

PERSPECTIVE

DEVELOPMENT AND IMPLEMENTATION OF A MULTIDISCIPLINARY DIAGNOSTIC AND THERAPEUTIC CARE PATHWAY (PDTA) FOR PLEURAL MESOTHELIOMA: A METHODOLOGICAL FRAMEWORK FOR REGIONAL ONCOLOGY NETWORKS

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ABSTRACT: Pleural mesothelioma (PM) is a rare, aggressive tumor strongly linked to occupational asbestos exposure, with a complex presentation that often delays diagnosis. Effective management requires a structured, multidisciplinary approach integrating diagnostic, therapeutic, psychological, and supportive care across the healthcare system.

Conducted within the PNC-SINTESIproject – funded by the Italian Ministry of Health under the PNC/PNRR for environment-health surveillance in Sites of National Interest – this study analyzed diagnostic and therapeutic care pathways (PDTAs) for PM developed by eight Italian regions (Emilia-Romagna, Piemonte, Sicilia, Puglia, Toscana, Campania, Marche and Sardegna). Regional documents were compared across eleven key dimensions, including healthcare professionals involved, access criteria, hub-and-spoke center definitions, and process indicators, to identify shared components and propose a harmonized national model. The analysis identified a core multidisciplinary team – medical oncologist, radiation oncologist, thoracic surgeon, pulmonologist, radiologist, pathologist, and palliative care specialist – alongside a standardized hub-and-spoke framework and six key process indicators for quality monitoring. Early, concurrent integration of palliative care and psychological support emerged as critical, consistent with evidence that timely psychosocial involvement improves patients' and families' quality of life. Given the established asbestos link, the framework also recommends occupational disease notification and medico-legal counselling to protect patients' rights and support epidemiological surveillance. This reproducible model aims to reduce regional variability in PM care and may serve as a reference for international standardization.

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Impact statement: A harmonized hub-and-spoke PDTA model for pleural mesothelioma may standardize multidisciplinary care and reduce interregional variability in Italy.

Key words: *Pleural mesothelioma; care pathway; multidisciplinary team; palliative care; hub-and-spoke model.*

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INTRODUCTION

Pleural mesothelioma (PM) is a rare and aggressive malignancy arising from the mesothelial cells of the pleura, strongly associated with previous occupational or environmental exposure to asbestos. The long latency between exposure and clinical onset, often spanning decades, means that PM incidence will remain substantial for years despite the progressive ban on asbestos in many countries (1-3). Its clinical presentation is insidious and non-specific, frequently mimicking other pleuropulmonary conditions, which delays diagnosis and results in many patients presenting at an advanced stage (4, 5). Adequate tissue sampling and specialized histopathological and molecular characterization are essential to confirm the diagnosis and histological subtype, both of which carry major prognostic and therapeutic weight (4).

The therapeutic landscape has moved from a period in which single-modality treatment was uniformly disappointing towards multimodal strategies combining surgery, systemic therapy and radiotherapy, with the more recent addition of immunotherapy (6, 7). This evolution, together with the need to correctly allocate patients to active treatment or supportive care based on age, performance status and physiological reserve, is why international guidelines consistently recommend that every patient with PM

be evaluated by a multidisciplinary team with specific expertise in mesothelioma (4, 5, 8). In Italy, the National Mesothelioma Registry (ReNaM) has systematically documented asbestos exposure and mesothelioma incidence, underscoring the continued public health relevance of the disease (3). The multidisciplinary approach is increasingly translated into clinical practice through diagnostic and therapeutic care pathways (PDTAs), which represent essential organizational tools for coordinating the management of patients with PM. By defining roles, responsibilities, organizational structures, and timelines across the entire care pathway, PDTAs promote multidisciplinary integration, ensure continuity of care between hospital and community settings, and support the delivery of timely, appropriate, and high-quality care. However, because PM-specific PDTAs have been developed independently by individual Italian regions, substantial heterogeneity may exist in their structure, content, and implementation, potentially leading to interregional variability in patient management.

Since 2024, the PNC SINTESI project has been underway in Italy. It is a national program involving 14 Italian regions, guided by Puglia region, funded by the Italian Ministry of Health to establish a permanent health surveillance system in the Italian National Priority Contaminated Sites (Siti di Interesse Nazionale, SINs), with the aim of reducing the health burden

associated with environmental pollution and social inequalities through targeted primary and secondary prevention strategies. Within this program, a specific objective focuses on PM and aims to define the minimum requirements that diagnostic, therapeutic, and care pathways (PDTAs) for mesothelioma should meet across all Italian regions.

The present study was conducted within this framework. We systematically reviewed and compared the regional PDTAs for PM currently available in Italy and used them as the basis for a structured discussion within the project working group. This process enabled the identification and critical appraisal of the key organizational and clinical domains that should be addressed by any mesothelioma PDTA, with the aim of defining a shared set of minimum requirements and proposing a harmonized, reproducible, and adaptable framework to support regional implementation, reduce interregional variability, and serve as a methodological reference for regional oncology networks.

A SURVEY-AND CONSENSUS-BASED COMPARISON ACROSS EIGHT ITALIAN REGIONS

The study was conducted between February 2025 and April 2026 within the PNC SINTESI project. The overall objective of this initiative was to define a shared set of minimum organizational and clinical standards that every regional PM PDTA should meet. Specifically, the proposed framework aims to reduce diagnostic and treatment waiting times through the definition of regional standards; standardize therapeutic pathways; improve patient information, communication, and shared decision-making; ensure access to rehabilitation and psychological support; promote the systematic assessment of occupational and environmental asbestos exposure; facilitate case reporting to the Regional Mesothelioma Registries (CORs) and occupational disease notification procedures; support the implementation of clinical and translational research programs; optimize and continuously monitor the quality of care through the definition of process and outcome indicators and the development of a structured data collection and analysis system; and establish a national repository to evaluate health impact, monitor adherence to quality standards, and support epidemiological, preventive, translational, and clinical research.

A dedicated working group was established, involving representatives from 8 of the 14 Italian regions participating in the project: Emilia-Romagna, Friuli Venezia Giulia, Marche, Piemonte, Puglia, Sardegna, Sicilia, and Toscana. Each participating region subsequently established a dedicated regional working group, in collaboration with its Regional Oncology Network, involving the professionals considered most relevant to the organization and delivery of malignant PM care within the regional health-care system.

As a first step, a structured questionnaire was developed and distributed to all participating regions to perform a comprehensive assessment of the regional organization of PM care. The survey collected information on the annual number of PM cases, the presence major asbestos-related industrial exposure sources, the availability of regional PM PDTA, designated referral centers, the availability of specialized services (medical oncology, pulmonology, thoracic surgery, radiation oncology, pathology, and nuclear medicine), supportive care resources (including palliative care and psychological support), access to clinical trials, and the main organizational and clinical challenges identified in each region.

For regions with a PM PDTA formally approved by the Regional Oncology Network, additional information was collected on the date of the most recent update, case notification procedures, entry points to the care pathway, the inclusion of diagnostic and therapeutic standards, and the use of process and outcome indicators for pathway monitoring and evaluation.

A nationwide survey was subsequently conducted to identify the existence of additional regional PM PDTAs in Italian regions not participating in the project, in order to ensure the most comprehensive assessment of the organizational models adopted across the country.

TOWARD A SHARED MODEL: THE BUILDING BLOCKS WE CONSIDER NON-NEGOTIABLE

Organizational and clinical domains of the care pathway

The comparative analysis of the available regional PM PDTAs enabled the identification of the main organizational and clinical domains of the care pathway. Based on these findings, a structured set of

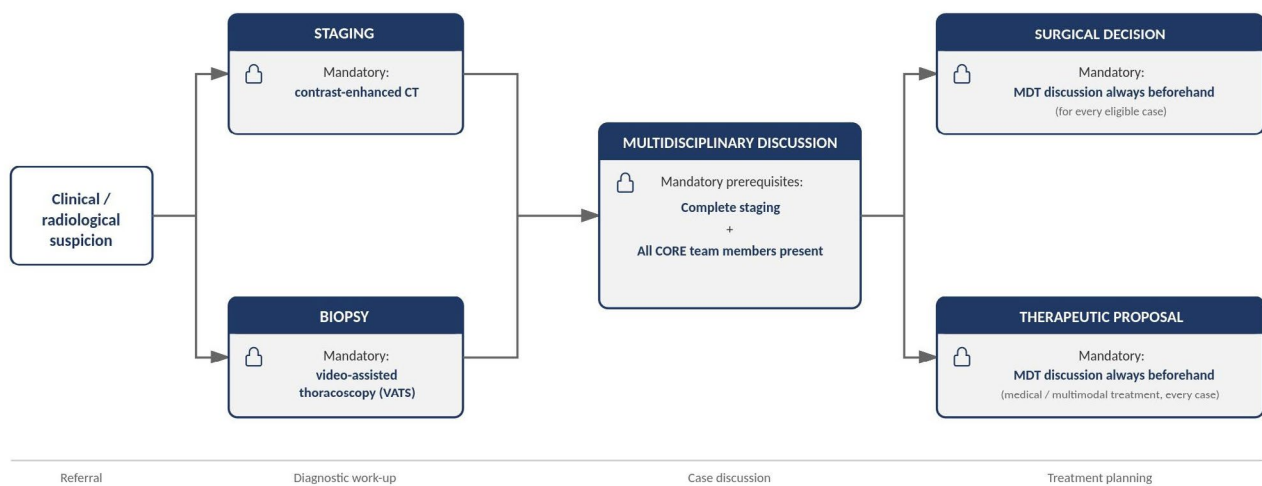


Figure 1. Mandatory sequential requirements (“gates”) within the pleural mesothelioma diagnostic-therapeutic pathway (PDTA). Clinical/radiological suspicion leads to two parallel, mandatory diagnostic requirements – staging by contrast-enhanced computed tomography (CT) and biopsy by video-assisted thoracoscopy (VATS) – both of which must be completed before multidisciplinary discussion. Multidisciplinary discussion additionally requires attendance of all core team members (CORE). Both the surgical decision and the therapeutic proposal are gated by mandatory prior multidisciplinary discussion, for every case.

CORE: core multidisciplinary team members (medical oncologist, thoracic surgeon, pulmonologist, radiologist, pathologist, radiation oncologist, palliative care specialist, nurse case manager); CT: computed tomography; MDT: multidisciplinary team; VATS: video-assisted thoracoscopic surgery.

questions was developed to guide the discussions within each regional working group. The questionnaire explored the following domains: governance of the regional PDTA; composition of the multidisciplinary team and involvement of additional specialists according to clinical needs; eligibility criteria and entry points to the care pathway; organization of the hub-and-spoke network, including criteria for the identification and roles of first-level (spoke) and second-level (hub) centers; access to clinical trials; and process indicators for monitoring pathway implementation. The responses from each regional working group were registered in an appropriate database and subsequently discussed during 4 plenary meetings of the regional working groups to reach consensus on the minimum organizational and clinical requirements for regional PM PDTAs. Finally, the results of the consensus process were synthesized into a shared reference document defining the key organizational and clinical elements that every regional PM PDTA should include.

Standardizing the route to multidisciplinary discussion

Among the eight participating regions, three had a PM PDTA formally approved by their Regional Oncology Network: Piemonte, Emilia-Romagna, and Sicilia.

A fourth regional PM PDTA, from Campania, was identified through the subsequent nationwide survey and was also included in the comparative analysis. Based on the findings of the initial structured questionnaire, the comparative analysis of the four available regional PM PDTAs, and the consensus reached on the structured questions, the following key elements of the care pathway were identified.

The definition of a regional PM PDTA should be entrusted to a multidisciplinary working group comprising, at a minimum, medical oncologists, thoracic surgeons, pulmonologists, radiologists, pathologists, radiation oncologists, nurse case managers, palliative care specialists, physiatrists/rehabilitation medicine specialists, occupational physicians, psychologists, dietitians or nutritionists, representatives of the Regional Mesothelioma Registry (COR/ReNaM), and accredited patient and former asbestos-exposed workers' associations.

The multidisciplinary team (MDT) responsible for defining the most appropriate pathway for each patient should consist of a core team, whose members should participate routinely in case discussions, and an extended team, whose members should be involved according to the patient's specific clinical needs (**Figure 1**). At a minimum, the core team should include medical oncologists, thoracic surgeons, pul-

monologists, radiologists, pathologists, radiation oncologists, palliative care specialists, and a nurse case manager. The extended team should include, as appropriate, nuclear medicine physicians, hospital pharmacists, physiatrists and physiotherapists, psychologists, clinical geneticists, molecular biologists, and dietitians or nutritionists. The nurse case manager should coordinate the patient's pathway, facilitate communication among team members, and ensure continuity of care throughout the diagnostic, therapeutic, and follow-up phases.

The main clinical criteria warranting referral to the PM PDTA include recurrent unilateral pleural effusion, pleural effusion in individuals with a history of asbestos exposure, pleural effusion associated with pleural thickening, and isolated pleural thickening. Each regional PM PDTA should clearly define the referral entry point to the pathway, identifying the healthcare professionals and healthcare facilities responsible for patient referral, as well as the procedures for patient enrolment and care coordination following entry into the pathway.

The timelines for every phase of the diagnostic pathway should define the recommended. These should include the initial diagnostic work-up following clinical and/or radiological suspicion, the staging pathway and the healthcare professionals responsible for its completion, the recommended biopsy procedures, and the pathological assessment, including specimen requirements, diagnostic criteria, immunohistochemical analyses, and classification according to the current WHO classification. The pathway should also specify the procedures for obtaining a second pathological opinion in diagnostically challenging cases or when the diagnosis is established in low-volume centers, together with predefined reporting timelines. In addition, mandatory and optional imaging investigations (e.g. contrast-enhanced CT, MRI, and 18F-FDG PET/CT) should be clearly identified, together with their indications within the diagnostic algorithm.

Each regional PM PDTA should adopt a hub-and-spoke organizational model, allowing the coordination of local care pathways with referral centers providing specialized expertise for complex cases. This organizational approach is in line with the principles of the European Reference Networks (ERNs) and may facilitate future integration within the Italian National Rare Cancer Network (Rete Nazionale Tumori Rari, RNTR). Where the Regional Oncology Network has not already formally identified referral centers, the PDTA should explicitly define the criteria

for the designation of first-level (spoke) and second-level (hub) centers, together with their respective roles and responsibilities. The criteria proposed by the working group and agreed upon through the consensus process are summarized below.

First-level (spoke) centers should include a dedicated multidisciplinary team for thoracic malignancies with access to thoracic surgery expertise and should ensure timely diagnostic work-up, staging, and delivery of standard treatments. Their responsibilities should include patient referral and enrolment, diagnostic investigations (including imaging and pathology), case notification to the Regional Mesothelioma Registry (COR/ReNaM), provision of standard systemic therapies, palliative care, rehabilitation, nutritional and psychosocial support, and integration with the regional network through telemedicine where available.

Second-level (hub) centers should provide all the functions of spoke centers and additionally guarantee access to highly specialized procedures and treatments. These should include invasive diagnostic procedures performed by specialized pulmonology, thoracic surgery, or interventional radiology teams; molecular pathology; pleurectomy/decortication (P/D), performed in centers with dedicated thoracic surgery units and appropriate expertise according to current evidence; multimodal radiotherapy; access to experimental therapies and clinical trials; and coordination of the multidisciplinary management of complex cases.

Each regional PDTA should identify the designated hub centers in agreement with the Regional Oncology Network. In regions where one or more hub functions are unavailable, formal interregional referral pathways should be established to ensure equitable access to specialized care.

In organizational terms, Level I (spoke) centers were responsible for diagnostic testing, pathological diagnosis, medico-legal requirements, reporting to the COR, imaging-based staging, psychosocial support, conventional therapies, palliative care, nutritional support, and physical rehabilitation. By contrast, Level II (hub) centers were responsible for invasive diagnostic procedures, molecular biology and advanced diagnostic testing, surgery requiring specialized expertise, radiotherapy within multimodal treatment strategies, and experimental therapies not available at Level I centers.

The patient management and all major therapeutic decisions must be discussed and agreed upon by the multidisciplinary team. Therapeutic strategies

should be defined according to histological subtype and disease stage, in accordance with the most recent national and international clinical guidelines, and should include specific recommendations for selected patient subgroups, such as frail and older patients, individuals with hereditary cancer predisposition. The PDTA should also provide clear recommendations for post-treatment follow-up, including the modalities and timing of clinical and instrumental surveillance. Simultaneous supportive care should be integrated throughout the entire patient journey, ensuring early involvement of palliative care specialists as members of the core multidisciplinary team, together with access to rehabilitation, psychological and nutritional support, specialized nursing care, and continuity of care between hospital and community services.

Whenever available, patients should be offered participation in clinical trials, with Regional Oncology Networks serving as the reference point for information and access to ongoing studies; coordination among regional networks and the development of a shared national platform for clinical trial referral should be encouraged.

A research infrastructure built into the pathway, not bolted on

We also think a PDTA should do more than organize clinical care: it should generate the data needed to improve it. Each regional PDTA should promote the prospective collection of standardized clinical data through a shared electronic dataset, including patient characteristics, treatment information, and survival outcomes, with harmonized data collection across regions and integration with national collabo-

rative initiatives such as MET.I (Mesothelioma Team Italy). In parallel, the PDTA should encourage the systematic collection of archival tissue and biological specimens and identify dedicated regional biobanks or referral centers responsible for their collection, processing, storage, and management according to standardized procedures. Clinical, pathological, and biological data should be prospectively linked through appropriate data set, thereby establishing a comprehensive infrastructure to support epidemiological, translational, and clinical research, as well as the development and validation of novel diagnostic and therapeutic strategies.

Measuring what matters: core process indicators

To enable the monitoring and evaluation of pathway performance, a core set of process indicators was identified and agreed upon by the working group. These indicators include: the proportion of newly diagnosed PM cases reported to the Regional Mesothelioma Registry (COR/ReNaM) (target: 100%); the proportion of patients undergoing diagnostic and/or staging thoracoscopic biopsy according to the recommendations of the multidisciplinary team (target: $\geq 90\%$); the proportion of patients receiving multidisciplinary evaluation within 30 days of histological diagnosis and disease staging (target: $\geq 90\%$); the proportion of patients starting medical treatment within 30 days of multidisciplinary discussion (target: 100%); the proportion of patients undergoing surgery following preoperative multidisciplinary assessment (target: 100%); and the proportion of patients referred to palliative care within the last six months of life (target: $\geq 90\%$) (**Table 1**).

Table 1. Core process indicators proposed for monitoring the regional pleural mesothelioma (PM) diagnostic and therapeutic care pathway (PDTA).

PATHWAY DOMAIN	PROCESS INDICATOR	TARGET
Case registration	Proportion of newly diagnosed PM cases reported to the Regional Mesothelioma Registry (COR/ReNaM)	100%
Diagnostic work-up	Proportion of patients undergoing diagnostic and/or staging thoracoscopic biopsy according to multidisciplinary team recommendations	$\geq 90\%$
Multidisciplinary evaluation	Proportion of patients receiving multidisciplinary evaluation within 30 days of histological diagnosis and disease staging	$\geq 90\%$
Medical treatment	Proportion of patients starting medical treatment within 30 days of multidisciplinary discussion	100%
Surgical treatment	Proportion of patients undergoing surgery following preoperative multidisciplinary assessment	100%
Palliative care	Proportion of patients referred to palliative care within the last six months of life	$\geq 90\%$

COR/ReNaM: Regional Mesothelioma Registry / National Mesothelioma Registry; MDT: multidisciplinary team; PM: pleural mesothelioma.

LIMITATIONS AND A PATH FORWARD

The present study should be interpreted in light of its methodological characteristics. Our proposal is based on the comparative analysis of four formally approved regional PM PDTAs and on a structured consensus process involving representatives from eight Italian regions. As such, it represents a consensus-based organizational framework derived from existing regional PDTAs rather than an evaluation of clinical outcomes or pathway effectiveness, and it does not assess the extent to which regional pathways are implemented in routine clinical practice. Furthermore, the proposed process indicators have not yet been prospectively validated and should therefore be considered an initial point for quality assessment, to be refined and validated through future implementation studies. Finally, not all Italian regions were represented, although the four regional PDTAs included in the comparative analysis cover geographically diverse areas of the country (North-West, North-East, Central, and Southern Italy), providing a broad overview of the organizational models currently adopted and supporting the development of a framework with potential national applicability. Despite these limitations, this study provides, to our knowledge, the first national consensus-based framework defining the minimum organizational and clinical requirements for regional PM diagnostic, therapeutic, and care pathways in Italy. By establishing a shared set of minimum standards, it offers a practical methodological reference to support the harmonization of regional care pathways, reduce unwarranted variability in patient management, and provide a foundation for future evaluation of pathway quality and outcomes.

Our comparative analysis of four Italian regional PDTAs for PM identified a shared core of essential multidisciplinary professionals, a consistent hub-and-spoke organizational architecture, and a set of six reproducible process indicators. These convergent elements provide the basis for a harmonized, regionally adaptable model of care for this rare and complex malignancy.

In this context, the PDTA represents a structured organizational framework for the diagnosis, treatment, and supportive care of patients with PM, developed on the basis of the best available evidence and designed to ensure coordinated, timely, and continuous care across hospital and community settings while taking into account the available human

and technical resources. Given the complexity of PM management, clearly defined responsibilities, referral pathways, and timelines are essential to improve coordination, appropriateness, and efficiency of care. Evidence on clinical pathways supports their role in improving professional practice, enhancing care coordination, and reducing unwarranted variability in healthcare delivery (9). Multidisciplinary management and effective integration between hospital- and community-based services represent the fundamental principles underpinning high-quality PM care.

Given the complexity of PM management and the need to ensure efficient use of healthcare resources, it is essential to distinguish between professionals who should routinely participate in the multidisciplinary management of all patients and those whose involvement should be tailored to specific clinical needs. Consistent with current international recommendations (4, 10), the core multidisciplinary team should include, at a minimum, a medical oncologist, thoracic surgeon, pulmonologist, radiologist, pathologist, radiation oncologist, palliative care specialist, and nurse case manager. Additional specialists, including nuclear medicine physicians, occupational physicians, rehabilitation specialists, psychologists, dietitians or nutritionists, clinical geneticists, molecular biologists, hospital pharmacists, and other organ-specific specialists, should be involved whenever clinically indicated. This organizational model allows multidisciplinary expertise to be integrated in a flexible and sustainable manner, improving coordination, facilitating timely decision-making, and promoting greater consistency in patient management across different healthcare settings.

The hub-and-spoke model represents a key component of regional PM PDTAs, balancing equitable access to care with the concentration of specialized expertise (11). For this model to be effective, Regional Oncology Networks should play a central role in formally identifying and accrediting Level I (spoke) and Level II (hub) centers, clearly defining their respective functions and responsibilities according to available expertise, case volume, and available facilities. This represents a crucial effort to ensure that patients are managed within an integrated regional network and have equitable access to optimal multidisciplinary care, regardless of where they first enter the healthcare system. Such an organization is particularly important in PM, where optimal outcomes depend on the strategy defined at diagnosis in experienced centers capable of delivering complex mul-

timodal management, and it may also facilitate the timely referral of eligible patients to clinical trials. Process indicators are practical tools for assessing the efficiency and effectiveness of pathway activities over time and for supporting continuous quality improvement. To be useful, these indicators should be reproducible, measurable, and adaptable across different healthcare settings. Their routine application enables the evaluation of pathway implementation, facilitates benchmarking across settings, and supports evidence-based refinement of clinical practice.

PM is a highly challenging malignancy to manage. Owing to its frequently advanced stage at diagnosis, treatment is curative in only a minority of patients and, in most cases, is primarily aimed at prolonging survival while maintaining disease control, alleviating symptoms, and preserving quality of life. Throughout the course of the disease, patients experience one of the highest symptom burdens among thoracic malignancies, with pain, dyspnea, fatigue, anorexia, and psychological distress often occurring simultaneously and significantly impairing daily functioning. These characteristics make PM an ideal setting for the early integration of palliative care alongside active therapies, according to the principles of simultaneous care. The World Health Organization defines palliative care as *"an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other physical, psychosocial, and spiritual problems"* (12). In patients with advanced cancer, early integration of palliative care has consistently been associated with less aggressive end-of-life care, better symptom control, improved quality of life, and greater patient and caregiver satisfaction (13, 14). A potential survival benefit has also been reported, most notably in patients with metastatic non-small-cell lung cancer (15). Although comparable prospective evidence is currently lacking in PM, the disease's clinical characteristics and substantial supportive care need provide a compelling rationale for integrating palliative care from the time of diagnosis.

Despite these considerations, palliative care remains underutilized in patients with PM and is frequently introduced only in the final stages of the disease. In a retrospective study, Baird *et al.* reported that although referrals to palliative care services had increased over time, more than half of patients

with PM still did not receive specialist palliative care despite their limited life expectancy (16). These findings highlight the persistent gap between evidence-based recommendations and clinical practice, emphasizing the need for structured multidisciplinary care pathways that facilitate the timely incorporation of palliative care throughout the disease trajectory.

Accordingly, in the proposed pathway, palliative care should be introduced early and delivered concurrently with disease-directed treatment as an integral component of comprehensive patient management rather than being reserved for end-of-life care. Early access to psychological support should likewise be ensured to address the significant emotional and psychosocial burden experienced by both patients and their caregivers. In addition, collaboration with patient and volunteer associations may further strengthen supportive care by helping identify unmet needs, facilitating communication between patients, families, and healthcare professionals, and promoting a more patient-centered approach throughout the care pathway. The active involvement of accredited patient associations should also be pursued in PM PDTAs. This recommendation is supported by the recent Italian State-Regions Agreement of 4 December 2024 on the participation of non-profit organizations in Regional Oncology Networks, which formally recognizes their role in organizational and clinical decision-making, the development and revision of oncology care pathways, patient advocacy, health promotion and research, and the evaluation of patient experience and healthcare quality.

This work demonstrates that defining a structured, multidisciplinary PDTA for PM, based on a clearly identified core multidisciplinary team, a well-defined hub-and-spoke model, mandatory multidisciplinary case discussion, shared process indicators, integrated clinical and biological data collection, and early integration of psychological and supportive/palliative care, is both feasible and necessary to promote equitable, high-quality care. Future efforts should focus on prospectively validating the proposed quality indicators, extending the consensus process to all Italian regions, and implementing a national infrastructure linking clinical, pathological, and biological data to support quality assessment, outcome evaluation, and epidemiological, translational, and clinical research. Although developed within the Italian healthcare system, the framework proposed in this study provides a practical reference for the harmonization of regional PM care pathways

and may represent a useful model for other countries seeking to reduce organizational variability in the management of this rare and complex disease. The framework may represent a useful reference for the development of the Italian National Rare Cancer Network (Rete Nazionale Tumori Rari, RNTR) and for the alignment of regional PM care pathways with the European Reference Networks (ERNs) model for rare and complex diseases.

COMPLIANCE WITH ETHICAL STANDARDS

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Conflicts of interest

The authors declare no competing interests.

Availability of data and materials

The regional PDTA documents analyzed in this study are publicly available through the respective regional health authorities.

Authors' contributions

MP, FG: conceptualization, writing - original draft, writing - review & editing, supervision. Other authors: conceptualization. We acknowledge MET.I (Mesothelioma Team Italy) for its support.

Ethical approval

This study is based exclusively on the review and analysis of publicly available regional PDTA documents. No patients, animals, or personal data were involved. Ethics committee approval and informed consent were therefore not required.

Publications ethics

Plagiarism

Authors declare no potentially overlapping publications with the content of this manuscript and all original studies are cited as appropriate.

Data falsification and fabrication

The writing and contents of the article are entirely original and were developed entirely by the authors.

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