BACKGROUND

The Calgary Health Region (CHR), a large integrated care organization in Alberta, responded to a rapid review of reuse of SUDs in order to inform Regional policy, as there is no current overarching Provincial or National policy regarding this issue.

There is currently a wide range of single use medical device (SUD) types being reused in many health systems. SUDs range from inexpensive basic equipment, such as disposable procedure gloves, to expensive and complex devices with electronic components, such as electrophysiology catheters.

To our knowledge, there are no published systematic reviews or health technology assessments (HTAs) that address the risk, benefits, or cost issues associated with SUDs in a generic fashion.

In Canada, HTAs have been published on single-use cardiac catheters (1,2) and hemodialysis (3). Most attention appears to have been placed on relatively expensive SUDs for which the financial impact on health systems would presumably be larger.

This rapid review considered only critical devices defined as any device that comes in contact with mucous membranes or non-intact skin but does not penetrate them.

Critical devices: any device that enters sterile areas

METHODS

Literature Search

Published peer-reviewed journal articles were searched using the Internet search engine PubMed.

Search terms using the “and” operator in all cases:
- disposable device cost (224 references)
- disposable device cost reuse review articles (22 references)
- disposable device cost re-use (311 references)
- medical device reuse (20 references)
- reprocessing device (289 references)
- reprocessing medical device (14 references)
- single-use device re-use safety (58 references)
- single-use device reuse economics (72 references)
- sterilization device medical (32 references)

Internet search engines (Google and Google Scholar) identified relevant government and non-peer-reviewed literature sources of information using the following search terms:
- medical device reprocessing cost
- single-use medical device
- single-use medical device cost
- single-use medical device costs
- single-use device re-use costs
- single-use device reuse safety
- single-use device re-use safety

No data restrictions were used

RESULTS

Organizational Risks

Legal/ Ethical Considerations

- Civil liability
- Patient safety
- Distributive justice in allocating available resources
- Disclosure and allocation issues if some patients receive new devices and some receive reused

Financial/ Operational Considerations

- Cost of new device
- Direct labour for cleaning and sterilizing
- Testing for device integrity and effectiveness of sterilization
- Cleaning agents, disinfectants, monitors, etc.
- Staff education on reprocessing
- Cleaning, sterilization, and other reprocessing protocol development
- Possibly increased liability insurance
- Amortization of capital equipment
- Disposal
- Increased inventory/storage of reprocessed devices long turnaround time for reprocessing

Table 1: Health Risks Associated with SUD Reuse

<table>
<thead>
<tr>
<th>Risk</th>
<th>Issue</th>
<th>Risk Management</th>
</tr>
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<tbody>
<tr>
<td>Cost of new device</td>
<td>Critical devices that cost at initial and at reprocessing time (including labour) should not be reused.</td>
<td>Critical devices that cost at initial and at reprocessing time (including labour) should not be reused.</td>
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<tr>
<td>Direct labour for cleaning and sterilizing</td>
<td>Failure to follow proper cleaning and sterilizing protocols.</td>
<td>Proper cleaning and sterilizing protocols should be followed.</td>
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<tr>
<td>Testing for device integrity and effectiveness of sterilization</td>
<td>Device failure leading to device failure.</td>
<td>Testing for device integrity and effectiveness of sterilization should be done.</td>
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<tr>
<td>Cleaning agents, disinfectants, monitors, etc.</td>
<td>Failure to follow proper cleaning and sterilizing protocols.</td>
<td>Proper cleaning and sterilizing protocols should be followed.</td>
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<tr>
<td>Staff education on reprocessing</td>
<td>Failure to follow proper education on reprocessing.</td>
<td>Proper education on reprocessing should be followed.</td>
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<tr>
<td>Cleaning, sterilization, and other reprocessing protocol development</td>
<td>Failure to follow proper development of reprocessing protocol.</td>
<td>Proper development of reprocessing protocol should be followed.</td>
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<tr>
<td>Possibly increased liability insurance</td>
<td>Failure to follow proper insurance protocol.</td>
<td>Proper insurance protocol should be followed.</td>
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<tr>
<td>Amortization of capital equipment</td>
<td>Failure to follow proper amortization of capital equipment.</td>
<td>Proper amortization of capital equipment should be followed.</td>
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<tr>
<td>Disposal</td>
<td>Failure to follow proper disposal protocol.</td>
<td>Proper disposal protocol should be followed.</td>
</tr>
<tr>
<td>Increased inventory/storage of reprocessed devices</td>
<td>Failure to follow proper inventory/storage protocol.</td>
<td>Proper inventory/storage protocol should be followed.</td>
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DISCUSSION & CONCLUSIONS

The CHR SUDs Reuse Task Force used the results of the rapid review in help inform Interim Regional policy regarding reuse. The CHR subsequently adopted the recommendation of the Task Force to temporarily suspend reuse of single use cardiac catheters until Health Canada issues recommendations/policies.

With limited health care resources, there will always be a trade-off between the human resources and costs associated with purchasing and disposing of non-reused SUDs.

Evaluation of operational pathways, especially for more expensive and commonly used SUDs, will be useful to properly determine the balance of benefits, risks, and costs under a reuse policy.

The review of SUDs is interwoven with the issue of infection control and reprocessing procedures in general and as applied to multiple use devices.

REFERENCES

(2) Report from the Canadian Coordinating Office for Health Technology Assessment (CCOHTA). Reuse of single-use cardiac catheters. 1994.