Waitemata District Health Board
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MULTIDISCIPLINARY CANCER CLINICS

What are they?

A model of coordinated ambulatory care in which cancer patients see providers from all relevant disciplines (eg, surgical, medical, radiation oncology) at one clinic visit, and leave the clinic with a single, coordinated treatment plan.

Promoted by the US National Cancer Institute, multidisciplinary clinics (MDCs) have become a routine portal of entry for patients to North American academic cancer centres. Examples include the Dana-Farber/Brigham and Women's Cancer Centre (Boston, MA) which, in 1997, organised its ambulatory care into 12 distinct disease centres, 10 of which focus on the care of specific solid tumour type (eg, breast oncology, GI oncology). Each of these centres run MDCs, which have evolved into various configurations according to the needs of the clinicians and patients. MDCs are also becoming more prevalent in the community setting eg, Intermountain Healthcare (Utah) established a multidisciplinary breast clinic in a community hospital in 2005. The success of this clinic, based on patient satisfaction and increasing attendance, led to other MDCs for prostate, GI, sarcoma, and thoracic cancers.

Certain organizational elements appear critical to the success of an MDC[1]; a physician-director, clinic/nurse coordinator, administrator, support staff, and a dedicated tumour board (including a surgeon, medical oncologist, radiation oncologist, pathologist, and radiologist). Since surgery continues to be the primary mode of therapy for the majority of solid malignancies, surgeons need to take a prominent role in the leadership of MDCs. The clinic coordinator is responsible for keeping the clinic running smoothly and ensuring continued physician support. Often, a nurse coordinator will assume the clinic coordinator role, taking responsibility for preparing and distributing patient history prior to the clinic.

Some institutions (eg, the University of Michigan Comprehensive Cancer Centre) use MDCs only to see new patients. The focus of these "intake" clinics is to evaluate the newly diagnosed cancer patient or individual with a lesion highly suspicious for malignancy, and follow-up is conducted in individual specialty clinics. Other institutions (eg the Dana-Farber), also see returning patients with specific issues requiring multidisciplinary evaluation. Fewer MDCs include appointments for routine patient follow-up. In the US, MDCs also provide second opinions to

private practitioners and their patients, who may already be undergoing treatment – and some institutions market their MDCs as "second opinion clinics" to attract patients.

Two primary models of MDCs implemented in the US:

(1) The Concurrent Model

A patient coordinator gathers necessary medical information from the patient by telephone (often with clinical back-up from a nurse) and schedules the patient to see all providers on the same day.

Initially, the patient is evaluated by one physician from the multidisciplinary team. This doctor then presents the case to the rest of the team, which also reviews any radiology and diagnostics as a group.

The team then interviews and examines the patient concurrently, and together they present the options and an agreed treatment plan to the patient.

The concurrent approach allows for maximal interaction and coordination among providers, so it tends to be employed for types of cancer that are commonly treated with concurrent therapy modalities (eg, combined chemotherapy and radiation therapies), or that require particularly complicated coordination of care (eg, treatment pathways involving frequent handovers between disciplines). In these cases, clinicians agree the concurrent MDC provides a unique and significant value to patients. However, this high degree of provider interdependency comes at a cost of relatively low patient clinic throughput – which many providers perceive as inefficient use of their time, particularly when the care pathway does not require a complex interdisciplinary coordination.

Examples: Concurrent MDCs are used in the thoracic, gastrointestestinal, head and neck, melanoma, sarcoma, and neuro-oncology clinics at the Dana-Farber.

(2) The Sequential Model

A patient coordinator gathers medical information from the patient by telephone and schedules the patient to see the appropriate providers from radiation, surgical, and medical oncology, at sequential appointment times during the clinic.

Physicians generally do not see the patient together, but each formulate their opinion and treatment recommendation, and communicate with each other between visits.

Often, one of the providers assumes the coordinating role for that patient.

By the end of the clinic visit day, the patient has received a full set of consultations with the appropriate disciplines and leaves the clinic with a single, coordinated treatment plan.

The sequential approach tends to be taken for disease requiring less complex care, or where surgery, radiation, and chemotherapy treatments occur at separate and distinct times in the treatment course. For example, where treatment decisions about chemotherapy cannot be made until surgery has occurred, or where treatment modalities are mutually exclusive (eg surgery *vs* radiation). Interdisciplinary coordination along these treatment paths involves relatively straightforward handovers from one discipline to the next at the conclusion of one treatment modality. Therefore there is not the same need for frequent and complex communication that occurs with the concurrent MDC model.

Examples:
The sequential model has been used in breast, gynaecologic, cutaneous and genitourinary oncology MDCs at the Dana-Farber Cancer Centre.

Sequential MDCs are used for the breast, prostate, and lung clinics at the Presbyterian Cancer Centre (Charlotte, North Carolina)[2]. In a typical clinic visit, patients are shown to a private exam room as they arrive by a nurse, vital signs are documented and a quick assessment of overall well-being made. The patient then meets individually with a dietician and, at the breast clinic, patients also meet with a patient survivor from the American Cancer Society. Patients are provided with resource materials (educational and support services) and screened by clinical research nurses for trial eligibility. They may also see a social worker, a genetic counselor, or physiotherapist during the visit. While these initial meetings are occurring, a tumour board pre-conference is held by the surgeon, medical and radiation oncologists, pathologist and radiologist, during which each patients' pathology and radiology findings are comprehensively reviewed. Following this, the oncology physicians separate evaluate each patient in 15-20 minute consultations. Once all three physicians have met with a patient, a brief post-conference is held during which they identify any additional tests or follow-up needed, discuss new or problematic clinical findings, and come to an agreed, detailed final team recommendation for treatment. One physician takes responsibility for discussing the treatment plan with the patient's referring doctor, and meets with the patient immediately after the post-conference, to summarise the team recommendation. The clinic visit concludes with the patient meeting with a nurse educator, who reviews the visit and treatment plan with the patient, answers any remaining questions and ensures that all the patient's concerns have been addressed.

Multidisciplinary tumour board

All MDC models (whether sequential or concurrent) also feature multidisciplinary case-based tumour boards. These are weekly conferences attended by members from each discipline as well as pathologists and radiologists, at which the most difficult cases seen over the previous week are reviewed. They usually include a mixture of case management and educational components.

Where possible, most MDC models schedule the specialty tumour conference just before a clinic, so that the patients for that day can be discussed and a consensus opinion formulated, including the patients' appropriateness for enrolment onto a clinical trial.

Advantages

- **Patient-centred care**: an individualized, convenient, time efficient (for the patient), multimodality, "one stop shop" for patients. Patient surveys at the Intermountain breast MDC demonstrate that MDC patients are more prepared to assume an active role in their own care, they value the patient-specific information they receive and report the clinic makes them "feel part of the team".[3]
- **High patient satisfaction** with MDCs – patients can see firsthand the collaboration between clinicians, and that their specific case is receiving personalized, detailed attention. At Intermountain Healthcare, patients have observed that the unhurried atmosphere of the clinic is an excellent forum for asking questions and 98% rated the overall clinic experience as excellent. In a 2010 survey at the Dana Farber[4], >93% of patients reported satisfaction with the degree to which staff worked together, the level of care coordination between doctors, and with the overall care they received. Over 96% would recommend the MDC to others. There were no significant differences in patient satisfaction between disease groups or different MDC care models.
- **Personally and professionally satisfying to providers**: in a 2010 survey of 141 providers at the Dana Farber, >90% reported they enjoyed working in the MDC, <1% said they did not; 76% preferred to see new patients in the MDC, whereas <4% preferred another venue. Providers enjoy the opportunity to interact with other disciplines and to keep current with the latest research across multiple specialties, through the didactic nature of the tumour conference.
- **May improve quality of care** through:
  - **Standardised approach to patient care** – an integral part of MDCs is the establishment of evidence-based, consensus-approved practice guidelines. For example, this resulted in substantial treatment changes being recommended for over 10% of patients referred to the Presbyterian Cancer Centre MDC for a second opinion case review. Similarly, the Johns Hopkins single-day pancreatic MDC tumour board evaluation led to changes in therapeutic recommendations in close to one-quarter of patients in 2007.[5] A beneficial follow-on effect from standardizing patient evaluations may be **cost savings** in the MDC setting. For example, a 1998 analysis of patients at the multidisciplinary melanoma clinic at the University of Michigan Cancer Centre showed cost savings of $1600 per patient, compared to a similar group treated in the Michigan community.[6] Cost savings were mainly related to avoidance of unnecessary investigations ordered in the community setting compared to the MDC.

- **Facilitating seamless coordination** between previously fragmented specialty visits – reduces risk of unnecessary duplication, miscommunication, and patients "falling between the cracks".
- **Improved access** to consultations and may shorten time to initial treatment eg, at Dartmouth-Hitchcock Medical Centre, the switch to an MDC model in 2009, for patients with newly diagnosed pancreatic adenocarcinoma resulted in significantly shorter times from biopsy to treatment (7.7 days *vs* 29.5 days), shorter time to complete all required pretreatment consultations (7.1 days *vs* 13.9 days), and fewer visits to complete all consultations (1.1 *vs* 4.3).[7]
- Offering services aimed at **improving quality of life** – patient education programs, psychosocial support programs and rehabilitative services - with input from nurses, social workers, physiotherapists, dieticians. The addition of a psychiatrist as an integral member of the multidisciplinary team (eg at the University of Michigan Cancer Centre) may significantly enhance the psychosocial support of patients. A study of ENT and GI MDCs at Barnes-Jewish Hospital (St Louis), found that overall patient satisfaction was predicted by patients having a chance to discuss their feelings about their diagnosis as well as staff attention to how patients are coping, support services available, and issues of common emotional reactions to cancer. The relationship of these psychosocial issues to patient satisfaction did not vary by age or gender.[8]
- It is the ability of the MDC to conveniently meet all the demands of the cancer patient that will add significant quality to their care. 90% of Dana Farber clinicians in the 2010 survey, felt that the MDC allows them to provide more comprehensive, coordinated and appropriate patient care.
- Note: Very few studies have looked at the effect of MDCs on health outcomes. 15 years of data from the MDC prostate cancer clinic at the Thomas Jefferson University Kimmel Cancer Centre (Philadelphia), which is believed to be the longest continuously operating MDC of its kind in the US, is encouraging for prostate cancer care – MDC patients initially diagnosed with stage III and IV disease had higher probability of 5 year survival compared to the cohort from the Surveillance, Epidemiology, and End Results (SEER) database.[9]

- Environment of close interdisciplinary interaction **facilitates development of innovative therapies**
- Convenient referral source for **clinical research** eg, 33% of the pancreatic adenocarcinoma patients seen at the newly established Dartmouth-Hitchcock MDC enrolled onto clinical trials. At the Presbyterian Cancer Centre in North Carolina, clinical research nurses screen every clinic patient for trial eligibility.

Disadvantages

- The time involved in having the patient interact with multiple disciplines limits the number of patients who can be seen per examination room per day. Therefore, while MDCs are extremely efficient from the patient's perspective, they may not be an efficient use of the clinician's time. In the Dana Farber survey, many providers perceived MDCs as less time efficient than single-practice clinics, particularly surgeons; although 52% of providers felt their MDCs ran efficiently, 26% were neutral about this and 22% thought they were inefficiently run. Of the 26 surgeons surveyed, 40% felt the MDC was not an efficient use of their time, compared to 25% of radiation oncologists and only 7% of medical oncologists. Some surgeons complained that they could see eight times as many patients in their private surgical rooms than at the MDC. The differences in perceived inefficiency between disciplines seemed to be related to: (i) the revenue streams of individual providers (patient throughput is acutely linked to income of private practice surgeons who consult at the MDC, in contrast to salaried oncologists at the cancer centre); and (ii) poor functional design of the MDC with respect to surgical practice needs (surgeons complained that the MDCs were frequently ill-equipped, lacking surgical supplies and appropriately trained surgical support staff). Inefficiencies due to the latter can be mitigated by ensuring the functional needs of all disciplines are supported by the infrastructure and design of the MDC. For example, it was observed that the handful of surgeons who were based at the cancer centre, with their own dedicated clinic space and the ability to schedule return and new patients during their session, were less likely to report that their clinics ran inefficiently.

  Comparing the concurrent with the sequential model, providers rated concurrent MDCs as making the least efficient use of their time. However, they also rated the concurrent approach as the superior model for producing comprehensive, coordinated care, which they felt patients appreciated more, and would attract more patients to the institution.

  Similarly, at Intermountain Healthcare (which runs community-based sequential type MDCs), while some physicians felt MDCs were not the most efficient use of their time, they all agreed that the time allotted was essential and that the real-time interaction of all oncologic subspecialties is extremely beneficial and elevates the level of care.[10]

Websites

Presbyterian Cancer Centre: http://www.novanthealth.org/presbyterian-medical-center/services/cancer/need-a-second-opinion.aspx

Dana-Farber/Brigham Women's Cancer Centre: http://www.youhaveus.org/cancer-care-boston.aspx#.U6q_8zPlqAh; GI centre: http://www.youhaveus.org/gastrointestinal-cancer/#.U6q_ojPlqAh

University of Michigan Comprehensive Cancer Centre, GI clinic: http://mcancer.org/gastrointestinal-cancer/gastrointestinal-cancer-clinic

Johns Hopkins: http://www.hopkinsmedicine.org/kimmel_cancer_center/centers/lung_cancer_program/multidisciplinary_clinics.html

Stanford Cancer Institute: http://cancer.stanford.edu/patient_care/services/multidisciplinaryTumorBoard.html

Beaumont Cancer Centre (Michigan) MDCs: http://cancer.beaumont.edu/multidisciplinary-cancer-care, http://cancer.beaumont.edu/hepatobiliary-and-gastrointestinal-cancer-treatment

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[9] http://prostatecancerinfolink.net/2010/11/25/15-years-of-experience-from-a-multidisciplinary-prostate-cancer-clinic/
[10] Supra at 3.