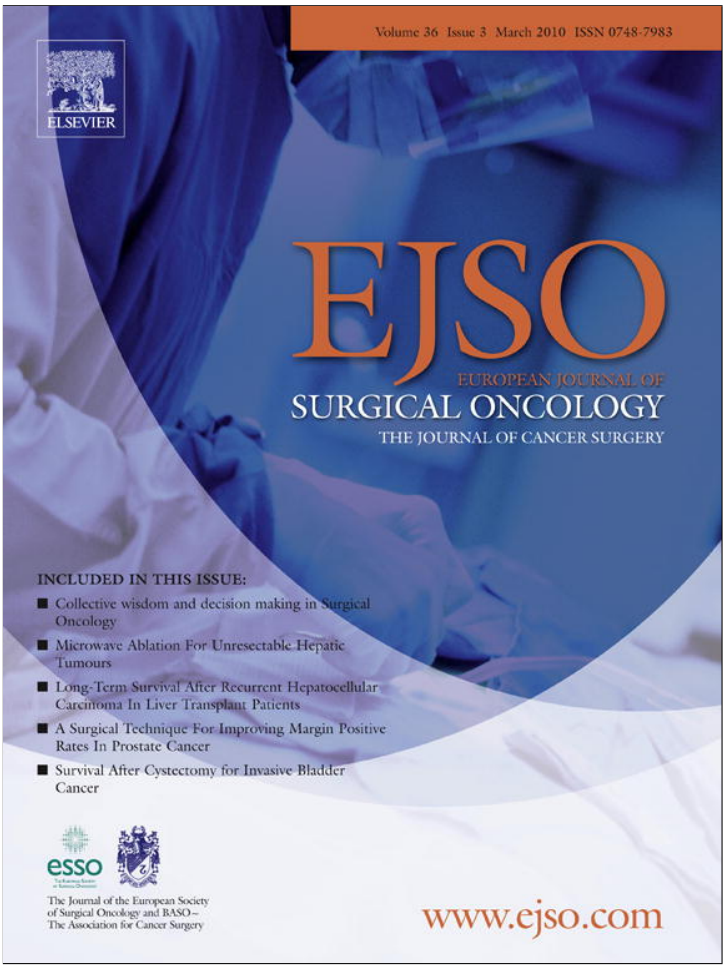

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Editorial

Editorial: The multidisciplinary team process: The next steps

The multidisciplinary team (MDT) now has a central role in decision making in the management of all cancers in most advanced health systems. The logic of multidisciplinary teamworking in cancer care is persuasive,[1,2] although the evidence base for a treatment benefit is as yet weak.[3] However, the evolution of the MDT as a clinical management tool is incomplete.

At its best, the MDT process allows for substantial improvement in the management of cancers. A little more than a decade ago, the treatment of individual cancers was something of a lottery, in which the choice of adjuvant modalities was often governed by the attitudes and beliefs of individual clinicians, and often determined by surgeons alone.

The introduction of the formal structure of the MDT, centred upon the regular MDT meeting, has helped to standardise cancer treatments across health systems. It has brought together general and specialist surgeons, medical and radiation oncologists, diagnosticians, allied health professionals and data managers into a coherent structure in all hospitals for the management of each major class of tumour. This has been achieved at considerable administrative and organisational cost. The questions now arise as to whether the MDT process is serving the purposes for which it is intended, and whether and how it should be further improved.

The intentions of the MDT process are thus clear. They are to standardise and harmonise decision making in cancer management around perceived best practice, and to introduce all components of decision making in advance of critical interventions.

Regrettably, the MDT process also promotes a fundamental shift in responsibility for decision making from the individual clinician to the group, thus diffusing the critical responsibility for events and outcomes. The observation that groups and committees feel empowered to take decisions that no single member would necessarily take individually is apposite here. The consequence is that the accountability of the individual consultant to the individual patient is in danger of being undermined by anonymised group decision making. MDT group decisions also remain subject to the vagaries of human nature, personalities and people interactions. They are made outwith the presence of the patient under discussion, whose immediate contact remains the named and responsible consultant. This is often the surgeon, who must represent and ''humanise'' the MDT decision to the patient.

The need for more informative data systems

The most important factor which presently impedes the clinical effectiveness of the MDT is the quality of decision-determining data which is available to the MDT members. The MDT process is designed and intended to discuss and determine interventions in every individual in the local population who presents with a relevant diagnosis. These individuals will come from all age groups; with all pathological variants of the particular cancer; in all disease stages; with a wide variety of co-morbidities and body mass indices, drug and treatment histories; and with the full range of social attitudes, backgrounds, economic circumstances and lifestyle choices. It is therefore essential that the MDT data reflect all of these variations and nuances.

The MDT decision-making process for individual patients is necessarily directed by the available evidence base. However, this will be largely drawn from clinical trials, which in turn represent a highly selected group of patients who are treated by enthusiasts for the trials process. These data may be modified and refined by meta-analysis and by software tools such as Adjuvant On-Line. Unfortunately, this is invariably an abstraction which does not accurately represent ''ground truth''. It does not encompass the full range of factors including age, disease and co-morbidity, which will determine the outcome in the individual patient in the immediate catchment population before the local MDT.

The question thus arises as to how the MDT process can help us to learn more about the contributions of the component therapies to outcome for each and every cancer. The ''first generation'' MDT has largely been focussed upon the decision-making process at the outset of an individual treatment pathway. This will usually involve a surgical intervention followed by an adjuvant treatment package of radiotherapy and/or chemotherapy for treatable disease; sometimes there will be a clear indication for a primary chemotherapy and/or radiotherapy intervention. Not infrequently there will be a grey area in which either surgical or adjuvant intervention may take primacy, the final

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decision being determined by a number of factors, including the local skill and resource mix, and the influence of the protagonists for the various clinical strategies in the discussion on the strategy for each patient.

The critical deficiency is that as yet, there are no readily available computerised analysis systems which aid the collection of all treatment and clinical event data over time from registration on diagnosis to final outcome; and which allow flexible user generated analysis of the data to be conducted at will.

Advanced analytical software systems can be specified which draw upon a wide range of data inputs from the existing computer systems which run most modern hospitals; which include demographic, pathological and all relevant contact and treatment data; which have the capacity to compare and contrast each and every individual patient's timeline from diagnosis to ultimate outcome; and which would ultimately allow us to understand much better the true contribution of surgery, chemotherapy, radiotherapy and other interventions to each and every clinical outcome.

Such systems might also in time reveal insights which might have a radical impact on the allocation of therapeutic resources for each and every tumour type, when the outcome data for large, real time, all-comer populations of patients with particular tumour types and treatment strategies have been analysed. Software systems with the capabilities for massive data warehousing and mining, and for extraordinarily advanced statistical analysis, as evidenced by the functioning of Internet search engines such as Google, exist for various applications in the commercial world, but they have yet to be adapted to and adopted into clinical practice.

Closing the MDT data loop

The computer-enabled and networked MDT meeting provides the ideal focal point for populating and updating such clinically informative data systems. The systematic collation and accumulation of information through the MDT, including registration data, all cancer treatments and their time sequencing will allow very large data banks to be built up very rapidly. These will now be based upon the collective experience of treatment of ''all comers'' rather than of distant, select and abstracted populations. Using standard software systems across multiple sites locally, regionally, nationally and internationally, it will soon become possible to optimise the treatment for individual patients by matching each patient most closely to all others in the historical treatment population with similar epidemiological and clinical characteristics. This in turn will provide far greater global utility on a daily basis than individual clinical trials and will substantially improve the objectivity of MDT decision-making.

Common-user software systems containing information collated and validated through the MDT process will allow the rapid accumulation of knowledge based upon very large data sets across local and national health systems. For example, a common system within the UK health economy would allow the accumulation of outcome-related treatment data on some 30,000 patients with breast or colorectal cancer per annum, with the potential rapidly to expand our real world knowledge base. The political and intellectual attractions of investment in an MDT-moderated system which would so clearly reveal the benefits and limitations of all components of treatment are considerable and compelling. An internationally standardised system between cooperating national subspeciality groups would allow even more rapid accumulation of data for analysis.

Further development of the MDT process

In order to fulfil the potential of MDT-moderated cancer outcome data, we will have to expand and extend the MDT process from initial treatment decision making into a medium and long term post-treatment review of outcomes and complications. Natural review stages will occur when the initial adjuvant therapy cycle is concluded; at the time of recurrences and secondary adjuvant therapies; and on death. In this way, lessons are continuously learned, databases are updated, and decision making on new cases is continuously refined by the growing knowledge base of existing patients and case matches. This will also rebalance the MDT, such that the work of medical and radiation oncologists becomes as accountable as is that of the surgeons at the outset of treatment.

The expansion of the MDT process from a pre- and immediate-treatment decision making exercise into the realm of intermediate and long term post treatment review and assessment will have considerable resource implications for local units and services. The introduction of a review element will add considerably to the workload, resource and time demands upon clinical and administrative members of the MDT. Weekly MDT sessions which currently take 60–120 min may well need to be extended into full sessions. In order to control this workload, MDTs will need to set specific review dates for individual cases, which might be at the one year, five year and ten year points, or on notification of a major outcome event, such as proven recurrence or death. The latter data will in turn mandate networking to regional and national mortality registries.

The increased time needed to complete the enhanced MDT process will be justified over time by the substantial gain in insight into the effectiveness of treatment strategies for each and every patient, and by better individual treatment.

In conclusion, the need for evolution of the MDT process is inescapable. The immediate challenge is to design and roll out robust data systems which will support the analytical capabilities of MDTs across the cancer spectrum. There is an enormous opportunity for surgeons to champion the process as a definitive strategy for validating all elements of treatment. This will help us to understand once and for all time the true costs, benefits and morbidities of the various cancer therapies and strategies which we presently have to debate and apply with incomplete knowledge

and insight. It will also help us to move to a more objective assessment of the MDT process itself.

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