Multidisciplinary Team Decisions in Management of Abdominal Aortic Aneurysm: A Service and Quality Evaluation

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Objective: To investigate whether decisions made by the multidisciplinary team (MDT) were implemented and review the MDT process to identify areas for improvement.

Methods: This was a retrospective service evaluation project. Consecutive cases of abdominal aortic aneurysm (AAA) from vascular surgery MDT meetings were reviewed. MDT outputs were extracted and compared with implemented clinical management obtained from the electronic health record (EHR) to determine concordance. Cases were re-reviewed to understand reasons why planned management was not implemented.

Results: From 42 MDT meetings, 106 patients were identified. Twenty-four patients were discussed at two MDTs and four patients were discussed three times. Of the 106 patients, 91 (85.8%) were treated as planned, seven (6.6%) declined planned management and opted for conservative management, four (3.8%) patients died before treatment, and four (3.8%) had alternative management for individual reasons. Of the patients discussed multiple times, 15 (53.6%) needed review by a consultant anaesthetist or additional investigations.

Conclusion: This service evaluation found a similar proportion of cases as in existing oncology literature where the MDT decision was not implemented. However, the natural history of AAA brings nuance to this finding. Facilitating patient preference is an important problem that will require future study. This evaluation resulted in local improvements to the MDT process for AAA.

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INTRODUCTION

Multidisciplinary team meetings (MDTs) were introduced in cancer services in the context of an increasing diversity and complexity of treatment options.1,2 The MDT has expanded into other areas of healthcare, including vascular surgery.3 The UK Abdominal Aortic Aneurysm Quality Improvement Programme (AAAQIP 2008 and 2012) led to reduced UK mortality from abdominal aortic aneurysm (AAA) repair. Among its recommendations was that all patients being considered for AAA repair should be reviewed by a formally constituted MDT.3 Discussion by an MDT is not mandated in the UK, but following the AAAQIP it is recognised as best practice and attendance is recorded in the national vascular registry.5

The Vascular Society of Great Britain and Ireland Standards for Service Provision state that multidisciplinary teams are “a key component in delivering quality outcome”.6 The AAAQIP was a complex multifaceted intervention with changes in both clinical practice and systems. In the work reported here, the focus is specifically on the working of the vascular MDT. While it is accepted that MDTs can improve patient care by enhancing clinical decision making, much of the evidence for this derives from the cancer setting.7 It is unclear whether the same processes, and advantages, of the MDT are observed in vascular services. Existing literature notes the time and resource demanded by MDTs and suggests a need for robust underpinning evidence.8,9

It is a challenge to study the direct impact of MDTs on clinical outcomes because of concurrent advances in clinical practice.2,20 Blazeby and colleagues studied the efficacy of cancer MDTs by analysing the extent to which meeting decisions were implemented. They hypothesised that if decisions are made, with relevant information and experts, treatment decisions will be implemented in almost all cases.7 They found that in practice 15% of decisions made
were not implemented as planned and sought to identify
the reasons for this. The present authors make the same
hypothesis and apply similar methodology to the vascular
MDT. The primary aim was to determine whether decisions
made by the MDT were implemented, with the secondary
aim of examining resource use by analysing patient flow
through the MDT.

MATERIALS AND METHODS

This service evaluation project was approved by the
Vascular Institute of the Leeds Teaching Hospitals NHS
Trust. The methodology was adapted from that used by
Blazeby and colleagues to study cancer MDTs.1

Consecutive new cases of abdominal aortic aneurysm
(AAA), discussed at the MDT in a large UK teaching hospital
taking regional vascular surgery referrals, were identi-
fied retrospectively between October 2017 and August 2018.
The MDT (Fig. 1) considers cases from the regional centre
(the hub) and a district (spoke) hospital. It meets weekly
and generally considers a total of eight to 10 vascular cases
at each meeting, two to three of which are new aortic
cases. The core membership required for the meeting to be
quorate is one vascular surgeon, one vascular radiologist,
one vascular anaesthetist, and the MDT co-ordinator. In
practice the meeting is generally attended by two or three
colleagues from each specialty.

Cases for discussion are collated by the coordinator and a
list circulated at least 24 hours in advance of the meeting,
although late additions including acute cases are allowed.
The meeting is led by a vascular radiologist who has
reviewed the cases in advance, the surgical aspects of each
case are presented by one of the surgeons, and information
on medical assessment and pre-operative testing by the
anaesthetist. The expectation is that this information will
have been prepared in advance of the meeting.

At the time of this service evaluation, patients had
generally undergone CT scanning and surgical review prior
to the meeting. The performance of investigations including
blood tests, echocardiography, and cardiopulmonary exercise
(CPX) testing was variable. Some, but not all, patients
had been seen by an anaesthetist in advance of the
meeting. There was no single agreed protocol for the work
up of patients prior to the meeting.

Included cases were identified using the MDT minutes
and records. It was planned that 100 cases would be
examined. This was a pragmatic decision balancing the time
and resources available for the work and the need to review
sufficient cases to obtain a true representation of the work
of the unit. Cases were excluded if they had also been
discussed at the complex AAA MDT (a meeting specifically
designed for cases unsuitable for standard EVAR or
infrarenal/juxtarenal open repair), if the question posed to
the MDT was unrelated to the AAA (e.g., another vascular
pathology), or if patients had previously undergone inter-
vention for their AAA. All MDT discussions related to each
case were included in the analysis.

Data were collected by two authors (DJD and SH). Patient
characteristics were extracted from the electronic health
record (EHR). The hospital EHR includes clinical notes, cor-
respondence, and results of tests and investigations. For
each MDT meeting, the minutes are transcribed and then
uploaded to the EHR. Data were collected on age, gender,
and aneurysm size. Where patients were discussed at more
than one MDT the reasons for this were recorded. Details of
planned and actual management were also extracted from
the EHR. Where the actual management of the patient
differed from that planned in the MDT, the reasons for this
were determined from the clinical records and correspondence.

All data were recorded and analysed using Microsoft
Excel (Microsoft Corporation, 2010) and stored securely on

Figure 1. Structure of the multidisciplinary team (MDT) prior to the service evaluation. The pathway was non-linear with several loops
resulting in re-discussion by the MDT.
Trust computers. Excel was used to calculate summary statistics and the pivot table function was used to calculate counts, proportions, and averages.

RESULTS

One hundred and six patients were included in the final analysis as six patients were initially excluded from the review but identified as candidates for inclusion on further review. They were identified from 42 MDT meetings. The median (range) number of clinicians from different specialties present according to the meeting register was interventional radiologists three (1–6), surgeons six (4–11), and anaesthetists one (0–1). The attendance register was missing for two of the MDT meetings.

Patient characteristics are presented in Table 1. The median (range) age of the patients was 78 (56–96) years and 85 (80%) were male. The median (range) aneurysm size was 6.0 (3.0–9.5) cm. The most common route of presentation to the MDT was aneurysms detected incidentally when imaging was performed for other reasons (n = 27, 25%). Patients reaching threshold (≥5.5 cm) from the local aneurysm surveillance programme within the Trust were the second most frequently discussed at the MDT (n = 25, 24%). Other reasons for discussion in the MDT included referrals from the national AAA screening programme (n = 14, 13%) or a partnered Hospital Trust (n = 13, 12%). The referral route was not clearly documented in 13 (12%) cases.

Fig. 2 illustrates the MDT pathway for the 106 patients. Eighty two patients were only discussed once. Of those, 73 were managed as planned, three died after the MDT discussion but before a treatment plan had been made, four were managed as planned, three died after the MDT discussion took place after a consultation to seek the patient’s preference in light of the risks and benefits of AAA repair and five to address technical questions related to the planning of EVAR on six occasions (21.4%), two related to the feasibility of obtaining a bespoke manufactured endovascular graft and four to address technical questions related to the conduct of the endovascular repair. One patient (3.6%) was discussed at a third MDT because their medical condition had changed. In three patients (10.7%), planned re-discussion took place after a consultation to seek the patient’s preference in light of the risks and benefits of repair.

DISCUSSION

A quarter of the patients were discussed in more than one MDT and the treatment plan made by the MDT was not implemented in 14% of cases, mirroring that found in the aortic disease.
cancer studies. At first sight this suggests an inefficient process which fails to reach the most appropriate conclusion in a substantial number of cases. However, this interpretation requires further scrutiny.

The MDT model is drawn from the management of cancer patients. There are significant differences between the patient pathway for cancers and that for AAA, particularly regarding untreated prognosis and disease progression. For most cancers untreated prognosis is known, and disease progression is clinically apparent. For AAA, the contemporaneous prognosis (for AAA \(>5.5\) cm) is unknown and the pathology usually remains symptomatically occult until causing sudden deterioration or death. These considerations bring a different nuance to vascular MDT discussions. It cannot be assumed a cancer MDT model can be transplanted wholesale to serve this population. An iterative process with repeat discussion may add value in some cases. However, existing literature suggests that effective teamwork and communication results in improved clinician and patient satisfaction.\(^{13,15,17}\) It was beyond the scope of this project to investigate how the MDT constitution affected decision making. However, existing literature suggests that effective teamwork and communication results in improved clinician and patient satisfaction.\(^{13,15,17}\)

In conclusion, the significant number of MDT re-discussions because of missing information indicates that MDT preparation and core dataset completeness was sub-optimal, but multiple MDT discussions may be necessary in this population. In addition to optimising information flow into the MDT, referrals back to the MDT suggests the quality and structure of information being produced by the MDT is an area for targeted improvement.

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**Figure 2.** Patient flow through the vascular multidisciplinary team (MDT). Each stage shows the number of patients that left the process and the number proceeding to further MDT discussion.
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CONFLICT OF INTEREST
None.

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