

Eliciting Provider Perspectives on Diabetes Management During Cancer Care

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Abstract

Purpose: We sought to elicit the perspectives of primary care providers (PCPs) and oncologists regarding their expectations on who should be responsible for diabetes management, as well as communication mode and frequency about diabetes care during cancer treatment.

Methods: In-depth interviews were conducted with PCPs (physicians and nurse practitioners) and oncologists who treat cancer patients with type 2 diabetes. Interviews were audio-recorded and professionally transcribed. A grounded theory approach was used to analyze the qualitative data and identify key themes.

Results: Ten PCPs and ten oncologists were interviewed between March and July 2019. Two broad themes emerged from our interviews with PCPs: (1) cancer patients pausing primary care during cancer treatments, and (2) patients with poorer prognoses and advanced cancer. The following theme emerged from our interviews with oncologists: (3) challenges in caring for cancer patients with uncontrolled diabetes. Three common themes emerged from our interviews with both PCPs and oncologists: (4) discomfort with providing care outside of respective specialty, (5) the need to individualize care plans, and (6) lack of communication across primary and oncology care.

Conclusions: Our findings suggest that substantial barriers to optimal diabetes management during cancer care exist at the provider level. Interventions prioritizing effective communication and educational resources amongst PCPs, oncologists, and additional members of the patients' care team should be prioritized to achieve optimal outcomes.

Introduction

Twenty percent of cancer patients have co-occurring type 2 diabetes at the time of their cancer diagnosis.¹ Cancer patients with pre-existing diabetes are at increased risk for short- and long-term mortality, as well as cancer recurrence.^{2,3} Emerging evidence suggests that uncontrolled diabetes may impact cancer treatment completion, reduce cancer treatment aggressiveness, and put diabetic cancer patients at increased risk for infections and hospitalizations during their cancer treatments.⁴

During cancer care, expectations regarding who should be responsible for diabetes management, as well as communication mode and frequency may differ across oncologists and primary care providers (PCPs).⁵ To date, studies that have described this situation have focused solely on oncology providers. As such, the PCP perspective has been under-represented. To gain a comprehensive picture of the problem, we sought to describe both oncology and PCP perspectives regarding diabetes management during active cancer care. We conducted in-depth interviews with oncologists and PCPs to assess providers' expectations regarding diabetes management during active cancer treatment, and to identify possible communication barriers between generalists and cancer specialists. A greater understanding of

similarities and differences in provider expectations and communication barriers can inform interventions designed to optimize the delivery of diabetes management during active cancer treatment.

Methods

Setting: This qualitative study was conducted from March to July 2019 at Weill Cornell Medical Center (WCMC), Lower Manhattan Hospital (LMH), and Brooklyn Methodist (BM) Hospital in New York City. All three hospitals are part of the NewYork-Presbyterian (NYP) Healthcare System, which serves patients from all five boroughs of New York City. NYP-WCMC is a large teaching hospital in the Upper East Side with more than 400 academic full-time faculty and residents under supervision. NYP-LMH and NYP-Brooklyn hospitals serve lower Manhattan and Park Slope, respectively. NYP-LMH is a community hospital with full-time faculty caring for a diverse group of patients from residential areas of Wall Street, Chinatown, SoHo, TriBeCa, Battery Park City, and the Lower East Side. As the largest medical institution in Brooklyn, NYP-Brooklyn is a teaching hospital with more than approximately 40,000 ambulatory visits annually.^{6,7} The study was approved by the Institutional Review Board of WCMC.

Provider recruitment: We employed a convenience sampling method to identify NYP providers who fit our eligibility criteria.⁸ Eligible providers included attending physicians and nurse practitioners (NPs) who have treated active cancer patients with pre-existing diabetes. Providers from NYP's internal medicine and oncology practices were recruited by email. Modest financial incentives (\$10 gift cards) were provided to those who participated in the interviews.

Provider demographics and interviews: A semi-structured topic guide was developed to conduct the interviews in English. Prior to the interview, participants were asked to complete a brief demographic questionnaire. PCPs completed a 3-item questionnaire that assessed their gender, duration of medical practice (in years), and approximate percentage of patients with active cancer. Oncologists completed a 4-item questionnaire that assessed their gender, duration of medical practice (in years), type of cancer(s) that they treated, and approximate percentage of their patients with pre-existing diabetes.

Interviews were conducted using two topic guides that varied between oncologists and PCPs. Topic guides for PCPs focused, from their perspectives, on identifying what happens to diabetes management among patients diagnosed with cancer. We asked questions about frequency of primary care appointments, diabetes medications, and treatment alterations related to diabetes care. Topic guides for oncologists asked providers if and how they manage diabetes for their cancer patients who are undergoing cancer treatments. Both provider topic guides assessed the respondents' views on: 1) the current frequency and mode of communication among members of the patient's care team, 2) which healthcare provider should be responsible for diabetes management for cancer patients, and 3) the ideal way for multiple providers to coordinate care for these patients.

Three researchers (JC, DN, LCP) conducted the interviews in private medical offices in Weill Cornell facilities. Interviews were audio-recorded and transcribed by Ubiquis, a professional transcription service.⁹

Prior to data analysis, each transcript was de-identified to ensure participant confidentiality. As transcripts were generated, they were reviewed by two members of the research team (JC and DN). Data collection continued until thematic saturation was reached.

Data Analysis: Beginning with a thorough reading of each transcript, a comprehensive codebook was developed. Then, the provider transcripts were independently coded by two members (JC, DN) of the research team. Once all transcripts were coded, the study leader (LCP) consolidated discrepancies among the two coders.

Related codes were clustered into higher-level themes by the study leader (LCP). Then, each independent coder reviewed the codes and noted if they agreed or disagreed with the assigned theme. Discrepancies were reviewed and discussed among the team until consensus was achieved. Finally, as a quality check, a fourth study team member (MRS), who was not involved in previous analyses and who had not seen the data, reviewed the codes and resulting themes, and provided feedback. The final codebook contained a total of 59 codes clustered into 7 main themes (Supplementary Material I).

Results

A total of 10 oncologists and 10 PCPs were interviewed for this study. Overall, PCPs had a mean of 21.8 (SD 11.3) years and oncologists had a mean of 15.4 (SD 10.4) years of experience in practice. PCPs reported that 5–20% of their patients had active cancer. Oncologists estimated that up to 40% of their current cancer patients had pre-existing type 2 diabetes. Specific characteristics of the providers and the types of cancers that the oncologists treated are presented in Table I. Interview duration ranged from 15 to 30 minutes.

From our data analysis, we identified a total of six themes that are presented in Table II and Figure I. Two major themes emerged from our interviews with PCPs: (1) cancer patients pausing primary care during cancer treatments, and (2) patients with poorer prognoses and advanced cancer. The following theme emerged from our interviews with oncologists: (3) challenges in caring for cancer patients with uncontrolled diabetes. We identified three common themes across both oncologists and PCPs: (4) providers' discomfort with providing care outside of their specialty, (5) the need to individualize care plans according to patient-specific responses to cancer regimens, and (6) lack of effective communication between oncology and PCPs.

Theme 1: Cancer Patients Pausing Primary Care During Cancer Treatments

PCPs mentioned that once patients were diagnosed with cancer, patients struggled to prioritize primary care until their cancer treatments concluded. The lack of engagement with primary care during cancer treatments made it difficult for PCPs to continuously manage diabetes during patients' cancer care.

"Sometimes, patients don't come to us and they'll sort of disappear for six months or a year." (PCP)

PCPs revealed that many cancer patients with pre-existing diabetes experience significant weight loss due to their cancer treatments. However, PCPs are unable to intervene and manage diabetes during these weight fluctuations because patients do not make appointments to see them.

“One thing that comes up a lot is depending on how much weight they lose as a result of either their cancer or their treatment, their diabetes requirements tend to go down. That happens a lot. I personally in 17 years am usually not seeing that in real time because the patient just doesn't come back; doesn't want to come back; is fully immersed in their cancer care. Unless they actively seek me out, I tend to see them at some point where they've already lost a lot of weight.” (PCP)

Theme 2: Patients with Poor Prognoses and Advanced Cancer

PCPs also described overall well-being as an important factor in diabetes management for their cancer patients. Generally, patients with poor prognoses created dilemmas about how aggressive to be with diabetes management. PCPs shared how challenging it was to address these difficulties.

“Oftentimes the questions of control are ones of prognosis. In other words, if someone has an incredibly poor prognosis and they're being aggressive with palliative care or other interventions, is taking control of the diabetes the goal or is losing control of the diabetes the goal?” (PCP)

Theme 3: Challenges in Caring for Cancer Patients with Uncontrolled Diabetes

Oncologists emphasized that some of their patients' lack of awareness of their diabetes created barriers to cancer and diabetes care management. They highlighted that patients who struggled to access adequate care due to factors, such as lower health literacy, often struggled with the competing demands from co-managing cancer and diabetes.

“Some of my patients don't even know that they have diabetes when they come to see us. That is a significant difficulty because then I need to involve a new provider.” (Oncologist)

Theme 4: Discomfort with Providing Care Outside of Specialty

Oncologists and PCPs reported lack of sufficient knowledge in providing care outside of their respective specialties. Oncologists reported unfamiliarity with specific diabetes treatment regimens and medications:

“I have never done diabetes management, so I definitely do not feel comfortable prescribing [diabetes] medications.” (Oncologist)

Although oncologists acknowledged the need to modify patients' use of insulin and steroids during chemotherapy, they felt that diabetes control was out of their area of clinical expertise:

"I know a lot of times with chemotherapy, part of the pre-medications are steroids, which make it harder to control blood glucose. I wouldn't feel comfortable managing any of the oral or injectables. It's sort of out of my wheelhouse." (Oncologist)

Due to oncologists' discomfort with diabetes management, they relied on patients to communicate health-related information pertaining to their diabetes treatment regimens. For example, providers expected their patients to explain why they are taking certain diabetes medications:

"It gets difficult because I haven't done diabetes, so I feel I'm underqualified, and you rely on the patients to communicate that." (Oncologist)

PCPs reported that they lacked sufficient knowledge of rapidly evolving and complex cancer treatments (e.g., chemotherapy, radiation, and hormone regimens) and how they may specifically impact glucose levels during cancer treatments. With the rapidly evolving landscape of cancer treatments, PCPs believed that cancer care for diabetic patients was out of their clinical expertise.

"From the internist's perspective, there are newer and newer cancer treatments coming out, right? So, the old chemotherapy has evolved into agents that are far less toxic and there are also targeted therapies, immunotherapies, right? There's a whole other armamentarium out there that the general internist is not as familiar with anymore." (PCP)

Theme 5: Importance of Tailoring to Patients' Specific Responses to Cancer Regimens

Due to the complexities associated with the management of concurrent diabetes and cancer, providers highlighted the need for individualized approaches to providing care for each patient. Providers reported that in order for an individualized approach to be successful, it was important to closely monitor how the cancer treatments were impacting patients' diabetes care. However, close monitoring is time and resource intensive. As providers adjusted care plans in response to patients' specific needs, a need for improved care coordination and a diverse care team was emphasized.

"There are no algorithms or protocols that we follow. It's very individualized here in terms of how we manage the patients." (PCP)

In order to address patients' specific needs in co-managing diabetes and cancer, providers called for a multi-disciplinary care team. These members included an oncologist, PCP, endocrinologist, certified diabetes educator, and a nurse practitioner.

"The whole rest of the healthcare team should be part of this, including the oncologist and team of specialists who is trained in managing diabetes in the course of chemotherapy and cancer treatments. We have nurse practitioners, certified diabetes educators and nurses who help us take care of our patients. I think all of that can be incorporated really well into the co-management of a patient getting active treatment for cancer with diabetes." (PCP)

While providers acknowledged that a multidisciplinary care team would benefit all patients, they agreed that disadvantaged patients might experience the most benefit from such an approach.

“Where possible, a physician paired with a diabetes nurse educator, paired with a nutritionist, paired with a care manager would be optimal. There are some patients who have very complicated diabetes and/or who have low health literacy that would maximally benefit from that.” (PCP)

Theme 6: Lack of Communication between Oncologists and PCPs

Lack of communication was a prominent theme that emerged as providers expressed that they do not regularly communicate with providers from other specialties. Despite having questions or concerns regarding patients’ care plans, oncologists and PCPs did not routinely communicate with each other. They rarely updated one another to inform each other of new adjustments that were made to patients’ care plans.

“I have to say, I rarely reach out to them [PCP] saying, this is what I’m doing for the patient.” (Oncologist)

“To be honest, I probably have never sent an oncologist a new message saying that I altered their metformin dose, or I altered their insulin dosing.” (PCP)

While oncologists reported that they were aware of how steroids may lead to worse glucose control, they did not communicate these concerns to the patient’s PCP. Similarly, although PCPs noticed that their cancer patients with diabetes experienced worse glucose control due to their cancer treatments, the PCP did not discuss these intricacies with the oncologists. Oncologists and PCPs highlighted the need for regular communication between providers of the patient’s cancer and diabetes care teams.

“...if the oncologist is seeing sort of more quick day-to-day change or quick changes because they’re seeing the oncologist more frequently, I wouldn’t mind if the oncologist took care of it [diabetes management] as long as there’s some clear communication... (PCP)

While oncologists and PCPs agreed that all providers involved in the patient’s care team (e.g., the oncologist, PCP, endocrinologist, nurse practitioner, etc.) should engage in consistent communication with each other, they admitted that this did not occur. They acknowledged that by regularly reaching out to one another when modifying the patient’s care plan, providers would be able to closely monitor how these adjustments would impact the patient’s health:

“Many patients have protocols about having their diabetes tightly controlled simply because they’re required to be in certain ranges for [cancer] treatments. Oftentimes, we find that they’re not well controlled and they come back to us after their treatment is finished and their sugars have been uncontrolled for a long period of time. Sometimes, they also get into trouble in the opposite direction because they stop eating because of chemotherapy and nausea and the cachectic stage of cancers and they’ll often get quite low. There’s not enough collaboration and communication to really help manage this well.” (PCP)

Due to this lack of consistent communication across oncology and primary care, PCPs and oncologists expressed the need for patient involvement regarding diabetes management during cancer care:

"I rely on the patients to share that information about medication changes with the oncologist." (PCP)

Discussion

Through 20 in-depth interviews with oncologists and PCPs, we uncovered important provider-perceived barriers to effective diabetes and cancer co-management. We identified 6 unique themes: (1) cancer patients who pause primary care due to competing medical priorities focused on cancer care, (2) patients with poorer prognoses and advanced cancer, (3) challenges in caring for cancer patients with uncontrolled diabetes, (4) providers' discomfort with providing care outside of respective specialties, (5) importance of tailoring to each patient's specific responses to cancer regimens, and (6) lack of consistent communication between oncologists and PCPs. Overall, we found that both PCPs and oncologists called for multidisciplinary care during cancer treatment for diabetic patients. To our knowledge, our study is the first to identify the prominent challenges that providers from both primary care and oncology face in managing diabetes during acute cancer treatment.

One notable finding was the salience of providers' discomfort with providing care outside of their respective specialties. Oncologists reported that they were uncomfortable adjusting patients' diabetes medication, often professing a lack of familiarity and knowledge in diabetes management. This finding aligns with previous studies that have found that with the increasing sub-specialization in medicine, specialists are often not prepared to manage the wide spectrum of chronic illnesses while treating cancer.^{10, 11} We also found that PCPs felt uncomfortable managing the effects of cancer treatments on diabetes, in part because cancer treatments are evolving so rapidly. This is also consistent with existing literature revealing PCPs' limited confidence and ability in caring for cancer patients and survivors.^{12–16}

In addition, when cancer treatment plans involve the continuous use of corticosteroids,¹⁹ many patients experience worsened hyperglycemia.²⁰ In response to these concerns, our study found that both oncologists and PCPs highlighted the importance of optimal care coordination among oncologists, PCPs, endocrinologists, and nurse practitioners for effective diabetes management during cancer treatments. These results highlight that the current mode and frequency of communication between oncologists and PCPs during patients' active cancer treatments was suboptimal. As studies have shown how deficiencies in communication between primary care and oncology can exacerbate patient outcomes,^{26, 27} enhanced coordination may be warranted. Our study revealed that oncologists did not routinely update their PCPs regarding changes in cancer medications and treatment plans. As such, PCPs reported being unaware of such adjustments. We found that PCPs are not often active members of oncology-based care teams. Instead, PCPs are usually recipients of information pertaining to survivorship care plans upon the conclusion of patients' cancer treatments. This model of care delivery poses challenges for comorbidity management because PCPs are left out of making critical decisions pertaining to diabetes management during cancer care. As studies have shown that cancer patients with concurrent diabetes report worse

health-related outcomes and health-related quality of life than those without diabetes,^{17, 32} actively engaging general practitioners into the oncology-based care team may help to improve glycemic control in cancer patients with diabetes. A multi-disciplinary care team that incorporates frequent communication and coordination between oncologists and PCPs of the patient's care team is needed to improve health-outcomes for this patient group.

While oncologists and PCPs unanimously agreed that PCPs should be responsible for diabetes management care, we found that patients understandably often ceased PCP follow-up during their cancer treatments. Our findings reinforce studies revealing that patients not only prioritize their cancer care over diabetes care, but also report receiving fewer diabetes management care services after their cancer diagnosis than prior to diagnosis.^{33, 34} In a study conducted by Irizarry et al.,³⁵ cancer patients 60 + years of age who received diabetes education were more likely to increase their diabetes self-management practices after their cancer diagnosis. Increasing access to diabetes education among cancer patients undergoing cancer treatments may help patients to co-manage their diabetes and cancer care. We suggest further opportunities for patient navigators and care coordinators to educate these patients and ensure that they do not pause primary care during their cancer treatments.

Studies have shown how effective team-based approaches, such as implementing care coordinators, are associated with positive outcomes for cancer patients with comorbid conditions.^{5, 36, 37} In a qualitative study by Vimalananda et al.,²⁴ the authors found that patients often relied on non-physician clinical staff, such as nurses and pharmacists, to coordinate their primary care with oncology care. With the rise of diabetes mellitus among cancer patients and survivors,³⁸ exploring the impact of interventions that add a provider specifically tasked with managing diabetes, communicating, and coordinating with the rest of the patient's care team should be prioritized.

Strengths And Limitations

The strengths of our study include our broad range of providers recruited from distinct New York hospitals in the Upper East Side, Lower Manhattan, and Brooklyn. By recruiting providers serving in distinct neighborhoods in New York City, we selected a provider population with extensive experience caring for patients from diverse socioeconomic and racial/ethnic backgrounds. Our provider sample also consisted of providers with 10 + years of clinical experience. As such, we interviewed providers who cared for many diabetic patients with multiple cancer types and in distinct phases of their cancer treatments. There are also some limitations to note. Due to the nature of our qualitative study conducted in New York City, the experience of providers treating other types of cancers in rural areas may differ. Hence, further research with larger and more diverse provider samples may be warranted.

Conclusion

Few studies have documented the unique perspectives of both oncology and PCPs caring for cancer patients with pre-existing diabetes. As oncologists and PCPs both reported discomfort and lack of clinical

expertise in managing care outside of their respective specialties, they relied on their patients to relay important information regarding medication changes and treatment regimens. This posed significant challenges for patients who often prioritize their cancer care over diabetes care during their cancer treatments. The risk of adverse outcomes for this patient population may be exacerbated by the lack of communication between oncologists and PCPs. While acknowledging the need for consulting one another regarding patients' treatment regimens, providers shared that they did not regularly reach out to different members of the patients' care team. Multi-disciplinary interventions integrating PCPs, oncologists, and additional members of the patients' care team may help to optimize the delivery of diabetes care during cancer treatments.

Declarations

Funding: This study was funded by Weill Cornell Medicine.

Conflicts of interest: Dr. Safford, receives salary support for investigator-initiated research from Amgen, Inc. The other co-authors have no conflicts of interest to disclose.

Availability of data and material: The codebook generated from this study is included in the published article [Supplementary Material I].

Ethics approval: The methodology, questionnaire, and interview topic guide for this study were approved by the Human Research Ethics committee of Weill Cornell Medicine.

Consent to participate: Informed consent was obtained from all participants in the study.

Consent to publish: All participants provided written consent regarding publication of the content from the interviews.

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Tables

Table I. Participant characteristics

Characteristics		N = 20
Gender	Male	7 (35%)
	Female	13 (65%)
Health professional role	Oncologists	10 (50%)
	Primary Care Providers*	10 (50%)
Type of cancer treated	Breast	6 (40%)
	Gastrointestinal	1 (7%)
	Genitourinary	3 (20%)
	Gynecological	3 (20%)
	Lymphoma	2 (13%)
Years in practice, mean (SD)	Oncologists	15.4 (10.5)
	Primary Care Providers*	21.8 (11.3)

*Primary care providers included primary care physicians and nurse practitioners.

Table II. Representative Quotes

Theme	Provider Perspectives
Cancer Patients Pausing Primary Care During Cancer Treatments	<p>“I think the biggest barrier is that they stop coming to see me because the cancer diagnosis is the biggest priority at that moment. If they don't come back as often, that's probably the biggest barrier for me reaching out. The biggest barrier is that they probably don't show up as often. And fatigue from their treatments, potentially, could be another barrier. If they don't show up, I can't take care of them.” (PCP)</p> <p>“Sometimes, patients don't come to us and they'll sort of disappear for six months or a year.” (PCP)</p> <p>“We often will not see patients for quite some time after diagnosis of cancer as they are busy with lots of appointments with the oncology teams, which is appropriate. I think there is an assumption that if they're not making appointments here or no one's asking us to continue this role, that the oncologists are managing it [diabetes].” (PCP)</p>
Patients with Poor Prognoses and Advanced Cancer	<p>“For cancers with poor prognoses where now their life expectancy has changed, the burden to try to prevent diabetic complications – 20, 40 years down the line obviously now feels less relevant to me. Part of the change might be due to a change that the cancer has brought in their overall life expectancy and their [patients'] overall likelihood of developing diabetic complications. (PCP)</p>
Challenges in Caring for Cancer Patients with Uncontrolled Diabetes	<p>“I think to me; the biggest difficulty is when they already arrive here without a good [diabetes] control – for patients with either poor medical literacy or had trouble with accessing care.” (Oncologist)</p> <p>“It's possible that it can become more difficult to control especially if they're not eating as well because their treatment or because of the cancer induced decreases appetite.” (PCP)</p>
Discomfort with Providing Care Outside of Specialty	<p>“Then there's steroids that are used in some cancer regimens and newer medications, where I have no idea what their effect on patients' diabetes is.” (PCP)</p> <p>“At the end of the day, I'm addressing diabetes as a problem for the patient that I would not necessarily want to be the primary physician monitoring their diabetes.” (Oncologist)</p>

Importance of Tailoring to Patients' Specific Responses to Cancer Regimens	<p>"It's hard when they're getting chemotherapy because it is episodic, but patients can get quite sick from the chemo and again, it's only one or a couple of days every couple of weeks where the sugars might be very high. They may or may not stay high for a while, but it's challenging." (PCP)</p> <p>"In any questions about diabetes during cancer management is to separate patients with early-stage disease who are being treated in the curative setting and patients with metastatic disease who are being treated in the palliative setting." (Oncologist)</p>
Lack of Communication between Oncologists and PCPs	<p>"I don't routinely communicate with the patient's PCP." (Oncologist)</p> <p>"And I think that is best to engage in consultation with them [oncologists]. So, is this medicine okay for them [patients] to take with their current chemotherapy? What is the expected course of this and things like that?" (PCP)</p> <p>"It's unclear if they're (PCPs) actually receiving our notes. It's more difficult to get a hold of them. If they don't, they aren't seeing our bloodwork every two weeks. It just adds another level of making sure that they're getting the notes faxed, and so on." (Oncologist)</p> <p>"I have not traditionally gone out of my way to contact the oncologist to say, 'How do you want to involve me in the diabetes care?' I don't really expect their [the patients'] oncologists to know what to do, but I do expect them to reach out to somebody who knows what to do, either back to me or to an endocrinologist. I don't necessarily think that happens very much." (PCP)</p> <p>"I think it's the oncologist's responsibility to either take care of titration meds or if they don't remember, they need to reach back out to me and say, 'I'm noticing X or I'm starting Y' with some information. I'd rather hear them say 'I'm starting this and, in our experience, their [patients'] diabetes either becomes more or less controlled because they lose weight and they need to have fewer requirements for their meds.' But almost no one ever reaches out to me from oncology regarding changing diabetes meds. I can't remember the last time that's ever happened." (PCP)</p>

*Primary care providers included primary care physicians and nurse practitioners.

Figures

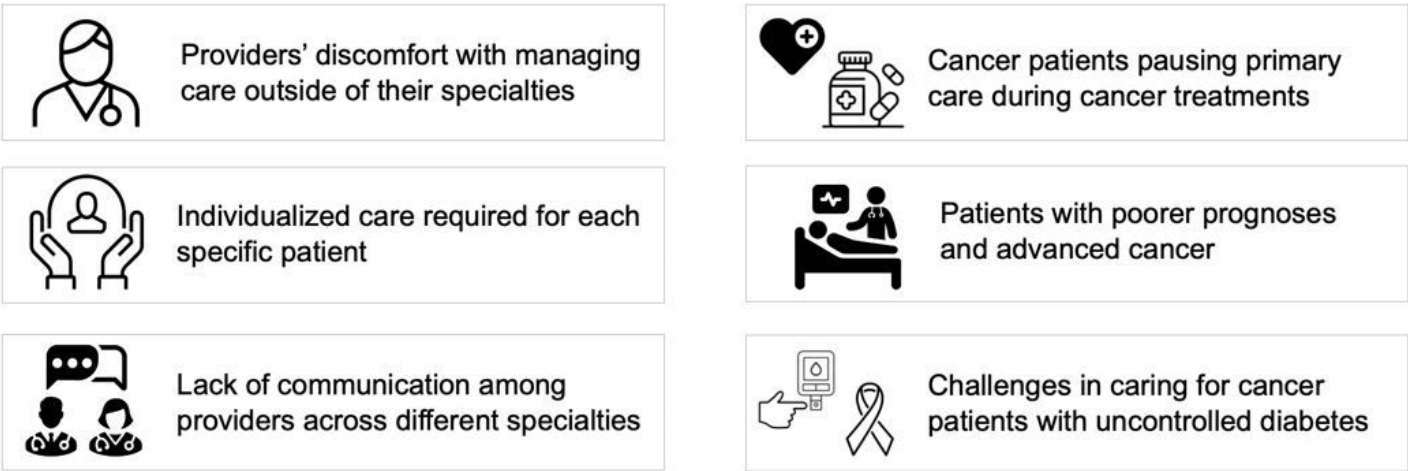


Figure 1

Major Themes Emerging from Providers' Perspectives on Caring for Cancer Patients with Type 2 Diabetes

Supplementary Files

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