Ambulatory emergency oncology

Cooksley, T; Marshall , W; Lasserson, Dan; Marshall, E; Rice , T; Klotz , A

DOI:

[10.1111/ijcp.13436](https://doi.org/10.1111/ijcp.13436)

License:

Other (please specify with Rights Statement)

Document Version

Peer reviewed version

Citation for published version (Harvard):

Cooksley, T, Marshall , W, Lasserson, D, Marshall, E, Rice , T & Klotz , A 2019, 'Ambulatory emergency oncology: a key tenet of future emergency oncology care', *International Journal of Clinical Practice*.
<https://doi.org/10.1111/ijcp.13436>

[Link to publication on Research at Birmingham portal](#)

Publisher Rights Statement:

This is the peer reviewed version of the following article: Cooksley, T, Marshall, W, Ahn, S, et al. Ambulatory emergency oncology: A key tenet of future emergency oncology care. *Int J Clin Pract*. 2019;e13436. <https://doi.org/10.1111/ijcp.13436>, which has been published in final form at <https://onlinelibrary.wiley.com/doi/full/10.1111/ijcp.13436>. This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Self-Archiving

General rights

Unless a licence is specified above, all rights (including copyright and moral rights) in this document are retained by the authors and/or the copyright holders. The express permission of the copyright holder must be obtained for any use of this material other than for purposes permitted by law.

- Users may freely distribute the URL that is used to identify this publication.
- Users may download and/or print one copy of the publication from the University of Birmingham research portal for the purpose of private study or non-commercial research.
- User may use extracts from the document in line with the concept of 'fair dealing' under the Copyright, Designs and Patents Act 1988 (?)
- Users may not further distribute the material nor use it for the purposes of commercial gain.

Where a licence is displayed above, please note the terms and conditions of the licence govern your use of this document.

When citing, please reference the published version.

Take down policy

While the University of Birmingham exercises care and attention in making items available there are rare occasions when an item has been uploaded in error or has been deemed to be commercially or otherwise sensitive.

If you believe that this is the case for this document, please contact UBIRA@lists.bham.ac.uk providing details and we will remove access to the work immediately and investigate.

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

References

1. Rivera D, Gallicchio L, Brown J et al. Trends in adult cancer-related Emergency Department utilisation. *JAMA Oncol* 2017; 3(10): e172450
2. Brown J, Grudzen C, Kyriacou D. The Emergency Care of Patients with Cancer: Setting the Research Agenda. *Ann Emerg Med* 2016; 68(6): 706-11.
3. Cooksley T, Rice T. Emergency Oncology: Development, Current Position and Future Direction in the US and UK. *Support Care Cancer* 2017; 25(1): 3-7.
4. Lasserson DS, Harris C, Elias T, Bowen J et al. What is the evidence base for ambulatory care for acute medical illness? *Acute Med* 2018; 17(3): 148-53.
5. Todd KH, Thomas CR Jr. An Inflection Point in the Evolution of Oncologic Emergency Medicine. *Ann Emerg Med* 2016; 68(6): 712-16.
6. Hamad M, Connolly V. Ambulatory emergency care – improvement by design. *Clin Med* 2018; 18(1): 69-74.
7. Conley J, O'Brien CW, Leff BA et al. Alternative strategies to inpatient hospitalization for inpatient conditions: A systematic review. *JAMA Intern Med* 2016; 176(11): 1693-702.
8. Bischof JJ, Sellers JB, Phillips AW et al. Patient navigation for complex care patients in the emergency department: a survey of oncology patient navigators. *Support Care Cancer* 2019 Mar 29
9. Klastersky J, Paesmans M, Rubenstein E et al. The Multinational Association for Supportive Care in Cancer Risk Index: A Multinational Scoring System for Identifying Low-Risk Febrile Neutropenic Cancer Patients. *J Clin Onc* 2000; 18: 3038-51.
10. Carmona-Bayonas A, Jiménez-Fonseca P, Virizuela Echaburu J et al. Prediction of serious complications in patients with seemingly stable febrile neutropenia: validation of the Clinical Index of Stable Febrile Neutropenia in a prospective cohort of patients from the FINITE study. *J Clin Onc* 2015; 33: 465-71.
11. Klastersky J, Paesmans M. The Multinational Association for Supportive Care in Cancer (MASCC) risk score: 10 years of use for identifying low risk neutropenic cancer patients. *Support Care Cancer* 2013; 21: 1487-95.
12. Knight T, Ahn S, Rice TW et al. Acute Oncology Care: A narrative review of the acute management of neutropenic sepsis and immune-related toxicities of checkpoint inhibitors. *Eur J Intern Med* 2017; 45: 59-65.
13. Cooksley T, Holland M, Klastersky J. Ambulatory outpatient management of patients with low risk febrile neutropaenia. *Acute Med* 2015; 14(4): 178-81.
14. Howard LS, Barden S, Condliffe R et al. British Thoracic Society Guideline for in the initial outpatient management of pulmonary embolism. *Thorax* 2018; 73(Suppl 2): ii1-ii29.
15. Reschen ME, Raby J, Bowen J et al. A retrospective analysis of outcomes in low- and intermediate-high-risk pulmonary embolism patients managed on an ambulatory medical unit in the UK. *ERJ Open Res.* 2019 8; 5(2)
16. Banala S, Yeung SC, Rice TW, Reyes-Gibby C et al. Discharge or admit? Emergency department management of incidental pulmonary embolism in patients with cancer: a retrospective study. *Int J Emerg Med* 2017;10:19
17. Ahn S, Cooksley T, Banala S et al. Validation of the EPIPHANY index for predicting risk of serious complications in cancer patients with incidental pulmonary embolism. *Support Care Cancer* 2018; 26(10): 3601-07
18. Caterino J, Adler D, Durham D. Analysis of Diagnosis, Symptoms, Medications and Admissions among patients with cancer presenting to Emergency Departments. *JAMA Netw Open* 2019; 2(3): e190979

19. El Majzoub I, Qdaisat A, Thein K et al. Adverse Effects of Immune Checkpoint Therapy in Cancer Patients visiting the Emergency Department of a Comprehensive Cancer Center. *Ann Emerg Med* 2019; 73(1): 79-87
20. Champiat S, Lambotte O, Barreau E et al. Management of immune checkpoint blockade dysimmune toxicities: a collaborative position paper. *Ann Oncol* 2016; 27: 559-74.
21. Webb P, Rice TW, Cooksley T. Immune-mediated complications of Checkpoint Inhibitors for the Acute Physician. *Acute Med* 2017; 16(1): 21-24.
22. Marshall E. Ambulatory management in low risk neutropenic sepsis – A plea for integrated acute cancer care. *Acute Med* 2019; 18(1): 5-6.
23. Hui D, Bruera E. Integrating palliative care into the trajectory of cancer care. *Nat Rev Clin Oncol* 2016; 13(3): 159-71.
24. Cooksley T, Campbell G, Al-Sayed T, Lamola L, Berman R. A novel approach to improving ambulatory outpatient management of low risk febrile neutropenia: an Enhanced Supportive Care (ESC) Clinic. *Support Care Cancer* 2018; 26(9): 2937-40.
25. Lipitz-Snyderman A, Klotz A, Atoria CL et al. Impact of observation status on hospital use for patients with cancer. *J Oncol Pract* 2015; 11(2): 73-7.
26. Teh BW, Brown C, Joyce T et al. Safety and cost of an ambulatory program for patients with low-risk neutropenic fever at an Australian centre. *Support Care Cancer* 2018; 26: 997-1003.
27. Adler D, Abar B, Durham D et al. Validation of the Emergency Severity Index for the triage of Adult Emergency Department Patients with Active Cancer. *J Emerg Med* 2019 July 26