



## Systematic or Meta-analysis Studies

# The impact of multidisciplinary team meetings on patient assessment, management and outcomes in oncology settings: A systematic review of the literature



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## ABSTRACT

**Background:** Conducting regular multidisciplinary team (MDT) meetings requires significant investment of time and finances. It is thus important to assess the empirical benefits of such practice. A systematic review was conducted to evaluate the literature regarding the impact of MDT meetings on patient assessment, management and outcomes in oncology settings.

**Methods:** Relevant studies were identified by searching OVID MEDLINE, PsycINFO, and EMBASE databases from 1995 to April 2015, using the keywords: *multidisciplinary team meeting\** OR *multidisciplinary discussion\** OR *multidisciplinary conference\** OR *case review meeting\** OR *multidisciplinary care forum\** OR *multidisciplinary tumour board\** OR *case conference\** OR *case discussion\** AND *oncology* OR *cancer*. Studies were included if they assessed measurable outcomes, and used a comparison group and/or a pre- and post-test design.

**Results:** Twenty-seven articles met inclusion criteria. There was limited evidence for improved survival outcomes of patients discussed at MDT meetings. Between 4% and 45% of patients discussed at MDT meetings experienced changes in diagnostic reports following the meeting. Patients discussed at MDT meetings were more likely to receive more accurate and complete pre-operative staging, and neo-adjuvant/adjuvant treatment. Quality of studies was affected by selection bias and the use of historical cohorts impacted study quality.

**Conclusions:** MDT meetings impact upon patient assessment and management practices. However, there was little evidence indicating that MDT meetings resulted in improvements in clinical outcomes. Future research should assess the impact of MDT meetings on patient satisfaction and quality of life, as well as, rates of cross-referral between disciplines.

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Multidisciplinary care has increasingly been implemented across cancer care services throughout Europe, the United States and Australia [1]. Given that the assessment and management of disease requires complex clinical decision-making, the involvement of multidisciplinary teams (MDTs) has been advocated to ensure timely and appropriate care by a range of professionals with different expertise [1].

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Several studies have investigated the impact of a MDT framework and/or multidisciplinary clinic (i.e. multiple consultations with different members of an MDT during a single patient visit) on patient outcomes, assessment and management. Results have generally indicated that multidisciplinary teams and/or clinics were associated with changes in staging/diagnosis [2], initial management plans [3,4], higher rates of treatment [5–7], shorter time to treatment after diagnosis [8], better survival [5,8–10], and adherence to clinical guidelines [6,7,11].

The implementation of an effective MDT framework or clinic necessitates coordination of care within the team to ensure accurate staging, consideration of different treatment options,

continuity of treatment, and appropriate follow-up [12]. The MDT meeting serves as a platform for the coordinated delivery of care through consultation amongst different professionals in a single setting. The MDT meeting can be defined as a regularly scheduled discussion of patients, comprising professionals from different specialties, such as surgeons, medical and radiation oncologists, radiologists, pathologists and nurse specialists [13]. In addition, professionals from pharmacy, palliative medicine, mental health and other allied health disciplines may also be present [14]. Several studies have surveyed MDT members to assess their opinions regarding the functioning, quality, feasibility and outcomes of conducting MDT meetings [15–22]. In line with this notion, other studies have examined if treatment recommendations arising from the MDT meeting translate into final patient management, as a surrogate measure for the effectiveness of the meeting process [23–25].

Given that MDT meetings utilise considerable time, effort and financial resources [1,26], a number of studies have directly evaluated the impact of these meetings on objective and measurable outcomes. These include patient assessment and diagnosis (e.g. staging), treatment received (e.g. type, likelihood of receiving treatment and time from diagnosis to treatment), and clinical outcomes (e.g. survival, recurrence of cancer, and clinical indicators of surgery outcomes). However, to date, there has been no synthesis of this body of research. An integrated and systematic review of this research will provide insight into the empirical benefits of MDT meetings, thus informing clinical practice. Therefore, the aim of this systematic review was to summarise, integrate and critically evaluate the current literature regarding the impact of MDT meetings on patient outcomes, assessment and diagnosis, and management, as well as clinician practice. In addition, research gaps were identified and directions for future research suggested.

## Materials and methods

The identification of relevant studies and the preparation of this systematic literature review and report were conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [27].

### Search strategy

Relevant studies were identified by searching the following electronic databases: (1) OVID MEDLINE, (2) PsycINFO, and (3) EMBASE, using the keywords *multidisciplinary team meeting\** OR *multidisciplinary discussion\** OR *multidisciplinary conference\** OR *case review meeting\** OR *multidisciplinary care forum\** OR *multidisciplinary tumour board\** OR *case conference\** OR *case discussion\** AND *oncology* OR *cancer*. The search was conducted on 9th April 2015. Search limits were applied to include only English articles and those published within the last 20 years (1995 onwards). Abstracts of articles yielded from the search were reviewed for relevance by two authors, based on the inclusion and exclusion criteria detailed below. Discrepancies in judgment about the relevance of articles were resolved through discussion between the authors. When it was unclear if an article met selection criteria, the corresponding author of the article was contacted for clarification. If no response was received from the authors, the article was excluded from the review. Full-texts of short-listed articles were obtained and further evaluated to ensure that they met inclusion criteria. The reference lists of the short-listed articles were then searched to identify other relevant studies that may have been missed through the search of databases.

### Inclusion criteria

Studies were included if they were empirical publications and (1) examined the impact of conducting MDT meetings on patient outcomes, patient assessment and diagnosis, patient management or clinician practice, (2) had quantitative outcomes, and (3) had a comparison participant group (e.g. non-MDT meeting group) or used a pre- and post-test design as a control.

### Exclusion criteria

Studies were excluded if they focused on assessing the (1) impact of multidisciplinary clinic, clinical service or MDT framework, rather than the MDT meeting; (2) functioning, quality, cost or feasibility of conducting MDT meetings; (3) differences in outcomes as a result of differing MDT meeting formats; (4) impact of MDT meetings on clinical trial recruitment; (5) combined impact of MDT meeting and another intervention, such that the unique impact of the MDT meeting on outcomes could not be evaluated; (6) subjective self-report by MDT meeting members about the impact of MDT meeting on patient outcomes and clinician practice (i.e., survey of staff without audit of medical records); and (7) concordance between MDT meeting decisions and actual treatment administered. Dissertations were not included to restrict the articles reviewed to publications that have been peer reviewed.

### Data extraction

Data were extracted from the articles that met inclusion criteria based on full-text review. Information extracted was based on the PICOTS framework (Population, Intervention, Comparator, Outcomes, Timing and Setting). Data about the study design and limitations of each study, including risk of bias were also extracted and entered into a spreadsheet.

## Results

From an initial yield of 1067 articles, 27 articles were deemed to meet inclusion criteria. Fig. 1 displays the number of articles that were identified, screened and included in the final review. Reasons for exclusion of articles after full texts were obtained are stated in Table 1. The final selection of articles were reviewed and grouped into 1 of 3 categories, based on the type of outcomes assessed: (1) patient assessment and diagnosis ( $n = 15$  articles); (2) patient management and clinician practice ( $n = 25$  articles); (3) patient outcomes ( $n = 7$  articles). Some studies examined more than one type of outcome. Relevant information that was extracted from each of the studies are summarised in Table 2.

### Study characteristics and design

#### Participant recruitment and sample characteristics

Studies were conducted in the US [12,13,26,39–44], UK [45–49], Australia [50–52], France [53,54], Sweden [55,56], The Netherlands [57,58], New Zealand [59,60], Germany [61] and Denmark [62]. Two studies recruited patients with a range of cancer diagnoses [41,48]. The remaining studies assessed patients with colon or rectal cancer [46,49,54–57,62], lung cancer [12,39,50,51,59], oesophageal or gastric cancer [47,53,58,61], urological cancer [13,45,52], gynaecological cancer [26,40,44,60], breast cancer [42], and head and neck tumours [43]. In one study, patients who had non-malignant head and neck tumours were included in analyses. This study was retained in the review as the majority of patients surveyed had malignant disease (70%) [43]. Eight studies did not

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