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REVIEW

# Representation of geriatric oncology in cancer care guidelines in Europe: a scoping review by the International Society of Geriatric Oncology (SIOG)

**I. Pinker[1*], C. Lafont[2,3], G. Liposits[4], R. Vidra[5,6], A. J. Cunquero-Tomás[7], E. Korobeinikova[8], N. R. Neuendorff[9], V. Slavova-Boneva[10], J. Baltussen[11], M. Chovanec[12], F. Coutinho[13,14], R. Dubianski[15], U. Janzic[16], C. Kenis[17,18], I. Kukec[19], Z. Küronya[20], K. Lehtomäki[21,22], C. M. Eochagain[23], E. Osterlund[24], P. Osterlund[21,22,25], M. Pattwell[26], K. Rejlekova[12], T. Sharma[27], N. M. L. Battisti[28] & S. Pilleron[1]**

[1]Ageing, Cancer, and Disparities Research Unit, Department of Precision Health, Luxembourg Institute of Health, Strassen, Luxembourg; [2]Equipe Clinical Epidemiology and Ageing (CEpiA), IMRB, INSERM U955, Université Paris Est Créteil (UPEC), Creteil; [3]AP-HP, Hôpital Henri-Mondor, Service de Santé Publique, Creteil, France; [4]Department of Oncology, Gødstrup Regional Hospital, Herning, Denmark; [5]Department of Medical Oncology, Regional Institute of Gastroenterology and Hepatology "Prof. Dr. Octavian Fodor", Cluj-Napoca; [6]UBBMed & The International Institute for the Advanced Studies of Psychotherapy and Applied Mental Health, Babes-Bolyai University, Cluj-Napoca, Romania; [7]Department of Medical Oncology, Consorcio Hospital General Universitario de Valencia, Valencia, Spain; [8]Oncology Institute, Lithuanian University of Health Sciences, Kaunas, Lithuania; [9]Department of Geriatrics, Marien Hospital Herne, University Hospital, Ruhr University Bochum, Herne, Germany; [10]Department of Pharmacy & Senior Adult Oncology Programme, The Royal Marsden NHS Foundation Trust Sutton, London, UK; [11]Leiden University Medical Center, Department of Medical Oncology, Leiden, The Netherlands; [12]2nd Department of Oncology, Faculty of Medicine, Comenius University, National Cancer Institute, Bratislava, Slovakia; [13]Medical Oncology Unit, Médio Ave Local Health Unit, Santo Tirso; [14]Geriatric Oncology Working Group of the Portuguese Society of Oncology, Coimbra, Portugal; [15]Department of Medical Oncology, West Pomeranian Oncology Center, Szczecin, Poland; [16]Department of Medical Oncology, University Clinic Golnik, Golnik, Slovenia; [17]Department of General Medical Oncology and Geriatric Medicine, University Hospitals Leuven, Leuven; [18]Department of Public Health and Primary Care, Academic Centre for Nursing and Midwifery, KU Leuven, Leuven, Belgium; [19]Department of Oncology, University Hospital Centre Zagreb, Zagreb, Croatia; [20]National Institute of Oncology, Department of Urogenital Tumours and Clinical Pharmacology, Budapest, Hungary; [21]Department of Oncology, Tays Cancer Centre, Tampere University Hospital, Wellbeing Services County of Pirkanmaa, Tampere; [22]Faculty of Medicine and Health Technology, Tampere University, Tampere, Finland; [23]Trinity St James Cancer Institute, St James Hospital, Dublin, Ireland; [24]Department of Immunology, Genetics and Pathology, Uppsala University, Uppsala; [25]Department of Oncology/Pathology, Comprehensive Cancer Center, Karolinska University Hospital and Karolinska Institutet, Stockholm, Sweden; [26]Department of Nutrition & Dietetics & Senior Adult Oncology Programme, The Royal Marsden NHS Foundation Trust Sutton, London; [27]University College London Medical School, London; [28]Department of Medicine, Breast Unit & Senior Adult Oncology Programme, The Royal Marsden NHS Foundation Trust Sutton, London, UK

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**Introduction:** Implementation of national cancer policy is frequently shaped by medical guidelines. These guidelines often lack detail addressing the intricate care needs of vulnerable groups such as older adults, hindering the potential impact of these policies.

**Objective:** To provide an overview of the representation of older adults in European cancer guidelines to identify areas for improvement.

**Methods:** A scoping review was conducted using the Arksey and O'Malley framework and Levac et al. extension. The search strategy was developed for grey literature (i.e. guidelines) for the five most prevalent primary malignancies (prostate, breast, colorectal, lung, and urinary bladder) in 29 countries (member states of the European Union, Switzerland, and the UK). Data were extracted by a national expert and at least one other reviewer.

**Results:** A total of 187 guideline reports from 31 jurisdictions were analysed, encompassing general cancer care and selected primary malignancies. The representation of older adults varied by cancer type and region. Dedicated guidelines for older adults were uncommon, with only a few jurisdictions, such as France and Spain, providing age-specific recommendations for certain malignancies. Although some national guidelines addressed older patients, this focus was inconsistent both across different cancers and within the guidelines of the same country.

**Conclusions:** There is limited representation of geriatric oncology across European cancer guidelines. To enhance representative guideline development, there is a call for greater consideration of older adults' unique needs. Suggestions include further guidance on the implementation of the comprehensive geriatric assessment and consequent treatment across neoadjuvant, adjuvant, and metastatic settings.

**Key words:** cancer, older adults, policy, guidelines, healthcare system

*Correspondence to: Dr India Pinker, Ageing, Cancer, and Disparities Research Unit, Department of Precision Health, Luxembourg Institute of Health, 1A-B, Rue Thomas Edison, 1445 Strassen, Luxembourg. Tel: +352 26 97 01

E-mail: india.pinker@lih.lu (I. Pinker).

@IndiaPinker

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## INTRODUCTION

National cancer policy is often shaped by national cancer plans, which play a crucial role in addressing a country's specific cancer burden. In Europe, a strong emphasis on cancer control is exemplified by Europe's Beating Cancer Plan.[1] However, despite advancements in cancer care strategies stemming from these plans and respective national guidelines, challenges remain in implementing these among the diverse population of patients with cancer. Guidelines might inadequately represent the complex care management needs of underrepresented groups, such as older adults, when establishing care standards.[2] This inadequate representation stems from a reliance on evidence generated in notably 'less complex', healthier, and younger patient populations,[3] which compromises the external validity of existing guidelines for older patients routinely seen in practice.

Highlighting care priorities in geriatric oncology, such as assessment-guided treatments and age-friendly models of care and guidelines across Europe, is crucial for guiding physicians and multidisciplinary teams involved in the care of older adults with cancer.[4] Older adults with cancer are a diverse and complex group, often burdened by comorbidities, nutritional deficits, functional impairments, and polypharmacy. As populations live longer and ageing remains a significant risk factor for cancer, implementing appropriate guidelines and care is essential for this growing demographic.[5]

Additionally, both a healthcare professional's (HCP) working environment and core values influence their underlying perceptions of patient characteristics.[6] These perceptions are often reinforced by HCPs' practice settings, which can be seen as a reflection of the best practice standards established by their healthcare governing bodies based on a cumulative evidence base.[7,8] Consequently, the priorities established by governing bodies influence the approach of HCPs when making decisions about cancer management.[9] Therefore, it is important to ascertain whether understudied populations, such as older adults with cancer, are adequately accounted for in the context of the significant advancements in guidelines and research.

We hypothesise that geriatric oncology is underrepresented in current cancer care guidelines. Given the unique and complex care needs of older adults, it is essential to systematically evaluate this representation to assess the current status of geriatric oncology in European cancer care.

The objective of this scoping review is to provide a comprehensive overview of the representation of older adults in cancer care guidelines and recommendations across Europe, with the goal of identifying areas for improvement.

## MATERIALS AND METHODS

Given the breadth of disciplines and materials required, and the exploratory nature of the research question, a scoping review approach was deemed appropriate. This scoping review was conducted following the Arksey and O'Malley framework with the Levac et al. extension.[10,11] The reporting of the review is in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines for scoping reviews.[12] The protocol was registered with the Open Science Framework (OSF) at https://doi.org/10.17605/OSF.IO/ZPXVB

A search of MEDLINE, the Cochrane Database of Systematic Reviews, and OSF was conducted, as well as consulting members of the International Society of Geriatric Oncology (SIOG). No current or underway systematic reviews or scoping reviews on the topic were identified.

### *Search*

**Context.** This scoping review covers the 27 member states of the European Union (EU; Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Latvia, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden) as well as the UK and Switzerland (Figure 1). Each nation within the UK (i.e. England, Northern Ireland, Scotland, and Wales) also produced nation-specific cancer care guidelines. Therefore, for the specific primary malignancies, we considered these four nations separately.

**Types of sources.** The search strategy aimed to locate national and international cancer care guidelines for each country of the EU. In the absence of specific national guidelines, international guidelines referenced by these countries were included.

For primary Google screening before expert review, only the first 100 results were considered for each national search iteration. The sources searched included the National Cancer Society websites, public health websites, and specific guideline databases affiliated with medical councils.

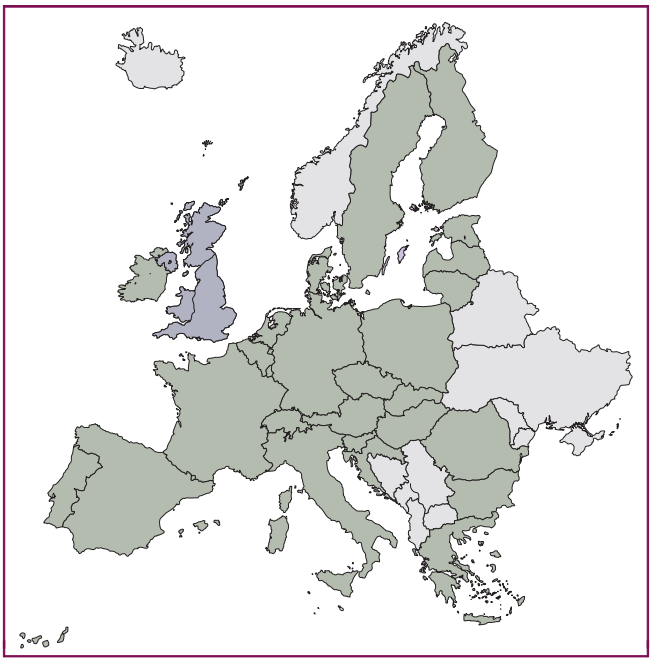

**Figure 1. Map indicating European countries (European Union, Switzerland, and the UK) included in this scoping review (image generated in BioRender).**

Some guidelines were preliminarily identified through relevant original research papers found during this search.[13-25] Relevant papers were screened within the first 100 results per country based on their titles and abstracts including keywords such as cancer, management, treatment, guidelines, and relevant country name. Additional sources such as websites or organisations, raised by the consulted experts from the review team, were also considered.

All final sources were compiled into a master source document (Supplementary Material, available at https://doi.org/10.1016/j.esmoop.2025.105052). These sources were confirmed by expert members of the SIOG review team, who ensured that the guidelines included were accurate and reflective of current practice. The review team consisted of oncologists and HCPs knowledgeable about the cancer care guidelines used in their respective countries.

### *Eligibility criteria*

The eligibility criteria based on the patient, intervention or exposure of interest, comparison, outcome (PICO) framework are shown in Table 1.[26]

**Source of evidence selection.** The identification and inclusion of guidelines followed a multistage process (Table 2):

- *Screening by references*: The reference list of original research papers on the use or development of national guidelines that were identified during the search for grey literature was screened by the reviewers to identify sources for the national guidelines to ensure comprehensive coverage of relevant materials. These sources were compiled by IP and TS for verification by experts on the review team.
- *Screening by specific search*: Titles and documents of relevant cancer guidelines published by medical bodies or societies for specific nations were screened independently by experts within the review team.
- *Screening by expert-guided search*: Additional sources highlighted by the experts on the review team were compiled by IP and the relevant experts. These were considered in data extraction for comprehensive coverage of the materials.

If a guideline was not accessible, efforts were made to obtain it through relevant contacts or written requests. If

**Table 1. Eligibility criteria based on the PICO framework**

| Element | Inclusion criteria | Exclusion criteria |
|---|---|---|
| **P**articipants | 29 countries' 32 jurisdictions (European Union, Switzerland, and nations of the UK) official cancer care guidelines, including reference to international guidelines in the absence of specific guidance (e.g. ESMO guidelines). | Any other nations not specified on the inclusion list. Guidelines that are not officially endorsed or recognised as national guidelines. Unreferenced international guideline sources. |
| **I**ntervention or exposure of interest | Five most prevalent primary malignancies in Europe: prostate, breast, colorectum, lung, and urinary bladder. Only verified, up-to-date, and recognised national guidelines for these tumour types, including the international guidelines referenced in the absence of national guidelines. Guidelines specific to treating older adults with cancer will also be considered. | Generic cancer research, generic models of care, care or treatment guidelines not specific to care for specified cancers. |
| **C**omparator | None | None |
| **O**utcome | Specific interest is taken in the representation or reference to best practices for older adults (aged $\geq$65 years). This refers exclusively to actions taken as a result of age or age-related tools (e.g. frailty assessments) or age-related evidence. Specific national guidance for the care of older adults with cancer is also of interest. This is not mandatory for inclusion. | Older adult-specific guidelines not related to cancer care or malignancies outside of the selected list are excluded. Paediatric cancer guidelines. |
| Material/study design | Recognised national or referenced international guidelines on the five most common primary malignancies for older adults in Europe (prostate, breast, colorectum, lung, and urinary bladder). Research papers written as the basis of guidelines materials (i.e. ESMO guidelines). | Case reports, research papers (beyond use for identifying guidelines), and models of care. |
| Resource/article type | Published, complete, recognised, and primarily used national and referenced international cancer guidelines on prostate, breast, colorectal, lung, and urinary bladder cancer for the 32 jurisdictions (29 countries). | Book chapters, dissertations, editorials, protocols, conference abstracts, and original research papers (beyond use for identifying guidelines). |
| Language | All European languages | Any language not officially used within the specified countries. |
| Study period | Most up-to-date cancer care guidelines for treatment and management. They can also be identified through research papers since 2013. This range acknowledges that papers older than 10 years may not adequately capture the current understanding of the field and contemporary standards of care, but also aligns with the time frame of certain guidelines that may have not been updated since 2013, thus allowing for compatibility between the reviewed literature and relevant guidelines. | Previous editions of current cancer care guidelines in selected countries, research papers older than 10 years (published before 2013). |
| Geography | European Union, the UK, and Switzerland. | Any country not on the specified list. |

**Table 2. Grey literature search strategy**

| Source searched | Date searched | Search description |
|---|---|---|
| Google Scholar | 1 August 2023 | Cancer or 'cancer care' or 'cancer treatment' or 'cancer management' and guidelines and Europe[a] or nation name (e.g. Austria[a]) |
| ESMO.org | 7 August 2023 | On the website click: guidelines by topic, selected cancer (i.e. breast, prostate, lung, colorectum, bladder) |
| European Union 'Europe's Beating Cancer Plan' | 9 August 2023 | On the website click: policy framework and related information |
| Guidelines International Network | 10 August 2023 | Cancer or 'cancer care' or 'cancer treatment' or 'cancer management' and (cancer type, i.e. breast, prostate, lung, colorectal, bladder) and guidelines and guidelines and Europe[a] or nation name (e.g. Austria[a]) |
| Google | 15 August 2023 | Cancer or 'cancer care' or 'cancer treatment' or 'cancer management' and guidelines and guidelines and Europe[a] or nation name (e.g. Austria[a]) |
| Expert consultation | August 2023 to June 2024 | Consultation with expert review members to verify identified documents, correct the master source document, and provide any further relevant material |

access was not granted, the guideline was excluded and labelled in the tabulation.

**Data extraction.** Data were extracted from the included guidelines by at least two independent reviewers using a data extraction strategy and a jurisdiction-specific Excel sheet (Microsoft Corporation, Redmond, WA) developed by IP and reviewed by the review team. The national expert(s) independently extracted the following:

- Country of publication
- Year of edition or last update
- Reference to international guidelines [if yes, which guidelines, e.g. European Society for Medical Oncology (ESMO) guidelines]
- Representation of older patients (yes or no)
- Description of representation (e.g. recommended treatment modifications, adjustment in management based on age, based on geriatric screening or evidence)
- Aim of this representation (e.g. guide HCPs practice for treatment)
- Further comments

Representation of older adults was identified when a guideline explicitly referenced the patient's age, either numerically (e.g. specific age in years) or descriptively (e.g. terms such as 'older' or 'elderly'), in the context of professional care for the cancer being addressed. If there was no representation of older adults with cancer in national guidelines, this absence was also tabulated alongside the other extracted data.

**Critical appraisal of individual sources of evidence.** No quality assessment for the inclusion or exclusion of guidelines was conducted, as suggested by both the Arksey and O'Malley Framework and Joanna Briggs Institute.[10,27] This was also deemed inappropriate owing to the nature of the national guidelines development process.

**Analyses and synthesis.** The source selection process was documented using the PRISMA guidelines (Figure 2). Source characteristics and documentation of the representation of older adults were described using numbers and percentages according to the type of cancer (Table 3). The qualitative data or description of this representation was taken from each of the 187 included guidelines and compiled into a narrative synthesis.

Microsoft Excel and Stata (Stata Statistical Software: Release 18; StataCorp LLC, College Station, TX) were used.

**Ethics approval.** Ethical approval was not required for this scoping review.

## RESULTS

A total of 187 reports of included guidelines were included in the analysis (Figure 2). The Onkopedia expert consensus/guidelines are in use by the three German-speaking

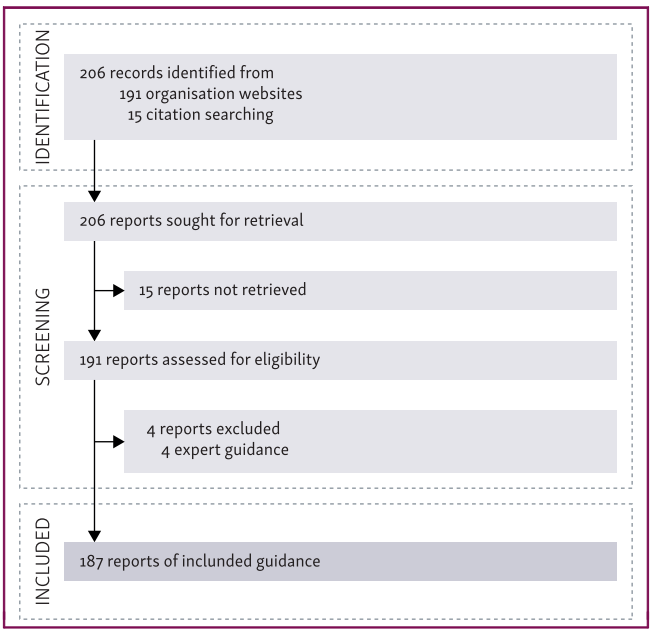


**Figure 2. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 flowchart for the identification of reports.**

countries (Austria, Germany, and Switzerland). Of these nations, only Germany has produced its own national guidelines from the *Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften* (AWMF). Therefore, Germany is counted both at a national level and as part of the broader Onkopedia consensus. Consequently, for the five most frequent malignancies, we analysed 31 jurisdictions. These comprised 26 EU member states (with Germany counted as part of the EU), Onkopedia Consensus (Austria, Switzerland, and Germany counted again), and the four UK nations (England, Northern Ireland, Wales, and Scotland).

As a result of not having access to any of Northern Ireland's guidelines, this was treated as missing data, leaving information for 30 jurisdictions. For the general care guidelines, however, guidelines were available for 27 jurisdictions as the UK did not use devolved guidelines for generic cancer care. The sources for each guideline are provided in a document compiled by the team's national representatives, available in the Supplementary Material, available at https://doi.org/10.1016/j.esmoop.2025.105052.

The results are structured into distinct subsections for clarity and comprehensiveness. First, an overview of the frequency of representation across the identified documents, categorised by cancer type, is presented (Tables 3 and 4 and Figure 3). This is followed by a narrative synthesis that examines how older adults are portrayed within these guidelines and identifies variations by region and overall trends in the integration of recommendations for older adults.

### Characteristics of the included guidelines

Among the 30 included jurisdictions (including the devolved nations of the UK), 23 countries had national guidelines for at least one type of cancer including 'general cancer care'; 20 had a representation of older patients in their national guidelines and 4 (Italy, France, Poland, and Spain) had separate guidelines specifically for general cancer care in older adults, with the exception of France having older-adult-specific guidelines for prostate cancer.

### General cancer care

Among the 27 jurisdictions (including the UK as a unified entity) with available data for general cancer care, 9 jurisdictions (33%) had national guidelines for general cancer,[28-35] with Italy, Spain, and Poland having separate general guidelines for cancer care in older adults.[36-38] Older patients were not represented in the general guidelines of any country with national recommendations.

The number of jurisdictions and guideline documents according to the localisation of cancer are reported in Table 3.

International guidelines were referenced by 24 of the 27 jurisdictions, with some referring to multiple international guidelines. The international guidelines referenced included:

- ESMO for 22 jurisdictions (92%)
- National Comprehensive Cancer Network (NCCN) for 15 jurisdictions (63%)
- American Society of Clinical Oncology (ASCO) for nine jurisdictions (38%).

ESMO guideline data for the examined primary malignancies, as the European standard for cancer guidelines, were tabulated to provide an overview of the international recommendations used by most jurisdictions (Table 4).

**Prostate.** From the 30 jurisdictions with available guideline data for prostate cancer, a total of 31 documents or sources were identified. Of these, 20 (65%) were national guidelines, covering 19 jurisdictions. Portugal produced two documents for prostate cancer guidelines.[39,40] Older patients were represented in 8 (42%) of these national documents.[39,41-47] France was the only country with separate guidelines for prostate cancer care in older patients.[48] Of

**Table 3. Breakdown of the existing guidelines in the included European jurisdictions, including the frequency of representation of older adults and reference to international guidelines**

| | General (the UK as one jurisdiction) | Prostate | Breast | Colorectal | Lung | Urinary bladder |
|---|---|---|---|---|---|---|
| **Overall no of jurisdictions** | **27** | **31** | **31** | **31** | **31** | **31** |
| Number of jurisdictions with available guideline data, *n* | 27 | 30 | 30 | 30 | 30 | 30 |
| Jurisdictionally produced guideline documents, *n* | 9 | 20 | 21 | 25 | 27 | 15 |
| Documents/sources[a] referring to international guidelines, *n* | 24 | 30 | 28 | 30 | 32 | 25 |
| ESMO | 22 | 21 | 26 | 30 | 32 | 21 |
| NCCN | 15 | 14 | 14 | 17 | 14 | 13 |
| ASCO | 9 | 6 | 8 | 9 | 8 | 3 |
| EAU | N/A | 11 | N/A | N/A | N/A | 5 |
| International guidelines referenced when no national guidelines exist, *n* | 15 | 11 | 10 | 8 | 8 | 12 |
| **Representation of older adults** | | | | | | |
| In jurisdiction guideline documents (%)[b] | 1 (12.5) | 8 (42) | 13 (62) | 19 (76) | 17 (63) | 6 (40) |
| Separate guidelines for cancer care in older adults, *n* | 3 | 1 | 1 | 1 | 0 | 0 |

ASCO, American Society of Clinical Oncology; EAU, European Association of Urology; NCCN, National Comprehensive Cancer Network.
[a]Sources refer to welcome pages or general information pages signposting to guidelines in use for a specific country.
[b]Percentage calculated based on available national guidelines data, not total jurisdictions.

**Table 4. Summary of ESMO clinical practice guidelines for the evaluated primary malignancies: edition year, inclusion of older adults, and scope of representation**

| Cancer type | Year | Representation of older adults (Yes/No) | Overview of representation of older adults |
|---|---|---|---|
| **Prostate** | 2020 | No | N/A |
| **Breast** | | | |
| Early breast cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up | 2019 | Yes | - Age-based recommendations for screening.<br>- Age should be considered alongside other factors to avoid under-treatment for older adults.<br>- Acknowledgement of limited evidence available for older adults but encouragement of using geriatric screening tools to guide treatment.<br>- Older patients are required to accept risks if they decide to opt in for certain treatments given limited evidence. |
| ESMO Clinical Practice Guideline for the diagnosis, staging, and treatment of patients with metastatic breast cancer | 2021 | Yes | - Treatment decisions should be independent of patient age.<br>- Emphasis on shared decision-making.<br>- Age should not be the only metric by which to decide treatment.<br>- Encourages screening of key characteristics (i.e. geriatric screening tools).<br>- Highlighted the need for attention to risk, proactive symptom management, and patient education on side-effect management. |
| Risk reduction and screening of cancer in hereditary breast—ovarian cancer syndromes | 2022 | No | N/A |
| ESMO management and treatment-adapted recommendations in the COVID-19 era: breast cancer | 2020 | Yes | - Advising adjustment to treatment recommendations for older adults while postponing chemotherapy.<br>- Adjust treatment plans according to screened patient risk. |
| **Colorectal** | | | |
| Localised colon cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment, and follow-up. | 2020 | Yes | - Age is a criterion for risk assessment and screening for fitness to guide treatment choice.<br>- Limited treatment evidence for the older population.<br>- Treatment choices made with caution to avoid toxicity. |
| Metastatic colorectal cancer: ESMO Clinical Practice Guideline for diagnosis, treatment, and follow-up. | 2023 | Yes | - Frail patients described as not able to tolerate treatment with side-effects, adjust goals accordingly (i.e. quality of life).<br>- Adjust treatment based on screening for fitness.<br>- Age alone is not a contraindication for combined therapy.<br>- Complete geriatric screening is encouraged. |
| **Lung** | | | |
| Small-cell lung cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment, and follow-up | 2021 | Yes | - Age is described as a poor prognostic factor to consider.<br>- Role of certain treatments is not well understood for older patients.<br>- Shared decision making is encouraged for older patients.<br>- Encouraged awareness of age and treatment contributing to neurotoxicity. |
| Non-oncogene-addicted metastatic non-small-cell lung cancer: ESMO Clinical Practice Guideline for diagnosis, treatment, and follow-up | 2022 | Yes | - Older-population-specific recommendations for treatment courses.<br>- Lack of evidence from clinical trials for those >75 years of age.<br>- Age needs to be considered for treatment strategy. |
| Oncogene-addicted metastatic non-small-cell lung cancer: ESMO Clinical Practice Guideline for diagnosis, treatment, and follow-up | 2022 | Yes | - Current treatment recommendations are also beneficial for older populations—despite limited evidence, the benefits appear the same or better. |
| Early and locally advanced non-small-cell lung cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment, and follow-up | 2017 | Yes | - Age is a consideration for length and intervals of treatment.<br>- Risk assessment is necessary to guide treatment courses.<br>- Age is associated with readmission which needs to be considered in follow-up management. |
| Bladder | 2021 | No | |

COVID-19, coronavirus 2019.

the 31 available guideline sources for each jurisdiction, 30 referenced international guidelines.

**Breast.** For breast cancer, 31 documents or sources were identified from the 30 jurisdictions with available data. Similar to the prostate cancer guideline data, two jurisdictions produced two documents (Germany via Onkopedia and AWMF; and Portugal).[22,49-51] Twenty-one of the documents were national guidelines (68%), corresponding to 20 jurisdictions. Older patients were represented in 13 of these guidelines (62%).[22,50,52-62] Only Spain developed separate guidelines for cancer care in older patients.[63] International guidelines were referenced in 28 out of 31 of the guidelines sources or documents, whether nationally produced or signposting in the case of no existing national guidelines.

**Colorectal.** Among the 30 jurisdictions with available guideline data for colorectal cancer, 33 documents or sources were identified. Four jurisdictions produced two documents, respectively: Belgium, Germany (Onkopedia and AWMF), Czechia, and Italy.[64-70] Of these, 25 (76%) were national guidelines. Older patients were represented in 19 (76%) of these national documents.[64-82] Spain was the only country with separate guidelines for older patients with colorectal cancer (4%).[83] International guidelines were referenced in 30 out of 33 of the documents or sources, in the case of both nationally produced documents and signposting.

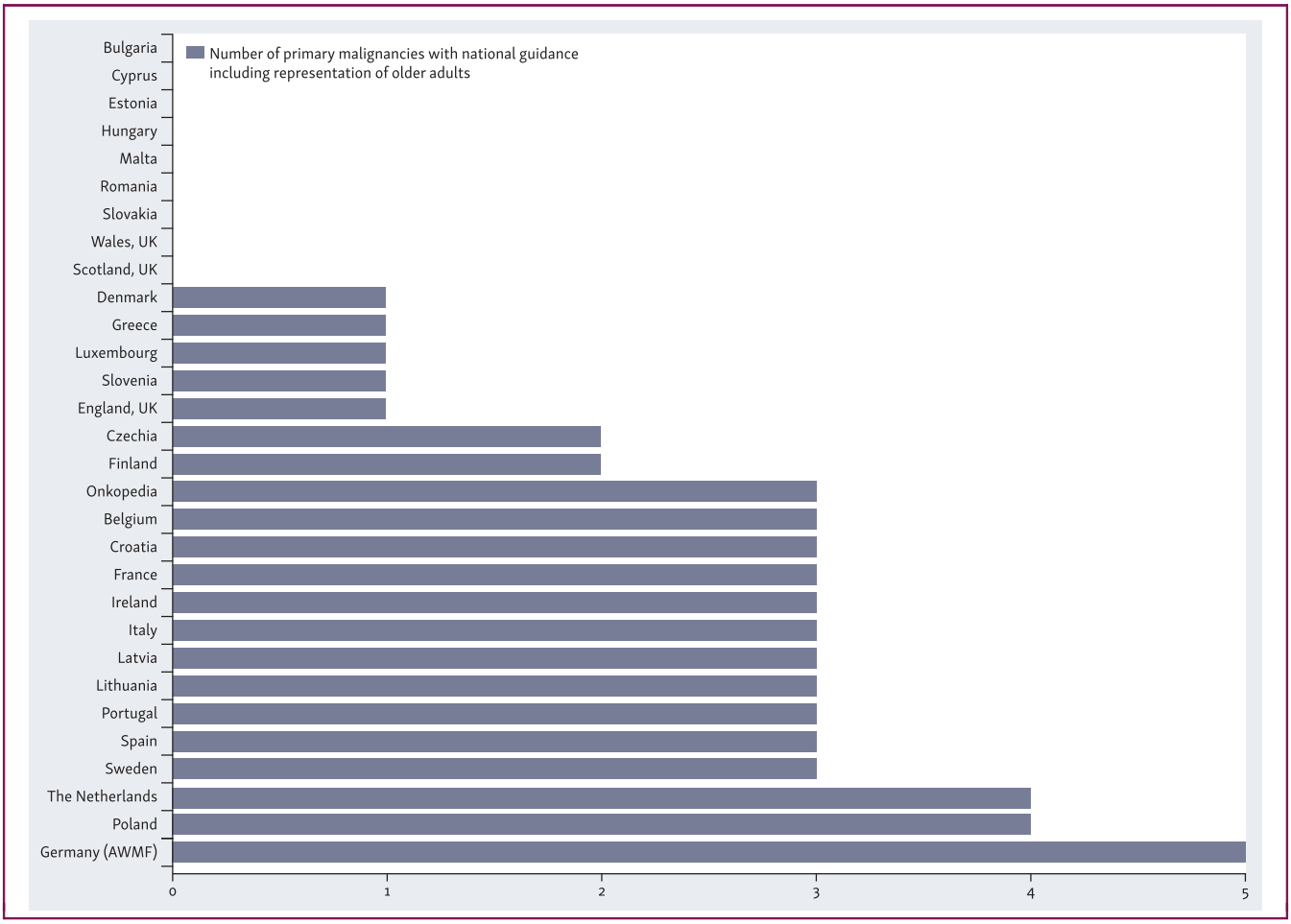


**Figure 3. Number of primary malignancies with nationally produced age-specific recommendations in Europe.**
AWMF, Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften.

**Lung.** For lung cancer, 35 documents or sources were identified from the 30 jurisdictions with available data. Six jurisdictions [Germany (Onkopedia and AWMF), Croatia, Lithuania, The Netherlands, Portugal, and Spain] produced two documents, respectively.[84-95] Of the 35 documents, 27 (77%) were national guidelines. Older adults were represented in 17 (63%) of these national documents.[84-100] International guidelines were referenced in 32 out of 35 of the documents or sources, in the case of both nationally produced documents and signposting in the absence of these documents.

**Urinary bladder.** From 30 jurisdictions with available guideline data, 30 documents or guideline sources were identified. Germany (via Onkopedia and AWMF) developed two guideline documents for urinary bladder cancer.[101,102] Of these 30 documents or sources, 15 (50%) were nationally produced guidelines, covering 15 jurisdictions. Older patients were represented in only 6 (40%) of these 15 documents and no country developed separate guidelines specifically for older patients.[101-106] Additionally, of the 27 sources with data on international guidelines, 25 referenced them.

### *Representation of older adults: narrative summary*

In the included guidelines, older adults are predominantly represented in terms of risk. Many countries, including but not limited to Denmark, Greece, Ireland, Latvia, Lithuania, The Netherlands, Poland, and Slovenia, focus on modifying treatment to mitigate risks in older patients. This often involves age-based exclusion of certain treatment options, such as adjuvant treatment, or recommending lower doses to avoid toxicity. Countries, such as Belgium, Finland, Italy, Luxembourg, Spain, and Sweden, emphasise tailoring treatment plans based on an older patient's fitness or comorbidities rather than age alone.[46,53,59,60,70,74,79,81,104] These guidelines stress the importance of considering individual health conditions to optimise treatment plans. Only a few countries, for example, Belgium, Czechia, Finland, France, Luxembourg, and Spain, suggest formally assessing functional status and comorbidities to guide treatment decisions.[74,77,79,84,93,104,105]

Regarding the management and clinical decision-making process, guidelines from countries such as Italy, Latvia, and Poland included general statements encouraging clinicians to use their judgement or provide age cut-offs for treatment.[43,57,80] These recommendations are frequently justified by acknowledging a lack of evidence for treating older adults and focusing on age-related risks or precautions but there were some inconsistencies within the same guidelines regarding age cut-offs, general risk considerations, and the use of assessments to assist with

treatment decisions, as seen in the guidelines from Croatia, Czechia, Luxembourg, and Onkopedia.[67,79,85,87]

### Geographical patterns in representation of older adults

**Western Europe.** *Austria, Belgium, France, Germany, Ireland, Luxembourg, The Netherlands, Switzerland, the UK (England, Northern Ireland, Scotland, and Wales)*

Western Europe showed a relatively high level of representation for older adults, including more consistent references to assessments for comorbidities in treatment options. However, the UK had minimal or no specific recommendations for older adults in their guidelines.[107] All countries in this region developed at least one national guideline for a specified cancer. In Germany, the AWMF guidelines were the only national guidelines developed for each specified primary malignancy that also included specific recommendations for older adults.[108] Despite this, the two German language documents for urinary bladder cancer from AWMF and Onkopedia provided limited detail in their recommendations for older adults.[101,102] By contrast, the German AWMF guidelines for breast and prostate cancer involved representatives from the German Geriatric Society, leading to more specific recommendations for older patients.[41,50]

**Southern Europe.** *Cyprus, Greece, Italy, Malta, Portugal, and Spain*

In Southern Europe, the national guidelines of Italy, Portugal, and Spain most consistently addressed older adults, providing recommendations for three of the five specified cancers. Italy and Spain provided the most detailed recommendations for older adults, including specific guidelines for this population.[36,37,63,83] Portugal provided varied levels of recommendations across their three cancer guidelines, consistently including debates on the sufficiency of available evidence and risk of toxicity. Portugal's most detailed recommendations were included in their breast cancer guidelines, comprising two documents, of which only one provided recommendations specifically for older adults.[51] Greece included only one reference to older adults, discussing treatment-related risks.[73] Malta and Cyprus did not produce national guidelines.

**Northern Europe.** *Denmark, Estonia, Finland, Latvia, Lithuania, and Sweden*

Denmark, Finland, and Sweden offered more detailed recommendations, with Sweden including a separate chapter on breast cancer care for older adults.[46,54,60,74,76,82] Latvia and Lithuania included considerations for the care of older adults across a greater number of national guidelines, focusing primarily on treatment risks but with limited detail.[23,44,45,57,58,78,89,90,109,110] Estonia did not produce national guidelines. Older adults were included in a maximum of three of the five national guidelines in Latvia, Lithuania, and Sweden.[44-46,57,58,60,78,82,89,90]

**Eastern Europe.** *Bulgaria, Croatia, Czechia, Hungary, Poland, Romania, Slovakia, and Slovenia*

Eastern Europe had fewer national guidelines and less representation of older adults. The national guidelines of Poland, however, most consistently addressed older adults providing recommendations for four of the five specified cancers.[52,80,99,106,111] Guidelines from Croatia, Czechia, Poland, and Slovenia included brief mentions of older adults, often citing limited evidence for their treatment and emphasising clinical judgement.[68,80,87,100] In some guidelines, this was presented as avoiding the risk and not providing certain treatments such as adjuvant chemotherapy to patients aged >75 years. Bulgaria, Hungary, and Slovakia did not produce national guidelines.

### Additional observations

Croatia, Czechia, Germany, Italy, Lithuania, The Netherlands, and Portugal provided multiple documents for at least one cancer type, with consistent representation of older adults across documents for specific cancers, except for some limitations in detail or representation noted in breast cancer documents from Onkopedia and Portugal.[22,49] The breast cancer document from the AWMF guidelines (Germany), however, was the only document to have a separate chapter for the surgical and medical treatment of older adults.[50]

Some countries, such as Cyprus and Portugal, explicitly referenced international geriatric oncology guidelines, such as those from SIOG.[112] Estonia referenced general NCCN guidelines, including those for Older Adult Oncology.[113] These references are not always clearly signposted and are more common in countries that have not developed their own guidelines, such as Cyprus, Estonia, and Slovakia.

## DISCUSSION

This scoping review aimed to examine the representation of older adults in national cancer care guidelines across Europe, with a focus on the five most prevalent primary malignancies (prostate, breast, colorectum, lung, and urinary bladder). Our findings revealed notable variation in the inclusion of older adults in guidelines across European regions, with Western European countries demonstrating more consistent representation compared with Eastern Europe, where national guidelines are less developed. Only Germany produced national guidelines that included older adult-specific recommendations for all five primary malignancies.

The variation in how older adults are considered may reflect differences in health care systems, culture, availability of various treatments, and the historical development of geriatric oncology within different regions.[114,115] For example in Northern Europe, particularly the Nordics, there was advanced integration of geriatric care principles into cancer treatment guidelines compared with other parts of the same region. In Sweden, the previous version of colorectal cancer guidelines already included recommendations for older adults, and the upcoming version is expected to expand on these. Similarly, the upcoming Finnish guidelines also make specific mention of geriatric oncology

patients, indicating ongoing progress in this area.[74] Countries such as France and Italy, which have well-established geriatric and geriatric oncology societies such as Société Francophone d'Onco-Gériatrie (SoFOG) and Societá Italiana di Gerontologia e Geriatria (SIGG), have incorporated detailed geriatric care recommendations into their national guidelines. This integration may reflect both the cultural emphasis on geriatric care and the longstanding tradition of geriatric oncology research in these countries. Furthermore, Germany's AWMF guidelines include a dedicated chapter on geriatrics for some cancers, developed with input from geriatricians; however, this level of integration is not consistently seen across Europe.

The 'Belgian Board of Oncology' was established by the Belgian government to create tumour-specific guidelines for practice. These guidelines were not effectively integrated into clinical practice, and many have not been updated since their initial creation. As a result, they do not incorporate recent advances, particularly regarding older adults. Studies examining guidelines in use in Belgium reflect this issue, as many omit the guidelines developed by the Belgian Board of Oncology.[116] Similar situations may occur in other countries, where national guidelines lack detail for specific populations or have not been recently updated. This reflects the complexities of real-world clinical practice and the challenges in standardising the implementation of the latest locally relevant evidence, stressing the importance of guideline updates at national and international levels. This is particularly relevant when local guidance is limited or outdated, leading HCPs to rely on international guidelines, such as those from ESMO, or on internal institutional protocols. ESMO guidelines, in particular, appear frequently referenced in the reviewed guidelines, and may also see frequent use in some European regions where national guidance is limited. By design, however, this scoping review provides a descriptive approach to the representation of older adults in all cancer care guidelines for the chosen malignancies in Europe, capturing the range of priorities and intended practices as opposed to their use or influence in clinical settings. Assessing such influence—for instance, the extent to which ESMO guidelines are favoured over national ones in some regions—would require capturing subjective and diverse adoption patterns across countries and settings, a question best addressed by tailored methodology and beyond the scope of this article. Further dedicated research into the adoption of various guidelines across oncological practice in Europe, along with the factors influencing their use, would provide valuable insights to enhance oncological care for specific populations such as older adults.

Another key challenge in improving the representation of older adults in national guidelines is the unequal availability of certain treatments across Europe. Newer, less toxic treatments essential for older adults with cancer may be delayed or less accessible in less-wealthy countries such as Portugal or Romania due to regional reimbursement restrictions, as companies prioritise larger markets such as Germany or the UK, where higher prices further hinder timely uptake elsewhere.[117] This limits the rate at which national treatment recommendations can be updated, regardless of the population in question.

The inconsistency in recommendations across Europe underscores a broader issue: older adults are frequently excluded from randomised controlled trials (RCTs), which inform a majority of treatment guidelines.[118] Consequently, even when treatments are accessible, there is limited evidence regarding their safety and efficacy in older populations, leading to cautious recommendations. The included guidelines reflect this, often citing a lack of supporting evidence or the risks of treatment for older adults. While the underrepresentation of older adults in clinical trials results in significant gaps, there are opportunities to generate evidence through observational data.[119] Although observational studies do not hold the same 'gold standard' as RCTs, good quality observational studies with appropriate methods provide valuable insights into real-world treatment outcomes.[120] To develop more inclusive, evidence-based guidelines, it is essential to expand the use of such data while advocating for the inclusion of older adults in RCTs.[121]

As evidence advances, it is crucial to promote the use of appropriate screening tools to guide clinicians in treating older adults.[122] Tools such as the Comprehensive Geriatric Assessment are essential for assessing frailty and other geriatric-specific factors that influence treatment planning.[123] This initial geriatric assessment guides therapeutic decisions, allowing clinicians to identify patients who may benefit from tailored treatment approaches—an important consideration as older adults can be more susceptible to the side-effects of aggressive therapies, depending on their biological age.[124] A significant challenge is the shortage of geriatricians and clinicians specialised in geriatrics, which can compromise the quality of these assessments. While other HCPs may conduct these evaluations depending on the model of care, they often lack the precision and expertise of geriatric specialists. This shortage underscores the need to expand geriatric expertise in oncology care, as it can directly impact clinical outcomes and patients' quality of life.[125]

### *Strengths and limitations*

This scoping review, to the authors' knowledge, is the first to provide an overview of the representation of older adults in European cancer guidelines. By involving local HCPs, the identified sources were verified and contextualised, thereby enhancing the practical applicability of the findings to the specific population studied.

A potential limitation of this review is the variability in the interpretation of what constitutes relevant guidelines, which may have led to the inadvertent omission of smaller yet pertinent guidelines. Moreover, limited access to certain sources may have resulted in the exclusion of recommendations pertinent to older adults, potentially affecting the comprehensiveness of the review. Most guidelines are written in the national language of their country, limiting

our ability to have multiple team members independently review the expert-extracted data. When fewer than two team members were proficient in a language, we used digital translators or native-speaking consultants. Thus, our capacity to review each setting's nuances depended on available linguistic skills and translation quality.

## CONCLUSIONS

This scoping review identified limited representation of older adults in national cancer care guidelines for the five most prevalent cancers across Europe. The extent of this representation varied significantly, reflecting regional differences in focus on geriatric care, with some jurisdictions offering comprehensive approaches while others have limited recommendations. To develop more robust and relevant guidelines that address the specific needs of older adults, dedicated research, collaboration with geriatricians, and relevant funding are essential. International guidelines should also aim to provide greater detail on geriatric oncology to serve as an alternative when national guidelines do not adequately address the geriatric population. Sustained advocacy for integrating geriatric care into clinical practice is necessary to improve cancer outcomes for older adults across Europe.

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