

Benefits of multidisciplinary teamwork in the management of breast cancer

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Abstract: The widespread introduction of multidisciplinary team (MDT)-work for breast cancer management has in part evolved due to the increasing complexity of diagnostic and treatment decision-making. An MDT approach aims to bring together the range of specialists required to discuss and agree treatment recommendations and ongoing management for individual patients. MDTs are resource-intensive yet we lack strong (randomized controlled trial) evidence of their effectiveness. Clinical consensus is generally favorable on the benefits of effective specialist MDT-work. Many studies have shown the benefits of receiving treatment from a specialist center, and evidence continues to accrue from comparative studies of clinical benefits of an MDT approach, including improved survival. Patients' views of the MDT model of decision-making (and in particular its impact on involvement in decisions about their care) have been under-researched. Barriers to effective teamwork and poor decision-making include excessive caseload, low attendance at meetings, lack of leadership, poor communication, role ambiguity, and failure to consider patients' holistic needs. Breast cancer nurses have a key role in relation to assessing holistic needs, and their specialist contribution has also been associated with improved patient experience and quality of life. This paper examines the evidence for the benefits of MDT-work, in particular for breast cancer. Evidence is considered within a context of growing cancer incidence at a time of increased financial restraint, and it may now be important to reevaluate the structure and models of MDT-work to ensure that MDTs are an efficient use of resources.

Keywords: interdisciplinary teams, interprofessional interactions, multidisciplinary collaboration, teams, teamwork

Introduction

There have been significant advances in the diagnosis and treatment of breast cancer over the past 20 years, due to increased knowledge about the biology and molecular changes in breast cancer. Comprehensive profiling at the molecular level has led to understanding of breast cancer not as a single disease but heterogeneous,¹ and facilitated the development of personalized medicine (eg, targeted therapies such as trastuzumab for HER2-positive cancers) that are far more sophisticated than previously available treatment. These advances have increased the complexity of treatment decision-making for individual women, and reinforced the need for a team approach to treatment decision-making.

Multidisciplinary teams (MDTs), consisting of medical, nursing, allied professionals, and diagnostic experts, have arguably “naturally” evolved alongside advances in treatment, due to the requirement for a range of specialist expertise in order to

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determine the optimal treatment pathway for individual patients. MDTs are now firmly established at the core of cancer care in many countries worldwide. This article aims to synthesize evidence of the benefits of MDT-work, in particular for breast cancer.

Defining multidisciplinary care

Multidisciplinary cancer care is described using various terms: MDTs, multidisciplinary case/cancer conferences, and tumor boards are all forms of multidisciplinary cancer care. The core elements are inclusion of a range of health professionals who can make unique contributions to decision-making about the management of individual patients, and a forum in which they can communicate these contributions. A multidisciplinary team is defined by the UK Department of Health as “a group of people of different health care disciplines which meets together at a given time (whether physically in one place or by video or teleconferencing) to discuss a given patient and who are each able to contribute independently to the diagnostic and treatment decisions about the patient.”²

Whilst the increasing complexity of treatment decisions provides a strong rationale for MDT-work, its existence is not universal. A global survey, completed by principal investigators from 39 countries participating in a phase III trial, showed that mandatory MDT-work for breast cancer ranged from approximately two-thirds of centers in Eastern/Western Europe to only a quarter of centers in South America and a third in Asia.³ Even within centers that reported having mandatory MDT care, most lacked national or regional guidelines regarding composition or practice of MDT-work to ensure consistency of provision (only 19% reported having such guidelines). The variation in format and function of MDTs has previously been reported in relation to tumor boards in the US.⁴ Furthermore, tumor boards are often solely “medically” focused: a recent survey of 138 providers within one health system in the US found less than a third listed having social workers, nutritionists, or palliative care specialists as members (nurses were not even mentioned).⁵

In the UK, MDTs are a mandatory component of cancer care and are regulated through a “peer review” program that assesses adherence to national tumor-specific guidance regarding their structure and processes.^{2,6} The guidance includes specifying the membership in relation to professional group and degree of specialism, separating into “core” (mandatory) and “extended” (recommended) members. For breast cancer, core membership includes two

designated breast surgeons, a clinical oncologist (radiation oncologist), a medical oncologist (where the responsibility for chemotherapy is not undertaken by the clinical oncology core member), two imaging specialists, two histopathologists, two breast cancer nurse specialists, and an MDT coordinator/secretary. Extended team members include a reconstructive/plastic surgeon, physiotherapist/lymphedema specialist, psychiatrist or clinical psychologist, and a social worker.

What difference does it make? Reviewing the evidence of benefit

MDTs have been established as a cornerstone of cancer care in the UK and other countries worldwide prior to robust demonstration of effectiveness.^{7,8} The value of an MDT approach to decision-making and management has been tested subsequent to implementation of MDTs. In many countries, national policy supporting an MDT approach prevents a “gold standard” randomized controlled trial evaluation of the effectiveness of MDT care, and may raise ethical dilemmas as well as methodological complexities, even where policy does not exist. Evidence of benefit therefore arises from weaker (quasi-experimental) study designs such as “before/after” or comparative studies, which require cautious interpretation due to risk of bias caused by “time” (improved outcomes due to other changes over time, such as better treatments) or other potential confounders of outcomes.

Clinical benefit

A systematic review conducted in 2010⁹ found that twelve studies reported a significant relationship between MDT care and survival (including four on breast cancer), but concluded that the pooling of data to provide more definitive evidence was prevented by methodological limitations. These included poor definitions of the MDT interventions and/or heterogeneous MDT models, the fact that temporal changes may confound findings in before-and-after studies, and that data may not be sufficiently accurate or comprehensive when drawn from cancer registry databases.

An opportunity for evaluating the relationship with survival in a contemporaneous comparative design (thereby overcoming temporal bias) was provided by the introduction of MDT-work in one but not other health boards in a region of Scotland.¹⁰ Data from over 13,000 women diagnosed with symptomatic invasive breast cancer between 1990 and 2000 were included. Adjusting for case mix (including year of incidence, age at diagnosis, and deprivation), the researchers found that prior to the introduction of MDTs, breast cancer mortality was 11%

higher in the intervention area compared with other areas in the region, but after MDTs were introduced, mortality was 18% lower than the other areas. They used an interrupted time-series approach to adjust for trends in survival before the intervention was introduced, and found that the improvement in survival in the intervention area was significantly greater than the predicted levels based on the trends.

A similar opportunity for contemporaneous comparison was taken in Sweden where breast cancer-survival rates were compared across seven counties in one region.¹¹ Seven-year relative survival in one county was significantly worse than in the others. The main explanatory factor for this difference was a lower rate of diagnostic activity, and once the region had established MDTs and adhered to the regional guidelines, the diagnostic activity levels rose and differences in survival across the regions were eliminated. Similar findings have been reported in studies of other tumor types, most recently for upper gastrointestinal cancer in Norway,¹² though the presence/absence of MDT intervention was measured in terms of being theoretically possible according to the availability of a range of specialists in each county. The longitudinal design allowed examination of change in MDT status. Survival in counties with MDT availability was significantly greater than in counties without, probably at least in part accounted for by their increased use of chemotherapy.

The importance of being treated by specialists is well established.^{13,14} This includes evidence of benefit where surgeons operate on at least 30 breast cancers per year¹⁵ and treatment benefits from multiprofessional specialist input, such as increased use of adjuvant and hormone therapy, fewer mastectomies, and higher rates of breast-conserving surgery. These findings are particularly evident in studies that have compared outcomes (including survival) for patients treated in large regional centers (eg, teaching hospitals) with smaller secondary-care hospitals.^{14,16–22} Similar findings have been reported in studies of other tumor types.^{23–25} A study involving 72 breast cancer teams in the UK²⁶ found that higher caseload (per whole-time equivalent team member) was an important indicator of clinical performance, as was having a higher proportion of breast cancer nurses (BCNs).

Breast cancer nurses

The BCN role first emerged in the 1970s, when the need to identify and address psychosocial concerns in women diagnosed with breast cancer was first noted.^{27,28} Since that time, the role of the BCN has continually evolved, and in the UK it is mandatory for MDTs to have a BCN as a core member

of the MDT. The importance of the BCN to patient experience and quality of life has been demonstrated.^{29,30} They are often the patient's key worker (named point of contact), and thereby the only consistent point of reference through the care pathway.³¹ Key elements of their role include providing information, psychological support, advocacy, and coordinating care through the pathway.^{32,33} They have a central role in ensuring holistic assessment of patients' needs (including physical, psychological, social, spiritual, sexual, and cultural issues).³⁴ Earlier diagnosis and better treatments have led to an increasing population of women surviving breast cancer and coping with the impacts of the cancer or treatments on their lives.^{35,36} BCNs have an important role in identifying such needs and concerns and signposting patients to appropriate services. Nurse-led interventions have included providing tailored information to inform patient decision-making,³⁷ leading changes to follow-up services,³⁸ and developing end-of-treatment clinics.³⁹ Emerging evidence from small-scale studies suggests that nurses may have limited participation in MDT meetings.⁴⁰ This may be due to longstanding hierarchies that value contributions from medical and diagnostic perspectives above nursing perspectives.⁴¹ Given that a key component of the nurse's role is that of patient advocate and/or key worker, it is essential to address any such barriers and ensure nurses have an equal voice in MDT discussions.

Health-professional views

Clinical opinion regarding the value of MDTs has been predominantly positive. A survey of over 2,000 cancer health professionals in the UK,⁴² repeated in an international study of breast cancer professionals³ showed that over 90% of respondents agreed that effective MDT care results in improved clinical decision-making, better coordinated patient care, more evidence-based treatment decisions, and improved overall quality of treatment. Some authors have been more critical about the value of MDTs,⁴³ in part based on the methodological limitations of the evidence, but also acknowledging the cost of MDTs and potential barriers to effective teamwork. MDTs are very resource-intensive, though estimates of costs varied significantly in a recent exercise by the UK National Cancer Action Team (submitted costs from trusts across the UK ranged from £14 to £643 per treatment plan).⁴⁴ A recent systematic review concluded that current evidence was insufficient to draw any conclusions regarding the cost-effectiveness of MDT care.⁴⁵ The increasing financial restraints on health care in many countries worldwide coupled with the increased cancer incidence (and

thereby MDT workload) supports a greater focus on ensuring that MDTs are an efficient use of resources.

Patients' experiences and views about MDT-work

Little is known about the impact of MDT-work on patients' experience of their care, or their views on having their treatment coordinated and agreed on by a team, some of whom they may know and meet face-to-face, while others will remain largely anonymous to them. It has been suggested that this raises issues of confidentiality and data protection,⁴³ though we lack knowledge of patients' views about this. Treatment-discussion meetings do not generally involve the patient, nor is this deemed desirable or practical by health professionals, according to a UK survey.⁴² Each patient case discussion is estimated to last 4–6 minutes^{46,47} and requires team members to feel able to debate and have frank discussions in the best interests of the patient, underpinned by consideration of complex radiological and histopathological data. Much would need to be changed to support patients to attend MDT meetings, including consideration of the likely impact it would have on the length of meetings. Patient participation in breast cancer MDT meetings has been piloted in Australia, where it was reported to be acceptable to both staff and patients.⁴⁸ Enhancing shared decision-making is at the heart of current reforms in the UK National Health Service (NHS), using the slogan "No decision about me without me."^{49,50} Whilst there has been a wealth of research regarding doctor–patient communication and involvement in decision-making at an individual doctor–patient level, there has been very little focus on how best to ensure active patient involvement in decisions about treatment in the context of MDT decision-making forums.

Technological advances and the MDT

Tele/videoconferencing is fast becoming a norm of MDT-work in the UK and elsewhere to facilitate collaborative decision-making. Compared to face-to-face meetings, it has been shown to lead to comparable decisions in terms of quality,^{50–52} and has obvious advantages in relation to time, convenience, and cost. This clearly depends on having sufficient investment in standardized equipment to enable high-quality conversations and sharing of imaging.^{53,54} MDTs are a hugely expensive resource, due to the requirement to have many experts available at the same time. In recent years, the potential for virtual teams in health care has been discussed to overcome the barriers that time and geography present.^{55,56} There are increasing numbers of Information Technology companies

interested in developing patient-pathway tracking software and real-time MDT meeting software (some of which operate as decision-making aids, eg, <http://mate.cossac.org>).⁵⁷ Such software solutions – if effective and acceptable to the end users – may also have other benefits, such as helping teams to focus on complex (non-routine) cases for discussion and also to identify potentially eligible patients for recruitment to trials. Although discussion of patients in MDT meetings has been associated with improved recruitment to trials,⁵⁸ research regarding MDT members' informational roles has shown a lack of clarity regarding the responsibility for discussing trials with patients, which may lead to missed recruitment opportunities.^{59–61} Software solutions that alert the team to potentially eligible patients for trials may support more systematic MDT discussion and action planning with specified team member responsibilities.

Barriers to effective MDT-work

There are many ingredients required for effective teamwork in MDTs. A report published by the UK National Cancer Action Team in 2010⁶² (based on clinical consensus in over 2,000 MDT members) described over 100 recommendations for effective MDT-work. These recommendations are organized under five domains: the team, infrastructure for meetings, meeting organization and logistics, patient-centered clinical decision-making, and team governance. Similar frameworks have been used to describe effective MDT-work elsewhere, eg, in Australia.⁶³ Audit and research evidence from the UK and other countries shows that MDTs vary in relation to these domains and that there are many obstacles to effective MDT-work.^{40,64}

A systematic review⁴⁰ highlighted time pressure, excessive caseload, low attendance at MDT meetings, poor teamwork and lack of leadership as features related to poor-quality decision-making in MDTs. Poor communication within the team and role ambiguity (eg, poor definition/understanding of roles within the team) can lead to dysfunctional teamwork.^{8,59} Communication with colleagues has been cited as a major source of stress in MDTs,^{65,66} though providing care in MDTs is generally reported to be an important source of job satisfaction,^{42,46} and 90% of over 2,000 UK cancer health professionals reported MDT-work as beneficial to mental health.⁴²

One particular focus of several studies has been the quality of decision-making in MDT meetings. Several studies have examined the concordance of final treatment plans with MDT recommendations in a range of tumor types.^{67–70} Actual treatment was discordant in up to 15% of cases. Predominant reasons were lack of consideration of holistic information

about the patient, including comorbidities and their preferences for treatment. This could be caused by a range of issues, including not collecting such information from patients prior to MDT discussion, having insufficient time for preparation and/or inadequate presentation in meetings, or lack of inclusiveness of MDT discussions, particularly in relation to nurses' contributions.^{41,71}

MDT development

There is a need to identify the active ingredients (or mechanisms) by which MDT-work confers benefit in relation to clinical outcomes, patient experience, and staff well-being and experience. From this, MDT care can be better defined and standardized to provide optimal care to all patients with breast cancer. The increasing prevalence of cancer coupled with workforce shortages and other time pressures make it ever more important that time spent in MDT meetings is used efficiently. Ensuring good preparation (collating all relevant tumor and patient-based information prior to meetings) will enable better organization of case discussions, allowing routine protocol-led cases to be discussed and agreed upon quickly and allowing more time for complex cases. Recognition of the current barriers to effective MDT-work and implementing strategies to reduce or remove their impact is also important. Various tools have been developed and tested in the UK to assess the quality of teamwork in cancer teams. These include both independent observational tools to assess teamwork in MDT meetings^{72,73} and a team self-assessment tool that facilitates anonymized team-member self-assessment of teamwork across the whole pathway (not just focusing on MDT meetings).⁷⁴ This latter tool is a component of an evidence-based team-improvement intervention called MDT-FIT (Feedback for Improving Teamworking), developed on behalf of the UK National Cancer Action Team. Based upon input and testing with over 100 MDTs, it is an assessment-and-feedback process that provides teams with the space to reflect on how they are working as a team and prioritize actions for improvement. Currently in a final stage of evaluation with ten breast cancer teams within a large cancer network, teams typically identify six to eight areas for improvement, and the majority are implemented within 6–9 months.⁷⁵

Conclusion

A specialist team approach to breast cancer management may lack randomized controlled trial evidence of effectiveness, but is considered superior based upon both clinical consensus and research evidence. In most health care systems, there is

pressure to “do more with less”: be more efficient, but with fewer resources. MDT-work appears to raise the quality of care, but as the teams were often implemented at pace (and 10–20 years ago), it may now be important to reevaluate the structure and models of MDT-work to determine how the best teams work, what comprises the best team nucleus and leadership styles, the best methods to allow shared learning, self-assessment, and feedback, and the most appropriate outcomes to enable more accurate evaluation of MDT care. This will allow teams to be the very best they can with the resources available.

Disclosure

The authors report no conflicts of interest in relation to this manuscript.

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