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ORIGINAL ARTICLE

# The impact of contemporary multidisciplinary meetings on workload at a tertiary level hospital

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**Abstract**
*Background* In recent years, multidisciplinary meetings (MDMs) have become the standard of patient care in oncologic and other speciality care pathways. The number, complexity, and diverse source of imaging studies presented continue to expand rapidly. True multidisciplinary input requires parallel support from other colleagues and diagnostic services. It is now recognised that this is the appropriate forum for key decision making and education in care algorithms, though service plans make little or no accommodation of their expanding role in addition to existing services.
*Aims* We tried to objectively quantify one element of this burgeoning service.
*Methods* Data were retrospectively gathered over a 6 month period, and a 5 week prospective study was then performed to examine the workload in further detail.
*Results* Retrospectively, 199 meetings were held with 2253 clinical cases reviewed over 26 weeks. Prospectively, 52 meetings were held over 5 weeks for 13 clinical specialty areas. There were 1038 clinical case discussions. There were a total of 2122 documented individual imaging studies reviewed. Specialist registrar preparation time was 55 h (11 per week). Consultant preparation time was 67.75 h (13.55 per week). Delivery time was 57.25 h (11.45 per week).
*Conclusion* The complexity and range of cases at MDMs continue to expand, serving local and national needs, though service plans do not acknowledge their role in the working day. Our study shows just one element that clearly signals a need to take account of the new methods of delivering modern healthcare.

**Keywords** Multidisciplinary meetings · Oncologic imaging

## Background and aim

In recent years, particularly with the establishment of centres for cancer care, multidisciplinary team meetings (MDMs) have become a part of the standard of care for many patients. The number of meetings scheduled and the number and complexity of clinical cases discussed continue to expand rapidly. This has been driven by the best practice models and facilitated by new information technology systems and communications. MDMs allow true multisource input into care pathways for the standard and non-standard clinical challenges and are also being used to assess quality and outcomes through data gathering. These meetings are an important forum for the optimisation of patient management, fostering clinician and patient confidence, interdisciplinary interaction, teaching and discussion of current evidenced-based medicine, and shared experience, but have put ever increasing pressure on all clinical departments in their demand for time and resources [1].

Internationally, most MDMs are hosted and organised in imaging departments but with a significant input from other diagnostics, such as pathology, endoscopy, etc., and multiple specialty clinical input from doctors and allied science personnel from all levels. With digital technology, the range and complexity of cases as well as the geographic source have expanded significantly.

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Our aim was to evaluate and document workload within the radiology department attributable to the preparation for and delivery of MDMs and to provide the necessary framework to establish appropriate time dedicated to achieving excellence in these activities.

## Methods

Data were retrospectively gathered from a 6 month period on the number of multidisciplinary meetings held and type of imaging reviewed. This was performed using Excel databases that are maintained by the radiology conference coordinator, as well as cross referencing with the PACS system which has been established in our institution since April 2012. This 6 month period was chosen, as both data sources were up to date and available for this study period which allowed for a more accurate review.

A 5 week prospective study was then performed to examine the number of MDMs, the number of clinical cases discussed, the number of clinical non-radiologist consultant attendances, the number and type of imaging studies reviewed, the number of external imaging studies uploaded, reviewed, and discussed, and the time taken for the consultant radiologist and radiology registrar assigned to prepare for and to participate in these meetings. The breast service MDMs were also included in the prospective study. The data from these were not available retrospectively. A questionnaire was devised that was included in the conference preparation pack provided to each radiologist presenter before each scheduled conference. The questions related to the number of patients discussed, number of non-radiology, non-pathology consultants present, number and type of studies reviewed, number of studies performed at other hospitals reviewed, registrar preparation time, consultant preparation time, and time for delivery. The questionnaire was completed by the conference presenter during preparation and immediately after each conference and left in a dropbox outside the meeting room. The surveys were collected and reviewed on a weekly basis, and the data were entered into an Excel database for analysis. A reminder email was sent to any presenter who had not completed the questionnaire and all were finally submitted.

## Results

In the retrospective 6 month review, 199 MDMs (excluding breast MDMs) were held (average of 7.65 per week). 2253 clinical cases were discussed. There was an average of 87 patients discussed per week (11.3 per conference) and 152 imaging studies reviewed per week (1.75 per patient).

Over the 5 week prospective period, there were a total of 52 multidisciplinary meetings held. These represented 13 of the 16 specialty groups who hold regularly scheduled MDMs, including; gastrointestinal, chest, breast imaging, oncology, haematology, gynaecology, urology, vascular, neurology, intensive care, otorhinolaryngology, musculoskeletal, cardiac MRI, thoracic aortic, pelvic floor, and bone oncology. There were 1038 clinical case discussions. 23 of these were "add-on" cases which had not previously been reviewed by the presenting radiologist. There were 206 reported non-radiology/pathology clinical consultant attendances (mean 3.96/meeting).

There were a total of 2122 separate imaging studies reviewed, 563 CT studies (27 %), 446 ultrasound studies (21 %), 411 mammogram studies (19 %), 264 MRI studies (12 %), 113 PET studies (5 %), and 325 other types of investigations (15 %) including but not limited to DSA, fluoroscopy, ERCP, nuclear medicine studies, and plain films. 143 (7 %) of these imaging studies were from outside hospitals. There was an average of 2.04 imaging studies reviewed per clinical case.

Specialist registrar preparation time was 55 h total (11 h/week). Consultant radiologists spent 67.75 h in preparation (13.55 h/week). It required 57.25 h for the delivery of the conferences (11.45 h/week). The delivery time only includes the time spent by the presenting radiologist. The time of other radiologists spent attending and contributing to the conference was not recorded. The time of the radiology conference coordinator was also not recorded. This means that the total minimum time required by the radiology department for the preparation and delivery of the MDMs was 125 h (25 h/week).

## Discussion

MDMs are now the standard of care for many patients. They have become ever more frequent, more rigorous, more meaningful, and more standardised in the last 10 years. Although it has proved difficult to scientifically evaluate their impact on patient care, they are widely believed to be greatly beneficial if well organised and clinically balanced [2–5]. 10 such conferences per week would be the minimum in larger centres and conferences typically last an average of 1–1.5 h. To be of value, all stakeholders must be present. As they are not accounted for in service plans, the MDMs increasingly happen early in the day before the 'working' day begins. 7 a.m. starts are required to accommodate two MDMs before 9 a.m., and this has clear conflicts with the European Working Time Directive.

A significant amount of resource input is demanded for these to be informed discussions with balanced and appropriate therapeutic management decisions [6, 7]. This includes the time spent by ward-based consultants and their teams, clinical nurse specialists, the pathology department, IT, clerical staff and the radiology department in the preparation, and delivery of MDMs. We chose to initially review the effect on the radiology department. The role of the radiologist has evolved significantly over the last 15 years, and there is increasing demand on the resources required for non-traditional, not easily countable activities such as MDMs [8, 9]. Having identified this facet of modern practice, we would acknowledge the next step is to continue to independently quantify and verify current and future demands of these non-traditional roles. For presenting radiologists only, we calculate a need for 13.55 h MDM preparation time and 11.45 h presenting time for 13 MDMs. Thus, under the current contract more than half of a full whole time equivalent, 39 h would be used and this assumes no data input afterwards. New conferences continue to be added and we expect further expansion, as this is accepted as a fundamental component of best practice.

Currently, there are 16 regularly scheduled clinical specialty meetings of varying frequency. Some are held twice weekly, some weekly, fortnightly, or monthly. There is a consultant radiologist formally on the roster to prepare and present each meeting, and in addition, there are three MDMs which are prepared and delivered by a specialist registrar under supervision of a consultant. No dedicated session time is formally allocated for this preparation and it is often performed out of hours or while juggling other activities and demands. As well as this, each meeting is attended regularly by other specified radiology consultants who contribute to the discussion and help to provide consistency across a modality from week to week. Patients can often be discussed at one type of meeting multiple times or can be discussed at other MDM modalities and this helps to ensure that the overall opinions are not conflicting. This demand now accounts for a significant proportion of radiologist workload as documented here at 25 h per week.

As our understanding of cancer continues to develop, patients are living longer and have newer therapies available to them, including percutaneous ablation and surgical resection of metastatic disease. Patient expectations are also rising, and the complexity of personalised care adds new demands to decision making. As imaging technology advances, we are able to detect smaller disease progressions at an earlier stage. This has significantly increased the demand for complex and higher volume cross-sectional imaging studies, including thin slice isotropic CT, MRI, and PET (44 % in this study). These take more time to review and interpret than lower volume studies, such as radiographs, ultrasound, or previous lower volume cross-sectional studies. Additional post-processing of image data for calculations of size and volume is required in select conditions. This does not take into consideration that many other comparative studies are informally reviewed when preparing the conference, e.g., initial disease stage or prior studies for comparison. As the number and complexity of studies continues to increase, more and more time is required for preparation and delivery of MDMs. Furthermore, we believe that there are valuable data to be input by the radiologist after the MDM discussion which can inform quality and outcomes, but we have no facility for doing this at present.

Locally, solutions have been sought by beginning dialogue with colleagues and management on how to rise to this challenge. In the first instance, we have reviewed rota capacity to allow individuals the necessary time to prepare conferences without adversely affecting other service demands. However, there are competing demands for radiologist time. Striking a balance fair to doctors and patients is difficult. We constantly try to ensure conferences have a cap on the number of cases discussed. Those cases not truly needing a multi-stakeholder decision or without key data points are removed and future electronic solutions will allow for leaner and more efficient MDM practice. Occasionally, we limit or cancel conferences when manpower simply cannot meet demand. All future job applications will require clarity on time applied to support MDM as a core service need. Ultimately, if adequate manpower cannot be sourced, additional leave or pay will have to be considered for MDMs, as it is not an optional service provision. MDM needs to be discussed as much as outpatient visits, length of stay and other hospital metrics.

## Conclusion

As hospitals seek to meet current and future demands, it is imperative that service expansions and appointments are mindful of the need for diagnostic resources beyond simply counting the number of scans performed. The value of a modern imaging study goes well beyond its initial interpretation into consultation, post-processing, MDM, and audit. To be done properly, MDMs require appropriate time and the highest levels of specialist expertise and senior decision making. They are here to stay and to develop as a core fulcrum of decision making in contemporary clinical practice. Hospitals need to plan for their sustainable development. Current practice of MDM on the margins of the day as an ‘added extra’ is unsafe practice and a significant contributor to burnout. There are lessons beyond radiology in the evolution of other aspects of modern medicine that are not properly recognised in the

traditional measures of beds, length of stay, operations, and outpatient visits. We need to think differently and box smarter.

**Compliance with ethical standards**

**Conflict of interest** The authors declare that they have no conflict of interest.

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