Efficacy of Current Sanitation Recommendations at Reducing Rates of Toxic Shock Syndrome in Menstruating Women Using a Menstrual Cup

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Methods Cont.

Table 1. Search Strings and Results

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<tr>
<th>Database Searched</th>
<th>Date of Search</th>
<th>Key Word Search String</th>
<th>Number of Results</th>
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<td>PubMed</td>
<td>9/2/2023</td>
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<td>PubMed</td>
<td>10/2/2023</td>
<td>Menstrual cup sanitation</td>
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<td>Menstrual cup cleaning</td>
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<td>MEDLINE (OVID)</td>
<td>10/2/23</td>
<td>Toxic shock syndrome and tampon and menstrual cups</td>
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<td>Embase</td>
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Results Cont.

- The efficacy of current sanitation recommendations of menstrual cups at preventing mTSS when compared to that of tampons was found to be was found to be less effective according to Nonfoux et al., but effective according to Friburg et al.
- The discrepancy is due to the presence of oxygen:
  - Nonfoux et al conducted aerobic treatments based on a modified method previously used by Reiser et al.
  - This correlated positively with TSST growth in comparison to tampons.
  - Friburg et al. conducted anaerobic experiments as a rational of the recommended form of insertion which evacuates excess air from the vault of the MC.
- This was found to lack significant growth of S. aureus after cleaning.
- Mitchell et al. & Schilevert, P. corroborate the presence of oxygen in the growth of TSST in tampons.
- The conflict of an anaerobic vs aerobic condition on the growth of TSST should be reduced to the typical use of MCs.
- Surveys conducted by Parent et al. suggests MCs are not used according to package instructions, suggesting that residual air may be present during MC usage.

Discussion

- MC hygiene protocols should be updated based on the suggestions presented in the reviewed literature in order to further prevent incidence of mTSS:
  - Use smallest appropriately sized cup
  - Frequency of change should be based on menstrual flow
  - Wash with soap & water, then boil to sanitize between each use
  - A second rotational cup should be available between cleanings
  - Wash hands before inserting MC
  - Insertion instructions should emphasize reduction of air
  - Manufacturers must emphasize the risk of mTSS with MC use
- Popular MC brands fall short of these recommendations most frequently in sizing, insertional instruction, and cleansing.
- Sizing was advertised to be guided by gravity, age, and vaginal canal depth
- All brands recommend cleaning with soap & water after each use and boiling only after the conclusion of each cycle. None mention a second rotational cup for use between cleanings.
- Brands that did not meet frequency of changing was due to guidance via time interval rather than menstrual flow

Future Direction

- The CDC guidelines lack clear guidance on hygiene measures for menstrual cups and need to be updated with specific information gleaned from research. Further studies should continue to examine the relationship between MCs, tampons, and mTSS.