Multidisciplinary care team for cancer patients and its implementation in several Middle Eastern countries


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This article introduces palliative care to cancer patients in Middle Eastern countries. It considers the importance of the multidisciplinary team in providing an adequate service to the patient and his/her family. It provides views of professionals from the various countries with regard to the role of the nurse in such teams; whereby the three elements of palliative care nursing entail: 1. Working directly with patients and families; 2. Working with other health and social care professionals to network and co-ordinate services; and 3. Working at an organizational level to plan, develop and manage service provision in local, regional and national settings. This article also details the challenges that nurses face in the Middle East and outlines the preferable ways to overcome such challenges. The latter include more focused educational activities at the undergraduate and graduate levels and continuous clinical training throughout their work as palliative care nurse specialists.

introduction

Multidisciplinary care (MDC) can be broadly defined as an integrated team approach to health care in which medical and allied health care professionals consider all relevant treatment options and develop an individual treatment plan for each patient collaboratively [1].

Cancer care can be complex. Due to the large number and range of healthcare providers who may be involved, there is a potential for poor communication and poor coordination of care. MDC has been identified as a key enabler in the provision of high-quality treatment and care for cancer patients. Multidisciplinary teams (MDTs) aim at improving communication, coordination and decision making between the care professionals. The use of MDTs in cancer care is endorsed internationally, although uptake varies. It has been adopted in several Western countries, but is a less common model of care in the Middle East.

Research has shown that MDT decisions lead to revisions of cancer diagnoses and treatment plans in new cancer cases [2–4], and better adherence to evidence-based guidelines [5–7]. Importantly, patient satisfaction with the operation of MDTs is shown to be excellent [8, 9].

Multidisciplinary cancer care can be delivered using various models of care. These include multidisciplinary clinics staffed by a mix of different health professionals [2], and MDTs that hold regular meetings to discuss patient care plans prospectively. On the whole, these MDTs and clinics tend to be tumor or organ specific. In large metropolitan hospitals, MDT meetings are usually held weekly; while in smaller community hospitals, meetings may be held fortnightly or monthly. Rural hospitals may be linked to metropolitan cancer centers for regular meetings through teleconference or videoconferencing [10]. By far and large, rural teams are less well developed than those in metropolitan and regional areas [11].

benefits of MDC teams

The evidence of improved survival as an impact of MDC has not been strong [4]. Yet, recent evidence from a Scottish study has linked substantially greater improvement in breast cancer survival to MDC, over and above improvement expected to occur in the absence of MDC [12]. Discussions of individual cases at the MDT meetings provide an excellent opportunity for training physicians and nurses [13]. Also, team meetings assist in communication and information sharing between members, particularly between hospital-based specialists and primary care providers, which enhance referral and continuing care pathways [14].

composition of the MDT

Core members of the multidisciplinary cancer team usually include an oncologist (medical, surgical, radiation), pathologist,
radiologist and nurses. The make-up of the team varies depending on the tumor stream and on the health service. Nurse coordinators are often the team members who bring patient information and concerns to the meeting [15]. Communication with the patient’s primary care provider is important. In most Western countries, the MDT recommendations are also discussed with each patient by an appropriate member of the care team after the meeting is concluded [2, 9].

barriers

An Australian survey alluded to several important barriers to implementing MDC, such as lack of time, workforce resources, small caseloads and funding [16]. Further, it was recommended that teams implement systems to ensure that communication with general practitioners (GPs) regarding treatment plans is timely and adequate as GPs are ideally placed to assist in providing continuity of care.

   In a recent qualitative survey, Walsh et al. [17] identified the following barriers to cancer care coordination: recognizing health professional roles and responsibilities and inadequate communication between specialists and primary care. Hierarchical boundaries and unequal participation in decision making are also issues, with nurses reporting that they were marginalized and their contribution of patient-centered information ignored.

requirements for an effective multidisciplinary team

Guidelines for operating an effective MDT have been published in several countries [18, 19]. Important components of such a team are:

(i) Leadership
   Good leadership is integral to the operation of an effective MDT [14]. The MDT chair needs to ensure that all voices are heard, will be well respected and will be able to make a casting decision [19]. Further, effective leadership is necessary in order to encourage inclusiveness and open discussions, thereby helping to avoid both the marginalization of team members and poor decision making [19].

(ii) Team dynamics
   The team needs to agree upon mutual respect and trust, valuing different opinions and the encouragement of constructive discussion [18]. As indicated above, nurses play a crucial role in coordinating care, as well as in representing the patient’s views and psychological aspects of care, especially as psychological concerns are often neglected in favor of medical information [13].

(iii) Administrative support
   Administrative support is a key component of good MDT operation, to ensure good organization and coordination. Documentation is an important aspect of MDT meetings. The MDT coordinator assists in timely and complete patient information transfer between a specialist and a GP [19].

(iv) Involvement of the patient
   Opinions differ on the involvement of the patient in MDT meetings. In Western societies, there is general agreement that patients need to be informed that their case will be discussed at an MDT meeting. The Cancer Care Ontario guidelines state that ‘patients or their representatives should not attend the MDT meeting, to ensure unbiased case review’ [19].

addressing rural/regional issues for MDT care

Delivering MDC in regional areas aims to lead to improved cancer care. Such services include the formation of a multidisciplinary cancer team, along with formal links to tertiary cancer centers and increased primary health involvement in cancer care. The outcomes of such an initiative include improved services to regional cancer patients and their families.

geriatric oncology

Lynch et al. [20] found that most issues faced by older adult patients were psychosocial in nature and were best addressed through the collaboration of a social worker, the palliative care nurse and other members of the multidisciplinary team, including geriatricians.

international trends

Internationally, the trend seems to be toward increased use of mandatory guidelines to ensure that cancer care is multidisciplinary. In Belgium, France and the Netherlands, the use of MDTs is mandatory [21–23]. The UK, Canada and Australia all have national or state-defined guidelines for the use of MDTs in cancer care [1, 18, 19]. No such guidelines exist in Middle Eastern countries.

the current situation in the middle east

In those countries where MDTs have been set up, it is important that oncologists work to expand and improve these services, and that they refer their patients to MDC. This may not necessarily be the case with all oncologists at present.

Cyprus

In Cyprus, not all oncologists refer their patients to the MDTs. This reflects on one of the roles of oncologists, namely their role as gatekeepers: they see patients and they control referrals to the other members of the MDT. The problem of under-referral to the MDT may relate to the oncologists’ perceptions that they can do it all themselves. This is often due to a lacuna in the training of oncologists and their unawareness of the potential impact of the MDT, to meet the complex needs of patients with advanced cancer. Additionally, often oncologists may not be aware of their limitations in terms of managing all the different symptoms as a result of time pressure. Moreover, oncologists, for the most part, are trained to provide disease-directed therapy, and are expected to be very knowledgeable about this,
but they may have difficulty in providing psychological support or spiritual guidance to the patient.

Using a team approach that includes geriatricians, nurses, social workers and therapists is especially valuable in providing support in the community, both to elderly cancer patients and to their caregivers, to ensure appropriate quality care, including end-of-life care. Older caregivers pose unique problems, as their physical and psychological needs may differ from those of younger caregivers. With respect to the older cancer patient, the geriatrician’s role would also entail training other members of the team to undertake certain geriatric assessments.

Unfortunately, Cyprus has not as yet developed medical services for palliative care or geriatrics. Palliative care has been left to Non Governmental Organizations who have acquired vast experience in caring for cancer patients at home.

The leading organizations in this area are the Cyprus Association of Cancer Patients of Friends (PASYKAF) and the Anticancer Society, which have improved the quality of life for all cancer patients, and especially the elderly, whose needs are more pronounced. This requires a team approach and education and time spent with the family who often become the decision makers for the elderly and must be guided to shift their focus from cure to care. It is imperative that both the family team and the caring team have the same goal care.

PASYKAF and Anticancer Society have been offering home care for the past 20 years with a full multidisciplinary team comprising a physician, palliative care nurses, psychologists, physiotherapists and social workers. As a result, the rates of death at home in Cyprus are increasing yearly, while in 2010 they constituted 27% of all treated patients, in 2012 the figure rose to 33%. In providing such services, education is a fundamental component of the team’s work. Patients and their care relatives need to know that they are a vital part of the team. This is very different from what they experienced previously, during the hospitalization period, as at home they are encouraged to take on more responsibility. That patients at home are able to feel in control, and know what the next step is going to be, is of great importance. It is therefore essential that the care goal is continually evaluated, with input from both the patient and the family. In managing older cancer patients who often suffer from co-morbidities, the palliative care nurse monitors all medications and drug interactions and discusses this aspect with the treating physician.

The psychologists in the team deal with the caregiver’s stressors at home and jointly prepare intervention programs with a multidisciplinary approach to be implemented in groups.

**Lebanon**

In Lebanon as other countries in the region, the surgeon often plays a major role in the functioning of the MDT. When the purpose of intervention is curative, the consensus today is that the age of the patient per se does not pose any particular problem, since surgical procedures for elderly cancer patients do not differ from those for younger people. Unfortunately, many cancer patients delay treatment and see the surgical oncologist at an advanced stage of the disease and/or with associated co-morbidities, so that palliative surgery, aimed at relieving symptoms and improvement of (QoL), is the only option. Such surgery includes drainage of infected or carcinomatous aggregations, by-pass for biliary, intestinal or urinary obstruction, control and other symptoms.

Notably, the use of surgical procedures for palliation requires the highest level of surgical judgment, and the need to take the medical prognosis of the disease into consideration.

Surgery has been in the forefront of palliative care for decades, focus on three major elements of surgical emergencies: obstruction, bleeding and perforation. Such interventions are carried out to alleviate symptoms when cure is no longer an option. Decisions concerning such procedures need to be flexible and individualized taking into account the state of the disease and of the patient. Moreover, the surgical techniques should always favor the simplest and least invasive procedure.

**Israel**

In Israel the leading cancer center adopted the Primary Care Nursing Model (PCNM) in its outpatient clinic for chemotherapy and biological therapies. This model represents a nursing practice system that emphasizes continuity of care by having one nurse provide complete and comprehensive care for a small group of patients in a hospital nursing unit. The model differs from a classic MDT, in that it is highly personally oriented, whereas the MDT’s work is based on the partnership and sharing of knowledge and experience. For all practical purposes, the PCNM is based on the nursing teamwork. However, in effect, the PCNM, which consists of a number of self-contained nursing units in a hospital ward, is also based on the teamwork. In order for such a team to function optimally, three major prerequisites must be in place:

(i) Select the right individuals, based on their professional skills and feelings about joining a team of professional colleagues.

(ii) Suitable environmental conditions in which the team will operate.

(iii) Training and promotion of teamwork competencies.

Both personal and clinical qualifications play an important role in forming a team. Ideally, the team members will share personal characteristics essential for good interpersonal relationships; along with the appropriate clinical qualifications to ensure excellence in various clinical domains, thereby being able to complement each other. It would be important to assess the personality, age, family status, personal preferences and individual traits of the candidates. The status of each member in the team is of utmost importance as each team will have a formal leader. The performance of the team leader should be evaluated intermittently, including exploring his/her acceptance by teammates. The leader overseeing the teams’ operations must allocate ample time for listening to and private talks with staff members. The mutual exchange of ideas and impressions is paramount for the coalescence and longevity of the teams.

**mode of operation of the PCNM**

Once a patient is assigned to a nurse, that nurse will attend the patient throughout the treatment process. Should the nurse miss
a shift, team members will take over, as all the nurses in the team know all the patients and are familiar with their therapy protocols in the clinic. In a recent survey of the interrelationship between team size and efficiency of the nursing teamwork, it became apparent that a negative correlation was found between the two correlates [24]; leading to the conclusion that in order to optimize nursing unit teamwork, consideration should be given to strategies aimed at reducing the patient load of the nursing teams.

the Sultanate of Oman

The first oncology service in the Sultanate of Oman was established in the Royal Hospital in 1996. About 80% of the nurses are certified in oncology and radiotherapy. The working relationships between nurses and physicians are trustful and positive, thus enabling effectively functioning teams. The staff in the ward meets once every 3 months and joint decisions are made.

In order to further improve the MDT work, there is a need for an official job description of oncology nursing, which still awaits final approval. Also, the staff feels a lack in its communication skills and more efforts are needed in order to involve patients and their families in decision making which, in turn, will enhance trust relationships between the caregivers and their patients and relatives. The oncology service as a whole places a great emphasis on joint extracurricular social activities, which are perceived as an act of appreciation and recognition of all staff members.

Egypt

Nurses in Egypt feel that often their work and efforts are not fully recognized by their fellow physicians on the ward; as the physicians tend to view nurses merely as helpers who should operate under their authority. A dominant factor contributing to such an attitude is the physicians’ lack of knowledge regarding the scope of the nurses’ professional training and responsibilities. Consequently, physicians may feel reluctant to extend freedom of practice in all aspects of patient care to nurses. While most nurses are well aware of the physician’s educational training and background, the physicians’ knowledge of nursing education and training is quite limited. This leads to the misconception of the nurse’s role in the team. All members of the team need to understand the meaning of collaboration. This can be a critical issue in the harmonious functioning of an MDT; as nurses view collaboration as according to them a more independent role in the overall management of the patient. As a result of such an inhibiting attitude, nurses face obstacles in terms of autonomy and independence. Mutual respect is paramount for effective teamwork and nurses’ motivation and job satisfaction. A cardinal issue that is constantly brought up in Middle Eastern countries refers to poor communication which is an essential factor for successful work in a MDT. Accordingly, it has been repeatedly suggested that strategies be developed to avoid communication gaps among professionals caring for the cancer patient. Notably, it has been our experience that over time, the role and responsibilities of the nurse in the oncology ward have been better formalized, thereby granting nurses more equality in their work. Still, physicians perceive attempts at collaborative work as an attempt to invade their sphere of practice. One way to overcome some of the above obstacles is to provide medical students with a formal orientation concerning the nurse’s scope of practice. This will require the formal documentation of nursing training and practice objectives. Such an approach could assist in eliminating misguided attitudes toward nurses later on in the physician’s career.

Defining the nurse’s role in the MDT model of collaboration would eliminate unnecessary uncertainties and thereby ensure optimal functioning of all members of the MDT. Of importance are the timely meetings which will eliminate the feature of ‘absence of information sharing’ in many reports.

Palestine

In Palestine physicians’, daily staff meetings are not usually attended by the ward’s nurses, although nurses participate in daily rounds. One of the main obstacles to a proper functioning of the team is the lack of confidence in the nurses’ capacities, and inadequate communication between physicians and nurses, which, in turn, can lead to a stressful situation. Similar to the situation in Egypt, staff members believe that inter-team relationships can be improved by additional training, increased awareness of peoples’ emotional needs and expectations, and counseling techniques to improve communication among the team members.

Jordan

The Jordanian approach coincides in many aspects with that of Egyptian nurses, as the current notion of successful MDT work in Jordan refers to the management of the team along with the clear description of the roles of its members. An additional factor to the team’s success is the delegation of responsibility by the medical specialist to the other team members. The role of the advanced practice nurse or the nurse coordinator or navigator is repeatedly emphasized, as it is strongly believed that a well-trained nurse can contribute significantly to the effective management of cancer patients.

In recent years, the working relationships of nurses in Jordan with other health professionals, including physicians, have improved due to their advanced level of education. Currently, Jordanian nurses have gained more respect and status, yet gender issues still persist. In places where such conflicts exist, the nurses believe that they themselves must initiate strategies to enhance physician-nurse collaborations, which will also involve closing the gaps in education through more training for nurses. Palliative care nurses in Jordan have also succeeded in promoting the notion that professionals should be open and honest with their patients with regard to diagnosis and prognosis, even in a culture that avoids mentioning the word ‘cancer’. The reality is that nurses in the treating team were trying to deliver quality end-of-life care to patients who were not aware that they had cancer. With time, the palliative care nurse became the trusted companion in the patient’s last journey. Based on the experience gained in recent years in Jordan as well as other Middle Eastern countries, professionals have reached the conclusion that community nursing generally and palliative care services in particular are services that can be managed primarily by nurses. This shift can be achieved more quickly.
and efficiently once the nurses’ job description is clearly formulated and regulated.

**United Arab Emirates**

In the UAE, highly advanced oncology systems have been developed, which include palliative care services. Yet, as other countries in the Middle East, a paternalistic culture still prevails among physicians, which creates a barrier for the advancement of nursing in the MDT generally, and in improving specialized nursing in particular. The UAE health system faces a unique situation in terms of caring for a multiethnic society. In such a society, with many languages and cultural barriers, nurses cannot advocate as much as they should, physicians make almost all the decisions, and patients get lost in the sea of translations. Palliative care in the UAE is one of the dynamic domains that still requires the build-up of an infrastructure of professionals to implement such an important service. Essentially, these professionals will function in MDTs and inter alia will have to deal with cultural and religious issues.

**Saudi Arabia**

Palliative teams function in the King Abdul Aziz Medical City, Jeddah but still there are no designated palliative units while the teams function as nursing teams in the oncology units (male and female oncology, pediatric, hematology Bone Marrow Transplantation). The palliative care physician team takes first a comprehensive assessment as a holistic approach of the patients and their families. These get recommendations for medication adjustments or continuity by the nurse’s. Hence, nurses are recognized as palliative nurse specialists. This is not the case for the non-oncological units in the Medical City in Jeddah.

The relationships between physicians and nurses are of mutual respect and trust after a long period of working together; and the palliative care consultants trust the nurses’ assessments and recommendations.

Some of the physicians feel uncomfortable as nurses suggest changes or stopping of medications; yet, after working together all initial worries disappear.

Some of the current problems and barriers that are encountered are:

(i) Need for more palliative units to accommodate the increasing numbers of patients.
(ii) Shortage of manpower specializing in the palliative medicine.
(iii) Need for more policies and guidelines for palliative care.
(iv) Need for education programs for nurses and physicians in palliative medicine.
(v) Late involvement of the palliative care team with patients with advanced disease.

**discussion**

Having studied and analyzed the current state of affairs in the Middle East, it becomes apparent that most countries in the region aspire to attain multidisciplinary teamwork of a high quality that is either hospital- or community-based. The quality of such teamwork relies on training, the experience of its members, and a team philosophy of care and organizational structure. In particular, the quality of the teamwork depends on relationships between nurses and general oncologists in the hospital. Moreover, effective palliative care requires not only good team relationships but also robust processes. In this context, nurses are in an ideal position to share the patients’ social, spiritual and emotional needs if a relationship is established early enough in the disease trajectory; as the nurse’s role is a major link in caring for palliative-care patients.

Although there is universal acceptance of the need for interprofessional communication, there are different perspectives about the relative merits of formal multidisciplinary meetings versus informal meetings between practitioners when the need arises; with nurses generally preferring formal meetings and physicians in the community favoring informal ones.

Regionally, palliative care is commonly provided in people’s homes, as it should be in the environment that patient wishes and in an affordable and culturally appropriate manner [25]. It is most commonly provided by community visiting nurses who coordinate services and liaise with physicians, health care and social care staff. Often, the provision of holistic care may also involve nurses helping to provide food as well as equipment and other resources.

By and large, in the community, physicians tend to value informal communication with nurses much more highly than formal meetings, as nurses are recognized as often being better informed about the patients’ day-to-day condition and can alert the physician when a patient is deteriorating and might require greater attention [26]. However, many nurses do not have the opportunity to contribute more fully because of the low status of nurses in the professional arena. Nurses can play a central role in providing clear and accessible medical information in various formats—verbal, written—in a timely and sensitive way.

The issue of hierarchy and status cannot be ignored, yet effective leadership by physicians can remove such obstacles and make communication from less powerful members (nurses) safe and efficacious.

In some Middle Eastern countries, palliative-care specialists are available in hospitals, but this is still the exception rather than the norm. The introduction of such services needs to be understood in relation to the demography, politics, economics and cultures of particular societies [25]. Team members in hospitals recognize the nurse as the primary informant, largely because she sees patients more often than other team members, and therefore is likely to be most familiar with the patient [27].

A driving force behind the transition of health care professionals’ from being soloists to members of an orchestra is the complexity of modern health care, which is evolving at a fast pace. No single person can absorb and apply all the available information. Therefore, now more than ever, there is an obligation to strive for perfecting the science and practice of interprofessional team-based health care [28].

The information and data provided by the various Middle Eastern countries clearly indicate that fundamental to the success of any model of team-based care is the skill and reliability with which the team members work together. To achieve that goal, the individuals in the team need honesty, discipline, creativity, humility and curiosity.
Furthermore, the team as a whole needs to have meaningful shared goals based on mutual trust and effective communication among its members, and an effective team leader with skills that are distinct from those needed for making clinical decisions.

There was a consensus among all countries that effective communication among the team members lies at the core of the team’s work; and that this involves active listening to the contributions of others on the team, as well as to the patient and the family. Representatives from the region also repeatedly stressed the issue of developing strategies to overcome existing barriers in the teams which hinder teams’ functioning. These require modulating the culture and practices of team members in an acceptable fashion and improving physician–nurse–patient communication. Building such bridges between the team members can promote synergy and efficiency. Everyone agreed that this is feasible by means of inter-professional education, more disease-related information and care coordination.

In the United States (at the University of Colorado Hospital), the inpatient palliative care service is coordinated by two advanced practice clinical nurse specialists (both master’s degree prepared and certified in palliative care) who work with multiple palliative care physicians rotating on service monthly. A social worker and chaplain are also involved with the palliative care team and other interdisciplinary team members (e.g. pharmacist, rehabilitation therapists, dietician, for example) are often consulted, when appropriate. The palliative care nurse–physician relationship is one of collaboration and mutual respect. The palliative care physician is well aware of the advanced practice palliative care nurses’ role in providing a comprehensive patient/family assessment and consultation for pain and symptom management and wishes for end-of-life care. The patient and family is at the center of the team with their past experiences, preferences, and cultural and religious beliefs informing their care. The palliative care nurse establishes a relationship with the patient and the family, listens empathetically to understand their concerns and needs and communicates their wishes to other team members. The palliative care physician looks to the nurse to provide this information, so that a plan of care can be developed.

Further, in the United States palliative care services and teams vary in their structure but are typically comprised of nurses and physicians. Palliative care has transformed nursing practice; however, this has not happened swiftly. Much of what bedside clinical nurses have done in the past has been palliative care, often driven by nurses’ concerns and conflicts that patients receive proper pain and symptom management, communicating with patients and families about what they knew about their disease and what they wanted for their future, and planning for care at home when discharged from the hospital. Bedside clinical nurses are on the front line dealing with a patient’s pain and suffering and questions they often have about their care, disease and treatment, and goals for the future. Specialized nurses with advanced degrees (for example, clinical nurse specialists, nurse educators, or nurse practitioners) are role models for and teach bedside nurses about palliative care provision and advanced symptom management techniques. These advance practice palliative care nurses often manage their own patient caseload and become care coordinators in hospital settings, outpatient or ambulatory care, home and hospice settings. Nurses are essential partners in palliative care, and collaborating with physicians is crucial. This includes getting to know one another, establishing relationships, building trust, learning about each other’s strengths when dealing with patients and families, and respecting each other’s role. Incorporating these aspects into team care happens when physicians and nurses working together experience success with difficult patient and family situations. Learning what worked well and what did not in each patient/family encounter builds the collaborative relationship.

Since palliative care is a vital component of healthcare reform, nurses must obtain Hospice and Palliative Nursing certification, participate in continuing education activities [e.g. End-of-Life Nursing Education Consortium training] and seek master’s or post-master’s level education through advanced practice classes or certificate programs [29]. In addition, nurses can actively participate in palliative care research to improve the quality of life, pain and symptom management, decrease suffering and the provision of palliative care to patients. Nurses should be encouraged and mentored to collaborate with physicians in research or develop their own evidence-based practice, quality improvement or research project. Identifying a clinical question, searching for and critically appraising the evidence and changing practice based on best evidence improve patient outcomes. Clinical nurses are encouraged to coordinate and participate in nurse-run journal clubs, keeping abreast of new knowledge and reviewing literature on topics that will impact patient care.

An important member of the multidisciplinary team is the psychologist/psychiatrist. The Children Cancer Hospital in Cairo, Egypt, succeeded in developing an outstanding psycho-oncological service to all its patients along with their relatives. In a recent meta-analysis study, it became evident that 38.2% of cancer patients suffered from any type of mood disorders, and 31.6% suffered from depression or anxiety [30].

It is known that depression decreases the survival rate of patients with cancer, and that it contributes to the prediction of desire for hastened death [31].

Further, it has been suggested that psychological factors have a role in cancer incidence and prognosis; as it was shown that 70% of prospective studies proved relationship between cancer and the psychological status of the individual [32]. It is, therefore, imperative to have an experienced mental health expert in the MDT for the benefit of the patient, his/her family and the caring staff themselves.

directions for future research

The current situation concerning the implementation of a multidisciplinary team approach in cancer care is still problematic, and there are gaps in our understanding of the following items:

(i) Which types and structural configurations of MDT function best and in what circumstances?
(ii) What characteristics of physicians, nurses and other clinical specialists lead to optimal team performance, and for which disease sites?
(iii) What external regulatory influences prohibit or enhance the sustainability of MDT in cancer centers and in the community?
(iv) Which MDT models and configurations lead to optimal patient outcomes? [33]

The current review found only scant research relating to how cancer specialists work together as a clinical team, little attention has been given to the patient experience. It is important to remember that MDTs are not single-dose interventions, they are longitudinal care structures that require theoretical approaches that go beyond the more typical cross-sectional snapshots of team structure, process and performance [33]. What are urgently needed are regional intervention studies of how team composition, culture, organizational characteristics and environmental factors affect the team’s performance. Such studies should be carried out if cancer services wish to keep pace with the future trajectory of personalized oncology. Only then can we begin to appraise the potential for MDC to become a foundation for optimal cancer care delivery in the 21st century [33].

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