Improving Axillary Sentinel Lymph Node Imaging in Breast Cancer Patients

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Background
Axillary sentinel lymph node (SLN) imaging is indicated in biopsy proven breast cancer without clinically palpable nodes. Accurate identification and assessment of these nodes is crucial in determining prognosis. When nodes are found to be negative, unnecessary axillary nodal clearance can be prevented.

British Nuclear Medicine Society Standards
• SLNs should be identified in 95% of patients
• 20-30% of SLNs should contain metastatic cells

1st Audit Cycle Results
• Nodes were identified in 26 out of 32 patients (81%), below the recommended standard.
• Radioactive nodes were found intra-operatively in all 6 patients with negative imaging.
• Metastatic cells were seen in 9 (28%) patients.

2nd Audit Cycle Results
• Nodes were identified in 37 out of 38 patients (97%), representing a significant improvement (p<0.05).
• Radioactive nodes were found intra-operatively in the 1 patient with negative imaging.
• Metastatic cells were seen in 11 (29%) patients.

Indicator
• SLNs identified on imaging
• SLNs confirmed intra-operatively using a gamma probe

1st Action Plan
Our initial findings prompted a full review of procedure, for both injection and imaging techniques. This resulted in three changes to departmental protocol; type of needle used, injection technique, and changes to imaging technique when nodes are not initially visible. These changes were disseminated to staff locally.

2nd Action Plan
Our results were shared with the other nuclear medicine (NM) department in our trust where SLN imaging is performed. This led to a standardised method being adopted. The value of imaging as a means of quality assurance was also highlighted to the remaining NM departments in our trust where SLN localisation without imaging is performed.

Methods
Caldicott approval was obtained. The images and clinical details of all patients undergoing axillary SLN imaging at Glasgow Royal Infirmary from March 2013 to February 2015 were reviewed retrospectively. Data was analysed using Microsoft Excel. A repeat audit of all patients imaged from May 2016 to May 2017 was performed after changes had been implemented from the 1st audit.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>1st Cycle</th>
<th>2nd Cycle</th>
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<tbody>
<tr>
<td>Mean Age (Range)</td>
<td>53.8 (31 – 79)</td>
<td>50.9 (28 – 73)</td>
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<tr>
<td>Procedure:</td>
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<tr>
<td>Wide local excision &amp; SLN biopsy</td>
<td>7 (22%)</td>
<td>1 (3%)</td>
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<td>Mastectomy &amp; SLN biopsy</td>
<td>25 (78%)</td>
<td>37 (97%)</td>
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References: