

## Ambulatory emergency oncology

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## **Ambulatory emergency oncology: A key tenet of future emergency oncology care**

### **Abstract**

The challenges of emergency oncology alongside its increasing financial burden has led to an interest in developing optimal care models for meeting patients' needs. Ambulatory care is recognized as a key tenet in ensuring the safety and sustainability of acute care services. Increased access to ambulatory care has successfully reduced ED utilization and improved clinical outcomes in high risk non-Oncological populations.

Individualised management of acute cancer presentations is a key challenge for emergency oncology services so that it can mirror routine cancer care. There are an increasing number of acute cancer presentations, such as low risk febrile neutropenia and incidental pulmonary embolism, that can be risk assessed for care in an emergency ambulatory setting.

Modelling of ambulatory emergency oncology services will be dependent on local service deliveries and pathways, but are key for providing high quality, personalised and sustainable emergency oncology care. These services will also be at the forefront of much needed emergency oncology to define the optimal management of ambulatory-sensitive presentations.

### **Keywords**

Emergency Oncology, Ambulatory Care, MASCC, Febrile neutropenia, Incidental pulmonary embolism.

### **The need for ambulatory emergency care**

As a result of advances in therapy, cancer outcomes have significantly improved. Living longer with cancer and exposure to new treatments has led to an increase in the number of cancer-related emergency presentations, either relating to the malignancy itself or treatment toxicities. [1] The challenges of emergency oncology alongside its increasing financial burden has led to an interest in developing optimal care models for meeting patients' needs. [2,3]

Emergency care systems in general face a challenge of increasing demand often on a backdrop of fixed resources for inpatient care.[4] Cancer patients seeking emergency care generally have longer lengths of stay, higher admission rates and higher mortality than non-cancer patients.[5] As the general population ages, cancer patients will be increasingly older with complex co-morbidities. Ambulatory care is recognized as a key tenet in ensuring the safety and sustainability of acute care services. Ambulatory care delivers acute care to patients without the need for an inpatient bed. This can reduce pressures on inpatient services, facilitate patient flow and aims to reduce the pressures and risks of Emergency Department (ED) overcrowding. Increased access to ambulatory care has successfully reduced ED utilization and improved clinical outcomes in high risk non-Oncological populations, such as older people. [6]

The fundamental basis for ambulatory care is that patients presenting with acute illnesses can be stratified as low risk for developing complications and therefore do not require traditional inpatient care. There are a number of models that have been adapted to deliver this care including hospital at home, ambulatory care units and observation units. [7]

The majority of routine cancer care is delivered in an outpatient setting. However, many acutely unwell cancer patients present to an Emergency Department. The complexity of emergency care systems can lead to fractured communication between oncology and emergency services, which may negatively impact patient outcomes. [3,5]

Individualised management of acute cancer presentations is a key challenge for emergency oncology services so that it can mirror routine cancer care. This requires close collaboration and development of models and services that facilitate this care. The implementation of patient navigation services in the ED may aid this process. [8] There are an increasing number of acute cancer presentations that can be risk assessed for care in an emergency ambulatory setting.

### **Ambulatory emergency oncology presentations**

Low risk febrile neutropenia epitomises the need and challenges of delivering emergency ambulatory care for oncology patients. Although prospectively validated risk assessment tools such as the MASCC (Multinational Association for Supportive Care in Cancer) [9] and CISNE (Clinical Index of Stable Febrile Neutropenia)[10] have established that ambulatory outpatient management of low risk febrile neutropenia is safe and effective, compliance with the guidelines remains inconsistent. [11,12] Alongside the traditional benefits of ambulatory care, such as cost savings and patient preferences for avoiding hospital admission, the reduced risk of nosocomial infection should be a key driver for broader implementation. [13]

Low risk pulmonary embolism is increasingly managed in an ambulatory setting, although many cancer patients presenting with symptomatic PE are classified as intermediate or high risk and currently deemed not suitable for outpatient management. [14] Nevertheless, there is emerging evidence that ambulatory management of PE currently classed as higher risk is in fact possible with good outcomes. [15] Incidental Pulmonary Embolism (IPE) has become an increasingly frequent presentation in patients with cancer and optimal management of IPE has become an important issue in the emergent care of cancer patients. [16] There is a recognition that patients with IPE without adverse features, such as hypoxemia, significant comorbidities or a saddle embolism, are suitable for ambulatory treatment with anticoagulation. The EPIPHANY index may be a useful adjunct tool in supporting physicians considering outpatient management for cancer patients with IPE. [17] Cancer-associated DVT is another important presentation suitable for ambulatory management.

A number of other common presentations in emergency oncology are likely to be amenable to ambulatory management. These include chemotherapy-related acute kidney injury, chemotherapy-induced nausea and vomiting, indwelling line infections, acute management of pain crises, malignant hypercalcaemia and other electrolytes abnormalities, asymptomatic brain metastases and malignant pleural effusion. [3,6,18] Development and validation of exemplar pathways and risk scores for ambulatory management of these presentations to guide and support clinicians is required.

Alongside, the management of toxicities of chemotherapy and presentations directly related to the cancer, ambulatory emergency care may be a useful model for treating immune-related toxicities from checkpoint inhibitors and other complications from emergency treatment modalities.[19] Currently patients with grade 3 and 4 toxicities are admitted for inpatient management [12,20,21]] but it may be possible to identify lower risk patients within these cohorts that could be managed on ambulatory pathways. This is a key area for research in toxicity management.

### **Future models of ambulatory emergency oncology**

Ensuring that emergency oncology patients have access to ambulatory care will require widening of access and careful modelling of services integrating with oncology care and other key specialties.

[22] Development of emergency triage criteria that identify low risk as well as high risk cancer patients is important. As the capabilities of telephonic and video-triage improve, there will be opportunities to intervene in symptom management at an earlier stage.

Early palliative and supportive care has been shown to improve outcomes in patients with cancer.

[23] Ambulatory models offer the opportunity to integrate palliative and supportive care with oncology and acute services. This may result in improved access for patients to expertise in cancer care, including rapid access pain and symptom management, and immediate management of the complications of cancer treatment with the goal of preventing downstream complications and future emergency presentations. [24]

Observation units at tertiary cancer centres have shown utility in reducing hospital admissions. [25] These units are well adapted to leading and developing ambulatory models incorporating services from other key providers.

The feasibility of ambulatory emergency oncology services is a key consideration. An Australian centre described a cost-saving low risk febrile neutropenia ambulatory service with only 25 patients over a 12 month period. [26] Education of ED triaging in non-cancer centres as to which cancer patients may be suitable for ambulatory care is a priority to ensure that appropriate and sufficient patients are identified. [27]

Modelling of ambulatory emergency oncology services will be dependent on local service deliveries and pathways, but are key for providing high quality, personalised and sustainable emergency oncology care. These services will also be at the forefront of much needed emergency oncology to define the optimal management of these presentations.

**Conflicts of Interest:** None declared

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