

Climate change and healthcare

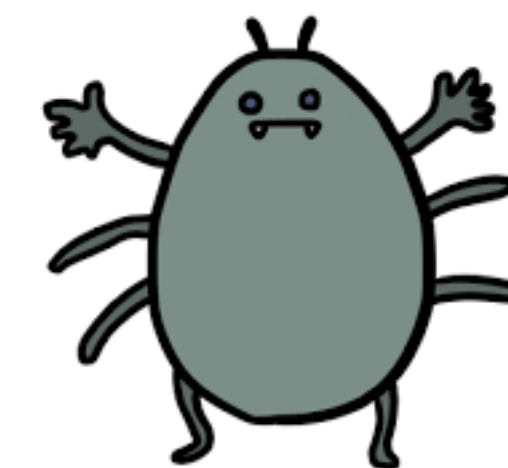


Effect of climate change on health

- Climate change is affecting peoples health in various ways, putting a greater strain on the NHS
- The unnaturally high temperatures seen in recent summers can be fatal, especially when it is something people are not used to, 2,500 people were killed by a heatwave in 2020 in the uk
- If action isn't taken to prevent further climate change then there will be more storms and flooding as well as more frequent and intense heatwaves, all which can cause injury and death
- The warmer temperatures have also resulted in the migration of certain pests to the uk such as ticks and mosquitos which have resulted in an increase in vector born diseases here
- The main causes of climate change such as the burning of fossil fuels releases harmful gases impacting on peoples health e.g it is estimated that action to cut carbon emissions could mean 1/3 of new asthma cases could be avoided



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The NHSs contribution to carbon emissions

- Today, doctors must do their best to treat their patients effectively without compromising the sustainability and environmental impacts of the medication given
- The health service contributes 4-5% of the total carbon emissions in the UK
- 83% of NHS vehicles use petrol and diesel (contributing to carbon emissions) 8% are hybrid and 9% are electric
- Each year the NHS produces 156000 tonnes of clinical waste requiring heat or alternative treatment which contributes further to carbon emissions
- Despite efforts to reduce carbon emissions the lack of funding has prevented many organisations in the NHS from becoming more sustainable



The environmental impact of different medications

- Medicines account for 25% of carbon emissions within the NHS
- Medicines which have the highest environmental impact include anaesthetic gases, nitrous oxides (accounting for 2% of emissions) and inhalers (accounting for 3% of emissions)
- Doctors today have found greener alternatives to these medications, however often doctors who have been treating patients a certain way are more reluctant to change their methods



Anaesthetic gases and nitrous oxides

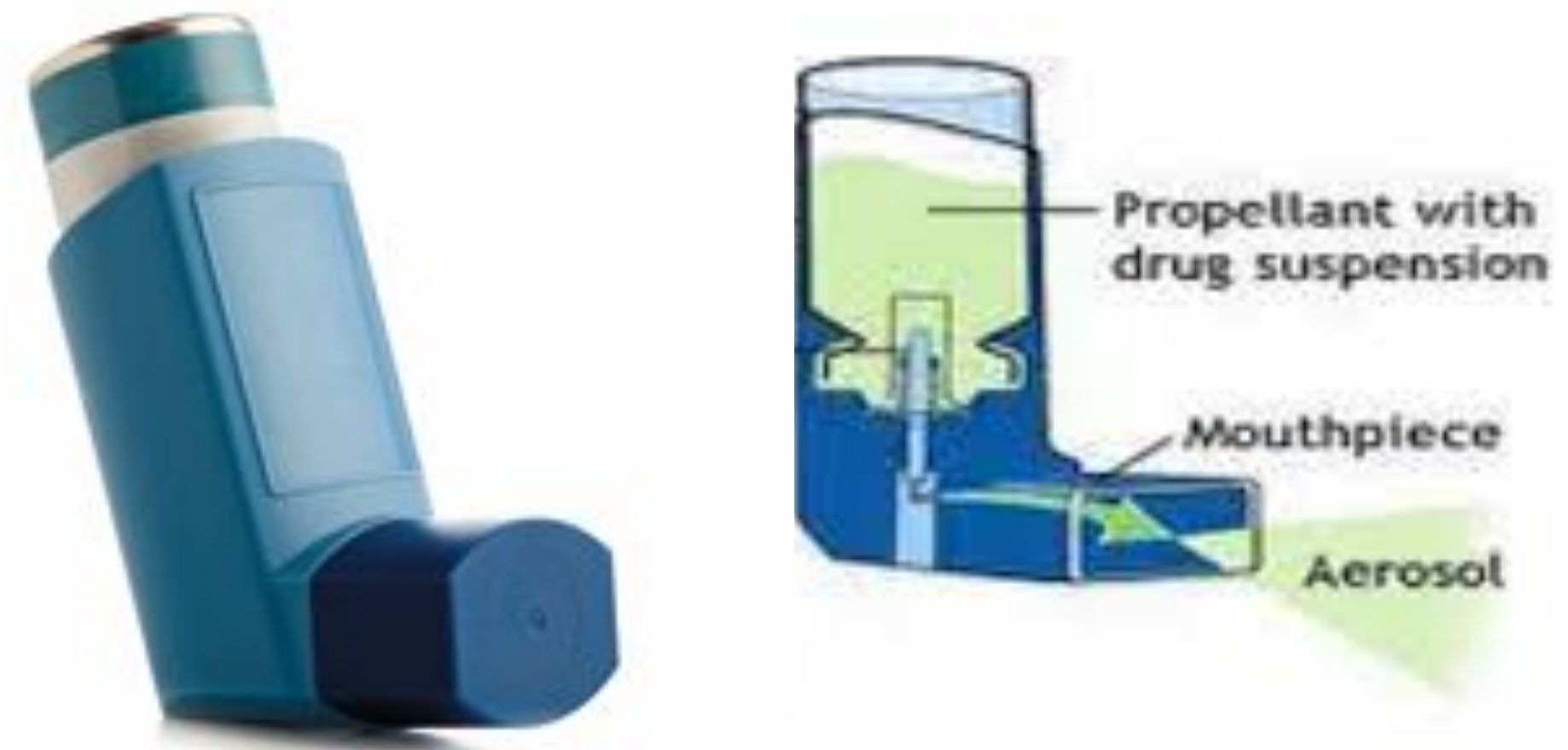
- Anaesthetic gases are used in surgery to put the patient in a state of controlled consciousness so that they do not feel any pain or move during the surgery
- It is taken either as a liquid injected into your veins or as a gas that you breathe through a mask
- Desflurane is one of the most common anaesthetic gases, using one bottle of it has the same global warming effect as burning 440 kg of coal
- Desflurane has higher rates of respiratory complications associated with it than alternatives such as Sevoflurane and is also more expensive for the NHS due to more of the gas being required per patient
- Nitrous oxide is another gas used in anaesthesia and is considered most harmful to the environment due to the large volumes used per patient with most gas wasted within the operating theatres
- In order to reduce carbon emissions, many NHS organisations have begun switching to using Sevoflurane which emits less carbon than Desflurane and nitrous oxide
- **The EU has chosen to ban Desflurane from use by 2026**



Inhalers

Pressured metered dose inhalers

- Inhalers are used when treating asthma to either relieve symptoms or prevent them from happening (reliever or preventer inhalers) or both (combination)
- They are an extremely effective treatment, however they are the largest contributor to NHS carbon emissions by a medicine
- Some inhalers, called **pressured metered dose inhaler** use a gas (a propellant) to form a puff of medicine which the patient can then breathe in, while this gas is safe for the person using the inhaler, the gas used is a greenhouse gas that is far more powerful than carbon dioxide and so contributes to climate change



Pressured metered dose inhaler

Greener inhalers

Dry powder inhalers and soft mist inhalers

- In order to reduce emissions many doctors are beginning to prescribe **dry powder inhalers** and **soft mist inhalers** which have much lower carbon footprints due to not containing greenhouse gases
- Dry powder inhalers release fine particles of medication which can be breathed into the lungs, unlike other inhalers they only require a strong breath to release the medication rather than the push of a button, while many may find this easier to use it can make it either easier or more difficult when using during an asthma flare and strong breaths are harder to take
- The soft mist inhalers turn medicine into a mist that can be inhaled, it is propellant free and instead uses mechanical power in order to deliver the medication it enables the most medicine into the lungs out of all the inhalers and so a lower dose is required

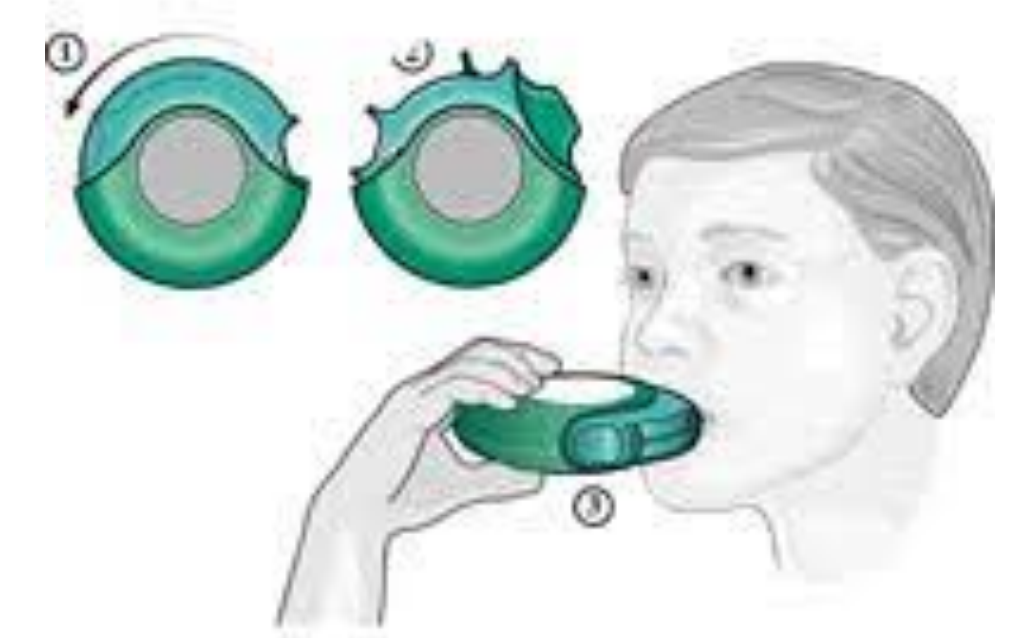


Figure 1: Diskus

Dry powder inhalers



Soft mist inhalers

changes made in the NHS in response

- On the 25 January 2020 Chief sir simon Stevens (CEO) announced that the NHS would be taking steps to tackle the climate change, health emergency.
- The NHS has established an expert panel to help the NHS get to net zero (contribute no carbon to the atmosphere) by reporting on greenhouse gas emissions and looking at any changes that could be made, It is the only healthcare system in the world to do this
- The NHS has also called on hospitals to reduce carbon usage within buildings, switch to less polluting anaesthetic gases and asthma inhalers and encourage more active travel for staff
- The campaign “for a greener NHS” has also been launched which works with staff, hospitals and partners to share ideas on how to reduce the impact of climate change on public health, the environment, save money and reach net zero

Thank you for listening