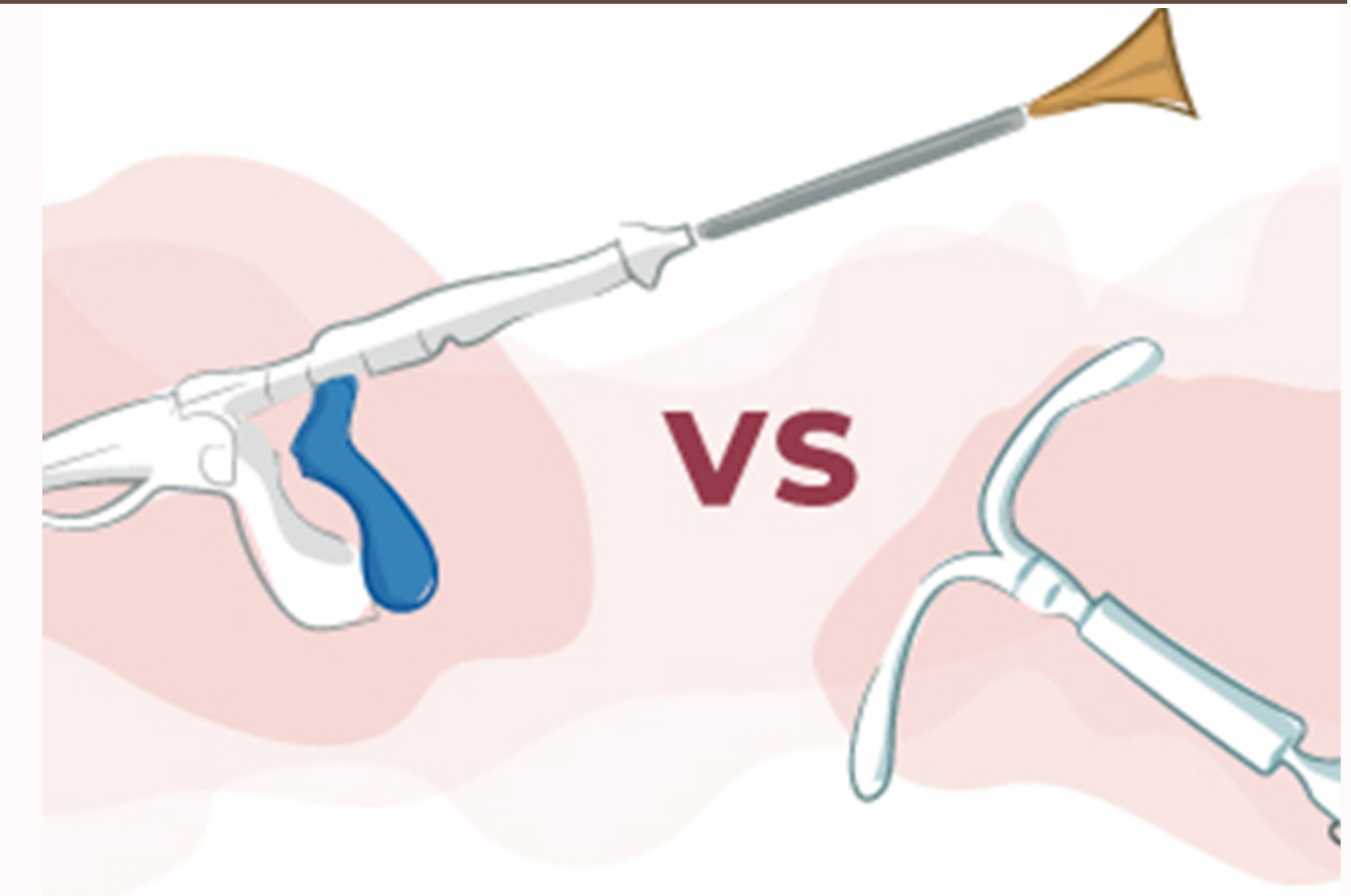
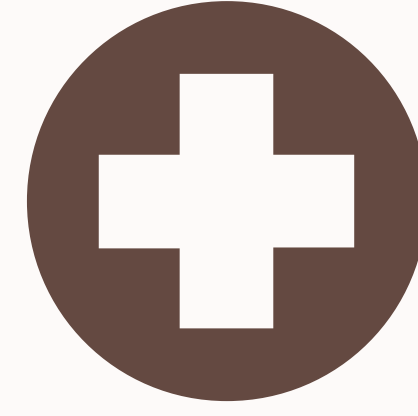


# ENVIRONMENTAL IMPACT: IUD VS NOVASURE

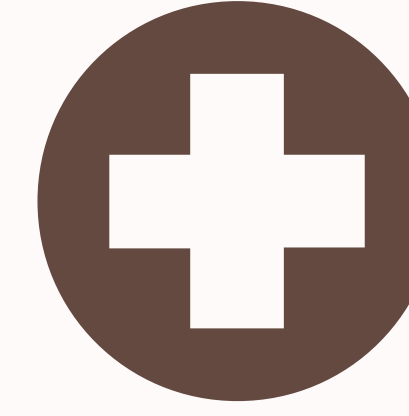
A comparative life cycle assessment on the NovaSure procedure compared to the insertion of the Mirena intra uterine device (IUD) in the treatment of menorrhagia (heavy menstrual bloodloss/HMB) without myomas in women with no (longer) wish to conceive in the Netherlands. What are the environmental hotspots in the different treatment options?



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## INTRODUCTION

Climate change is a growing issue with a tremendous impact on general health. Healthcare itself contributes 7-8% of the total carbon footprint[1]. To reduce this, research is needed on how to make this system more sustainable.

Sometimes, the clinical outcome of different treatment options can be equal, but the environmental impact might be different.

According to the latest guidelines of the treatment of HMB in the Netherlands, the clinical outcome of treatment through IUD and NovaSure are almost identical[2]. Therefore we would like to compare them regarding environmental impact to establish the environmental sustainability of the treatment options from cradle to grave\*.

## OBJECTIVES

- Determine the environmental impact of IUD and NovaSure procedure from cradle to grave
- Inform patients, healthcare providers and policymakers in the choice of treatment in HMB.
- Identify hotspots on which recommendations and policy can be made to reduce the environmental impact

## METHODOLOGY

The LCA methodology was used (Diag1). Data on use of materials was conducted by observing, counting and weighing materials used during both procedures as they are performed nowadays. No alterations were made. On each of the materials used data was collected regarding the environmental impact

## METHODOLOGY

For collection of data different databases were used such as Healthcare LCA, EcoInvent and pubmed. Also Mirena and NovaSure were approached for information of materials used, location of manufacturers etc. in both devices. For calculations of the raw data CMLCA was used.+ To analyze the results ReCiPe was used.+

## RESULTS

Insertion of Mirena IUD is done in the outpatient clinic. On average 12 disposables and 4 reusables were used. NovaSure is performed in the OR of the hospital. On average 18,6 disposables and 15 reusables were used. Data was collected on the life cycles of these materials. An average of resp. 2,1 and 2,8 non sterile gloves were used in conducting Mirena and NovaSure.

## ANALYSIS

45,5% of the non sterile gloves were not used according to protocol. Non sterile gloves were used when not necessary. (Fig 1)

The NovaSure procedure was performed in an operating room. According to the area requirements of the procedure, it is not necessary to perform the NovaSure in an operating room. Analysis through CMLCA and ReCiPe has not yet been performed when this poster was created. During the NovaSure procedure as much as 1,55 more disposables are used compared to the mirena insertion procedure. For the total of materials NovaSure uses 1,97 as much.

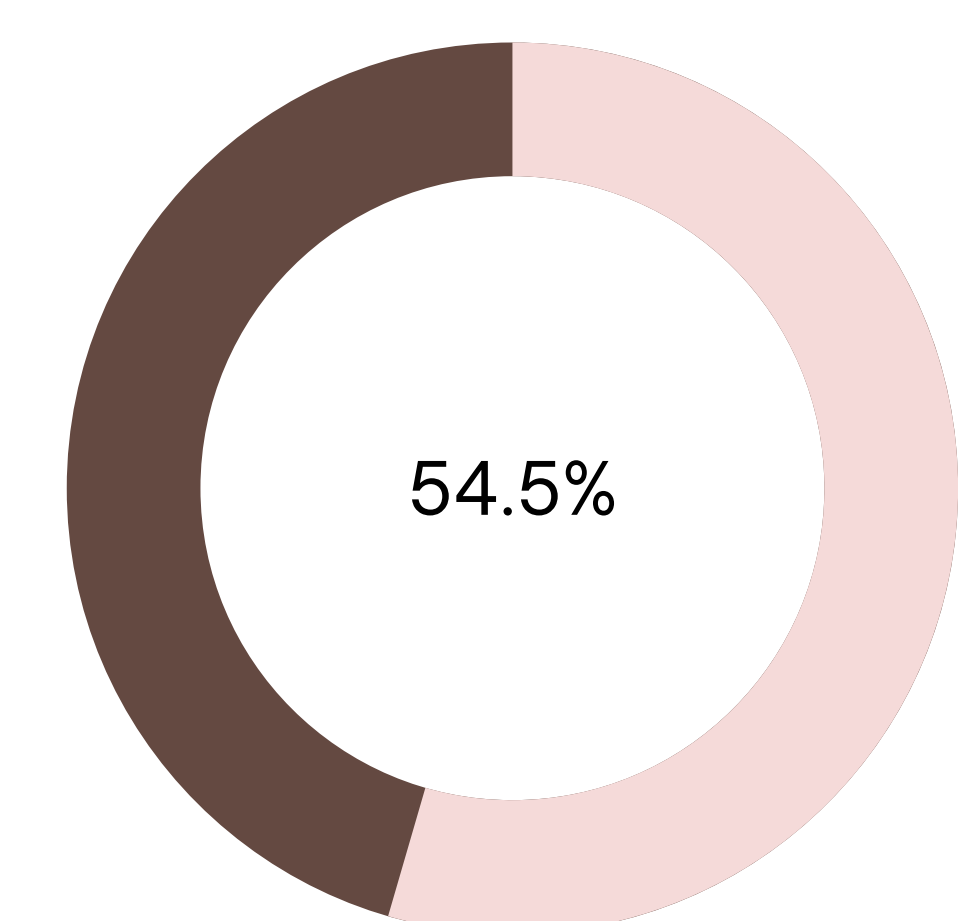
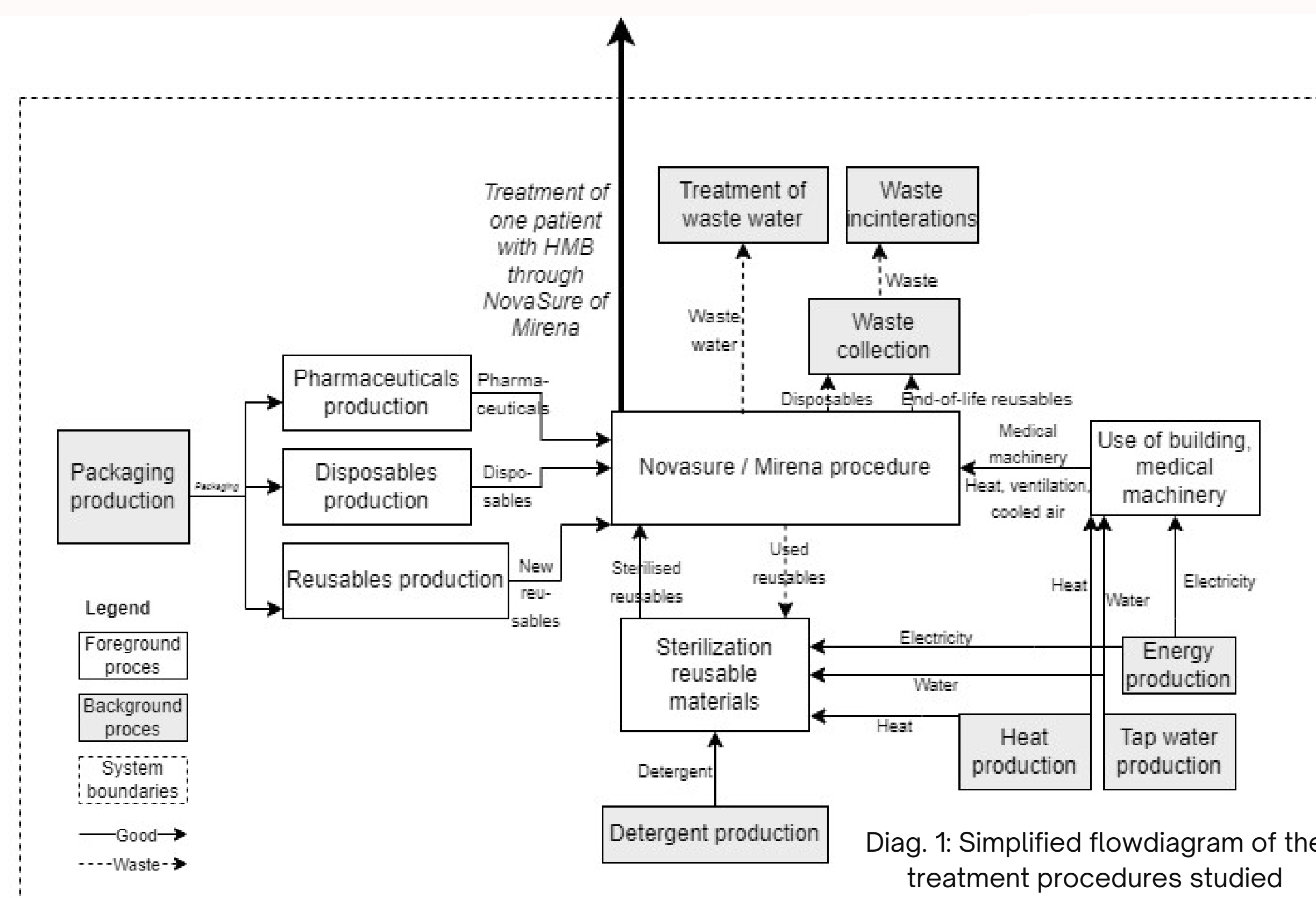
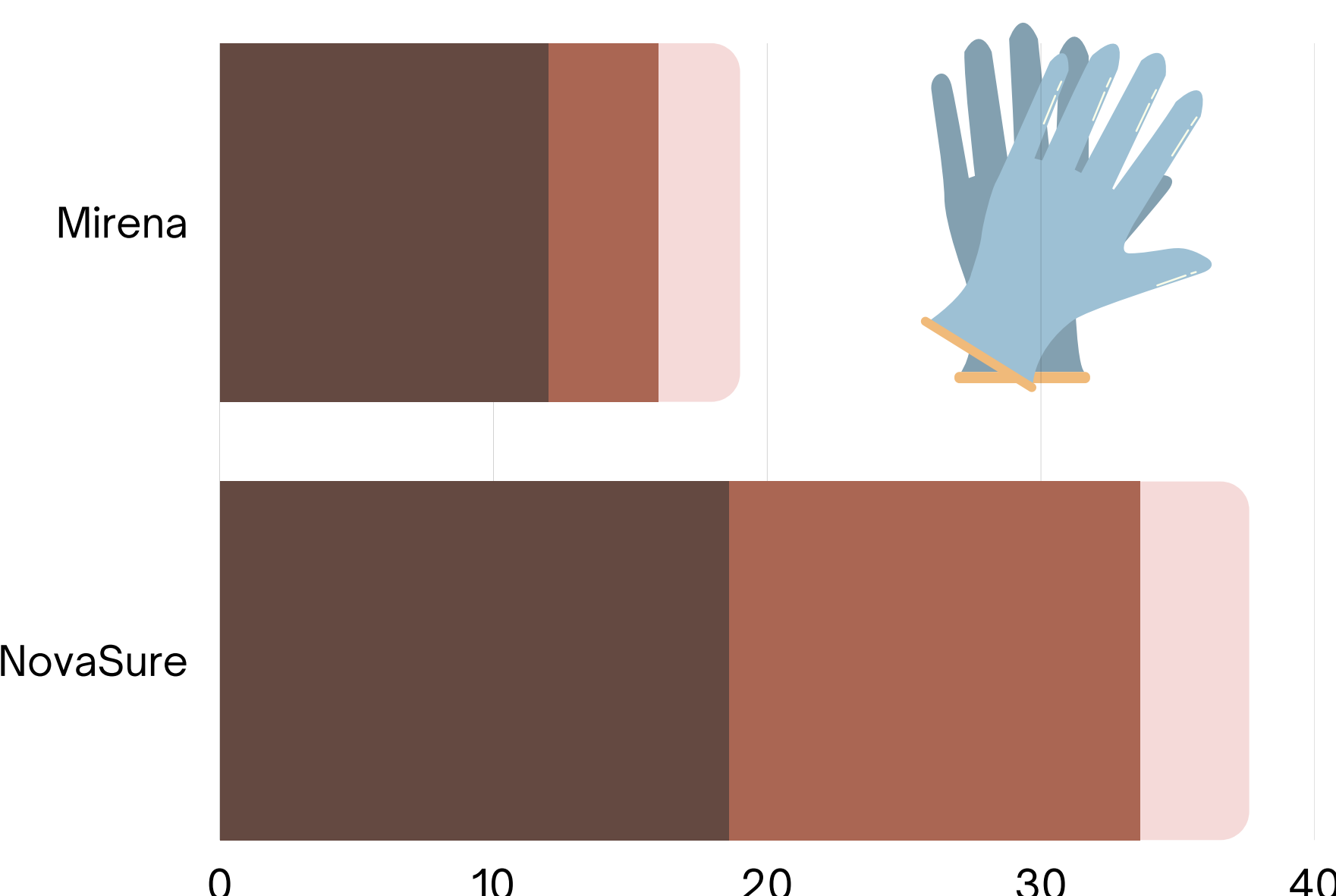


Fig. 1: Average use of non sterile gloves when required according protocol (pink) and use of non sterile gloves when not required according protocol



Diag. 2: Use of materials disposable, reusables and number of persons to perform a single Mirena or NovaSure procedure without sedation, devices itself are excluded, patients included

## CONCLUSION

For now the following conclusions can be drawn from the research:

- Nitrile non sterile gloves are not used according to protocols. Therefore a overuse on gloves takes place within Dutch hospitals.
- NovaSure procedure is currently being performed in an OR-room. This is not necessary.
- During the NovaSure procedure more disposables and reusables are used to perform the treatment compared to Mirena.

The actual environmental impact has yet to be determined through calculations.

### Definitions

"LCA: compilation and evaluation of the inputs, outputs and the environmental impacts of a product system throughout its life cycle [ISO 14040 standard]

\*Cradle to grave: all stages in the life cycle of a product/service from raw material extraction from the environment, material processing and manufacturing, use of the product or service, end-of-life disposal or recycling [3]

+ : the calculations had not yet been made when the poster was created

### Related literature

1. Romanello, M., McGushin, A., Di Napoli, C., Drummond, P., Hughes, N., Jamart, L., Kennard, H., Lampard, P., Rodriguez, B. S., Arnell, N. W., Ayebe-Karlsson, S., Belesova, K., Cai, W., Campbell-Lendrum, D., Capstick, S., Chambers, J., Chu, L., Ciampi, L., Dalin, C., ... Hamilton, I. (2021). The 2021 report of the Lancet Countdown on health and climate change: code red for a healthy future. *The Lancet*, 398(10311), 1619-1662.
2. Nederlandse Vereniging voor Obstetrie en Gynaecologie. (2021). Richtlijn hevig menstrueel bloedverlies (HMB). Retrieved from [https://richtlijndatabase.nl/richtlijn/hevig\\_menstrueel\\_bloedverlies/hevig\\_menstrueel\\_bloedverlies\\_-\\_startpagina.html](https://richtlijndatabase.nl/richtlijn/hevig_menstrueel_bloedverlies/hevig_menstrueel_bloedverlies_-_startpagina.html)