

Medical Coverage Policies

[Printer-Friendly Page](#)

Selective Internal Radiation Therapy for Liver Tumors

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Description:

Hepatic tumors can arise either as primary liver cancer or by metastasis to the liver from other tissues or organs. Local therapy for hepatic metastasis is indicated only when there is no extrahepatic disease, which rarely occurs for patients with primary cancers other than colorectal carcinoma (CRC) or certain neuroendocrine malignancies. At present, surgical resection with tumor-free margins and liver transplantation are the only potentially curative treatments. For liver metastases from CRC, randomized trials have reported that post-surgical adjuvant chemotherapy (administered systemically or via the hepatic artery) decreases recurrence rates and increases time to recurrence. Important prognostic factors for survival include site and extent of primary tumor, hepatic tumor burden, and performance status.

Unfortunately, most hepatic tumors are unresectable at diagnosis, due either to their anatomic location, size, number of lesions, concurrent nonmalignant liver disease, or insufficient hepatic reserve. Palliative chemotherapy by combined systemic and hepatic artery infusion (HAI) may increase disease-free intervals for patients with unresectable hepatic metastases from CRC. However, durable responses to chemotherapy are less likely for patients with unresectable primary hepatocellular cancer (HCC).

Selective internal radiation therapy (SIRT), relies on targeted delivery of small beads (microspheres) impregnated with yttrium-90 (90Y). The rationale for SIRT is based on the following: 1) the liver parenchyma is sensitive to radiation; 2) the hepatic circulation is uniquely organized, whereby tumors greater than 0.5 cm rely on the hepatic artery for blood supply while normal liver is primarily perfused via the portal vein; and 3) 90Y is a pure beta emitter with a relatively limited effective range and short half-life that helps focus the radiation and minimize its spread. Candidates for SIRT are initially examined by liver angiography to rule out aberrant hepatic vasculature and technetium (99mTm) lung scan to rule out significant lung shunting that would permit diffusion of injected microspheres.

Currently 2 commercial forms of 90Y microspheres are available: TheraSpheres (Theragenics; Atlanta, GA) and SIR-Spheres (Sirtex Medical Limited; Lake Forest, IL). While the commercial products use the same radioisotope (90Y) and have the same target dose (100 Gy), they differ in microsphere size profile, base material (i.e., resin versus glass), and size of commercially available doses. These physical characteristics of the active and inactive ingredients affect the flow of microspheres during injection, their retention at the tumor site, spread outside the therapeutic target region, and dosimetry calculations. The microspheres are injected into the liver tumor through the common hepatic (liver) artery, or through the right or left hepatic artery. The spheres lodge in the area of the tumor, where the radiation helps slow the growth of the cancer cells. The radioactivity disappears within 11 days, but the spheres remain in the liver permanently.

Intra-hepatic microspheres are typically used for patients with unresectable HCC or unresectable liver tumors from primary colorectal cancer. In any of the following circumstances, patients would generally be considered non-resectable:

- multiple liver metastases together with involvement of both lobes; or
- tumor invasion of the hepatic confluence where the three hepatic veins enter the inferior vena cava (IVC) such that none of the hepatic veins could be preserved if the metastases were resected; or tumor invasion of the porta hepatis such that neither origin of the right or left portal veins could be preserved if resection were undertaken; or
- widespread metastases such that resection would require removal of more liver than is necessary to maintain life.

Medical Criteria:

Not applicable.

Policy:

Treatment of liver tumors utilizing intra-hepatic microspheres is a covered service for all lines of business.

Coding:

Coding:

There are no specific CPT codes describing SIRT therapy. The following nonspecific CPT codes might possibly be used:

37204 75894 77778 79445

Since this therapy involves radiation therapy, a variety of radiation therapy planning codes may be a component of the overall procedure. For example CPT code 77399 (unlisted procedure, medical radiation physics) may be used.

HCPCS code S2095 is considered not separately reimburable. Please use appropriate CPT codes.

S2095 Transcatheter occlusion or embolization for tumor destruction, percutaneous, any method, using yttrium-90 microspheres

References:

Blue Cross Blue Shield Association Medical Policy Reference Manual, Policy. 8.01.43, Selective Internal Radiation Therapy for Primary and Metastatic Tumors of the Liver. 6:2008.

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Liver Cancer. Action Plan for Liver Disease Research: A Report of the Liver Disease Subcommittee of the Digestive Diseases Interagency Coordinating Committee. Bethesda (MD): Nation Digestive Diseases Information Clearinghouse, National Institutes of Health, 2007. NIH Publication No. 045491, p 137-43. http://www2.niddk.nih.gov/NR/rdonlyres/6F72F147-036C-48A3-814E-9941A58D9EB6/0/ldrb_chapter14.pdf

Allison C. Yttrium-90 Microspheres (TheraSphere and SIR-Spheres) for the Treatment of Unresectable Hepatocellular Carcinoma. Issues in Emerging Health Technologies, Issue 102. Ottawa: The Canadian Agency for Drugs and Technologies in Health (CADTH), 2007.

Package Insert: TheraSphere yttrium-90 glass microspheres. Rev 8, Ottawa: MDS Nordion, 2008.

Package Insert: SIR-spheres microspheres (Yttrium-90 microspheres). Wilmington, MA; Sirtex Medical; 2006 Sep., SSL-US-07.

Also Known As:

SIRT

Published:

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 [Back to Previous Page](#)