


Virtual Teaming: Leveraging Team Science Sense-Making During COVID-19

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Abstract

Individuals with cancer anorexia cachexia syndrome (CACS) experience multifaceted distress. To address CACS patient concerns regarding their experience of care, our cancer center established a specialized CACS clinic in 2016. We applied the team science principle of the team mental model (TMM) to support development of an effective interprofessional collaborative CACS care team. In 2020, cessation of CACS clinic in-person visits during coronavirus disease 2019 (COVID-19) threatened the viability of the entrenched TMM and once again jeopardized the patient experience of care.

We present a case-based vignette as a representative composite of patient experiences to illustrate the challenges. A 48-year-old female was referred to our CACS clinic for pancreatic cancer-associated appetite and weight loss during COVID-19. To reduce risk of infection, in-person clinic visits were curtailed. When informed about the resulting need to defer the CACS assessment, the patient and her spouse expressed concern that postponement would adversely affect her ability to undergo anticancer treatments or achieve beneficial outcomes.

To minimize delays in CACS treatment and optimize the patient experience of care, we applied the team science principle of sense-making to help the team rapidly reformulate the TMM to provide interprofessional collaborative CACS care via telemedicine. The sense-making initiative highlights opportunities to examine sense-making within health care teams more broadly during and after the pandemic. The application of sense-making within interprofessional cancer care teams has not been described previously.

Keywords

access to care, cancer, COVID-19, team communication, telemedicine, team science, sense-making

Introduction

Cancer anorexia cachexia syndrome (CACS) affects many patients with advanced cancer and leads to patient and caregiver emotional distress, functional decline, conflict among family members, inability to tolerate anticancer treatments, and risk of reduced longevity. Affected individuals experience muscle wasting, reduced appetite, weight loss, fatigue, and weakness.

In 2016, we identified CACS care challenges, including under-recognition, treatment delays, and fragmentation of interprofessional care and communications. To improve the patient experience, we developed a multimodal CACS clinic and described the team mental model (TMM) that supported implementation (1).

The TMM ensured that teammates from several disciplines shared knowledge about CACS and team functioning. Three knowledge types were included: task-related, team-related, and team-process. The team members adopted the 4 Interprofessional Education Collaborative (IPEC) core competencies for interprofessional collaborative practice as a critical foundation

to inform the TMM (2). Teammates agreed to maintain a climate of mutual respect and shared values within the team and with other professionals; use their knowledge of their own roles and those of other professions to appropriately assess and address the health care needs of CACS patients; communicate with patients, families, communities, and other professionals in a responsive and responsible manner to support a team approach to the care; and apply relationship-building values and the principles of team dynamics to plan, deliver, and evaluate safe, timely, efficient, effective, and equitable patient-centered care. Team members therefore developed a similar understanding of tasks, knowledge of the team and teammates'

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characteristics and expertise and team communication and collaboration to perform the team's work.

Our resulting TMM established team membership, shared tasks, and interactions for coordinated interprofessional CACS care. We included specialists to treat factors interfering with patient intake, optimize oral nutrition, conserve patient energy and maintain strength, and provide patient/caregiver education and emotional support. During the visit, each patient was sequentially evaluated by palliative care clinicians, a dietitian, and physical therapist. Teammates developed and discussed care plans with the patient and caregiver(s) toward shared decision-making.

During CACS clinic assessments, we found that patients often experienced multiple adverse physical and emotional symptoms. The patients and their caregivers frequently had limited understanding of the prognosis or comfort-oriented treatment options and had not engaged in important advance care planning. The CACS clinic therefore also provided an opportunity to introduce early comprehensive supportive palliative care to alleviate symptoms and identify and address other important care needs (3).

Following implementation of innovations like our CACS clinic, teams may assume that the underlying shared TMM is secure, stable or, if needed, may evolve slowly (4,5). But health care environments are ever-changing and sometimes shift precipitously, as demonstrated during the current pandemic. The inability of teams to *rapidly* adjust to changing environments or apply insights from experience to alter their TMM may imperil team viability and patient care. While consistent attention to ongoing performance improvement may help sustainability of the team and the quality of care, sudden threats and disorder such as seen during coronavirus disease 2019 (COVID-19) may paralyze teams and bring their work to a screeching halt.

Some CACS clinic challenges had emerged pre-COVID-19. The CACS patient frailty made travel burdensome for some. Prolonged encounters fatigued patients with limited stamina and made other appointments harder to schedule. With pandemic-associated restrictions on in-person visits, our CACS team faced the most profound hurdle. Entrenchment in our traditional TMM was a barrier to solutions.

TMMs are crucial for successful team adaptation (6), and team members should update their mental models in response to changes in their task situation (7). However, the extent to which they must and are able to adjust may depend on the magnitude of the change (8). Scholars describe 2 different types of change that inform TMM adaptability: evolutionary versus radical change (9,10). In gradual or subtle evolutionary change, many elements from the established TMM may pertain. In contrast, radical change refers to sudden or major upheaval in the relevant environment that renders many TMM elements obsolete. Gersick explains the difference as, "the difference between changing the game of basketball by moving the hoops higher (evolutionary change) and changing it by taking the hoops away (radical

change)" (9, p. 10). In the present article, we refer to a pandemic-related environmental change large enough to require the team to abandon many previously acquired routines and practices, but not so large that all previous knowledge became irrelevant. Empirical studies on TMMs to date have not established how TMMs update over time in reaction to such changes.

Team science provided a foundation to update our TMM for CACS care through *sense-making*, a process teams may employ to make sense of events and experiences during periods of significant turmoil (11). In sense-making, teams observe aspects of their environment and *make meaning of them* as a basis for action. Sense-making, therefore, involves the interplay of interpretation and action (12–14). Unlike traditional quality improvement models or tools, sense-making provided the team a swift process to mount an agile transformation of the TMM and care in the setting of a major environmental change.

In 1995, Weick described sense-making as a process that enables teams to perform in ways that are aligned to the information they gather about their own work (15). Structured team sense-making enables teams to comprehend task, environmental and technology-related information within their own organizations, and leverage opportunities accordingly.

Ashmosh and Nathan described sense-making models that embed the team's duty to navigate uncertainty, complexity, and rapid change. They suggested how teams might apply sense-making models to their work to be flexible and effective during periods of turbulence (16).

Amaya et al introduced team sense-making capability and trust as critical sources of innovation implementation and success (17). Trust and sense-making allow teams to *fast-track* introduction of new processes or approaches by gathering new information to generate knowledge about opportunities or technology.

The sense-making process represents steps toward a consensually constructed, coordinated action approach (18).

- Sense-making is a conversation among members of a team about specific challenges.
- The subject of a sense-making conversation is the occurrence of an unanticipated, novel, or uncertain situation that affects the team.
- The intent of a sense-making conversation is to increase clarity about the subject—to "make sense" out of it.
- Sense-making is enabled when each member draws from their own experience to communicate unique knowledge and insights pertaining to the issue.
- Discussion permits the translation of parsed knowledge into a new comprehensible form for the members.
- Although sense-making is personal, team members are ultimately enabled to derive similar individual representations of the challenges, potential approaches, and solutions.

- This shared representation potentiates actions that are understood and implementable by participants (19).

Description

We present the following case as a composite representation of a population of patients with CACS referred to our CACS clinic. Affected cancer patients experience marked involuntary weight loss that cannot be reversed by normal nutritional support and experience decline of their overall health. Cancer anorexia cachexia syndrome is a large burden for both patients and their families; causes psychological suffering; and affects quality of life, physical functioning, response to anticancer treatment, and survival. Our 1-stop CACS clinic was established in 2016 to optimize coordination of multifaceted CACS care. The CACS interprofessional collaborative team was developed as a direct response to CACS patient concerns about the experience of CACS care to that point.

A 48-year-old female with a diagnosis of pancreatic cancer was referred to our cancer center's Vitality Clinic to address CACS-associated appetite and weight loss. The referral occurred during COVID-19, when in-person visits to this clinic were deferred as part of virus risk mitigation protocols. Her wasting was causing emotional distress and she worried that postponement of the visit would compromise overall outcomes.

During the pandemic, CACS care clinicians were challenged to assess patients and develop and deliver well-communicated and coordinated patient-centered CACS care plans. When familiar clinic scheduling and communication mechanisms for CACS in-person care became unavailable, the team clinicians lacked a common understanding of how to manage the care and could not reconceptualize how the team itself could function. The teammates had additional concerns about the prior tolls of prolonged visits on patients and caregivers.

Team members had difficulty conceiving how geographically dispersed CACS specialists and patients could coordinate effectively; how the clinic workflow could proceed without sequential face-to-face interactions; and how patient assessments, feedback, and outcomes could be captured and shared with others quickly. They did not know how virtual visit technologies could be used by the team or the individual disciplines. They were unfamiliar with organizational endeavors to support televisits, home options for CACS care hands-on assessments and therapies, and how teammates could communicate with each other, patients, and caregivers remotely via digital means to optimize the quality and experience of care. Care coordination was viewed as complex and requiring additional staff. Reflecting the absence of sense-making in the new environment, the clinicians expressed that CACS clinic care may require indefinite suspension. However, visit deferral was not supportive of the patient's goals or a positive experience of care.

We understood the applicability of team sense-making to our CACS health care challenge. To continue care, we needed to make sense of the COVID-19-related changes and technological options to devise a new TMM for remote teamwork. A sense-making process (13–15,20,21) was initiated to identify opportunities and develop a new TMM for CACS care to inform creation of a *virtual CACS team* (vCACSt) which would continue to support patients and optimize their experience of care by addressing their appetite and weight loss concerns and enabling their participation in the development of an individualized care plan (Table 1).

Results

The sense-making effort included reflection by team members on past experiences in CACS care to clarify recent challenges, define new goals, share individual understanding, perspectives and expertise, and derive a new shared TMM for a vCACSt to replace unworkable practices.

The team members regarded the sense-making approach and objectives as adding to their scope and removing barriers to contribution. Making sense of how the team could deliver the essential dimensions of care brought a sense of empowerment, improved trust, and ownership to participating members. They were motivated by the possibilities for innovation and articulation of a new shared TMM for the vCACSt.

The core components of CACS care remained assessment, patient-centered care plan development, and communication and enactment of recommended interventions. The team members continued their commitment to the IPEC framework (2) that had informed the prior CACS TMM for in-person care: Mutual respect and shared values; knowledge of their own and others' roles; responsive and responsible communication with the team's patients, families, and other professionals; and application of relationship-building values and the principles of team dynamics to the care. As such, sense-making discussions also provided the opportunity to address other concerns about the care, including long and fatiguing appointments for frail patients. As team members conversed and agreed upon ideal collaborations, training to use virtual technologies and different scheduling schemas were proposed and adopted. The rehabilitation component of CACS care was identified as a challenge due to need for in-person assessment. Members agreed to defer this component for some patients. For others, utilization of home therapists was planned and an implementation process was established. The patient would receive a comprehensive interprofessional CACS assessment via videoconferencing without undue delays or long contiguous visits. The team members agreed to separate the assessment components for ease of scheduling and to allow the patient respite in between, while keeping the evaluations close together. Care plan discussion with the patient/caregiver and among team members was enabled via the virtual platforms, electronic health record notes, and email to ensure coordination.

Table 1. Key Team Sense-Making Steps to Construct a Consensual and Coordinated Action Approach.

Key sense-making steps	Sense-making in the CACS case	Sense-made CACS care
<i>Challenge</i> New, unexpected, or ambiguous occurrence	<ul style="list-style-type: none"> – COVID-19 pandemic outbreak and containment guidelines preclude usual in-person interprofessional assessments and discussions for CACS patients and caregivers – Patients and caregivers unaccepting of deferral of CACS assessment and care – Several team members lack familiarity with remote care delivery options in health care and within their disciplines – Some care components may not have virtual care delivery options – Adapt shared TMM to continue provision of usual multimodal team-based CACS care as much as possible, including the patient and caregiver in a consensus-based approach 	<ul style="list-style-type: none"> – Patients and caregivers can receive and take part in comprehensive CACS <i>virtual</i> clinic visits for supportive care and nutrition optimization during the pandemic outbreak
<i>Goal</i> Reduce ambiguity and make sense of the issue and solution	<ul style="list-style-type: none"> – Team members share previous challenges with scheduling prolonged in person visits for weakened CACS patients – Each team member describes their current role and tasks, their experiences with virtual platforms, and the pros and cons of possible use of virtual assessments and care plan discussions in their discipline – Team members describe their knowledge of developing opportunities in the organization's use of virtual visits in other programs and applicability to CACS care – Team members describe understanding of home-service options for some CACS care components – Nutrition and supportive care team members discuss how they can use virtual platforms to deliver rapid interprofessional sequential care for CACS and coordinate care among the members – Physical therapy team members discuss obstacles and home-based alternatives to in-person care 	<ul style="list-style-type: none"> – A modified shared TMM is derived to reflect the team's new environment and commitment to establish the new what, who, and how for CACS virtual and home care provision, including supportive care, nutrition and physical rehabilitation evaluations and support – CACS screening and early referral criteria are reaffirmed – Sense is created regarding the team member roles that can be performed virtually and those that must have a home-delivered option
<i>Sharing unique perspectives</i> Each member draws from and shares their own knowledge and experience about the situation, resources, and ways to address	<ul style="list-style-type: none"> – Team members describe understanding of home-service options for some CACS care components – Nutrition and supportive care team members discuss how they can use virtual platforms to deliver rapid interprofessional sequential care for CACS and coordinate care among the members – Physical therapy team members discuss obstacles and home-based alternatives to in-person care 	<ul style="list-style-type: none"> – Collaborative conversation creates shared knowledge and a unified approach to virtual and home-based CACS care
<i>Discussion</i> Team members converse to create shared understanding and representations	<ul style="list-style-type: none"> – Collaborative conversation creates shared knowledge and a unified approach to virtual and home-based CACS care 	<ul style="list-style-type: none"> – Collaborative conversation creates shared knowledge and a unified approach to virtual and home-based CACS care

(continued)

Table 1. (continued)

Key sense-making steps	Sense-making in the CACS case	Sense-made CACS care
<p><i>Potential action</i></p> <p>Shared representation allows development of potential action that can be implemented and understood by all participants</p>	<ul style="list-style-type: none"> - Agree on virtual mechanisms to provide interprofessional patient and family education regarding CACS presentation, staging, and outcomes; CACS comprehensive interprofessional assessments, including elicitation of the patient and caregiver priorities and goals - Agree on need to optimize patient convenience and coordinate care by continuing to provide new virtual assessments within a fixed time frame, while allowing for flexibility to optimize access to care 	<ul style="list-style-type: none"> - Supportive care and nutrition providers are trained in use of virtual visit platforms - Virtual visit scheduling mechanisms are adopted and appointments by the various CACS clinic providers occur sequentially on the same day whenever possible - Home PT assessments are arranged as part of the CACS ordering protocol - Templates to document timely virtual visit notes and patient agreements are created and made available for rapid implementation in the EHR - CACS specialists communicate with each other via video conferencing platforms, chat functions, and email - Education and discussion of care plans with patient/caregiver occur during each virtual visit and are immediately electronically documented for viewing by other team members - Group team members/patient/caregiver videoconferences are arranged as needed to discuss collaborative care plans - Patients and caregivers express satisfaction with the virtual CACS visits, discussions, and care plans.

Abbreviations: CACS, cancer anorexia cachexia syndrome; COVID-19, coronavirus disease 2019; EHR, electronic health record; TMM, team mental model.

Documentation templates were modified to capture the virtual assessments.

Team members agreed upon new process and outcome indicators to gauge future performance of the vCACSt. The rapidly scheduled virtual visits and care plans were well-received by the patients represented in the composite description.

Lessons Learned

Sense-making during COVID-19 enabled our CACS team members to adapt our TMM by recognizing the collective impact of events—the intersection of the pandemic and a highly coordinated, but often taxing team visit. The dynamic environment of health care provides fertile ground for ongoing team sense-making studies to gauge effects during periods of adjustment.

During the viral pandemic, teams throughout health care are encountering unfamiliar problems, conflicting information, shifting objectives, and difficult decisions. All teams must make sense of fluctuating conditions to sustain action. Research on *how* various health care teams are “making sense” and rapidly innovating to address patient needs may provide pragmatic strategies to optimize team care broadly.

Studying team sense-making communications during a crisis, that is, the processes to rapidly organize group consideration of problem(s), question prior assumptions, and together develop approaches to coordinate actions and apply innovative solutions, could also provide a roadmap to combat health care team inertia during noncrisis periods. Collecting information on what is working and not working for patients, caregivers, and team members during the pandemic and interpreting the data via continued team sense-making will be vital to postpandemic team care.

Conclusion

We have described an application of team sense-making to the TMM and virtual conversion of an in-person CACS team at our cancer center. While we present this as a 1 patient case study, we believe that the principles are equally pertinent to improving the general patient experience. To our knowledge, this is the first report of the application of sense-making to update the TMM and care of an interprofessional collaborative cancer care team.

The sense-making steps described allowed profound environmental changes during the pandemic to be understood and enabled reasonable decisions to buttress the team’s core IPEC competencies (2). The sense-making achievement of meaningful consensus was therefore a necessary precursor to effective action. While the actions taken may improve quality, this was not necessarily the intent. In this case, the purpose was rapid reformulation of a TMM to permit ongoing quality care in a dramatically changed health care arena that made prior approaches to care impossible.

The importance of sense-making is that it enables us to move forward when the world as we know it has shifted (20). Weick (21) speaks to the value added of sense-making, by likening sense-making to cartography. Just as a map of unfamiliar territory mitigates the fear of the unknown, the sense-making process generates a common map to bridge confusion and increase coherence. Then coordinated action among team members is possible. Sense-making is not about finding the “correct” answer or improvement, it is about creating an evolving map through data, experience, and consensus-building conversation that will serve teams and improve experiences of care both during and after the pandemic.


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