Replacement and Separation of Kerrisons to Reduce Bioburden
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Background

- Efficient instrument reprocessing is a critical challenge nationwide
- Meeting reprocessing standards requires complex coordination of multiple hospital functions, resources, and stakeholders
- Michigan Medicine conducted 51,583 cases and reprocessed ~15,000 items/day in FY14
- Insufficiently cleaned instruments containing bioburden or debris negatively impact institutional outcome measures, most notably patient safety

Problem Statement

- OR Staff reported frequent problems related to the reprocessing and delivery of surgical instruments
- 51% of problems reported were due to bioburden/debris

Solution Approach

Key Topics

- Definition and Preparing New Instrument Sets
  - How many sets and storage trays should be purchased?
  - What will each of them contain?
  - How will new sets be defined and barcoded?
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  - How much safety stock will be required & purchased?

- Storage
  - Where will new items be kept?
  - How will they be accessed and tracked?

- Logistics
  - What will the new workflow be for CSPD runners?
  - What will the new workflow be for CSPD runners?

- Metrics
  - How we evaluate success?
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Scoping Questions

1. Conducted observations of perioperative instrument flow
2. Analyzed historical set-level bioburden/debris event data
3. Identified Set L as difficult to clean
4. Identified Kerrison rongeurs as instrument most likely to cause bioburden/debris events in Set L via instrument-level analysis and staff interviews:
   - Hypothesis 1: Separating high-from low-risk instruments improves reprocessing outcomes
   - Hypothesis 2: Instrument design features impact cleanliness
5. Proposed a two-part intervention to:
   - Separate existing Kerrison rongeurs from the rest of Set L
   - Replace the Kerrison rongeurs with new, easier-to-clean Kerrisons

Instrument Feature | Old Kerrisons | New Kerrons
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Blades | Partially Accessible | Accessible
Channel | Inaccessible | Accessible
Grooved components | Inaccessible | Accessible
Jaws/Hinge | Inaccessible | Accessible

6. Conducted cost-benefit analysis of the proposed interventions

7. Implemented pilot study and tracked bioburden/debris event data post-intervention

Impact/Results

Benefits observed associated with this intervention:
1. To date, 0 bioburden/debris events related to new Kerrison set
2. Average monthly bioburden/debris events related to Set L decreased by 63.2% from 3.73 to 1.37
3. OR time saved provides estimated annual savings of $23,490 to $236,290 (based on average event delays of 5-30 min)

Applying engineering approaches to configuring sets (e.g., high-risk instrument separation) can improve quality and save money

Operating Room Bioburden/Debris Events
(Post-intervention: Jan – Aug 2016)

Set L accounts for 8.9% of post-intervention bioburden/debris events, compared to 47% of pre-intervention events

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Set L Bioburden/Debris Events
(Jan 2015 – Sept 2017)

Pre-intervention vs Post-intervention