

Title

Let's reduce plastic impact in pediatric critical care

Problem statement

The Green Deal to improve environmental sustainability in healthcare aims to ultimately improve the impact of healthcare on climate change. As children will undergo the largest impact of climate change, pediatric healthcare should take an important responsibility in achieving the Green Deal. In a (pediatric) critical care unit, plastic disposables have a large impact on the environment. The Pediatric Intensive Care Unit (PICU) of the Erasmus MC –Sophia Children's hospital is divided in 4 units, and with a total of 26 beds it is the largest PICU in the Netherlands. In our PICU, 7 household waste bags are produced per bed per day. With 13% (approximately 13 kg per day), plastic packaging is the third largest part of garbage in the pediatric ICU. A recent analysis further showed that each individual product is wrapped in plastic on multiple levels. Moreover, the collection and recycling of plastics in the pediatric ICU is a major challenge because of the different kinds of plastics, the logistics around the bedside and the risks of contamination with human fluids and infectious agents.



Research question(s)

Can the plastic impact of the pediatric intensive care unit be reduced?

- What is the environmental impact of plastic (packaging) products in the pediatric ICU?
- What is the reason for the amount of plastic packaging of medical products, disposables? How can this be reduced?
- How can we collect and re-cycle plastic disposed in a pediatric ICU?
- What are the costs and benefits of changing the inflow and outflow of plastic in the Pediatric ICU?

Expected type of work

Material flow analysis, cost-benefit analysis, life-cycle assessment, interviews in the Intensive Care Unit, with commercial suppliers, distributors, and with companies, and possibly design of alternative materials, engagement of garbage disposal / recycling companies and distributors.

References

Work done by previous master students can be made available upon request (unpublished work).

Commissioner details

Organization / Department: Sophia Childrens Hospital (Erasmus MC Rotterdam), Pediatric Intensive Care Unit Department

Name: S. (Sascha) C.A.T. Verbruggen MD, PhD Pediatrician-Intensivist; Suzan Cochius - den Otter MD, PhD Pediatrician-Intensivist

Email: s.verbruggen@erasmusmc.nl, s.denotter@erasmusmc.nl