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Reuse, repair, refurbish, remanufacture, repurpose and recycle; these R's are all viable circular frameworks in order to enhance sustainability. When trying to implement these in order to work towards a more sustainable hospital, and especially operating room a problem occurs: disposable OR equipment. This type of equipment, such as surgical staplers, vessel sealers, scissors and more, are discarded after surgery. Millions of euro's are lost, none of the R's are implemented, and thus a lot of waste is created. However, parts of these disposable instruments could be used circularly. Why is disposability the standard? Can we increase circularity in these disposable instruments? And what's necessary to reach this?



F.L.T.R. Top: Discarded surgical staplers, discarded surgical scissors.
F.L.T.R. Bottom: Disassembled surgical stapler, Other disposable equipment.

Methodology



Study at the *LUMC* and *Noordwest Ziekenhuis* of their different OR disposable streams.



Literature study on which disposable surgical instruments are suitable for circular use on a high-value component level?

- What are high-value components?
- Can different categories of (high-value components) disposables be determined?
- Which circular methods are available?
- Which regulatory obstacles prevent circularity?
- Is it interesting from a financial standpoint?

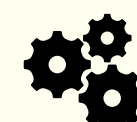
Goal

The primary goal is to determine which disposable surgical equipment is suitable for circular use.

Hereafter there will be a focus on one specific disposable instrument, the surgical stapler by Johnson&Johnson. Research is done on which specific parts could be used circularly and what's needed to ensure integrity of parts..

Results

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Instruments with mono material parts and at least 1 actuator will yield the most profit when trying to implement circular use.



Disposables built of multiple components (unlike scissors) are mostly worth collecting for future reprocessing



Manufacturers could enhance circularity when acknowledging current problem of *the intended use*



Rules and regulations are currently the biggest problem when trying to go circular

Conclusion

It is certain that a division or categorization can be made in order to pinpoint OR equipment which is (can be) suitable for circular use. However, before doing this the current rules and regulations for either hospitals, manufacturers and processors must be assessed critically. In order to ascertain a good view of technical necessities to ensure the integrity of parts my research will continue as stated.