

Title

Bottoms up! Time for a more environmental- and user-friendly design of ultrasound gel bottle

Problem statement

Ultrasound gel is used as a medium in all ultrasound procedures to replace air between the transducer and the patient's skin, as ultrasound waves have trouble in traveling through air. Ultrasound examinations are performed at many different departments in the hospital (e.g., radiology, intensive care unit, obstetrics, gynecology, cardiology and urology).

The gel is packed in a bottle of 250 ml (Image 1). The bottle is never completely empty when thrown away (similar to a ketchup bottle; Image 2) and the complete plastic bottle is thrown away as general waste.

At the obstetric department 5-7 examinations can be performed with one bottle of ultrasound gel. On an average day, the obstetric ultrasound department alone performs over 50 examinations. Using therefore 8-10 bottles gel per day. There is a big waste of unused leftover ultrasound gel in the bottle and most importantly a great amount of plastic waste due to the high turnover of plastic bottles.

In the past, it was allowed to refill the gel bottles with a 5-litre refill package (Image 3). However, besides the fact that it was quite a struggle to refill the bottles, it is nowadays also against the hospital hygiene regulations.

A new design or solution to reduce the amount of plastic waste and to improve the complete use of the bottle could have a significant environmental impact.



Image 1.



Image 2.



Image 3.



Image 4.

Research question(s)

1. What is most sustainable redesign of an echo-gel bottle that prevents gel waste?
2. What are alternatives to the echo-gel bottle itself?
3. Are there alternatives/possibilities regarding hygiene rules that currently prevent the more sustainable option of refillable bottles?

Expected type of work

Possible work includes: Interviews with end users (medical specialists, sonographers, patients), interviews with hospital hygienist. Reviewing current ultrasound and hygiene protocols. Contact with and conducting interviews with the procurement departments. Design of a product material flow analysis, life cycle assessment (LCA).

References

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Commissioner details

Organization / Department: LUMC, Obstetrics and Gynaecology, Radiology Department

Name: Claar Lap, MD.PhD. gynaecologist, fellow perinatology, Els L. van Persijn - van Meerten MD, PhD. Radiologist and Julienne Janse MD. PhD. Gynaecologist

Email: c.c.m.lap@lumc.nl; e.l.van_persijn-van_meerten@lumc.nl; j.a.janse@lumc.nl