ISRCTN45653542 https://doi.org/10.1186/ISRCTN45653542

# Biologically adaptive radiotherapy for oropharyngeal cancer

| | | |
|---|---|---|
| **Submission date**<br>24/10/2022 | **Recruitment status**<br>No longer recruiting | [X] Prospectively registered<br>[X] Protocol<br>[_] Statistical analysis plan<br>[_] Results<br>[_] Individual participant data<br>[X] Record updated in last year |
| **Registration date**<br>02/11/2022 | **Overall study status**<br>Completed | |
| **Last Edited**<br>10/08/2026 | **Condition category**<br>Cancer | |

## Plain English summary of protocol

Background and study aims
Six weeks of radiotherapy treatment is carried out for the treatment of oropharyngeal cancer, a type of head and neck cancer, with the aim of long-term cancer control or cure. Unfortunately, some cancers recur after finishing radiotherapy. If oropharyngeal cancer comes back, it usually recurs in the same place it was at diagnosis.

Giving a higher dose of radiotherapy to this area might help keep cancer under control for longer. However, increasing the dose of radiotherapy for all patients is not required. Our previous research showed that a tool used for the evaluation of treatment response and assessment of disease progression called a diffusion-weighted (DW)-MRI scan, carried out before and during treatment can determine which patients are most likely to have a recurrence. This study will use these scans to identify which patients are at risk of their cancer coming back after treatment.

Who can participate?
Adult patients with oropharyngeal squamous cell carcinoma

What does the study involve?
A DW-MRI scan will be done before the start of radiotherapy and repeated after 2 weeks of treatment then analysed by the specialist team.
If the MRI scans show the cancer is not responding to the usual radiotherapy dose, a higher dose of radiotherapy will be given for the second half of the treatment. If the scans show the cancer is responding well to radiotherapy, the standard dose of radiotherapy will continue to be delivered. Identifying cancers in patients where the radiotherapy is not working well enough during treatment and changing the radiotherapy plan may lead to better treatment in the long term but are very different to how things are done now. One aim of this study is to see how practical the extra steps involved in changing the treatment plan are and work out the best way of doing this. The study will also gather information from participants about side effects and the impact on patients' quality of life during and after treatment – an important way for us to make sure that increasing the dose of radiotherapy is acceptable.

What are the possible benefits and risks of participating?
A possible benefit of participating is a higher chance of the participants' cancer being kept under control or cured. Some participants may also benefit from increased support during the monitoring of the study and regular contact with members of the study team.
Possible risks of participating are listed as the following possible side effects:
Side effects associated with radiotherapy treatment (radiotherapy is standard of care so no additional risk with participating in the study):
1. Tiredness. Most patients feel extremely tired after radiotherapy and plenty of rest is recommended. Tiredness can continue long-term.
2. Skin soreness. The area where radiotherapy is given (face and neck) may become red and sore after treatment (like sunburn). The team can prescribe creams to manage this.
3. Skin fibrosis. In the long term, skin can become thicker and darker.
4. Dry mouth. Saliva can become thick and sticky. In the long term, the patient may need to rinse their mouth frequently with water or use artificial saliva.
5. Oral mucositis. This is an inflammation of the lining of the mouth causing sores, pain and possible infections that are usually treated with painkillers and antibiotics. Mouthwashes will be prescribed to help with these symptoms.
6. Poor appetite and weight loss. The patient may be referred to a dietician for nutritional advice.
7. Swallowing problems. Swallowing can become difficult. Most patients will need to change their diet (for example soft food only). During treatment or within 3 months after the end of treatment a temporary feeding tube through your nose or your stomach may be necessary. The need for the feeding tube in the long term is quite rare (less than 10% of patients).
8. Alteration of your taste. Taste will change. Most patients describe their food as tasting “metallic” or “like cardboard”. In the long term, most patients report minimal taste changes or complete recovery.
9. Osteradionecrosis of the mandible. The jawbone can be affected by radiotherapy (this happens in less than 10% of patients). The patient may develop pain, infections or tooth loss. There is no specific treatment for this condition. Some patients can benefit from painkillers and vitamins. In rare cases, surgical treatment is required.

Modern radiotherapy techniques allow us to reduce harm to the surrounding healthy organs while delivering high doses of radiotherapy to the tumour.
Possible side effects associated with study tests:
Blood sample collection. This may cause a small amount of bleeding and temporary discomfort or the patient may feel faint. Sometimes a bruise or redness develops at the site where the needle was inserted (but this will clear after a week or two). Patients are asked to inform the study doctor or research nurse if they experience any reactions at the injection site.
DW-MRI scan. Side effects from the dye injected for the scan may include nausea, vomiting or headache. Allergic reactions are rare.
Research Biopsy. This may cause pain, bleeding and bruising at the site of the biopsy. The biopsy can also cause a sore throat or infection at the biopsy site.

Participants will be monitored closely for these and any other side effects and will have regular appointments with the study doctor, nurse, or radiographer as well as a telephone number to contact the research staff if they are concerned about possible side effects.
Where possible, other treatments may be given to make side effects less serious or uncomfortable. Many side effects go away after the study treatment is reduced or stopped but in some cases, side effects can be serious, long-lasting, or permanent (even with standard treatment).

Although we are able to target the radiotherapy accurately to the tumour we know that side effects still occur as the healthy tissue around the cancer is exposed to some radiation. The

chances of more serious side effects may be slightly higher with the increased dose of radiotherapy than the standard dose. Experts designing this study and reviewing the study independently think that this is very unlikely.

Where is the study run from?
Beatson West of Scotland Cancer Centre (UK)

When is the study starting and how long is it expected to run for?
April 2022 to July 2026

Who is funding the study?
Beatson Cancer Charity (UK)

Who is the main contact?
Ann Shaw (Project Manager)
ann.shaw@glasgow.ac.uk

# Contact information

### Type(s)
Principal investigator

### Contact name
Dr Claire Paterson

### ORCID ID
https://orcid.org/0000-0002-1691-5016

### Contact details
Beatson West of Scotland Cancer Centre
1053 Great Western Road
Glasgow
United Kingdom
G12 0YN
+44 (0)141 301 7066
Claire.Paterson2@ggc.scot.nhs.uk

### Type(s)
Public

### Contact name
Ms Ann Shaw

### ORCID ID
https://orcid.org/0000-0003-4011-9893

### Contact details
The Beatson West of Scotland Cancer Centre
1053 Gt. Western Road
Glasgow
United Kingdom

G12 9XW
+44 (0)1413017189
ann.shaw@glasgow.ac.uk

### Type(s)
Scientific

### Contact name
Dr Claire Paterson

### ORCID ID
https://orcid.org/0000-0002-1691-5016

### Contact details
1053 Gt. Western Road
Glasgow
Glasgow
United Kingdom
G12 9XW
+44 (0)141 301 7066
claire.paterson2@ggc.scot.nhs.uk

## Additional identifiers

### Integrated Research Application System (IRAS)
318567

## Study information

### Scientific Title
Biologically adaptive radiotherapy for oropharyngeal cancer

### Acronym
BARitOne

### Study objectives
It is feasible to deliver diffusion-weighted (DW)-magnetic resonance imaging (MRI)-guided response-adapted radiotherapy

### Ethics approval required
Old ethics approval format

### Ethics approval(s)
Approved 16/05/2023, West of Scotland Research Ethics Service (Clinical Research and Development, Dykebar hospital, Grahamston Road, Dykebar, Paisley, PA2 7DE, UK; +44 (0)141 314 0211; WestofScotland.ResearchEthicsCommittee1@ggc.scot.nhs.uk), ref: 23/WS/0056

### Primary study design
Interventional

## Study design
Single-centre R-IDEAL-framework stage 2a (development) and 2b (exploration) study

## Study type(s)
Screening

## Health condition(s) or problem(s) studied
Oropharyngeal cancer, stage III/IVa/IVb

## Interventions
Potentially eligible patients will be identified and assessed by the clinician coordinating their care or delegated members of the research team. Potential participants will be given sufficient time (in their own judgement) to consider the commitment required to fulfil trial requirements and to decide whether or not they wish to participate. Where possible, patients will be given at least 24 hours. Patients may choose to defer consent if they require additional time and will be offered a follow-up telephone call. In addition, all patients will be made aware that participation is voluntary and they may withdraw at any time without their standard care being affected. For remote consent, the Patient Information Sheet can be posted or emailed to the patient and then remote consent sought, via telephone or videoconference. The study must have been adequately explained to the patient and the patient must have had the opportunity to ask questions.

Patients are not randomized. All consenting eligible participants start on the 6 weeks of standard radiotherapy treatment. A diffusion-weighted (DW)-magnetic resonance imaging (MRI) scan will be done before the start of radiotherapy and repeated after 2 weeks of treatment. These scans will be analysed by the specialist team:
1. If the MRI scans show that the cancer is not responding to the usual radiotherapy dose, a higher dose of radiotherapy will be given for the second half of the treatment
2. If the scans show that the cancer is responding well to radiotherapy, standard treatment will continue, and the standard dose of radiotherapy will be delivered.

All patients will be followed up at the end of treatment, 4 weeks post-treatment then 3 and 6 months after completion of treatment.

## Intervention Type
Procedure/Surgery

## Primary outcome(s)
The proportion of patients able to complete diffusion-weighted (DW)-magnetic resonance imaging (MRI)-guided response-adapted radiotherapy measured by 50% of patients having completed DW-MRI guided response adapted RT at the end of the study as per data collected in the study database

## Key secondary outcome(s)
Evaluation of the outcomes of patients undergoing DW-MRI guided radiotherapy as follows:
1. The proportion of Grade 3+ acute toxicity rates, comparing dose-escalated and standard RT cohorts, measured using data collected in the study database for analysis. Toxicity and adverse events will be collected and recorded throughout treatment, at the end of treatment, post-treatment and at 3 and 6 months after completion of treatment.
2. Patient-reported quality of life scores, comparing dose-escalated and standard RT cohorts, measured using data collected in the study database for analysis prior to treatment, at the end

of treatment, 4 weeks post-treatment, and 3 months and 6 months after completion of treatment
3. Loco-regional control rates at 12 and 24 months, overall survival, and cancer-specific survival, comparing dose-escalated and standard RT cohorts, measured using data from medical records at 12 and 24 months after completion of treatment

### Completion date
31/07/2026

## Eligibility

### Key inclusion criteria
1. Histologically confirmed HPV-negative oropharyngeal squamous cell carcinoma (OPSCC) or HPV-positive OPSCC and significant smoking history (>20 pack years) within the past 20 years
2. Stage III, IVa or IVb OPSCC
3. Scheduled for single modality photon radiotherapy as primary radical treatment
4.18 years old and over
5. Able to give informed consent
6. Patients willing and able to comply with the protocol for the duration of the study

### Participant type(s)
Patient

### Healthy volunteers allowed
No

### Age group
Mixed

### Lower age limit
18 Years

### Upper age limit
110 Years

### Sex
All

### Total final enrolment
0

### Key exclusion criteria
1. Head and neck cancers from sub-sites other than oropharynx
2. HPV-positive oropharyngeal squamous cell carcinoma (OPSCC) in patients with no significant smoking history (low-risk OPSCC)
3. Confirmed distal metastatic disease (stage IVc)
4. Patients who have undergone primary surgery for OPSCC (including neck dissection)
5. Patients who have received induction chemotherapy prior to definitive treatment
6. Patients receiving chemoradiotherapy or cetuximab-radiotherapy
7. Prior radiotherapy to the head and neck region

8. Patients with contra-indications to MRI scanning
9. Patients who do not adequately understand verbal or written information

**Date of first enrolment**
24/08/2023

**Date of final enrolment**
31/10/2025

# Locations

**Countries of recruitment**
United Kingdom

Scotland

**Study participating centre**
**Beatson West of Scotland Cancer Centre**
1053 Great Western Road
Glasgow
Scotland
G12 0YN

# Sponsor information

**Organisation**
NHS Greater Glasgow and Clyde

**ROR**
https://ror.org/05kdz4d87

# Funder(s)

**Funder type**
Charity

**Funder Name**
Beatson Cancer Charity

**Alternative Name(s)**

**Funding Body Type**

Private sector organisation

**Funding Body Subtype**
Other non-profit organizations

**Location**
United Kingdom

# Results and Publications

## Individual participant data (IPD) sharing plan

### IPD sharing plan summary
Data sharing statement to be made available at a later date

### Study outputs

| Output type | Details | Date created | Date added | Peer reviewed? | Patient-facing? |
|---|---|---|---|---|---|
| Protocol article | | 25/07/2026 | 10/08/2026 | Yes | No |
| Participant information sheet | version 1 | 31/10/2022 | 01/11/2022 | No | Yes |