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Waiting times for cancer treatment: the impact of multi-disciplinary team meetings

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In the UK, treatment recommendations for patients with cancer are all made within multi-disciplinary team (MDT) meetings. This has benefits, but it may delay treatment starting if MDT decisions require revision before implementation. This study examined whether changes in MDT treatment decisions after the meeting led to a delay in the start of treatment. Consecutive MDT treatment recommendations were recorded and times to start of treatment were calculated. Comparisons of the time from MDT meeting to start of treatment were made between implemented and non-implemented MDT recommendations. Of 363 MDT recommendations, 71 (19.5%, 95% CIs 15.6–24.0) were not implemented. The median time to start of treatment was 24 days (IQR 12–33), increasing to 35 days (IQR 17–77.5), if the MDT decision required revision to another active therapy ($p = 0.009$). Decisions were changed because details about co-morbidity ($n = 32$, 45%), new clinical information ($n = 24$, 34%) or patient choice became apparent ($n = 13$, 18%) and two changed for no clear reason. Significant delays in starting treatment occur if team treatment recommendations are not implemented. Effort and resources are required to ensure that information is present at meetings to allow comprehensive patient-centred decisions to be made and implemented.

Keywords: multi-disciplinary team meetings; decision making; patient-centred care; health service organisation

1. Introduction

The delivery of timely high quality care for patients with cancer is the focus of the National Health Service (NHS) Cancer Plan and working in multi-disciplinary teams (MDTs) is one part of this process (Department of Health 2000). MDT care can be broadly defined as 'an integrated team approach to health care in which medical and allied health professionals consider all relevant treatment options and develop collaboratively an individual treatment plan for each patient' (Department of Health 2007). Central to MDT care are regular meetings to discuss all new cancer patients with the overall aim of improving positive outcomes for patients. Specific purposes of meetings include treatment planning that is patient centred and timely, professional development of team members and maximising recruitment into randomised controlled trials (Fleissig *et al*. 2006, McNair *et al*. 2008). At the meetings themselves, where the main work focus involves creating a treatment plan for patients, it is essential to effectively co-ordinate all the relevant information about the patient to be available for team members to review and discuss. Specific information that is regularly needed at MDT meetings includes histopathological data about tumour type and stage, radiological information about disease stage and details of patient co-morbidity, performance status and treatment preference. Collating this information for presentation at the MDT meeting is complex and can require careful synchronisation of results of investigations performed at the local hospital or performed at referring hospital trusts to ensure that MDT treatment decisions are based on all the relevant up-to-date details.

There is some evidence that if MDTs do not have access to all the relevant information that the treatment decisions made at the meeting may require revision once the information is available. Studies of treatment decision making in upper and lower gastrointestinal cancer teams have found a high proportion of revised treatment plans follow a failure to include information about patient co-morbidity or preference. When the patients were subsequently reviewed in the clinic, the MDT treatment recommendation was found not to be appropriate or unacceptable to the patient. In this situation, the MDT treatment recommendation was altered by the individual clinician reviewing the patient (Blazeby *et al*. 2006, Wood *et al*. 2008).

If changes to the MDT decision after the meeting are required to encompass these additional issues that

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were not apparent at the MDT meeting it may be necessary to undertake further investigations to clarify the patients' level of fitness to undergo treatment, or it may be necessary to arrange a different treatment plan because of the patients' preferences for an alternative treatment. It may therefore be hypothesised that undertaking these additional investigations and/or rearranging a new treatment plan may lead to delays in starting treatment. Delays in starting treatment may impact on the National Cancer Targets as outlined by the *NHS Cancer Plan* (Department of Health 2000) and more recently updated in the *Cancer Reform Strategy* (Department of Health 2007). Targets aim to start treatment within 62 days of referral by a general practitioner with a possible cancer diagnosis, or within 31 days of the decision to go ahead with treatment (as agreed between patient and hospital doctor), depending on which route the patient was referred into the specialist team. Delays in starting treatment can also cause unnecessary anxiety for the patient and their family as well as potentially resulting in disease progression and patient deterioration.

The aim of this article, therefore, was to specifically focus on treatment decision making within MDTs by examining whether MDT treatment decisions that are not implemented (and require revision after the meeting) lead to delays to the start of treatment. We also examine the reasons why MDT decisions need revision and consider methods to improve this process.

2. Methods

Prospectively recorded consecutive upper gastrointestinal MDT meeting records from the Avon, Somerset and Wiltshire Cancer Network were retrospectively studied between March and December 2006. At the time of this study, the team met weekly and considered patients from University Hospitals Bristol NHS Foundation Trust, North Bristol Trust, East Somerset Trust, Taunton and Somerset NHS Trust, Royal United Hospital Bath and Weston Area Healthcare Trust. At each MDT meeting, after full discussion of the patient and clinical details, the MDT made a treatment plan that was recorded within a database and circulated to core team members and referring hospitals and doctors. The MDT discussed all new patients with upper gastro-intestinal cancer and additional patients (e.g. patients with recurrence) if this was requested by a team member, with no limits on the number of occasions that a patient could be discussed at the MDT meeting. Following the team meeting, treatment recommendations were shared with patients by team members in an outpatient clinic appointment. MDT decisions were carried out, or 'implemented', if they were acceptable to and suitable for the patient and if the doctor did not change the decision. At the time of this study, where MDT treatment recommendations were subsequently found to be not possible to be carried out, or 'non-implemented', patients were not re-discussed at the meeting, unless a specific clinician requested this. Included in this study were final MDT treatment decisions for newly diagnosed patients with primary cancers of the oesophagus, stomach, pancreas, gallbladder and liver and for patients with potentially resectable colorectal liver metastases. For the purpose of this research, MDT decisions were categorised into treatments that aimed to cure (including radical surgery with or without neoadjuvant treatment and definitive chemoradiotherapy), or palliative treatments (including palliative chemotherapy or radiotherapy, endoscopic treatment, radiofrequency ablation or best supportive care). Decisions regarding recurrent disease and further investigations were excluded, as were primary treatment decisions for best supportive care. Best supportive care decisions were excluded because the start of treatment date is not clearly defined. At least two independent researchers examined MDT decisions, hospital computer records and patients' medical notes to obtain the final treatment that patients had received and the date on which that treatment was initiated. Where the researchers did not reach similar conclusions, meetings were held to reach a final agreement.

The MDT treatment decisions were compared with the final treatment that the patients received and decisions were then classified as (a) concordant (MDT decision the same as treatment received), or (b) discordant (MDT decision was not implemented). Where decisions were discordant, the hospital notes were examined in full and reasons for a change in management plan identified and classified into categories: (i) patient's choice not to undergo the recommended MDT decision, (ii) patients' co-morbid health state precluded implementation of MDT decision, (iii) new clinical information became available (e.g. the disease was further advanced than considered by the MDT), doctor independently decided not to offer patient MDT decision and (iv) for 'no apparent reason'. Where co-morbid health issues were recorded as the reason, this included all conditions such as pre-existing health issues that preceded the time of the MDT meeting (but were not known about at the time of discussion). The category, 'new clinical information becoming available', included patients who developed new onset co-morbid health issues and patients who were discovered at the point of decision of implementation to have a different disease severity than that considered by the MDT (thus making decision implementation not possible or appropriate).

2.1. Sample size and data analyses

The sample size was calculated assuming implementation of 80% of MDT decisions. In these circumstances, 364 decisions would provide 80% statistical power at the 5% significance level to detect a 15% difference in the true proportions of decisions implemented within 28 days (90% for interventions consistent with the MDT decision and 75% for interventions discordant with the MDT decision). The median time from the MDT decision being made to the start of treatment was compared between groups using the Wilcoxon Rank Sum test. Patients whose MDT decision changed from an active treatment to best supportive care were excluded from this comparison because of the aforementioned problem of defining the start of treatment date.

3. Results

Team decisions for 364 patients were recorded and one excluded because of emergency treatment before the meeting. Of the remaining 363 decisions just over 50% were recommended for potential cure and 232 (64%) involved patients with oesophago-gastric cancer (Table 1). The majority of MDT decisions were implemented, but 71 subsequently changed (19.5%, 95% confidence intervals 15.6–24.0) to a different treatment plan (Table 2). This occurred for several reasons, including patient co-morbidity precluding planned treatment ($n = 32$, 45.1%), new clinical information becoming available ($n = 24$, 33.8%) or because the patient did not want the proposed treatment plan ($n = 13$, 18.3%). The reasons for changed decisions were unclear in two cases (2.8%). Of the 71 non-implemented treatment decisions, seven changed from an active treatment plan to another or to active surveillance and the remainder changed between palliative treatments or from a curative to a palliative treatment (Table 2).

3.1. Time to treatment

For patients whose MDT recommendation was implemented the median time to start of treatment was 24

Table 1. Patient details according to MDT treatment decision.

Patient details	MDT decision implemented ($n = 292$)	MDT decision changed: To another active treatment ($n = 31$)	MDT decision changed: To best supportive care ($n = 40$)
Age (%)			
<65 years	110 (37.7)	12 (38.7)	16 (40.0)
65–74 years	100 (34.2)	8 (25.8)	17 (42.5)
75 years +	82 (28.1)	11 (35.5)	7 (17.5)
	292 (100%)	31 (100%)	40 (100%)
Gender			
Male (%)	200 (68.3)	21 (67.7)	24 (60.0)
Cancer site/diagnosis (%)			
Oesophageal and junctional	167 (57.2)	12 (38.7)	9 (22.5)
Gastric (including stromal tumours)	34 (11.6)	2 (6.5)	8 (20.0)
Pancreatic, duodenal and ampullary	44 (15.1)	9 (29.0)	14 (35.0)
Cholangiocarcinoma (and gall bladder)	11 (3.8)	2 (6.5)	2 (5.0)
Colorectal liver metastases	30 (10.3)	5 (16.1)	5 (12.5)
Hepatocellular carcinoma	2 (0.7)	1 (3.2)	2 (5.0)
Other liver lesions	4 (1.4)	0 (0)	0 (0)
	292 (100%)	31 (100%)	40 (100%)
MDT treatment decision (%)			
Curative intent ($n = 193$)			
Neo-adjuvant treatment	39 (13.4)	3 (9.7)	0 (0)
Surgery	47 (16.1)	7 (22.6)	6 (15.0)
Surgery after neo-adjuvant treatment	39 (13.4)	5 (16.1)	3 (7.5)
Definitive chemo-radiotherapy	16 (5.5)	0 (0)	1 (2.5)
Choice of above	25 (8.6)	2 (6.5)	0 (0)
Palliative intent ($n = 170$)			
Chemotherapy and/or radiotherapy	77 (26.4)	4 (12.9)	26 (65.0)
Endoscopic treatment	32 (10.9)	2 (6.5)	2 (5.0)
Choice of palliation or supportive care	11 (3.8)	0 (0)	0 (0)
Radiofrequency ablation	3 (1.0)	3 (9.7)	1 (2.5)
Chemo-embolisation	0 (0)	1 (3.2)	1 (2.5)
Other	3 (1.0)	4 (12.9)	0 (0)
	292 (100%)	31 (100%)	40 (100%)

Note: Column percentages are presented to facilitate comparison between groups defined according to the implementation of MDT decisions.

Table 2. Details of MDT treatment recommendations and final treatment received in 71 patients whose MDT decisions were not implemented.

MDT treatment recommendation	Final treatment received	
MDT decision not implemented because pre-existing patient co-morbidities precludes recommended treatment plan		*N = 32*
Curative surgery	Support/palliative chemotherapy/radiotherapy/stent	4
Curative surgery	Surveillance	2
Neo-adjuvant chemotherapy	Stent	1
Definitive chemo-radiation	Supportive care	1
Palliative chemotherapy/radiotherapy	Stent, supportive care	21
Stent	Supportive care	1
Radiofrequency ablation	Surveillance	1
Chemo-embolisation	Supportive care	1
MDT decision not implemented because development of co-morbid condition precluding treatment or discovery of different disease severity precluding planned treatment		*N = 24*
Curative surgery	Palliative chemotherapy/radiotherapy/supportive care	17
Curative surgery	Surveillance	1
Definitive chemo-radiotherapy	Palliative radiotherapy	1
Stent	Supportive care	1
Radiofrequency ablation	Supportive care	4
MDT decision not implemented because it was not the patient's choice		*N = 13*
Neo-adjuvant chemotherapy	Definitive chemo-radiotherapy	2
Curative surgery	Definitive chemo-radiation	1
Curative surgery	Surveillance	1
Palliative chemotherapy/radiotherapy	Supportive care	7
Stent	Supportive care	2
MDT recommendation changed for no documented reason		*N = 2*
Palliative chemotherapy/radiotherapy	Stent	1
Palliative chemotherapy/radiotherapy	Supportive care	1

days [inter quartile range (IQR) 12–33], increasing to 35 days (IQR 17–77.5) if the MDT decision was changed to an alternative active treatment ($p = 0.009$).

4. Discussion

In this study, almost 20% of MDT treatment recommendations were subsequently revised and over half of the changed decisions resulted in best supportive care. When the MDT recommendation was not implemented and the patient received an alternative active treatment, there was a significant 11 day delay to finally starting treatment. Most changes occurred because relevant clinical information or patient co-morbidity details were unavailable at the time of the MDT discussion. Where information about patient choice was unavailable at the MDT meeting this led to 13 (18.3%) of MDT decisions not being implemented. These data show that if relevant information is not present at the MDT meeting, the decisions made by the team are not patient centred and need to be revised when the full data is available. This leads to significant delays in the start of treatment.

In cancer care in the UK, many oncologists, surgeons, radiologists, pathologists and clinical nurse specialists attend weekly MDTs and it is essential that the mechanisms around these hugely expensive meetings are underpinned by research (Fleissig *et al.* 2006). Methods to evaluate MDT working, however, are not standardised at present. NHS cancer peer review processes regularly review some aspects of MDT care (e.g. attendance and team constitution) but currently these do not evaluate outcomes (National Cancer Action Team 2008). Methods to evaluate the quality of decision making within MDTs may be complex and may require a combination of qualitative and quantitative techniques because of the multifaceted nature of the process (Craig *et al.* 2008). Recent work has suggested that using a measure of 'rates of MDT decision implementation' may be a useful proxy measure of the quality of decision making because this provides feedback to the team about the reasons why their treatment recommendations are not practical, acceptable or accurate (Blazeby *et al.* 2006, Wood *et al.* 2008). Exploratory quantitative investigations into the processes and practical implications of clinical decision making in MDTs show the importance of ensuring that details about patient co-morbidity and patient preference may benefit MDT decision making (Blazeby *et al.* 2006, Wood *et al.* 2008). Qualitative studies have demonstrated that MDT decision making partly depends upon whether the patient is known by a team member and have indicated a need for clear decision pathway (Lanceley *et al.* 2008, Kidger *et al.* 2009). If 'rates of MDT decision-implementation' are used to evaluate team working and provide feedback for MDTs in the future, it will be necessary for teams to re-discuss patients at an additional MDT meeting. This in itself may lead to further treatment delays.

Some of the evidence has highlighted the importance of organisational factors in creating and maintaining effective team working as well as an emphasis on team communication (Catt *et al*. 2005). The current study shows some of the problems that may occur due to missing information, but collating multiple different results from local, central and external systems is difficult. For cancer services, being able to capture the important data at the MDT meeting and being able to communicate MDT recommendations effectively is an essential part of the clinical pathway and this requires personnel and electronic infrastructures. If meetings do not have the information, it is possible that delaying the treatment decisions until the following week, is a better process than revising treatment plans outside of the MDT. However, it is essential that every patient is dealt with on its merits and where ever possible someone who has met the patient present at the meeting.

Although this prospective work is the first of its kind, it does have limitations. Only one tertiary MDT was studied and it is uncertain whether the findings can be generalised to other cancer sites or hospital settings. This study also excluded patients who finally received best supportive care because of the uncertainty of the date of the start of this treatment. Inclusion of this patient group (if it was possible to obtain the date that patients received palliative care services), may have influenced the final results of the study. The study is observational, and it may be that relationships between the availability of information, the implementation of the MDT decision and the time to the start of treatment are confounded. For example, it may take longer to obtain complete information on complex cases, such cases perhaps being prone to changes in management due to a rapidly changing clinical picture, and requiring more time to put the necessary combination of treatments in place. The proportion of implemented decisions made on the basis of incomplete information was not recorded, so it is not possible to estimate the work required to ensure all decisions are based upon complete information (whether subsequently implemented or otherwise).

Potential future work could explore both the clinical and patient impact of treatment delays caused by non-implemented MDT decisions and it would be important for future work to examine how treatment delays influence national cancer targets. Work could also explore how information about patient choice (which may mature and change during the diagnosis and staging pathway) can be incorporated into MDT decision making.

In conclusion, this study suggests that where MDT decisions are changed after the meeting this delays treatment. More research is required to establish the most cost-effective and patient centred preferred model for team decision making (Sharma *et al*. 2009) but until this is achieved, it is recommended that every effort is made to maximise expertise and relevant information within the MDT meeting itself so that all treatment options can be considered based upon sufficient information. Ensuring that MDT treatment recommendations are effectively communicated with patients within the context of a shared decision making, doctor–patient model is the final common pathway to implementation of these decisions.

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