

# Hepatic Artery Infusion Pump in the Treatment of Liver Metastases

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**Background:** Hepatic artery infusion pump (HAIP) use in chemotherapy started in the 1960s as a way to treat liver metastases that were not amenable to locoregional therapy or surgical resection. Because of complications and limited survival benefit, the use of HAIPs fell out of favor. A resurgence has occurred in the use of these pumps, but limited information is available in the literature guiding nursing care of these patients.

**Objectives:** The purpose of this study was to review the literature regarding the use, procedures, and nursing care of patients with HAIPs.

**Methods:** A systematic literature review was conducted to obtain a comprehensive range of publications.

**Findings:** Database searching resulted in 511 titles and abstracts. After eliminating duplicates and nonrelevant titles, 65 remained and were read in full. Of these, 20 were excluded because they did not fit the inclusion criteria.

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Liver metastasis is commonly the first site of distant metastases from cancers of the breast, gastrointestinal tract, uveal melanoma, and hepatobiliary system because of the liver's large blood supply (Barber & Fabugais-Nazario, 2003; Nishiofuku et al., 2010). Patients with a limited number of liver metastases may benefit from improved survival from surgery or locoregional therapy (Liang et al., 2013). Systemic therapy, such as chemotherapy, is used along with liver-directed therapy in most patients with hepatic metastases.

Blood flow to the liver is delivered via the hepatic artery and the portal vein. The hepatic artery delivers oxygenated blood to the liver, and the portal vein collects the venous flow from the prehepatic splanchnic vascular bed. The hepatic artery perfuses liver metastases greater than 2–3 mm in size, and the normal liver cells receive the majority of their blood supply from the portal vein (Callahan & Kemeny, 2010; Kanat, Gewirtz, & Kemeny, 2012). Because most liver metastases

receive a specific blood supply, this allows for targeted liver chemotherapy.

## Methods

A literature search was conducted to identify a comprehensive range of relevant publications. Databases searched included CINAHL®, PubMed, Scopus, Google Books, and ProQuest Dissertations and Theses. The following key words and medical subject heading (MeSH) phrases were used: *liver metastases*, *hepatic artery infusion pump*, and *chemotherapy pump*. The search was limited to accessible full-text research articles, review articles, books, and expert content (textbooks) in English. The search dates were not limited but ended January 1, 2015, and disciplines outside of nursing were sought. Inclusion criteria included mention of hepatic artery infusion pumps (HAIPs) as single- or multimodality treatment of liver metastases from solid tumors and primary liver tumors. Literature regarding