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A study testing a more precise type of radiotherapy for head and neck cancer to reduce long-term side effects

Submission date 04/11/2025	**Recruitment status** Recruiting	[X] Prospectively registered [_] Protocol [_] Statistical analysis plan [_] Results [_] Individual participant data [_] Record updated in last year
Registration date 06/11/2025	**Overall study status** Ongoing	
Last Edited 07/11/2025	**Condition category** Cancer	

Plain English summary of protocol

Background and study aims
Head and neck radiotherapy has a small efficacy. Adaptive radiotherapy (ART) has the potential to improve this, but has failed to deliver meaningful outcome benefits and/or required non-scalable daily Radiation Oncologist input. To drive routine adoption, ART must achieve measurable clinical benefit without requiring significant changes to the current radiotherapy delivery staffing resources. We will investigate first-in-kind daily Radiotherapist-led ART-enabled Target Volume margin reduction and salivary glands sparing to deliver clinically meaningful reductions in xerostomia. This study will leverage our institutional expertise and experience in radiotherapy-led Magnetic Resonance Lymphangiography ART and is anticipated to demonstrate clinical benefit from a world-first RT-led Head and Neck ART workflow.

Who can participate?
Patients aged at least 18 years old and diagnosed with head and neck squamous cell carcinoma who are planned for curative (chemo)therapy and have at least one level 1b that has not been treated.

What does the study involve?
This study involves participants being randomly assigned to either a control group or an ART group. They will be blinded to the treatment as they will be completing quality-of-life questionnaires, and we don't expect any bias in their responses. This study is only open at Princess Margaret Hospital in Toronto, ON, Canada. The participation will last approximately 7 weeks, but may vary slightly depending on your treatment needs.

What are the possible benefits and risks of participating?
There are no direct benefits to participating in the study, as we don't know how beneficial ART is. The risks of participating are the same as the standard of care palliative radiation therapies for both the control and the ART group.

Where is the study run from?
University Health Network, Canada.

When is the study starting and how long is it expected to run for?
July 2025 to November 2028

Who is funding the study?
Varian Medical Systems, USA

Who is the main contact?
Dr Andrew McPartlin, andrew.mcpartlin@uhn.ca

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Study information

Scientific Title
Phase II randomized trial of RT-led daily adaptive radiotherapy for submandibular gland-sparing in head and neck cancer

Acronym
RTL-DART

Study objectives
1. Analyze dose sparing to organs at risk achieved by daily ART
2. Assess the effect of SMG dose sparing on repeat MST assessment
3. Assess clinician and patient-reported outcomes before and following treatment

Hypotheses: RT-led daily ART
1. Reduces the delivered dose to organs at risk
2. Improves unstimulated salivary flow following radiotherapy
3. Improves patient-reported outcome measures following treatment

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 18/07/2025, University Health Network Research Ethics Board (UHN REB) (700 University Ave, 4th Floor, Toronto, M5G 1Z5, Canada; +1 416-581-7849; reb@uhnresearch.ca), ref: 25-5273

Primary study design
Interventional

Study design
Single-blinded site, phase II randomized study

Study type(s)
Efficacy, Quality of life, Treatment

Health condition(s) or problem(s) studied
Squamous cell carcinoma of head and neck (HNSCC)

Interventions
This is a single-blinded, phase II randomized study that compares daily adaptive radiation therapy to the standard of care palliative radiation therapy. Randomization will be performed using the randomization module of the REDCap electronic research data capture software.

Daily adaptive radiotherapy (ART): modification of the radiotherapy plan during treatment to account for changes from the original anatomy and set-up. Broadly, reductions in treatment volume can be achieved through ART by:
1. Adjusting for gradual longitudinal changes in tumor and anatomy through several weeks of treatment via intermittent offline (performed between treatments) re-planning.
2. Improving plan conformality and reducing treatment volumes by adjusting to account for uncertainty in set-up and anatomy via daily online (performed while the patient is on the treatment couch) re-planning

Intervention Type
Procedure/Surgery

Primary outcome(s)
Change in saliva production from baseline measured using the Modified Schirmer Test (MST) at 6 months following IGRT or daily ART HN treatment

Key secondary outcome(s)
1. Saliva production measured using the Modified Schirmer Test (MST) during radiotherapy and at 1.5, 12 and 24 months
2. Patient-reported outcomes measured using the MD Anderson Dysphagia Inventory (MDADI), xerostomia questionnaire, and European Organisation for Research and Treatment of Cancer (EORTC) QLQ-HN43 at baseline, end of treatment and 1.5, 6, 12 and 24 months
3. Clinician assessed toxicity, according to the Common Terminology Criteria for Adverse Events (CTCAE) version 5.0, measured using data collected from electronic Case Report Forms (eCRF) at baseline, weekly during radiotherapy and 1.5, 6, 12,and 24 months
4. Swallow assessment measured using the Performance Status Scale for Head and Neck Cancer (PSS-HNC) at baseline, end of treatment and 1.5, 6, 12 and 24 months

Completion date

01/11/2028

Eligibility

Key inclusion criteria
1. Age ≥ 18 years
2. Histologically proven Squamous Cell carcinoma of head and neck
3. At least one level 1b not being treated electively and with no high dose structure <1cm to spared SMG
4. ECOG PS 0-2
5. Planned for curative (chemo)radiotherapy
6. Able to receive and understand verbal and written information regarding study and able to give written informed consent
7. Be able to lie comfortably on back and to wear immobilization for up to 1 hour

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
1. As judged by the investigator, evidence of systemic disease that makes them unsuitable for study
2. Pregnancy
3. Underlying salivary dysfunction prior to treatment judged by the investigator to affect the likelihood of benefit from ART

Date of first enrolment
07/11/2025

Date of final enrolment
01/11/2028

Locations

Countries of recruitment
Canada

Study participating centre
Princess Margaret Hospital
610 University Ave
Toronto
Canada
M5G 2C4

Sponsor information

Organisation
University Health Network

ROR
https://ror.org/042xt5161

Funder(s)

Funder type
Industry

Funder Name
Varian Medical Systems

Alternative Name(s)
Varian Medical Systems, Inc., Varian Associates,

Funding Body Type
Private sector organisation

Funding Body Subtype
For-profit companies (industry)

Location
United States of America

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are not expected to be made available

IPD sharing plan summary

Not expected to be made available