

EfCCNa Webinar on Sustainability in ICU

10 April 2024 19.00-20.30 hrs UTC/GMT+1 on ZOOM



European federation of Critical Care Nursing associations



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EfCCNa
Webinar

Position Statement on
Environmental Sustainability

Examples for good practice

Every ICU nurse in Europe can contribute to a more sustainable ICU

Join our free webinar to be informed about:

- the latest insights on sustainability in the ICU
- the new EfCCNa position statement on sustainability in the ICU
- and talk to fellow ICU nurses from all over Europe

www.efccna.org



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Moderator *Wouter de Graaf*

19.00 Introduction *Wouter de Graaf*

19.05 Keynote on sustainability in the ICU
Willemke Stilma

19.25 Presentation of the EfCCNa position statement on sustainability
Paul Rood

19.35 Break out rooms, hosted by EfCCNa sustainability group members

19.50 Wrap up, take home messages from the break out rooms and closing words
Wouter de Graaf

20.00 End of programme



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Sustainability in the ICU

Willemke Stilma, RN LLM PhD

Amsterdam University of Applied Sciences

Amsterdam University Medical Centers

Dutch National professional organisation for
Critical Care Nurses (V&VN-IC)



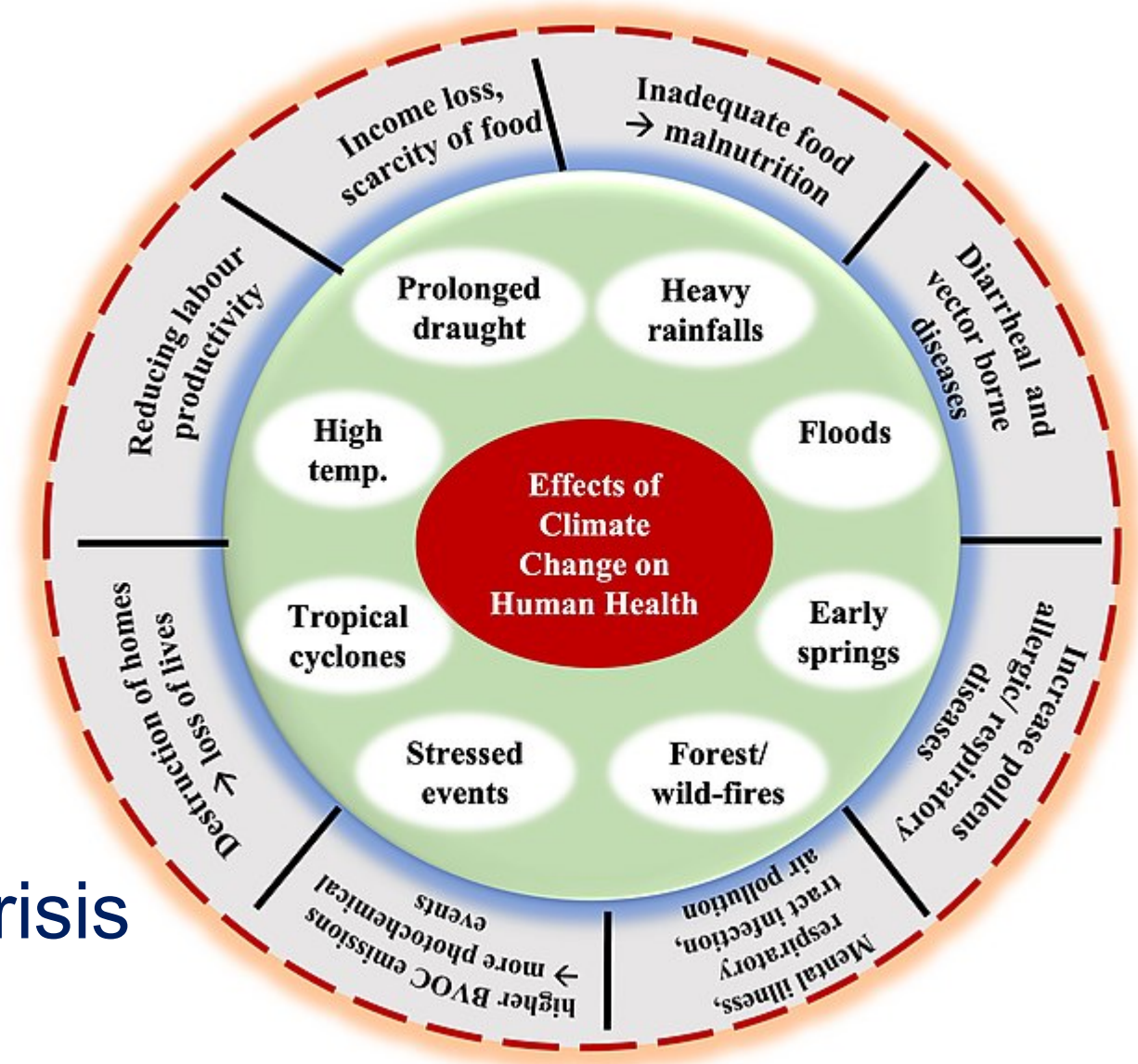
Content

- background
- Material Flow Analysis
- airway care interventions
- Life Cycle Assessment
- education
- what can you do?



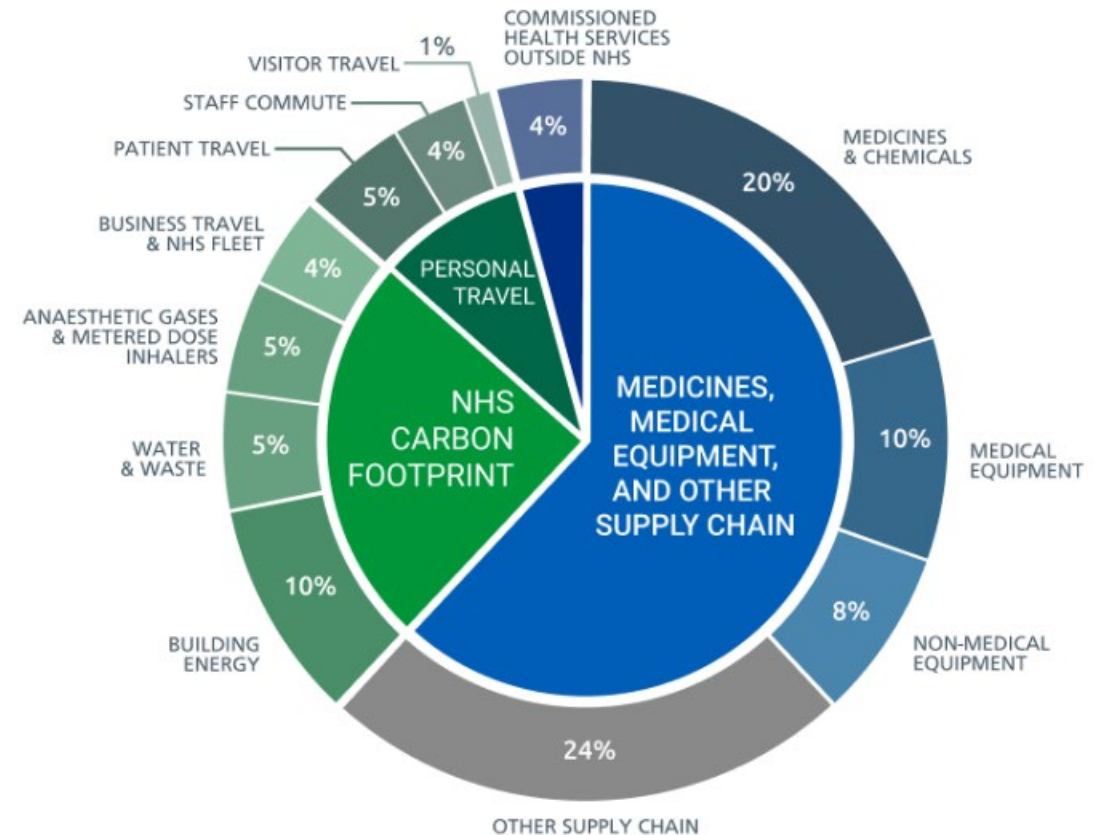
Climate crisis

- increasing temperature
 - flooding
 - heatwaves
 - scarcity of food
 - respiratory diseases
 - mental stress
- climate crisis = healthcare crisis



Global carbon footprint healthcare

- 4.4% global carbon emissions
- USA 8.5%
- western countries



<https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf>

EU Green Deal

1. promote health
2. raise awareness & understanding
3. 55% CO₂ reduction in 2030 & climate neutral in 2050
4. 50% reduction raw materials in 2030 & maximise circularity in 2050
5. reduce environmental harm by medication

The five goals of the Green Deal for Sustainable Healthcare

The climate crisis is the greatest threat to public health. Climate change and environmental pollution are leading to ever more and different healthcare challenges. Take infectious diseases and heat stress, for example.

In the Netherlands, the healthcare sector is responsible for 7% greenhouse gas emissions, 4% of waste and 13% of raw materials usage. In other words, through the delivery of care, the sector is contributing to the climate crisis. It is this paradox that healthcare sector is keen to resolve.

The healthcare sector is therefore working on 'sustainable care'. Agreements on this have been made in the [Green Deal Working together towards sustainable healthcare](#). This Green Deal has five goals.



1. Promote health among patients, clients and employees

Actions include:

- A healthy, varied, more plant-based and sustainable diet
- Applying new knowledge and experience in the field of health promotion



2. Raise awareness and understanding of the impact of healthcare on climate and vice versa

Actions include:

- Embedding sustainable healthcare and Planetary Health in all healthcare study programmes
- Actively contributing to the social debate around the relationship between human behaviour, climate change and environmental pollution, a healthy lifestyle and health



3. Reduce CO₂ emissions by 55% by 2030 and to be climate neutral by 2050

Actions include:

- Large healthcare providers draw up a board-approved roadmap containing a strategic sustainability plan for their premises by 1 July 2023 at the latest
- Reducing emissions from transport movements of personnel



4. Reduce the consumption of primary raw materials by 50% by 2030 and maximise circularity in healthcare by 2050

Actions include:

- Choosing 'reusable' rather than 'disposable' where possible
- Circular procurement as point of departure for procurement policy for materials, equipment and food



5. Reduce environmental harm caused by (use of) medication

Actions include:

- Appropriate prescribing and appropriate dispensing of necessary medicines
- Continuation of the Dutch chain approach on medicinal residues in water

What is a Green Deal?

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Strategies towards circularity

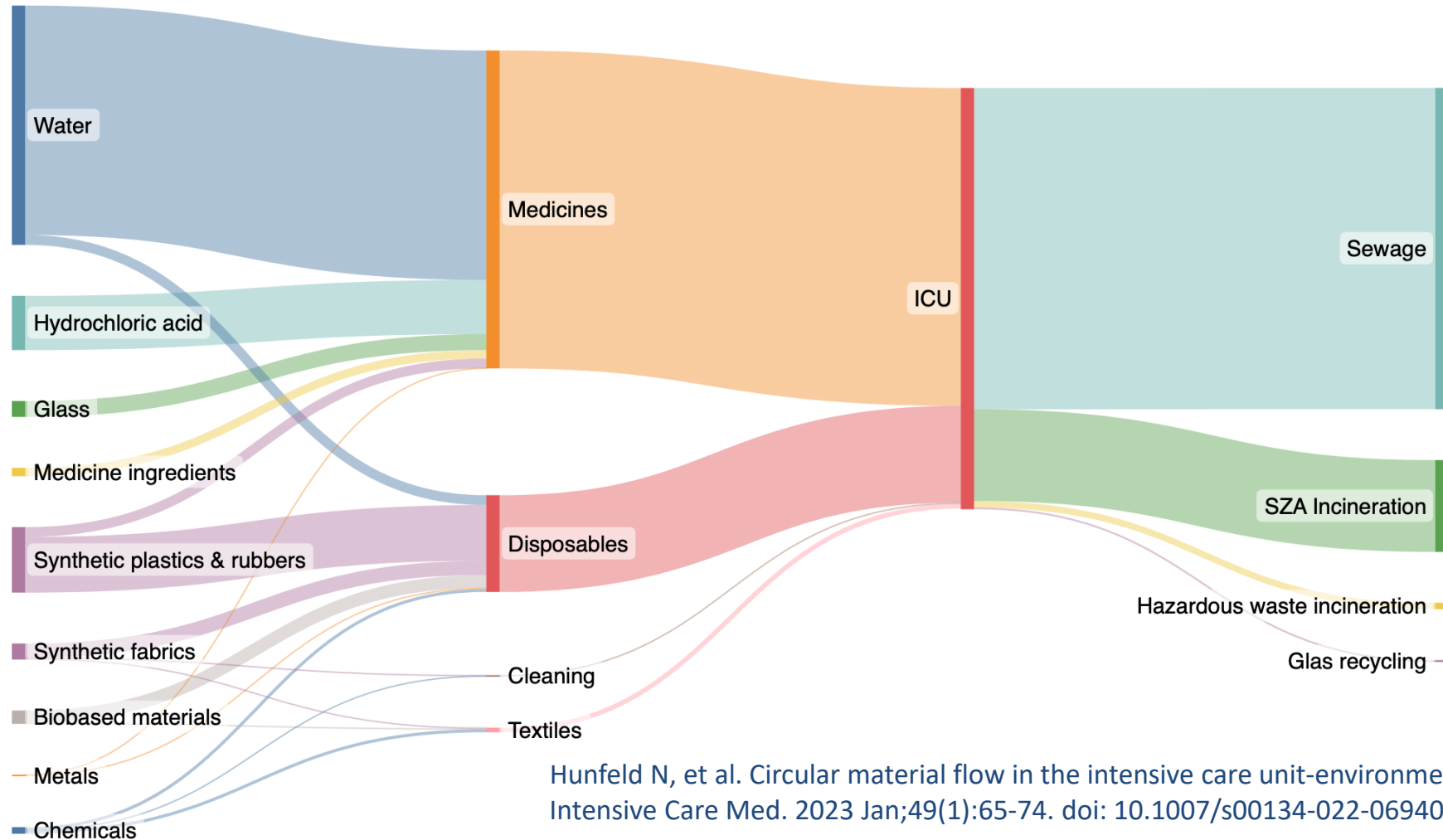
Smarter product use and manufacture	R0	Refuse	Make product redundant by abandoning its function or by offering the same function with a radically different product
	R1	Rethink	Make product use more intensive (e.g. through sharing products or by putting multi-functional products on market).
	R2	Reduce	Increase efficiency in product manufacture or use by consuming fewer natural resources
Extend lifespan of product and its parts	R3	Reuse	Re-use by another consumer of discarded product which is still in good condition and fulfils its original function
	R4	Repair	Repair and maintenance of defective product so it can be used with its original function
	R5	Refurbish	Restore an old product and bring it up to date
	R6	Remanufacture	Use parts of discarded product in a new product with the same function
	R7	Repurpose	Use discarded products or its part in a new product with a different function
Useful application of materials	R8	Recycle	Process materials to obtain the same (high grade) or lower (low grade) quality
	R9	Recovery	Incineration of material with energy recovery

Material Flow Analysis

- systematic analysis
- all materials used
- incidence and impact
- facilitate choices & projects



Material Flow Analysis (MFA) ICU



Hunfeld N, et al. Circular material flow in the intensive care unit-environmental effects and identification of hotspots. Intensive Care Med. 2023 Jan;49(1):65-74. doi: 10.1007/s00134-022-06940-6. PMID: 36480046

Use in a Dutch ICU

- Per patiënt per day:

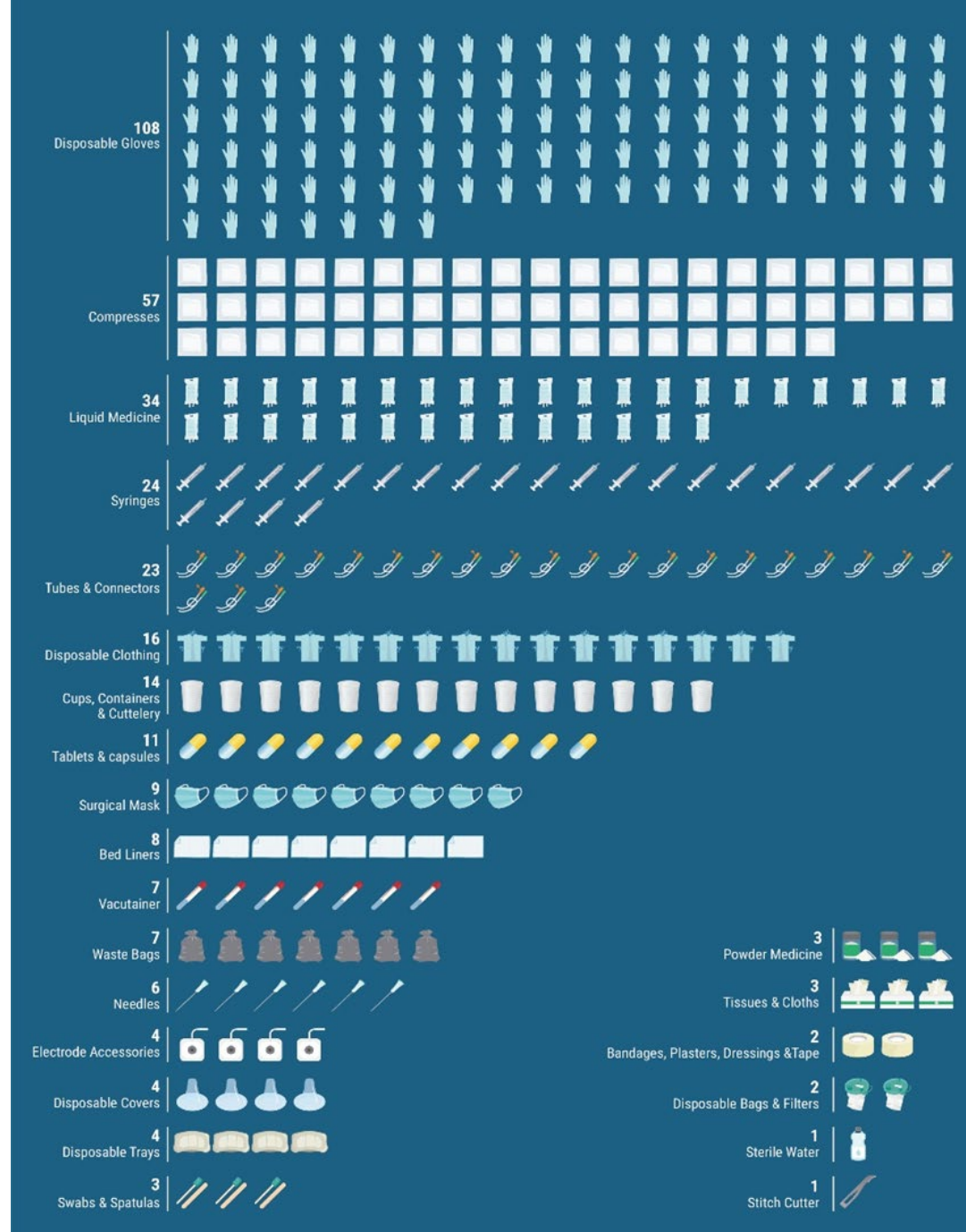
#108 Gloves

#57 Gauzes

#34 IV fluids

#24 Syringes

#8 Absorbing mats



Hotspots in the ICU

- packaging IV fluids
- gloves
- disposable gowns/skirts
- syringes
- IV lines
- surgical masks



Ventilated patient

- muscle weakness
- sedation
- endotracheal tube
- pathology



Airway care interventions

- humidification
- nebulization therapy
- artificial cough
- endotracheal suctioning



Endotracheal suctioning

- frequently applied (8-17 times per day)
- two systems:
 - open
 - closed
- most sustainable choice?



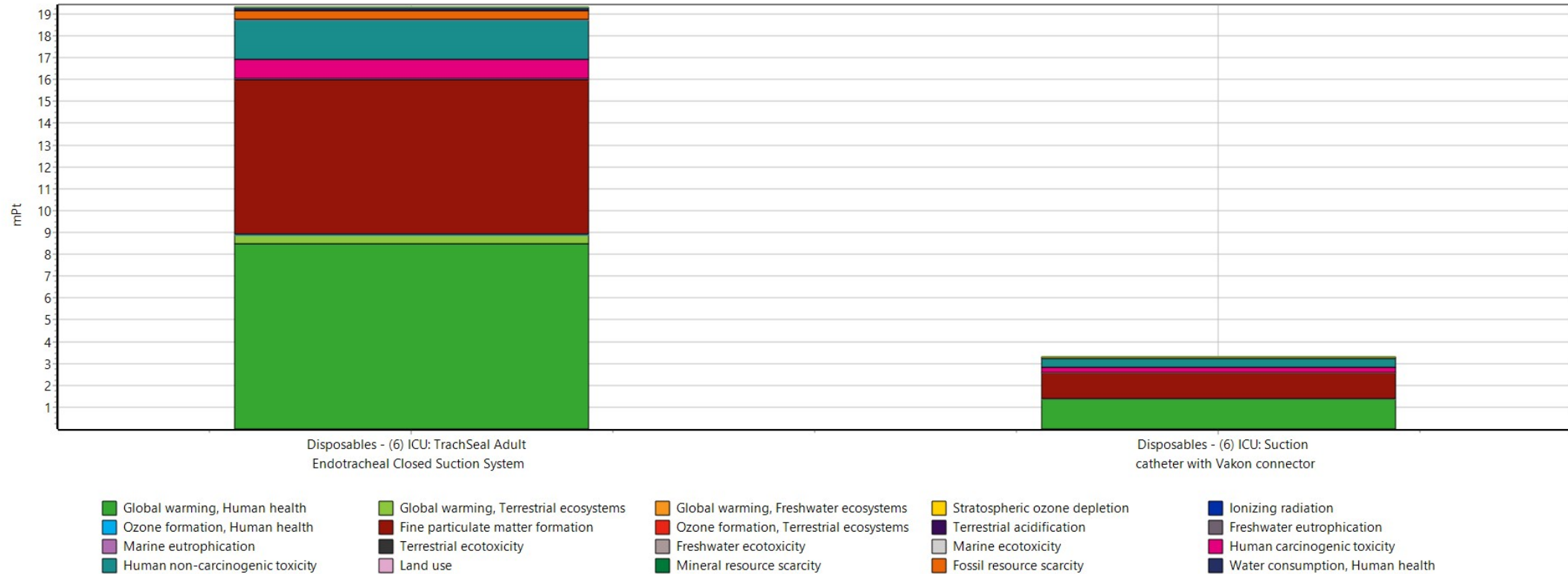
Life Cycle Assessment (LCA)

- analysis 18 midpoint indicatoren
- software
- Overview of the impact product on:
 - resources
 - water usage
 - land use
 - fine particulate matter formation
 - CO₂ emissions

Life Cycle Assessment (LCA)

- Materials
 - weight
 - kind of material
 - transport
 - specific information producer
 - database mean values

LCA – closed vs open suctioning



Method: ReCiPe 2016 Endpoint (H) V1.07 / World (2010) H/A / Single score

Comparing 1 p 'Disposables - (6) ICU: TrachSeal Adult Endotracheal Closed Suction System 72 hours' with 1 p 'Disposables - (6) ICU: Suction catheter with Vakon connector ideal tip';

Practical implications

- >6 times open suctioning, use of a closed system is more sustainable
- prolonged mechanical ventilation
- reduction nursing time
- discuss within your team
- adjust protocol
- purchasing policy

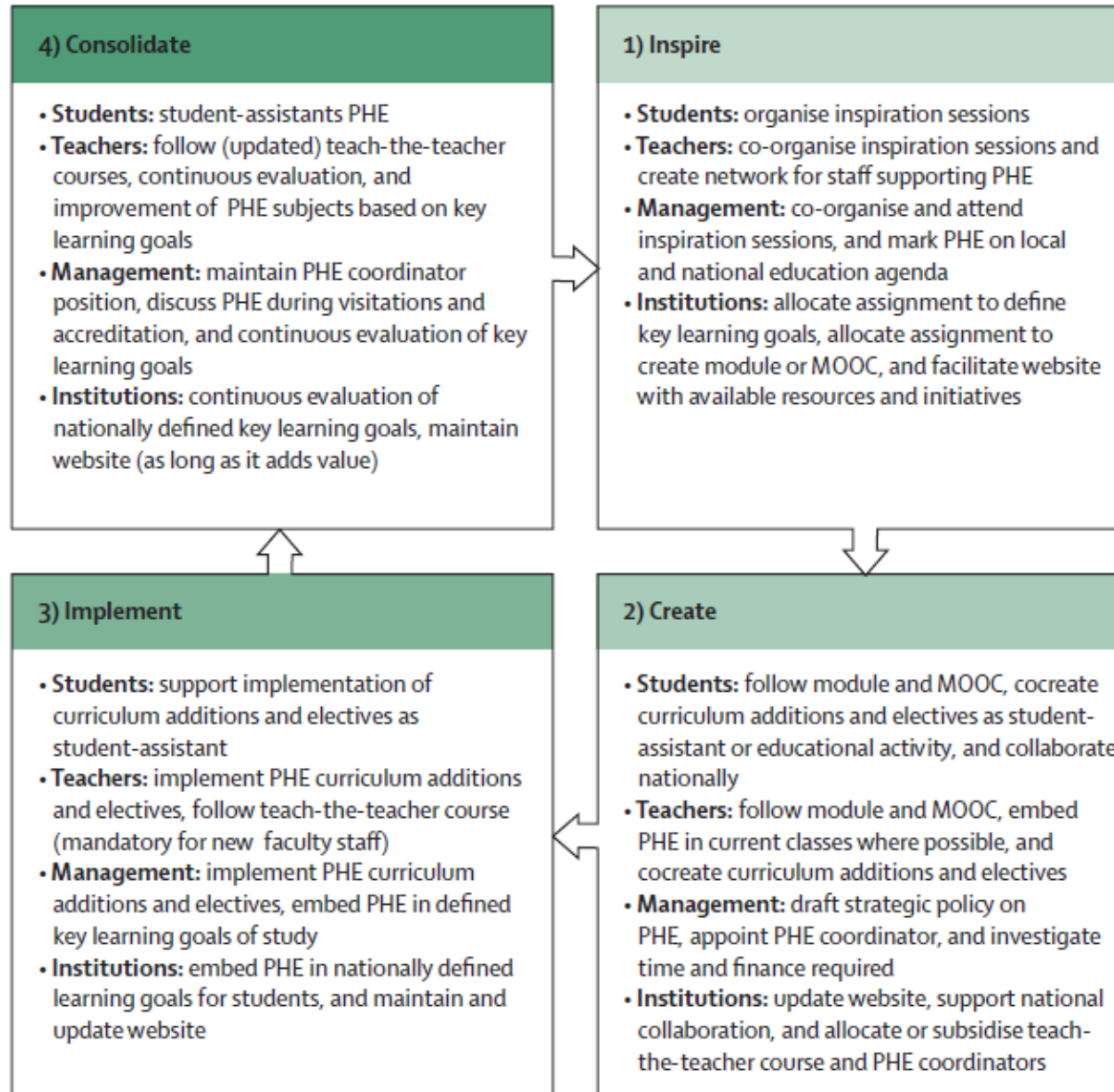
Nursing education

- awareness
- part of the Green deal
- future professionals
- Greener Collective
- NurSus toolkit



GREENER collective

Suggested agenda to realise the implementation of planetary health education in health-care curricula



Preconditions and required efforts for implementation of planetary health education in health-care curricula

- Formal ratification in educational regulations** underlining priority of the subject and making it part of formal visitations and testing
- Teach-the-teacher** availability of time and resources for staff to become familiar with planetary health
- Knowledge and resources** supporting students and staff by providing materials and expertise to create curriculum additions
- Transdisciplinary cooperation** collaboration within or between universities in full breadth of the planetary health field

Figure: Action agenda to implement planetary health in health education curricula (2022)

Bachelor nursing education

- creating awareness from year 1
- curriculum:
 - diseases
 - organisation of care
- reuse materials in lessons technical skills
- collaboration other faculties (technical engineers)

What can you do?

- discuss this topic with your colleagues
- search actively for new information and developments
- check possibilities in your own department
- www.sustainablehospital.org
- join or start a Green team

Green teams

- Green-hearted-professionals
- start with action
 - waste
 - cleaning inbox & emails
 - freezer challenge (-70°C vs -80°C)
- inform
- inspire
- connect

**NO RISK?
NO GLOVE!**

Handschoengebruik verminderen én infectiepreventie verbeteren

Niet-steriele handschoenen worden regelmatig onnodig of te lang gedragen. Dit draagt bij aan de verspreiding van micro-organismen. In veel situaties zijn algemene voorzorgsmaatregelen, zoals het toepassen van handhygiëne, voldoende om overdracht van micro-organismen te voorkomen. Dus pak niet gelijk die handschoenen maar bedenk voordat je aan een taak begint of 1 van de onderstaande risico's van toepassing is.

Aandachtspunten handschoenen

- Draag ze ruimte- en handeling gebouwen
- Raak de omgeving niet aan
- Geen handhygiëne toepassen op handschoenen
- Handschoenen zijn geen vervanging voor handhygiëne
- Pas na het uittrekken van handschoenen altijd handhygiëne toe

Handschoenen draag je bij de volgende risico's

- Isolatie
- Contact met lichaamsvloeistoffen niet-intacte huid en/of slijmvliezen
- Klaarmaken van medicatie

Handhygiëne momenten

- Voor contact met de patiënt
- Na contact met lichaamsvloeistoffen, niet-intacte huid en/of slijmvliezen
- Voor een schone/aseptische handeling
- Na contact met de patiënt of de omgeving van de patiënt

1 onsteriele handschoen is verantwoordelijk voor 26 gram CO₂-uitstoot.

Een voorbeeld:

Jaarlijks verbruik zorginstelling

9 miljoen handschoenen → 237 ton CO₂-uitstoot → 31.500 kg plastic afval

CO₂-uitstoot van handschoenen

Draag handschoenen alleen bij bovengenoemde risico's, de verwachting is dat het verbruik zal dalen. Zo draag je direct bij aan duurzaamheid én verbetering van infectiepreventie in de zorg.

Dit staat gelijk aan:

- 8 maanden elektriciteitsverbruik door 237 gemiddelde huishoudens in NL
- Om 237 ton CO₂-uitstoot op te nemen, moeten:

 - 11.000 bomen een jaar lang groeien
 - 2.370 zonnepanelen een jaar lang stroom opwekken

GREEN TEAM Infectiepreventie

EBP and circularity

- no evidence for benefit?
- potentially harmful?
- the best option is to refuse

Smarter product use and manufacture	R0	Refuse
	R1	Rethink
	R2	Reduce
Extend lifespan of product and its parts	R3	Reuse
	R4	Repair
	R5	Refurbish
	R6	Remanufacture
	R7	Repurpose
Useful application of materials	R8	Recycle
	R9	Recovery

Conclusion

- healthcare 4-7% CO₂ emissions
- 5 goals for healthcare in the EU Green deal
- increase awareness
- decrease use of materials
- research is on its way...
- connect while together we achieve more!



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Presentation of the EfCCNa position statement on sustainability

Paul Rood, RN PhD
HAN University of Applied Sciences
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Dutch National professional organisation for Critical
Care Nurses (V&VN-IC)



- Now available online: European federation of Critical Care Nursing associations (EfCCNa) position statement: Towards sustainable intensive care



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BACN Nursing in Critical Care | WILEY

EDITORIAL

European federation of Critical Care Nursing associations (EfCCNa) position statement: Towards sustainable intensive care

The earth's climate is changing as a result of human-induced excessive resource usage and carbon dioxide (CO₂) emissions.¹ The healthcare sector accounts for approximately 4.4% of annual worldwide greenhouse emissions, and European Union (EU) countries collectively are among the top three emitters.² Climate change severely affects the global ecosystem, including increased health risks, poverty, and displacement.³ As the climate is already changing, immediate action is required.

The United Nations (UN) formulated 17 sustainable development goals and set up a structure to resolve human-induced climate change that includes a Framework Convention on Climate Change (UNFCCC), an Intergovernmental Panel on Climate Change (IPCC), and annual Conferences of the Parties (COP). The World Health Organization (WHO) has developed a roadmap and partnerships for healthier people, a thriving planet and a sustainable future.⁴ The EU has formulated 'the green deal', striving to be the first climate-neutral continent in which specific goals are stated to provide sustainable healthcare.⁵ Healthcare professionals have great potential to influence more sustainable decisions made within the social and policy landscape.⁶

1 | NURSES' ROLE IN ENVIRONMENTAL SUSTAINABILITY IN THE ICU

As the largest profession in healthcare, nurses play a pivotal role in transitioning services to reduce the damage caused to our environment. Within hospitals, the Intensive Care Unit (ICU) is responsible for large amounts of waste. Daily ICU care results in seven bags of waste per ICU patient, and the materials used leave the ICU via the sewage system, regular waste procedures (burning) or specific high-risk hospital waste.⁷ The European federation of Critical Care Nursing associations (EfCCNa) advocates that all ICU nurses in Europe have a role in endorsing more sustainable ICU practices.

As nurses are continuously at the bedside, we are responsible for the care we deliver, individually and as part of a team. Four simple but effective interventions can have a strong impact to facilitate a transition towards sustainable care in the ICU: (1) reduction in use of chemicals (medication and iv-fluids); (2) decreasing energy consumption; (3) reducing waste generation; and (4) reduction of water pollution

and consumption seem to have the greatest impact.^{7,8} For example, when using intravenous fluids, choosing the appropriate amount and volume of the bag contributes to lowering the CO₂ footprint.⁹ Energy consumption may be reduced by shutting down devices when not used.¹⁰ Furthermore, waste reduction may be realized by adapting replacement frequencies of materials¹¹⁻¹³ or reducing unnecessary glove use.⁸ Lastly, re-useable instead of disposable materials can decrease our CO₂ footprint.¹⁴⁻¹⁶

2 | FORMATION OF 'GREEN TEAMS'

Within a team, nurses can inspire colleagues to integrate sustainability in the way care is delivered and how it is organized, for example, by the formation of green teams.¹⁷ A green team is a multidisciplinary group of environmentally conscious professionals that have regular meetings at their ward, in which ideas and suggestions are discussed and deployed to contribute to sustainable care. Good examples are projects on awareness of the use and saving of emails in relation to the carbon footprint, and hospital-wide initiatives like 'no risk, no glove'.⁸ An additional strength of green teams lies in their ability to take action with careful consideration of the regional and local characteristics of the context, as well as the available healthcare facilities. Furthermore, these teams are motivated and inspired by their own colleagues.

3 | EDUCATION ON SUSTAINABILITY

From an educational perspective, additional efforts can be made to implement environmental sustainable healthcare in curricula. The international association of health professions education (AMEE) has formulated a consensus statement on planetary health and education for sustainable healthcare.¹⁸ This consensus statement provides vision for educating an interprofessional healthcare workforce that can deliver sustainable healthcare and promote planetary health. Creating awareness and providing best practices will help the new generation to develop their professional practice in an environmentally sustainable manner. During the training of critical care nurses, awareness and



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- The Earth's climate is changing due to human-induced excessive resource usage and carbon dioxide (CO₂) emissions.
- The healthcare sector accounts for approximately 4.4% of annual worldwide greenhouse emissions, and European Union (EU) countries collectively are among the top three emitters (US, China and EU: 56%!).
- As the climate is already changing, immediate action is required: **WE MUST ACT NOW!**

Causes and Effects of Climate Change. 15 december 2023; Available from: <https://www.un.org/en/climatechange/science/causes-effects-climate-change>.

Romanello M, Napoli C, Green C, et al. The 2023 report of the Lancet Countdown on health and climate change: the imperative for a health-centred response in a world facing irreversible harms. *Lancet*. 2023;402(10419):2346-2394. doi:10.1016/S0140-6736(23)01859-7

https://noharm-global.org/sites/default/files/documents-files/5961/HealthCaresClimateFootprint_092319.pdf

- The UN 17 sustainable development goals



UNITED NATIONS



- The World Health Organization (WHO) has developed a roadmap and partnerships for healthier people, a thriving planet and a sustainable future.



- The EU has formulated 'the green deal', striving to be the first climate-neutral continent in which specific goals are stated to provide sustainable healthcare



The five goals of the Green Deal for Sustainable Healthcare

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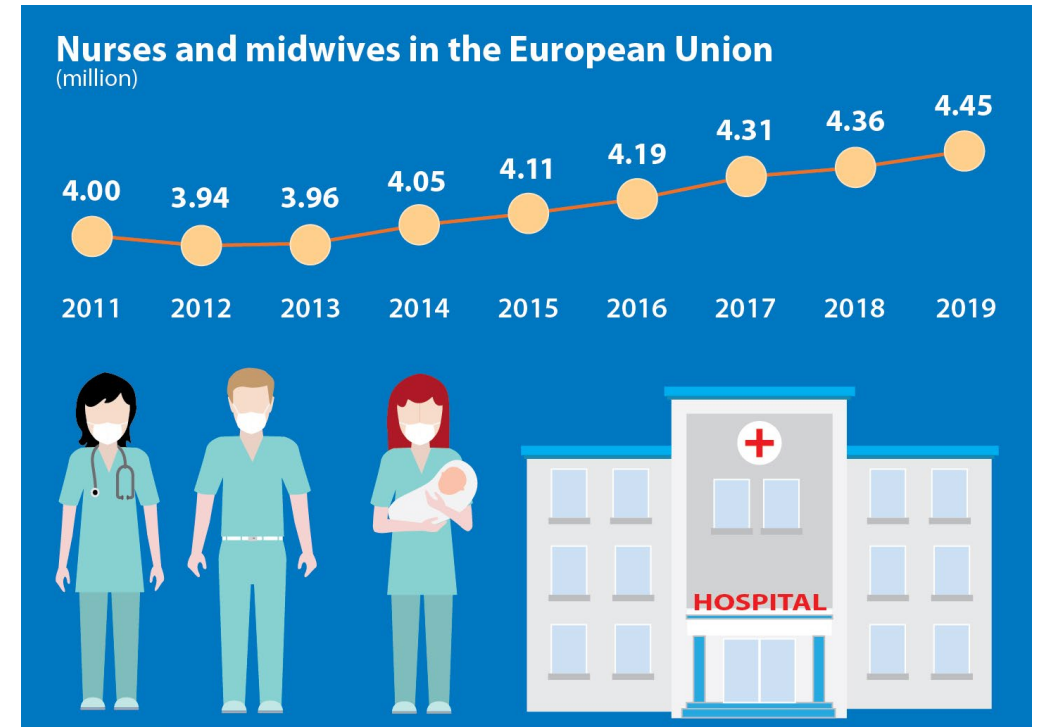




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- EU: 4.45 million nurses and midwives (50% of healthcare workforce!)
- Healthcare professionals have great potential to influence more sustainable decisions made within the social and policy landscape



ec.europa.eu/eurostat

<https://www.who.int/news-room/fact-sheets/detail/nursing-and-midwifery>

[Healthcare personnel statistics - nursing and caring professionals - Statistics Explained \(europa.eu\)](#)

Howard C, MacNeill AJ, Hughes F, et al. Learning to treat the climate emergency together: social tipping interventions by the health community. *Lancet Planet Health*. 2023;7(3):e251-e264. doi:10.1016/S2542-5196(23)00022-0

METHOD

- Workinggroup sustainability
- Founded in Skopje (April 2023)
- Regular meetings

- Willemke Stilma (Netherlands), Stelios Iordanou (Cyprus), Jelena Slijepcevic (Croatia), Mateja Adamovic (Croatia), Alex Furmanov (Israel), Mario Pytel (Czech Republic), Anneliese Raab (Austria), Paul J.T. Rood (Netherlands)

METHOD

- Literature review (Summer 2023)
- Presentation to counsilmembers, voting for statement on sustainability (October 2023)
- Draft by workinggroup
- Consent by all member countries
- Final manuscript published in ‘Nursing in Critical Care’



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NURSES' ROLE IN ENVIRONMENTAL SUSTAINABILITY IN THE ICU

- Nurses play a pivotal role in transitioning
- Intensive Care Units are responsible for large amounts of waste
- The European federation of Critical Care Nursing associations (EfCCNa) advocates that **all ICU nurses in Europe** have a role in endorsing more sustainable ICU practices.

FORMATION OF 'GREEN TEAMS'

- Multidisciplinary group of environmentally conscious professionals
- Good examples
- Acting with careful consideration of the context
- Motivated and inspired by their own colleagues

EDUCATION ON SUSTAINABILITY

- Implementing sustainable healthcare in curricula
- Creating awareness and providing best practices
- During the training of critical care nurses, awareness and knowledge of the possibilities to provide care in a more sustainable way should be embedded into the curriculum.

EfCCNa POSITION STATEMENT

- A first step
- EfCCNa contributes by informing and supporting
- Adopting practices whilst ensuring that ICU services are maximally sustainable.
- Goal: maximally sustainable ICUs
- We are committed to maintaining, and whenever possible, improving the quality and safety of patient care.

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In short:

WE NEED YOU!





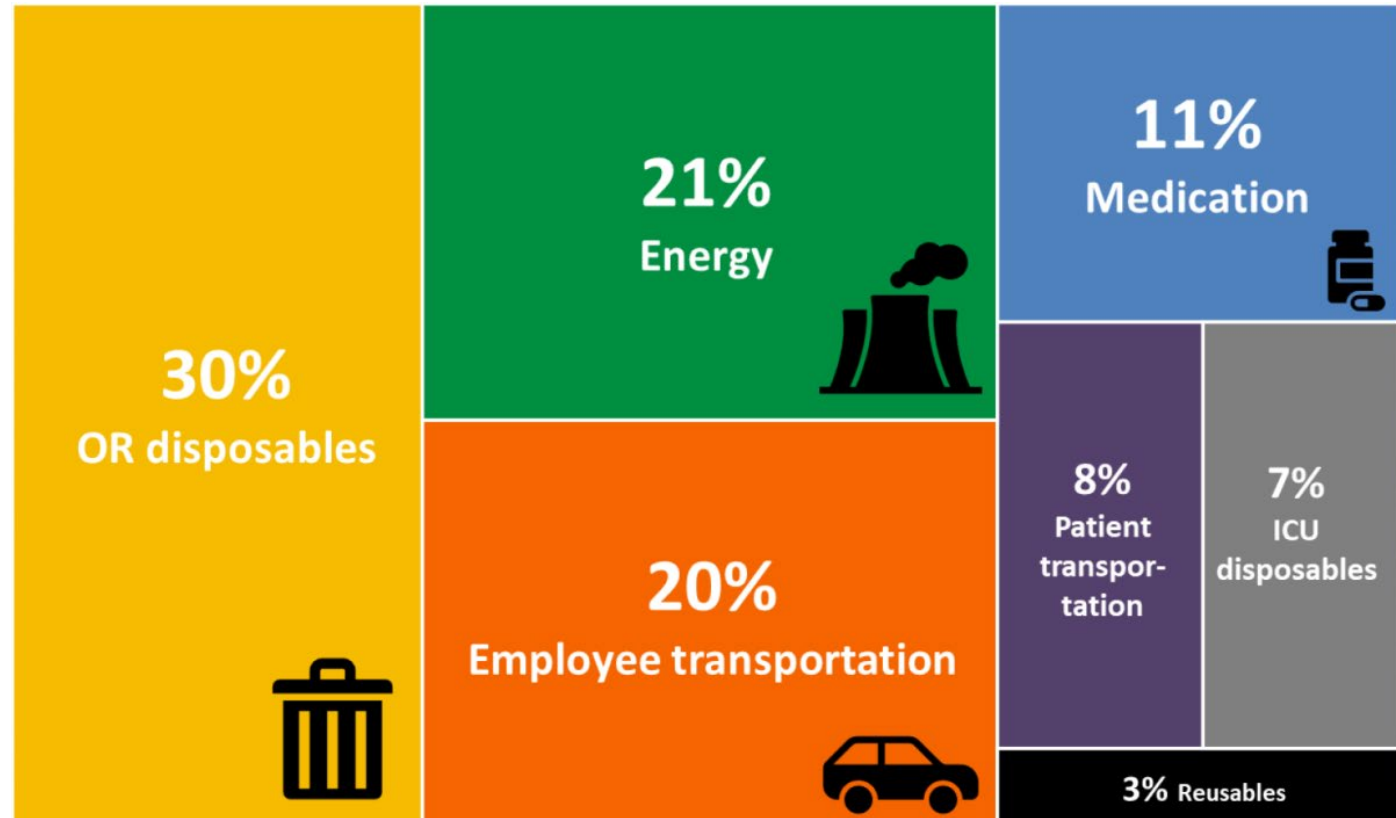
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Netherlands: HOT SPOTS – Cardiac surgery including ICU stay



Radboudumc



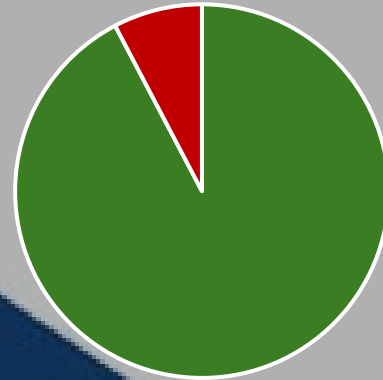
Croatia: University Hospital Centre Zagreb



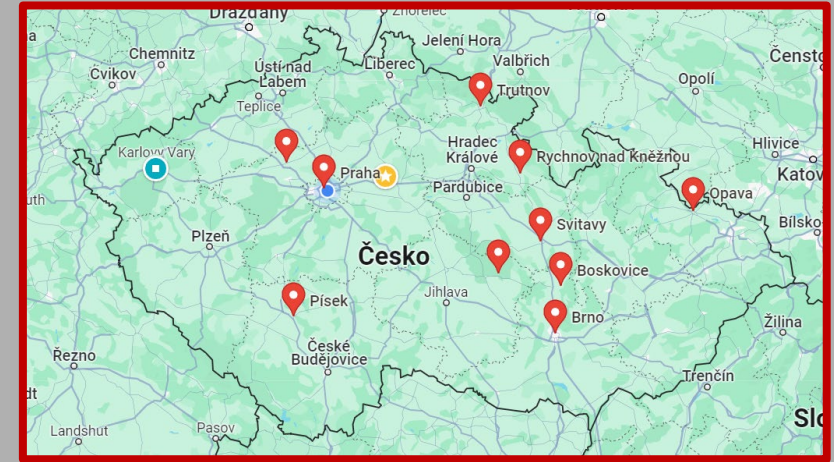
- More than 6 thousand employees
- More than 4,000 000 services per year
- Green healthcare - a call to action (june 2023.)
- UHC Zagreb works on 7 different locations; one location already have solar power plants on hospital roof
- According to the comprehensive reconstruction plan after the earthquake, solar collectors are planned to be installed in most of the other locations
- We separate paper, communal waste, medical, infectious, sharp, infectious waste, etc....according to the regulations
- The light in the hallway is switched on by the sensor
- We register everything in the register of environmental pollution (garbage, water, CO2) – (service for environmental protection and management of waste management procedures UHC Zagreb)
- In the ICU, disposable material is mostly used: disposable sets for cvk, for various sets for puncture, for placing cannulas... etc.
- We sterilize instruments, drainage bottles, individual parts of respirators
- **We do not have a plan** to make our departments greener for now, but we intend to make proposals for interventions in cooperation with our environmental services.

Czech Republic

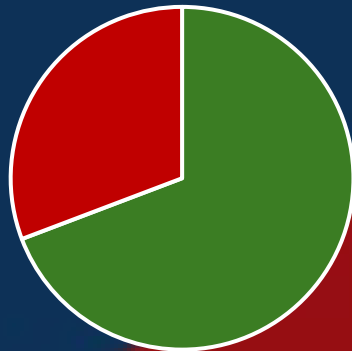
Are there recycling bins in your hospital?
(at least plastic and paper)



Yes No

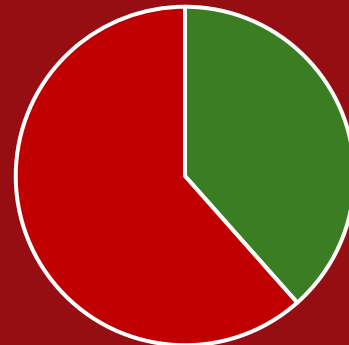


Do you have a safe place to put your bike
to when commuting to your work?



Yes No

Does your hospital offer plant based
alternatives in patient's diets?



Yes No

MATERIAL FLOW ANALYSIS
LIFE CYCLE ASSESMENT



EfCCNa

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Break out rooms

Hosted by EfCCNa sustainability group members



QUESTIONS

1. What do you already do?
2. What would you ideally be doing?
3. What would help to realize the ideal situation?
4. What other things are needed to contribute to sustainable ICU care as much as possible?



EfCCNa

European federation of Critical Care Nursing associations

Wrap up & Take home messages

Wouter de Graaf and EfCCNa sustainability group members



EfCCNa

European federation of Critical Care Nursing associations

End of programme

Thank you for joining!

#workingtogetherachievingmore