GIG CYMRU NHS WALES

Pwyllgor Gwasanaethau Iechyd Arbenigol Cymru (PGIAC)

Welsh Health Specialised Services Committee (WHSSC)

Specialised Services Commissioning Policy: CP124

Stereotactic ablative radiotherapy (SABR) for patients with hepatocellular carcinoma (HCC) (Adults)

December 2021

Version 1.0

PARCH - RESPECT

PARTNERIAETH - PARTNERSHIP

GWELLA AC ARLOESI - IMPROVEMENT & INNOVATION

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Document purpose	Policy
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Author	Welsh Health Specialised Services Committee
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Commissioning Team	Cancer & Blood
Target audience	Chief Executives, Medical Directors, Directors of Finance, Radiographers, Oncologists, Medical Physics, Urologists, Cancer Services
Description	NHS Wales routinely commission this specialised service in accordance with the criteria described in this policy
Document No	CP124
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Contents

Policy Statement

Welsh Health Specialised Services Committee (WHSSC) commission Stereotactic Ablative Body Radiotherapy (SABR) for adults with hepatocellular carcinoma (HCC) in accordance with the criteria outlined in this document.

In creating this document WHSSC has reviewed this clinical condition and the options for its treatment. It has considered the place of SABR in current clinical practice, whether scientific research has shown the treatment to be of benefit to patients, (including how any benefit is balanced against possible risks) and whether its use represents the best use of NHS resources.

Disclaimer

WHSSC assumes that healthcare professionals will use their clinical judgment, knowledge and expertise when deciding whether it is appropriate to apply this policy.

This policy may not be clinically appropriate for use in all situations and does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

WHSSC disclaims any responsibility for damages arising out of the use or non-use of this policy.

1. Introduction

This policy has been developed for the planning and delivery of Stereotactic Ablative Body Radiotherapy (SABR) for adults with hepatocellular carcinoma (HCC) and resident in Wales.

1.1 Plain Language Summary

Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer. This type of liver cancer develops from the main liver cells called hepatocytes. The disease is more likely to develop in men than women and becomes more common in older people.[1]

There are approximately 170 new diagnoses of hepatocellular carcinoma per year in Wales[2] and the number of diagnoses is increasing due to people living with obesity, viral hepatitis and alcohol excess. These things cause damage and scarring of the liver (known as cirrhosis), which increases the likelihood of hepatocellular carcinoma developing.

SABR is a highly targeted form of radiotherapy which targets a tumour with radiation beams from different angles at the same time. The treatment is delivered in a smaller number of treatments (hypofractionation) than conventional radiotherapy using one, three, five or eight fractions. The aim of treatment with SABR is to ensure that the tumour receives a high dose of radiation whilst the tissues close to the tumour receive a lower dose of radiation sparing the surrounding healthy normal tissues.

1.2 Aims and Objectives

This policy aims to define the commissioning position of WHSSC on the use of SABR for people with HCC.

The objectives of this policy are to:

- ensure commissioning for the use of SABR is evidence based
- ensure equitable access to SABR
- define criteria for people with HCC to access treatment
- improve outcomes for people with HCC.

1.3 Epidemiology

HCC is the most common form of primary liver cancer. The disease is more common in males than females and the risk of developing the disease increases with age, with the peak rate of incidence being in people aged between 85 – 85 years of age[1]. Liver cancer incidence rates are projected to rise by 38% in the UK between 2014 and 2035 and this includes a larger increase for males than for females[3].

[1] Cancer Research UK
[2] WCISU Cancer incidence in Wales dashboard
[3] Liver cancer statistics | Cancer Research UK

In 2017, there were 289 cases of liver cancer in Wales[4]. Of the 289, 169 had HCC. The SABR Clinical Advisory Group estimated that approximately 6 people with HCC would be eligible for SABR treatment per year in Wales in line with the criteria set out in this document.

1.4 Current Treatment

There are many available treatment options for HCC and the choice of treatment depends on a number of factors including:

i) the stage of the disease at diagnosis
ii) patient co-morbidities
iii) liver function, and
iv) patient choice.

Surgical resection and liver transplant are available choices to treat early stage disease. However, most people present with either severe co-morbidities or advanced disease meaning that treatment with surgery and liver transplant is not always possible.

For people unsuitable for surgery or transplant, local ablative treatments such as radiofrequency ablation (RFA) can be offered. Transcatheter arterial chemoembolisation (TACE) is also another possible treatment option, however, the treatment is associated with cumulative toxicity imposing a limit on the amount times a patient can undergo TACE.

Systemic chemotherapy, using an oral tyrosine kinase inhibitor called sorafenib[5] can be used with palliative intent to improve local control.

1.5 Proposed Treatment

The policy considers whether SABR, a form of hypofractionated radiotherapy, should be routinely offered for the treatment of localised HCC. The use of SABR in this indication is thought to stop further growth of the lesion (or cancer), supporting the management of any associated symptoms of the disease; this is referred to as local control.

The use of SABR in this indication would offer an additional treatment option for people unsuitable for any of current treatments but would also offer an alternative treatment option for people currently eligible for treatment with either RFA or systemic treatments such as Sorafenib, delaying or avoiding the use of these treatments.

[4] WCISU Cancer incidence in Wales dashboard
[5] National Institute for Health and Care Excellence (NICE) Technology Appraisal TA474

1.6 What NHS Wales has decided

WHSSC has carefully reviewed the evidence of SABR for HCC. We have concluded that there is enough evidence to fund the use of SABR, within the criteria set out in section 2.1.

1.7 Relationship with other documents

This document should be read in conjunction with the following documents:

- **NHS Wales**
  - All Wales Policy: Making Decisions in Individual Patient Funding requests (IPFR).

- **WHSSC policies and service specifications**
  - CP76 Stereotactic Ablative Body Radiotherapy (SABR) for the management of surgically inoperable Non-Small Cell Lung Cancer in Adults. May 2014
  - Commissioning Policy Stereotactic Ablative Body Radiotherapy (SABR) for metachronous extracranial oligometastatic cancer (all ages). In Development

- **Relevant NHS England policies**
  - Clinical Commissioning Policy: Stereotactic ablative radiotherapy (SABR) for patients with for Hepatocellular Carcinoma (Adults) (URN: 1913) [200206P] March 2020
  - Service Specification: Radiotherapy B01/S/a 2013

- **Other published documents**
  - Stereotactic Ablative Body Radiation Therapy (SABR): A Resource, SABR UK Consortium Version 6.1 January 2019

2. Criteria for Commissioning

The Welsh Health Specialised Services Committee approve funding of Stereotactic Ablative Body Radiotherapy (SABR) for adults with hepatocellular carcinoma (HCC in-line with the criteria identified in this policy.

2.1 Inclusion Criteria

To receive treatment with SABR patients will need to meet **all** of the following criteria:

- A confirmed diagnosis of localised HCC (primary, recurrent or progressive disease) by at least one criterion listed below:
    - pathologically (histologically or cytologically) proven diagnosis of HCC.
    - at least one solid liver lesion or vascular tumour thrombosis (involving portal vein, IVC and/or hepatic vein) > 1 cm with arterial enhancement and delayed washout on multiphasic Computed-Tomography (CT) or Magnetic Resonance Image (MRI) in the setting of cirrhosis or chronic hepatitis B or C without cirrhosis.
- Show no evidence of extrahepatic metastases or malignant nodes (that nenhance with typical features of HCC) > 3.0 cm in sum of maximal diameters.
- Be unsuitable for surgical resection or transplant.
- Be unsuitable or refractory to TACE.
- Have had a history/physical examination including examination for encephalopathy, ascites, and a World Health Organisation (WHO) Performance Status ≤2.
- Have adequate haematological and liver function.
- Have a Childs-Pugh score of Class A only.
- Have a maximum single tumour size of $\leq$10 cm, including any associated thrombus.
- Have a Liver volume minus intrahepatic GTV of >700 cc and intrahepatic tumour GTV/liver volume ratio of <80%.
- Have a life expectancy greater than six months.

SABR should be considered as an alternative treatment in people currently eligible for systemic treatments (such as sorafenib) and/or local ablative treatments.

Any patients suitable for SABR must have recovered from the effects of previous surgery, radiotherapy or chemotherapy with a minimum of 4 weeks break prior to treatment with SABR.

2.2 Exclusion Criteria

SABR is only commissioned for people who meet the criteria in section 2.1. Treatment with SABR is unsuitable in people with:

- Clinically significant liver failure (encephalopathy, oesophageal varices, portal hypertension).
- Prior abdominal radiotherapy precluding SABR, that is any previous radiation therapy in which a mean dose to the liver of 15 Gray (Gy) in conventional fractionation was delivered or previous doses to critical normal structures that would make re-irradiation unsafe. Prior pelvic radiation is permitted, as long as there is no overlap between pelvic and liver radiation fields.
- Clinically apparent ascites.
- Maximum single tumour size >10 cm.
- More than 5 discrete intrahepatic parenchymal foci of HCC.
- Direct tumour extension into the stomach, duodenum, small bowel or large bowel.
- Evidence of extrahepatic metastases or malignant nodes (that enhance with typical features of HCC) > 3.0 cm in sum of maximal diameters (e.g. 2 lung lesions >2 cm).
- Prior liver transplant.

2.3 Dose and fractionation

It is expected that prescription doses of 30-50 Gy in 5 fractions of SABR should be delivered in the treatment of HCC.

2.4 Continuation of Treatment

Healthcare professionals are expected to review a patient's health at regular intervals to ensure they are demonstrating an improvement to their health due to the treatment being given.

If no improvement to a patient's health has been recorded then clinical judgement on the continuation of treatment must be made by the treating healthcare professional.

2.5 Acceptance Criteria

The service outlined in this specification is for patients ordinarily resident in Wales, or otherwise the commissioning responsibility of the NHS in Wales. This excludes patients who whilst resident in Wales, are registered with a GP practice in England, but includes patients resident in England who are registered with a GP Practice in Wales.

2.6 Patient Pathway (Annex i)

Radiotherapy is part of an overall cancer management and treatment pathway. Decisions on the overall treatment plan should relate back to an MDT discussion and decision. Patients requiring radiotherapy are referred to a clinical oncologist for assessment, treatment planning and delivery of radiation fractions. Each fraction of radiation is delivered on one visit, usually on an outpatient basis.

2.7 Designated Centres

- Velindre Cancer Centre
  Velindre Road
  Whitchurch
  Cardiff
  CF14 2TL

- Clatterbridge Cancer Centre NHS Foundation Trust
  Clatterbridge Road
  Birkenhead
  Wirral
  CH63 4JY

- Queen Elizabeth Hospital
  University Hospitals Birmingham NHS Foundation Trust
  Mindelsohn Way
  Edgbaston, Birmingham
  B15 2GW

2.8 Exceptions

If the patient does not meet the criteria for treatment as outlined in this policy, an Individual Patient Funding Request (IPFR) can be submitted for consideration in line with the All Wales Policy: Making Decisions on Individual Patient Funding Requests. The request will then be considered by the All Wales IPFR Panel.

If the patient wishes to be referred to a provider outside of the agreed pathway, and IPFR should be submitted.

Further information on making IPFR requests can be found at: Welsh Health Specialised Services Committee (WHSSC) | Individual Patient Funding Requests

2.9 Clinical Outcome and Quality Measures

The Provider must work to written quality standards and provide monitoring information to the lead commissioner.

The centre must enable the patient's, carer's and advocate's informed participation and to be able to demonstrate this. Provision should be made for patients with communication difficulties and for children, teenagers and young adults.

Radiotherapy providers must submit their activity to the national Radiotherapy Dataset (RTDS) on a monthly basis. Providers will collect the audit clinical outcome data through their own collection process for all SABR.

The SABR Consortium Guidelines 2019 provide detailed information on each indication contained within this policy.

The radiotherapy service should be fully compliant with the Ionising Radiation (Medical Exposure) Regulations (IR(ME)R) 2017.

Clinical governance systems and policies should be in place and integrated into the organisational governance with clear lines of accountability and responsibility for all clinical governance functions. Providers should produce annual clinical governance reports as part of the NHS clinical governance reporting system. Providers must have an externally accredited quality management system (e.g. BSI) in place.

All providers must be compliant with radiotherapy quality assurance for contouring and outlining. A national approach to regular peer review of patient eligibility and treatment plans will be required.

In addition, all providers of treatment with SABR must:

- ensure all patients treated are subject to an MDT approach to patient selection and treatment including discussion at the HBP MDT and SABR planning group;
- have an adequate technical multi-professional radiotherapy SABR team present and able to deliver SABR radiotherapy; and
- have minimum of two subspecialist clinical oncologists with experience in treating SABR patients.

2.10 Responsibilities

Referrers should:

- inform the patient that this treatment is not routinely funded outside the criteria in this policy, and
- refer via the agreed pathway.

Clinicians considering treatment should:

- discuss all the alternative treatment with the patient
- advise the patient of any side effects and risks of the potential treatment
- inform the patient that treatment is not routinely funded outside of the criteria in the policy, and
- confirm that there is contractual agreement with WHSSC for the treatment.

In all other circumstances an IPFR must be submitted.

3. Evidence

WHSSC is committed to regularly reviewing and updating all of its commissioning policies based upon the best available evidence of both clinical and cost effectiveness.

The two main sources of evidence that describe the use of SABR in people with hepatocellular carcinoma (adults) are provided by NHS England (NHS England 2020) and an evaluation report of the SABR Commissioning through Evaluation (CtE) programme (KiTEC, 2019).

Overall survival

SABR v sorafenib

The best evidence on median overall survival (OS) is provided by the retrospective observational study by Bettinger et al. (2018) that included 190 patients in the matched cohort and compared SABR to sorafenib. Median OS in the SABR group was 17.0 months (95% CI 10.8-23.2) compared to 9.6 months (95% CI 8.6-10.7) in the sorafenib group.

After propensity score matching, patients treated with SABR had an improved progression-free survival (PFS) compared to patients treated with sorafenib (9.0 vs. 6.0 months).

SABR v RFA

The best evidence on OS is provided by the retrospective observational study by Wahl et al (2016) that included 224 patients and compared SABR with radiofrequency ablation (RFA) and reported OS at 1 and 2 years of 69.6% and 52.9% after RFA and 74.1% and 46.3% after SABR.

The study performed a retrospective comparison between the two groups. Despite the use of propensity score matching to account for baseline differences among the participants, patient selection and outcome detection bias cannot be excluded between the two cohorts. The 1- and 2-years local control rates reported by Wahl et al. (2016) are comparable to the SABR results reported by the Rim et al. (2019) meta-analysis of non-comparative studies. Overall, there is some uncertainty about this outcome.

Non comparative studies

The best non-comparative evidence on actuarial survival is provided by the Rim et al. (2019) systematic review and meta-analysis that included 32 observational single-arm studies (n=1950 patients) and reported 1-, 2-, and 3-year OS rates of 72.6% (95% CI 65.7- 78.6), 57.8% (95% CI 50.9-64.4), and 48.3% (95% CI 40.3-56.5) respectively.

Local control

The best evidence on local control (LC) is provided by the retrospective observational study by Wahl et al (2016) that included 224 patients and compared SABR with radiofrequency ablation (RFA). The study reported LC at 1 and 2 years of 97.4% and 83.6% with SABR and 83.6% and 80.2% with RFA. After adjusting for tumour size LC was no statistically different between the two groups.

The best non-comparative evidence is provided by the Rim et al. (2019) systematic review and meta-analysis that included 32 observational single-arm studies (n=1950 patients) and reported 1-year LC of 85.7% (95% CI 80.1-90.0) and 2-years LC of 83.6% (95% CI 77.4-88.3).

No evidence on LC comparing SABR to sorafenib was identified.

Size of lesion

The decision to allow SABR to be performed on people with a maximum single tumour size $\leq$ 10cm is supported by the SABR UK consortium (2019 and by Beaton et al (2019). Outcomes for people with single lesions >5 cm are poor post-TACE with local recurrence rates of 67%. Data from Beaton et al (2020) report one year a local control rate of 92%, one year overall survival rate of 62% and median overall survival of 17.7 months for people with HCC and a single lesion $\geq$ 5cm and <10 cm receiving SABR.

Quality of life

The best evidence on QoL is provided by the prospective, non-comparative observational study by Klein et al (2015) that included 99 patients with hepatocellular carcinoma and captured QoL outcomes up to 12 months post SABR treatment.

The study did not report a difference in QoL between baseline (137.4) and after SABR treatment (3 months = 133.4, 12 months = 135.1) using the Functional Assessment of Cancer Therapy-Hepatobiliary (FACT-Hep) checklist. No difference was also reported using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core-30 (EORTC QLQ-C30) checklist with baseline=65.8, 3-months=62.9 and 12-months=64.5.

Safety

The Rim et al. (2019) systematic review and meta-analysis reported toxicity rates from 23 of 33 included studies. The most commonly reported complications of grade ≥3 were gastrointestinal (GI) or hepatic toxicities with a pooled rate of 3.9% (95% CI 2.6-5.6%) for the former and 4.7% (95% CI 3.4-6.5%) for the latter. An association between Child-Pugh score and toxicity was found but not with either tumour size or radiation dose.

The meta-analysis also looked at separately the results of the three studies that reported high rates of grade ≥3 toxicity. The authors concluded that considering the pooled rates of complications and the fact that complications at high rates were mostly due to transient liver enzyme elevation and possibly caused by chronic liver disease, the use of SABR to treat patients with HCC was safe.

Commissioning through Evaluation (CtE) Report

Between 2015 and 2018, the Commissioning through Evaluation (CtE) registry collected data on a number of outcomes, including survival (KiTEC 2019). Data were collected on outcomes from 91 patients recruited from 7 UK centres. The mean age of patients was 72 years, and most (72.5%) were men. The cohort was mainly comprised of patients with a single lesion. The data analysis of the CtE reported overall survival (OS) of 76.5% (95% CI: 62.4 to 85.9%) at 1 year and 41.7% at 2 years (95% CI: 22.4 to 60.0%). The reported OS (including 95%CIs) is in agreement with the findings of the published literature.

The CtE data analysis also reported a local control (LC) rate of 72.3% (95% CI: 57.9-82.5%) at 1 year and 52.4% (95% CI: 25.2-73.9%) at 2 years. The 2-year LC rate is lower than the rate reported in the published literature. However, the CtE used a different definition of local control to the published studies so the results are not easily comparable.

Data on QoL were available for 88 (97%) patients of the CtE. According to the summary analysis, the proportion of patients reporting no problems, some problems and severe problems remained stable for the mobility and anxiety/depression outcomes. There was a small increase in the proportion of patients reporting problems with their self-care, usual activities, and pain/discomfort between baseline and 12 months follow-up. The result seems to be in agreement with the literature that reported no significant impact in most QoL outcomes of SABR treatment in patients with liver cancer.

The analysis of CTCAE adverse events showed 12.1% (95% CI 6.8-20.7) of patients suffered grade 3 events, while 3.3% (95% CI 1.1-9.9%) suffered grade 4 events. No patient suffered grade 5 toxicity.

Longitudinal analysis of the adverse events rates showed that a high proportion of patients (57%) reported symptoms consistent with CTCAE grade 1 and above adverse events at baseline before SABR treatment started.

3.1 References

Beaton et al (2020). Stereotactic Body Radiotherapy for large unresectable hepatocellular carcinomas – a single institution phase II study. Clinical Oncology 32: 423-432.

Bettinger et al (2018). Stereotactic Body Radiation Therapy as an alternative treatment for patients with Hepatocellular Carcinoma compared to Sorafenib: A Propensity Score Analysis. *Liver Cancer* 1-14.

NHS England (2020). Stereotactic Ablative Radiotherapy (SABR) for Hepatocellular Carcinoma (adults)

KiTEC. (2019). Commissioning through Evaluation: Stereotactic ablative radiotherapy (SABR). King's College Technology Evaluation Centre, London.

Klein et al (2015). Prospective Longitudinal Assessment of Quality of Life for liver cancer patients treated with Stereotactic Body Radiation Therapy. *International Journal of Radiation Oncology, Biology, Physics* 93(1): 16-25.

Rim et al (2019). Clinical feasibility and efficacy of stereotactic body radiotherapy for hepatocellular carcinoma: A systematic review and meta-analysis of observational studies. *Radiotherapy & Oncology* 131: 135-44.

SABR UK consortium (2019). Stereotactic Ablative Body Radiation Therapy (SABR): A Resource (version 6.1).

Wahl et al (2016). Outcomes after Stereotactic Body Radiotherapy or Radiofrequency Ablation for Hepatocellular Carcinoma. *Journal of Clinical Oncology* 34(5): 452-9.

3.2 Date of Review

This document is scheduled for review in 2024.

4. Equality Impact and Assessment

The Equality Impact Assessment (EQIA) process has been developed to help promote fair and equal treatment in the delivery of health services. It aims to enable Welsh Health Specialised Services Committee to identify and eliminate detrimental treatment caused by the adverse impact of health service policies upon groups and individuals for reasons of race, gender re-assignment, disability, sex, sexual orientation, age, religion and belief, marriage and civil partnership, pregnancy and maternity and language (Welsh).

This policy has been subjected to an Equality Impact Assessment.

The Assessment demonstrates the policy is robust and there is no potential for discrimination or adverse impact. All opportunities to promote equality have been taken.

5. Putting Things Right:

5.1 Raising a Concern

Whilst every effort has been made to ensure that decisions made under this policy are robust and appropriate for the patient group, it is acknowledged that there may be occasions when the patient or their representative are not happy with decisions made or the treatment provided.

The patient or their representative should be guided by the clinician, or the member of NHS staff with whom the concern is raised, to the appropriate arrangements for management of their concern.

If a patient or their representative is unhappy with the care provided during the treatment or the clinical decision to withdraw treatment provided under this policy, the patient and/or their representative should be guided to the LHB for NHS Putting Things Right. For services provided outside NHS Wales the patient or their representative should be guided to the NHS Trust Concerns Procedure, with a copy of the concern being sent to WHSSC.

5.2 Individual Patient Funding Request (IPFR)

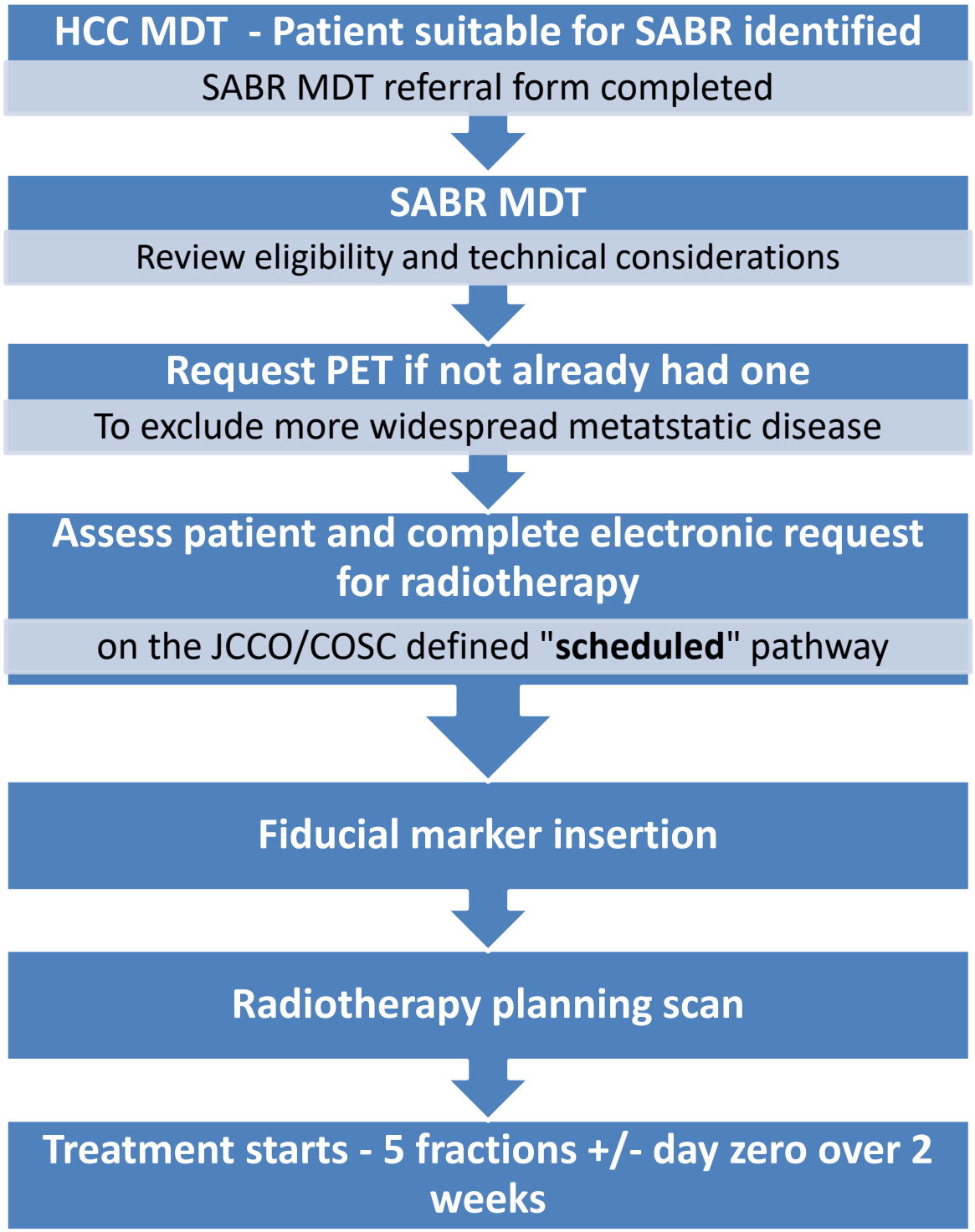
If the patient does not meet the criteria for treatment as outlined in this policy, an Individual Patient Funding Request (IPFR) can be submitted for consideration in line with the All Wales Policy: Making Decisions on Individual Patient Funding Requests. The request will then be considered by the All Wales IPFR Panel.

If an IPFR is declined by the Panel, a patient and/or their NHS clinician has the right to request information about how the decision was reached. If the patient and their NHS clinician feel the process has not been followed in accordance with this policy, arrangements can be made for an independent review of the process to be undertaken by the patient's Local Health Board. The ground for the review, which are detailed in the All Wales Policy: Making Decisions on Individual Patient Funding Requests (IPFR), must be clearly stated

If the patient wishes to be referred to a provider outside of the agreed pathway, and IPFR should be submitted.

Further information on making IPFR requests can be found at: Welsh Health Specialised Services Committee (WHSSC) | Individual Patient Funding Requests

Annex i Patient Pathway



Annex ii Codes

Code Category	Code	Description
OPCS	Y91.5	Megavoltage treatment for hypofractionated stereotactic radiotherapy

Annex iii Abbreviations and Glossary

CRUK	Cancer Research United Kingdom
CtE	Commissioning through Evaluation
IOG	Improving Outcomes Guidance
IPFR	Individual Patient Funding Request
MDT	Multi-disciplinary Team
OS	Overall survival
PROM	Patient Recorded Outcome Measure
RFA	Radiofrequency Ablation
SABR	Stereotactic Ablative Body Radiotherapy
TACE	Trans-arterial chemoembolization
WHO	World Health Organisation
WHSSC	Welsh Health Specialised Services

Abbreviations

Glossary

Child-Pugh score

A scoring system used to assess liver disease.

Cirrhosis

Describes the damage and scarring of the liver. Cirrhosis can be caused by a number of factors including hepatitis infections and excessive alcohol consumption.

Extra-hepatic

Outside the liver

Fraction/Fractionation

This describes how the full dose of radiation is divided into a number of smaller doses called fractions. The fractions are given as a series of treatment sessions which make up a radiotherapy course.

Hepatitis

A term used to describe inflammation of the liver. Hepatitis is usually caused as a result of a viral infection or drinking alcohol.

Hepatobiliary and pancreatic (HBP)

The liver, pancreas, gall bladder and bile duct are known as the hepatobiliary and pancreatic system.

Hepatocellular carcinoma (HCC)
The most common form of primary liver cancer, originating from hepatocytes.

Hepatocytes
The most common type of cell in the liver. These cells account for 65 – 75% of the tissue in the liver and are responsible for protein synthesis.

Hypofractionation
This describes a treatment regimen that delivers high doses of radiation using a smaller number of treatments as compared to conventional treatment regimens.

Intrahepatic
Inside the liver.

Individual Patient Funding Request (IPFR)
An IPFR is a request to Welsh Health Specialised Services Committee (WHSSC) to fund an intervention, device or treatment for patients that fall outside the range of services and treatments routinely provided across Wales.

Local control
Indicates that the cancer has stopped growing and has not increased in size.

Overall Survival (OS)
The length of time from either diagnosis or start of treatment that the patient is still alive

Performance Status
A recognised system developed by the World Health Organisation and other bodies to describe the general health and daily activity of patients.

Primary liver cancer
Means the cancer started in the liver.

Radiofrequency ablation (RFA)
A cancer treatment that uses heat to destroy cancer cells.

Radiotherapy
The safe use of ionising radiation to destroy cancer cells with the aim of cure or effective palliation.

Refractory

The cancer may be resistant at the beginning of treatment or it may become resistant during treatment.

Stereotactic Ablative Radiotherapy (SABR)

Refers to the irradiation of an image defined extra cranial lesion and is associated with the use of high radiation dose delivered in a small number of fractions. The technique requires specialist positioning equipment and imaging to confirm correct targeting. It allows sparing of the healthy normal tissues.

Surgical Resection

A surgical procedure used to remove the cancer or tumour.

Synchronous disease

Development of metastases at the time of diagnosis of the primary tumour.

Systemic treatment

Treatment, usually involving chemotherapy or hormone treatment, which aims to treat the whole body.

Transplant

A surgical procedure in which living tissue or an organ is implanted in another part of the body or in another body.

Trans-arterial chemoembolization (TACE)

A treatment in which chemotherapy is directly administered into the blood vessel feeding the tumour in the liver and blocking off the blood supply.

Tyrosine kinase inhibitor

A targeted cancer treatment that prevents cancer cells from growing by blocking chemical messengers called tyrosine kinases.

Welsh Health Specialised Services Committee (WHSSC)

WHSSC is a joint committee of the seven local health boards in Wales. The purpose of WHSSC is to ensure that the population of Wales has fair and equitable access to the full range of Specialised Services and Tertiary Services. WHSSC ensures that specialised services are commissioned from providers that have the appropriate experience and expertise. They ensure that these providers are able to provide a robust, high quality and sustainable services, which are safe for patients and are cost effective for NHS Wales.