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HOSPITAL MANAGEMENT OF DIABETES (A WALLIA AND JJ SELEY, SECTION EDITORS)

Hospitalization as an Opportunity to Optimize Glycemic Control in Oncology Patients

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Abstract

Purpose of Review Many patients experience hyperglycemia during cancer treatment, either as a new-onset condition or as an exacerbation of existing diabetes. This can impact treatment and outcomes, increasing the risk of complications and worsening health-related quality of life (HRQoL). These issues may be particularly significant when patients are hospitalized and/or acutely ill. The purpose of this review is to identify common barriers and strategies specific to the inpatient setting to improve glycemic control and minimize complications both while patients are hospitalized and after discharge.

Recent Findings Hyperglycemia in patients who are hospitalized during cancer treatment is common, but there is a lack of consensus on goals and approaches to glycemic management in this setting. Hyperglycemia related to oncology treatment can have unusual causes and challenges in management. Organizational guidelines can help standardize treatment and guide providers in managing hyperglycemia in oncology patients during hospitalization and upon discharge. Hospitalization is a critical period that provides an opportunity to reassess and modify management plans, coordinate follow-up care, and, crucially, educate and empower patients to successfully manage their blood glucose levels once they are discharged. Emerging technology such as patient portals can facilitate hyperglycemia management after discharge.

Summary This review discusses evidences and strategies to utilize the period of hospitalization to develop and implement an individualized plan of care for patients with concurrent hyperglycemia and cancer.

Keywords Oncology · Diabetes · Hyperglycemia · Steroid-induced hyperglycemia · Diabetes education · Discharge · Cancer treatment

Introduction

Diabetes and cancer are commonly comorbid. Up to 18% of newly diagnosed cancer patients have a diagnosis of diabetes [1••, 2, 3] while up to 30% [1••], even without a history of diabetes, will experience treatment-related hyperglycemia at some point during treatment. Hyperglycemia during cancer care is associated with a wide range of poorer outcomes across many different cancer types and stages, including a large increase in mortality risk [3–7], although it is essential to recognize that association is not always causation, and hyperglycemia may merely be a marker of underlying illness rather than a true cause of harm.

Nonetheless, hyperglycemia is a common problem that has the potential to harm patients and certainly can worsen quality of life through symptoms such as fatigue and polyuria. For patients who enter long-term survivorship after treatment, hyperglycemia may also contribute to long-term complications such as microvascular retinopathy, nephropathy, and neuropathy. Yet, treatment of hyperglycemia and management of hyperglycemia during cancer treatment tend to be deprioritized and at times ignored [1••, 4, 8].

Hospitalization, whether for acute illness, chemotherapy, surgery, or other reasons, is a time at which hyperglycemia may be particularly severe and difficult to manage. But,

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hospitalization can also be an ideal time to assess a patient's need for glycemic control or evaluate the effectiveness of the current hyperglycemia treatment plan; implementing both medical treatments and diabetes self-management education and support (DSMES), as well as arrange appropriate referrals, and coordinate follow-up care for a safe transition home.

Personalizing Goals for Glucose Control

The first step to glycemic management in oncology patients is to identify glycemic goals of care. Consistent with the American Diabetes Association's (ADA) and Endocrine Society recommendations, glucose management should be individualized based on patients' prognosis, ability to provide self-care, susceptibility to adverse effects from treatment, and availability of caregivers [9, 10]. Additionally, glycemic goals of care must be routinely re-evaluated as these factors continue to change. Of note, most patients with active cancer can be considered to have a significant comorbidity, which ADA and Endocrine Society guidelines indicate should prompt more relaxed glycemic goals than in uncomplicated chronic diabetes [9, 10].

Apart from these general principles, there are not widely accepted, specific, standardized guidelines targeted to oncology patients with hyperglycemia in either the inpatient or outpatient setting [1••]. It falls to cancer centers to develop organizational guidelines that accord with, but appropriately expand upon, guidelines offered by organizations such as the ADA and Endocrine Society [9, 10]. Table 1, generally adapted from these guidelines, illustrates the general principle of relaxing glycemic goals of care as patients become sicker.

The range of conditions described below is not sharply defined—while curative outcome may sometimes be easy to identify, no simple rule distinguishes somebody living with cancer as a chronic condition from somebody who can be considered to have an end-stage complex illness. When setting goals for patients proves very challenging, early involvement of palliative care (PC), potentially in the form of an inpatient consult by a specialized team, may be helpful to navigate complex issues such as glycemic goals of care and appropriateness of treatment [11]. PC teams endeavor to minimize burdensome and undue treatment and ascertain if or when diabetes medications or glucose monitoring should be discontinued [11]. Providers should consider early referral to palliative care and understand the distinction between palliative and hospice care. The American Society of Clinical Oncology (ASCO) offers a comprehensive Clinical Practice Guideline tool to encourage integrating PC as a standard of care [12].

Curative Outcome

For patients who appear cured of cancer, joining the 15.5 million cancer survivors in the USA [13], conventional diabetes goals are encouraged to prevent long-term diabetes complications. However, glycemic goals should always be personalized and in particular may be relaxed during periods of active treatment, such as chemotherapy.

Chronic Cancer Condition

As cancer treatments continue to improve, many patients with diabetes may also live longer with cancer as a chronic condition. This active disease state often demands ongoing treatment and constitutes a major comorbidity, making glycemic control more difficult to attain and less likely that patients will experience the very long-term benefits of glycemic control. Therefore, less stringent goals are often appropriate for these patients [9, 10]. The purpose of glucose control shifts towards maximizing HRQoL and avoiding short-term complications and diabetes emergencies. Examples of this include preventing infections, reducing chemotherapy toxicity and treatment stoppages, and minimizing the symptom burden related to hyperglycemia.

End-stage Complex Illness

In patients for whom cancer is not merely chronic but will clearly limit their life expectancy, in months to years, the prevention of long-term complications should cease to be a priority. Again, optimization of HRQoL and prevention of short-term complications take precedence.

Table 1 Suggested glycemic goals of care throughout the cancer treatment phase

Level of care		Curative outcome	Chronic cancer condition	End-stage complex illness	End-of-life care or hospice phase
Life expectancy		Many years	Difficult to predict; potential years	Months to years	Days to weeks
Suggested glucose targets	Fasting or preprandial	90–130 mg/dL	90–150 mg/dL	100–180 mg/dL	Symptom management; < 270 up to 360 mg/dL
	Bedtime	90–150 mg/dL	100–180 mg/dL	110–200 mg/dL	
Suggested HbA1c goal		≤ 7.0%	≤ 8.0%	≤ 8.5%	Not indicated

Data taken from [1••, 9, 15–17, 18••] to create the table

End-of-life Care

For patients with an anticipated life expectancy of days to weeks, such that they and their providers choose to focus on comfort measures and end-of-life care, hyperglycemia management should also emphasize comfort. During this time, diabetes management can become highly individualized, according to the preferences and beliefs of the patient and loved ones. Diabetes management may continue to be a priority for some patients. But, for others, managing diabetes at all may exceed their wishes for what they consider comfort care.

Guidelines advise simplification of anti-hyperglycemic regimens [10] and relaxation of glycemic targets for patients with limited life expectancy. Some authors have suggested more flexible glucose ranges, from 100 to 270 mg/dL [14, 15] or even as high as 360 mg/dL during the last days of life [1••, 15, 16, 17, 18••]. During this time, depending on the wishes of the patient and caregivers, glucose monitoring may be performed infrequently, such as every few days, or stopped all together [18••].

Challenges to Glycemic Management in the Hospitalized Oncology Patients

Cancer treatments and protocols present unique barriers to the regulation of blood glucose levels both in the hospital and at home. Providers who care for cancer patients in the hospital and manage the transition to home should do so with care, particularly since the patients' diabetes care provider in the community may not be ideally equipped to deal with these forms of hyperglycemia. Several of the more common oncology-specific scenarios that can cause hyperglycemia are described here.

Corticosteroids

While not unique to cancer therapy, corticosteroids, such as dexamethasone and prednisone, are particularly common in this setting. They are effective as a primary chemotherapeutic agent in some cancers [19], but are more widely used to mitigate side effects of treatment and prevent drug reactions from other chemotherapeutic agents [20].

Corticosteroids are the class of drugs most commonly associated with drug-induced hyperglycemia [21••], even for patients without a history of dysglycemia. The risk of steroid-induced hyperglycemia in patients without diabetes ranges between 30 and 50% [21••, 22], which typically resolves upon discontinuation, remains an independent risk factor for type 2 diabetes (T2DM) in the future [21••]. Although there is no formal guideline, it is reasonable to screen high-risk patients who will take extended or high-dose corticosteroids for diabetes using HbA1c or fasting blood glucose.

When corticosteroids are used to prevent chemotherapy-induced nausea and other side effects, regimens are not highly standardized. The medication schedule, including the specific type of corticosteroid, administration: oral versus intravenous, the total days of exposure, and dosing may vary widely. In one study, dexamethasone doses ranged from 4 to 20 mg in the same clinical scenario [23]. Similarly, chemotherapy regimens used to treat lymphoma may give doses of prednisone ranging from about 50 to 100 mg daily for 5 days [24].

While on steroid doses in these ranges, almost all patients with pre-existing diabetes can expect an exacerbation of hyperglycemia along with increased medication requirements [21••]. Therefore, bedside blood glucose monitoring and insulin corrections should begin within 24–48 h of initiating corticosteroids in patients noted to have hyperglycemia or a history of diabetes [25].

To manage steroid-induced hyperglycemia effectively, the pharmacokinetics of the steroid along with dosage, frequency, and duration of treatment should be considered. For example, chemotherapy regimens typically give steroids at high doses and then abruptly stop the steroid may briefly create the need for high doses of insulin. But, if insulin is simply continued at the same high dose while steroids are suddenly discontinued, there is a substantial risk for hypoglycemia. Table 2 lists typical pharmacodynamics and pharmacokinetics of some commonly used oral steroids.

Another common scenario is the utilization of steroids to treat complications such as radiation-induced pneumonitis, immunotherapy-induced inflammatory disorders such as colitis or hepatitis, or graft-versus-host disease. Treatment of these complications is rarely standardized, but the general principle is to begin with a high dose of a corticosteroid, traditionally prednisone at a dose of 0.5 to 1 mg/kg/day [26]. Diabetes management can be difficult as treatment often requires a protracted course of steroids in which the rate of the steroid taper is directly correlated to the resolution of symptoms and hence not entirely predictable.

Since patients are unlikely to remain hospitalized throughout the duration of a taper, close monitoring and frequent communication with their outpatient diabetes management team are required. Patients should be given precise instructions of when to notify their diabetes management team concerning hyper- and hypoglycemia, as well as changes in the steroid dosing throughout the taper. The insulin regimen must be frequently evaluated and adjusted alongside steroid dose changes, as the correlation between changes in steroid dosage to the percentage of change required for insulin doses is inconsistent.

Surgery (Emphasis on Pancreatic Surgeries)

Tight blood glucose management peri-operatively has been associated with improved outcomes in small randomized

Table 2 Oral steroid pharmacodynamics and pharmacokinetics

Steroid	Action	Terminal half-life elimination (h)	Time to peak plasma concentration (h)	Duration of action (h)
Hydrocortisone	Short-acting	1.8 ± 0.5	1.2 ± 0.4	8–12
Prednisone	Intermediate-acting	3.3 ± 1.3	2.6 ± 1.3	12–36
Methylprednisolone	Intermediate-acting	2.5 ± 1.2	2.1 ± 0.7	12–36
Dexamethasone	Long-acting	4 ± 0.9	1.5	36–72

Data taken from [27, 28] to create the table

clinical trials [29, 30]. Peri-operative glucose control, both during the hospital stay and after discharge can be particularly difficult. Oncologic surgery, especially pancreatic surgeries frequently performed as treatment for pancreatic cancer or prophylactically for intraductal papillary mucinous neoplasms (IPMN), can magnify these difficulties.

Partial removal of the pancreas, typically performed for locally advanced pancreatic cancer without evidence of metastasis, reduces endogenous insulin production. This frequently results in postoperative hyperglycemia and increases the long-term risk of developing diabetes by 20–50% [31]. For patients undergoing partial pancreatectomy, glucose levels should be monitored routinely, and insulin initiated if needed. Discharge planning should take into account the high probability that even patients without diabetes at baseline will need to manage their glucose levels at home after discharge. Glucose levels during the postoperative period can be highly variable as they are affected by the stress of surgery, erratic oral intake, and the use of pasireotide. Pasireotide is a somatostatin analog that reduces postoperative complications in pancreatic surgeries, but also inhibits insulin secretion, thereby causing hyperglycemia [32]. Consequently, patients discharged on insulin or oral antidiabetic medications need close follow-up as their medication needs may change as the effect of pasireotide wears off and the level of pancreatic function changes.

Total pancreatectomy poses a qualitatively different management challenge from partial pancreatectomy. By removing all endogenous insulin production, this operation results in type 1 diabetes mellitus (T1DM), for which insulin is the only effective treatment.

Patients suddenly face a monumental lifestyle change and must quickly adjust to rigorous self-care demands, with a high risk of both hypo- and hyperglycemic emergencies. Due to complex self-care needs and the possibility of serious complications, preoperative education is highly recommended [33]. During the immediate postoperative period, it is imperative for the bedside nurse to reinforce education and actively involve the patient and caregivers in diabetes self-care throughout their hospitalization. They should have an appointment made and be seen by an endocrinologist and/or diabetes educator within 1 week of discharge.

Immunotherapy

Immuno-oncology (IO) or "immunotherapy" has rapidly become important in cancer treatment for conditions including metastatic melanoma, non–small cell lung cancer, renal cell carcinoma, Hodgkin's lymphoma, and urothelial carcinoma [34]. IO is also well known to increase the risk for several types of endocrinopathies. Although hypophysitis and thyroid dysfunction are more common, the development of autoimmune T1DM has also been described [35, 36]. This is a rare side effect, occurring in only about 1% of IO patients, depending on the agent [37, 38]. As of this writing, nivolumab and pembrolizumab are the IO agents most commonly associated with new-onset T1DM [38, 39].

While this rare side effect of an outpatient treatment does not typically develop during hospitalization, patients with this condition may present with severe hyperglycemia or even diabetic ketoacidosis requiring hospitalization. Analogous to total pancreatectomy patients, these patients are faced with a sudden and massive lifestyle change and require rapid and thorough diabetes education. They should also have a follow-up appointment within a week of discharge.

Example Case Study

A 63-year-old Caucasian woman with no prior history of diabetes was diagnosed with stage III B melanoma and started on immunotherapy with nivolumab. She was hospitalized 1 month after her third dose of nivolumab for immunotherapy-related gastritis; a prednisone taper was started at 50 mg/day. While on steroids, she did not experience hyperglycemia. The steroid taper ended; then, a few months later, she presented to the urgent care center with a 2-day history of nausea, vomiting, and excessive thirst. Her labs were remarkable for a blood glucose of 570 mg/dL, bicarbonate of 10 mEq/L, pH of 7.23, anion gap of 28 mEq/L, and positive urine ketones. She was diagnosed with DKA, a C-peptide resulted as 0.22 ng/mL. The ketoacidosis was treated acutely per institutional protocol with an insulin drip. She received intensive DSMES and was discharged on a basal/bolus insulin regimen. Follow-up labs were negative for glutamic acid decarboxylase, anti-islet antibodies, and anti-

insulin antibodies, but the C-peptide remained undetectable after 1 month. The patient utilized the patient portal which allowed the endocrine service to quickly address several hypoglycemia episodes that occurred within the first few days after discharge and was prescribed a continuous glucose monitor (CGM). With these tools and close follow-up, she was able to achieve glycemic control and minimize the risk of recurrent DKA, as well as hypoglycemia and other complications.

Nutrition

One of the more challenging aspects to cancer care is the preservation of nutritional status. Up to 85% of patients experience severe weight loss or malnutrition during cancer treatment [40]. Malnutrition is linked to a poorer response to chemotherapy, reduced benefit from surgical and medical therapies, decreased HRQoL, and increased risk of mortality [41, 42]. Nutritional guidelines should be followed closely to help identify issues early, guide alternate nutrition options, optimize nutritional status, and achieve glycemic control. The inpatient setting creates an opportunity to address nutritional needs with interventions, such as a 2- to 3-day calorie count that are not typically available outpatient. This helps evaluate the patient's actual food intake and nutritional value they are receiving. This is most beneficial in conjunction with nutrition referral and counseling.

Oncology surgical patients, such as those with head/neck, gastric, or colon cancer, have a particularly great risk of malnutrition and commonly receive enteral nutrition or total parenteral nutrition (TPN). While effective in treating or preventing malnutrition, these alternate nutrition methods can cause severe hyperglycemia. Approximately 30% of patients on enteral nutrition [43] and over 50% of those receiving TPN [43, 44] will experience hyperglycemia. This is likely due to the increased intake of calories and prolonged calorie load alongside an increase in insulin resistance and hepatic glucose production [44]. An important first step in glycemic management for patients on enteral feeds is to ensure that a formula designed for patients with diabetes is used, which typically means greater use of low-carbohydrate calorie sources such as monounsaturated fatty acids, as well as fiber [45].

Even if the nutritional content of the feeds is optimized, hyperglycemia associated with enteral nutrition can be unusually challenging to manage because insulin requirements will be much greater when enteral feeding is in progress than when it is off, and the schedule of feeds may vary. Enteral feeding may be administered as a 24-h continuous feed, in which insulin requirements will be elevated throughout the day; as a continuous feed for part of the day (for example, overnight), in which case insulin requirements may be very high during the time of the feed and low the rest of the day; or as bolus feeds, in which case the patient may have high insulin requirements with each bolus feed, similar to a patient who is eating normally. If enteral nutrition is initiated inpatient, this is an ideal setting to develop a regimen of insulin and other diabetes medications that is adapted to the timing and content of the enteral feeding.

Endocrinology or inpatient diabetes team consultation should be considered in this setting, because of the potential complexity of the insulin regimens needed. Many experienced providers favor specific and relatively unusual insulin regimens in this setting, for example, the use of NPH insulin or NPH/regular mixed insulin in place of the long-acting analog insulins [25], although observational data and small randomized trials have not clearly demonstrated superiority of any particular insulin regimen [46–48]. TPN poses similar challenges; an option to managing hyperglycemia from TPN is the addition of regular insulin to the parental feed itself, which has the conceptual advantage of stopping whenever the parenteral feed does. Once again, however, strong evidence supporting this practice is lacking [48].

It is important for patients and their caregivers to understand these issues as well as to master technical details, such as the importance of flushing the feeding tube to verify patency and ensure a consistent calorie intake prior to administering insulin. Therefore, patients on enteral nutrition benefit greatly from education prior to discharge. Close outpatient follow-up is required, especially as oral intake is reintroduced, and enteral feedings are weaned off.

Optimizing Discharge Preparedness

Prioritization of Patient Education

Patient education is an important aspect of oncology care for everything from pain management [49] to chemotherapy [50, 51]. Education delivered during times of high stress, such as hospitalization, may affect the ability to learn. Many oncology patients and their caregivers can become overwhelmed with information and skills training required for several different aspects of their treatment. A key factor to a successful transition home is to initiate discharge education early in the admission process, which can help minimize the information overload typically seen at the time of discharge. To mitigate this issue and enhance learning, multimodal education techniques can help engage learners more fully and encourage an active role in the education process [52]. The teach-back method is a valuable communication tool that allows the educator, in the moment, to confirm understanding, provide feedback, and modify incorrect information or actions [53, 54]. A hands-on approach is helpful to utilize while educating patients and caregivers on skills such as BG monitoring and insulin injections. This provides the learner with an opportunity to

practice, employing critical-thinking and problem-solving skills to newly learned procedures, and the ability to clarify instructions or ask questions they may be unaware of, until performing the task themselves.

Identifying and Addressing Self-care Barriers

Diabetes management relies heavily on self-care. It is estimated that providers manage less than 5% of diabetes care, while the remainder depends on the day-in/day-out actions of the patient and caregiver [55]. It is common for patients to become increasingly reliant on their care partners, especially as their disease progresses, condition declines, or if the patient is elderly [15]. It is important to reassess the oncology patient with diabetes throughout the treatment phase, to identify and address any self-care deficits that may arise due to treatment side effects, such as neuropathy. Therefore, it is important to routinely evaluate the patient's ability to monitor their glucose, properly administer medications, and prepare meals, and enlist family members or caregivers to participate in diabetes care as needed. Hospitalization is an ideal time to engage the patient in self-care measures to determine if they can safely care for themselves once discharged.

The role of the bedside nurse is integral to the transition from inpatient to home. Since the bedside nurse has the greatest amount of face-to-face time, they are in an ideal position to assess and identify educational needs of patients and caregivers and initiate education. Oncology nurses are often very knowledgeable and skillful in the specific care and treatment of their patient population. But, with a majority of bedside nurses stating they feel uncomfortable or unprepared to effectively care for and educate patients with diabetes [56, 57], such knowledge and skill ought not to be assumed. To improve inpatient care and facilitate the proficient delivery of DSMES to the patient, the bedside nurse must be adequately prepared and receive ongoing continuing education on diabetes management guidelines. Therefore, diabetes educators are integral to the professional development of the bedside oncology nurse who should strive to educate oncology patients on diabetes self-care throughout the hospitalization, taking advantage of short teachable moments.

Diabetes survival skills education (DSSE), defined as the core set of skills a patient or caregiver must learn and master to transition home safely [58], offers a concise approach to addressing diabetes education needs in the hospital. Effective DSSE, at a minimum, includes the ability to monitor glucose levels, identify and treat hypo- and hyperglycemia, know when and who to follow-up with or notify of high/low glucose levels, and understand their medications and how to administer them, as well as a basic understanding of carbohydrate counting.

Promoting Self-care at Home

Lifestyle Measures

A diagnosis of cancer can be a motivating factor for some patients; prompting them to engage in healthier lifestyle choices to improve their likelihood of a positive outcome [59]. The benefits of nutrition and exercise have long been established and recommended as first-line treatment for diabetes patients, but these lifestyle interventions can have a significant effect for patients undergoing cancer treatment as well.

Nutrition

Aside from controlling carbohydrates, oncology patients can be faced with other dietary restrictions or food aversions related to treatment. For example, patients with neutropenia, particularly bone marrow transplant patients, are often placed on a low-microbial diet, which limits consumption of food such as fresh, uncooked fruits and vegetables or unpasteurized dairy [60]. Other adverse effects of cancer treatment may include food aversions, changes in taste, reduction in appetite, and mucositis may narrow the range of foods that patients tolerate [61]. Nutritional counseling in the hospital and after discharge should be sensitive to the dietary limitations patients often experience. Patients who use nutritional supplements should, if possible, use supplements designed for patients with diabetes [62].

Physical Activity

Diabetes and cancer are independent risk factors for a decline in functional status and fatigue [63, 64], and one of the most impactful, and distressing symptoms of cancer treatments is cancer-related fatigue (CRF) [64–66]. Although fatigue poses a challenge to physical activity, it is a key approach to maintaining quality of life and facilitating glycemic control [67]. Physical activity is one approach that can be used to combat CRF, support and maintain performance status, and HRQoL [67], and help control blood glucose levels [68, 69]. While not all hospitalized patients will be able to incorporate lifestyle measures, many can. This can be a favorable time to request a physical therapy evaluation to assess the patient's current status. This consultation can provide personalized strengthening and endurance techniques the patient can continue at home.

Facilitating Outpatient Follow-up and Communication

During the transition from inpatient to outpatient, a key factor to glycemic management is follow-up and communication. To

avoid recurrent emergency room visits and readmissions, it is crucial to assess patients just prior to discharge and communicate with the primary team about treatment changes that could impact glycemic control.

For high-risk patients, specifically newly diagnosed T1DM, T2DM discharged on insulin, and those on a rapid steroid taper, a diabetes outpatient follow-up within just a few days of hospital discharge is highly desirable. However, this may be difficult to arrange, particularly for patients undergoing a rigorous treatment protocol or recovering from surgery. Therefore, communication by phone, fax, and email with providers should be encouraged and facilitated.

In an effort to increase patient-provider access, many healthcare facilities have created patient portal systems, secure online platforms that allow patients to access clinical results, monitor for adverse events, and evaluate their treatment outcomes [70]. Portal usage in the USA continues to gain popularity, from 17% of patients self-reporting use in 2014 to 28% in 2017 [71]. Portals can be very valuable for the extensive communication and patients' self-care needed for glycemic control, since patients can attach blood glucose logs, report symptoms or changes in treatment course, and receive instruction on adjusting insulin doses. For patients who are reliant on a caregiver to help them with diabetes-self management, some portal systems can be configured, with the patients' permission, to allow family members or other caregivers access [72]. Portals, by facilitating and enhancing communication, can be integral to expediting care since the provider can submit medication prescriptions and initiate outpatient referrals and orders for diabetes supplies more readily.

Conclusions

Hyperglycemia frequently occurs during cancer treatment and poses a common management challenge during hospitalization. Hospitalization can also offer an opportunity to improve patient care, and in particular quality of life. To do this well, providers should be comfortable setting appropriate goals for glycemic control, navigating the specific challenges of hyperglycemia in oncology patients, giving patients sufficient education in self-care, and optimizing discharge planning.

Compliance with Ethical Standards

Conflict of Interest Amy Hiestand and Ritika Chitkara declare that they have no conflict of interest.

James Flory reports personal fees from Genentech.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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