

Clinical Commissioning Policy Statement
**Selective Internal Radiotherapy (SIRT) in the treatment of
secondary liver cancers (All ages) [NHS England Reference:
B01/PS/a]**

First published: June 2013 Updated: January 2024

Summary

The proposition is: Selective Internal Radiotherapy (SIRT) is not recommended to be available as a routine commissioning treatment option for the treatment of (1) neuroendocrine tumour liver metastases (NETLM); (2) liver metastases of other less common radiotherapy sensitive tumours, within the criteria set out in this document.

What we have decided

NHS England has carefully reviewed the evidence to treat NETLM and liver metastases of other less common radiotherapy sensitive tumours with SIRT. We have concluded that there is not enough evidence to make the treatment available at this time.

The evidence review which informs this commissioning position can be accessed [here](#).

Links and updates to other policies

This document updates Clinical Commissioning Policy Statement: Selective Internal Radiotherapy (SIRT) [NHS England Reference: B01/PS/a].

The use of SIRT in the treatment of colorectal liver metastases and intrahepatic cholangiocarcinoma are subject to separate NHS England Clinical Commissioning Policies ([NHS England Reference 170102P](#) and [NHS England Reference 170112P](#), respectively).

The use of SIRT in the treatment of hepatocellular carcinoma is subject to a NICE Technology appraisal guidance [TA688] which can be accessed [here](#).

Plain language summary

About the condition

Cancer is a condition where cells in a specific part of the body grow and reproduce uncontrollably. There are over 200 different types of cancer and each is diagnosed and treated in a particular way. A primary tumour is the name for where a cancer starts, however, cancer can sometimes spread to other parts of the body – this is called a secondary tumour or a metastasis.

This policy is specifically for the treatment of primary and secondary cancers that occur in the liver and includes:

- Neuroendocrine tumour liver metastases (NETLM). Neuroendocrine tumours are rare cancers that develop from cells of the neuroendocrine system. The primary tumour can develop in many different organs in the body, including the stomach, bowel and lungs. These tumours frequently metastasise (i.e. spread) to the liver, known as neuroendocrine tumour liver metastases.
- Liver metastases of other less common radiotherapy sensitive tumours. Any cancer can spread to the liver. The most common cancers to do so are breast cancer, bowel cancer and lung cancer

About current treatments

Treatment for cancers in the liver (primary and secondary) usually depends on where the cancer started, how advanced the cancer is and an individual's overall health. Treatments for cancers in the liver can include:

- Surgery to either remove the tumour or reduce/manage the symptoms of the disease.
- Injecting chemotherapy directly into the liver and cutting off the blood supply to the tumour (known as transarterial chemoembolisation or TACE).
- Radiofrequency ablation (RFA), a procedure which uses heat made by radio waves to destroy cancer cells.
- Systemic cancer treatments, using drugs to treat the whole of the body.
- External beam radiotherapy (EBRT), using high energy waves from outside of the body to destroy cancer cells.

About SIRT

Selective internal radiation therapy (SIRT) is a way of giving radiotherapy treatment to cancer in the liver. It involves injecting tiny spheres that contain a radioactive substance into blood vessels in the liver, via a tube (catheter). The spheres become lodged in the small blood vessels around the cancer and deliver radiation directly to the cancer cells which destroys them. The aim of SIRT is to control the growth of the cancer but it is not curative.

Two different radioactive substances can be used, Yttrium-90 and Holmium-166. Yttrium-90 is a beta emitting isotope with a half-life of 64.2 hours and following administration, 94% of the radiation is delivered in 11 days (Murthy et al. 2008). Holmium-166 is a high-energy beta-emitting isotope with gamma emission and the half-life is 26.8 hours. More than 90% of the radiation is delivered within the first 4 days following the implantation procedure.

Currently, there are two Yttrium-90 microsphere products available to treat primary HCC as a treatment option for unresectable advanced hepatocellular carcinoma (HCC) and mCRC which has spread to the liver in the UK:

- SIR-Spheres®, which are made of resin; and
- TheraSphere®, which are made of glass.

There is only one holmium-166 microspheres available in the UK:

- QuiremSpheres®, which are made of poly-l-lactic acid.

Epidemiology and needs assessment

Neuroendocrine tumour liver metastases (NETLM):

The incidence of neuroendocrine tumours in England is 8.61 per 100,000¹. With a population of approximately 60 million², this equates to an incidence of approximately 5200 cases in England. Approximately one fifth of all patients with NETs present with distant metastasis^{2,3}, and the liver is the most frequent site (approximately 80%)² for NET metastasis regardless of primary site. This equates to an approximate incidence of NETLM of 1000 patients.

Liver metastases of other less common radiotherapy sensitive tumours:

There is no epidemiology data available for the incidence of liver metastases of other less common radiotherapy sensitive tumours. Epidemiology estimates are difficult because many different cancers spread to the liver and patients may be diagnosed with liver metastases either at initial diagnosis of their primary cancer (synchronous) or after if the cancer progresses during or following treatment (metachronous).

Policy review date

This is a policy statement, which means that the full process of policy production has been abridged: a full independent evidence review has not been conducted; and public consultation has not been undertaken.

This document will be reviewed when information is received which indicates that the policy requires revision. If a review is needed due to a new evidence base then a new Preliminary Policy Proposal needs to be submitted by contacting england.CET@nhs.net.

Our policies provide access on the basis that the prices of therapies will be at or below the prices and commercial terms submitted for consideration at the time evaluated. NHS England reserves the right to review policies where the supplier of an intervention is no longer willing to supply the treatment to the NHS at or below this price and to review policies where the supplier is unable or unwilling to match price reductions in alternative therapies.

Equality statement

Promoting equality and addressing health inequalities are at the heart of NHS England's values. Throughout the development of the policies and processes cited in this document, we have:

- Given due regard to the need to eliminate discrimination, harassment and victimisation, to advance equality of opportunity, and to foster good relations between people who share a relevant protected characteristic (as cited under the Equality Act 2010) and those who do not share it; and
- Given regard to the need to reduce inequalities between patients in access to, and outcomes from healthcare services and to ensure services are provided in an integrated way where this might reduce health inequalities.

Definitions

Radiofrequency ablation (RFA) – ablation means to destroy and in the context of treating cancer means to destroy the cancer cells. RFA is a procedure which uses heat made by radio waves to destroy cancer cells.

Cancer cells – abnormal cells that divide in an uncontrolled way and can spread elsewhere in the body.

Chemotherapy – is a type of systemic therapy involving the use of medicines to kill the cancer cells. There are many different types of chemotherapy medicines and they all work in a similar way by stopping cancer cells reproducing, which prevents them from growing and spreading in the body. Chemotherapy also affects healthy cells and this can cause side-effects, which will vary depending on the type of cell affected.

External beam radiotherapy (EBRT) - is the safe use of using high energy waves from outside of the body to destroy cancer cells.

Neuroendocrine tumour liver metastases (NETLM) - neuroendocrine tumours are rare cancers that develop from cells of the neuroendocrine system. The primary tumour can develop in many different organs in the body, including the stomach, bowel and lungs. These tumours frequently metastasise (i.e. spread) to the liver, known as neuroendocrine tumour liver metastases.

Liver metastases– is the term used if the cancer has spread to the liver.

Metastasis (or secondary tumour) – the term used if the cancer has spread to other parts of the body.

Primary cancer or tumour - is the term used for where in the body that a cancer starts.

Selective internal radiation therapy (SIRT) – the use of microspheres containing a radioactive substance to deliver a targeted dose of radiation to a tumour in order to destroy it.

Systemic cancer treatments – are treatments for cancer using substances that travel through the blood stream to reach and affect cells all over the body. Chemotherapy, immunotherapy and targeted agents are types of systemic therapy.

Transarterial chemoembolisation (TACE) - injecting chemotherapy directly into the liver and cutting off the blood supply to the tumour.

References

1. White BE, Rous B, Chandrakumaran K, Wong K, Bouvier C, Van Hemelrijck M, George G, Russell B, Srirajaskanthan R, Ramage JK. (2022). Incidence and survival of neuroendocrine neoplasia in England 1995-2018: A retrospective, population-based study. *Lancet Reg Health Eur.* 23:100510.
2. Office for National Statistics (ONS). (2022). ONS website, statistical bulletin, Population and household estimates, England and Wales: Census 2021, unrounded data
3. Riihimäki M, Hemminki A, Sundquist K, Sundquist J, Hemminki K. (2016). The epidemiology of metastases in neuroendocrine tumors. *Int J Cancer.* 139(12):2679-2686.

Version control

- Use the version control table to document the changes to the policy during policy development. This table can remain when submitting to Clinical Panel.

Version number	Summary of amends	Initials	Date
1	Re-formatting of policy statement update into current template. Addition of text into 'Epidemiology and needs assessment' and 'Definitions'	AM	16/11/23
2	Change of title to remove primary liver tumours as no longer covered in this policy statement. Addition of text into 'Epidemiology and needs assessment'	AM	7/12/23
3	Edit of 'Epidemiology and needs assessment'	AM/MS	13/12/23
4	Removal of 'Committee Discussion' section	AM	8/1/24