

Is IPC the enemy of sustainability?



Jon Otter PhD FRCPATH,
Director of Infection Prevention and Control & Consultant Clinical Scientist
Guy's and St Thomas' NHS Foundation Trust

 @jonotter

 jon.otter@gstt.nhs.uk



Guy's and St Thomas'
NHS Foundation Trust

“*!~@& infection control...”

- Christmas
- Companion animals
- BBE/uniform
- Food & drink
- Single rooms and beds generally
- Flowers
- Surgery because a patient has COVID
- Sellotape
- Visitors
- Washable curtains



Sustainability and healthcare



IPC and sustainability don't always get on



Looking for the win-wins



What you can do to help

Sustainability and healthcare



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What you can do to help

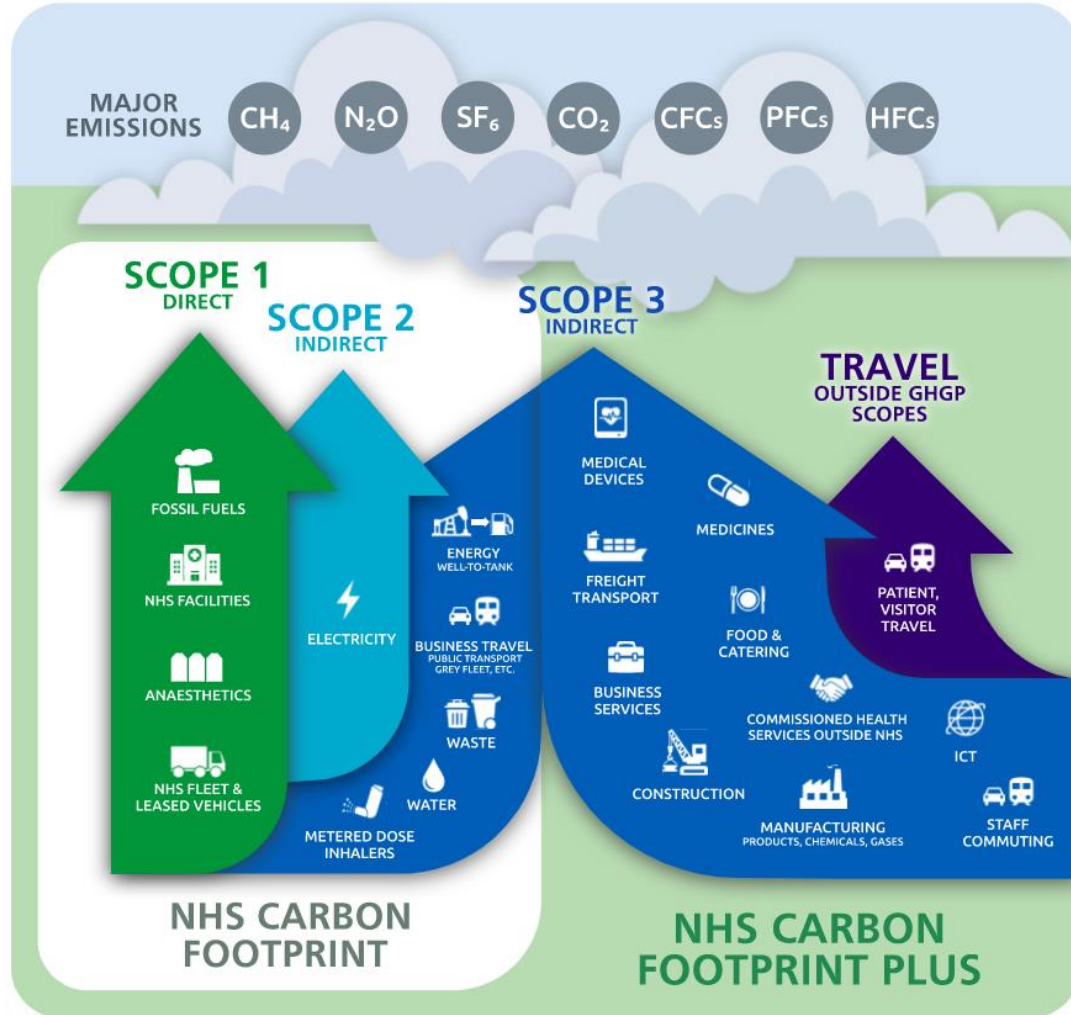
“A sustainable health system improves, maintains, or restores health, while minimizing negative impacts on the environment and leveraging opportunities to restore and improve it, to the benefit of the health and well-being of current and future generations.”

WHO, 2017





Getting to net zero (NHS)

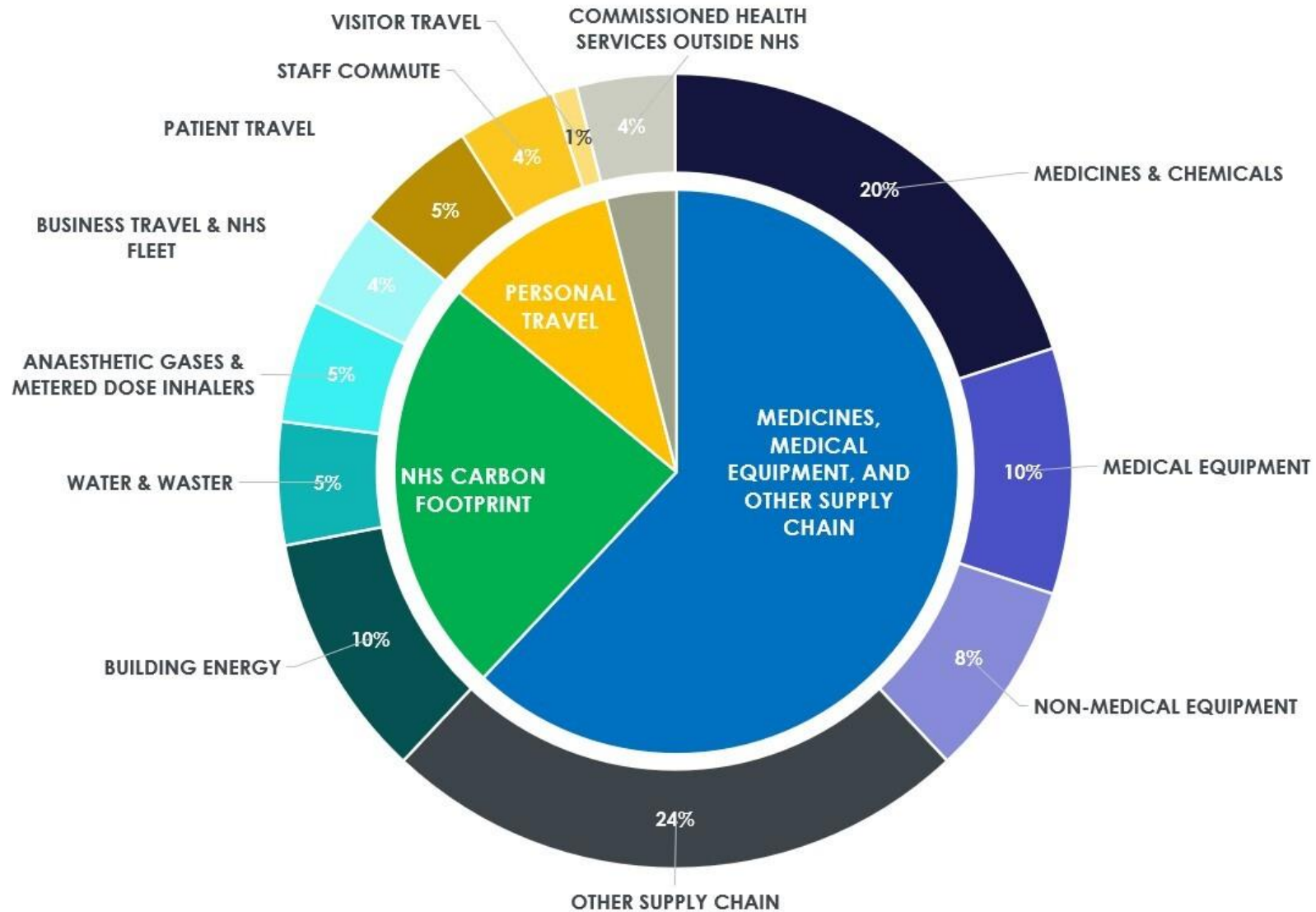


“For the emissions we control directly (the NHS Carbon Footprint), we will reach net zero by 2040, with an ambition to reach an 80% reduction by 2028 to 2032;

For the emissions we can influence (our NHS Carbon Footprint Plus), we will reach net zero by 2045, with an ambition to reach an 80% reduction by 2036 to 2039.”



Getting to net zero (NHS)



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What you can do to help

PPE and COVID-19

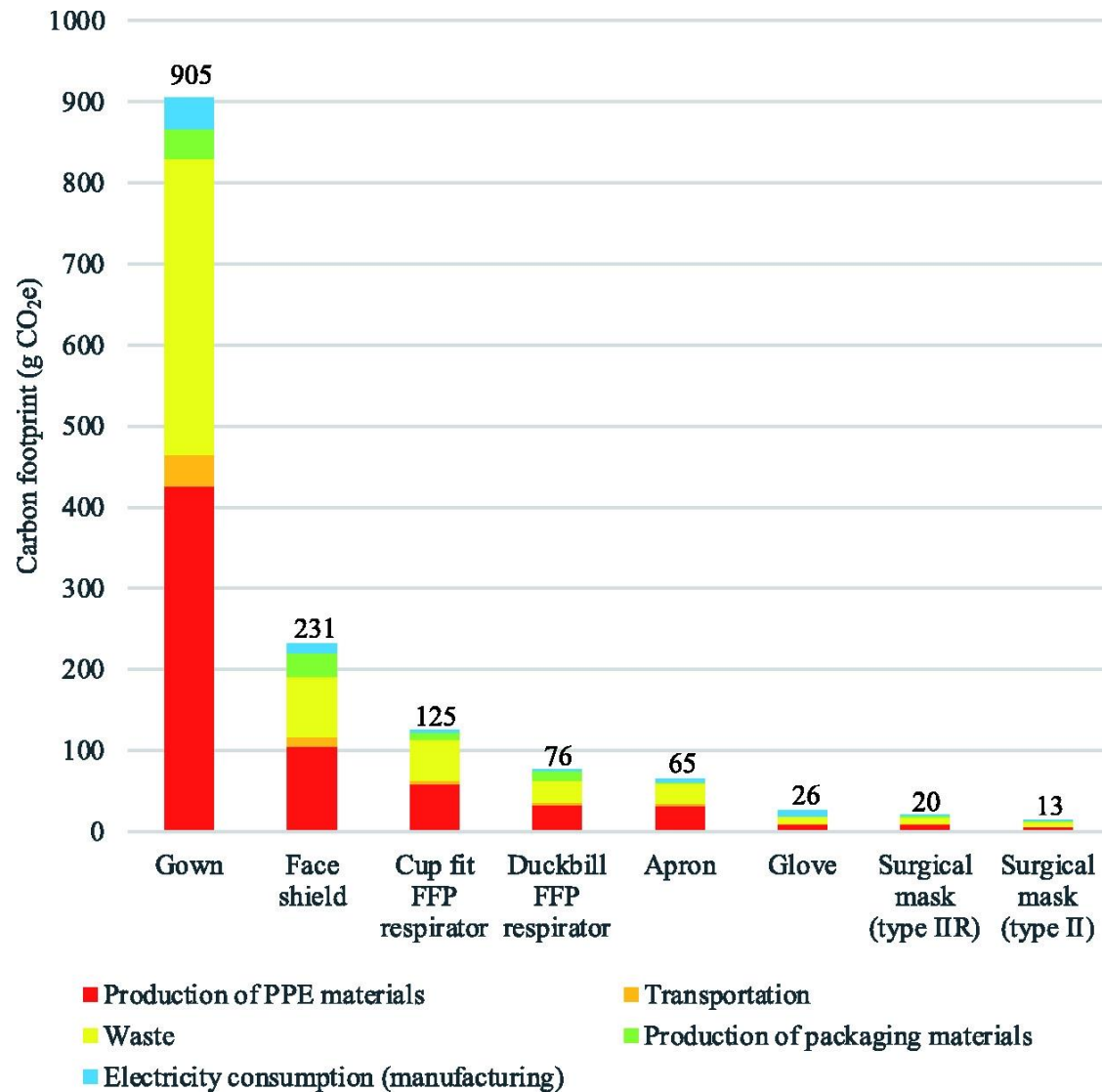
PPE required by type of transmission/exposure	Disposable gloves	Disposable apron/gown	Face masks	Eye/face protection (visor*)
Droplet/Contact PPE for direct patient care <2 metres	Single use	Single use apron (gown required if risk of spraying / splashing)	FRSM Type IIR ¹	Single use or re-usable*
Airborne PPE (When undertaking or if AGPs are likely)	Single use	Single use apron or gown	FFP3 ² or Respirator/ Hood for AGPs	Single use or re-usable

Trends in PPE usage

PPE item	2019	2020	% difference (2019 vs 2020)	Cumulative (Feb 2020-Mar 2022)
Gloves	1,763,164,000	5,492,770,000	212	12,765,607,000
Aprons	161,632,000	1,225,366,000	658	2,472,919,000
Face mask FFP3	2,810,000	82,507,000	2836	163,599,000
Gowns	749,000	36,593,000	4786	81,075,000
Face mask IIR	18,532,000	1,249,970,000	6645	3,098,746,000
Eye protectors	482,000	102,556,000	21177	183,603,000



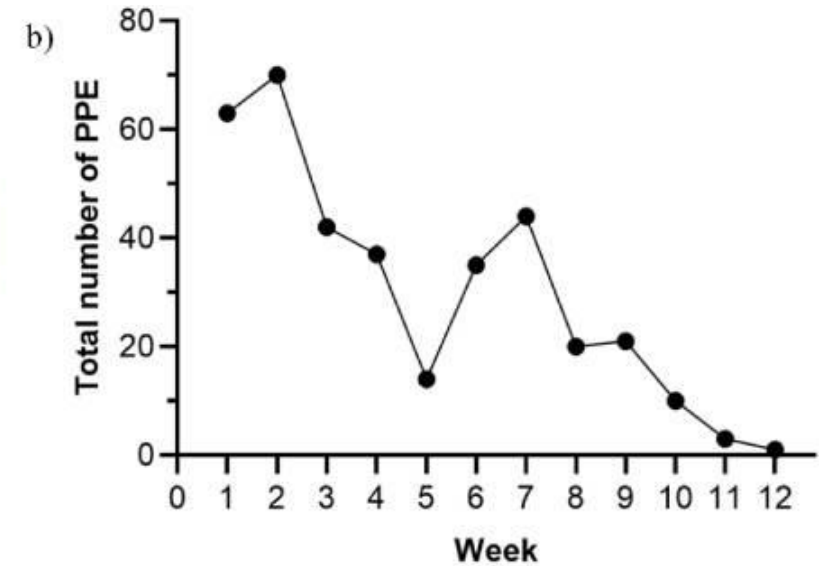
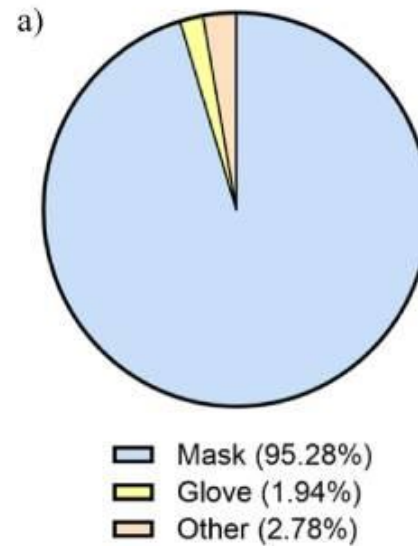
PPE: sustainability and waste



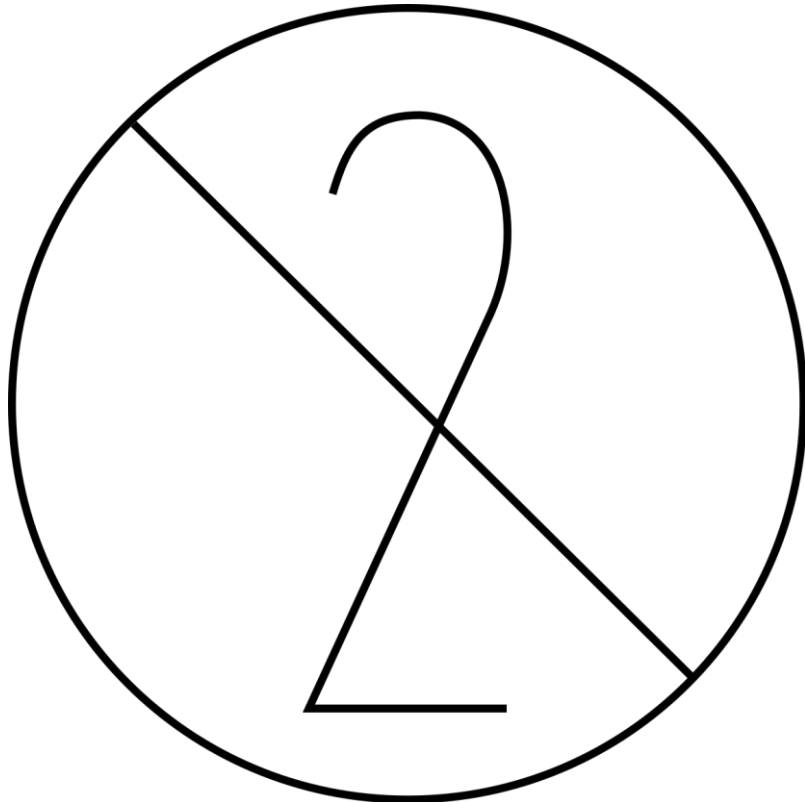
“The estimated damage to human health was 239 DALYs (disability-adjusted life years), impact on ecosystems was 0.47 species.year (loss of local species per year), and impact on resource depletion was costed at US \$12.7m (GBP £9.3m)”

Where does all that PPE go?

A 12 week survey of PPE waste identified in the Caspian sea.



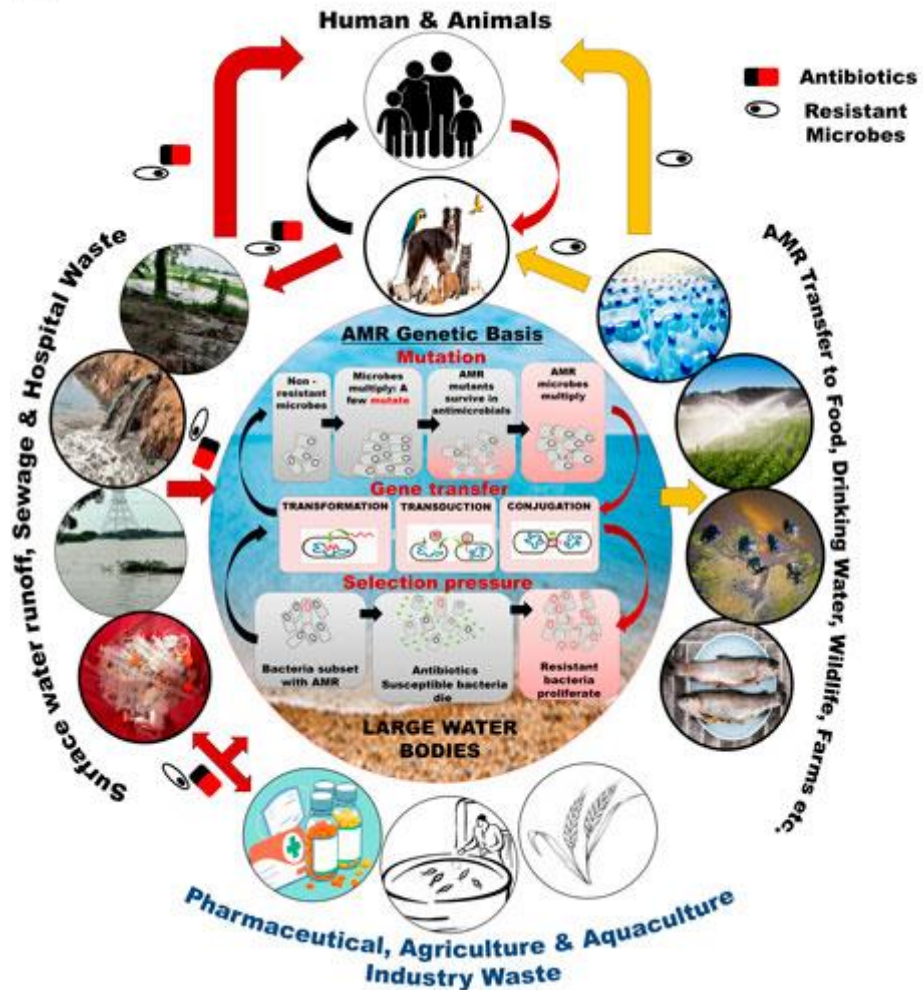
Single use medical devices / surgery



- Infection risk is (more or less) eliminated by single use devices, so it's an attractive strategy.
- Single use medical devices make a huge contribution to hospital waste and carbon emissions.
- For example...a typical cataract operation in the UK generates 182 kgCO₂e, but in India the same operation generates only 6 kgCO₂e.
- vCJD risk is an important driver for single use surgical equipment.


Antimicrobial agents & the environment

A



- Antimicrobial agents are vital to our management of infections.
- However, in addition to the usual carbon footprint of producing and disposing of medicines, antibiotics have unique environmental impact.
- One plant in India released phenomenal amounts of ciprofloxacin in waste water: 44 kg per day (Carlsson et al. Environ Toxicol Chem 2009;28:2656-62)

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What you can do to help

Do you really need to wear those gloves?

Classification: Official

Publication reference: C1691



National infection prevention and control manual for England

7 September 2022

V2.3. Updates to version 2.2 are highlighted

Personal protective equipment (PPE) Non-respiratory pathway

This poster details the PPE required for direct patient care when applying standard infection control precautions. Before undertaking any procedure, staff should assess any likely exposure to blood and/or other body fluids, including contact with non-intact skin or mucous membranes and wear PPE that adequately protects against the risks associated with the procedure.

Clinical task undertaken	Gloves	Apron/gown	Surgical face mask	Eye protection
Routine care	✗	✗ ¹	✗ ³	✗
Body fluid exposure risk <small>(task is expected to involve direct contact with blood or body fluids, including contact with mucous membranes or non-intact skin)</small>	✓	Apron ²	✓	✓
AGP <small>(aerosol generating procedure)</small>	✓	Apron ²	✓ ⁴	✓

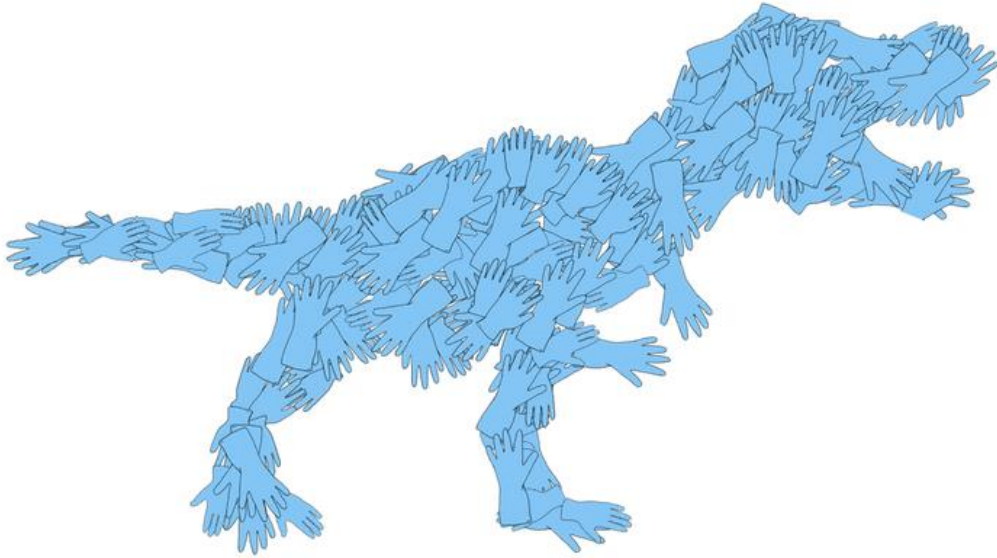
1. Apron required to protect uniform or clothes when contamination is anticipated e.g. direct care/contact with a patient.
2. Consider a gown if there is a risk of extensive splashing of blood and/or body fluids.
3. Surgical faces masks are required when caring for a vulnerable patient or when in a vulnerable patient care area.
4. Surgical face masks can be worn when undertaking an AGP provided the patient has tested negative for COVID-19 through routine testing and has no other respiratory infection concerns. Otherwise, an FFP3 respirator is required.



What's wrong with gloves?

- Glove use provides a false sense of security to staff, who feel protected and don't then do hand hygiene when the gloves are removed
- Gloves tend to be worn for too long, way beyond the duration of the immediate task for which they were selected ([Wilson, Loveday, 2017](#))
- Patients often feel uncomfortable with inappropriate use of gloves for personal tasks ([Wilson, Bak et al, 2017](#)).
- Gloves add mountains to hospital plastic waste
- Gloves cost money
- Gloves cause and exacerbate skin issues for staff

Gloves off...



Reduction in staff attendances to occupational health for hand or skin related problems.

Glove or no glove?



Glove or no glove?

Use this checklist to make sure you're only using disposable gloves or aprons when it's clinically necessary.

Wear gloves when:	Don't wear gloves when:
<ul style="list-style-type: none">• touching blood and/or body fluids• in contact with mucous membranes• in contact with non-intact skin• taking a blood sample• oral/tracheal suctioning• inserting/removing a peripheral cannula• handling hazardous chemicals e.g. cleaning solutions, or therapeutically active cream• preparing and administering liquid hormones and cytotoxic medication• handling waste contaminated with blood and body fluids• handling sharp instruments that are contaminated with blood and body fluids• in contact with an infectious patient• inserting invasive devices into body cavity• inserting central venous and arterial access• preparing of Total Parental Nutrition• dressing wounds• performing surgical procedures	<ul style="list-style-type: none">• taking a patient's observations• dressing a patient• feeding a patient• washing a patient• transporting a patient• writing on charts, using bedside computers• handling used linen (unless soiled)• preparing and administering IV medications (not cytotoxic medication)• giving oral medications• mobilising - e.g. physiotherapy• assessing a patient – e.g. chest auscultation• assisting with mobility/transfers• facilitating movement/exercises• providing manual therapy <p>Reducing unnecessary use of disposable gloves and aprons is better for staff and patients, and helps the Trust meet its sustainability goals.</p>

For more information, search GTI for 'gloves' or go to [gti/gloves](#)

Created: June 2022

If we reduced our glove usage by 30% this would save:

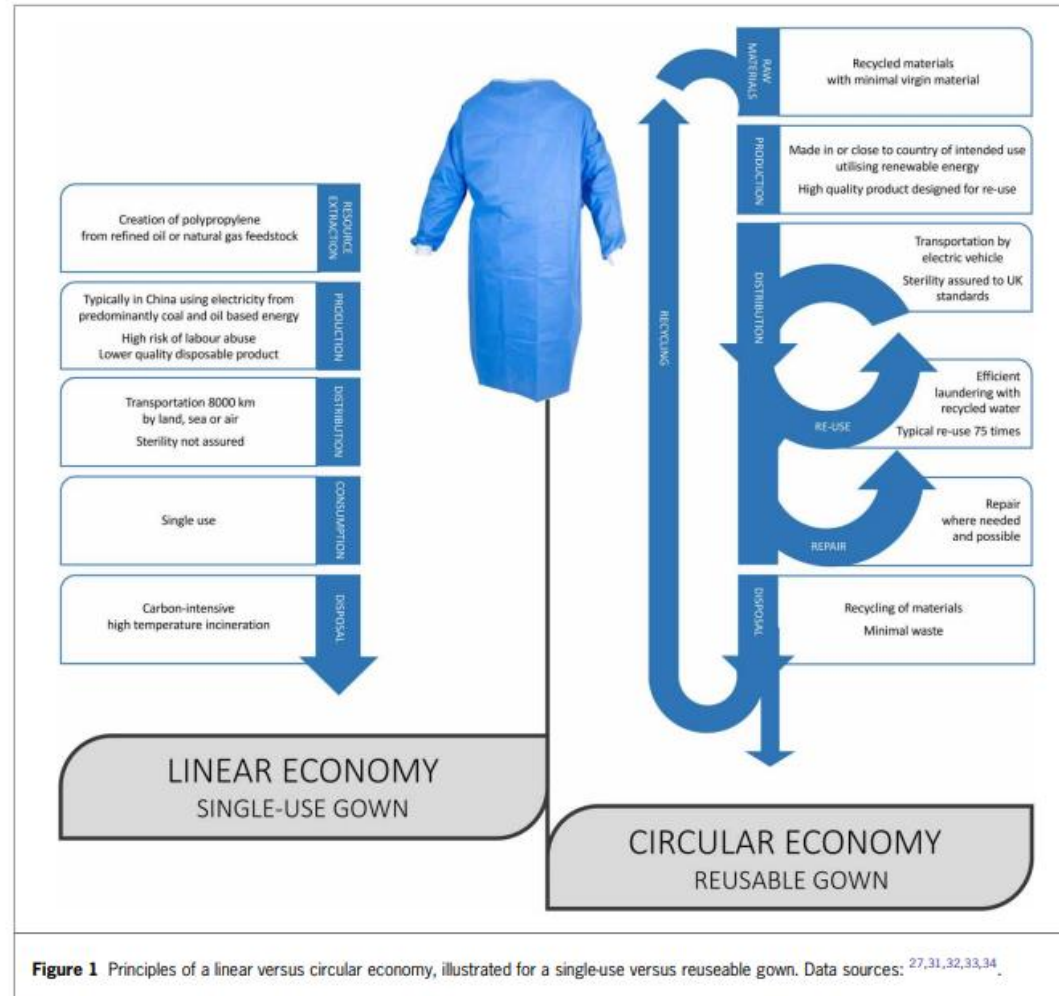
Purchasing 6.1m less pairs of gloves

Savings of £285000

Saving of 318 tons of CO2 - 17 flights from London to Paris

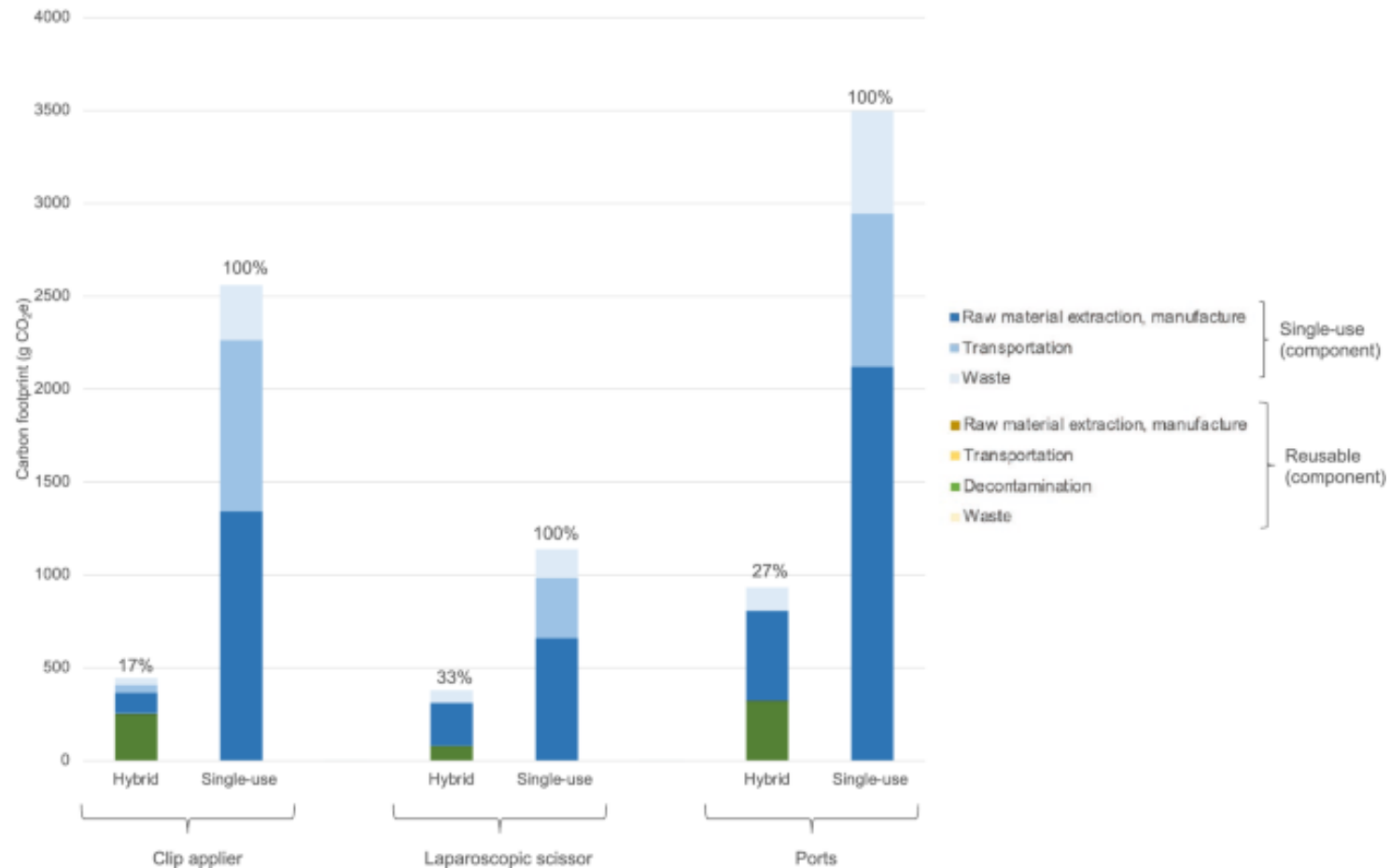


Single use medical devices / surgery



Moving away from single use surgery

Environmental impact and life cycle financial cost of hybrid (reusable/single-use) instruments versus single-use equivalents in laparoscopic cholecystectomy



Reducing waste from IPC isolation

An evaluation of contamination and hydrogen peroxide vapour decontamination of individually packaged supply items in the rooms of patients on contact precautions in US ICUs.



TABLE 2. Microbiological Assessment of 5 Standardized Supply Items from the Rooms of 20 Patients under Precautions for a Multidrug-Resistant Organism (MDRO)

Variable	MRSA	VRE	MDR-GNR ^a	Any MDRO ^b	Other microbes
No. positive/no. sampled	3/100	3/100	4/100	9/100 ^c	98/100 ^d
Items contaminated	Large dressing, small dressing, specimen cup	Large dressing, small dressing, syringe	Syringe (2 items), large dressing, specimen cup

TABLE 3. Projected Cost Savings Associated with Hydrogen Peroxide Vapor Disinfection of Packaged Supplies

Variable	Neurosurgical ICU	Surgical ICU	Transplant unit ^a	Oncology ICU	Medical ICU	Cardiothoracic ICU	Total
No. of supply items per room	712	302	200	567	747	739	3,267
Room supplies costs per room	363.55	119.67	96.01	255.69	407.44	274.04	1,516.39
No. of patients under precautions discharged	165	189	556	259	379	150	1,698
Policy for discard of supply stock, %	100	100	80	100	100	100	...
Annual cost of discarded supplies, \$	59,985.75	22,618.39	42,703.02	66,223.06	154,419.38	41,105.55	387,055.15

Antimicrobial stewardship

S. No.	Domains	Activity
1	Awareness Raising	Improve awareness, understanding, and knowledge of AMR through communication, education, and training at local, national, and regional levels.
2	Antimicrobial Stewardship	Promote the optimal use of antimicrobial agents through appropriate prescribing in diverse health care settings, especially in primary care.
3	<u>Reduction of Antimicrobial Contamination of the Environment #</u>	<u>Reduce antimicrobial contamination of environments which is potentially driving AMR selection and spread through identification, monitoring, regulation and implementation of activities and products/innovations that could help minimize antimicrobial residues in the environment (soil, air, water)</u>
4	Surveillance, monitoring, and research for national surveillance systems with a One Health approach	Under a One Health approach, strengthen knowledge and evidence through AMR and associated public health surveillance, monitoring, and research for national systems.
5	Infection prevention and control in human and animal health	Reduce infections (including hospital- and community-acquired infections) in humans and animals.
6	Reduction of the spread of pathogens into the environment	Identify, monitor, and regulate environmentally related activities or products that result in the spread of AMR pathogens
7	Operational Research Agenda	Strengthen and sustain operational research capacity for evidence-based decision-making to improve program performance.
<p>Notes:1. #Domain "Reduction of Antimicrobial Contamination of the Environment" is suggested by us. 2. As per World Bank Group (2018), "a One Health approach is: a collaborative approach for strengthening systems to prevent, prepare, detect, respond to, and recover from primarily infectious diseases and related issues such as antimicrobial resistance that threatens human health, animal health, and environmental health collectively, using tools such as surveillance and reporting with an endpoint of improving global health security and achieving gains in development" [WHO, 2018].</p>		

Antibiotic footprint



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What you can do to help

Things an IPC practitioner can do to support sustainability

- ✓ Measure carbon footprint of infection
- ✓ Read your Trust's sustainability strategy
- ✓ Get in touch with your Trust's sustainability team
- ✓ Start your own sustainability project



Sustainability

You can jump to a specific section

[We've started well](#)

[Our focus going forward](#)

[Our sustainability strategy video](#)



Some change ideas to get you started

- Transport related to lab specimens - reducing single use plastics, freezer bags and cooler bags which can be wiped down.
- Improve training of environmental hygiene personnel to reduce single use disinfectant wipe usage.
- Reduce facemask and tubing waste during nebuliser administration.
- “Gloves off” is so passé. It’s time for aprons off...!
- Reduce inappropriate clinical diagnostic samples sent to the microbiology lab.
- Reduce use of antibiotics in patients approaching the end of life.



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Looking for the win-wins



What you can do to help

enemy /'ɛnəmi /

(noun)

a person who is actively opposed
or hostile to someone or
something

friend / frɛnd /

(noun)

a person who gives assistance;
patron; supporter

IPC is the ~~enemy~~ of sustainability

friend

patron

supporter

partner

enabler

bezzie



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IPC is the partner of sustainability!



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