Do multidisciplinary teams make a difference to the quality of medical care?

ABSTRACT

One of the major modern advances in the organization and delivery of health care has been the introduction of multidisciplinary team management. This approach has reduced mortality levels in patients suffering with cancer and other complex multiorgan pathologies. Many centres of excellence and teaching hospitals have established multidisciplinary teams in order to streamline treatment pathways and optimize patient care.

This article presents an overview of multidisciplinary teams, their history, their introduction into mainstream medical care and the issues resulting from their introduction to the treating organizations as well as clinicians.

The NHS Data Dictionary defines the multidisciplinary team as 'a group of professionals from one or more clinical disciplines who together make decisions regarding recommended treatment of individual patients' (NHS Business Definitions, 2019).

Historical perspectives

Following comparisons of survival rates from cancer across Europe in the early 1990s (Berrino et al, 1999) the UK was highlighted as relatively poorly performing (Tattersall, 2006). To address this, a report from the (then) newly established Expert Advisory Group on Cancer was commissioned (The Expert Advisory Group on Cancer to the Chief Medical Officers of England and Wales, 1995). A key recommendation of this report was that patients should be seen by specialist surgeons working in teams including diagnostic specialists and nurses. Two transformations were therefore required – the patient should be seen by a specialist not a generalist, and key decisions should be taken on a multidisciplinary basis rather than by clinicians working individually (Haward, 2006). This report also introduced the concept of cancer units and centres, with larger centres supporting the smaller units in complex or rare cases in a 'hub and spoke' model (The Expert Advisory Group on Cancer to the Chief Medical Officers of England and Wales, 1995). This system of units and centres was incorporated into trauma and orthopaedic surgery as the major trauma networks which were developed in 2011.

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Evolution of the multidisciplinary team

After the Calman-Hine report in 1995, there was an impetus within oncology to adopt multidisciplinary working and by 2004 more than 80% of patients with cancer in England were being managed by a specialist team, compared with 20% 10 years previously (Tattersall, 2006) This way of working is now fundamental to oncological care and is mandated as part of the NHS Cancer Plan in the UK (Department of Health, 2000). Studies have shown a range of benefits of multidisciplinary team working within oncology including more accurate staging of disease (Davies et al, 2006), decreased time from diagnosis to treatment (Gabel et al, 1997), an increased number of patients treated with curative intent and improved survival.

Authors across a number of other specialties and centres have investigated the effect of establishing multidisciplinary teams on the care provided and given recommendations for others introducing or improving a multidisciplinary approach. A national audit of institutions caring for patients with inflammatory bowel disease identified that 75% were holding a weekly multidisciplinary team meeting. A subsequent report, based on expert consensus, offered recommendations for implementation regarding objectives, participants and eligible cases (Morar et al, 2018). After introducing multidisciplinary team working alongside other changes to their diabetic foot service one UK district general hospital showed a significant decrease in amputation rates over an 11-year observation period with a reduction in the rate of major amputations from 7.4/100 000 to 2.8/100 000, a reduction of 62% (Morar et al, 2018).

In trauma and orthopaedic surgery a particularly challenging cohort is those with infected joint replacements. This surgical challenge can be compounded by complicating factors, such as compromised immunity, systemic disease or altered anatomy, namely bone loss or soft tissue compromise. To achieve a successful outcome, expert input from a number of specialists is required, including orthopaedic surgeons, microbiologists, radiologists, physiotherapists and physicians. A 5-year follow-up study of a cohort of such patients demonstrated the benefits of this multidisciplinary approach in terms of the high rate of control of infection (Ibrahim et al, 2014).

Profound changes have also been made to the care of the trauma patient as a result of introduction of the multidisciplinary team approach for the management of patients suffering major trauma and polytrauma injuries (see also the accompanying article https://doi.org/10.12968/hmed.2019.80.12.703). In 2012 trauma networks were introduced, with the aim of ensuring that the most severely injured were seen in major trauma centres staffed by multidisciplinary teams seeing a high volume of cases. These ensure that there is 24-hour availability of the key specialties, represented by staff of appropriate seniority, including those not commonly present in smaller hospitals such as plastic surgery and neurosurgery. While statistically significant improvements in mortality have not been shown, functional status at discharge, as measured by the Glasgow Outcome Scale, has improved significantly, with a greater proportion of patients being categorised as experiencing a 'good recovery' (Metcalfe et al, 2014). The move to this model has not been without challenge for the institutions designated as major trauma centres. Across the four such hospitals studied, a substantially increased demand on resources was seen. Patient volume increased by 200%, absolute number of operations by 253% and critical care bed-days by 23% (Barnett et al, 2012).

Challenges and benefits of multidisciplinary teams

Several potential benefits exist for units with multidisciplinary teams. Referral systems create the opportunity for high volume specialist practices, allowing clinicians to rapidly develop experience and expertise. As experience increases the risks of complications following treatment are likely to decrease. Such settings also have the opportunity to become teaching centres and provide education for surgeons in training and fellows. This is in addition to delivering a streamlined service to patients.

Development of multidisciplinary teams poses several challenges to the centres in which they are developed. They require significant levels of organization and staffing. They need to be well planned and coordinated. If multiple centres are involved then appropriate information technology is required and there are also logistical issues around the location of the multidisciplinary team meetings. Time has to be formally allocated to these meetings in the timetable and the output has to be clear and well documented. The job planning process has to include time for multidisciplinary team meetings to take place. This is complicated by the fact that the optimal number of specialists and specialities which constitutes an optimal multidisciplinary team meeting has not been defined nor has the minimum number of personnel required to make the outcome valid, i.e. the number of disciplines and the number and level of specialists from each. This has been highlighted as a significant issue at a recent United Kingdom Prosthetic Joint Infection consensus meeting. Delivery of such services is also labour intensive and can be expensive to deliver. This has the potential to absorb resources, both personnel and financial.

Responsibility and accountability

Moving away from a system where decisions are made by one senior individual towards one where these decisions are shared among a group raises the subject of responsibility. When a decision is taken by a group, who is responsible and who, if anyone, is accountable if things go wrong? This is partly addressed by the General Medical Council (2012) in *Leadership and Management for all Doctors*, which states:

> **'The formal leader of the team is accountable for the performance of the team, but the responsibility for identifying problems, solving them and taking the appropriate action is shared by the team as a whole.'**

In their guidance to doctors working within mental health teams the General Medical Council (2005) is more specific, with the following advice:

> **'Doctors are not accountable to the GMC [General Medical Council] for the decisions and actions of other clinicians.'**

This is further expanded upon, explaining that if an aspect of care has been delegated to an individual, the consultant is not responsible for the individual's specific decisions or actions, but is responsible for ensuring that the individual is appropriately trained, experienced and supervised.

Sidhom and Poulsen (2006) identified an important potential threat to patient-centred care from the widespread use of multidisciplinary teams which they termed 'treatment by committee', i.e. without an individual clinician taking responsibility for patient care, and ignoring individual patient circumstances and comorbidities when reaching treatment decisions.

Cost

Establishing multidisciplinary teams is resource intensive – there is the direct cost of the staff involved, and also the opportunity cost incurred; time spent within a meeting is time not spent engaging in direct patient contact, e.g. in clinics or operating lists. There is also the cost of arranging and preparing for the meetings – the correct infrastructure and personnel must be present, the relevant patient details collated, and pathological and radiological results reviewed. Oncology multidisciplinary teams alone are estimated to cost the NHS around £50 million per annum for preparation and a similar amount to fund attendance (Taylor et al, 2010). The available evidence for the cost effectiveness is limited, and at high risk of bias. It is therefore very difficult to identify whether this is a cost-effective way of working (Ke et al, 2013). Indeed it has been suggested that the decisions reached in an multidisciplinary team rarely differ from those made by the supervising consultant in isolation, suggesting that the significant outlay results only in a small clinical impact (Chinai et al, 2013).

Professional attitudes and perceived autonomy

Molleman and colleagues (2010) examined the potential threats which multidisciplinary teams pose to practicing

KEY POINTS

- Multidisciplinary teams have led to a reduction in mortality among patients with cancer.
- Multidisciplinary teams have led to an improvement in outcomes of patients who have suffered multiple trauma.
- Establishing multidisciplinary teams poses specific logistic challenges to the treating institution.

clinicians. The authors hypothesized that multidisciplinary medical team meetings would be more of a threat to the professional identity of surgical specialists than to the professional identity of non-surgical and supporting specialists. They surveyed 1827 Dutch medical specialists and the findings supported their hypotheses, although a few specialties had response patterns which deviated from expectations. It is unknown whether these findings are related to specialty choice, to the training of medical specialties and/or to having a role in leading team meetings.

Discussion

Since their inception within cancer services more than 20 years ago, multidisciplinary teams are much more widespread. Aspects of care are delivered in this way across a range of services and settings. Multiple specialties have demonstrated that this approach has improved outcomes for their patients. In most of the examples discussed this way of working has also been introduced alongside other developments, making it difficult to extrapolate the extent to which multidisciplinary teams themselves have led to improvements, rather than other measures being implemented concurrently. Nevertheless, there is little contention that the use of multidisciplinary meetings and teams, comprising appropriate specialists, as envisioned by the Calman-Hine report, offers a means to enhance patient care and clinical outcomes. This is ever more pertinent as increasing complexity is seen in the extent and severity of patient pathology and comorbidity and also interventions that can be offered to this challenging patient population.

While acknowledging the potential benefits, caution must be exercised when introducing, managing or participating in such systems. There must be clarity regarding responsibility and delegation. Costs must be justifiable and the multidisciplinary team used selectively for cases that warrant financial and temporal outlay.

In order to address these outstanding questions further studies aimed at identifying improvements in outcomes attributable to multidisciplinary working and also evaluating their cost effectiveness are required.

Conclusions

Introducing a multidisciplinary team approach to deliver medical care has improved outcomes across a number of specialities. However, establishing these teams poses logistical, financial, ethical and professional challenges to the organization and professionals involved in them. BJHM

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