

# Prospective Surveillance and Risk Reduction of Cancer Treatment–Related Lymphedema: Systematic Review and Meta-Analysis

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**PROBLEM IDENTIFICATION:** Secondary lymphedema is a chronic condition that may result from cancer-related treatments. Evidence is emerging on prospective surveillance and risk reduction.

**LITERATURE SEARCH:** Databases were systematically searched through April 1, 2019, for comparative studies evaluating interventions aiming to prevent lymphedema in patients with cancer.

**DATA EVALUATION:** A random-effects model was used to perform meta-analysis, when appropriate.

**SYNTHESIS:** A total of 26 studies (4,095 patients) were included, with 23 providing data sufficient for meta-analysis. Surveillance programs increased the likelihood of detecting lymphedema. Physiotherapy, exercise programs, and delayed exercise reduced the incidence of lymphedema.

**IMPLICATIONS FOR RESEARCH:** Future research should standardize (a) evidence-based interventions to reduce the development of lymphedema and increase the likelihood of early detection and (b) outcome measures to build a body of evidence that leads to practice change.

**KEYWORDS** lymphedema; systematic review; meta-analysis; cancer treatment

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Secondary lymphedema, or lymphedema that is caused by injury or damage to the lymphatic system, is a chronic, progressive, and debilitating condition that is often attributable to cancer treatments, such as surgery, particularly involving lymph nodes; radiation therapy; and chemotherapy. It often presents as fluid accumulation in the interstitial tissue spaces as a result of the injured or damaged lymphatic system being unable to process the fluid as it once did. This fluid accumulation can progress to swelling of the arm, breast, shoulder, neck, torso, or lower extremities (Cheville et al., 2003). Secondary lymphedema is often diagnosed following treatment for breast cancer, but it is also frequently diagnosed in patients after treatment for melanoma or gynecologic or head and neck cancers. Current guidelines support education and baseline measurements with prospective assessment for early diagnosis and treatment of secondary lymphedema (Gradishar & Salerno, 2016), but the specifics of what comprises effective prospective surveillance are not well described.

Early detection of secondary lymphedema leads to improved patient outcomes and decreases the risk of lymphedema progressing to a persistent stage. Prospective surveillance is a model to identify physical changes that can lead to lymphedema so that interventions can begin early. For example, prospective surveillance for women with breast cancer involves education, support, empowerment, monitoring, and management of the physical and psychological effects of cancer treatment (Koelmeyer et al., 2019). Evidence is emerging that the detection of subclinical lymphedema through prospective