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Title: Experience of COVID-19 restrictions on Multi-Disciplinary Team Meeting decision making and care: a service evaluation of cancer services in a major UK cancer centre.

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Research in context

Evidence before this study

Significant disruption to NHS services has occurred as a result of the COVID-19 pandemic which includes cancer services. Multi-disciplinary team (MDT) meetings form part of the diagnostic and treatment pathway for cancer patients but the implications of COVID-19 on this process is unknown. We carried out a service evaluation to investigate this.

Added value of this study

Our findings show that there was a marked reduction in the numbers of patients discussed at Cancer MDT meetings during the COVID-19 lockdown which has not yet recovered. The results also suggest that MDT members believe there has been a negative impact on the quality of discussions in MDT meetings which may have impacted diagnostic and therapeutic decision making primarily due to staff absences and use of virtual meetings.

Implications for practice or policy and future research

To mitigate some of the harmful consequences of COVID-19 on cancer care, teams must fully understand why less patients are being discussed in cancer MDT meetings. Cancer teams must ensure that the quality of discussions on diagnostic and treatment recommendations are not hampered by virtual working and other negative consequences of delivering high quality cancer care in the midst of a pandemic.

Abstract

Background

COVID-19 has caused significant disruption to NHS services with clinical resources redirected to treat those affected at detriment to non-COVID patients, such as those with cancer. Due to the importance of multi-disciplinary team (MDT) meetings as part of the cancer care pathway, we studied how COVID-19 has affected its processes.

Method

Three periods were studied to investigate MDT changes through the COVID pandemic: Period one (before COVID), Period two (during COVID lockdown), and period three (post-COVID lockdown recovery). A retrospective analysis of prospectively collected MDT data was carried out to study differences in numbers of patients discussed and all MDT members of a major cancer hospital were surveyed to collate information regarding their experience of MDTs during the same time periods.

Findings

There was a 37% reduction in number of patients discussed between Period one and two; improvements in numbers in period three could signify a slow recovery, as this has not reached pre COVID levels. 57% of respondents experienced poorer quality discussions in MDTs associated with the use of virtual software implemented for social distancing. This may have impacted decision-making due to problems with IT systems, equipment and inter-professional shared clinical reasoning.

Interpretation

There was a marked reduction in numbers of patients discussed in MDT meetings as a result of COVID-19 which persists. Multiple factors may contribute to this. Absence of key members and increased use of virtual working has led to concerns of poorer quality decision making processes. It will be many years

before the full effects of COVID-19 related impact can be determined. Cancer teams must adapt to these rapidly changing service delivery practices to minimise changes to effective clinical reasoning within MDTs when planning and delivering patient cancer care.

Funding
None

Background

Since its emergence in December 2019, the severe acute respiratory syndrome coronavirus 2 (COVID-19) has affected more than 100 countries. It was declared by the World Health Organisation (WHO) on the 30th January 2020 to be a Public Health Emergency of International Concern. [1]

As the COVID pandemic spread through the United Kingdom [2] capacity to treat non-COVID health problems was reduced as hospital trusts prepared themselves for a potential influx in COVID-19 patients.[3,4] Critical care and inpatient beds were also redirected to treat COVID-19 patients, resulting in cancellation or delays in diagnostic and therapeutic interventions for patients with cancer [5]. Further restrictions have been placed in order to reduce the risk of infection in high-risk groups such as older patients, those with comorbidities and immunosuppressed patients which has further delayed the delivery of non–COVID related care, including surgery and chemotherapy. [6]

The National Health Service (NHS) Cancer Plan mandates all cancer patients in the United Kingdom (UK) should be discussed by a specialist multidisciplinary team (MDT) and this forum is a critical component for how cancer services are delivered.[7] MDT meetings are equivalent to tumour boards held in other health systems. MDTs ensure high quality and efficient diagnostic pathways and robust, high quality treatment decision-making. [8] It is known that there has already been a significant increase in the number of avoidable deaths from cancer due to the COVID-19 pandemic. [9]

Here we present a service evaluation of the impact of COVID-19 on the function of cancer MDT decision-making in a tertiary level cancer hospital in the UK.

Methods

Context: This service evaluation assessed usual care MDTs for cancer services at Leeds Teaching Hospitals NHS Trust (LTHT), UK, providing cancer care and treatment to a population of approximately 4·5 million people. 31 cancer MDTs were included in the study population; ethical issues and risks of this evaluation were assessed by LTHT local leaders in line with best practice guidelines and this study received institutional approval.

Design: A cohort study design using mixed methods using routinely collected, prospective data of MDT activity and questionnaires of staff experiences.
All patients reviewed at MDTs at three time-points: time one - pre-COVID-19, before any impact on MDTs (Jan-Feb 2020); time two – lockdown, when the restrictions of COVID on NHS functioning were most keenly felt (March-June 2020) [10,11]; time three – restart, when NHS functioning was re-instated (June-July 2020).

Sample: The analysis of cancer MDT workload utilized prospectively collected data on the number of patients discussed at each weekly meeting; cancer MDT meetings which occurred less frequently than once per week were excluded. To ensure data accurately reflected only the behavior in the three time periods, namely pre-COVID, during full lockdown and in the recovery phase post-lockdown, the transition months between the three time periods, the months of March and June were excluded. The mean number of patients discussed per meeting, per time period was calculated - typically a mean of eight or nine meetings.

Survey: An online survey for all 450 NHS staff involved in the delivery of cancer care across West Yorkshire delivered online using survey monkey. The survey informed by feedback received by the senior cancer team was also informed using areas investigated in previous MDT surveys. [12] MDT members including surgeons, oncologists, radiologists, pathologists, physicians and specialist nursing staff were asked to participate. The survey contained 35 questions with a mixture of fixed and free text responses eliciting data about participant: role in

MDT, experiences of MDT and clinical decision making; views of remote systems on patient care and service delivery. The survey was submitted on 7th July 2020 and the deadline for completion was 17th August 2020. One further reminder was sent.

Analysis: The survey results were recorded and analysed using Microsoft Excel and to generate the descriptive data used in this study. The study was conducted, analysed and data presented according STROBE guidelines. [13]

Results

COVID and reduction in MDT case discussions

The total number of patients discussed each week in cancer MDTs in time period one (Jan-Feb) was 874 per week, but following lockdown, in time period two (Apr-May) this dropped to 548 per week, a drop of 37%. In time period three (July-August) the number of patients being discussed had increased again, to 679 per week but this was still 22% below the weekly figures prior to COVID-19.

Figure 1 displays the data by each cancer MDT. Some cancer MDTs were able to maintain a consistent workload such as breast, liver, haematology-myeloid and neuroendocrine. However most saw a marked decrease in numbers of patients discussed at their MDT, which has not yet fully recovered.

Survey Participants

From 450 staff that were sent the survey, 90 completed the survey with a response rate of 20%. Participant characteristics are described in Table 1.

Changes to MDT structure

The survey results demonstrated that the number of cancer types continuing with face-to-face MDTs to some extent markedly dropped (63%). Substantial changes were also made within these meetings to reduce the risk of COVID-19 including markedly limiting the number of attendees, social distancing and wearing facemasks. Most participants attending the MDT in person observed social distancing being applied adequately (96%). In those meetings that required more participants than the limit of attendees allowed or due to members shielding/isolating; virtual software was used to allow members to participate. The average number of MDTs per week remained the same through all periods although the duration of the meetings did shorten. In time period one, the median length of MDTs was 148 minutes falling to 117 minutes (79%) in period two. This increased in time period three to 138 minutes (93%) but remained short of the pre-COVID era.

Effect on the Decision Making Process

A majority of people (44%) identified both positive and negative aspects of the changes made due to COVID-19 (Table 2). The experience of virtual MDTs was that it was less interactive (79%) and communication was disadvantaged (80%). 57% of respondents felt there was a decline in quality of discussions (Table 3) with comments including "communication issues" and "fewer voices being heard". Half of the respondents believed that the decision-making process was hampered by a virtual MDT and over a third (38%) perceived the final care plan may have been different after a face-to-face MDT with more inter-professional shared decision-making communications.

Responses to Technological aspects of virtual MDTs

63% of those surveyed believed IT support was not adequate during the virtual MDT meetings, with comments including: "a lot of time taken up if equipment stopped working during MDT" and even "it was non existent". This included the general need for better equipment in order to hold the meetings on online platforms and also training to use the software, and is summarized in a comment by a respondent "Any equipment that helps us to provide a better service and helps each team to communicate better with the others as certain services are using different systems to ourselves."

Changes and impact on patient care

66% of respondents believed that COVID-19 had resulted in delays in the diagnosis or management of cancer patients. Many responded that patient preference was "often discussed", but "This has reduced significantly since the start of COVID-19 because in many instances the treating clinicians/nursing staff who know the patient are not present at the MDT." 62% reported that the attendance was affected by members self-isolating or due to COVID related sickness. The survey demonstrated a 22% fall in the number of core members attending the meetings and has remained to be the case in time period three.

Discussion

COVID-19 lockdown measures imposed by the UK government has led to a reduction in cancer-related patient encounters, [14] a freeze on cancer screening and changes to routine diagnostic investigations which may all contribute to poorer cancer survival rates. [15, 16] Those with a cancer diagnosis may have had delays to their treatment, as they are both more vulnerable to the effects of COVID-19 [17] and have an increased risk of developing complications if infected with COVID. [18]

COVID-19 has had a multifaceted effect on MDTs and MDT meetings that themselves form an integral part of cancer treatment pathways in the UK. This analysis is the first to address the impact of COVID-19 on the cancer MDT process and provides insight into the need to support proactively inter-professional reasoning within the MDT to mitigate some of the potential damage experienced in the COVID-19 era.

This study has demonstrated a marked reduction in the number of patients being discussed in cancer MDT meetings suggesting patients with cancers are not being diagnosed and referred for a variety of possible reasons, including: a pause in screening programs, patient reticence in seeking medical advice for symptoms due to shielding and/or concerns about the risk of being infected if attending hospitals or their doctor's surgery. In addition, less patients may be being diagnosed due to a reduced capacity of the health system to catch up with the backlog of patients awaiting diagnostic tests and treatment. [19] A contrary view may be that the reduction in numbers of patients discussed is due to streamlining discussion on only diagnosed cancers leading to more efficient meetings, however it will take time to tell whether this is the case or not.

There have by necessity been substantial changes to MDT meetings as a result of social distancing measures impacting on the decision-making process within meetings, most notably the effects of using virtual software implemented across MDTs enabling the service to run at all. Our respondents frequently highlighted the communication difficulties associated with virtual platforms including the

loss of non-verbal cues.[20] Furthermore, poor equipment and support could lead to time being taken away from clinical reasoning and personalisation of patient care discussions to trouble-shooting IT problems. Problematic technology can result in information being inadequately conveyed and members unable to hear key information about the patient. This could lead to errors or frustration which may damage participation in those taking part remotely and in combination has the potential to lead to poorer quality discussion and decision-making and/or increasing the likelihood that the professional best able to represent the patient's interests being absent from these crucial decision-making discussions.

These technical challenges, as well as the direct impact of COVID-19 on health professional wellbeing from increased frustration and stress when adjusting to new work and home-life challenges combined to make clinical judgments and plan patient care within a virtual infrastructure more difficult. Data suggests that although the number of patients discussed fell by 37% and also the meeting length fell by 21%; an indication perhaps of the difficulty of having inter-professional shared decision making discussions about patient diagnosis, treatment timing and the delivery of care when working virtually. However, it is easy to blame poor technology: MDTs may benefit from improved meeting etiquette.

COVID-19 has also directly affected MDT members as noted by most of our respondents (62%) having experienced the absence of members due to shielding or sickness. This could reduce the expertise required to make the best decision for a patient's treatment. Furthermore, this may include the absence of the clinician that best represents the patient's interests which could be detrimental to the need for patient centered care.

It is likely all services will need to adapt even more to new ways of running MDT meetings as COVID-19 and it's impact will not disappear in the near future. It is imperative to improve IT systems and support the use of virtual platforms to allow colleagues to be able to work effectively together and make the best decisions for patients. While most respondents believe that the shift to virtual

working has not changed the final outcome more than one third had concerns that treatment decision making had been adversely affected by COVID-19 related changes to working practices. Proving the full extent of this is beyond the scope of this study but a degree of confirmation bias is also likely to have occurred meaning the estimate of variation is an underestimate. Working virtually may have other beneficial effects for the profession though, such as enabling more members to take part remotely, particularly those with underlying health conditions and family commitments. However for these inter-professional shared decision making discussions to happen effectively, it may require MDTs to include prompts making explicit the discussion about different options, for example stereotactic ablation radiotherapy (SABR) or input from specific people to ensure certain aspects such as patient preferences are captured.

The NHS has adapted such as expediting the roll out of SABR which allows patients to require fewer treatments compared to traditional radiotherapy methods, and also the use of "chemotherapy buses" to provide treatment in order to overcome the problems of patients continuing to receive cancer treatment. [21] Encouragingly, the majority of the chemotherapy and radiotherapy services continued to run at normal capacity throughout this period in this hospital trust.

This study provides insight into the delivery of cancer services through COVID-19. However, our findings have some limitations as it was a service evaluation methodology of the impact of COVID-19 in one region; other regions' implementation of government restrictions may have a differential impact on experiences. In addition, the questionnaire response rate was modest and it may be staff had a range of experiences and views we were not able to capture the impact in this evaluation. However, we have confidence our findings capture the impact of COVID-19 on services ability to deliver cancer services and the benefits and challenges of staff to make reasoned clinical decisions with colleagues in remotely delivered MDTs of relevance to UK practice.

In summary, we have demonstrated that COVID-19 has substantially impacted the cancer MDT meeting process, which is concerning due to its key role in the provision of cancer care in the NHS. Not only have the numbers of patients discussed fallen, but also the effect on the quality of discussion due to the use of virtual software and member absences, has been hampered. Promisingly, actions in our hospital trust have already been taken such as the upgrade of IT systems and technology in the MDT meeting rooms and also efforts from the cancer care teams to increase support to patients by for example increasing cancer nurse specialist input where possible. However, it is likely such improvements are needed throughout the NHS and other healthcare systems to mitigate some of the current deficits. The changes to healthcare provision due to COVID-19 are an opportunity to improve patient care and efficiency whilst also maintaining high quality of care [22-23]. A fine balance needs to be made between reducing the risk of COVID-19-related harm whilst allowing the effective treatment of other conditions such as patients with cancer. [24]

Tables and figures

Table 1

Characteristics of respondents,		**n (%)**
Profession	Surgeon	21 (23%)
	Pathologist	12 (13%)
	Oncologist	12 (13%)
	Clinical nurse specialist	12 (13%)
	Other	31 (34%)
	No answer	2 (2%)
Type of Centre	Tertiary	86 (96%)
	DGH	4 (4%)
Trust	Leeds Teaching Hospitals trust 85	85 (94%)
	Mid Yorkshire Hospitals NHS Trust	3 (3%)
	Bradford Teaching Hospitals NHS FT	1 (1%)
	Calderdale and Huddersfield NHS FT	1 (1%)
Type of MDT	Gastrointestinal	17 (19%)
	Neurology	7 (8%)
	Paediatrics and young adults	5 (6%)
	Sarcoma	5 (6%)
	Hematology	5 (6%)
	Endocrine	5 (6%)
	Breast	4 (4%)
	Head and neck	3 (3%)
	Gynae	2 (2%)
	Other 6	6 (7%)
	Not defined	31 (34%)

Figure 1. Total number of patients discussed each week in cancer MD

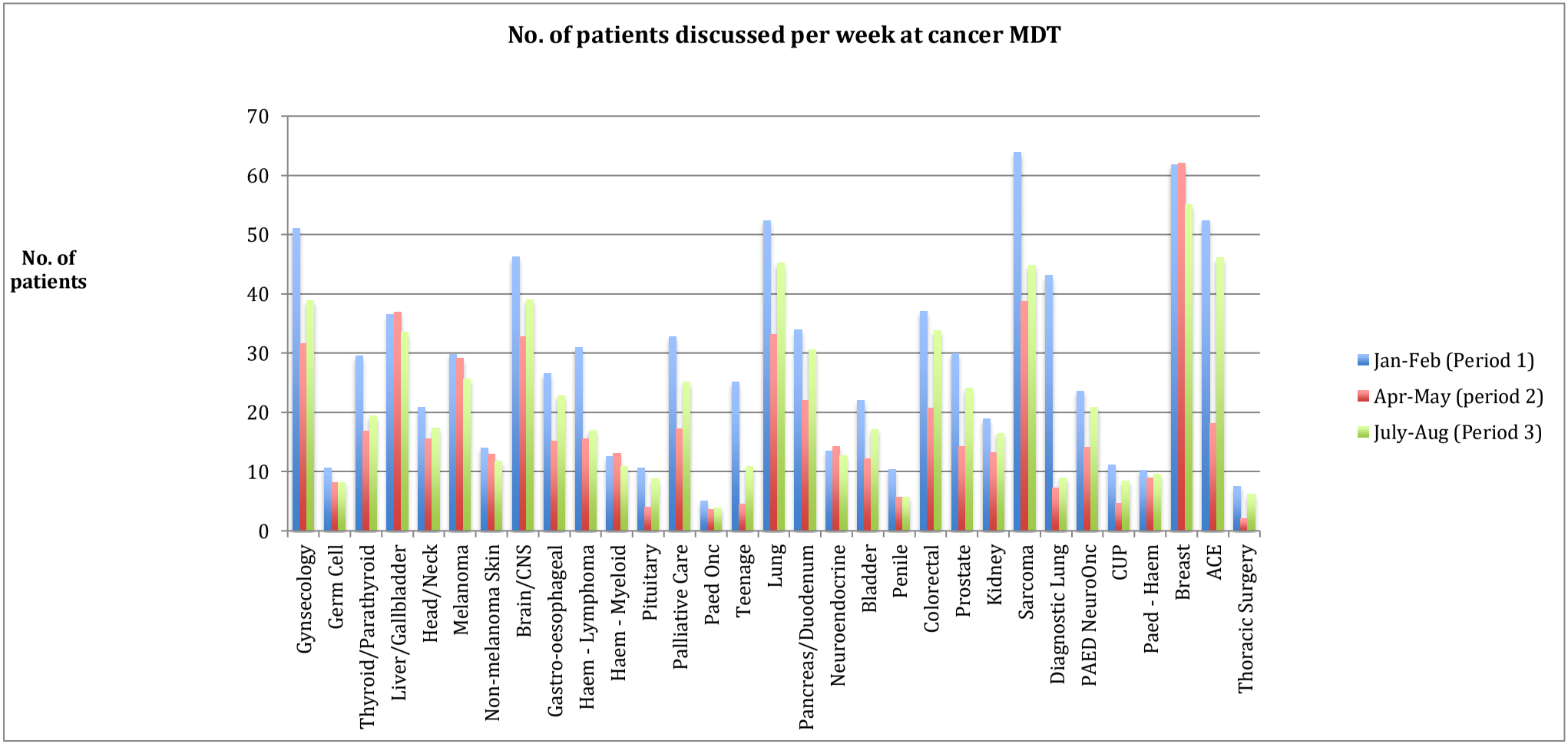

Table 2: Illustrative responses of staff experiences of remote MDTs

Positive	**Convenience** "It allowed us to consider the better way of running MDTs more efficiently with less time constraint." "remote working allows consultants to work from their office and avoid travelling between cross sites" "As a histopathologist, attending remotely provides flexibility without any loss of quality of information being provided by us. **Allowed COVID-19 restrictions** "Worked well to allow social distancing."
Negative	**Communication** "Much more difficult to get open opinions with robust discussion" "Cannot pick up on body language so hard to talk as may interrupt/start with someone else, hard to listen as well hard to locate free computer "Communication more difficult without facial / body language." "Sometimes the information is difficult to hear particularly if there are several people wanting to talk. " **Poor IT Systems** "The technology is inadequate. Teams cannot emulate the real thing." "The IT support needs to improve if this is how the MDTs are to run in the future. The system is not always stable and tends to collapse intermittently" "Difficult to hear conversation. Connection issues." " Very poor experience. PACS system too slow. Poor sound quality. People getting logged out of the meeting. Very limited discussion."

Table 3: Staff responses to quality of discussion in MDT

Postive	"I see no change to the quality of discussion, anything our discussions are better documented in the MDT plan these days and as experience in the use of technology increases" "Its improved. Less palaver"
Negative	"Makes discussion of difficult cases more challenging and difficult to follow what is being shown on the screen" "Less people involved - sometimes lacking relevant specialists. IT issues mean people haven't been able to hear information or contribute to the discussion, frustrations eventually led to disengagement " "Not so easy to discuss on a virtual platform. If one person is more dominant some members can struggle to have a say." "Difficult to be part of a discussion when you can't hear. Easy to miss important information"

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