Policy & practice for environmentally sustainable products in healthcare

joining the dots

Prof. Mahmood Bhutta

Chair in ENT Surgery & Sustainable Healthcare
Brighton & Sussex Medical School (UK)
Clinical Green Lead and Consultant in ENT
University Hospitals Sussex (UK)
THIS Institute Fellow





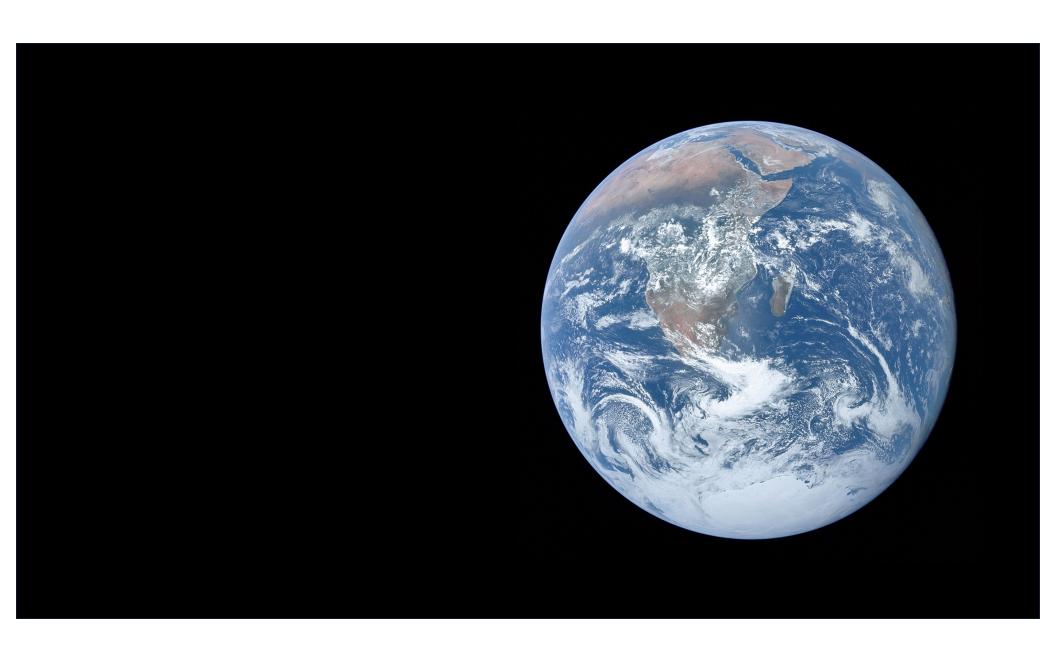
NHS Foundation Trust

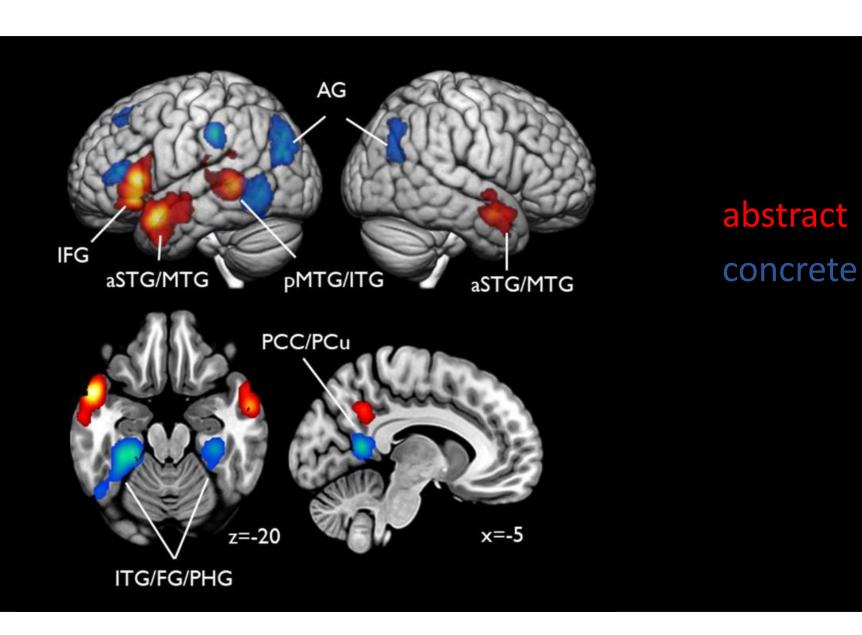
Hosted by Prof. Jean-Yves Maillard Cardiff University

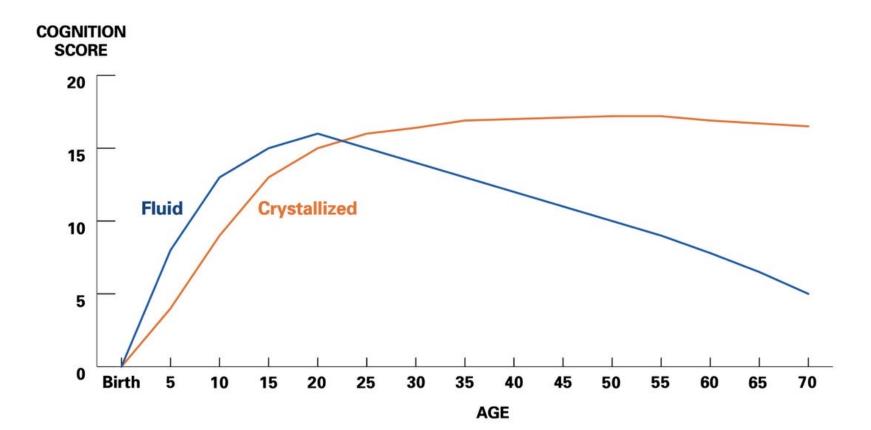


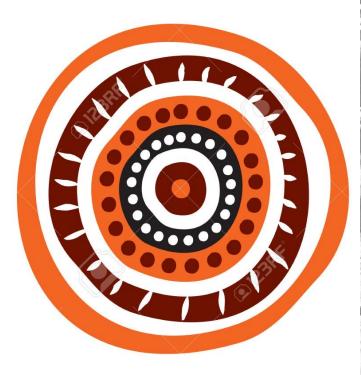
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January 6, 2025

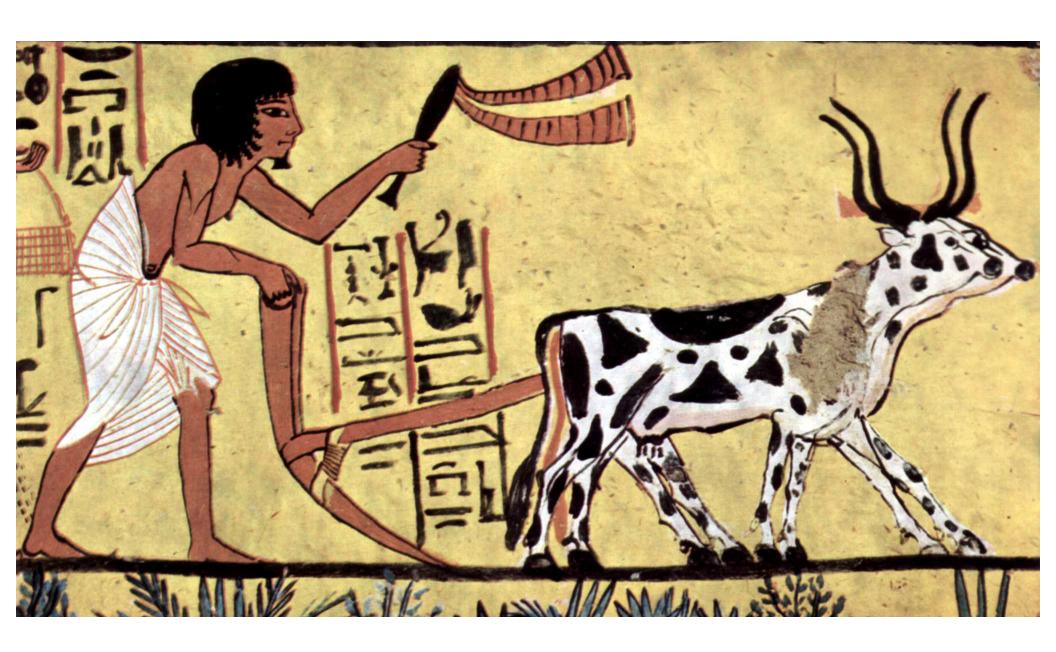










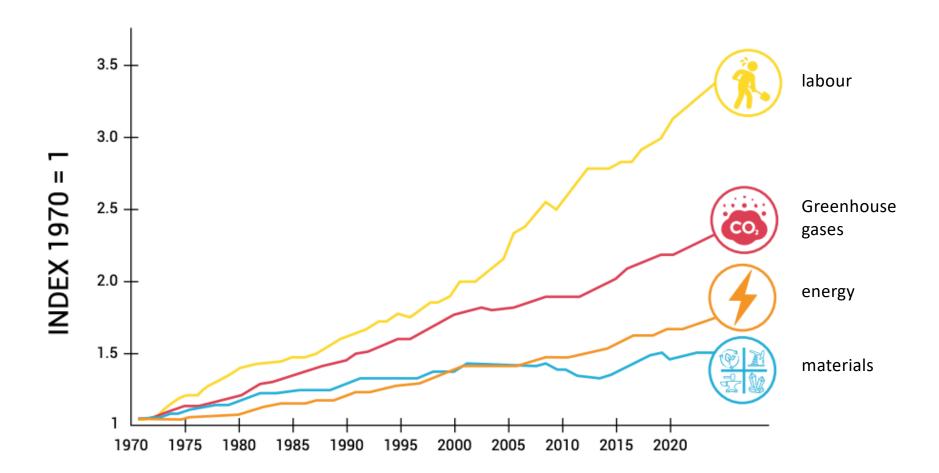




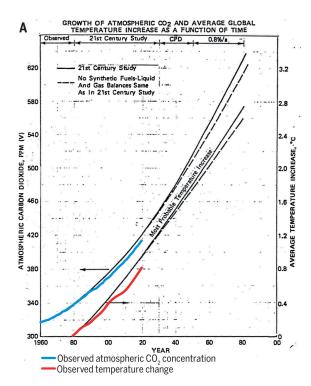
















Fuel





ΙΠΠΟΚΡΑΤΟΥΣ OPKOS

HIPPOCRATIS

IVSIVRANDVM.



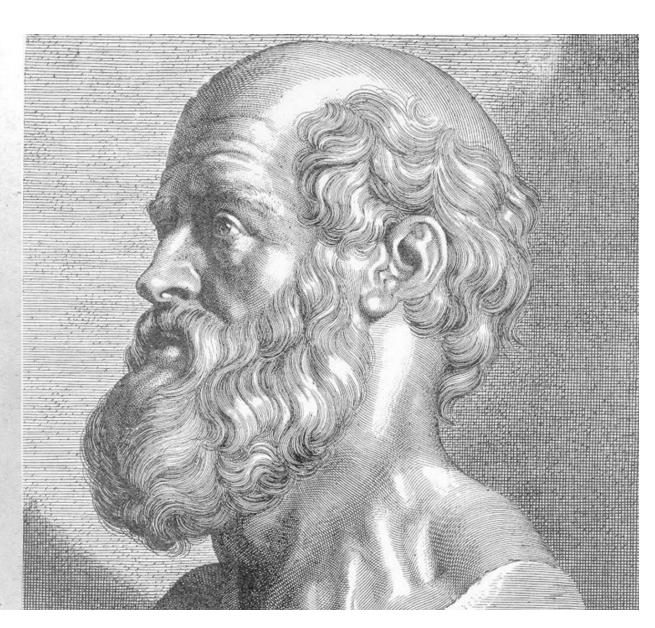
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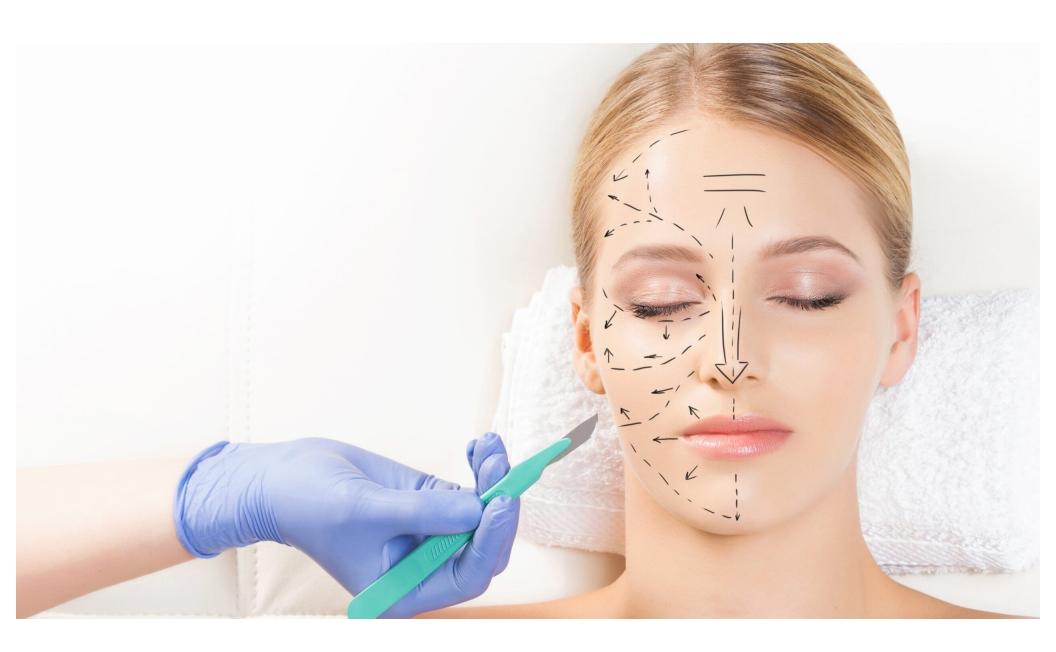
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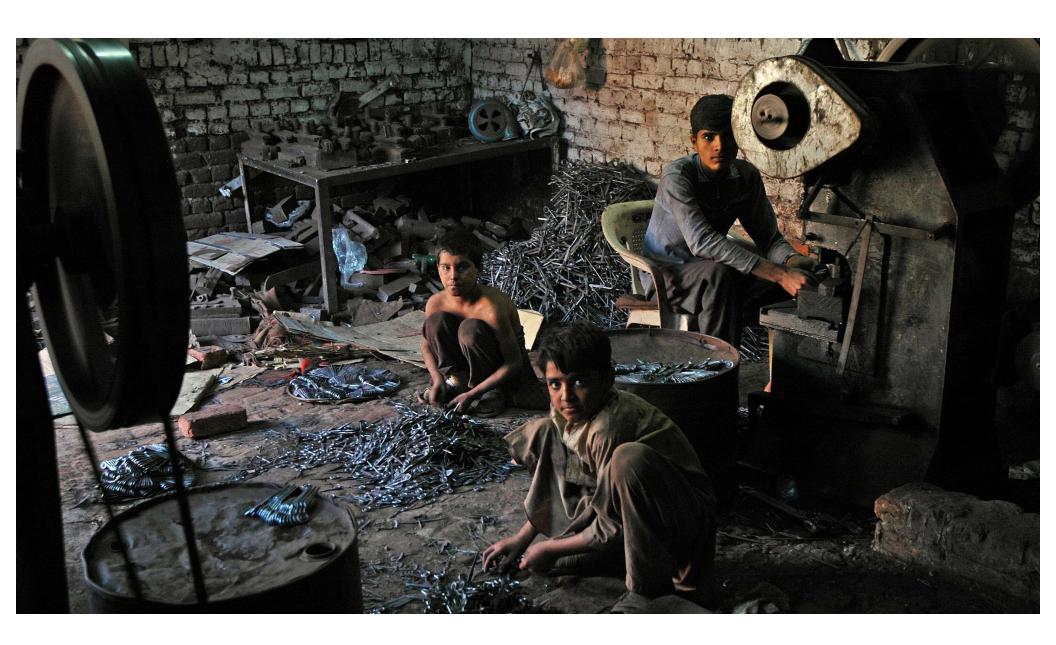
quidem qui me hane artem edocuir, parencum lu-co habiturum, esque cim ad victum, tum eriam ad víum necessaria, grato animo communicacurum & suppediaturum. Einsque polleros apud mecodem doCutum. Perceptionum quoque & audinonum, todusque relique discipline, cum meos & eius que me edocuir liberos, tum discipulos qui Medico inreiurandonomen fidem/que dedurine, pasticipes facturum, aliotum practescu neminiem. Victus quoque rationem, quantum facultate àciad clo confequi eqtero, agris vulem me prateripeurum, easé, ab omail naxia & iniuria vuidica urum. Neo; carot quam precibus adductis, alicui medicament un terbale propipendum exhibebox fed cultam & ab omni feelere puram, tum vicam, tum ætatern means perpenso præfiabo. Neque verò calculo laborantes fecabo, fed magifiris eius actis peritis id muneris concedam. In quanconqueautem domum ingreffusfucto, ad agrocantium falutem ingrediar, omnem infurlæinferendæde corruptelse inspicionem procul fugiers, sum vel mawinse rerum venercarum cupidicatem, ergamulieres iuxta ac viros, tum ingentios, tumifernos. Que verò inter curandum, aut ettam Medicinam minimir faciens, în communi hominum vita, vel videro, vel audicro, qua minime in vulgos efferri oporteas, ca arcacest cum funima apud omnes existimaciono perpetuò vitamfælicem degere, & artis vberrimum fru-dumpercipere, Oubdi illud violatero d'arierane













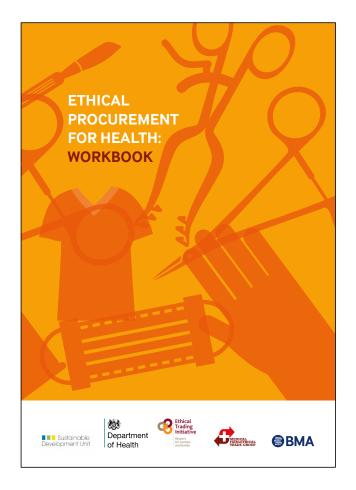


How to produce a Green Plan: A three-year strategy towards net zero



www.england.nhs.uk/greenernhs

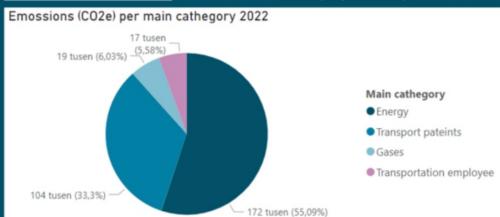
Updated guidance - June 2021





Total CO2e emission (ton)

Reduce CO2e emissions by 40 percent by the end of 2023 (compared to 2019)



| Emissions (CO2e) 2019-2022 | | | | |
|---------------------------------|----------------------------|----------------------------|--------------------------------------|-------------------------|
| Region | Total emissions 2019 | Total emissions 2022 | Change in emissions 2019- 2022 | Emission target 2030 |
| ☐ Helse Sør-Øst | 216 125 | 132 823 | -39 % | 129 675 |
| Akershus universitetssykehus HF | 22 737 | 14 359 | -37 % | 13 642 |
| Oslo universitetssykehus HF | 81 842 | 43 402 | -47 % | 49 105 |
| Sunnaas sykehus HF | 999 | 550 | -45 % | 600 |
| Sykehusapotekene HF | 130 | 80 | -39 % | 78 |
| Sykehuset i Vestfold HF | 14 342 | 8 552 | -40 % | 8 605 |
| Sykehuset Innlandet HF | 29 621 | 16 754 | -43 % | 17 772 |
| Sykehuset Telemark HF | 12 943 | 8 499 | -34 % | 7 766 |
| Sykehuset Østfold HF | 15 764 | 10 037 | -36 % | 9 459 |
| Total | 463 546 | 311 399 | -33 % | 278 127 |



| Emissions (CO2e) 2019-2022 ex | xcluded ene | rgy recyclin | ng* | |
|---------------------------------|----------------------------|----------------------------|--------------------------------------|-------------------------|
| Region | Total emissions 2019 | Total emissions 2022 | Change in emissions 2019- 2022 | Emission target 2030 |
| ☐ Helse Sør-Øst | 216 125 | 200 272 | -7 % | 129 675 |
| Akershus universitetssykehus HF | 22 737 | 21 838 | -4 % | 13 642 |
| Oslo universitetssykehus HF | 81 842 | 69 717 | -15 % | 49 105 |
| Sunnaas sykehus HF | 999 | 993 | -1 % | 600 |
| Sykehusapotekene HF | 130 | 80 | -39 % | 78 |
| Sykehuset i Vestfold HF | 14 342 | 13 261 | -8 % | 8 605 |
| Sykehuset Innlandet HF | 29 621 | 25 203 | -15 % | 17 772 |
| Sykehuset Telemark HF | 12 943 | 12 654 | -2 % | 7 766 |
| Sykehuset Østfold HF | 15 764 | 14 469 | -8 % | 9 459 |
| Total | 463 546 | 442 863 | -4 % | 278 127 |

2021

2022

2020

300 tusen

^{*}This is energy that would normally be lost if not for the energy recovery facilities used by individual companies

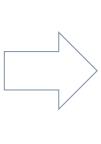
POLICY BRIEF

Reducing the environmental impact of medical devices adopted for use in the NHS

APRIL 2024









Forced Labour in the Malaysian Medical Gloves Supply Chain before and during the COVID-19 Pandemic: Evidence, Scale and Solutions

July 2021



























Intercollegiate Green Theatre Checklist Compendium of Evidence

Below are a list of recommendations to reduce the environmental impact of operating theatres. All the relevant guidance and published evidence has been included in the Compendium of evidence, accessed via the QR code.

| Ana | esthesia | |
|------------------------------|--|---|
| 1 | Consider local/regional anaesthesia where appropriate (with targeted O ₂ delivery only if necessary) | |
| 2 | Use TIVA whenever possible with high fresh gas flows (5-6 L) and, if appropriate, a low O ₂ concentration | |
| 3 | Limit Mitrous Oxide (N,O) to specific cases only and if using: • check N,O pipes of reaks or constend decommissioning the manifold and switching to cylinders at point of use; • introduce N,O crackers for patient-controlled delivery. | |
| 4 | If using inhalational anaesthesia: • use lowest global warming potential (sevoflurane better than isoflurane better than desflurane); • consider removing desflurane from formulary; • use low-flow target controlled anaesthetic machines; • consider Volatile Capture Technology. | |
| 5 | Switch to reusable equipment (e.g. laryngoscopes, underbody heaters, slide sheets, trays) | |
| 6 | Minimise drug waste ("Don't open it unless you need it", pre-empt propofol use) | |
| Prei | paring for Surgery | |
| 7 | Switch to reusable textiles, including theatre hats, sterile gowns, patient drapes, and trolley covers | |
| 8 | Reduce water and energy consumption: • nub don't serub arter lirst water scrub of day, you can use alcohol rub for subsequent cases; • install automatic or pedia-controlled water taps. | |
| 9 | Avoid clinically unnecessary interventions (e.g. antibiotics, catheterisation, histological examinations) | |
| | | |
| Intra | apperative Equipment | |
| Intra 10 | apperative Equipment REVIEW & RATIONALISE: • surgeon preference lists for each operation - separate essential vs. optional tiems to have ready on side; • single-use surgical packs - what can be reusable and added to instrument sets? what is surplus? (request suppliers remove these); • instrument sets - open only what and when needed, integrate supplementary items into sets, and consolidate sets only if allows smaller/flewer sets (please see guidance). | |
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| 11 12 13 Afte | REVIEW & RATIONALISE: > surgeon preference lists for each operation - separate essential vs. optional items to have ready on side; > single-use surgical packs - what can be reusable and added to instrument sets? what is surplus? (request suppliers remove these); - instrument sets - open only what and when needed, integrate supplementary items into sets, and consolidate sets only if it allows smaller/flewer sets (please see guidance). REDUCE: avoid all unnecessary equipment (eg swabs, single-use gloves), "Don't open it unless you need it" RELUSE: opt for reusables, hybrid, or remanufactured equipment instead of single-use (e.g. diathermy, gallipots, kidney-dishes, light handles, quivers, staplers, energy devices) REPLACE: switch to low carbon alternatives (e.g. skin sutures vs. clips, loose prep in gallipots) er the Operation RECYCLE or use lowest carbon appropriate waste streams as appropriate: - use domestic or recycling waste streams for all packaging; - use non-infectious offensive waste (yellow/black tiger), unless clear risk of infection; - ensure only appropriate contents in sharps bins (sharps/drugs); - arrange metals/battery collection where possible. | |

MENTUK



Environmental sustainability guidance: Outpatient ENT metal instruments



 We recommend the sucker we recommend the sucker
 and liners are changed daily
 Rarely, tubing may need to l
 contaminated with blood or

There is no indication to v

the UK General Medical Council advisi to, provided these don't compromise

It is estimated that around 2.3 millio

related to earwax². In England, arour annually².

In recent years, there have been corceating a trend towards single use m the UK showed that 79% of ENT UK me the end of the day, but others change muse gloves and masks routinely in wax

Risk of infection from v

Wax (cerumen) is a normal biological healthy skin (commensal bacteria). Corynebacterium spp, Staphylococcus Therefore, coming into contact with I skin (for example through a handshak

Risk of backflow in low-volume sucti

The pressure in the tube is higher created by the lip around the suc.
The position of the suction tube gravity may pull the contents in the positioned higher than the passificient to prevent backflow to
There is concurrent use of high-we



ommend preparing, reprocessing and using ENT outpatient instruments in

is no indication for use of gloves in ENT examination except when there is f exposure to blood, body fluid, or non-intact skin.

of environmentally sustainable practice in healthcare is increasingly recognised, with Medical Council advising doctors to "Choose sustainable solutions when you're able

e instruments than many other surgical specialties in the outpatient setting. There has towards using single use individually packaged medical instruments. In a survey at the pring Meeting, 46% of EMT Surgeons reported using single use instruments only, 43% a freusable and single use instruments. and 11% only regulable instruments.



n 80% lower ecological impact² f autoclave for sterilization)^{2,4}. reduce carbon by 20%⁵. These

ves because this technology is lly need to undergo high level or mucosa during use.

d use

achine loading for autoclaves, ends on the size of the tray and stay on communal instrument those that are rarely used4.

dual instruments picked out tact with clean instruments,

ENTUK

Environmental sustainability guidance:

Wax microsuction

Environmental sustainability guidance: Flexible nasoendoscopy

Version 1: November 2024

- We recommend only using reusable flexible nasoendoscopes
- We do not recommend routine use of local anaesthetic spray
 We do not recommend routine use of anti-fog
- We do not recommend routine use of lubricant gels
- Nasoendoscopy can be safely performed without gloves
- . Ultraviolet-C light is the preferred method for decontamination of flexible

The importance of environmentally sustainable practice in healthcare is increasingly recognised, with the UK General Medical Council advising doctors to "Choose sustainable solutions when you're able to, provided these don't compromise care standards"

Resible nasoendoscopy is a frequently used diagnostic tool in outpatient and emergency settings, with the average ENT consultant performing 700-1000 nasoendoscops per year. Assoendoscopy has potential to generate waste from use of disposable devices, personal protective equipment, supplementary items and from the decontamination process. In a survey at the 2024 ENT UK Spring Meeting, 350 of ENT UK remembers satted they use single-ue asoendoscopes a part of their practice.

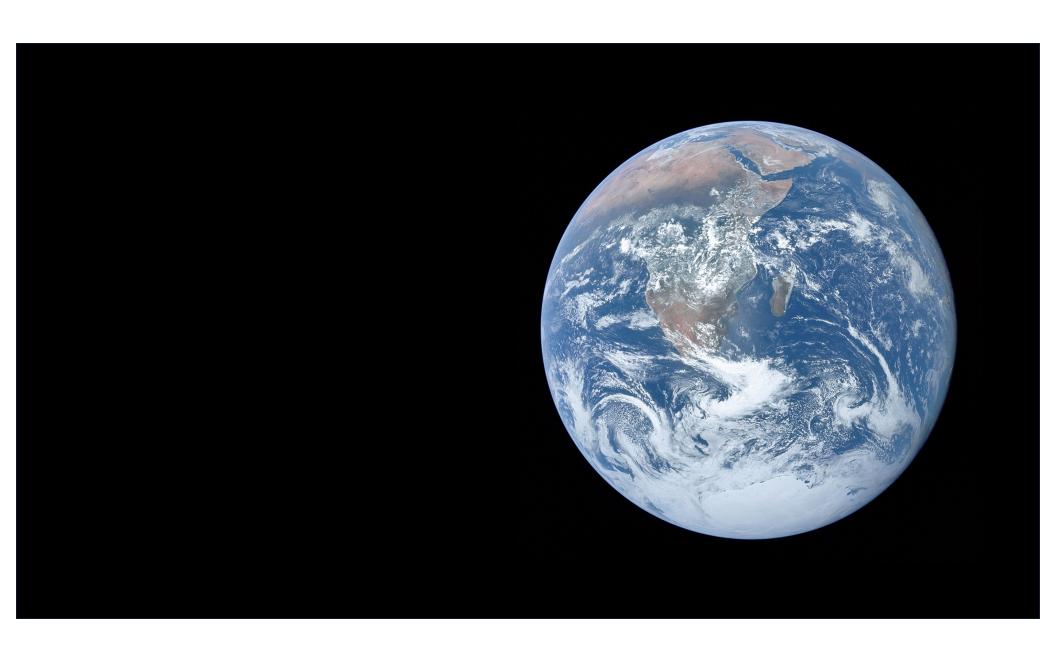
Here we review evidence and provide recommendations on safety and environmental impact of practice (focused on carbon dioxide emissions and waste generation).

Reusable versus single-use flexible nasendoscopes

Compared to single use, resulble insolation copies of more environmentally friendly and cost effective in the long term.¹⁴ A study of cytotocopes (of similar size and composition to assemblocopes) found that manufacture of a single use cope generate 1.179g of cytotocopes (of similar size and composition to assemblocopes) found that manufacture of a single use cope generate 1.179g of cyto, whilst for a generate size (1.0 kg of CO) per cyto¹⁶. Assuming militar packaging and transport, and using these gigners, a resultable assemblocopes of cyto-from single use nasoendocopes for carbon clopper in a few sizes. It is sufficient to the cyto-free cyto-

On the basis of a typical ENT consultant performing 700-1000 endoscope procedures per year, the estimated overall CO2 reduction for an ENT surgeon from using reusable rather than single use nasoendoscopes is 1082-1576kg of CO₂ (manufacture and disposal combine).





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FEBRUARY

- 6 ... Policy and Practice for Environmentally Sustainable Products in Healthcare: Joining the Dots With Prof. Mahmood Bhutta, UK
- 13 ... Food Safety of Fresh Produce: An Old Food Safety Problem Nut With New Solutions With Prof. Keith Warriner, Canada
- 20 ... To aeruginosa or Not to aeruginosa: How Significant are Pseudomonads in Waterborne Healthcare Infections With Prof. Helen Rickard and Prof. Elaine Cloutman-Green, UK
- 26 ... WHO Teleclass ... The Global Situation of Infection Prevention and Control and the Case for Action and Investment in Improving It

With Prof. Benedetta Allegranzi, Switzerland, and Dr. Michele Cecchini, France

MARCH

- 4 ... Preventing MRSA Bacteraemia: An Achievable Outcome Even in High Endemic Hospitals With Prof. Michael Borg, Malta
- 13 ... The Next Pandemic Are We Prepared? With Prof. Michael Klompas, US
- 20 ... Frugal Innovation for Low-Resource Settings With Prof. Davide Piaggio, UK

APRIL

- 3 ... Assessment of Mould Remediation in a Healthcare Setting Following Extensive Flooding With Manjula Meda, UK
- 10 ... Use of Artificial Intelligence for Healthcare-Associated Infection Surveillance With Prof. Ruth Carrico. US

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