

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

Regional Chemotherapy for the Treatment of Breast Cancer: Clinical and Cost- Effectiveness and Guidelines

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Research Questions

1. What is the clinical effectiveness of regional chemotherapy for adults with any type of breast cancer of any stage?
2. What is the cost-effectiveness of regional chemotherapy for adults with any type of breast cancer of any stage?
3. What are the evidence-based guidelines associated with the use of regional chemotherapy for the treatment of adults with any type of breast cancer of any stage?

Key Findings

One randomized controlled trial, 10 non-randomized studies, and one evidence-based guideline were identified regarding the clinical effectiveness of regional chemotherapy for adults with any type of breast cancer of any stage. No health technology assessments, systematic reviews, or economic evaluations were identified.

Methods

A limited literature search was conducted on key resources including PubMed, the Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to randomized controlled trials, non-randomized studies, health technology assessments, systematic reviews, meta-analyses, economic studies, and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English or German language documents published between Jan 1, 2013 and Sep 10, 2018. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Adults (male or female) with any type of breast cancer of any stage (Stages I to IV); including primary breast cancer and breast cancer that has metastasized to remote organs e.g., but not limited to, liver, lung, bone, brain
Intervention	Regional chemotherapy (also termed local or intra-arterial chemotherapy - any compound or strategy), including, but not limited, hepatic artery infusion (HAI) and trans-arterial chemoembolization (TACE)
Comparator	Q1-2: IV or oral systemic therapy (e.g., chemotherapy, targeted therapy, biologics [immunotherapy], hormonal therapy); Surgical resection; Radiation therapy; Placebo/sham procedure Q3: No comparator
Outcomes	Q1: Clinical effectiveness (e.g., but not limited to, tumour response rate, time to progression, progression rate, survival rate [progression-free and overall], quality of life) and safety (e.g., toxicity, adverse events, discontinuation [both of the study and stopping the treatment]) Q2: Cost-effectiveness (e.g., cost per QALY) Q3: Guidelines
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, evidence-based guidelines

Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines.

One randomized controlled trial, 10 non-randomized studies, and one evidence-based guideline were identified regarding the clinical effectiveness of regional chemotherapy for adults with any type of breast cancer of any stage. No health technology assessments, systematic reviews, or economic evaluations were identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

1. Chen W-X, Pan M, Li J, Zhao J-H, Zhou J-W, Tang J-H. Clinical observation of intraoperative local chemotherapy with lobaplatin in breast cancer modified radical mastectomy. *Int J Clin Exp Med*. 2017;10(7):10834-10839. http://www.ijcem.com/V10_No7.html. Accessed 2018 Sep 12.

Non-Randomized Studies

2. Chang J, Charalel R, Noda C, et al. Liver-dominant breast cancer metastasis: a comparative outcomes study of chemoembolization versus radioembolization. *Anticancer Res.* 2018;38(5):3063-3068.
[PubMed: PM29715141](#)
3. Ma J, Song J, Chen H, Fan C, Xie J, Qi X. Intra-arterial interventional therapy for inoperable local advanced breast cancer: a retrospective study. *Oncol Lett.* 2018;15(2):1955-1962.
[PubMed: PM29434896](#)
4. Kennoki N, Hori S, Yuki T, Hori A. Transcatheter arterial chemoembolization with spherical embolic agent in patients with pulmonary or mediastinal metastases from breast cancer. *J Vasc Interv Radiol.* 2017;28(10):1386-1394.
[PubMed: PM28728935](#)
5. Lin YT, Medioni J, Amouyal G, Dean C, Sapoval M, Pellerin O. Doxorubicin-loaded 70-150 µm microspheres for liver-dominant metastatic breast cancer: results and outcomes of a pilot study. *Cardiovasc Intervent Radiol.* 2017 Jan;40(1):81-89.
[PubMed: PM27646519](#)
6. Tewes M, Peis MW, Bogner S, et al. Hepatic arterial infusion chemotherapy for extensive liver metastases of breast cancer: efficacy, safety and prognostic parameters. *J Cancer Res Clin Oncol.* 2017;143(10):2131-2141.
[PubMed: PM28646261](#)
7. Jin HY, He W, Liu Q, Wang XF, Liu YF, Wei ZX. Efficacy of intra-arterial neoadjuvant chemotherapy through the superior epigastric artery in the treatment of locally advanced triple negative breast cancer. *Neoplasma.* 2016;63(4):607-616.
[PubMed: PM27268925](#)
8. Eichler K, Jakobi S, Gruber-Rouh T, Hammerstingl R, Vogl TJ, Zangos S. Transarterial chemoembolisation (TACE) with gemcitabine: phase II study in patients with liver metastases of breast cancer. *Eur J Radiol.* 2013;82(12):e816-822.
[PubMed: PM24055389](#)
9. Tsimberidou AM, Vaklavas C, Fu S, et al. Hepatic arterial infusion therapy in advanced cancer and liver-predominant disease: the MD Anderson Experience. *Hepatogastroenterology.* 2013;60(127):1611-1623.
[PubMed: PM24634931](#)
10. Wang X, Gan C, Li H, et al. Main complications and results of treatment with intra-arterial infusion chemotherapy through the subclavian and thoracic arteries for locally advanced breast cancer. *Mol Clin Oncol.* 2013;1(4):745-748.
[PubMed: PM24649239](#)
11. Zhang W, Liu R, Wang Y, et al. Efficacy of intraarterial chemoinfusion therapy for locally advanced breast cancer patients: a retrospective analysis of 28 cases. *Onco Targets Ther.* 2013;6:761-765.

[PubMed: PM23836989](#)

Economic Evaluations

No literature identified.

Guidelines and Recommendations

12. Brackstone M, Fletcher GG, Dayes IS, et al. Locoregional therapy of locally advanced breast cancer: a clinical practice guideline. *Curr Oncol*. 2014;22:S54-S66.
<http://www.current-oncology.com/index.php/oncology/article/view/2316/1689>.
Accessed 2018 Sep 12.

Appendix — Further Information

Non-Randomized Studies

Mixed Intervention

13. Wang H, Liu B, Long H, Zhang F, Wang S, Li F. Clinical study of radiofrequency ablation combined with TACE in the treatment of breast cancer with liver metastasis. *Oncol Lett*. 2017;14(3):2699-2702.

[PubMed: PM28927032](#)

Mixed Population

14. Fountzilas E, Krishnan E, Janku F, et al. A phase I clinical trial of hepatic arterial infusion of oxaliplatin and oral capecitabine, with or without intravenous bevacizumab, in patients with advanced cancer and predominant liver involvement. *Cancer Chemother Pharmacol*. 2018 Sep 4.

[PubMed: PM30182147](#)

15. Kirstein MM, Marquardt S, Jedicke N, et al. Safety and efficacy of chemosaturation in patients with primary and secondary liver tumors. *J Cancer Res Clin Oncol*. 2017;143(10):2113-2121.

[PubMed: PM28634727](#)

16. Gruber-Rouh T, Langenbach M, Naguib NNN, et al. Trans-arterial chemoperfusion for the treatment of liver metastases of breast cancer and colorectal cancer: clinical results in palliative care patients. *World J Clin Oncol*. 2017;8(4):343-350.

[PubMed: 28848701](#)

17. Li XH, Wang YF, Sun GM. Transcatheter arterial chemoembolization combined with microwave coagulation therapy and the perioperative care for patients with hepatocellular carcinoma. *J BUON*. 2015;20(4):1037-1041.

[PubMed: 26416053](#)

Case Studies

18. Ranieri G, Marech I, Porcelli M, et al. Complete response in a patient with liver metastases from breast cancer employing hepatic arterial infusion 5-fluorouracil based chemotherapy plus systemic nab-paclitaxel. *Oncotarget*. 2018;9(8):8197-8203.

[PubMed: PM29487726](#)

Review Articles

19. White SB, Lewandowski RJ. Locoregional therapy for liver metastases from breast cancer: current intra-arterial treatment options for women with hepatic-dominant breast cancer metastases. *Endovasc Today*. 2018;17(1):45-50.

https://evtoday.com/pdfs/et0118_F7_White.pdf. Accessed 2018 Sep 12.