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Section 8 – Operational Resource Use

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Operational Resource Use

In this section we will look at sustainable use of resources. We will begin with procurement, because reducing waste has much greater potential to reduce environmental impact than how we deal with waste once its generated.

Most of the ideas outlined in the section will be equally applicable in healthcare and in other sectors, some even your own home!

Ethical Procurement

As clinicians we may not think about it much but the medical supply chain is massive. It includes pharmaceuticals, medical devices, high-volume consumables like gloves and gowns as well as furniture, linens etc. The majority of the environmental impact of a surgical procedure like cataract surgery , for instance, is due to procurement – i.e. it has happened before the patient even enters the theatre. How can we ensure that the required supplies are reliably available, of high quality and within budget, whilst also reducing the environmental footprint of procurement? To do so requires action from both purchasers and manufacturers in the global supply chain.

Suppliers

are aware of the global push for sustainability. Some are genuinely attempting to reduce their environmental impact. Others are spending more marketing themselves as sustainable than actually becoming so. This is called 'greenwashing'. This guide helps consumers to spot it. There are no international standards on sustainability and emissions-reporting to assist with this. Some medical suppliers have created internal codes of conduct and/or come together as industry groups to set overall principles, such as the Pharmaceutical Supply Chain Initiative, The Sustainable Healthcare Coalition (a group of large healthcare companies, predominantly pharmaceutical manufacturers, that share data and best practice sustainability) and The Sustainable Medicines Partnership (a coalition of industry and public interest groups seeking to find solutions to reduce pharmaceutical waste). However, when industry is left to regulate itself, the onus remains on the purchaser to verify sustainability claims.

Purchasers

can push industry to change by demanding:

- Demanding more sustainable goods
- Demanding accurate life cycle data on environmental impact of products and
- Choosing more sustainable and ethical suppliers.

Large purchasers like the NHS can have a significant impact. The NHS has begun to require suppliers to sign a code of conduct, will soon require transparency about the carbon emissions of manufacturing and have set out a road map to supplier net zero.

Health Care Without Harm (HCWH), an international organisation based in the US, has accumulated resources, best practices, and model examples for sustainable procurement. In Europe, their Healthcare Market Transformation Network is a web of working groups from different sectors who share experience, identify gaps in the market, and present unified acceptable product criteria and identification of sustainable alternatives.

The United Nations Development Programme (UNDP) has also published guidelines for sustainable procurement for the healthcare sector.

Human Rights and Working Conditions

Ethical Procurement is not just about environmental sustainability.

In this video on the social cost of healthcare (11 min), Dr Mahmoud Bhutta describes how many of the medical products we use are produced in unhealthy, unsafe and unfair working conditions, with workers risking injury and even death to make the goods to treat sick people in the global North.

The British Medical Association's Fair and Ethical Trade Group investigated abusive practices in supply chains around the world, lobbied for improvement to the Modern Slavery Act, and promoted purchasing of ethically and sustainably produced materials for the UK healthcare sector. In collaboration with the Royal College of General Practitioners they published a guide to ethical and sustainable procurement for GPs and ICBs.

How to Implement Ethical and Sustainable Procurement

Procurement:

1. Ensure sustainability is weighted equally with price and quality when choosing products.
2. Demand information from suppliers about the sustainability of their products – ideally life cycle analysis information or at least carbon emissions – and end of life disposal – is the product recyclable or repairable.
3. Consider leasing contracts rather than purchasing for appliances. This encourages manufacturer to build durable products.
4. Chose reusable over single use where clinically safe.
5. Chose items with a long lifespan that can be easily repaired of recycled.
6. Collaborate with others to increase purchasing power
7. Monitor your progress

Stock management:

1. Monitoring usage to avoid over-ordering, particularly for items with shorter shelf life
2. Organise storage so that older items are used first ('first-in, first-out').
3. Where possible, combine orders to minimise transport emissions
4. Adopting first in / first out storage to ensure older items are used before their expiry date.

Final Thoughts

There is still a long way to go to ensure that items used in healthcare come from sustainable, ethical sources, and are designed with their reuse or safe disposal in mind. As the climate changes and begins to impact supply chains prices will rise and choices will need to be made about what is essential and whether alternatives can be found. To reduce the environmental impact and increase security of supply, the manufacture and disposal of healthcare supplies will need to become closer to the end user.

Case study: Do you know where your suture comes from?

To highlight the impact of the supply chain the Sustainable Surgery team of Cardiff and Vale Health Board investigated the journey taken by the humble suture.

For needles that are 3/0 or finer, there is no automated process that unites the suture thread with the needle, so these are transported via air freight to be assembled by hand in a factory located in another continent, before being flown back to the original factory. Sutures destined for the UK market may be transported by sea and/or road to a warehouse before their dispatch to hospitals throughout the country.

Investigating the suture procurement at one large hospital revealed that individual purchasing is the responsibility of the senior nurse from each operating theatre (there are over 25 theatres in the health board). When supplies of a particular suture are low, an online purchasing order is completed. Once received, the manufacturer dispatches the order via road transport.

The ordering process in this hospital led to an estimated transportation carbon footprint of 26.3 tonnes of CO_2e for one tonne of 3/0 monofilament absorbable sutures. This is the equivalent to driving 65,261 miles in an average passenger vehicle, or the entire energy usage of 3 homes over a year. This amount could only be offset by switching 999 incandescent lamps to LED bulbs or planting 435 tree seedlings and growing them for 10 years.

Extracted from Horwood et al, [The globalised supply chain of the suture: industry and healthcare organisations' responsibility to sustainable healthcare]

Waste Reduction

When we think about sustainability, waste disposal and recycling are often the first things that come to mind. Healthcare produces a huge amount of waste. The NHS purchased over 180 million plastic items in 2018 alone and produces over 600,000 tonnes of waste annually. However, the overwhelming majority of environmental impacts (including about 85% of GHG emissions) occur earlier in the life cycle during resource extraction, manufacture and transportation. That's why nearly 2/3 of the NHS carbon footprint comes from the supply chain, whilst less than 5% is related to waste disposal. So the primary objective must be to reduce consumption.

A Circular vs. Linear Economy

Our current economic system is 'linear': precious resources constantly flowing out of the system as manufacturers are incentivised to design products with short lifespans (obsolescence) so they can keep selling new products.

A-circular-economy is more like the natural world, where waste from one process becomes useful for another. This is not simply about recycling. It requires redesign of products so they last longer and can be easily repaired, refurbished or taken apart to be re-purposed or recycled.

Leasing (or ‘Servicization’) contracts (where a product or service is rented rather than bought with the manufacturer remaining responsible for maintenance, repair and replacement) incentivises companies to build durable products that are easily repaired, refurbished or broken down for recycling.

This review outlines the opportunities and barriers to implementing a circular economy in healthcare.

This 3-minute video explains the concept

Reducing our environmental impact

1, Reduce

- Medicines – Reduce the number of prescriptions, targeting those the patient is not taking or benefitting from. This improves care, reduces risk to the patients and costs to the service.
- Stop low-value use of items or procedures– (learn how this Green Ward competition team saved carbon and money by Reducing Unnecessary Cannulation
- Digital transformation - Minimise paper usage by adopting electronic patient record and administration systems.
- Pre-assembled packs for procedures - ensure they only have the necessary items in them.
- Reduce water use by fixing leaks, installing meters and taps that turn off automatically, and raising staff awareness.

2, Reuse

- in recent decades healthcare has switched from sterilising reusable items to single use items. reversing this trend is complex - see the Single Use vs reusable devices page
- When you no longer need something, someone else might. Establish a storage area for hospital furniture, mobility aids etc and encourage return of items like crutches. Some hospitals have been donated used hospital beds to children in bed poverty.

3, Repair

- Due to safety concerns slightly damaged equipment is often replaced with new. This adds significant cost and equipment often goes to landfill.

4, Recycle

Recycling re-introduces materials such as metals and glass to the manufacturing system. It works less well for plastic. Firstly, only around 7 of the ~50 types of plastic can be recycled. Secondly, plastic can only be recycled a few times before the quality is too poor for most purposes. After that it degrades to smaller called microplastics. These adsorb other toxins and can be eaten by living species, deposit in tissues and cells and move up trophic levels from prey to predators, leading to microplastic and toxin accumulation in animals. Microplastics are present in food and drink consumed by humans.

- Case study: Trust goes green with a new recycling centre | News | Royal Surrey NHS Foundation Trust
- Case study: PVC medical device take-back scheme at 36 NHS hospitals[9] collects used nasal cannulas, oxygen tubes, anaesthetic masks and oxygen masks (see p. 24-25) (RecoMed)
- Case study: Waste Management - Clinical Sterilisation Wrap
- Case study: Frimley Hospital Trust (2 minute video)

5, Recovery

Where it is not possible to recycle or reuse items it may still be possible to recapture something by burning them for energy. However, this can result in harmful air pollution and some greenhouse gas emissions.

6, Landfill

Landfill is often the most expensive and always the least environmentally sustainable option. Resources (which may be scarce) are lost to the system and land is converted to toxic dumps. These are often located in areas of social deprivation, exacerbating health inequalities.

Special forms of Waste

Food

Approximately 1/3 of food produced is wasted. This contributes 8-10% of global emissions. The food industry is responsible for about 23% of global emissions.

Food waste can be reduced by better planning, serving on the ward rather than delivering pre-plated, reducing portion size (where appropriate) and improving the quality of food. This has additional benefits in improving patient and staff nutrition, promoting wellbeing and faster recovery. Projects such as Hospitals - Food for Life can help to achieve significant reductions

Diverting wasted food to composting returns nutrients to the soil and helps support on site or community horticultural projects. Onsite projects have multiple benefits for patients and staff and can help to supply the hospital kitchen at reduced cost.

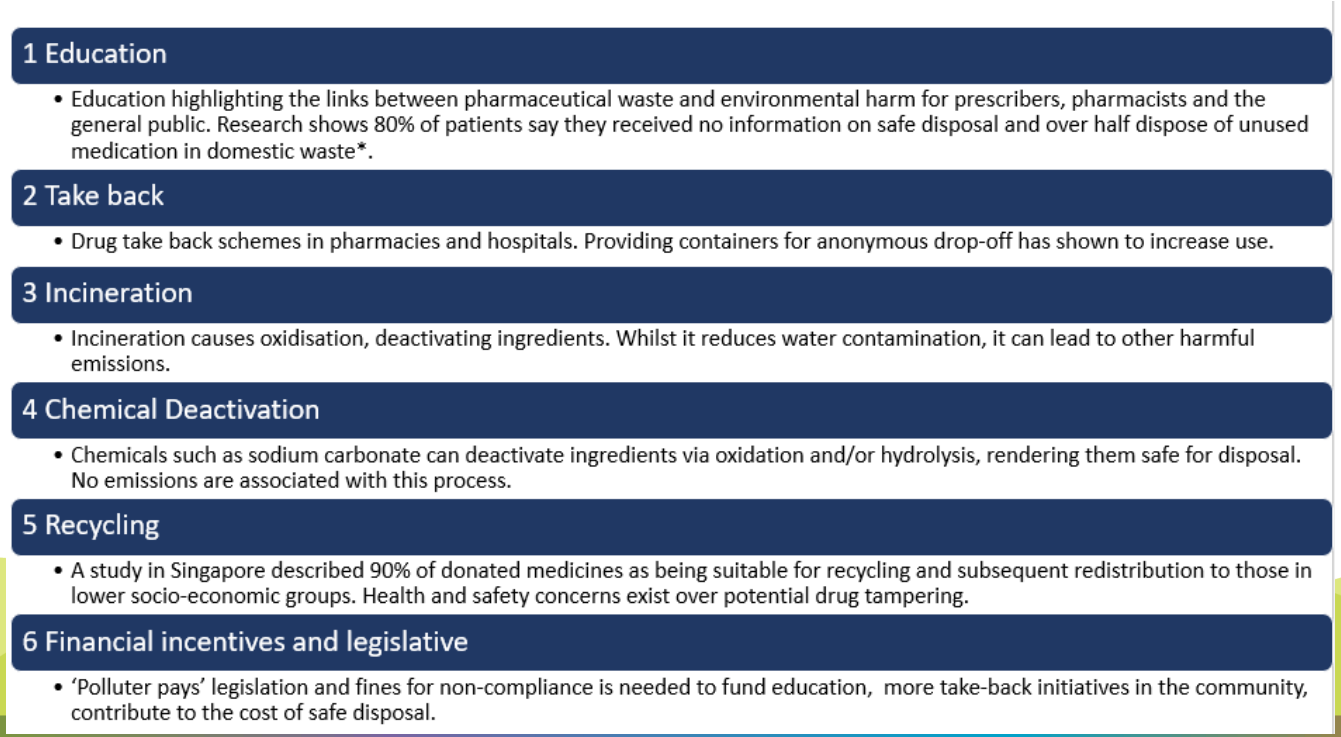
Case studies:

- Food Waste
- £650,000 spent on meals that go straight in the bin at North Wales hospitals - North Wales Live (dailypost.co.uk)

Pharmaceutical waste

Most water treatment plants are not designed to remove more than small amounts of biologically active molecules such as active pharmaceutical ingredients (API). Furthermore, concerns have been raised about wastewater bypassing treatment centres and being dumped into rivers, leading to mass water contamination. Many countries with access to healthcare, but without waste management systems, have been found to have high levels of API in their rivers including analgesics and antibiotics. This has been linked to antibiotic resistance and harm to aquatic life. The One Health Breakthrough Partnership in Scotland is working to reduce the impact of pharmaceutical waste on Scottish waterways

Reducing the harms of pharmaceutical waste requires:



Pharm Report_WEB.pdf (noharm-europe.org)

Table 1 Costs and carbon emissions per waste disposal

Waste type	Cost/credit	Carbon emissions
Recycling (clear/blue)	Recycling can cost £144 per tonne.[14,19] £26 per tonne can be credited for segregated cardboard[13]	21.8 kg CO_2e/tonne[63]
Food waste/organic waste (brown)	Cost varies	6 kg CO_2e/tonne (based on removal and anaerobic digestion or composting)[63]
Domestic waste (black)	£101[13]-£142 per tonne[14,19]	345 kg CO_2e/tonne (based on average waste)[63]
Hygiene waste (yellow with black stripe)	£241 per tonne[14,19]	
Infectious waste contaminated with chemicals (yellow)	£337 to £457,[14,19] £725,[13] £1,630 per tonne[13]	220 kg CO_2e/tonne
Infectious waste not contaminated with chemicals (orange)		
Medicinal waste for incineration (black)	Cost not available	
Dental amalgam waste (white)	Cost not available	Carbon emission data not available
Plaster waste (no specific colour)	Cost not available	
X-ray fixer and developer (no specific colour)	Cost not available	

*Euros were converted into British pounds at £1 = €1.13, correct as of 4 May 2018[18]

Financial savings

Better waste management almost always leads to cost savings. The table below show some of the environmental and financial costs of different ways to waste streams in dentistry. Exact costs often depend on local contracts.

Getting Staff on Board

Instigating and sustaining behaviour change in a team can be challenging. The success of any waste management strategy will depend on the engagement of the staff, patients and visitors who use products and fill the bins.

Take a four-step approach: -

1. **Study the System** - Consult with the team so they feel involved rather than being dictated to. They can help to understand how current processes work and where waste occurs. Many may already be concerned about waste and have helpful ideas. The Royal Surrey Hospital's recycling programme grew from a group of nurses carrying home recyclable waste into a dedicated recycling centre for the Trust, and 60 'Sustainability Champions' (Trust goes green with a new recycling centre | News | Royal Surrey NHS Foundation Trust) .

2. **Training** – providing information about why and how is vital, but information-based campaigns is don't always result in long-term behaviour change. Ensure information is linked to the values of the team.

Getting Staff on Board

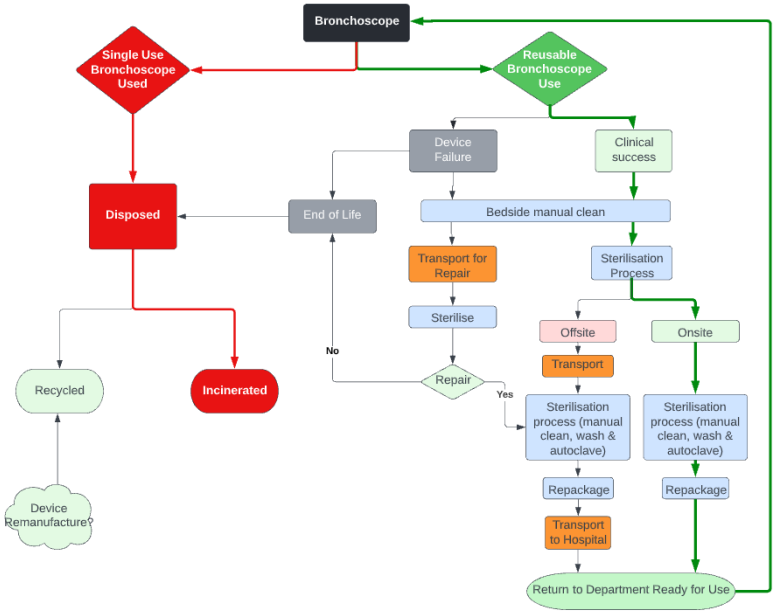
3. **Make the right thing to do the easy thing to do** –
   - Storage - place newly arrived items behind older ones on shelves
   - Bin positioning. Position bins where they can be easily accessed at the point of disposal. Even the most dedicated staff member is unlikely to use the recycling bin if its in another room. This can require creativity if space is limited. Avoid putting clinical waste bins where members of the public can use them for general waste. A survey of where waste is generated using Process Mapping can be helpful to ensure optimal placement.
   - Signage – what goes where? even after training its easy to forget. Ensure there are clear posters with the bins to avoid confusion.
4. **Regular Feedback** –on how much waste has been diverted from landfill +/- carbon and financial savings can help to keep motivation going. Present data in way that makes it meaningful (e.g. 7 tons of waste – as much as the weight of one elephant!)

Further resources

- Dumpster Diving in the Emergency Department - PubMed (nih.gov)
- Sustainable Dentistry How-to Guide: Waste | Centre for Sustainable Healthcare
- Transforming The Medical Device Industry: Road Map To A Circular Economy
- Circular business models in the medical device industry: paths towards sustainable healthcare

Reusable Vs Single Use Devices

One strategy to reduce consumption and waste it to switch back from single use devices (SUDs) to reusable products. If approached from the perspective of the triple bottom line the argument for reusables is easily made. Ultimately, if the NHS strives to achieve net zero, reviewing the appropriateness of SUD's is imperative.



What are the barriers to this?

Infection control

In recent decades we have been taught to believe that single use devices (SUDs) are necessary to prevent healthcare-associated infections (HCAIs). This has had a devastating impact on the amount of medical waste produced and lacks a convincing evidence base. No medical authority in any country has explicitly promoted the use of SUDs as a tool to prevent HCAIs and despite their widespread use the NHS records over 300,000 healthcare-associated infections per year.

The Challenge of Change

Let's look at what is involved in reusing devices using the example of a bronchoscope. Reviewing the flow diagram below, what challenges can you see to implementing a reusable pathway?

Reusable vs single use pathway – Bronchoscope

Here are some ideas we had -

Human Barriers: -

- Reusables may require bedside cleaning, adding workload to over stretched theatre teams.
- Changing the system requires finding the time and effort to engage stakeholders.

System Barriers: -

- Reusable equipment may be more expensive up front (although cheaper in the long run).
- Reusables require facilities and a workforce (in house or external contracts) for maintenance and sterilisation.
- Setting up in house facilities has upfront costs and, depending on the size of the organisation, may lack economy of scale.

Examples:-

1. Reusable Laryngoscopes

A 2018 paper found that sterilisation of blades generated 40-50% fewer GHG emissions than SUD alternatives. Sterilisation of handles produced 7x less CO2e emissions than SUD handles. Reusable blades and handles were also cheaper.

Disposable laryngoscopes were mandated by the Department of Health (UK), in response to concerns about prion transmission in the late 90's, particularly with tonsillectomies. However, they reversed this decision 12 months later. In 2011, the death of a patient related to a failure to properly decontaminate a laryngoscope handle prompted many organisations to switch to disposable laryngoscopes. Current guidance from the Association of Anaesthetists states this decision 'should be determined by individual departments based on their ability to process reusable components safely and consistently, following the manufacturers' instructions'.

On balance the risk appears small and uncertain compared to the known risks associated with environmental degradation. Some centres use reusable laryngoscope blades and handles with no evidence of harm occurring. If the infection control risk is minimised with appropriate decontamination for this *critical item* (Spaulding classification), the focus should then move onto the economic and environmental savings.

- Life Cycle Assessment and Costing Methods for Device Procure... : Anesthesia & Analgesia (lww.com)
- Re-usable and sheathed laryngoscope blades - Cook - 2002 - Anaesthesia - Wiley Online Library
- Infection Control Guideline FINAL 2020.pdf (anaesthetists.org) page 8-9

Why should hospitals consider switching to reusable devices?

They are just as safe. The US Food and Drug Administration found that reusable or reprocessed devices pose no significant increase in infection risk compared to SUDs.

They save money - US hospitals saved $500 million (£362 million) in 2018 by switching to reusable devices. One French hospital demonstrated reprocessing single-use devices in short lumbar spine fusion saved 181€ per intervention. A life cycle assessment laparoscopic instruments found that using hybrid instruments cost less than half that of single-use equivalents.

There are significant environmental benefits. Reprocessing catheters led to a 90% decrease in ozone depleting gases and a 69% decrease in greenhouse gas emissions. Even if the energy from incineration of plastic were captured and used, the chemical pollution, including dioxins, from the process would outweigh this benefit.

Reusable Laryngeal Mask Airways (LMAs)

Single use LMAs are *semi critical items* (Spaulding classification) made of medical grade polyvinyl chloride and were designed to replace the standard reusable silicon LMAs after evidence emerged that decontamination lacked efficacy. Due to this and concerns about prion disease single use LMA's were advocated. To date, there is little evidence investigating the efficacy of the sterilisation process for reusable LMA's. Perhaps it is time for this to be revisited.

A 2012 study in the US found the carbon footprint of a reusable LMA's, capable of being used 40x, was 7.4kgCO2e over its lifetime, whereas the equivalent 40x single use LMA's was 11.3kgCO2e.

This is just the tip of the iceberg. Could we find ourselves moving back to the era of reusable glass syringes, developing washable cotton intra operative warming blankets, reusable theatre caps, sterilising elastic bougies and supraglottic airway adjuncts to name but a few possibilities - What do you think could be transitioned to reusable?

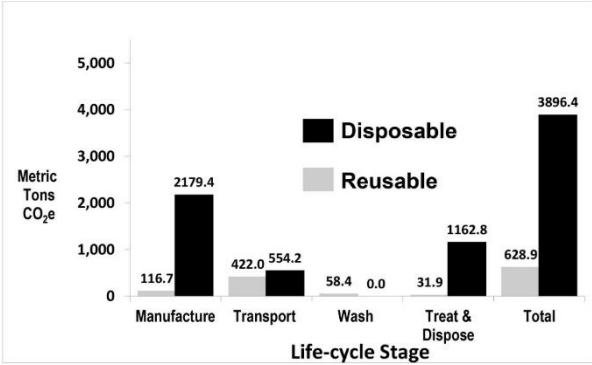
More information can be found here

Reusable sharps bins

Clinical waste bins are one of the top 20 medical devices being prioritised to contribute to the Net Zero NHS effort. Disposable bins are greenhouse gas intensive as the life cycle includes manufacture, transport, washing, treatment and disposal.

Reusable sharps containers have been shown to reduce the environmental impact, whilst also reducing infection risk and sharps injuries.

Currently, there are two companies in the UK distributing reusable sharps containers: Sharpsmart and Bio Systems RSC (by Stericycle UK). Sharpsmart have also begun recycling non-sharp single-use metal medical devices such as laryngoscopes, stapling devices and trochars. Whilst this is positive it may reduce motivation of hospitals to switch to reusable devices, which should be the priority where possible.



[image credit: https://bmjopen.bmj.com]

Further reading:

- Sharpsmart knowledge Centre resources
- Grimmond TR, Bright A, Cadman J, et al Before/after intervention study to determine impact on life-cycle carbon footprint of converting from single-use to reusable sharps containers in 40 UK NHS trustsBMJ Open 2021;11:e046200. doi:10.1136/bmjopen-2020-046200
- The use of single-use devices in anaesthesia: balancing the risks to patient safety
- Financial and environmental costs of reusable and single-use anaesthetic equipment
- Before/after intervention study to determine impact on life-cycle carbon footprint of converting from single-use to reusable sharps containers in 40 UK NHS trusts | BMJ Open

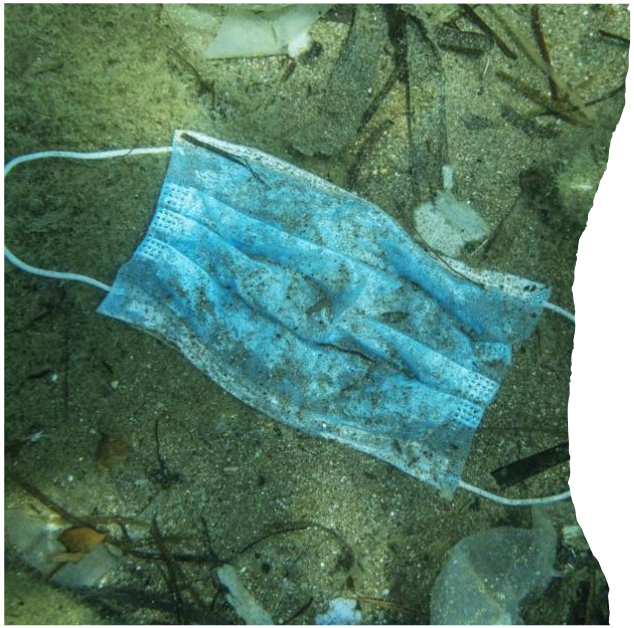
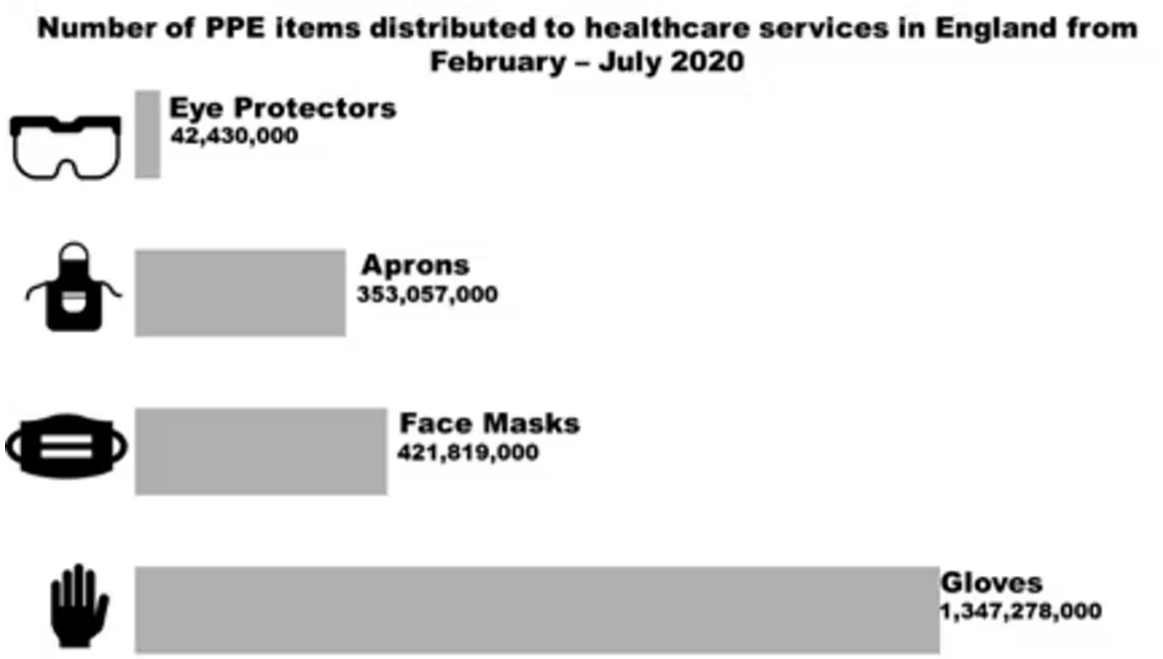


Figure https://s.yimg.com/ny/api/

PPE and the pandemic

COVID 19 has, for good reason, massively increased use of personal protective equipment (PPE). This has resulted in a steep rise in plastic pollution. In 2019, 2.3 billion items of single-use PPE were distributed to health and social care services in England. Approximately same number was distributed to the same services in the first six months of the pandemic alone, despite reduction in routine services. The carbon footprint of this is equivalent to 244 flights from London to New York per day.

Environmental impact of Personal Protective Equipment distributed for use by health and social care services in England in the first six months of the COVID-19 pandemic | medRxiv



- **(image credits** Chloe Way / data from gov.uk https://theconversation.com/healthcare-is-still-hooked-on-single-use-plastic-ppe-but-there-are-more-sustainable-options-143940 **)**

Globally, it is estimated that during the pandemic 65 billion disposable gloves and 129 billion face masks are being used every month. This has overwhelmed waste management systems resulting in unsafe disposal, increased incineration and use of landfill.

Non-sterile gloves

Gloves intended for clinical use contain latex, nitrile, neoprene or vinyl and a range of plastics. They may only be used for a few minutes, but the materials can take 450 years to decompose. They are notoriously difficult to recycle and carry risk of contamination.

Overuse of gloves can cause other problems. Many routine tasks take longer than usual, staff feel physically uncomfortable and, often, uncertain about what PPE to use. Regular glove usage has been shown to result in complacency: a false sense of protection and increased rates of self-contamination [2]. Single-use non-sterile gloves grew in demand during the pandemic due to perceived barrier protection from droplets and hands-to-face contact. However, many governing bodies including the World Health Organisation (WHO) have warned that gloves provide limited protection, especially when incorrectly disposed of.

Gowns and aprons

WHO only recommends long-sleeved gowns for aerosol and non-aerosol generating procedures. Waterproof aprons are only advised if there is a potential for high volumes for fluid to penetrate the gown. The US Centre for Disease Control recommends that disposable aprons should only be used as last resort in a shortage of gowns as they are not true PPE. Despite these recommendations, disposable aprons are commonly used for every patient interaction with no clear clinical indication.

The energy and environmental footprints of COVID-19 fighting measures - PPE, disinfection, supply chains - PubMed (nih.gov)

Changing gears: Medical gloves in the era of coronavirus disease 2019 pandemic - PMC (nih.gov)

Microplastics

Most PPE contains plastic. There is emerging evidence that PPE is breaking down into microplastics which can contaminate freshwater and soils. Microplastics can propagate microbes and present a risk for the spread of infection. The long-term consequences of PPE usage and disposal are yet to be fully understood but there needs to be a shift in behaviour to reduce use and find solutions that are less environmentally damaging rather than focusing on new disposal techniques.

(image credits Covid-19 face masks: A potential source of microplastic fibres in the environment - PMC (nih.gov)

Labour rights and procurement

Due to the urgency to meet increased service demand, an ‘extremely overheated global market’ emerged. Global supply chains were vulnerable and many new suppliers entered the market, increasing competition and pricing.

In the first 6 months of the pandemic, much of the UK’s PPE stock came from Malaysia (medical gloves) and China (aprons and masks). Even prior to the pandemic, concerns had been raised regarding forced labour, inadequate pay and exploitation in these factories. This was further exacerbated by the increased demand once Covid-19 spread worldwide.

Studies have since highlighted the abuse of the Uyghur population in Xinjiang and other areas of China working in factories that the UK government used to procure PPE. The health of workers should not be compromised in order to fulfil contracts.

The UK Modern Slavery Statement and the UK Government PPE Strategy are important policies that have been created or amended in response to these issues. This BMA report gives further recommendations on how to ensure PPE is obtained in a more ethical and sustainable way. The report includes national and international policies and recognises the need to call for action to prevent further infringements of labour rights.

Strategies to reduce impact

1. Buy from domestic suppliers where possible to reduce transport emissions (this reduced carbon footprint by 12% in one study)
2. Complete the maximum amount of treatment possible in one appointment to reduce both PPE usage, and patient travel.
3. Reducing glove use to when it is clinically necessary - glove use was mandated during COVID for close patient contact although transmission is airborne not through touch.
4. Using reusables where possible – e.g. the environmental impact of one use of a reusable gown was lower than that of a single-use gown across 16/18 environmental midpoint impact categories with impact reductions of 17% to 86%[4]
5. Policy changes regarding bins, waste management strategies, consumption pattern analysis and plastic-free alternatives Environmental impact of Personal Protective Equipment distributed for use by health and social care services in England in the first six months of the COVID-19 pandemic | medRxiv

Case studies

1. Gloves Off Project - Over a period of 10 months, staff at Great Ormond Street Hospital reduced use of plastic gloves, and in doing so saved 21 tonnes of plastic and £90,000. The team used internal communications channels to raise awareness and developed a training package to reach all their nursing staff and healthcare assistants. The project changed behaviour and helped deliver health benefits for staff as well as the environment. Watch this 2-minute video to hear more about the project.

2. Mass decontamination systems are being developed using ultraviolet light to clean and reuse PPE (masks and visors)
3. New nitrile gloves have been designed for biologically active landfills (to degrade within two years)
4. Watch this seven-minute video about Revolution-ZERO and how they are displacing single-use PPE in the NHS.

Further reading

1. COVID-19 Creating another problem? Sustainable solution for PPE disposal through LCA approach (https://link.springer.com/article/10.1007/s10668-020-01033-0)

Author: Ardra Radhalakshmi

Travel

Reducing our transport emissions involves thinking about :

- Staff and service user travel
- Travel for training and meetings
- The organisation’s own fleet
- Deliveries

Reducing emissions from staff travel

Support flexible working

- Ensure policies support working from home where appropriate
- Provide laptops and ensure they can access the data and sites they need at home
- Install the technology required for remote conferencing

Encourage sustainable travel

- Promote active travel options by sharing resources on your organisation's website
- Implement a cycle to work scheme to reduce the cost of cycling for staff
- Provide secure cycle parking
- Provide showers, changing facilities and lockers
- Some trusts even offer free bicycle servicing and the same mileage expense rates to cyclist as they do for car drivers.
- Incentivise staff to use public or shared transport e.g. discounted public transport cards, loans for yearly passes at zero interest, carpooling, priority parking for car shares.
- Survey your staff to find out how they currently travel and what could help them switch to active or public transport.
- Start a competition - e.g. a step challenge - try collating the pedometer count for the whole staff every week and see how high you can get. Use the data for a staff competition between individuals or teams and provide regular updates highlighting the reduced impact on health.

Patient and pupil's travel

- Display walking/cycling routes and maps of your local area
- Add a sentence to letters, appointment invitations and reminders
- Where possible locate services close to people's homes – use satellite clinics and use remote consultation where appropriate.
- Showcase changes to staff travel
- Run school competitions
- Offer cycle training

Conferences and training – virtual attendance versus in person significantly reduces environmental impact. It also wastes less time if people have to travel over long distances. For example:

One senior management meeting across an ICS	
Number attending	15
Average car journey time	30 minutes each way – total 1 hour
Total time wasted whilst driving	15 hours

This starts to look expensive even if they are not senior staff, and that is before you even think about carbon emissions and air pollution.

The organisation’s own fleet

Consider a plan to gradually replace all lease and pool cars, ambulances and vans etc with low or zero emission vehicles.

Deliveries

Think creatively. Some trusts are now using cargo bikes for deliveries. In urban areas this can be faster than cars or vans

Kings and Guys and St Thomas’s in London have set up a consolidation depot in Dartford to reduce delivery associated travel and use river transport for some deliveries.

Consider working with procurement and suppliers to

Reduce journeys by combining deliveries.

Order lower volume versions of items such as dry powder for mixing on site rather than pre-mixed dialysate

e-cargo scheme has launched at a Br

For more ideas see

- Travel & Transport – Greener Practice
- How to encourage active travel.pdf (sustainablehealthcare.org.uk)

Measuring the impact of changes

Table 1 Illustrating the effect of dental travel emissions on population health using the HOTT tool

	Staff business mileage by car	Patient travel	Staff commute	Total
Miles	41,261,174	476,471,033	241,134,752	758,866,959
QALY loss	19	195	111	325
Air pollution economic loss (£)	1,018,308	10,492,065	5,951,103	17,461,476
Tonnes nitrous oxide	21.52	224.90	125.74	372
Tonnes particulate matter (2.5)	1.20	11.01	7.03	19

The Sustainable Development Unit developed the Health Outcomes of Travel Tool (HOTT) to help NHS organisations measure the impact of travel in environment, financial and health terms. The tool converts miles to QALYs and estimates the cost of this. The travel tool (HOTT) only accounts for acute health events. The impact would be even higher if chronic disease were also taken into account.