

Development of a Rapid Access Clinic for Urgent and Palliative Radiotherapy

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AAPM/COMP
July 2026

Introduction

Approximately half of RT courses are palliative, and the total number is rising with longer survival and increasing incidence of cancer. Many of these courses are delivered to patients who have acute symptoms that would benefit from urgent RT. For them, long wait times can increase their symptom burden, reduce function, and increase opioid utilization. Dedicated rapid access palliative radiotherapy programs have developed around the world and elsewhere in BC to serve patients with symptomatic and advanced disease. Published experiences have demonstrated increased patient satisfaction, reduced wait times, reduced prescription of pain management medications, as well as cost savings with decreased hospitalization¹. Many clinics accomplish this in part by using simplified treatment techniques or streamlined QA procedures. The aim of the rapid access clinic (RAC) described here is to decrease time-to-treatment to 4 hours without compromising the standard of care.

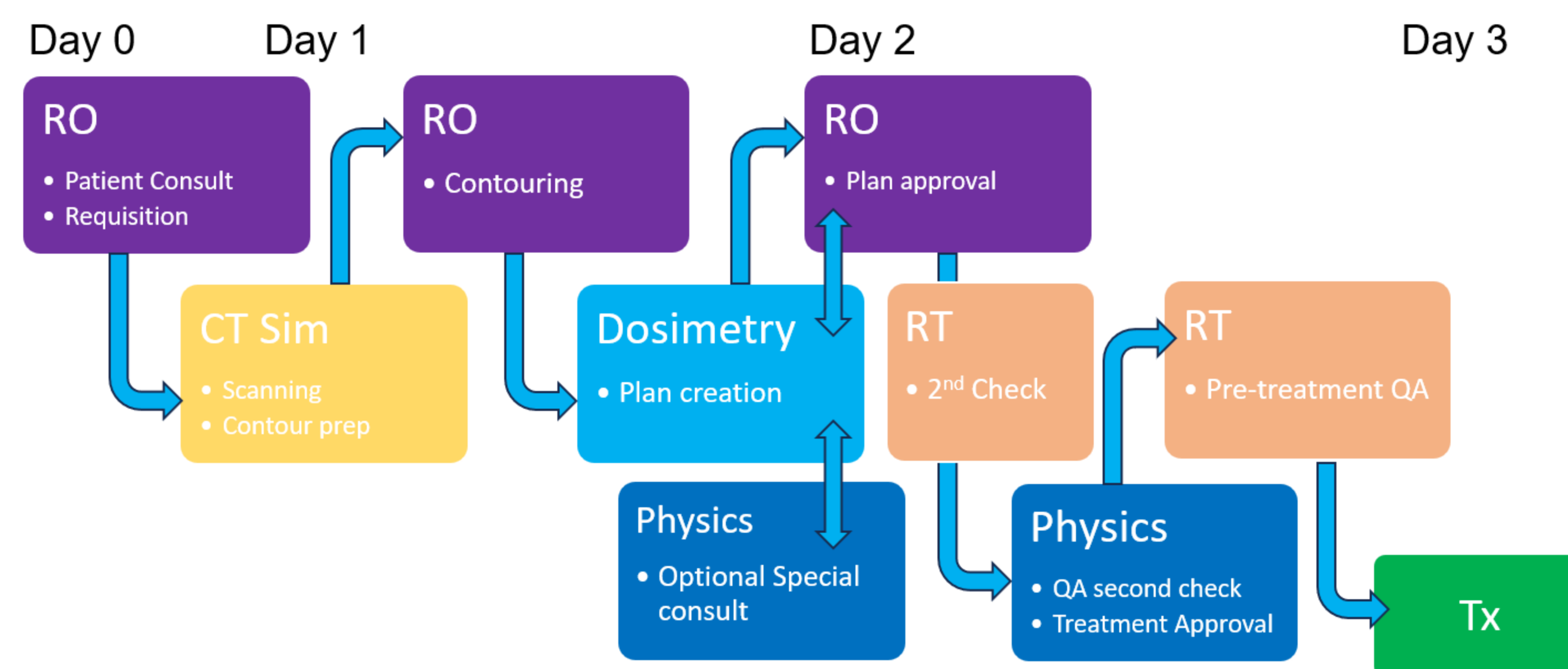


Figure 1. Workflow sketch of current urgent VMAT Palliative (VMP) pathway. The fastest turnaround time from requisition to first fraction under current protocols is 3 days.

Clinic Design

A multidisciplinary team was assembled including RT nurses, CT sim staff, radiation oncologists, dosimetrists, physicists, and radiation therapists. The role and schedule of each team member was defined in advance to minimize dead time between tasks (i.e. completion of contouring to start of treatment planning). Eligibility considerations for patients included: less than 3 symptomatic sites, maximum dimension of the CTV, distance from the CTV to the surface of the skin, prostheses, and lack of significant overlap with previous treatment. Prescriptions were limited to 8 Gy in 1 fraction, 20 Gy in 5 fractions, 24 Gy in 3 fractions, and 25 Gy in 5 fractions.

Software was written in C# and the Eclipse scripting application programming interface (ESAPI) for automating some steps of the workflow and treatment planning process. These included: copying Limbus AI structures into the patient structure set, screening patient eligibility based upon the above constraints, and setting up VMAT plans.

Rapid Access Clinic Pilot

A pilot of the RAC was conducted from February 13 – May 8th, 2025. Twelve patients were recruited who had symptomatic disease and were predicted to benefit from same-day treatment and advanced RT planning techniques. A total of 17 sites were treated using 13 VMAT plans, and 2 conformal field plans. Sites included pelvis, spine, and femur. CT sim and radiotherapy treatment times were booked in advance. Average time from CT to delivery of first fraction was 4h32m. Deadlines were set for RO contouring to be completed 90 minutes after the scheduled CT sim time. On average contours were complete 6m ahead of the deadline.

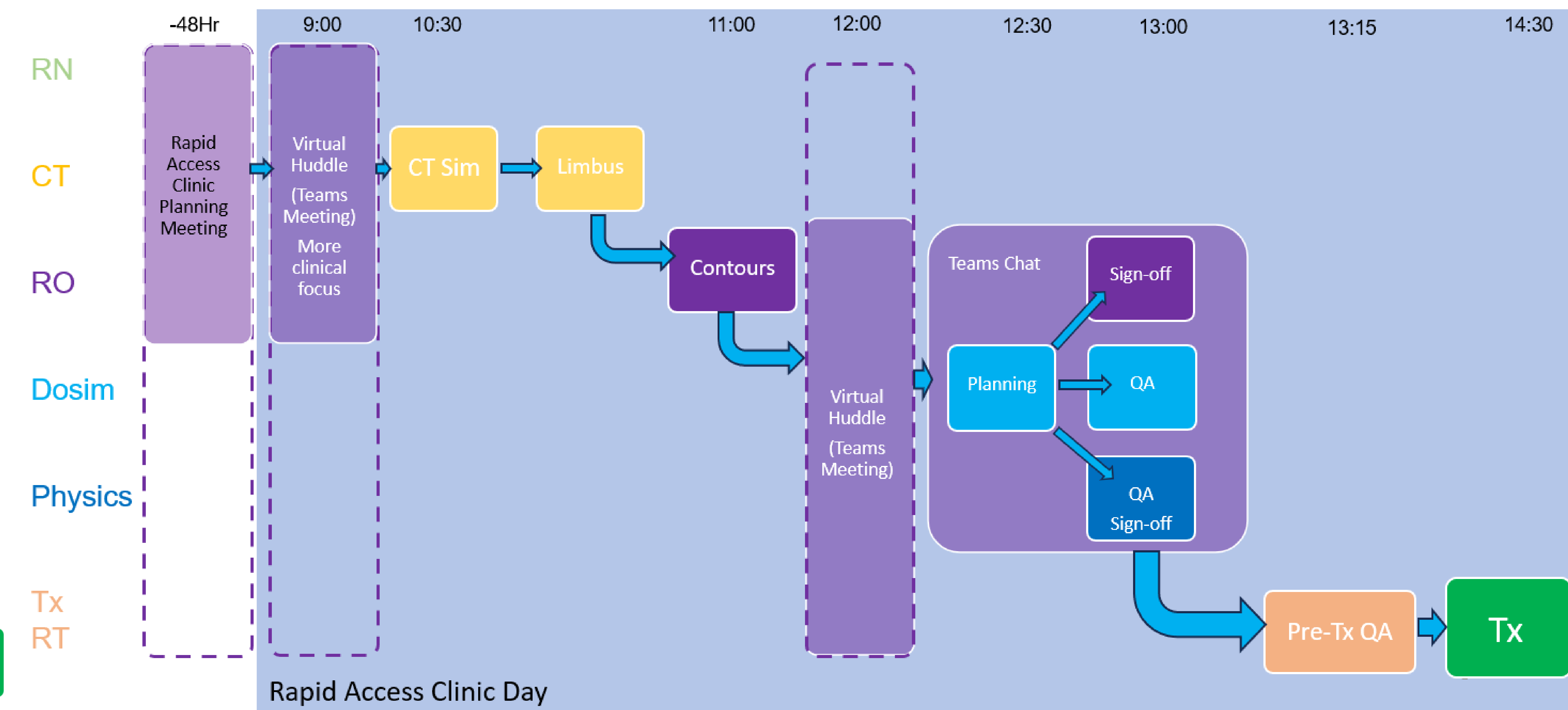


Figure 2. Clinic personnel and workflow for RAC pilot. Virtual huddles (Microsoft Teams meetings) were used to communicate with the RAC team ~48 hours prior to the clinic day, as well as at the beginning of the clinic and prior to treatment planning. The RO and physicist were on-call and present in a Teams chat throughout the planning process. Deadlines were set for tasks (i.e. RO contour approval) that may otherwise create workflow bottlenecks. Nursing provided additional support throughout which is not captured in this workflow.

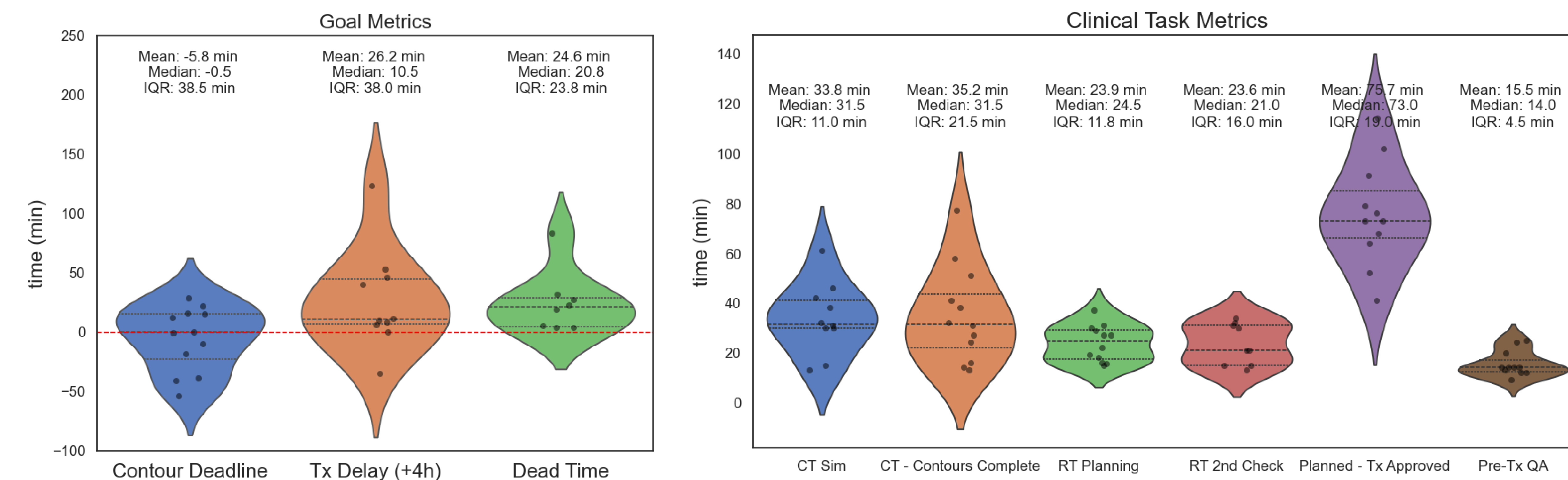


Figure 3. Timing of clinical tasks during the pilot of the RAC. Metrics were collected from notes, Teams chats/meetings, Eclipse structures, and Aria task timestamps. The 'Dead Time' represents the time not spent on clinical tasks between scheduled CT sim and treatment delivery. Parallelizing QA tasks post planning, including the RT 2nd check and Physics QA, could further streamline the workflow.

Future Development

Identified areas for further improvement include:

- Implement automated VMAT planning – utilizing Eclipse clinical protocols.
- Standardized communication of treatment plan priorities
- Planning on diagnostic CT could be suitable for some cases and would enable higher throughput²
- Leveraging AI-contoured structures to protect additional OARs without increasing the burden on planning resources

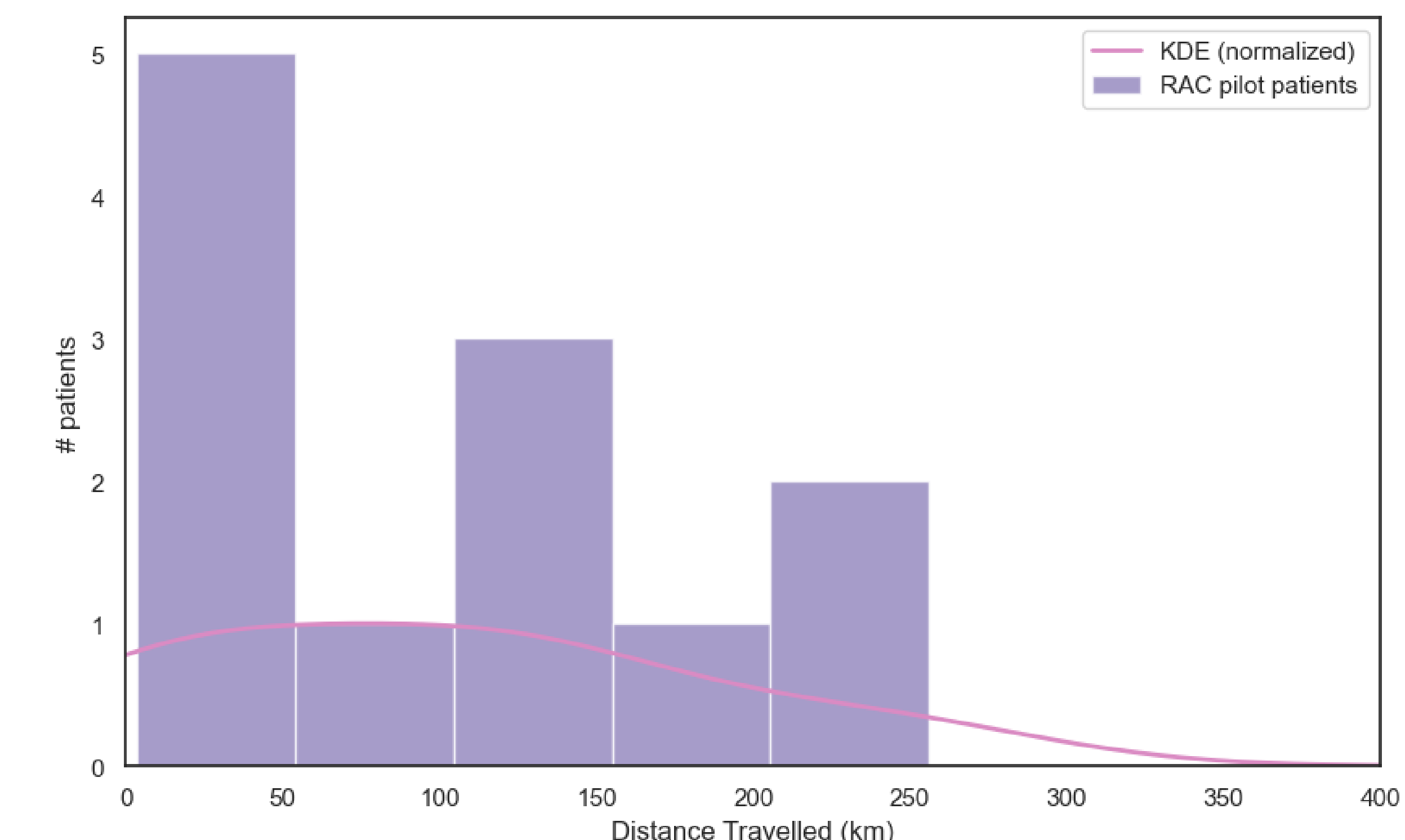


Figure 4. Distance travelled by patients to attend the pilot clinic (each way). Patients travelled an average of ~100 km each direction to receive treatment in the clinic. Minimizing the number of visits to receive care has an outside impact on patients who urgently need treatment.

Conclusion

A new rapid access clinic with a focus on team-based care can simultaneously reduce wait times and raise the standard of treatment quality for patients with symptomatic disease who would benefit from same-day radiotherapy. Following one clinic day, the supporting radiation oncologist reported that patients received 'way better plans than I would have even asked for without this process'.

References

- 1.Dennis K, Harris G, Kamel R, Barnes T, Balboni T, Fenton P, Rembielak A. Rapid Access Palliative Radiotherapy Programmes. Clin Oncol (R Coll Radiol). 2020 Nov;32(11):704-712.
- 2.Wong S, Roderick S, Kejda A, Atyeo J, Grimberg K, Porter B, Booth J, Hraby G, Eade T. Diagnostic Computed Tomography Enabled Planning for Palliative Radiation Therapy: Removing the Need for a Planning Computed Tomography Scan. Pract Radiat Oncol. 2021 Mar-Apr;11(2):e146-e153.

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