TITLE: Blood Pressure Monitoring and Venipuncture for Post Mastectomy or Post Lumpectomy Patients: Clinical Safety and Guidelines

DATE: 26 October 2016

RESEARCH QUESTIONS

1. What is the clinical evidence regarding the safety of performing manual blood pressure measurements on the ipsilateral arm of post mastectomy or post lumpectomy patients?

2. What is the clinical evidence regarding the safety of performing a venipuncture on the ipsilateral arm of post mastectomy or post lumpectomy patients?

3. What are the evidence-based guidelines regarding blood pressure monitoring in post mastectomy or post lumpectomy patients?

4. What are the evidence-based guidelines regarding the performance of venipuncture in post mastectomy or post lumpectomy patients?

KEY FINDINGS

Two non-randomized studies were identified regarding the safety of performing manual blood pressure measurements on the ipsilateral arm of post mastectomy or post lumpectomy patients. In addition, one evidence-based guideline was identified regarding venipuncture in patients with breast cancer following an axillary intervention.

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. No filters were applied to limit the retrieval by study type. The search was also limited to English language documents published between January 1, 2006 and October 12, 2016. Internet links were provided, where available.
The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

**SELECTION CRITERIA**

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

<table>
<thead>
<tr>
<th>Table 1: Selection Criteria</th>
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<tr>
<td><strong>Population</strong></td>
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<tr>
<td>Women who have undergone a mastectomy procedure (with or without axillary clearance) or lumpectomy procedure (with or without sentinel node biopsy)</td>
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<td><strong>Intervention</strong></td>
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<td>Q1: Manual blood pressure measurement performed on the ipsilateral arm post mastectomy or post lumpectomy surgery</td>
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<td>Q2: Venipuncture performed on the ipsilateral arm post mastectomy or post lumpectomy surgery</td>
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<td>Q3: Blood pressure monitoring</td>
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<td>Q4: Venipuncture</td>
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<tr>
<td><strong>Comparator</strong></td>
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<tr>
<td>Q1: Manual blood pressure measurement performed on the contralateral arm post mastectomy or lumpectomy surgery; or, no blood pressure monitoring</td>
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<tr>
<td>Q2: Venipuncture performed on the contralateral arm post mastectomy or lumpectomy surgery; or, no venipuncture procedure</td>
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<td>Q3, 4: No comparator</td>
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<td><strong>Outcomes</strong></td>
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<td>Q1, 2: Clinical safety and harms (e.g., rate of infection, lymphedema, or peripheral nerve damage)</td>
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<td>Q3, 4: Evidence-based guidelines (e.g., how should blood pressure monitoring or venipuncture be performed?; should any precautions be taken in performing manual blood pressure measurements or venipuncture?)</td>
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<td><strong>Study Designs</strong></td>
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<tr>
<td>Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized trials, evidence-based guidelines</td>
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**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, and evidence-based guidelines.

Two non-randomized studies were identified regarding the safety of performing manual blood pressure measurements on the ipsilateral arm of post mastectomy or post lumpectomy patients. In addition, one evidence-based guideline was identified regarding venipuncture in patients with breast cancer following an axillary intervention. No health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.
OVERALL SUMMARY OF FINDINGS

Two non-randomized studies were identified.\textsuperscript{1,2} One study investigated the association between blood draws, injections, blood pressure readings, trauma, and cellulitis in the at-risk arm, and air travel and increases in arm volume in patients treated for breast cancer and screened for lymphedema.\textsuperscript{1} In 3,041 measurements, no significant association between relative volume change or weight-adjusted change increase were reported in patients undergoing one or more blood draws, injections, number of flights, or duration of flights. A multivariate analysis showed that factors significantly associated with arm volume increase included body mass index, axillary lymph node irradiation, and cellulitis. The authors concluded that arm volume increases may not be associated with ipsilateral blood draws, injections, blood pressure readings, and air travel.\textsuperscript{1}

Another study involved three breast cancer survivors who had axillary lymph node dissection (ALND) and had later developed end-stage renal failure.\textsuperscript{2} The patients were referred for hemodialysis access construction at a single site. Imaging with ultrasound confirmed that veins appropriate for autogenous access construction were only present in the ipsilateral arm of patients. At two, 20, and 76 months after access construction for dialysis occurring three times a week, no patient developed significant lymphedema. The authors concluded that autogenous hemodialysis access construction does not contribute to the development of lymphedema in breast cancer survivors after ALND.\textsuperscript{2}

Evidence-based recommendations by Jakes et al.\textsuperscript{3} were identified regarding the development of lymphedema associated with venipuncture in breast cancer patients. The findings of a small prospective study, case control studies, and retrospective reviews suggest that there is no good evidence that venipuncture can precipitate lymphedema. The authors concluded that, when possible, venipuncture should be performed on the contralateral arm. If this is not possible, venipuncture in the ipsilateral arm or insertion of a central venous device may be considered in patients who do not have lymphedema. This approach may be favorable to making further attempts in the contralateral arm or using alternative veins such as those in the foot.\textsuperscript{3}
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses
No literature identified.

Randomized Controlled Trials
No literature identified.

Non-Randomized Studies


Guidelines and Recommendations


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APPENDIX – FURTHER INFORMATION:

Previous CADTH Reports


Review Articles


Additional References
