Technoleg Iechyd Cymru
Health Technology Wales

Topic Exploration Report

This report summarises the results of a brief exploration to establish the quantity and quality of existing high-level evidence on the procedure of interest.

Topic:	Supraclavicular fossa (SCF) nodal volume contouring for people requiring locoregional adjuvant breast radiotherapy
Topic proposer	Catherine Pembroke
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Prepared by	Cedar (Cardiff & Vale University Health Board)
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Purpose

On behalf of Health Technology Wales, Cedar researchers conducted a rapid review of evidence on the implementation and use of supraclavicular fossa (SCF) nodal volume contouring for people requiring locoregional adjuvant breast radiotherapy. This exploratory summary will inform the prioritisation of radiotherapy procedures to be introduced at Velindre Cancer Centre (VCC), alongside expert opinion and other considerations. It could also be used to clarify the scope of an evidence appraisal. Some of the background information and resource impact considerations was submitted by clinical teams at VCC.

Background

The risk of local recurrence has decreased and overall survival of breast cancer has improved in recent years and it is therefore important to consider the risks of late morbidity from radiotherapy. Nodal radiotherapy fields are generally defined using anatomical landmarks but a transition from 2D to 3D radiotherapy planning nodal contouring is now possible which allows shaping the radiotherapy fields closely around the target volumes with steep dose gradients between the clinical target volumes (CTV) and the organs at risk (OAR) (Offerson, 2014). One trial reported results suggesting delivery of a homogeneous dose distribution, improved cosmetic outcomes and the quality of life of patients (Donovan, 2007).

Centres in Australia and New Zealand are increasingly contouring breast/chest wall and regional node clinical target volumes for treatment planning purposes according to European Society for Radiotherapy and Oncology (ESTRO) consensus guidelines, although for clinicians who did not routinely contour target volumes, the reason given was a lack of evidence (Nguyen, 2017).

Proposed PICO	
Population	Patients requiring locoregional adjuvant breast radiotherapy
Intervention	SCF contouring of nodal volume
Comparator	Whole Breast Irradiation without SCF contouring
Outcome measures	Locoregional recurrence, treatment toxicity/adverse events, disease free survival, overall survival

Summary of findings

No high quality evidence (systematic reviews or randomised trials) was identified; searches indicate a small number of possible studies of lesser quality (cohort studies) which may provide some evidence to support introduction of SCF contouring.

There appears to be limited evidence comparing different ways in which radiotherapy can be tailored to improve delivery. In a single centre study with 20 patients (Ranger, 2018) showed that a points based algorithm is capable of meeting target volume dose constraints and organ at risk (OAR) constraints in most cases tested when compared with target volume delineation. A second study reported on the development of an automated treatment planning workflow for creating hybrid RapidArc plans (van Duren-Koopman, 2018). Results suggest that automated planning times were shorter than manual planning times and that both plans were dosimetrically similar.

Economic impact

The main cost for implementation of SCF contouring appears to be in the increased staff time resulting from the increase in planning time as well as additional cost of training and development. The topic proposer estimates that the additional planning time would cost in the region of £8200 per annum while training and development costs would be in the region of £5500 (£1100 for clinicians and £4400 for physics staff) but these costs are based on costs on at mid-scale so there is likely to be variation. There do not appear to be any additional equipment costs. The total estimated cost of implementation of SCF contouring is therefore estimated as approximately £13700.

Prioritisation criteria

Clinical impact (Potential for the technology to have an impact on patient-related health outcomes):
The improvement to clinical outcomes appears to be in the reduction of radiation delivered to adjacent organs/tissues without compromising the target dose which may represent a major clinical improvement, albeit in a small number of patients

Budget impact (Impact of the technology on health care spending):
Total cost of implementation appears to be low based on estimates from the topic proposer although there are different techniques/methods which may require additional software/equipment potentially resulting in extra costs.

Population impact (The size of the population that would be affected by the technology):
Affect approximately 202 patients which represents approximately 7% of breast cancer patients in Wales (based on 2872 people diagnosed in 2014 (WCISU)).

Equity (The technology has the potential to introduce, increase, or decrease equity in health status):
No equity issues identified.

Questions for researcher

Based on the sources you have identified, is your impression that the evidence is likely to:

- favour implementation of the procedure?
- favour standard care?
- be inconclusive?

There is limited evidence available for the use of SCF contouring in breast cancer, however the available evidence indicates a possible benefit.

Questions for topic proposer

- The topic proposal states that this would replace whole breast radiotherapy but the table in the topic proposal suggests that current treatment is WBI with or without SCF and the proposed treatment is WBI with SCF. Please confirm whether the proposed treatment is WBI+SCF or is SCF alone?
- Could the topic proposer reference the source of costs (PSSRU etc)? The stated staff costs are based on mid-scale presumably NHS agenda for change bandings; it would be useful to have the band stated.
- What is the impact of using the top of the scale on the costs?

Sources of evidence

- Donovan E, et al. (2007) Randomised trial of standard 2D radiotherapy (RT) versus intensity modulated radiotherapy (IMRT) in patients prescribed breast radiotherapy. Radiotherapy and Oncology 82:254-64
- Nguyen K et al (2017) Breast interest group faculty of radiation oncology: Australian and New Zealand patterns pf practice survey on breast radiotherapy Journal of Medical Imaging and Radiation Oncology 61;4
- Offerson B et al (2015) ESTRO consensus guideline on target volume delineation for elective radiation therapy of early stage breast cancer Radiotherapy and Oncology 114:3-10
- Ranger A et al (2018) Evaluation of a novel field placement algorithm for locoregional breast cancer radiotherapy including the internal mammary chain Clinical Oncology (article in press)
- van Duren-Koopman M et al (2018) Personalized automated treatment planning for breast plus locoregional lymph nodes using hybrid rapid arc Practical Radiation Oncology 8;5:332-341

Appendix - Brief literature search results

Resource	Results
UK guidelines and guidance	
NICE	N=0
Healthcare Improvement Scotland	N=0
Guidelines International Network	N=0
SIGN	N=0
Secondary literature and economic evaluations	
e.g.Cochrane library; Medline *systematic reviews, meta-analyses, economic evaluations*	N=0
Primary studies	
Medline *RCTs; observational studies*	N=32
Cochrane *trials database*	N=0
Ongoing secondary research	
Clinicaltrials.gov	N=0

Date of search:	23rd November 2018
Concepts searched:	breast neoplasm, breast cancer, radiotherapy, treatment planning, nodal contouring