Improving washing methods for Power Tool Hoses

Introduction
In view of the fast growing demand for more efficient ways in reprocessing surgical instruments, Theatre Sterile Supplies Unit (TSSU) is always seeking ways to improve efficiency of reprocessing surgical instruments. As such, this improvement project was carried out to look into areas where staffs can actively participate in improving the reprocessing process of power tool hoses so as to enhance work efficiency.

Mission Statement
To reduce Power Tool Hoses washing time and improve Adenosine Triphosphate (ATP) results by 50% in TSSU decontamination area within 6 months.

Background
In TSSU Decontamination area, staff manually washes all used Power Tool Hoses received from the Operating Theatres.

Results
Conducted ATP swap test. ATP is the universal energy molecule found in all cells including bacteria. This test measures ATP amount left on the hose after a washing cycle using Relative Light Unit (RLU) as unit of measurement. Higher RLU means more bacteria remains on the hose.

T-test result is less than 0.05, which is statistically significant indicating the RLU has decreased when the Power Tool Hoses are machine-washed.

Cost Savings
Total time savings of 870hrs/yr. Total manpower cost savings of $21,924/yr.

Table 1: ATP Swap Test Results

<table>
<thead>
<tr>
<th>S/N</th>
<th>Implementation Plan</th>
<th>Responsible</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Meeting and discussion with members and QI coach</td>
<td>All members and coach</td>
<td>1/8/18</td>
</tr>
<tr>
<td>2</td>
<td>Discussing with Instrument vendors on impact of the hose reliability using the Auto-mechanical washer instead of manual washing</td>
<td>Yew Wai Kean</td>
<td>12/8/18</td>
</tr>
<tr>
<td>3</td>
<td>Fabrication and testing of the hose basket</td>
<td>Lim Chai Kim</td>
<td>21/8/18 – 29/8/18</td>
</tr>
<tr>
<td>4</td>
<td>Demonstrate to TSSU staff on the use of the hose basket, arrangement of the hose in the basket, highlighting the importance of the propeller height limit when placing the basket into the washer cart</td>
<td>All members</td>
<td>7/9/18</td>
</tr>
<tr>
<td>5</td>
<td>Create pictorial guidelines and monitor feedback from all staffs</td>
<td>All members</td>
<td>10/9/18</td>
</tr>
<tr>
<td>6</td>
<td>Conduct test to measure the amount of bio-burden on the hoses after the mechanical washing process</td>
<td>Yew Wai Kean</td>
<td>7/10/18 – 11/10/18</td>
</tr>
<tr>
<td>7</td>
<td>Evaluate solutions implemented</td>
<td>All members and coach</td>
<td>18/10/18</td>
</tr>
</tbody>
</table>

Conclusion
ATP swap test and visual inspection of Power Tool Hoses for any signs of deterioration continued to be carried out. Feedback from staff was generally positive as they have more time to re-process other instruments. Now, we are in the process of creating a larger basket to accommodate 2 more hoses, which would save more time and enhance efficiency in the washing of Power Tool Hoses in TSSU.

Interventions / Initiatives
1. To migrate manual hose washing to auto mechanical washer as it provides a much more consistent washing and better disinfection quality.
2. To fabricate a hose basket to fit two or more hoses.
3. To create shields to prevent water from entering into the hose ends and yet be able to wash the end connectors.
4. To ensure the final assembly meets the washer cart propeller height limit requirement.