QUALITY IMPROVEMENT

Drivers of Hematology and Oncology Care Team Staff Satisfaction

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Abstract

This study explores drivers of satisfaction in modern care teams in which clinical and support staff are fragmented between work locations and communication methods with a large workload of digital messages. It explores the association of team culture, communication, perceived staffing, and work location on team satisfaction in an outpatient hematology and oncology practice at a large academic medical center. Clinic observation sessions and interviews with clinicians were conducted to identify potential drivers of staff satisfaction. Subsequently, a 21-question survey was developed to assess drivers correlated with care team staff satisfaction. The anonymous survey was sent to clinical and non-clinical staff. A total of 586 staff received the survey, and 278 (47%) completed the survey. Team culture/collaboration, ability to get information, and sufficient staffing were associated with high team satisfaction. Team culture/collaboration was most correlated with an individual's team satisfaction. Clinicians who spent time in a shared team workspace had 21 percentage points higher overall satisfaction. Clinicians preferred in-person communication while support staff preferred asynchronous messaging. This study highlights the importance of building team culture for strong staff satisfaction. Practices should consider colocation of clinical teams within a shared workroom space to improve satisfaction. Colocation may be a way to support positive team culture.

he modern cancer care team incorporates multiple health-care roles, including physicians, advanced practice providers (APPs, including nurse practitioners and physician assistants), registered nurses (RNs), clinical pharmacists, and oth-

er support staff. As the complexity of cancer care has increased, so has the health-care system and the number of ways clinicians interact with patients and colleagues. Patients can now seek medical advice through patient messaging, telemedicine (phone and video visits), and online

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resources. For interdisciplinary communication, care teams can use messaging systems in electronic medical records (EMR), email, pager, calls, virtual meetings, or in-person discussion. This changes the way clinical staff interact with internal colleagues and across different health-care systems. The COVID-19 pandemic accelerated the use of telemedicine and changed the face of health care, with more roles now being able to leverage virtual platforms to work remotely. The rapid shift in work location has had a significant impact on how cancer care teams logistically interact daily.

Recent literature has examined overall satisfaction among oncology health-care professionals. Samant and colleagues (2023) found that most staff enjoyed their work but were often busy and experienced stress. Additionally, Karukivi and colleagues (2023) identified that empowerment at work was highly correlated with interprofessional collaboration. However, there is insufficient information in the literature to explore how the current work environments, multiple communication platforms, and work location (colocation vs. remote) have impacted the satisfaction of a health-care professional within the context of an interprofessional care team. Hansen and colleagues (2024) studied the impact of a shift to telehealth on the delivery of interprofessional cancer care, noting an increase in unscheduled patient interactions through calls or portal messages and a need to ensure adequate care team resources to manage this increased work.

Care teams need to adapt to match patient communication preferences and ensure information is clearly communicated to avoid an increase in unscheduled work. With these changes and more roles involved in patient interactions, strong intra-team communication is essential to ensure care coordination and messaging are consistent. With rapid digital changes in team communication, there is a risk of a decrease in the quality of communication. If the change from face-to-face communication with patients decreased efficiency of communication, the same is likely true of intra-team communication. This was previously recognized by Gross and colleagues (2016) when implementation of the EMR led to miscommunication, impacting trust among the health-care team members. Maintaining strong communication and trust across the care team is critical to

team success and patient care outcomes. Another study by Azar and colleagues (2017) highlighting the impact of a well-integrated and functioning team showed that higher scores in relational coordination (RC Index), a validated measure of coordination between teams, correlated with more positive patient perception of care. These findings support the need for strong teamwork in the changing health-care system.

This study evaluates the satisfaction of cancer care team members, both on the clinical team (physicians, APPs, RNs, pharmacists) and supportive team (scheduling staff, medical administrative assistants, other roles). It explores the association between workspace, work location, communication method, and team culture. This is important to understand as cancer care continues to rapidly evolve and adds to the literature an examination of underexplored drivers of cancer care team satisfaction such as colocation and method of communication.

METHODS

This study was completed in an outpatient hematology and oncology practice at a large academic medical center in which outpatient cancer care is aligned by disease-oriented groups. Care team members included clinical staff (physicians, APPs, RNs, pharmacists) and supportive team members (scheduling staff, medical administrative assistants, other roles). To determine which variables might impact care team member satisfaction, the study team conducted clinic observations and interviews of practice leadership. Eight half-day, unblinded observation sessions were completed in which nursing and APP staff observed the operations of different disease-oriented clinical care teams. Post-observation synthesis sessions were completed to document beneficial practices incorporated into team operations. Interviews with hematology and oncology practice leadership and disease group leaders were conducted to gain further insight into differences among team structure, communication practices, and clinical workflows.

A recent inventory of survey tools completed by Kash and colleagues (2018) demonstrates the availability of multiple preexisting measures for team functioning, individual job satisfaction, and team dynamics. Other existing validated measures such as the RC Index measure team coordination but are not specific to health care nor cancer care. A systematic review by Muthuri and colleagues (2020) highlights individual factors, such as age, gender, a sense of meaning and purpose, and workload, as drivers for satisfaction. However, validated measures do not exist for satisfaction with the interprofessional care team in the unique context of cancer care. The available measurement tools did not clearly align with the scope of this study. With these limitations, drivers of team satisfaction were synthesized from the observations and interviews completed with health-care team members. These included team staffing, efficient scheduling, team collaboration, ability to get information from team members, well-defined team roles, good culture, and sufficient physical space.

The factors and attributes affecting care team satisfaction identified in observations and interviews were synthesized into a 21-question survey (Table 1). The survey was sent to all physicians, APPs, RNs, scheduling staff, medical administrative assistants, pharmacists, social workers, and clinical trial coordinators in the outpatient hematology and oncology practices in February 2023. In the survey, stakeholders could add free-text comments to provide additional feedback. The survey was conducted anonymously.

The primary endpoint of the study was an individual's overall care team satisfaction, identified in survey question 3, measured on a 5-point Likert scale from "Very dissatisfied" to "Very satisfied." This endpoint was compared to (1) seven overarching key drivers of team satisfaction identified in interviews and observations, (2) work location, and (3) method of communication with teammates to identify best practices that could be disseminated to improve care team satisfaction across teams. Likert scales were converted to binary indicators (either participant responded "Agree/Strongly Agree" or did not respond "Agree/Strongly Agree") and were compared using a Z-test of proportions, a statistical test used to compare if there is a significant difference between two sample population proportions.

Data processing was completed in Python with statistical analysis and modeling completed in BlueSky Statistics (version 7.2) and Microsoft Excel. This study was deemed exempt by the institutional review board.

RESULTS

Response Rate

Overall, 586 staff received the survey. Of these, 278 completed the survey for an overall response rate of 47% (Table 2).

Overall Satisfaction

Overall, 73% of staff indicated that they were somewhat satisfied or very satisfied with the function of their primary care team.

Key Satisfaction Drivers

Seven key drivers of satisfaction synthesized from observations and interviews were identified in question 4 of the study data collection survey. These included team staffing, efficient scheduling, team collaboration, ability to get information, well defined roles, good culture, and sufficient physical space (Table 3; Figure 1).

The components with the highest satisfaction (responses of "Strongly Agree" or "Agree" with the statement) included team culture (86%) and collaboration (81%). Components with the lowest scores were sufficient space (48%) and efficient scheduling (46%).

A binary logistic regression model was fit to predict the association between overall team satisfaction, the study endpoint, and the seven key components of satisfaction identified above. Due to collinearity, "My team has a good culture" and "My team has strong collaboration or coordination" were combined to a single variable indicating if the respondent responded "Agree" or "Strongly Agree" to either one of the attributes of satisfaction. Staff who responded "Agree" or "Strongly Agree" that either their team had good culture or their team had strong collaboration or coordination were 5.9 times more likely to report overall satisfaction with their team (95% confidence interval [CI] = 2.1–18.6). Staff who responded "Agree" or "Strongly Agree" that they were able to get the information they need to do their job from colleagues were 3.1 times more likely to be satisfied with their team (95% CI = 1.4–7.4). Staff who responded "Agree" or "Strongly Agree" that they were on a team with sufficient staffing were 2.6 times more likely to be satisfied with their team (95% CI = 1.3-5.4).

Aligning with the quantitative results, survey comments from clinicians (physicians, APPs) who

Table 1. Survey Questions

1. What is your role?

Physician

APP (advanced practice provider)

Clinic RN (registered nurse)

Research RN

Desk operations specialist (Scheduling)

Patient appointment services specialist (Scheduling)

Medical administrative assistant

Pharmacist

Social worker

Trial coordinator

Other

What care team(s)/disease group(s) are you on? (Optional)

Acute Leukemia & Myeloid Neoplasms (ALMN)

Bone Marrow Transplant

Cell Therapy

Chronic Lymphocytic Leukemia (CLL)

Core Consultative Hematology

Lymphoma

Myeloma, Amyloidosis, Dysproteinemia (MAD)

Brain

Breast

Early Cancer Therapeutics/Phase I

Endocrine

Gastrointestinal

General

Genitourinary

Gynecologic

Head/Neck

Integrative Oncology

Lung

Melanoma and Skin Cancer

Precision Oncology

Sarcoma

Acute

Other

3. What is your overall satisfaction with the function of the primary care team(s)/disease group(s) that you support?

Very dissatisfied

Somewhat dissatisfied

Neither satisfied or dissatisfied

Somewhat satisfied

Very satisfied

Table 1. Survey Questions (cont.)

4. Please rate your agreement with the following statements.

My team has sufficient staffing for our workload

My team has efficient and effective scheduling processes

My team has strong collaboration or coordination

I am able to get the information I need to do my job

My team has well-defined team roles and responsibilities

My team has a good culture

My team has enough physical space (exam rooms, workrooms, offices)

For each statement for question 4:

Strongly disagree

Disagree

Neither disagree or agree

Agree

Strongly agree

Does not apply

5. Is there a challenge not listed above that you would like to highlight?

Yes

No

6. If yes, what is the challenge?

Free text

7. What percent of your days, on average, is spent managing in-basket messages (triaging, reviewing, information gathering, responding, etc.)?

0-20%

20-40%

40-60%

60-80%

80-100%

I do not work with in-basket messages

8. How much of a stressor is the management of in-basket messages?

Not a stressor

Somewhat a stressor

Very much a stressor

9. How effectively does your team prioritize in-basket messages by urgency?

Not very effectively

Somewhat effectively

Effectively

Very effectively

Table 1. Survey Questions (cont.)

10. How effectively does your team get in-basket messages to the right care team role for response?

Not very effectively

Somewhat effectively

Effectively

Very effectively

11. How often is an in-basket message forwarded to you with incomplete information or context?

Rarely

Sometimes

Frequently

Constantly

12. When responding to the following types of in-basket message, what is your primary mode of communication:

Staff-generated message (communication, etc.)

Automated message requiring follow-up (lab, exam, etc.)

Patient-generated message (portal message, etc.)

For all statements for question 12:

Asynchronous (respond using message)

Synchronous (respond by calling, paging, etc.)

In-person (conversation face-to-face)

No response is typically required or not applicable

13. How often are you interrupted from completing a task during your workday?

Rarely

Sometimes

Frequently

Constantly

14. Do you feel that frequent interruptions are a stressor in your workday?

No

Yes

15. How easy is it for you to track down the following care team members when you need information from them?

Physician

APP

Clinic RN

Research RN

Desk operations staff (Scheduling)

Patient appointment services specialist (Scheduling)

Medical administrative assistant

Pharmacist

Social worker

Table 1. Survey Questions (cont.)

For all statements for question 15:

Very challenging

Somewhat challenging

Neither easy or challenging

Easy

Very easy

N/A

16. When not in an exam room, please indicate what percent of your working day is spent in the following working settings:

Drop-in space in shared workroom or desk area

Dedicated private cubicle in a shared office

Private office

Work from home

Other

For all statements for question 16:

0-20%

20-40%

40-60%

60-80%

80-100%

17. What are your top 3 preferred methods of communication (select up to 3 options)?

In-person conversation

Email

Teams message

In-basket message in Epic/EMR

Secure chat message in Epic/EMR

Page

Phone call

Other

18. Are there tasks that you perform that should be completed by another care team role?

Yes, frequently

Yes, infrequently

No

N/A

19. What are the tasks that you perform that should be completed by another care team role? Why is that role not performing the task?

Free text

20. If you could change one thing about your team, what would it be?

Free text

21. What attributes of your team would you not want to change?

Free text

Table 2. Response Rate to Survey by Role					
Role	Total received	Total sent	Response rate		
Advanced practice provider	29	45	64%		
Clinic registered nurse	39	90	43%		
Desk operations specialist	36	93	39%		
Medical administrative assistant	30	43	70%		
Patient appointment services specialist	29	44	66%		
Pharmacist	11	50	22%		
Physician	70	126	56%		
Research registered nurse	9	27	33%		
Social worker	2	4	50%		
Trial coordinator	23	64	36%		
Total	278	586	47%		

were satisfied with their team typically mentioned strong team culture and collaborative environments in which information flowed smoothly between team members. Survey comments from providers who were dissatisfied frequently mentioned a need for better team structure, a more collaborative environment, and improved scheduling.

Work Location

For this analysis, the only roles under examination were the core clinical team of physicians, RNs, APPs, and pharmacists. Due to varying levels of clinical time, with some clinicians spending only 1 to 2 days in the clinic per week, a threshold of 20% of work time spent in a shared workroom space was selected to compare satisfaction between teams operating in a shared workroom model vs. working from private offices with sufficient sample size for comparison. Overall, clinicians (physicians, APPs, pharmacists, RNs) who spent at least 20% of their time in a shared workspace with their team reported 21 percentage points higher overall team satisfaction (Z-test of proportions, p < .05) and 13 percentage points higher satisfaction with scheduling (Z-test of proportions, p < .1). However, staff who spent at least 20% of their time in a shared workroom were 13 percentage points more likely to be frequently interrupted (Z-test of proportions, p < .1). While staff perceived that they were more frequently interrupted, there was no significant increase in the amount of stress from interruptions for staff working in a shared work location (Table 4).

Method of Communication

The following methods of communication among care teams were evaluated: in person, Microsoft Teams message, Epic Secure Chat, Epic In-Basket message, phone call, page, and email. Among all roles, individuals who listed in-person communication within their top three preferred methods of communication were 12 percentage points more likely to be satisfied with their ability to get information from their teammates (Z-test of proportions, p < .01). Page (Z-test of proportions, p < .01) and email (Z-test of proportions, p < .01) communication corresponded with lower rates of satisfaction with team communication (Figure 2).

Comparing the results for clinicians and support staff, significant differences were found in preference between communication modalities (Figure 3). Clinical staff more frequently listed inperson conversations and pages in their top forms of communication (Z-test of proportions, p < .01), while support staff more frequently reported email, phone calls, and Teams messages (Z-test of proportions, p < .01).

DISCUSSION

This analysis confirmed the importance of strong care team collaboration and team culture. These were found to be strong drivers of satisfaction across all roles of the care team. This environment fosters teamwork, open discussion, and the ability to ask questions, and ensures clear communication.

Table 3. Satisfaction by Component				
Component of satisfaction	% responding agree or strongly agree			
My team has a good culture	86%			
My team has strong collaboration or coordination	81%			
I am able to get the information I need to do my job	78%			
My team has well-defined team roles and responsibilities	72%			
My team has sufficient staffing for our workload	51%			
My team has enough physical space (exam rooms, workrooms, offices)	48%			
My team has efficient and effective scheduling processes	46%			

The second driver to satisfaction was the ability to get information from team members to do one's own role. Interestingly, insufficient staffing, which has been a noted concern throughout the health-care industry as a driver of staff dissatisfaction, was less impactful to staff members' overall satisfaction with their team than culture or collaboration and communication.

In the context of the recent changes to the health-care system and growth of remote workers, it is important to understand how to best maintain a collaborative environment and effective communication. There was a disconnect between the clinical team preferring in-person communication methods and those in a support role preferring electronic forms of communication, such as EMR messaging and email. A common strategy mentioned in interviews with clinical leaders included the creation of dedicated daily or weekly synchronous team huddles with remote staff through virtual platforms to balance both groups' preferences, connect in real time, and minimize the need

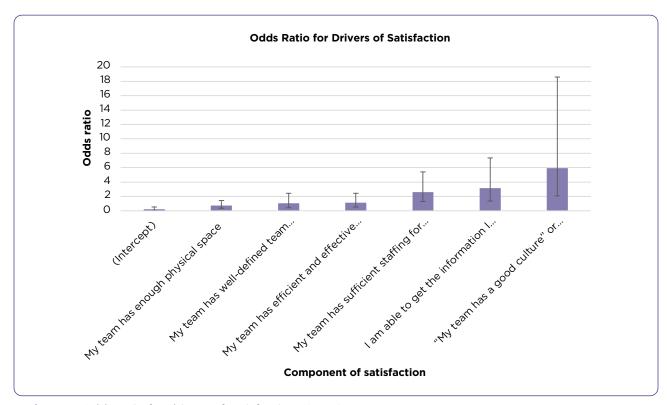


Figure 1. Odds ratio for drivers of satisfaction (95% CI).

Driver of satisfaction	Does not spend at least 20% of time in shared work location	Spends at least 20% of time in shared work location	Percentage point difference	p value Z-test of two proportions
Overall care team satisfaction	66%	87%	21	.006**
My team has sufficient staffing for our workload	47%	64%	17	.051*
My team has efficient and effective scheduling processes	31%	44%	13	.094*
My team has strong collaboration or coordination	80%	87%	6	.233
I am able to get the information I need to do my job	75%	82%	7	.245
My team has well-defined team roles and responsibilities	69%	70%	1	.393
My team has a good culture	86%	92%	5	.233
My team has enough physical space (exam rooms, workrooms, offices)	48%	39%	-9	.215
How often are you interrupted from completing a task during your workday? (constantly or frequently)	69%	82%	13	.074*
Do you feel that frequent interruptions are a stressor in your workday? (Yes)	73%	67%	-6	.298

for additional intra-team messaging. More work needs to be done on how to best incorporate the use of virtual huddles into daily clinic workflows.

For the clinical roles, there was higher overall satisfaction when care teams practiced out of a shared workroom space. This was despite challenges with space (limited seats or computers in the workroom) and increased interruptions throughout the clinic day. It could be argued that the value created by the shared space contributed to the positive team environment and ability to communicate clearly. Staff who spent time in a colocated workroom did not report higher stress from interruptions than their colleagues who did not work out of a colocated space. This may be because the ability to have in-person communication reduced asynchronous methods, such as email and EMR messaging, overall reducing the burden of nonvisit care. Challenges with space and interruptions were the only two variables that were identified as tradeoffs with colocated workrooms, yet overall satisfaction improved. Future research, especially

qualitative research to dive deeper into the lived experience of health-care professionals, should be completed to assess how the burden of electronic or asynchronous messaging and colocation affect team satisfaction and collaboration.

This study is limited as it was not controlled for all factors that could contribute to team satisfaction. There was significant variation in team size and roles that constitute the care team. For example, not every team has a clinical pharmacist or research RN supporting the team. The sample size for some of the roles was small due to limited staff in the role or low survey response rates. Despite these challenges, these results are intriguing and support the need to keep the focus on strong team collaboration as cancer care continues to evolve and more technologies become available to support teamwork and patient care. This study confirms the importance of strong teamwork as published previously in the literature and addresses the gap in how changes in work location and communication platforms have impacted care team satisfaction.

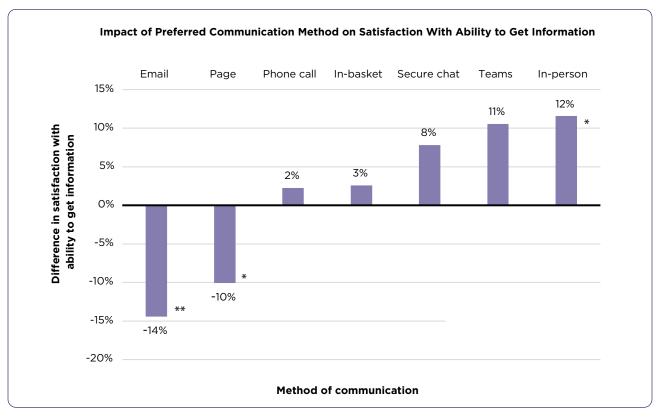


Figure 2. Impact of preferred communication method on satisfaction with ability to get information. Significance of difference, Z-test of two proportions. ** = p < .01; * = p < .1.

IMPLICATIONS FOR ONCOLOGY ADVANCED PRACTITIONERS

This study has high response rates from surveyed nurse practitioners and physician assistants and engagement in cross-team shadowing by these roles. The response rate from clinical pharmacists was the lowest. In alignment with the overall results, team culture and collaboration were the highest rated components of satisfaction specific to these roles, allowing for this work to be applied when looking at opportunities to improve the care satisfaction of APPs. It is more difficult to know if it is as relevant to the clinical pharmacist role in the context of the low response rate. Additional research needs to be done to understand how to improve collaborative work and team culture specifically for the oncology APP and pharmacist roles. Based on qualitative feedback from survey comments, having collaborating physicians readily available allows these roles to work at the top of their scope and might impact satisfaction. Further research needs to be done more deeply to explore this.

CONCLUSION

It is important for teams to have conversations about these drivers of satisfaction. Optimizing clinical workflows and maintaining a collaborative and strong team culture will lead to higher care team staff satisfaction. We anticipate this will help decrease turnover across the various roles in the care team and may lead to improved patient outcomes as was demonstrated in prior studies. If care teams elect for colocation, there should be agreement about what type of interruptions are appropriate to minimize the frequency of interruptions but also allow an opportunity to collaborate when urgent patient needs arise. Continuing huddles regardless of location might be one way to overcome some of these challenges. When using asynchronous forms of communication, efforts should be made to reduce the volume of messages and appropriately transmit and prioritize remaining messages to synchronous platforms to improve team communication and the burden of indirect clinical work. Teams

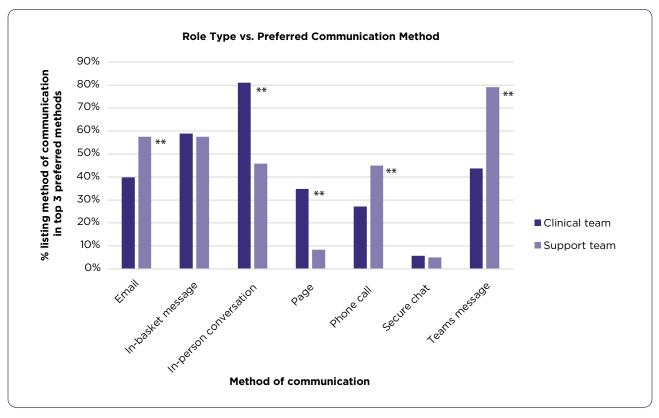


Figure 3. Role type vs. preferred communication method. Significance of difference, Z-test of two proportions. ** = p < .01; * = p < .1.

should consider opportunities to utilize both inperson and asynchronous messaging platforms to optimize communication workflows. Open discussions within care teams are important to understand various roles' communication preferences and negotiate workflows that support all team members in their ability to gain information needed to do their work.

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