massive neglected skin cancers of the head and neck. Arch Facial Plast Surg. 2003; 5: 479-4501.	untreated or diagnosed/treated late
100	Adriano E, Jagoe JM, Harrison T, Riffenburgh RH, Johnstone PAS. Survival of patients with untreated cervical carcinoma. Am J Clin Oncol Cancer Clin Trials. 2003; 26: 369-1184.	untreated or diagnosed/treated late
101	Rossi R, Campolmi P, Giomi B, Massi D, Cappugi P. Giant exophytic basal cell carcinoma treated with radiotherapy. J Eur Acad Dermatol Venereol. 2002; 16: 374-21.	untreated or diagnosed/treated late
102	Gardner ES, Goldberg LH. Neglected microcystic adnexal carcinoma: The second reported case in a black patient. Dermatol Surg. 2001; 27: 678-240.	untreated or diagnosed/treated late
103	Very rare cancers--a problem neglected. Lancet Oncol. 2001; 2: 189-197.	rare
104	Batteur B, Testelin S, Deramond H, Devauchelle B. Bilateral carotid paraganglioma. Rev Stomatol Chir Maxillofac. 2000; 101: 90-479.	untreated or diagnosed/treated late
105	Shehab Afzal Beg M, Sadiq M. Maltreated or neglected squamous cell carcinoma. J Pak Assoc Dermatol. 2000; 11: 44-2535.	untreated or diagnosed/treated late
106	Zhidiaeva NA. Medical and social aspects of causes of neglected lung cancer at the primary health care level. Probl Sotsialnoi Gig Zdravookhranenniiai Istor Med. 2000; : 44-46.	untreated or diagnosed/treated late
107	Sugarbaker PH. Successful management of microscopic residual disease in large bowel cancer. Cancer Chemother Pharmacol Suppl. 1999; 43: S15-246.	Ignored by patients or physicians
108	Tsai S-M, Wang T-N, Ko Y-C. Mortality for Certain Diseases in Areas with High Levels of Arsenic in Drinking Water. Arch Environ Health. 1999; 54: 186-136.	Ignored by patients or physicians
109	Maalej M, Frikha H, Ben Salem S, Daoud J, Bouaouina N, Ben Abdallah M, Ben Romdhane K. Breast cancer in Tunisia: Clinical and epidemiological study. Bull Cancer. 1999; 86: 302-485.	aggressive or (locally) advanced

110	Luykx-De Bakker SA, Verheul HMW, De Gruijl TD, Pinedo HM. Prolonged neoadjuvant treatment in locally advanced tumours: A novel concept based on biological considerations. Ann Oncol. 1999; 10: 155-2220.	Ignored by patients or physicians
111	Onwudiegwu U, Bako A, Oyewumi A. Cervical cancer - A neglected health tragedy. J Obstet Gynaecol. 1999; 19: 61-111.	untreated or diagnosed/treated late
112	Berking C, Konz B, Pfützner W, Heckmann M. Giant mutilating basal cell carcinoma of the trunk - A neglected tumor. Hautarzt. 1998; 49: 719-125.	Ignored by patients or physicians
113	Zubarev PN, Ignatovich IG, Sinenchenko GI. Procedures for the surgical treatment of cancer of the distal portions of the large intestine. Vestn Khir Im I I Grek. 1998; 157: 20-1108.	untreated or diagnosed/treated late
114	Gerlach KK, Marino C, Hoffman-Goetz L. Cancer coverage in women's magazines: What information are women receiving? J Cancer Educ. 1997; 12: 240-403.	Ignored by patients or physicians
115	Türler A, Mönig S-P, Raab M. Problems of diagnosis and therapy in malignant pleural mesothelioma. MED KLIN. 1997; 92: 101-161.	untreated or diagnosed/treated late
116	Tsumura H, Kodama T, Yokoyama T, Takesue Y, Murakami Y, Tatsumoto N, Akagi S, Matsuura Y. A resected case of total pancreatectomy with metachronous multiple metastasis to pancreas of renal cell carcinoma. Jpn J Gastroenterol Surg. 1997; 30: 2029-101.	aggressive or (locally) advanced
117	Grinev MV, Gromov MI, Masiianskaia TI, Pivovarova LP, Razumova NK, Tarelkina MN, Frolov GM, Tsibin IN, Shirokov DM. The role of adoptive immunotherapy in the combined treatment of neglected forms of colorectal cancer (a preliminary report). Vestn Khir Im I I Grek. 1995; 154: 50-207.	aggressive or (locally) advanced
118	Koch MO, Smith Jr JA. Local recurrence of squamous cell carcinoma of the penis. UROL CLIN NORTH AM. 1994; 21: 739-200.	untreated or diagnosed/treated late
119	Madjar S, Weissberg D. Neglected lung cancer. Lung Cancer. 1994; 11: 105-88.	untreated or diagnosed/treated late
120	Attia-Sobol J, Ferrière J-P, Curé H, Kwiatkowski F, Achard J-L, Verrelle P, Feillel V, Latour MD, Lafaye C, Deloche C, Dauplat J, Doly A, Rozan R, Chollet P. Treatment results, survival and prognostic factors in 109 inflammatory breast cancers: Univariate and multivariate analysis. Eur J Cancer. 1993; 29: 1081-177.	aggressive or (locally) advanced
121	Melato M, Bucconi S, Marus W, Spivach A, Perulli A, Mucelli RP. The schwannoma: An uncommon type of cystic lesion of the pancreas. ITAL J GASTROENTEROL. 1993; 25: 385-198.	Ignored by patients or physicians
122	De Rosa G, Boschi R, Boscaino A, Petrella G, Vetrani A, Palombini L, Pettinato G. Intraoperative cytology in breast cancer diagnosis: Comparison between cytologic and frozen section techniques. Diagn Cytopathol. 1993; 9: 623-1419.	Ignored by patients or physicians
123	Shutko AN, Vinokurov VL, Yurkova LE, Shatinina NN, Ekimova LP. Systemic radiotherapy in combined treatment of ovaries cancer. Med Radiol. 1992; 37: 26-2762.	aggressive or (locally) advanced
124	Prawer SE. Sun-related skin diseases. POSTGRAD MED. 1991; 89: 51-521.	Ignored by patients or physicians
125	Hallett Jr JW. Carotid body and cervical chemodectomas: Cure without permanent disability. Semin Vasc Surg. 1991; 4: 159.	aggressive or (locally) advanced

126	Gage AA. Cryosurgery of advanced tumors. Clin Dermatol. 1990; 8: 86-e8420.	Ignored by patients or physicians
127	Grekin RC, Schaler RE, Crumley RL. Cancer of the forehead and temple regions. DERMATOL CLIN. 1989; 7: 699-50.	untreated or diagnosed/treated late
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130	Klausner JM, Inbar M, Cutman M, Weiss G, Skornick Y, Chaichik S, Rozin RR. Nail-bed melanoma. J Surg Oncol. 1987; 34: 208.	aggressive or (locally) advanced
131	Urbanski SJ, From L, Abramowicz A, Joaquin A, Luk SC. Metamorphosis of dermal cylindroma Possible relation to malignant transformation: Case report of cutaneous cylindroma with direct intracranial invasion. J Am Acad Dermatol. 1985; 12: 188-2626.	aggressive or (locally) advanced
132	Gutman M, Klausner JM, Inbar M, Skornick Y, Baratz M, Rozin RR. Acral (volar—subungual) melanoma. Br J Surg. 1985; 72: 610-205.	aggressive or (locally) advanced
133	Calderoli H, Keiling R. Covering of substantial loss of substance in breast cancer with local complications. Apropos of 57 cases. Acta Chir Belg. 1985; 85: 1.	aggressive or (locally) advanced
134	Derbikova TI, Kolpakova TA, Zelinsky Yu G, Paderina TV. Detection of lung carcinoma in inpatients of tuberculosis dispensary. PROBL TUBERK. 1985; 63: 31-133.	Ignored by patients or physicians
135	Sidorov SD. Replacement of postoperative total defects of the mouth floor, chin and lower lip with Filatov's pedicle flaps. Vestn Khir Im I I Grek. 1979; 122: 121-638.	aggressive or (locally) advanced
136	Spasov GA. Causes accounting for late diagnosis of cancer of the rectum. SOV MED. 1978; 41: 120-503.	untreated or diagnosed/treated late
137	Strashinin AI, Rabinovich RM, Libson IL. Changes in the roentgenological picture of neglected cancer of the lungs in telegamma therapy with the use of uneven irradiation. MED RADIOL. 1978; 23: 13.	aggressive or (locally) advanced
138	Palangie A. Geriatric dermatology. CONCOURS MED. 1977; 99: 5061-723.	untreated or diagnosed/treated late
139	Baker JJ, Lokey JL, Price NA, Watkins WL, Winokur SH. Against Legalization of Laetrile. New Engl J Med. 1976; 295: 679.	untreated or diagnosed/treated late
140	MacDonald DM, Martin SJ. Acanthoma fissuratum: Spectacle frame acanthoma. ACTA DERM-VENEREOL. 1975; 55: 485-201.	Ignored by patients or physicians
141	Prochnow F, Tapolcsanyi L. The clinical importance of the circumscribed cancer of the breast (medullary carcinoma). MAGY ONKOL. 1973; 17: 77-665.	aggressive or (locally) advanced
142	Denck H, Schuster F, Szalay S. Surgical treatment of benign lung tumors (108 cases). WIEN MED WOCHENSCHR. 1973; 123: 770-31.	untreated or diagnosed/treated late

143	Goeringer CF. Hemangiomas of striated muscle. Am J Surg. 1948; 76: 58-39.	Ignored by patients or physicians

Annex 2

Age-standardised incidence and mortality rates (per 100000), together with percentage change in relative survival (absolute percentage points) from 1999 to 2007 for all solid cancer entities analysed.

	Men and women			Men		Women	
Cancer entity	**Incidence**	**Mortality**	**Change†**	**Incidence**	**Mortality**	**Incidence**	**Mortality**
Pancreas	18.8	17.9	1.0*	21.5	20.7	16.4	15.5
Liver	12.3	11.1	3.0*	19.2	17.0	6.6	6.4
Oesophagus	7.6	6.3	1.0*	12.7	10.8	3.3	2.7
Lung	68.8	55.6	na	96.9	82.4	46.6	34.8
Brain CNS‡	9.3	7.3	2.5*	11.2	9.0	7.7	5.9
Stomach	15.0	10.8	1.8	21.4	15.5	9.9	7.2
Gallbladder	5.0	3.5	3.0*	5.4	3.6	4.7	3.5
Ovary	15.7	10.7	na			15.7	10.7
Nasopharynx	0.7	0.4	2.9*	1.1	0.6	0.4	0.2
Hypopharynx	2.3	1.1	3.9*	4.3	2.0	0.5	0.2
Colorectum	71.3	32.1	5.0*	90.3	42.1	56.2	24.5
Larynx	5.1	2.3	0.4	9.6	4.5	1.3	0.5
Oropharynx	4.0	1.7	3.4*	6.3	3.0	2.0	0.6
Vagina	0.7	0.3	na			0.7	0.3
Cervix uteri	12.1	4.9	4.0*			12.1	4.9
Kidney	18.7	7.3	4.0*	26.3	10.8	12.3	4.5
Salivary glands	1.4	0.5		1.8	0.8	1.0	0.3
Vulva	4.4	1.4	na			4.4	1.4
Bladder	31	9.7	2.0*	55.4	17.8	12.1	4.1
Penis	2.2	0.6	1.2	2.2	0.6		
Prostate	159.5	37.8	8.0*	159.5	37.8		
Breast	145.2	32.8	2.0*			145.2	32.8
Corpus uteri	27.9	6.2	na			27.9	6.2
Skin melanoma	23.5	3.8	3.0*	25.7	5.0	22.1	2.8
Thyroid	11.3	0.9	6.0*	5.8	0.9	16.6	0.9
Testis	8.1	0.4	1.8	8.1	0.4		

†Absolute percentage point difference between survival for latest available and first time point, i.e. 1999 and 2007, except for breast cancer (1999 and 2004) and cancer of the liver (1999 and 2002); na, not available; *statistically significant ($p<0.05$) difference;
‡CNS, central nervous system;

Annex 3

Task Working Group

Country	Organisation	Contributors
Belgium	National Cancer Registry	Elizabeth Van Eycken
Croatia	National Cancer Registry	Mario Sekerija
Czech Republic	National Cancer Registry	Ladislav Dusek, Ondrej Majek, Jan Muzik
ECPC	European Cancer Patient Coalition	Francesco De Lorenzo, Antonella Cardone, Alex Filicevas, Max Schravendeel, Isabelle Manneh
ENCR-JRC	European Network of Cancer Registries .- Joint Research Centre	Manola Bettio
ECCO	European Cancer Care Organization	Richard Price, Pascal Blaes, Birgit Beger
Germany	German Scientific Society	Simone Wesselman, Christoph Kowalsky, Karen Budewig, Ellen Griesshammer
Greece	Cancer Registry of Crete	Aimilia Magkanaraki, Dimitris Mavrudis, Christos Lionis, Sofia Aggelaki, Dimitra Sifaki Pistolla, Eleni Mavrommati
Italy	Fondazione IRCSS Istituto Nazionale dei Tumori di Milano	Pamela Minicozzi; Milena Sant; Simone Bonfarnuzzo; Camilla Amati
Italy	National Institute of Public Health	Roberta De Angelis
Italy	National Association of Cancer Registries	Lucia Mangone
Lithuania	Ministry of Health	Marius Petrulonis
Malta	Ministry of Health	Miriam Dalmas, Sasha Reiff
The Netherlands	Netherlands Cancer Registry	Otto Visser, Lydia van der Geest
OECI	Organisation of European Cancer Institutes	Claudio Lombardo
Portugal	Northern Portugal Cancer Registry	Maria Jose Bento, Clara Castro
Portugal	Directorate-General of Health	Cristina Portugal
Portugal	National Program for Cancer Diseases	José Dinis
Portugal	Centre Portugal Cancer Registry	Joana Bastos
Portugal	Instituto Português de Oncologia de Coimbra Francisco Gentil	Luís Elvas
Poland	National Public Health Institute	Magdalena Bielska-Lasota, Dorota Dudek-Godeau
Serbia	National Institute of Public Health	Dragana Atanasijevic, Verica Jovanovic, Milena Vasic
Slovenia	National Public Health Institute	Vesna Zadnik, Tina Zagar
Slovakia	National Institute of Public Health	Silvia Pastorkeova, Tatiana Siposova, Bozena Smolkova
Spain	Catalan Institute of Oncology	Josep Maria Borras, Joan Lluis Prades