

EDITORIALS



The high-risk surgical patient: a role for a multi-disciplinary team approach?

A. R. Whiteman^{1,*}, J. K. Dhesi^{2,3} and D. Walker¹

¹ Department of Anaesthesia, University College Hospital, 235 Euston Road, London NW1 2BU, UK,

² Department of Ageing and Health, St Thomas' Hospital, 9th Floor, North Wing, Westminster Bridge Rd, London SE1 7EH, UK, and

³ Division of Health and Social Care Research, Kings College London, 5th Floor Addison House, Guy's Campus, London SE1 1UL, UK

*Corresponding author: E-mail: abigail.whiteman@doctors.org.uk

There is a growing cohort of multimorbid, often frail and elderly patients who disproportionately suffer predictable complications, as a consequence of seeking surgical intervention.¹ A strong case for better Multi-Disciplinary Team (MDT) care during the peri-operative period is gathering momentum. The Royal College of Anaesthetists, in its recent discussion document² emphasizes the importance of a multidisciplinary team approach to improving outcomes for patients. It supports the introduction of new working practices for some anaesthetists, to undertake MDT collaborative care both before and after surgery. Such practices are likely to require the development of MDT meetings (MDTMs) to facilitate better discussion, debate and consensus in the formulation of a patient-centred care plan, particularly where there is an absence of high quality research evidence. Whilst such multidisciplinary approaches are relatively new to many anaesthetists, they are part of established clinical practice in many other specialties, including oncology and geriatric medicine.

In cancer care concerns over patient outcomes and variation in clinical practice led to the development and evolution of the MDTM guided by a number of key publications over the last 25 yr.^{3–6} The 2004 Manual for Cancer services⁷ characterizes MDT as a 'group of people of different health care disciplines, which meets together at a given time (whether physically in one place, or by video or tele-conferencing) to discuss a given patient and who are each able to contribute independently to the diagnostic and treatment decisions about the patient'. Today more than 80% of all patients with cancer are managed in the context of the MDT meeting.⁸ MDT working is also well established in other

specialties, including geriatric medicine, diabetes medicine,⁹ respiratory medicine¹⁰ and those involved in stroke rehabilitation.¹¹

Benefits and criticisms of MDT working

Ensuring an evidence based approach

There is a strong rationale for multidisciplinary team working. As disease management becomes increasingly complex, bringing together a group of experts, all of whom can independently contribute to a diagnosis and suggested treatment strategy is important. The meetings can act as a safety mechanism, questioning and aligning the practice of individuals. There is some evidence that it encourages more 'evidenced-based' practice particularly with use of decision support systems.¹² This finding, however, is not universal. Many MDTMs are not structured to allow for in-depth discussion based on the available evidence, but depend more on clinical consensus and anecdote.^{13 14}

Timely management

Mandatory discussion at an MDT aims to facilitate the delivery of timely management and treatment; a strong argument in favour of use within cancer services. A clear and agreed management plan can be quickly provided to the patient and streamline communication between primary, secondary and tertiary care. In some specialties, however, incorrect diagnoses and inappropriate referral to the MDT can result in treatment delay.¹⁵

Inter and intra-specialty dynamics

The personalities of team members and intergroup dynamics may have an important impact on decision making. The MDT discussion tends to favour those who are willing to more forcefully put their views across, in an environment where all team members may not be considered equal in terms of weight of decision making. There is some evidence suggesting that nurses may have limited participation in MDT meetings¹⁶ and this may reflect the longstanding hierarchies that value contributions from medical and diagnostic perspectives above others.

Patient experience

It has been suggested that MDT working may improve patient experience. Taylor and colleagues (2010)¹⁷ identified improved patient experience, reported by national surveys between 2000 and 2004. The authors concluded this was because of the introduction of multidisciplinary teams, as a greater improvement was seen in specialties where MDTs were more established: breast, colorectal and lung cancer. However, one of the major criticisms of the MDT process is the lack of patient involvement in decision-making. The government has emphasized its commitment to this patient-centred care in its pledge 'no decision about me without me'.¹⁸ Despite directly influencing the patients' management, the multidisciplinary team meeting rarely invites the patient. Team members are concerned they would not be able to speak frankly regarding prognosis and time constraints would mean satisfactory explanations of the medical language used could not be given.

Cost

In the current financial climate, the high cost of MDT discussions has been questioned. De Ieso and colleagues,¹⁹ estimated that a years worth of MDT meetings at one institution cost £2 745 082 or £415 per new patient MDM discussion. This equates approximately to the yearly NHS salaries of 50 Band seven nurses or 20 consultants. It has been suggested this is not cost effective medicine. Ryan and colleagues (2014)²⁰ describe how in 197 routine patients discussed at a colorectal MDT, the discussion rarely resulted in significant medical intervention or deviation from the routine pathway. In contrast, after MDT discussion, patients with more complex disease had their management changed in more than 50% of patients. These findings suggest MDT discussion should be targeted at complex patients.

Clinical outcomes

The main criticism leveled at the MDTM is its lack of evidence base. Their introduction was mandated by Department of Health guidance and this eliminated the opportunity to perform any randomized controlled trials: randomizing patients to an MDT group or standard care. Hence most trials have a relatively weak study design: 'before and after' or observational data only. The lack of evidence base and lack of consultation about their introduction has frustrated many commentators.^{13 17}

Some studies do report improved survival: a retrospective, comparative, interventional cohort study of 13, 722 women with breast cancer in Scotland, found an association between MDT working and improved survival and a reduced variation in survival rates between hospitals.²¹ Friedland and colleagues²² (2011) also demonstrated improved survival in patients with stage 4 head and neck cancer associated with the introduction of multidisciplinary teams. However, Hong and colleagues²³

(2010), in a systematic review of 21 studies examining the potential relationship between multidisciplinary cancer care and patient survival, describe how the lack of a consistent definition of MDT care hampers the construction of meta-analyses. They also highlight that the favourable outcomes associated with multidisciplinary care, may be associated with selection bias towards patients with more favourable prognostic features. Many studies also do not adjust for the confounding effects of ongoing treatment improvements over time, which may have been made without the introduction of MDT care.

Perioperative medicine: the pathway to better surgical care'

Considerable challenges face our profession: an ageing surgical population, increasing surgical complexity and the growing cost of healthcare combined with increasing societal expectations for better outcomes. 'Perioperative Medicine: the pathway to better surgical care'² states our College is 'committed to developing a collaborative programme for the delivery of perioperative care across the UK; to deliver more efficient healthcare to improve patient outcomes and quality of life.' The document emphasizes that any improvement in quality of care will necessitate MDT working. It goes on to describe how a 'perioperative medicine team' should be created to optimize the health of complex patients undergoing surgery. Importantly the document introduces the concept of the anaesthetist as perioperative physician, leading and coordinating perioperative care.

In the US, the 'Perioperative Surgical Home' (PSH)²⁴ proposes a single team care model, nested within primary care, optimizing to improve outcomes and produce cost savings. The PSH requires a team leader, a 'perioperativist', who co-ordinates a patient's care and all other healthcare stakeholders. The group suggests a number of strategies that they feel would achieve all aspects of the Institute for Healthcare Improvement Triple Aim (see Fig. 1). These strategies include a greater emphasis on shared decision making and the patient being a more active member of the healthcare team, better preoperative risk assessment and prehabilitation and a standardization of care plans to reduce geographical variation in the provision of care.

Case study: the POPS pathway, Guy's and St Thomas' Hospital

Exemplars of perioperative multidisciplinary team working exist and offer important guidance on how we might evolve

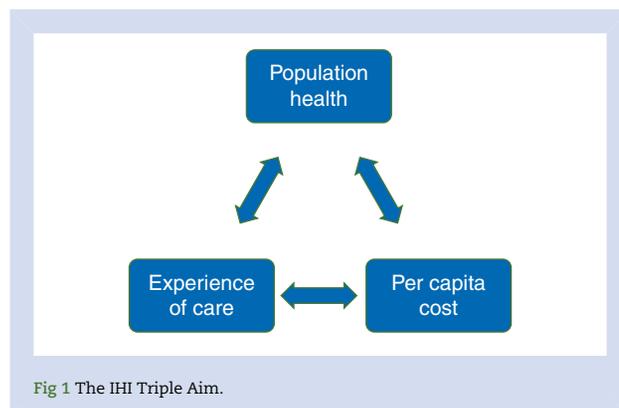


Fig 1 The IHI Triple Aim.

perioperative care.²⁵ One such example is the Guy's and St. Thomas' POPS (Proactive care of the Older Patient undergoing surgery) team. This consists of geriatricians, specialist nurses, a social worker, an occupational therapist and an administrator. The team's remit extends throughout the perioperative pathway; from preoperative assessment and optimization to postoperative care on the surgical wards and to safe and effective discharge home of the older surgical patient.

Before surgery, patients referred to the POPS pathway²⁵ undergo assessment and optimization of all their medical, psychosocial and functional needs using the Comprehensive Geriatric Assessment (CGA). An individually tailored perioperative management plan is produced covering expected complications and proactively communicating with patients, relatives, surgeons, anaesthetists, ward teams and primary care.

The team chair three MDT meetings:

- The 'POPS' MDT: all patients reviewed in the POPS clinic are discussed.
- A daily pre-assessment MDT: provides a forum for pre-assessment clinic nurses and anaesthetists to present patients who may benefit from POPS assessment
- Ward based MDT meetings: the POPS team and support workers proactively assist in the postoperative medical management, rehabilitation and discharge planning.

A POPS MDT intervention pilot study of 108 elective elderly orthopaedic patients²⁶ demonstrated a reduced incidence of postoperative pneumonia, delirium, pressure sores and a reduced length of stay. Regular audit cycles continue to be carried out to ensure improved patient outcomes.

The POPS MDT meeting provides a platform for both intra-specialty and inter-specialty education and learning. One of its main objectives is the peer review of decisions made by members of the team. Although, at times a highly medicalised meeting, many support workers find it an ideal opportunity to learn more about common medical problems in the geriatric population and their management.

How to deliver MDT care in perioperative medicine

One of the lessons learnt from cancer MDTs is that MDTM use should be restricted to a subset of complex patients. With extremely complex or frail patients the expert clinical consensus at a multidisciplinary team meeting is probably the best available decision making tool. For many of these patients, the details and problems are so individual, that a search of the relevant literature will not provide any useful information as to how to proceed and do little to inform a discussion about individual outcome.

The gold standard perioperative medicine MDTM, would be a weekly meeting of all perioperative team members, probably within the remit of pre-assessment clinic. In attendance should be representatives from every specialty, who can independently contribute to decision making in the complex perioperative patient: anaesthetists, surgeons, general physicians, cardiologists, geriatricians, intensivists and specialty specific nurses and pre-assessment nurses. Logistically it is difficult to see how this would work in practice, with all specialties having so many competing demands on their time: operating lists, clinics and management responsibilities. Hence the responsibility for preparing for, chairing and coordinating these meetings might need to lie with the newly introduced perioperative physicians. Even if all

perioperative team members cannot physically be in the same room, the greater use of teleconferencing, electronic messaging or virtual meetings could be used. Care co-ordination should be the backbone of any new model of care as the integration of multiple medical opinions sometimes over multiple physical sites, is pivotal to management of the complex surgical patient.²⁷ Currently this process occurs, but on an *ad hoc* and consequently unreliable basis. The process needs to be formalized, systematic and robust. The case could be made that the perioperative physician, or team leader, does not necessarily need to be an anaesthetist but, more importantly, be positioned to maintain a complete overview of a patients care.

The meetings should be used to make a multidisciplinary team decision as to whether or not to operate, to optimize the patient preoperatively and outline the multidisciplinary care needed intra and postoperatively. The use of better risk evaluation tools, better assessment of frailty and multidisciplinary expertise will allow us to better define differing care pathways. The outcome of the perioperative MDT should not simply be a decision as to whether or not to operate, but what support is needed for this patient. An emphasis should be placed on the need to plan pre-emptively.

We have seen how in other specialties MDT decision-making has been criticized for lacking a robust evidence base. With the introduction of this new model of care in perioperative medicine, there may be an opportunity to study the outcomes associated with this. The successful perioperative MDT should be able to demonstrate a reduction in mortality, morbidity and improved scores in other outcomes measures such as PROMS, LOS and PREMS. The target population requiring investigation would only be that small number of patients in which there was true equipoise about intervention.

As we move away from a culture of paternalism, a mechanism for including the patient's wishes within the MDT discussion must be created. Experience from cancer MDTs suggests that patient presence at meetings would be time consuming and hamper clinical decision-making. However, ensuring that discussions are appropriately patient-centred is an issue that must be addressed. This may require the specialty specific clinical nurse specialists taking the role of patient advocate, as they often develop the best and most productive relationships with patients.

The contribution of perioperative medicine team members will need to be recognized as a regular commitment, to ensure that adequate time is allowed for preparation and meeting attendance. It is not yet clear what the job plan of a perioperative physician may include, but attendance and preparation for MDT meetings should be an important component. The AAGBI guidance²⁸ on the 2003 consultant contract does include 'multi-disciplinary meetings about direct patient care' as an example of direct clinical care to be included in a consultants programmed activities (PA). However anaesthetists often attempt to fit MDT attendance around operating lists, when time allows. Further guidance from the College and Association may be necessary to ensure MDT meeting attendance is formalised.

The perioperative medicine MDT will be resource heavy. In order to be sustainable in the current NHS, newly introduced pathways must demonstrate improvements by measurable metrics, as we have discussed and also ultimately lead to cost savings. This will, however, probably require considerable investment in infrastructure before such improvements are seen. Appropriate piloting of such schemes will be necessary before their widespread introduction.

Conclusion

Multidisciplinary team working and the perioperative MDT meeting have been promulgated by the Royal College of Anaesthetists as the future of perioperative medicine. The use of the MDTM within other specialties has been subject to much criticism. Despite this we propose that it may be useful methodology for the multimorbid, frail perioperative patient and is worthy of more formal investigation within the perioperative arena. The perioperative MDT will need careful construction, learning lessons from the development of MDT in other specialties, to ensure that it is both efficacious and efficient.

Declaration of interest

J.D. and D.W. and are members of the Royal College of Anaesthetists Task and Finish Group on perioperative medicine.

References

- Pearse RM, Harrison DA, James P, et al. Identification and characterisation of the high-risk surgical population in the United Kingdom. *Crit Care* 2006; **10**: R81
- Royal College of Anaesthetists. Perioperative medicine the pathway to better surgical care. RCOA publication 2015
- Department of Health. Policy framework for commissioning cancer services: a report by the expert advisory group on cancer to the chief medical officers of England and Wales. London: DH, 1995
- Cancer Guidance subgroup of the Clinical Outcomes Group. Improving outcomes in breast cancer. London: DH, 1996
- National Institute for Health and Clinical Excellence. Guidance on cancer services: improving outcomes for patients with brain and other CNS tumours. NICE, 2006
- National Institute for Health and Clinical Excellence. Improving outcomes in urological cancers. London: NICE, 2002
- Department of Health. Manual for cancer services. London: DOH, 2004
- Griffith C, Turner J. United Kingdom National Health Service, cancer services collaborative 'improvement partnership', redesign of cancer services: a national approach. *Eur J Surg Oncol* 2004; **30**(suppl 1): 1–86
- Department of Health. National service framework for diabetes: standards. London: Department of Health, 2001
- National Institute for Health and Clinical Excellence. Chronic obstructive pulmonary disease. Management of chronic obstructive pulmonary disease in adults in primary and secondary care. NICE, 2004
- Department of Health. National service framework for older people. London: Department of Health, 2001
- Patkar V, Acosta D, Davidson T, Jones A, Fox J, Keshtgar M. Using computerised decision support to improve compliance of cancer multidisciplinary meetings with evidence-based guidance. *Br Med J Open* 2012; **2**: e000439
- Eldridge P. Editorial. *Br J Neurosurg* 2012; **26**: 437
- Kagan AR. The multidisciplinary clinic. *Int J Radiat Oncol* 2005; **61**: 967–8
- Rittman T, Corns R, Kumar A, Bhangoo R, Ashkan K. Is referral to the neuro-oncology MDT safe? *Br J Neurosurg* 2012; **26**: 321–4
- Lamb BW, Brown KF, Nagpal K, Vincent C, Green JS, Sevdalis N. Quality of care management decisions by multidisciplinary teams: a systematic review. *Ann Surg Oncol* 2011; **18**: 2116–25
- Taylor C, Munro AJ, Glynne-Jones R, et al. Multidisciplinary team working in cancer: what is the evidence? *Br Med J* 2010; **340**: c951
- Department of Health. Equity and Excellence: Liberating the NHS. London: Department of Health, 2010
- De Ieso PB, Coward JI, Letsa I, et al. A study of the decision outcomes and financial costs of multidisciplinary team meetings (MDMs) in oncology. *Br J Cancer* 2013; **109**: 2295–300
- Ryan J, Faragher I. Not all patients need to be discussed at the colorectal MDT. *Colorectal Dis* 2014; **16**: 520–6
- Kesson EM, Allardice GM, George WD, Burns HJ, Morrison DS. Effects of multidisciplinary team working on breast cancer survival: retrospective, comparative, interventional cohort study of 13 722 women. *Br Med J* 2012; **344**: e2718
- Friedland PL, Bozic B, Dewar J, Kuan R, Meyer C, Phillips M. Impact of multidisciplinary team management in head and neck cancer patients. *Br J Cancer* 2011; **104**: 1246–8
- Hong NJ, Wright FC, Gagliardi AR, Paszat LF. Examining the potential relationship between multidisciplinary cancer care and patient survival: an international literature review. *J Surg Oncol* 2010; **102**: 125–34
- Vetter TR, Boudreaux AM, Jones KA, Hunter JM, Pittet J. The perioperative surgical home: how anaesthesiology can collaboratively achieve and leverage the triple aim in healthcare. *Anesth Analg* 2014; **118**: 1131–6
- Dhesi J. *Setting up A Proactive Service to Make Surgery Safer for Older People*. London: The Health Foundation, 2013
- Harari D, Hopper A, Dhesi J, Babic-Illman G, Lockwood L, Martin F. Proactive care of older people undergoing surgery ('POPS'): designing, embedding, evaluating and funding a comprehensive geriatric assessment service for older elective surgical patients. *Age Ageing* 2007; **36**: 190–6
- Press MJ. Instant Replay — A Quarterback's View of Care Coordination. *N Engl J Med* 2014; **371**: 489–91
- AAGBI. Guidance on the 2003 (New) contract and job planning for Consultant Anaesthetists. AAGBI publication 2005