

Feasibility and Baseline Characteristics in a Phase II Single Institution Continuous Activity Monitoring (CAM 2.0) Trial for Patients Undergoing Chemoradiation

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Abstract

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Abstract

Purpose: Patients undergoing concurrent chemoradiation experience toxicities that can lead to emergency department (ED) visits, hospitalizations, and decreased quality of life (QoL). Our prior pilot study demonstrated feasibility of using activity data to trigger triage visits for symptom management.¹ The present study investigates whether combining continuous activity monitoring (CAM) with an automated chatbot can support timely symptom identification, triage, and management during cancer treatment. Here, we report baseline participant characteristics and present strategies to improve feasibility of other similar trials.

Methods: Eligible patients were recruited from radiation oncology clinics at a single, urban institution. Patients were consented and then randomized to: (1) CAM with telephone triage visits or (2) CAM with integrated chatbot triage with as needed additional symptom assessments. The primary endpoint is a reduction in triage visits, defined as unplanned nursing or physician encounters outside of scheduled visits. Secondary endpoints include the feasibility of reducing treatment breaks, ED visits, and hospitalizations, as well as differences in patient-reported QoL and staff burden. Chi-squared tests were used to compare completion rates between treatment groups.

Results: From June 2023 to January 2025, 73 patients were successfully enrolled. Patients were randomized to either the telephone triage arm (N = 37, 51%) or the chatbot arm (N = 36, 49%). Patients were predominantly white (N = 62, 85%) and male (N = 51, 70%). The median age at consent was 59 years (range, 28–81 years). The most common disease site was head and neck (N = 28, 38%), followed by gastrointestinal (N = 27, 37%) and thoracic (N = 18, 25%). Photon-based intensity modulated radiation therapy (IMRT) was the most common radiation modality (N = 43, 59%), followed by proton beam therapy (PBT) (N = 20, 27%) and combined IMRT/PBT (N = 10, 14%). Study completion rates were similar ($\chi^2(1, N = 73) = 0.39, p = .53$) between the telephone triage arm (30 of 37, 81%) and chatbot arm (27 of 36, 75%). Common reasons for withdrawal (N = 16, 22%) included data sync issues, device discomfort, and perceived triage burden.

Conclusion: Herein, we demonstrate feasibility to perform a phase II randomized trial with integration of wearable activity monitors and an automated chatbot platform into radiation oncology workflows. Patient recruitment and retention were strengthened by reducing barriers to technology use through structured onboarding for the wearable activity monitor and access to real-time troubleshooting support with study staff. A qualitative study involving interviews with study staff, including nurses and physicians, is currently ongoing to identify additional strategies for optimizing implementation of activity monitoring in oncology settings.