

# Hepatic Arterial Infusion Pump

## Complications and nursing management regarding use in patients with colorectal cancer

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**BACKGROUND:** The hepatic arterial infusion (HAI) pump is a treatment-delivery method based on the principle of targeting the tumor site directly and can be used alone or in combination with systemic chemotherapy.

**OBJECTIVES:** The intent of this article is to serve as a resource for oncology nurses to safely identify and manage HAI pump complications. These complications include seroma, flipped HAI pump, infection, changes in pressure and temperature, challenging access, dry pump, high residual volume, chemical hepatitis, risk of ulcer, and radiologic imaging considerations.

**METHODS:** The authors performed a literature review to provide a foundation for nurses to be able to manage HAI pump infusions.

**FINDINGS:** The literature review revealed minimal nursing resources to manage complications with an HAI pump. Resources to manage complications are crucial for safely administering medications and properly maintaining the function of the pump. Attention to patient education should be incorporated in nursing practice.

### KEYWORDS

hepatic arterial infusion pump; colorectal cancer; hepatic artery; oncology nursing

### DIGITAL OBJECT IDENTIFIER

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**THE LIVER IS THE DOMINANT METASTATIC SITE FOR PATIENTS** with colorectal cancer in the United States. Many patients initially present with liver metastases, and 50% develop liver metastases during the course of their disease (Groot Koerkamp et al., 2017). Multiple treatment options can be incorporated in the plan of care, including chemotherapy, radiation therapy, and surgery. Systemic chemotherapy is most common when surgery is not an initial option; however, surgical resection is preferred for curative intent. Hepatic arterial infusion (HAI) chemotherapy was developed to treat a metastatic site that is difficult to control. This modality has become an added treatment option for patients with unresectable liver metastases (Callahan & Kemeny, 2010) and can lead to rates of long-term disease-free survival because of control of the metastatic malignancies, allowing the option of resection, which would rarely occur with systemic chemotherapy alone (D'Angelica et al., 2015).

Despite being a treatment modality since the 1980s, a paucity of literature exists on the use of HAI, particularly literature geared toward nurses. A literature search revealed limited published articles about HAI treatment and management of complications. Martin (2002) discussed the variety of hepatic arterial catheters that have been used in the past and some of the risks and benefits of these delivery methods. A systematic literature review by Parks and Routt (2015) identified articles addressing use, procedures, and nursing care of patients with HAI pumps. Best practices have been identified through extrapolation from physician-specific literature and high volume of exposure to patients with HAI pumps at Memorial Sloan Kettering Cancer Center, a National Cancer Institute–designated cancer center in New York, New York, that cites more than 2,500 HAI treatments annually. This article provides an up-to-date overview of the HAI pump, the most common pump used to deliver treatment, and reviews pump management complications and strategies for nurses to address potential complications.

### Hepatic Arterial Infusion

The HAI pump is a delivery method that directly targets the tumor site. The healthy liver receives its blood supply from the portal vein. The blood supply for hepatic metastases is derived from the hepatic artery; therefore, patients