Oncology Emergency Department: A Nurse Practitioner Care Model

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As of January 1, 2017, there were 15.5 million Americans living with cancer or currently undergoing treatment after a diagnosis of cancer.[1] At our institution, patients who have cancer present to the hospital with high acuity and high rates of admission; often, 60% to 70% are admitted from our emergency department, as opposed to the 25% to 30% of patients who do not have cancer. Sixty percent of these patients with cancer have Emergency Severity Index (ESI) triage levels of 2 or higher, and 5% of our patients will receive new or suspected diagnoses of cancer in the emergency department.

The James Comprehensive Cancer Hospital at The Ohio State University Wexner Medical Center is one of only 46 comprehensive cancer centers in the nation and is the largest in the Midwest. This is a transformational facility that fosters the collaboration and integration of clinical care with research.

In 2015, we developed and launched a fully integrated oncologic emergency department to care for the special needs of our hematology and oncology patients. This clinical model of integrated oncology emergency care in a tertiary medical center is the first and only one of its kind in the country. We have found that the complex needs for care of oncology patients and patients with both benign and malignant hematologic disease are better served by our unique team of cancer- and emergency-trained physicians, nurse practitioners, nurses and ancillary staff. This emergency team works collaboratively with all hematology and oncology subspecialties. Our center is composed of 15 beds in a 100-bed emergency department with a separate waiting room for immunocompromised patients. With the use of specific questions during the triage process, patients are quickly identified as needing placement in the oncology emergency department. Our department is committed to comprehensive care of these vulnerable patients with complex conditions and has 24/7 on-site case-management or social workers present to help them. This team assesses each oncology and hematology patient to begin the process of discharge planning and provide individualized assistance as needed.

At the James, we have had a strong presence of advanced practice providers (APPs)—nurse practitioners and physician assistants—throughout the medical center. As of May 1, 2017, the number of APPs stands at 285. These APPs serve in all inpatient, outpatient, and specialty roles. Our administration was committed to continuing this expertise and integration when the integrated oncology emergency department was being developed. At present, our staff includes 9 nurse practitioners and 2 newly hired physician assistants. The nurse practitioners are certified in family, adult, acute care adult/geriatric, and advanced oncology. Our nursing backgrounds include emergency, oncology, bariatric surgery, trauma, critical care, thoracic surgery, and oncology procedural care.

In addition to emergency training, our team of 11 APPs has received specialty oncology training with the oncology and hematology primary providers from both inpatient and outpatient areas. This training allows our providers to become the emergency bridge between the primary teams and emergency services team. During our orientation for new staff, one goal is to have the provider develop a working relationship and familiarity of resources available with our primary oncology teams. This knowledge allows us to provide better patient-specific care related to patients' cancer diagnoses. Care specific to the type of cancer is essential for all our patients but is especially critical for our patients who are enrolled in one of more than 500 clinical trials. Our clinical orientation/onboarding is individualized to each APP's background and includes the following:

- Generalized emergency, oncology emergency and palliative care
- Chemotherapy/biotherapy
- Neuro-oncology

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- Medical oncology: breast, gastrointestinal, head, and neck
- Surgical oncology and wound care
- Radiation oncology
- Sickle-cell disease
- Bone marrow transplant: inpatient and outpatient

Upon patient presentation, APPs will initially evaluate the patient emergently and—using evidence-based protocols—initiate orders, treatment, and care plans. They collaborate with the ED attending physician to develop a plan for care and decisions regarding disposition of patients. Emergency medicine residents are also involved in care of these patients and especially critical patients and procedures, including bedside ultrasound, as needed. Some of the comprehensive services available for consultation include radiation oncology, neuro-oncology, and surgical oncology; hematology including bone marrow transplant and benign hematology; neurosurgery; and interventional radiology. During the patient's stay in the emergency department, the APP is responsible for the treatment plan, monitoring and evaluating the patient until admission, or discharge to home or other care modality.

At present, we are seeing approximately 1,150 patients monthly; their average length of stay is 8 hours. Although we see any patient with cancer, suspected cancer, or a disease that renders them immunocompromised, our primary oncology diagnoses by group seen in the emergency department are as follows:

- Digestive (stomach, pancreatic, colon, rectal): 16%
- Respiratory (lung, otolaryngology): 14%
- Sickle-cell disease: 12%
- Breast: 7%
- Lymphoma: 6%
- The remaining diagnoses include a variety of other primary malignancies

The top admitting diagnoses for our oncology emergency department include sepsis, malignancy-related pain, sickle-cell crisis, nausea/vomiting, dehydration, metabolic derangements, neutropenia/fever, cerebral edema, and tumor lysis syndrome.

At present, we have clinical practice guidelines developed through collaboration of emergency medicine physicians and oncologists for management of febrile neutropenia/sepsis, pneumonia, heparin-induced thrombocytopenia, sickle-cell crisis, and management of pain. These guidelines are available on the medical center Intranet, along with other guidelines that are less specific to our oncology population. This population-specific area has demonstrated that we meet or exceed benchmark standards for door-to-antibiotic time for septic or neutropenic patients and door-to-narcotic times for our patients with sickle-cell disease.

We are currently working on developing a competency framework to identify specific disease processes for our oncology and hematology patients. The goal for this framework is to prioritize and guide focused care and evaluate our APPs. In addition, we have developed monthly oncology-care conferences that are well-attended by various disciplines throughout the medical center. APPs are encouraged to present difficult and challenging cases and are also involved in providing continuing education and teaching throughout the hospital. At present, our oncology emergency is one of the most sought-after rotations for nurse practitioner students and fellows for the unique environment in which we practice.

Case Studies

The following are 3 examples of patients with complex conditions seen and treated in our oncology emergency department:

M is a 38-year-old, otherwise healthy woman who presented to her primary-care provider (PCP) with a complaint of unusual bruising for the past few weeks. She was examined carefully and had laboratory work completed by the PCP office. She was sent home with instruction that her PCP would call her back with the laboratory results. As her symptoms worsened, and having not heard back from her PCP, she presented to the emergency department. Upon arrival, she expressed concerns that her bruising was greatly increased, and her menses began with very heavy bleeding. Her initial examination showed a pale, anxious patient with palatine petechiae. Her laboratory results were as follows: white blood cell count, 2.1 K/uL; hemoglobin/hematocrit, 9.1g/dL, 28.1%; and a platelet count of 15 K/uL. A differential diagnosis of suspected acute promyelocytic leukemia (APL) was made for this patient, and the APP contacted the hospital laboratory for a stat manual differential to be completed and call to us. At our institution, these results can be read emergently by the hematology fellow or pathologist. The hematologist was consulted immediately and presented the case emergently. He arrived in the emergency department within minutes to examine the patient and begin emergent treatment, as it appeared that the peripheral smear was compatible with APL.

APL is one of a group of hematopoietic neoplasms and is the most malignant form of acute myelocytic leukemia (AML). Clinical trials have shown that rapid treatment with

all-trans retinoic acid (ATRA) upon suspicion of APL is paramount. APL represents a medical emergency with a high rate of early mortality, often due to hemorrhage from a characteristic coagulopathy.[2] In hematology, initiation of ATRA is similar to the "golden hour" of trauma care. The sooner the patient receives ATRA, the better the outcome has been shown to be.

L is a 36-year-old woman who presented to the oncology emergency department with a complaint of dyspnea and cough. She is a school teacher and had just started the academic year with symptoms of upper respiratory infection, typical of many previous years. She was treated by her PCP approximately 10 days before her ED visit for bronchitis with an antibiotic, a cough suppressant, a rescue inhaler, and steroids. Unlike previous years, however, her cough worsened, prompting a visit to an urgent care center just before her ED visit. She insisted on a chest x-ray for this persistent cough and was found to have diffuse bilateral infiltrates. In the interim, she had also seen a dermatologist for a small mole on her face and received notice that the biopsy results indicated melanoma. Initial evaluation in the emergency department demonstrated sinus tachycardia with a rate in the 130s and a respiratory rate in the 30s, with room air oxygen saturation of 94%. She was afebrile, slightly pale in appearance, with other pertinent physical findings including multiple 2- to 3-cm nontender nodules to the thorax, mild hepatosplenomegaly, and an irregular 6- to 7-mm pigmented area at the angle of the mandible. Computerized tomography scans of her brain, chest, and abdomen/pelvis showed metastatic disease in her axial and appendicular skeleton, liver, kidneys, spleen, and brain. She was admitted to the hospital to compete further staging and to initiate treatment. She had an extensive stay in the hospital, was started on whole-brain radiation therapy, and has been readmitted with sepsis, acute respiratory failure requiring intubation, and admission to the intensive care unit. Continued follow-up has shown that, although we feared the worst, her condition has improved, and she has returned to teaching part time.

S was a 61-year-old man with history of colon cancer and metastasis to his liver. During his illness, he was seen and treated in our oncology emergency department 3 times over the course of 4 months. With each of his ED visits, he was admitted to the hospital. He required biliary stents because of hepatic tumor involvement and then for sepsis. He was a pleasant patient, and our team made an immediate connection with him and his family during his visits to the emergency department. At the time of his third visit, he presented by ambulance with acute mental status changes. Our team almost did not recognize him, as his condition had deteriorated so quickly, and we found that he was dying. He was nonverbal, icteric, with temporal wasting. His wife acknowledged that it was a comfort to have our team there, to see familiar faces at this difficult time. Her sense of relief and trust made his transition to inpatient hospice easier, and this process was navigated expertly by our case-management and social-work teams.

Conclusion

It is clear that our patients and their families benefit from being treated by experts in an oncology emergency department. In addition, the staff in the general emergency department appreciates having the oncology team there to care for this vulnerable patient population.

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