

Selective Internal Radiation Therapy

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Definition

Selective Internal Radiation Therapy (SIRT) — also referred to as radioembolization or yttrium-90 (Y-90) hepatic brachytherapy, is an outpatient transcatheter interventional technique whereby radioactive particles (Y-90 microspheres) are delivered directly to the liver tumor bed via the hepatic artery. Once implanted, the microspheres emit localized radiation.

FDA-approved radioactive microspheres include SIR-Spheres® (biocompatible) and TheraSphere® (insoluble glass).

Guideline

- I. Selective internal radiation therapy (SIRT) is considered medically necessary when the following criteria are met:
 - A. Unresectable and/or medically inoperable primary or metastatic liver malignancies
 1. Unresectable liver only or liver dominant metastases from neuroendocrine tumors (e.g., carcinoids, pancreatic islet cell tumors, endocrine (tumor)
 2. Unresectable primary hepatocellular carcinoma (HCC)
 3. Unresectable metastatic liver tumors from primary colorectal cancer
 4. Treatment of unresectable liver metastases from breast carcinoma, ocular melanoma, cutaneous melanoma, or intrahepatic cholangiocarcinoma in the absence of available systemic or liver-directed treatment options to relieve symptoms and/or possibly extend life expectancy
 - B. The tumor burden should be liver dominant, not necessarily exclusive to the liver
 - C. Eastern Cooperative Oncology Group (ECOG) performance status should be 0 or 1 or Karnofsky Performance Status (KPS) of 70 or more
 - D. Life expectancy should be at least 3 months

- E. Radioactive Yttrium-90 (90Y) microspheres treatment is allowed only in the outpatient setting unless the documentation supports the medical necessity of inpatient treatment
- II. Repeat radioembolization is considered medically necessary for new or progressive primary or metastatic liver cancers when:
- A. The member has had a previous satisfactory response to an initial radioembolization treatment as evidenced on results of a computed tomography (CT) scan or positron emission tomography (PET)-CT scan performed 3 months following the previous procedure. Response should be graded according to the revised RECIST guideline (Version 1.1)
 - B. The disease still must be liver dominant
 - C. Life expectancy of at least 3 months
 - D. ECOG performance status no greater than 2 or KPS of 70 or more
 - E. There are no other effective systemic or liver-directed treatment options
 - F. The member has compensated liver function tests (LFTs)
 - G. Estimated lung dose and combined lung dose from previous embolizations are within acceptable dose volume constraints. Exclude an individual with lung shunting in which the lung radiation dose is greater than 25 to 30 Gy per treatment or greater than 50 Gy cumulatively for all treatments
 - H. Treatment should be given to a targeted tumor volume
 - I. Repeat whole liver irradiation is considered experimental, investigational, or unproven (EIU) and will not be certified
 - J. Requests for a third radioembolization will not be certified
 - K. All requests for repeat radioembolization are subject to medical review

Limitations/Exclusions

Only FDA-approved microspheres will be considered medically necessary.

Requests for the treatment of liver metastases from other primary malignancies, including breast carcinoma, ocular melanoma, cutaneous melanoma, and intrahepatic cholangiocarcinoma, will be considered on a case-by-case basis. These requests should be based on the lack of any known systemic or liver-directed treatment options for the member in an effort to relieve symptoms and/or possibly extend life expectancy.

Radioactive Yttrium-90 (90Y) microspheres treatment is allowed only in the outpatient setting unless the documentation supports the medical necessity of inpatient treatment.

Revision History

May 7, 2021	Added covered indication for treatment of unresectable liver metastases from breast carcinoma, ocular melanoma, cutaneous melanoma, or intrahepatic cholangiocarcinoma
Mar. 8, 2019	Added repeat radioembolization criteria
Oct. 9, 2015	Added ECOG performance score prerequisite and life expectancy language
Aug. 20, 2009	Added hepatoma

Applicable Procedure Codes

37243	Vascular embolization or occlusion, inclusive of all radiological supervision and interpretation, intraprocedural roadmapping, and imaging guidance necessary to complete the intervention; for tumors, organ ischemia, or infarction
75894	Transcatheter therapy, embolization, any method, radiological supervision and interpretation
77778	Interstitial radiation source application; complex
79445	Radiopharmaceutical therapy, by intra-arterial particulate administration
Q3001	Radioelements for brachytherapy, any type, each
S2095	Transcatheter occlusion or embolization for tumor destruction, percutaneous, any method, using yttrium-90 microspheres

Applicable ICD-10 Diagnosis Codes

C22.0	Liver cell carcinoma
C22.1	Intrahepatic bile duct carcinoma
C22.2	Hepatoblastoma
C22.3	Angiosarcoma of liver
C22.4	Other sarcomas of liver
C22.7	Other specified carcinomas of liver
C22.8	Malignant neoplasm of liver, primary, unspecified as to type
C22.9	Malignant neoplasm of liver, not specified as primary or secondary
C78.7	Secondary malignant neoplasm of liver and intrahepatic bile duct

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