



# Consideration of selective internal radiation therapies (SIRT) for treating primary hepatocellular carcinoma (liver cancer)

## What were we asked to look at?

Following discussions with the manufacturers of the TheraSphere™ technology, the Scottish HepatoPancreatoBiliary Network asked the Scottish Health Technologies Group (SHTG) to review the National Institute for Health and Care Excellence (NICE) [Technology Appraisal \(TA\) 688](#) to inform the consideration of SIRT in Scotland.

## Why is this important?

Hepatocellular carcinoma (HCC) is a complex heterogeneous cancer, which is challenging to treat. HCC is the most common form of primary liver cancer. In 2017, the age standardised incidence rate for HCC in Scotland was 7.71 cases per 100,000 population (95% confidence interval 6.98 to 8.50).

Following the publication of TA688, selected patients in England and Wales have access to SIRT. This review of TA688 will inform the consideration of SIRT for patients in Scotland.

## What is SIRT?

QuiremSpheres™, SIR-Spheres® and TheraSphere™ are forms of SIRT. They are types of internal radiotherapy used to treat primary liver tumours that cannot be removed by surgery. SIRT involves injecting small radioactive beads into a patient's blood supply to the liver. In this way, SIRT provides targeted treatment to the tumour.

## What are the NICE recommendations on SIRT?

In 2021, NICE published [TA688](#) on SIRT for treating HCC. The TA688 recommendations for NHS England and Wales are:

The SIRT SIR-Spheres® is recommended as an option for treating unresectable advanced HCC in adults, only if

- used for people with Child–Pugh grade A liver impairment when conventional transarterial therapies are inappropriate, and
- the company provides SIR-Spheres® according to the commercial [price] arrangement.

The SIRT TheraSphere™ is recommended as an option for treating unresectable advanced HCC in adults, only if

- used for people with Child–Pugh grade A liver impairment when conventional transarterial therapies are inappropriate, and
- the company provides TheraSphere™ according to the commercial [price] arrangement.

The SIRT QuiremSpheres™ is not recommended for treating unresectable advanced HCC in adults.

## Possible adaptation of the NICE guidance on SIRT for use in Scotland

SHTG was initially asked to consider adapting the NICE guidance (TA688) for Scotland. It became clear that adaptation would not be possible for the reasons outlined below.

### **1. Variation in comparative systemic therapies**

The systemic chemotherapy comparator used in the published trials that form the basis of NICE TA688 is sorafenib. The most common systemic treatments for HCC in the west of Scotland (approximately 50% of Scottish patients) are lenvatinib or atezolizumab plus bevacizumab. Sorafenib is used in very few Scottish patients.

It is likely that sorafenib was the most appropriate systemic comparator for SIRT at the time of publication of the SIRT randomised controlled trials (RCTs) and the NICE assessment, since the current systemic therapies used in Scotland were only approved in 2019 and 2021, respectively.

### **2. Relevance of the patient group in one large trial of SIRT**

The SIRveNIB RCT on SIR-Spheres® was conducted in Asia where the primary cause of HCC is hepatitis B and where treatment options differ from Europe. In Scotland, the primary cause of HCC is alcohol misuse or hepatitis C. The patient population of one of only two SIRT RCTs with large sample sizes (n>100) therefore may not be directly applicable to the Scottish patient population.

### 3. Cost effectiveness and funding arrangements

The NICE recommendations on SIRT for patients with HCC apply only when the manufacturer provides SIRT according to the commercial [pricing] arrangement agreed with NICE, which applied only in England and Wales.

*Please see below for updated information on manufacturer pricing arrangements for NHSScotland.*

#### Can clinicians in Scotland use SIRT to treat patients with HCC?

Yes. SIR-Spheres® and TheraSphere™ are available for use within NHSScotland to treat selected patients with HCC, based on the NICE TA688 criteria.

Clinicians should make decisions on the use of SIRT (SIR-Spheres® or TheraSphere™) for the treatment of HCC based on a patient's disease characteristics. They should take into consideration the NICE TA688 recommendations and the limitations (for Scotland) of the evidence base, as outlined above.

#### Procurement of SIRT technologies in NHSScotland

A confidential discounted price for supplying SIRT has been agreed with the manufacturers of SIR-Spheres® and TheraSphere™ for patients considered eligible for SIRT in Scotland. This is the same price originally agreed with NICE. Once a clinical decision has been made to use SIRT, clinicians should discuss the procurement of the technology from the manufacturer according to their local standing financial instructions.

Clinicians can contact the manufacturers of SIR-Spheres® or TheraSphere™ for more information on the centres offering a SIRT service in Scotland.

### Acknowledgement of fact checking

A document fact-check was carried out by the manufacturers of the SIR-Spheres® and TheraSphere™ technologies, prior to publication.

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