



Diagnostic CT-Enabled Radiation Therapy (**DART**): Results of **a** Randomized Trial for Palliative **R**adiation **T**herapy



Presented by:

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Disclosure & Study Team

I have no conflicts of interest to disclose

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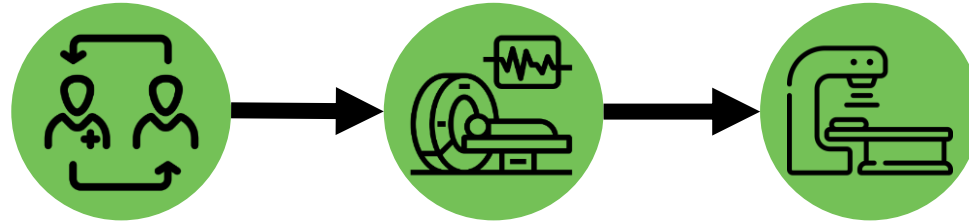
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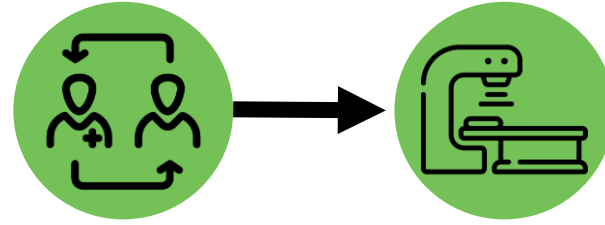
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Background



- CT simulation is a procedure that generates the 3D images used for custom radiation treatment planning, and is considered the standard of care
- Patients referred for palliative radiation must undergo a CT simulation before they can receive radiation
- Even with “fast-track” workflows the process takes several hours, resulting in significant wait times for patients who are often experiencing pain, respiratory problems, or other debilitating symptoms
- Yet many of these patients have also had a recent diagnostic CT scan, performed in medical imaging departments outside the cancer centre as a part of routine follow-up or other care

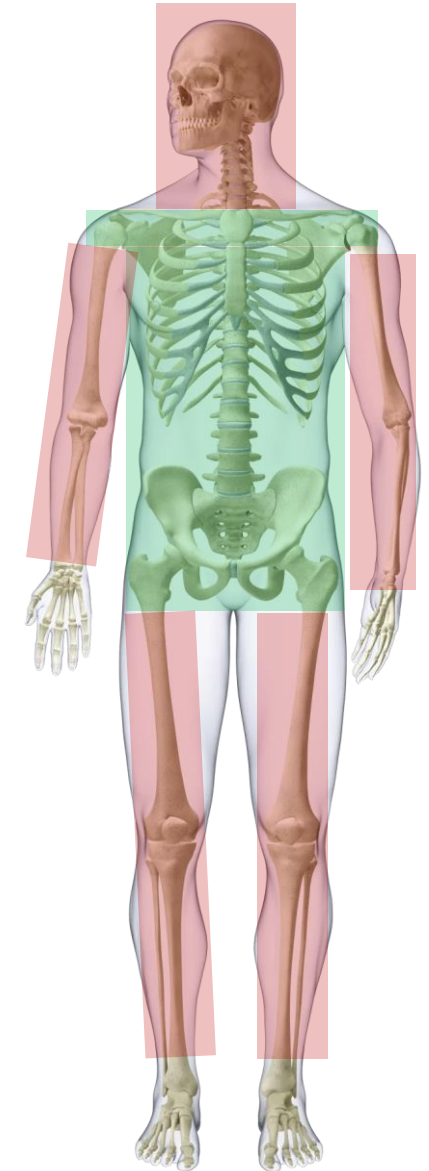
Background



- Previous research has shown that these diagnostic CT scans can be used instead of the CT simulation scan to produce clinically acceptable palliative radiation treatment plans
- Our goal was to assess the impact of using diagnostic CT-based planning on the patient experience, plan deliverability, adequacy of target coverage, and staff workflows

Method

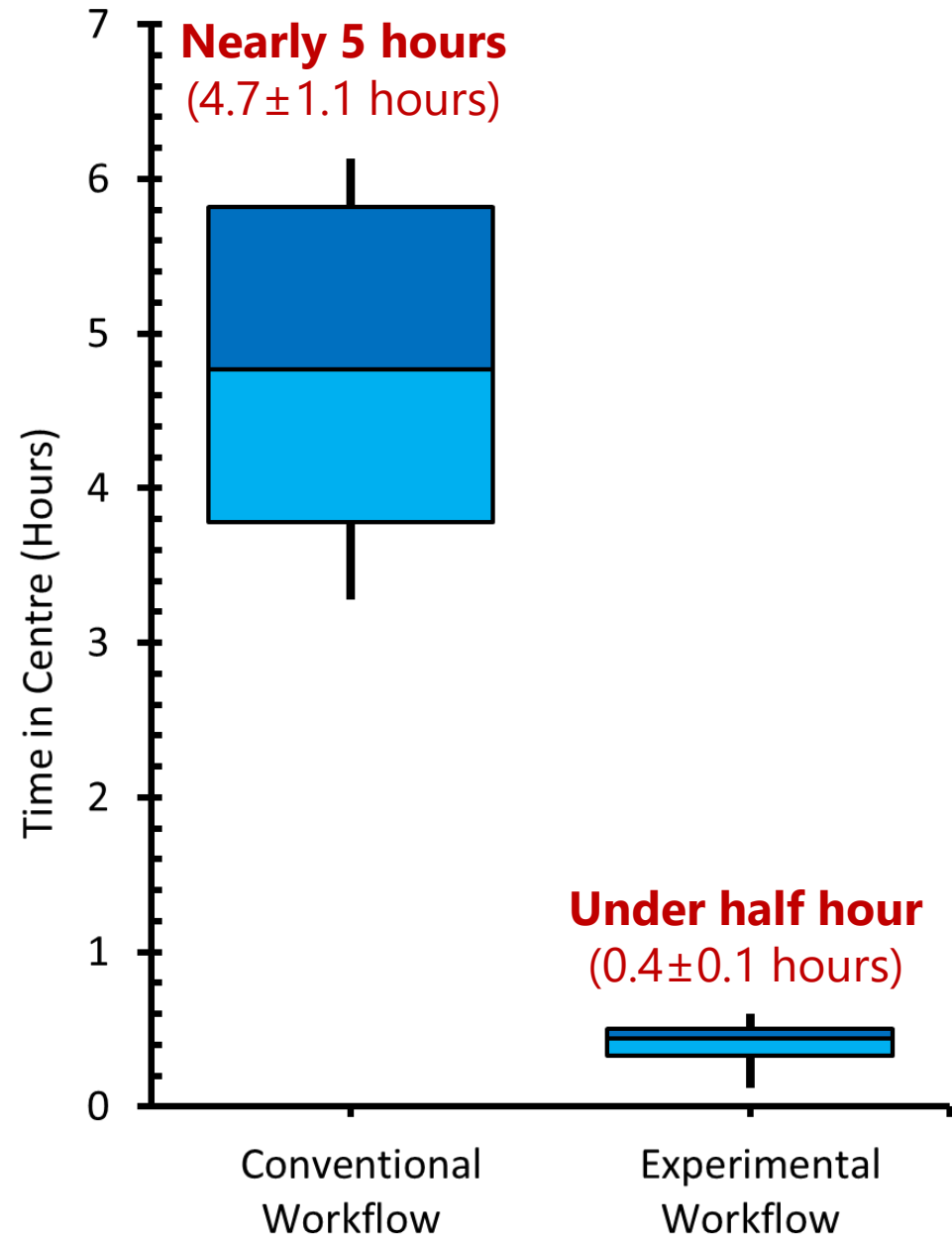
- Patients were eligible if they had been prescribed simple palliative radiation treatment to a soft tissue or bony target in their chest, abdomen or pelvis, **and** if they had recent, acceptable diagnostic CT
 - Recent = 28 days old or less
 - Acceptable = full visualization of the target with reproducible patient positioning
- 33 patients were assigned to either standard treatment using on-site CT simulation or had their treatment planned before they arrived at their appointment using a recent diagnostic CT scan



Results

- We measured how much time each patient spent at the cancer center on the day of treatment, from the time of first appointment (either CT simulation or radiation treatment) to treatment completion

p < 0.001

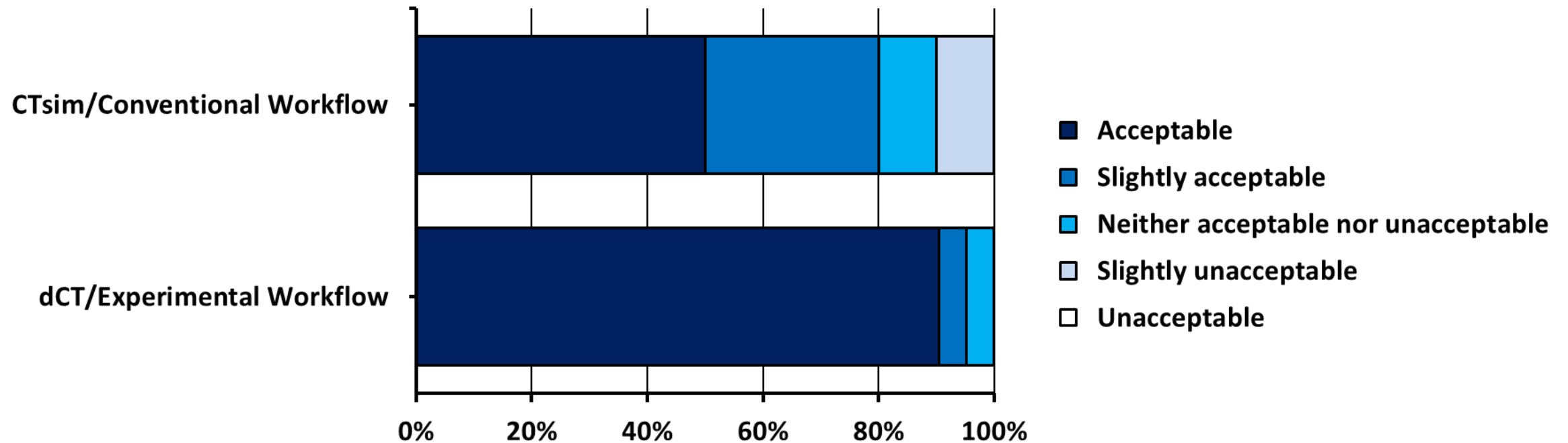


Results

- In **both** arms of the trial:
 - All treatment plans were delivered successfully
 - Adequacy of target coverage, rated by blinded physicians, was acceptable or acceptable with minor variation
 - Patient ratings on the acceptability of their treatment experience were similar, with one exception: **time burden**

Results

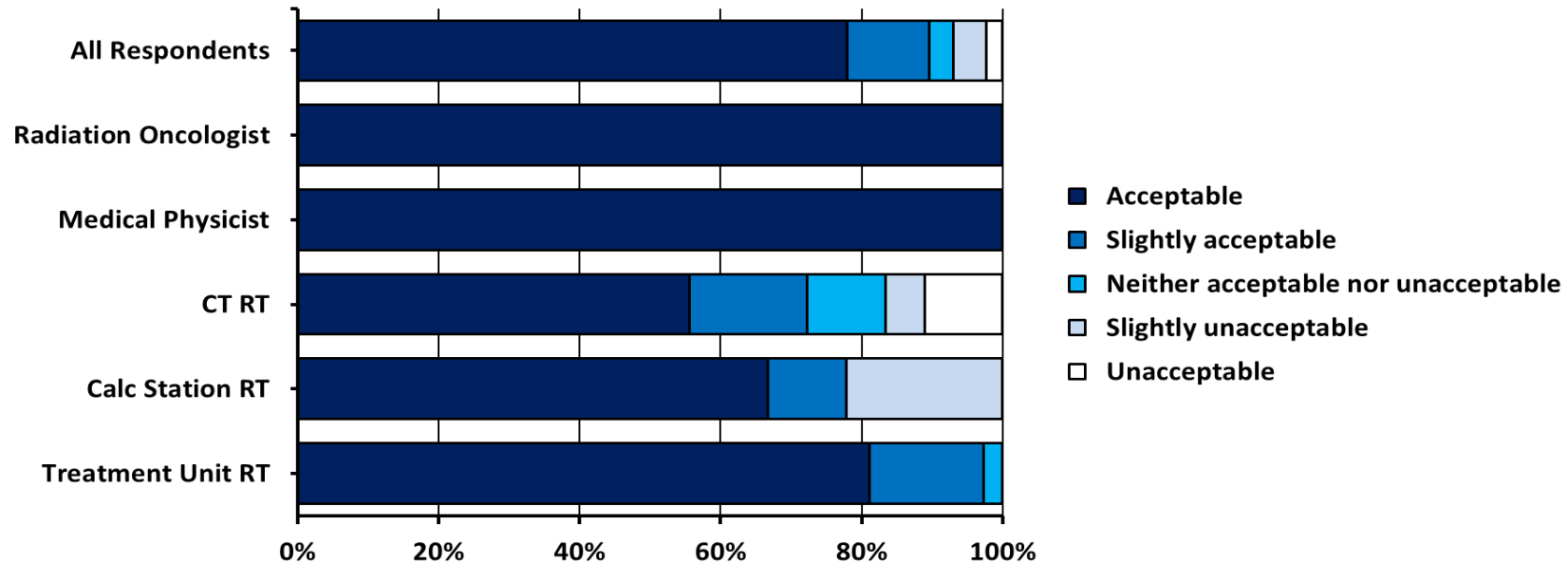
- **Time spent receiving treatment** was acceptable to **50%** of those on the CT simulation workflow versus **90%** of those on the diagnostic CT workflow



p=0.025

Results

- We also surveyed clinical stakeholders (Radiation Oncologists, Medical Physicists and Medical Radiation Therapists) and asked them to compare the diagnostic CT workflow to the standard of care
- On a 5 point scale of acceptability, **90%** of clinicians rated the diagnostic CT workflow as a 4 or higher (mean score 4.6/5 \pm 0.5)



Conclusions

- Implications for ***Patient Care***

- Reduced waiting time for urgent treatment improves the patient experience
- Fewer appointments, less travel, less waiting, and faster relief eases treatment burden and financial toxicity for patients and caregivers

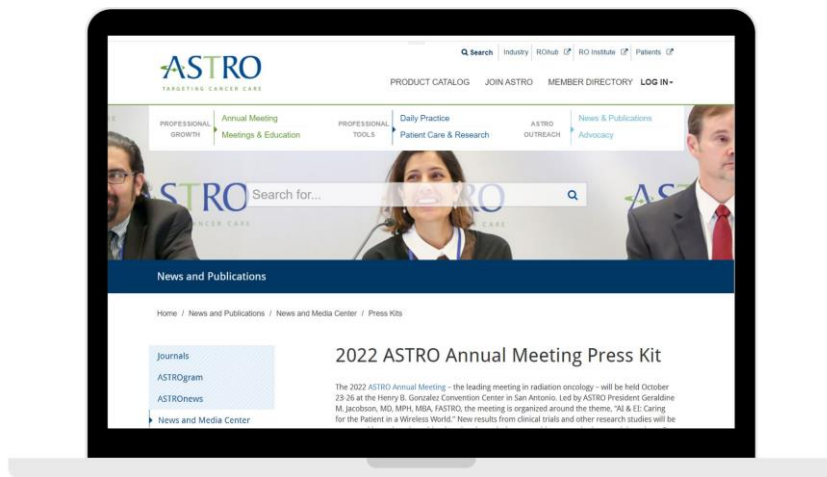
- Implications for ***Health Systems***

- Optimization of resources contributes to health system sustainability
- Frees up appointment slots in the CT simulator or allows staff redistribution, enabling departments to see more patients and/or maintain throughput during workforce shortages
- Less time spent at the cancer centre equates to a smaller window of time when unwell patients may require supports, which can also result in diversion of staff resources

Conclusions

- Diagnostic CT-based planning is a viable workflow and should be considered for patients with a recent diagnostic CT scan who are undergoing simple palliative radiation treatment
- **Future work** includes collaboration with other teams using similar workflows to create recommendations and guidelines for clinical implementation, and in testing the workflow with more complex planning techniques

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