



# Child Health and Wellbeing Network

## North East and North Cumbria

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Child Health and  
Wellbeing Network  
North East and North Cumbria

## Section 7 – Sustainable Child Healthcare Sustainable Child Health

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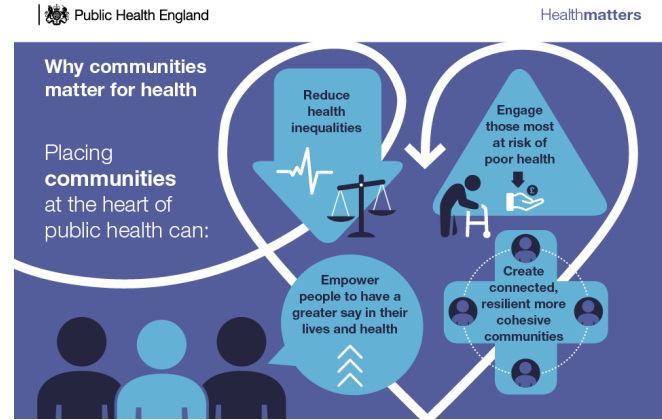


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# Sustainable Healthcare in Practice



Applying these ideas to the delivery of healthcare can not only assist with achieving net zero carbon emissions, it can also deliver improved health outcomes for our children and young people. In the first few pages we will look at some generally applicable aspects of care delivery and then consider how sustainable healthcare principles could apply to some specific conditions.



**Public Health Approaches** - First let's consider the role of public health. Public health teams have an important role in educating the public and local government about the risks of climate change but also highlighting the potential health co-benefits of acting to tackle it. They can advocate, influence and advise on how to implement change, and provide data to monitor impacts. They are also skilled in engaging and working with a diverse range of stakeholders, from disadvantaged communities to government makers.

# Sustainable Healthcare in Practice



Achieving the behavioural changes in the population required to tackle climate change effectively (such as changes to how we travel, what we eat, purchasing habits etc) will be challenging. However, as we have recently experienced, most of the public are prepared to make quite dramatic changes to their behaviour when given sufficient motivation (such as avoiding infection during a pandemic). Public health teams also have skills in behaviour change techniques. However, with the rise in individualism and reduced focus on communities over the last few decades public health campaigns have often focused too strongly on individual behaviour change. This approach risks increasing rather than decreasing health inequalities because Individual behaviour change relies not only on the person wanting to make the change, they also need the capability and the opportunity to do it. Factors such as low income, low level of trust and engagement with 'authority', educational status, immigration status, language and opportunity in the local environment can act as barriers. System-wide interventions have most potential for positive impact both in mitigation (trying to reduce the amount) of climate change and in adaptation to its effects. Below are two examples of system wide public health approaches.

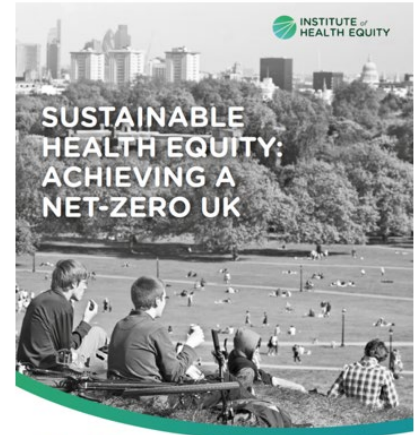


# Sustainable Healthcare in Practice

## Mitigation:

[Sustainable Health Equity: Achieving a Net Zero UK](#) - this report was written to advise the Climate Change Committee on the health impacts of achieving Net Zero UK. The report's recommendations:

- Support a just energy transition that minimises air pollution from all sources
- Design and retrofit homes to be energy efficient, climate resilient and healthy
- Build a sustainable, resilient and healthy food system
- Develop a transport system that promotes active travel and road safety, and which minimises pollution
- Develop healthy and sustainable models of work



Advisory Group  
Report for the UK Committee  
on Climate Change

Professor Sir Michael Marmot, Chair  
Report written by Alice Munro, Tammy Boyce, Michael Marmot  
on behalf of the Health Expert Advisory Group  
October 2020

# Sustainable Healthcare in Practice



## Adaptation:

Public preparedness measures such as early warnings for public services may protect vulnerable groups, if they lead to improved preparedness and joined-up action. An example of this is the [Heatwave Plan for England](#) and additional guidance for [Looking after children and those in early years settings during heatwaves: for teachers and professionals](#)

## Further reading:

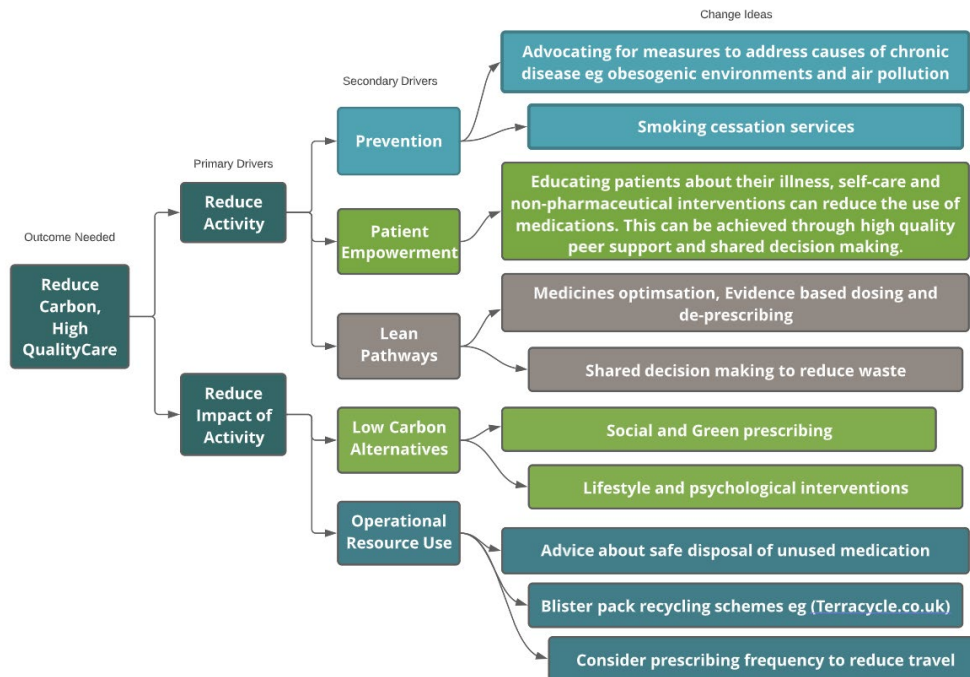
- [Reimagining Public Health \(common-wealth.co.uk\)](http://common-wealth.co.uk)
- [COM-B | COM-B | Capability, Opportunity, Motivation](#)



**Heatwave plan for England**  
Protecting health and reducing harm from severe heat and heatwaves



# Sustainable Prescribing for Children & Young People

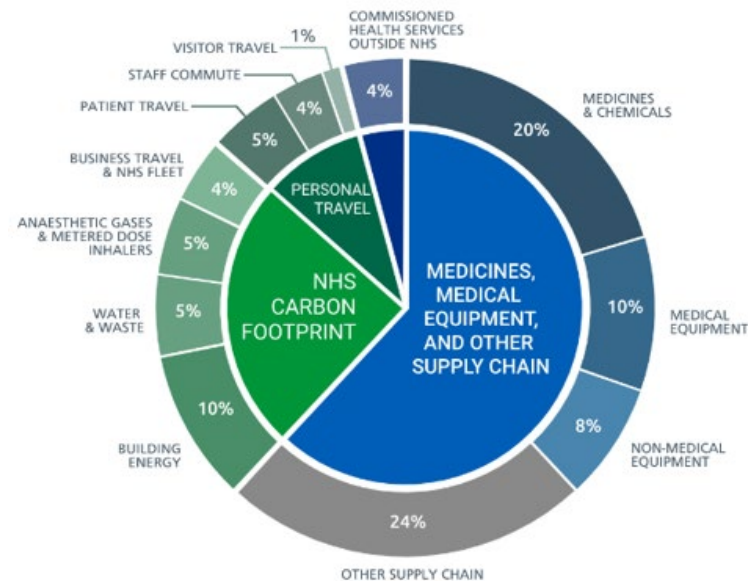




# Carbon Footprint



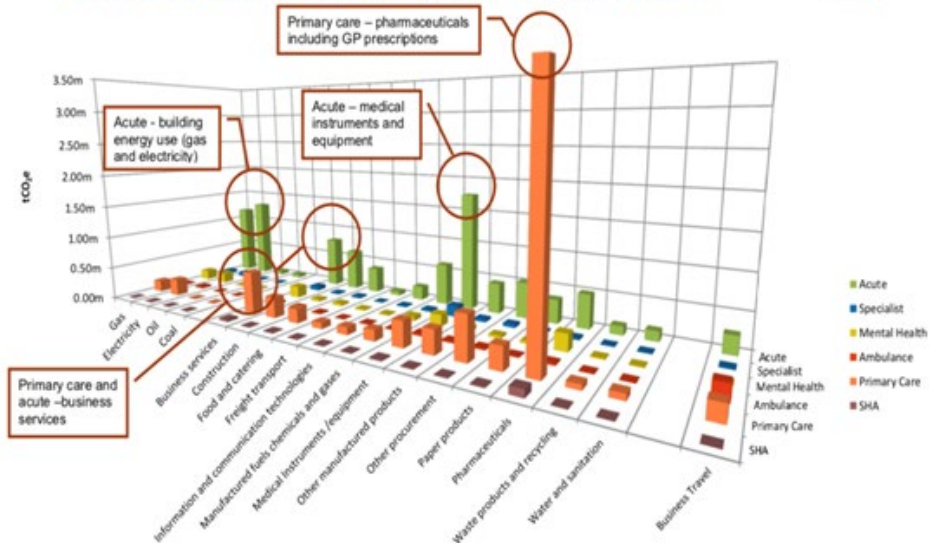
Pharmaceuticals are responsible for [20% of the overall NHS carbon footprint](#) and are the largest carbon hotspot for primary care (figure 1). They also find their way into water and soils, damaging wildlife<sup>[1],[2]</sup>. Unfortunately, much of this is happening without real benefit to patients, as medication is often over-prescribed and/or over-dispensed or not taken at all. The UK Dept of Health and Social Care [Overprescribing report 2021](#) suggested that at least 10% of prescription items in primary care need not have been issued. It has also been estimated that [£300 million worth of medication goes unused annually in England](#) and only [16% of patients](#) take their medicines as prescribed.



# Carbon Footprint



## Goods and Services carbon footprint – carbon hotspots



# Polypharmacy



Usually defined as 10 or more prescriptions per patient, poly-pharmacy can occur appropriately in patients with complex comorbidities but is often inappropriate and may be the result of a [prescribing cascade](#), where side effects of an initial medication trigger prescribing of additional drugs which have more side effects etc. There are several terms used in this area which have considerable overlap e.g. deprescribing, medicines optimisation.




This [6-minute](#) video by a GP outlines the issues with overprescribing and practical strategies to address it.



# Polypharmacy

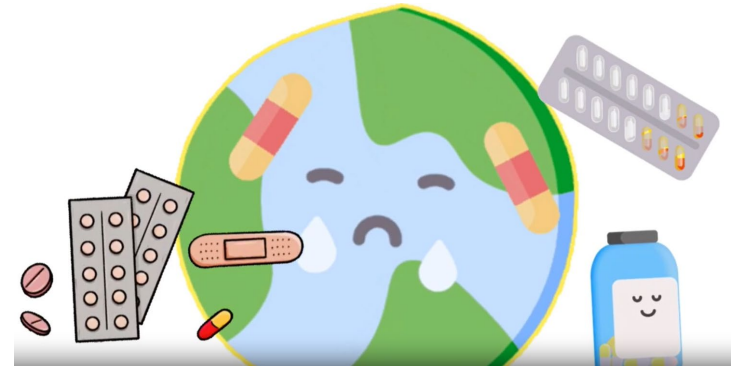


## The underlying goals of all of these are to:

- Prescribe only where: 
- Prescribe the minimum effective dose.
- Prescribe for the minimum effective duration.
- Avoid drug interactions.
- The Royal Pharmaceutical Society has excellent resources on [polypharmacy](#) and The Kings Fund distinguishes between appropriate polypharmacy (often including devices such as continence aids and dressings) and problematic. Their report includes a [Medication Appropriateness Index \(page 18\)](#).



- It is necessary.
- The evidence base suggests any benefits will outweigh the risk.
- The patient (or their carer) understands what the medicine is for and how to take it.



# Sustainable Prescribing – The Triple Bottom Line



Tackling polypharmacy, de-prescribing and medicines optimisation all contribute to sustainable value:

**Outcomes for Patients:** Reduced risk to patient wellbeing and safety due to:

- Drug interactions,
- Drug errors ([38.4%](#) of all medication errors occur in Primary Care)
- Adverse drug events ([20% of admissions in over 65s](#) may be due to adverse drug reactions)

## Population outcomes

- Reduced impact on populations living close to poorly regulated [pharmaceutical production factories](#) and/or waste dumps
- Reduced risk of medication being diverted to others (up to [20 % of patients admit sharing medication with others](#))

Public Health England

Healthmatters



# Environmental Impacts



## The Reduction of:

- [Carbon footprint of the medication and packaging](#)
- [Pharmaceutical pollution](#)
- Packaging waste -often [difficult to recycle](#)

## Travel – journeys to pharmacies

- Additional environmental impacts of healthcare activity required to manage the consequences of polypharmacy.
- Financial Impacts: reduction in wasted medication
- treatment of health complications of poly-pharmacy

## Social impacts:

- Reduced incidence of patients living with side effects and feeling tied to medication regimes
- Reduced time spent going to the pharmacy
- Reduced complications for carers, and care home staff



# How to Start



**Step 1** - Identify patients receiving polypharmacy. This data can be obtained from range of sources including:

- Clinical system searches for patients on more than X repeat prescription items.
- The [Open Prescribing](#) website includes the [Greener NHS Prescribing Dashboard](#). It can send monthly bulletins with prescribing data to GP practices, helping identify areas of unnecessary, expensive or environmentally costly prescribing, and to monitor your progress.
- The NHSBSA ePACT2 [Polypharmacy Prescribing Comparators](#) provides data on numbers of polypharmacy patients at various levels along with patient safety indicator numbers.

**Step 2** - Engage your team. Consider who can help with medication reviews. Practice, hospital or PCN pharmacists and pharmacy technicians can offer invaluable expertise. PCN pharmacists are required to undertake structured medication reviews (SMRs) as part of their role. Discuss how they could adapt these to incorporate sustainable prescribing practice.

**Step 3** - Review the patients - successful medication reviews require a patient centred and non-judgemental approach to identify patient goals, pick up on poor compliance, incorrect doses, or medicines sharing. Medication reviews in a patient's own home can provide vital information around adherence, hoarding and self-management. Time for this can be limited in practice, particularly for reviews involving complex polypharmacy and co-morbidities. Multiple appointments may be required to allow for follow up, titrations and management of a realistic number of issues at a time.

# Additional Issues to Consider



## Why are swallowing pills better than liquid medicines?

### Swallowing pills are better:

- **For children and young people:** pills are less sickly, contain less sugar and children who swallow pills tend to have less problems taking their medicines
- **For carers:** pills have a longer shelf-life, do not need to be kept in a fridge, are easier to carry around and more readily available in local pharmacies
- **For pharmacists:** pills are more commonly stocked in local pharmacies compared to suspensions and cheaper

Swallowing pills is an important life skill for children to learn, for the reasons above, and because most medicines are in pill form.

What do I need to do to teach my child how to swallow pills?

## Over-prescribing of antibiotics in children

Up to 30% of antibiotic prescribing in pre-school children is unnecessary and may be causing harm through increased [antibiotic resistance](#). A recent [study](#) has shown that those who receive >2 courses in a year have increased risk of response failure and are more likely to reconsult, increasing workload and emissions from healthcare activity. Electronic decision aids and training has been shown to reduce antibiotic prescriptions by [12%](#)





# Additional Issues to Consider



## Tablets vs liquid

Medication is often prescribed to children as a liquid due to a prevailing belief that children can't swallow tablets. However, children as young as [4 years old](#) can be taught to swallow tablets liquids. Liquids and suspensions have a much higher carbon footprint than tablets, a shorter shelf life, often require refrigeration and are bulkier so have higher transport emissions. Switching to tablets therefore has potential to reduce prescribing emissions. Additionally, swallowing tablets is an important life skill for children to learn, prescribers are less likely to make errors when prescribing tablets and pharmacies are more likely to have them in stock. More information can be found [here](#)

Over-ordering: talk to patient and use posters, especially in dispensaries, about the importance of ordering only what they need and checking their prescription before leaving the pharmacy. Lots of resources are available at [Medicine Waste UK](#). Build a good working relationship with your community pharmacies so that concerns about over-ordering, hoarding or non-compliance identified within the community pharmacy can be communicated to the relevant practice staff.



## Additional Issues to Consider

- Frequency of Dispensing: less frequent dispensing reduces associated travel and hence environmental impact, may reduce social impacts on patients and carers in terms of their time and may reduce gaps in treatment for those who struggle to organise themselves to ensure they don't run out. These benefits must be balanced on an individual basis against risks of overuse, dependence or overdose and the potential for waste if the medication or dose is changed.
- Medication compliance aids (MCAs) such as Dossett boxes. Although often recommended there is little evidence to show these devices improve compliance or safety. They create large amounts of single use plastic waste. Appropriate prescribing that is understood by the patient, delivered with support, shows [better outcomes](#). Your PCN or practice pharmacy team can help with aligning doses, providing reminder charts and other strategies to help patients to remember to take their medication.
- Safe disposal – Don't forget to remind patients (in conversation and with posters etc) about the importance of returning unused or expired medication and inhalers to the pharmacy. Some pharmacies are now part of a blister pack recycling scheme run through Terracycle.
- Non-pharmaceutical interventions - Don't forget lifestyle advice (e.g. e.g. for sleep, diet and exercise), psychological interventions and social and green prescribing which can assist with de-prescribing and sometimes avoid the need for prescribing pharmaceuticals at all. We will explore these further in the next few pages.



# Resources to Support Clinicians



[Choosing Wisely UK](#) – patients (or their parents) are [encouraged to ask four key questions](#):

1. What are the benefits?
2. What are the risks?
3. What are the alternatives?
4. What if I do nothing?

These discussions help explore in depth which option would be best for them. The process is empowering, encouraging patients to take more control of their own health and wellbeing. [Including patient preference](#) is known to improve compliance, reduce resource use and levels of unused medication. As part of the initiative the Academy of Medical Royal Colleges identified a [list](#) of treatments and procedures which, though commonly used, have low or questionable value indexed by speciality.



# Resources to Support Clinicians



PREVENTABLE HOSPITAL  
ADVERSE DRUG EVENTS  
ADMISSIONS

PATIENTS  
ON **5**  
OR MORE  
MEDICINES



PATIENTS  
OVER  
**65** YEARS  
OF AGE

**50**% ARE  
PREVENTABLE

## Further resources

- [NHS Scotland Polypharmacy Guidance](#) - including the '7 steps medication review', a cumulative toxicity tool and advice for managing frail patients and those with shortened life expectancy.
- [AWMSG Polypharmacy Guidance](#) - including prescribing data for health boards and primary care in Wales, patient information resources and a database of low value prescribing.
- [Medicines optimisation guidance](#) from The Royal Pharmaceutical Society.
- [PrescQIPP](#) – provides data, resources and training and events.
- [MedStopper](#) – an online tool which helps identify medications for deprescribing.
- [Deprescribing.org - Resources for Patients and Health Care Providers](#)
- [EDeN Deprescribing Network \(@EDeprescribeN\)/Twitter](#)

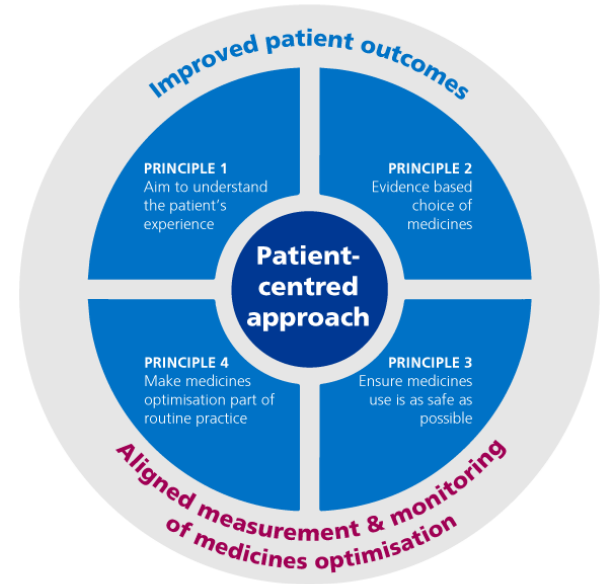


## Existing Policy & Guideline Support

- The Dept. of Health released a [report](#) in 2021 aiming to “reduce overprescribing, make patient care better and safer, support the NHS, and reduce carbon emissions”.
- NICE supports [medicines optimisation](#).
- Structured medication review (SMR) is a requirement of the primary care [Network Contract Directed Enhanced Service DES](#) (targeting those on >10 medications).
- [Antimicrobial stewardship](#).

### References

1. P Sehonova et al Effects of waterborne antidepressants on non-target animals living in the aquatic environment: A review *Sci Total Environ* 2018 Aug 1; 631-632:789-794. (<https://pubmed.ncbi.nlm.nih.gov/29727988/>)
2. Ford and Herrera, Prescribing' psychotropic medication to our rivers and estuaries *BJPsych Bull.* 2019 Aug; 43(4): 147–150 (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6642989/>)



# Green Social Prescribing



Social and green prescribing are low carbon alternatives to medical interventions which have multiple benefits for the child, their family and the community.




## What is Social Prescribing?

Families, children and young people who are experiencing physical or mental health problems or disabilities often don't realise what activities are available in their local area or don't feel able to access them. The role of a social prescriber is to get to know the individual or family and help them find and engage with local activities which suit their needs and interest e.g. sport, creative, social etc.

### What is Green Social Prescribing?

Green social prescribing refers people to local, non-clinical, nature-based activities to help improve their physical and mental health. GreenSpace is a pilot project working to build a network of trusted groups and organisations to embed green social prescribing throughout Nottingham City and Nottinghamshire

**GreenSpace** For better headspace  
Integrated Care System  
Nottingham & Nottinghamshire

 SPECIALIST	 TARGETED	 UNIVERSAL
For people with multiple + complex mental health needs Framework's Nature in Mind Find out more about the programme and how to refer <a href="https://www.frameworkha.org/service/nature-in-mind">https://www.frameworkha.org/service/nature-in-mind</a>	Referrals through Social Prescribing Link Workers, Community Connectors, Health Professionals  Activities provided by network of Trusted Green Providers  Contact <a href="mailto:greenspace@nottinghamcvs">greenspace@nottinghamcvs</a> to find out more	Encouraging self-referral and self-care by raising awareness of nature connectedness and its benefits, local green assets and activities and encouraging pro-environmental behaviours such as Active Travel  See <a href="https://www.nottinghamcvs.co.uk/voice-and-partnerships/greenspace/want-to-try-nature-based-activities">https://www.nottinghamcvs.co.uk/voice-and-partnerships/greenspace/want-to-try-nature-based-activities</a>

*Sporty stuff like football or paddleboarding*    *Conservation work*    *Community gardening*    *Farming and environment activities*    *Walking + cycling*  
*Nature appreciation*    *Horticulture*    *Arts, photography, woodworking*

## Social & Green Prescribing



Social prescribing can help to support children and young people with physical or mental health conditions and/or complex social needs. It can help address inactivity, loneliness, weight problems, low self-esteem and poor mental wellbeing. through engaging in enjoyable activities which are meaningful to the individual, build social networks and sometimes develop new skills. The holistic approach helps address problems which may be overshadowed by a dominant clinical diagnosis – such as social anxiety in a young person with diabetes. It recognises that the activities we take part in provide an opportunity to build multiple social identities. [The Social Identity Theory for Health](#) suggests that a greater number of social identities translates to greater mental health resilience. By encouraging more people to get involved, social prescribing also helps local groups to thrive, improving community resilience.

This [6-minute](#) video demonstrates a range of social prescribing projects with children and young people



# Existing Policy & Guideline Support



- Social prescribing has been shown to reduce referrals from primary care to outpatient mental health services, with associated reduction in costs and environmental footprint<sup>[1]</sup>. It can play a role in primary and relapse prevention and supports the recovery journey at all stages of illness.
- An evidence base is emerging and, so far, suggests a broad range of positive outcomes across a wide number of variables including: quality of life, self-esteem, well-being and loneliness.
- **Government Commitment** - The NHS' long-term plan states that 2.5 million people should benefit from social prescribing initiatives within 5 years.





# What is Green Space Social Prescribing?

A green prescription is a monitorable activity that involves spending time in natural environments for the benefit of health and wellbeing. The graphic below shows some of the options for green prescribing and potential benefits for the individual and the environment. Benefits of green interventions fall into three main groups: contact with nature, meaningful activity (including exercise) and social interaction, all of which contribute to prevention of illness. Horticultural activities such as food growing also have potential to improve diets. The [Handbook for Nature on Prescription to Promote Mental Health](#) (published by Exeter University) gives a detailed overview of how to set up green interventions (including avoiding pitfalls) and assess outcomes.

**What is Green Social Prescribing?**

Green social prescribing refers people to local, non-clinical, nature-based activities to help improve their physical and mental health.

**What type of activities could I do?**

- Horticulture**  
Sporty stuff like football or paddleboarding  
Farming and environment activities
- Nature appreciation**  
Community gardening  
Conservation work
- Walking + cycling**  
Arts, photography, woodworking  
Green volunteering

**How do I get referred?**

- You visit your health professional and tell them you're struggling.
- They decide if you can be referred for support and refer you to a link worker.
- You work together with your link worker to find a suitable activity that meets your needs.
- You attend and work with the community group to find your place.
- You decide to stay or to move on to follow other interests.

**How do I find out more?**

There are nature-based activities you can get involved in, without any referral, to support your health and wellbeing. Visit [www.https://www.nottinghamcs.co.uk/voice-and-partnerships/greenspace/want-to-try-nature-based-activities](https://www.nottinghamcs.co.uk/voice-and-partnerships/greenspace/want-to-try-nature-based-activities) for some ideas to get you, your family and friends started.

Or, if you need some support to get going, speak to your health professional and ask them how green social prescribing could help you.

## Case Examples



- [Myplace Ecotherapy Project](#) Lancashire Wildlife Trust is working in partnership with Lancashire and South Cumbria NHS Foundation Trust to deliver an ecotherapy project that helps people reconnect with nature in a gentle, participant-led way. Since the project launch in 2016 they have worked with over 1,000 children and young people and have since expanded to benefit adults too. To hear about the benefits from a participant see this [1.5 minute](#) video.
- [Green futures](#) (Yorkshire Dales) works with young people to reconnect with nature, tackle climate change, and get involved in conservation work, gaining new experiences, skills and confidence, and seeing their health and wellbeing improve along the way. This [2-minute](#) video describes what they do

[Wave Project](#) offers 'surf therapy' to young adults and children experiencing mental health problems. Started in Devon, it has been so successful it is now offered in sites across all four of the UK nations. This [3-minute](#) video demonstrates the impact of this project



# Sustainable Child and Adolescent Health



## Impact on children and young people's mental health

The mental health and wellbeing of millions of children and young people are already being affected by the changing climate around the world, including the UK. After exposure to storms, floods, wildfires, drought and sea level rise children are more likely than adults to develop PTSD, other anxiety disorders, acute stress reactions and depression, particularly where their homes are directly affected. The stress on their families and communities increases the risk of additional exposures to violence (both within and outside the home), parental mental illness and substance misuse increase. Those who are separated from care givers are at increased risk of disrupted attachment and vulnerable to further traumatic events. Millions are experiencing forced migration or living in conflict zones. These numbers will increase as the situation deteriorates. How much worse it gets depends on what we do in the next few years.

## NHS Benchmarking Network - Mental Health 2020 key findings

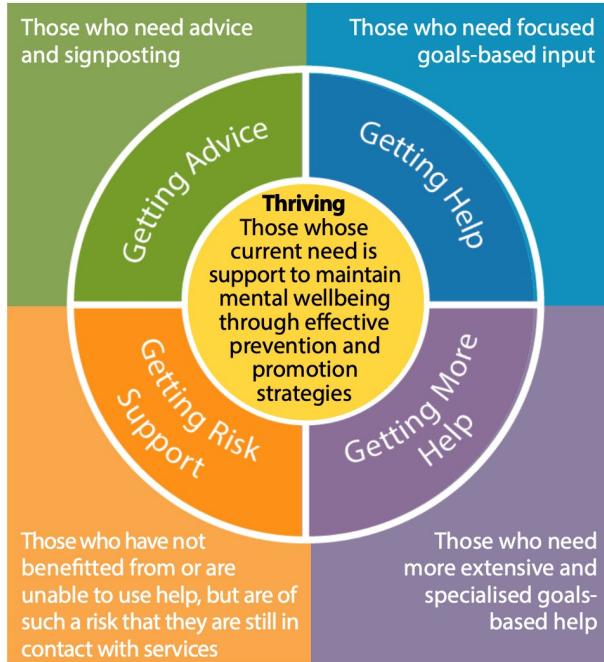


 <b>Inpatient care</b>	 <b>Occupancy</b> 96% bed occupancy (excluding leave) in Adult Acute beds	 <b>Length of Stay</b> 35 days (excluding leave) in Adult Acute beds	 <b>Mental Health Act</b> 44% of Adult Acute admissions were detentions under the MHA
 <b>Community care</b>	 <b>Caseloads</b> 1,632 people per 100,000 population receiving community-based support	 <b>Contacts</b> 30,184 community contacts delivered per 100,000 population	 <b>Waiting times</b> 4.4 weeks from referral to assessment in Generic CMHTs
 <b>Covid-19</b>	 <b>Bed numbers</b> 9% fewer Adult Acute beds open in April 2020	 <b>Community referrals</b> 44% reduction in referrals to community services in April 2020	 <b>Change in contact method</b> 68% of contacts were delivered by phone or digital tech in April 2020

Source: 2019/20 NHS Benchmarking Mental Health collection & Monthly Covid-19 Tracker

Positions are 2019/20 averages unless otherwise stated

# Sustainable Child and Adolescent Health

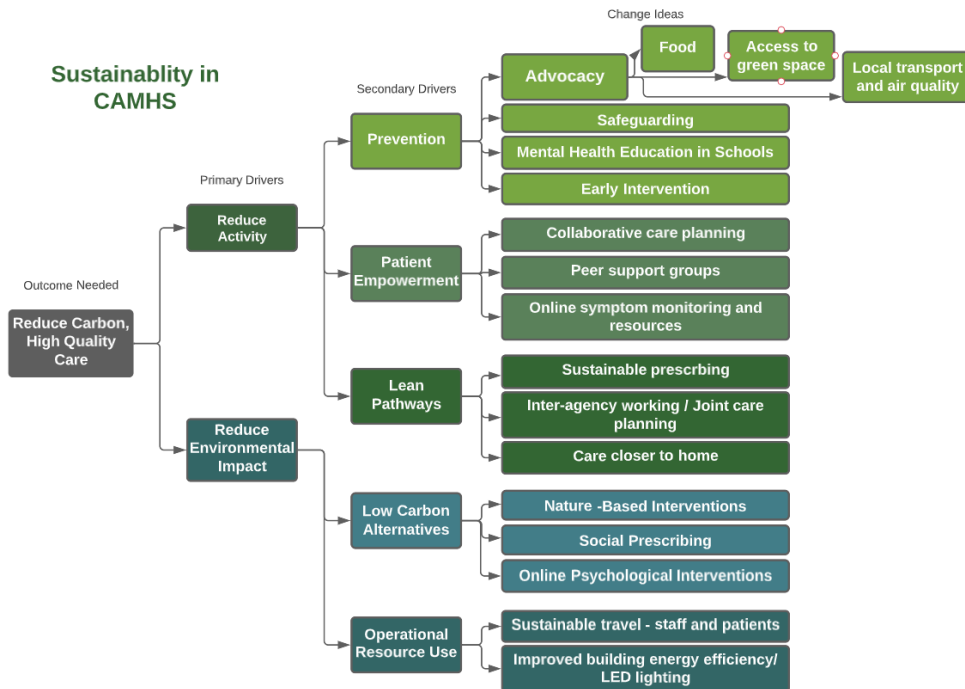


Many more children and young people are experiencing various forms of eco-distress. In 2020 a [survey](#) of 150 CAMHS staff found that over 50% had seen young people who were experiencing eco distress. 45% felt that most CYP did not disclose with without being asked but only 2/3 were routinely asking about it. Many avoided doing so as they did not know how to respond. We discussed eco-distress and management strategies in section 1 of this course.

# What can CAMHS professionals do?



In this section we will focus on what we can do in CAMHS services in the UK to reduce the environmental impact of delivering care whilst improving outcomes for our service users. Responders to the survey above cited not knowing where to start as the most common barrier to taking action in their workplace. It helpful to use a driver diagram to think about what opportunities there might be for change.

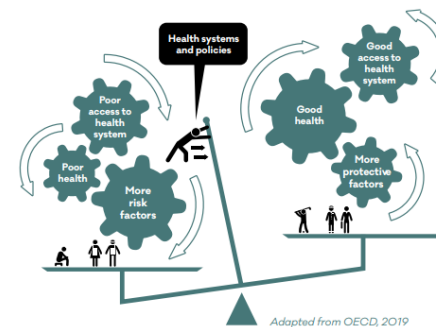


# Prevention

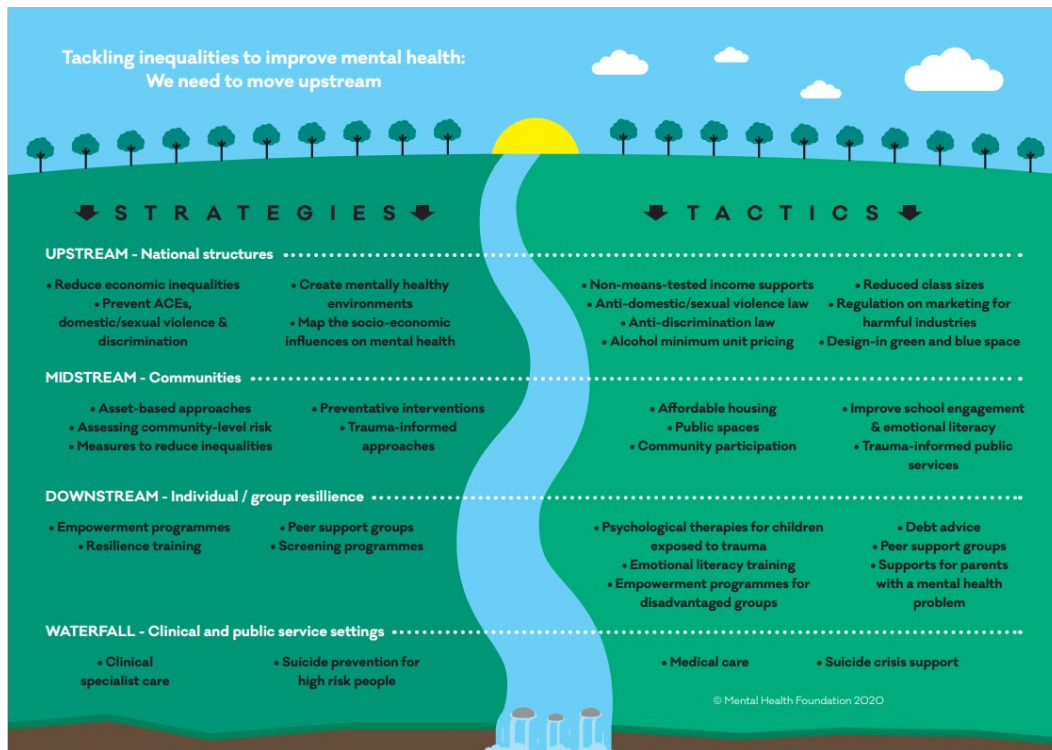
Is the most powerful tool we have for reducing the burden of mental illness. As CAMHS workers you will be well aware of the impact of ACEs and no doubt are already routinely engaged in safeguarding activity. So the good news is you are already doing some sustainable healthcare without knowing it! Earlier in the course we outlined the negative impacts on mental health and wellbeing of climate change, air pollution, obesogenic environments and our toxic food system, disconnection with nature and lack of access to green space, poverty and social inequality and, most recently, the pandemic. Whilst it may be out of your usual comfort zone, using the authority you have as a health professional to advocate for the changes necessary to address these challenges, on a local, national or even global scale is probably the most important and powerful thing you can do. Take every opportunity to raise the issues and work with partners to effect positive change. This excellent [report](#) by the Mental Health Foundation (MHF) outlines a range of practical approaches to addressing social inequality to improve public mental health.



Health, risk factors and access to the health system:  
The odds are stacked in favour of the better-off



# Case Examples





## Education

- Schools offer an excellent opportunity to teach mental health awareness and lifestyle approaches to supporting mental wellbeing. The MHF [peer education project](#), described in [this 2 minute video](#), is a great example of how to achieve this whilst also empowering young people.
- The MHF also has a wide range of resources for [schools](#) (covering topics from relationships to body image) and for [families and young people](#).
- These approaches also support early intervention (secondary prevention) through increased awareness. Early intervention can help to prevent admissions and the functional and social impacts of prolonged, untreated illness, which often become maintaining factors for poor health.



## Empowerment

- Well supported peer support groups can be highly effective and reduce the burden on services. In this [3-minute video](#) a group of young people in Durham talk about the benefits.



# Lean Pathways



## Telepsychiatry:

The pandemic has forced us to increase the amount of remote working we do. Whilst this is not always clinically appropriate, particularly where there are safeguarding concerns, it can make services much more accessible, reduce failure to attend rates, reduce travel emission (and costs for families) and reduce time taken out of school or training to access support.

Case example:

[Using Telehealth in CAMHS](#) (RCPsych 2020 award winner)

- Satellite clinics and hubs
- Satellite hubs in community venues, GP premises and schools, reduce travel emissions, have potential to reduce failure to attend rates and open opportunities for collaborative working with staff from other services important in a child's life.

### Extending care beyond hospital walls is a top priority for healthcare leaders<sup>1</sup>

Expanding out-of-hospital care could improve outcomes, reduce costs, and offer patients more convenience:



40%

of hospitals are expected to have shifted 20% of their beds to the patient's home by 2025<sup>2</sup>



60%

of patients find virtual care more convenient than in-person care<sup>3</sup>



80%

of patients are willing to seek care for minor illnesses at retail clinics<sup>4</sup>

1. Ranked as the second-highest priority after staff retention and satisfaction in the 2022 Phillips Future Health Index report  
2. Gartner 2022  
3. McKinsey survey 2022  
4. McKinsey survey 2019

# Lean Pathways



## Case example:

[Sustainable school liaison award](#) (RCPsych 2016 award winner)

- Right care – GIRFT
- Joint working
- High quality assessment which identifies all the child's needs are recognised and then working collaboratively with (or, where appropriate, delegating to) relevant partner agencies to meet these needs can reduce the workload for all involved, deliver more effective care and minimize the impact of multiple appointments (which can interfere with the child and families social functioning). 'Don't use the CAMHS hammer to do the job of the Education spanner, just because that's the tool you have'.

## SUSTAINABLE DEVELOPMENT GOALS



# Low Carbon Alternatives



## Prescribing

Supply chain emissions due to pharmaceuticals are a large proportion of the NHS carbon footprint. Whilst it is not a huge contribution to mental health emissions, secondary services direct a lot of primary care prescribing. Aiming to use medication only when it is the most effective option, in the lowest dose for the shortest time can have a significant impact. Where possible, maximise the potential of non-pharmaceutical interventions such as psychotherapy (in person or online) and social and green prescribing.

**1. PREVENTION**  
promoting health and preventing disease by tackling the causes of illnesses and inequalities

**3. LEAN SERVICE DELIVERY**  
streamlining care systems to minimise wasteful activities

### Four principles of SUSTAINABLE HEALTHCARE

Mortimer, F. *The Sustainable Physician*. Clin Med 10(2). April 1, 2010. p 110-111.  
<http://www.clinmed.rcpjournals.org/content/10/2/110.full>



CENTRE for SUSTAINABLE HEALTHCARE  
inspire • empower • transform

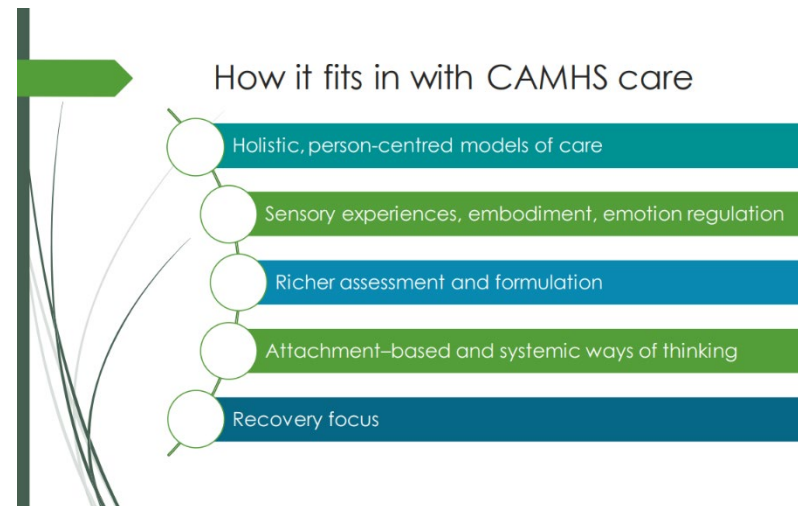
**2. PATIENT SELF-CARE**  
empowering patients to take a greater role in managing their own health and healthcare

**4. LOW CARBON ALTERNATIVES**  
prioritising treatments and technologies with a lower environmental impact.

# Creative Therapies



- Nature based approaches (NBA) We have already outlined the benefits of access to green space for mental health in the general population. Conditions most likely to benefit in the treatment population include depression, anxiety disorders, ADHD and various behaviour problems. How can we best implement this in practice? There are four levels at which the natural environment can be incorporated:
- Non-clinical activities - (e.g. gardening / horticulture; crafts based groups; walks). These activities can also build participants motivation and confidence to link in with community activities which support recovery.
- Clinical sessions – (e.g. assessments, therapy sessions). Locating these outside in natural environments has been reported to improve emotional regulation and assist in engagement and building therapeutic relationships.



## Creative Therapies



“People relax more, they kind of open up a bit more as well”

“Less threatening, more relaxing, lots of stuff comes out ... being in a natural environment helps that process.”

Staff also notice benefits to their own wellbeing and feeling they are building more satisfying relationship with patients and their colleagues.

“I always come back thinking I’m so glad I got out, you just feel refreshed.”

“I think we’ve kind of got a slightly deeper understanding of the colleagues on the ward, our relationships are better because of it”

# Creative Therapies



**Ecotherapy** – therapy session specifically designed incorporate the benefits of the natural environment, often through focusing on the five senses and/or using mindfulness techniques. You can find out more [here](#)

**Environmental therapeutics** – specifically utilises aspects of the natural environment ( eg light, temperature, water) as therapeutic agents. To find out more click [here](#).



# Nature Connectedness



In the same way that spending time in proximity to someone does not mean you have a close relationship with them, nature connectedness is a framework for assessing the quality of an individual's relationship with nature. This matters because it has been shown to moderate the beneficial effects of time in natural environments. Levels of nature connectedness tend to vary across the lifespan, dipping during adolescence. This matter because higher levels of connectedness are associated with a [25% reduction](#) in mental health symptoms.

### What is Nature Connectedness?

- Different to contact and exposure to nature.
- An internationally recognised psychological construct.
- A person's sense of their relationship with nature.
- Measurable & malleable.
- Gallup World Wellbeing Poll.

# Nature Connectedness



The [Nature Connectedness Research Group - University of Derby](#) has identified [5 ways to be closer to nature](#) which can be encouraged during green care activities. They have developed a Nature connection [handbook](#) to support professionals wishing to incorporate this in their practice including a summary of the research and examples of activities to try.





# Resources



## Mental health impacts of climate change:

- [The psychological effects of climate change on children](#)
- [Dr Van Susteren's excellent Expert Report](#) for the case brought by 21 children against the United States government for failure to act on climate change

## Eco-distress:

- [The eco-crisis and CAMHS resources | Royal College of Psychiatrists \(rcpsych.ac.uk\)](#)
- [Eco distress for parents | Royal College of Psychiatrists \(rcpsych.ac.uk\)](#)
- [Eco distress for young people | Royal College of Psychiatrists \(rcpsych.ac.uk\)](#)

## Publications and events

- [Special Issue - Climate and Mental Health BJPsych Bulletin \(cambridge.org\)](#)
- [Special issue: The climate crisis and mental health - International Review of Psychiatry](#)
- [The eco-crisis and CAMHS - what's the relevance? Faculty of Child and Adolescent Psychiatry Winter Conference 2021 \(rcpsych.ac.uk\)](#)

## Training

- [Outdoor Learning CPD Courses | Circle of Life Rediscovery](#) – offers CPD accredited courses in ecotherapy for mental health practitioners.
- [Natural Academy - Learning that grows and connects](#) –

## Guidance for commissioners

- [Guidance for Commissioners of Financially, Environmentally and Socially Sustainable Mental Health Services | CSH Networks \(sustainablehealthcare.org.uk\)](#)

# Obesity



Tackling the childhood obesity crisis is a national health priority. [1 in 3 children](#) leave primary school already overweight, 1 in 5 are obese.

 Public Health England

Healthmatters Obesity in children



## Health impacts of obesity in children:

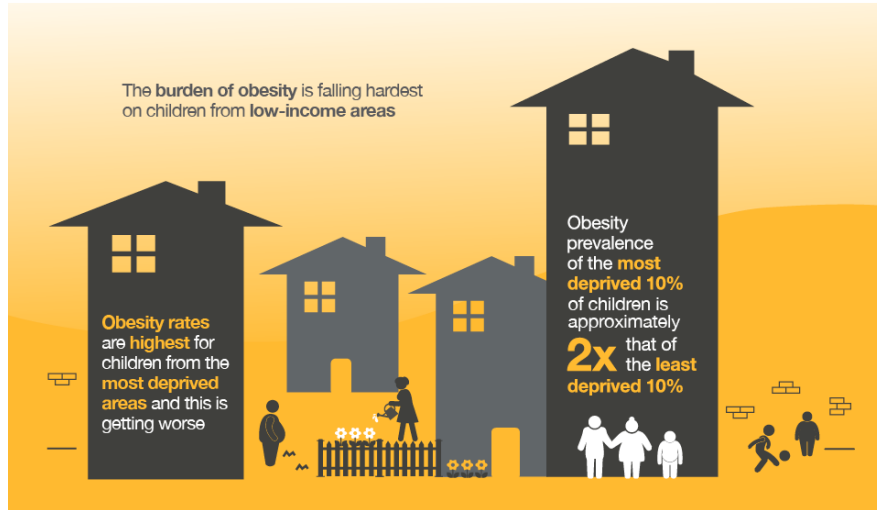
- Type 2 diabetes.
- Joint pain.
- Breathing problems
  - Increased incidence of asthma
  - Sleep apnoea
- High cholesterol and high blood pressure
- Non-alcoholic fatty liver disease (NAFLD).

# Obesity



Public Health England

Healthmatters Deprivation and child obesity



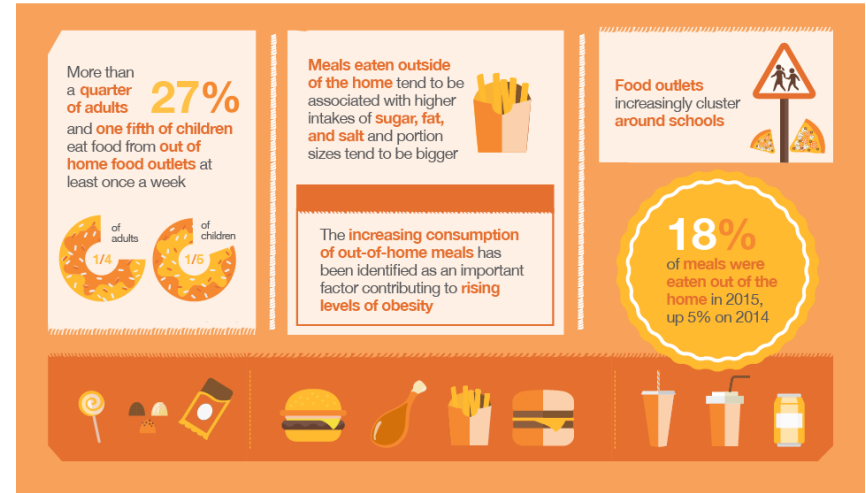
Children also suffer low self-esteem, are often subject to bullying and have higher rates of anxiety and depression

Obese children are more likely to become obese adults, significantly increasing their [risk](#) of heart disease, stroke, type 2 diabetes (5 x ↑risk), some cancers (3 x ↑risk of colon cancer); the risk of serious illness or death due to COVID and other obesity related conditions (e.g. sleep apnoea). Being overweight also impacts people's life prospects, mental health, self-esteem and experience of stigma.

# Treatment

Treating obesity is a sustainable intervention given the potential to reduce or avoid development of additional health conditions listed above. In the previous page on food systems we discussed the systemic drivers of rising obesity and some community level approaches to addressing this. As prevention measures these are the most effective way to reduce the environmental and human impact of obesity. **But how do we tackle this in a sustainable way on an individual patient level?**

Talking about diets and weight can be tricky and requires sensitivity. There are many factors involved in dietary choice including personal preference, culture, socio-economic status etc. Taking a compassionate approach is important to build a therapeutic relationship. Recognise and address the guilt, shame and [stigma](#) associated with obesity.



# Treatment



By gradually making the following simple changes, local authorities can help businesses help their customers make healthier choices



Reduce portion size



Reduce fats & frying practices



Reduce salt



Reduce sugar



Increase the content of fruit, vegetables and fibre



Promote healthier options



Procuring healthier ingredients and food products from suppliers



Provide calorie information

These feelings simply undermine efforts to address the problem and can lead to self-destructive cycles of bingeing. Explaining to families and children the forces driving obesity rates can help to take the burden off them as individuals which, counterintuitively perhaps, can be empowering. Explore with them what they know about healthy diets and the barriers they are experiencing to addressing the issues themselves. Taking a [motivational interviewing](#) approach is often more effective than just giving advice. Work collaboratively to agree realistic targets, don't set them up to fail and don't underestimate the power of positive feedback – praise all progress, however small, to motivate further efforts.



## In general aim for:

- A healthy sustainable diet with a strong focus on reduction in processed food and aiming for as natural a diet as possible. Ensure staff are aware of local food projects which can help the family access healthy food.
- A gradual reduction in screen time (where this is excessive).
- Using a social / green prescribing approach to building activity levels helps to identify the activities the child is most likely to enjoy and engage in to build confidence and fitness.
- Where possible encourage active transport which makes activity part of the daily routine whilst also reducing travel emissions and air pollution.
- Follow up contact by video or phone call with local monitoring can also reduce travel emissions, costs to the family and time out of education for the child but be mindful of the possibility of digital exclusion. This approach is not recommended where there are safeguarding concerns.
- A multi-disciplinary team including psychologists, dieticians and, physiotherapists is ideal to address different factors within the complexity of the individual family. With resources stretched thin however, this may not be possible.
- [Health Education England eLearning for health](#) - childhood obesity
- [Recommendations | Obesity: identification, assessment and management | Guidance | NICE](#)

# Greener bladder & bowel care for children



## Approximate Prevalence

**nocturnal enuresis (bedwetting)**

30% of children aged 4

3% of children aged 12

**Daytime wetting**

3% of 6–14-year-olds

**Faecal incontinence**

0.8 and 7.8% of children worldwide

Continence problems (daytime urinary incontinence, bedwetting (nocturnal enuresis) and constipation with soiling) are one of the most prevalent healthcare issues for children and young people (CYP), affecting around 900,000 in the UK.

### What is the problem with CYP's bladder and bowel care currently in the UK?

The majority do not have a pathological cause, the problem is functional. If this is not recognised and managed appropriately it can lead to the unnecessary investigations, interventions and other healthcare activity and ongoing use of containment products, all of which have significant environmental [impacts](#). Additionally, continence problems can have a significant impact on self-esteem, socialisation, mental wellbeing and learning for the CYP affected.

## Case Example –Streaming the Pathways



The team at Newcastle Upon Tyne Foundation Trust undertook a QI project to improve and streamline the pathway for continence problems. Although not a designed as a SusQI project the sustainable value of this project can be inferred. The new pathways were designed by specialist nurses and informed by quality-of-life questionnaires completed by parents and carers at the start, mid and end of treatment. Questionnaires were also issued to staff for comment during training.

Historically, children with continence problems could be referred into 5 different services including General Paediatrics, Community Paediatrics, Urology, Nephology and Paediatric surgery resulting in confusion about responsibility, delays, duplication of roles and investigations and risk of patients being passed between services. This lead to variability in clinical outcomes and inefficiencies in the cost of delivery. In most pathways patients were seen repeatedly in clinic, involving time out of school, parental time off work and travel to and from the hospital.





## Case Example –Streaming the Pathways



In the majority of cases the (often unrecognised) underlying problem was constipation, leading to symptoms of an overactive bladder (causing daytime and night-time wetting) and faecal impaction (causing soiling). All that is required is appropriate management and advice regarding constipation.

The team created a clear pathway with a single point of entry for all referrals. Waiting lists were eliminated because immediately after referral children were invited to attend a group consultation where a presentation was given by a consultant covering all relevant information about:

- Healthy bowels and bladder,
- How common functional problems occur
- Advice on management including fluid intake, diet and fibre and toileting.
- Empowering patients to take on a greater role in managing their bladder and bowels
- When medication or further interventions are needed.

Examples of slides used in the presentation on the following slides.



# Case Example –Streaming the Pathways



**8 Glasses of water**

Up to 6 years – 1 Litre  
7-11 years – 1.5 Litres  
12-14 years – 2 Litres  
14+ years – 3 Litres

**THE great north**  
CHILDREN'S HOSPITAL

The Newcastle upon Tyne Hospitals  
NHS Foundation Trust

**Preventing Constipation:**

Recommended Fibre Intake for:  
2-5 years ... 15 grams  
5-11 years ... 20 grams  
11-16 years ... 25 grams  
16-18 years ... 30 grams  
Adult ... 30 grams

**THE great north**  
CHILDREN'S HOSPITAL

The Newcastle upon Tyne Hospitals  
NHS Foundation Trust

**Constipation can cause**

- a** Overactive Bladder
- b** Daytime & night time wetting
- c** Urinary tract infections

**THE great north**  
CHILDREN'S HOSPITAL

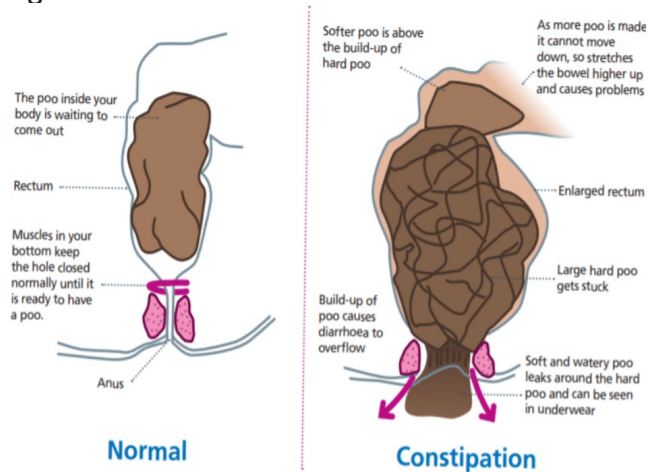
The Newcastle upon Tyne Hospitals  
NHS Foundation Trust

# Constipation



Poo then starts to build up in their colon and back-up

- The build up of poo in the rectum causes it to stretch making it harder for the child to feel the urge to poo
- This can then lead to runny poo escaping and accidents through no fault of their own



## Further Information



Families were also issued with a further information pack, questionnaires and bladder and bowel charts which they complete and return to the service.

Data outlining initial financial and capacity savings are shown below:

The Newcastle upon Tyne Hospitals NHS Foundation Trust

### Data

- First Session Feb 2019
- 13 Sessions in total
- 297 Attended with average per session 23
- Most seen 32, least 14
- Income generated total **£65,215.7**
- Consultant time if individual appointment 99 hours
- Consultant time for 6.5 hours (30 min session)
- Time released **92.5 hours**

THE great north  
CHILDREN'S HOSPITAL

## Following Lockdown



Following the initiation of lockdown in March 2020 the face-to-face group presentation was replaced with YouTube videos covering the same information listed above for either bladder or bowel problems which patients are given a link to at the point of referral. This approach further decreased waiting time and impact on consultant capacity. Information packs, questionnaires and bladder bowel diaries are sent to them.

The team review the returned questionnaires and charts, make a diagnosis where possible and start a management plan, often allowing initiation of treatment prior to the face-to-face consultation. The completion of bladder / bowel diaries replaces the need to physically examine most children, avoiding unnecessary outpatient visits. If necessary, patients are seen once for examination and any required investigations. Further management is then delivered by phone review or in the community by members of the bladder and bowel service. Any required support for medication, toileting programmes etc is put in place in the patients home and also in the child's school.

## Following Lockdown



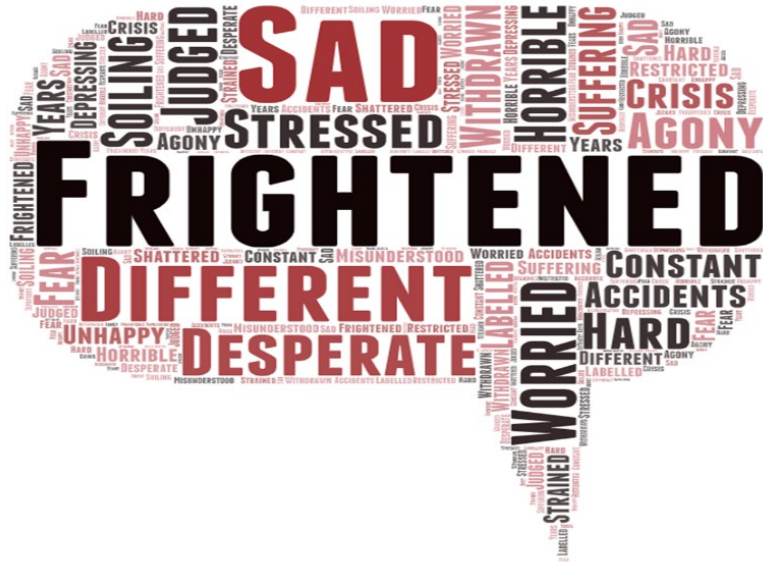
Additional treatment pathways were also reviewed resulting in a change in disimpaction regimes which had excellent results and significantly reduced the number of children needing to be admitted to hospital for disimpaction or presenting to A+E.

The children's bladder and bowel service now support to over 1200 families with most of the care delivered in the community (homes and schools) or via phone calls and e-mail. Clinical outcomes have included significant improvement in continence, confidence and self esteem and reduction in use of continence products.

# Feelings



Feelings of parents/carers/children at initial appointment



Feelings of parents/carers/children at end of treatment

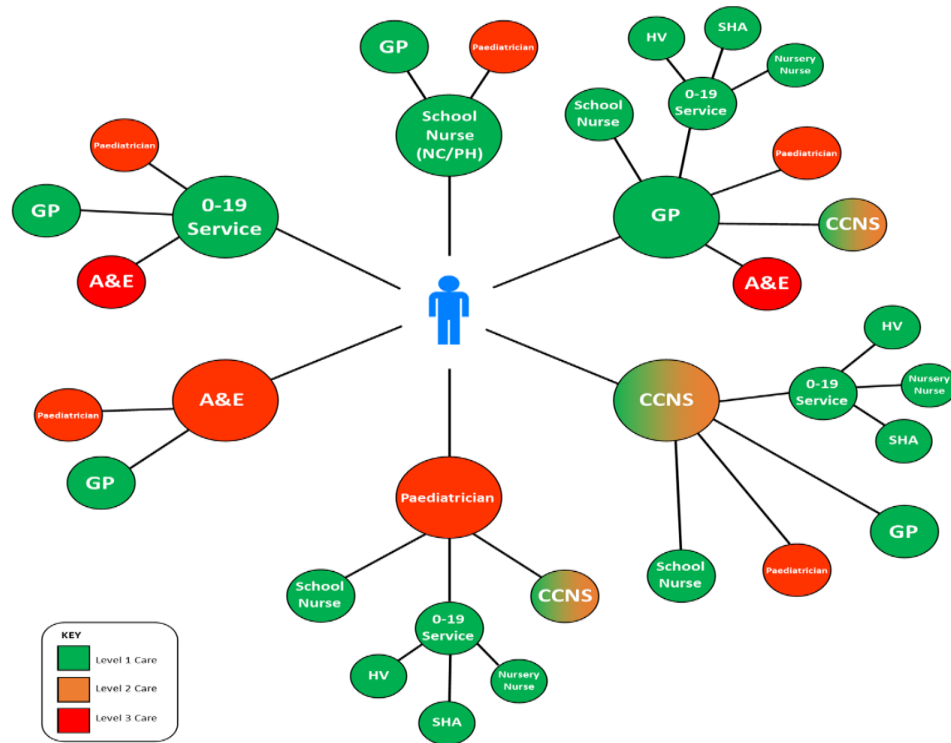


# Pathway Results





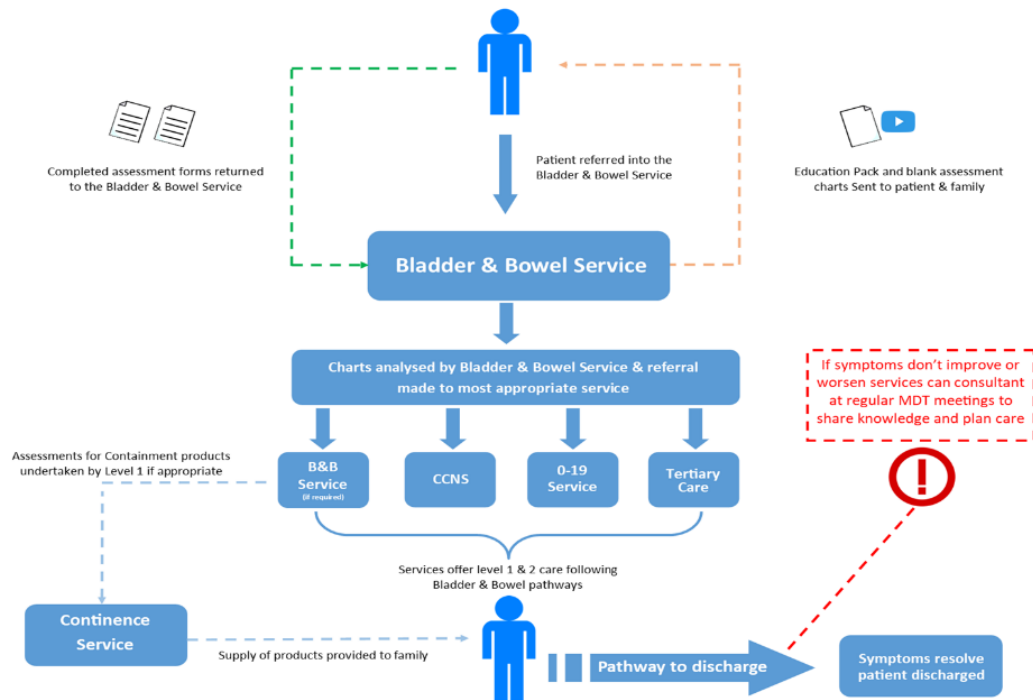
# Patient Journey Before Pathway Implementation



# Patient journey after intervention



## Bladder & Bowel Service Patient Pathway



# Intervention



Unfortunately, only a small proportion of patients can be managed at level two due to the service having just one specialist nurse. An increase in resource at this level could deliver further reductions in consultant appointments, inpatient time, A&E attendance and variability in care.

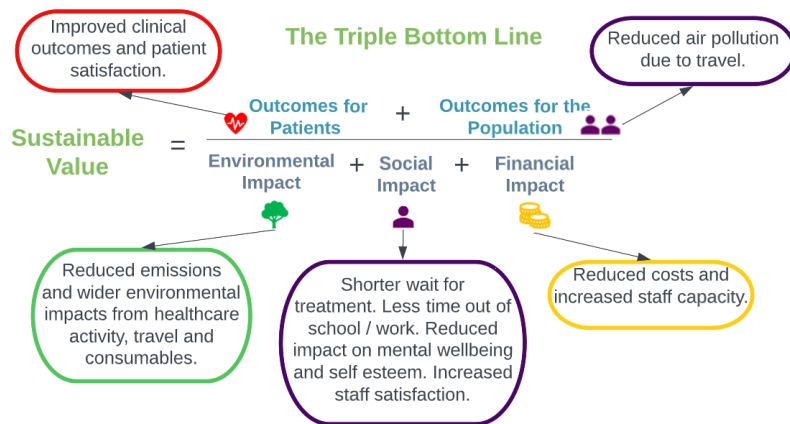
<b>Level 1 intervention</b>	<b>0-19 Service and Children's Community Nursing Team (CCNT)</b>	<b>£21.19 per hr</b>
<b>Level 2 intervention</b>	Consists of one nurse. CCNT support a max of 40 patients	£105 per hr
<b>Level 3 intervention</b>	Consists_of paediatricians	£160-220

# Streamlining Pathways



## Conclusion

Streamlining pathways and use of group interventions and technology to deliver care has resulted in highly positive feedback from families and practitioners and delivered clear sustainable value:

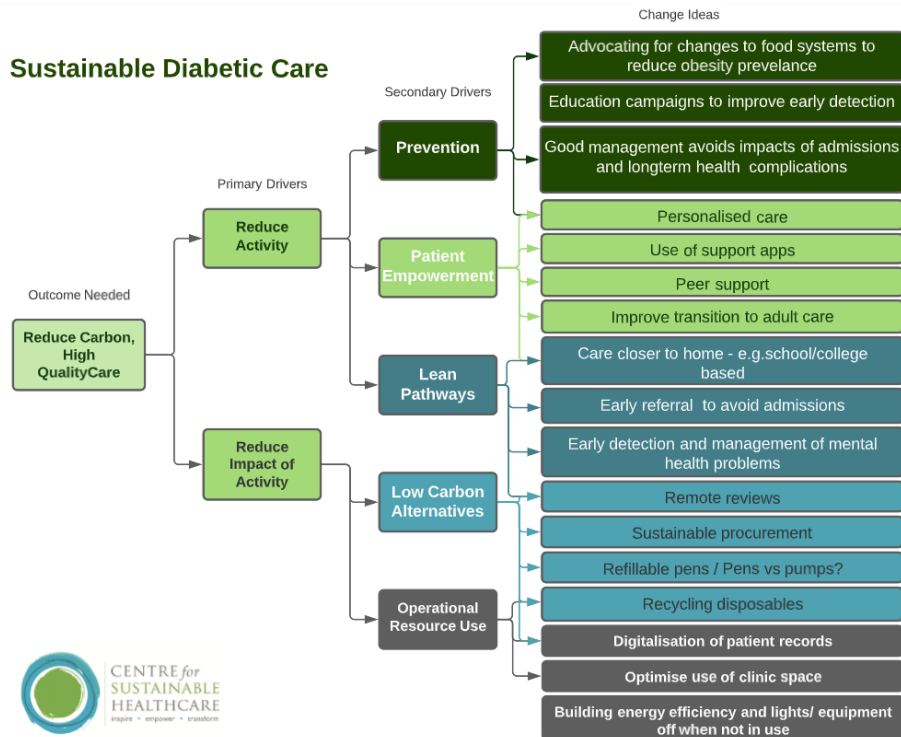


Our thanks go to Dr Paula Drummond, Consultant Paediatrician at the Great North Children's Hospital and lead consultant for the Children's Bladder and Bowel service for sharing her expertise and experience in writing this page.

# Diabetes



## Sustainable Diabetic Care



How can care of CYP with diabetes become more sustainable?

Using a driver diagram we can generate a variety of ideas.

## Prevention



Primary prevention is always the most sustainable goal, and best for patients. The incidence of Type 2 diabetes in children is rising in line with the obesity epidemic. Advocating for changes to food systems and supporting sustainable travel could help to tackle this in the local area.

The incidence of Type 1 diabetes is also [increasing by 4 %](#) per year. Higher BMI may increase the risk of type 1 developing ([accelerator hypothesis](#)) but this does not fully explain the increase, nor is such a rapid increase likely to be due to genetic factors.

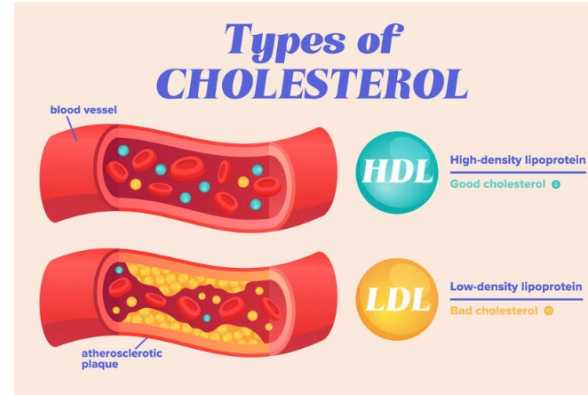


# Factors



[Factors being considered](#) include:

- Infant and childhood diet
- [Gut microbiome](#)
- Cholesterol
- Microbial exposure
- Antibiotic use
- Pollution (Ozone, polychlorinated biphenyls, phthalates, trichloroethylene, dioxin, heavy metals, bisphenol, nitrates/nitrites, and mercury)
- [Vaccines](#)



Given the human and environmental costs of complications of diabetes (retinopathy, heart, kidney and skin diseases, stroke, neuropathy, dental problems, infection, some cancers etc) significant reductions in long term environmental impact can also be made by delivering high quality care and maximising effective patient management of their condition and lifestyle.

# Education & Effective pathways to avoid admission



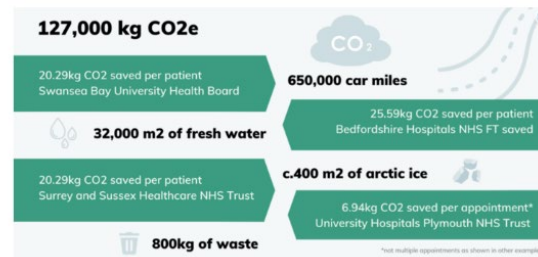
Earlier diagnosis and streamlined referral pathways could avoid or shorten initial admissions and save lives. Late presentation worsened during the pandemic. Education campaigns to increase awareness amongst the general population and school staff could help to pick up symptoms earlier. This should be paired with urgent referral pathways, including same day appointments for new referrals.

Supporting self-management through technology. There are many apps available to support patients understand and manage their diabetes. Patient Know Best is commonly used in the NHS and has been shown to reduce environmental impact through reduced travel and paper use. It helps facilitate remote management including consultation and allows information for patients to be stored in the app so it is easy to find in an emergency (e.g. hypoglycaemia).



PATIENTS KNOW BEST®  
MANAGE YOUR HEALTH

- ↑ Self-management
- ↓ Frequency of routine review
- ↑ Responsiveness
- ↓ Travel and Paper use





# Education & Effective pathways to avoid admission



Additional apps offer:

- Education– some are designed for young children such as [Toby's T1D Tale](#).
- Diet – e.g. [Calorie King Food Search](#) allows people to check their food on the go
- Data trackers - can track blood sugars, calorie intake and medication compliance. Some will upload data directly from glucose meters such as [Happy Bob App which](#) allows patients to collect stars when their readings are in range and sends notifications if they are not. [Invincible](#) supports collaboration between school and parents.

For more options see

- [Diabetes iPhone and Android Apps](#),
- [Diabetes Apps: Technology to Help Your Child Manage Diabetes](#),
- [The Top 5 Apps for Managing Diabetes of 2022](#)

iPad Screenshots



Are you a parent or loved one of a newly diagnosed child with type 1 diabetes? The first release of Toby's T1D Tale mobile app is an educational resource geared towards kids with and without type 1 diabetes to help them learn more about diabetes. Families will also love the "Tell me the Story" functionality so they don't miss out on any part of Toby's T1D Tale. Stay tuned – Toby will have a lot more in store for 2016.

# Consumables & Waste



Diabetic care generates large volumes of waste from single use items. Consider where there might be potential for reusable devices or recycling and where your team and patients could put pressure on manufacturers to implement a [circular economy](#) approach to their products.

**Pumps:** Around 2/3 of CYP use insulin pumps which require tubing, cannulas, batteries, dressings etc. Some pumps (e.g. [omnipod](#)) only last a few days before the whole device becomes waste. There was a recycling scheme [The ECO-POD Program – Omnipod](#) but this has sadly been discontinued.

**Pens:** Can be disposable or reusable - the reusable options reduce waste. Some companies are stating to recycle pens - e.g. [Novo Nordisk to hit 700k injection pen recycling target](#) - scheme has been hampered by workforce issues in pharmacies. They are considering involving hospital diabetic clinics to expand the scheme.

Continuous glucose monitoring (CGM) machines - some companies are looking to reduce the size of the devices. Consider other equipment that could be reusable such as [sharps containers in 40 UK NHS trusts | BMJ](#) Case example – reducing insulin waste [Stony Brook University Hospital Reduces Insulin Waste](#)



# Sustainable Asthma Care

Asthma care is a really good example of how changes can result in improved quality of care with better outcomes for patients as well as making a significant difference to healthcare emissions.

What's the problem? - Well there are three problems:

1. Asthma care is not as good as it could be.
2. Asthma inhalers are contributing to climate change.
3. Air pollution is contributing to respiratory disease (including asthma).

What do we need to do?

1. Improve respiratory care.
2. Reduce the environmental impact of respiratory care.
3. Advocate for measures to improve air quality.

# Sustainable Asthma Care in the UK

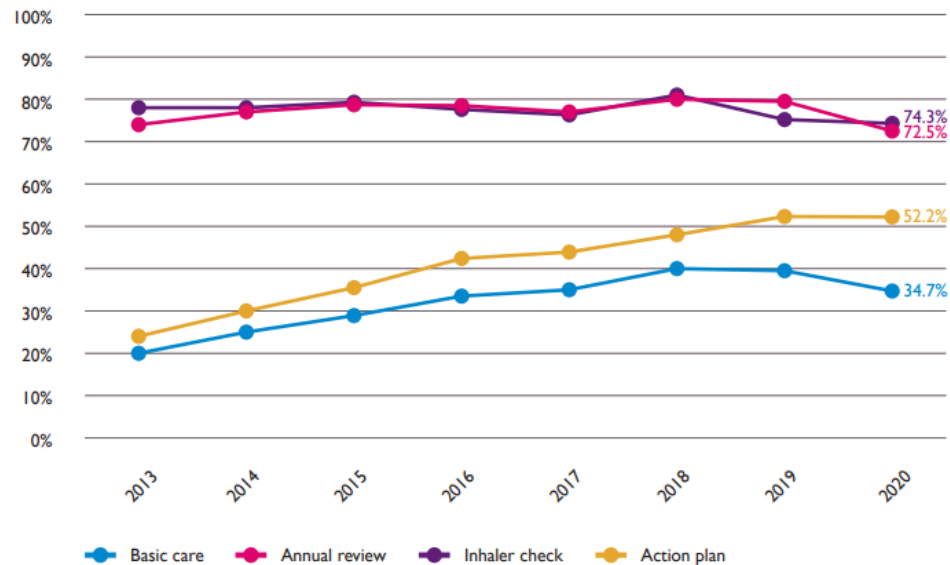


- About [1 in 11 \(1.1million\)](#) children in the UK have asthma.
- The UK has one of the [highest asthma mortality rates](#) for children and young people in Europe.
- [2/3](#) of deaths are preventable

## Issues with basic care:

- [2/3](#) of people with asthma are not receiving a basic level of care. Basic care means having received all three of the interventions below in the past 12 months:
- Annual asthma review
- Inhaler technique check
- Written asthma action plan

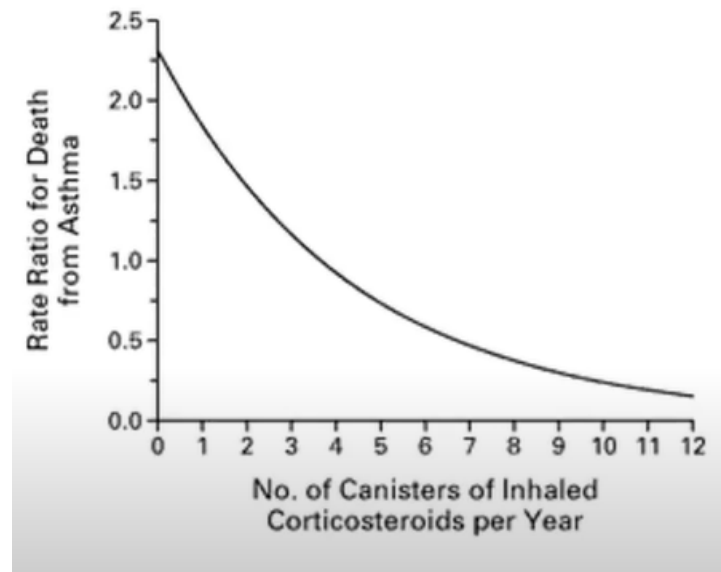
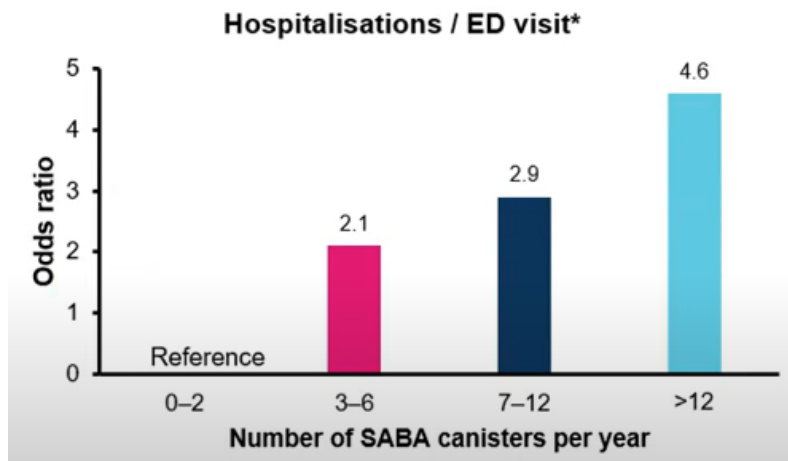
Figure 1: Basic care trends, 2013–2020



# Issues with Prescribing



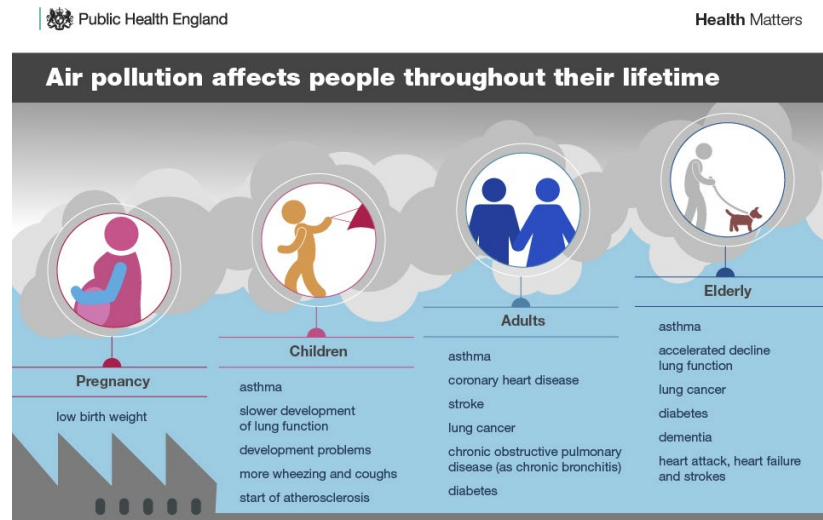
>2-fold risk hospitalisation/ED visit 3+ SABAs vs 0-2 per year<sup>11</sup>



# Issues with Prescribing



1. Overuse of Short Acting Beta Agonist inhalers (SABA) is strongly [associated with increased risk of hospitalisation](#) – in fact using more than 6 per year more than doubles the odds of admission to hospital. 70% of inhaler prescriptions in the UK are for relievers with around 50% of patients potentially overusing them ([average 6.51 inhalers /year](#)). 83% of SABA prescriptions in the UK go to people overusing their inhalers. Compared to the rest of Europe, the UK is the highest prescriber of SABA MDI inhalers, but has one of the [highest mortality rates from asthma](#)



## Issues with Prescribing



2. Underuse of preventer therapy - use of 'preventers' is associated with [reducing the risk of death](#). A UK study looking at around half a million patients found that around 2/3 are either just on a reliever or are overusing their reliever, suggesting inadequate treatment.
3. Poor inhaler technique - around [30% of patients have poor technique](#) which reduces the effectiveness of treatment and increases environmental impact due to overuse and waste. Most health professionals ([93%](#)) have gaps in their own knowledge on this so, unless you are super-confidant, use [training videos](#)) Ideally repeat this in 4-6 weeks time (this can be delegated to the pharmacy especially those signed up to the New Medicines service)

Addressing these 3 issues would improve care and outcomes for patients, whilst also reducing environmental impact by reducing the number of inhalers prescribed. That's before we even start on switching inhalers!

## Issues with Prescribing



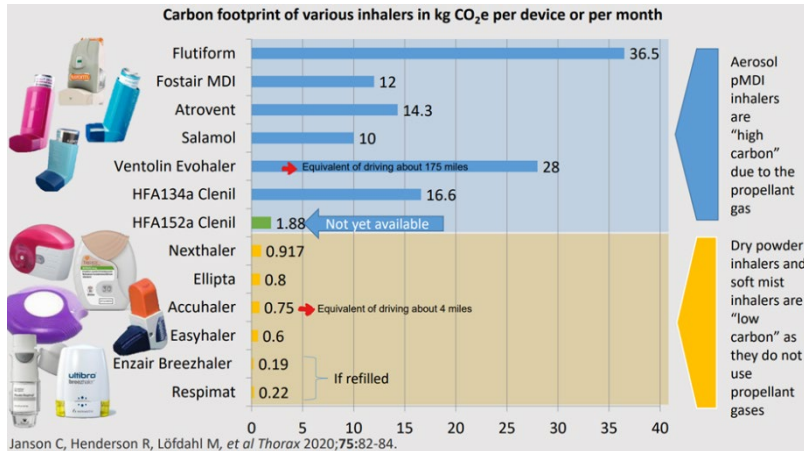
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# Environmental Impacts of Inhalers



Metered dose inhalers (MDIs) use hydrofluorocarbons (HFCs) as a propellant gas. These are 1,000- 3,000 times more potent than carbon dioxide as a greenhouse gas. In fact MDIs alone contribute [3%](#) of the entire NHS carbon footprint and about [13%](#) of the General Practice prescribing carbon footprint. Some MDIs are worse than others. Commonly prescribed 'Ventolin Evohaler' has more than twice the carbon footprint of low volume (less propellant per dose) MDIs such as Salamol. Pharmaceutical companies are trying to develop MDIs with a different propellant (HFA152a) which is much less potent as a GHG but these inhalers are not yet licensed in the UK.

Dry powder inhalers (DPIs) do not contain propellant gases so their carbon footprint is much lower.



## Pharmaceutical waste

How to know if it is empty? MDIs do not have dose counters, so it is almost impossible to know how much drug remains. This leads to 2 problems:

1. Patients could try to use empty inhalers with potentially life-threatening results
2. Inhalers are discarded partially full leading to pharmaceutical waste, increased environmental impact and increased cost. On average 48% of medicine remains in discarded inhalers (data from GSK's recycling scheme which has now sadly ended).

DPIs commonly have a dose counter so patients can track the number of doses remaining.



# Inhaler Disposal

## What do I need to do?

- (1) Always check your inhaler stock, before you order more.
- (2) Only tick or request the inhalers you will run low on in the next month.
- (3) It's ok to order your inhalers at different intervals. You may run low at different times due to how often you use them and the number of doses they contain.
- (4) Return your used or unwanted inhalers to the pharmacy for environmentally safe disposal.

Approximately 73 million inhalers are used in the UK every year. Most patients are not aware of safe disposal advice and evidence suggests that [58% put their old inhalers in the bin](#) at home, meaning they end up in landfill where

Residual HFC propellant gases leak out contributing to climate change- on average disposed cannisters still contain [30% of the original propellant](#).

Leaching of other chemicals (including plastic, metals, phosphates etc) contribute to [climate change, acidification and negative impacts on marine and freshwater life](#).

Sadly there is no national recycling scheme. Some pharmacies are part of a paid TEVA scheme. Those that are not send inhalers for incineration, which is not ideal but destroys the HFC gases, so it's still better than landfill.

Always give advice on ordering and disposing of inhalers, as in the graphic below.



# Choosing the right inhaler

MDI	MDI with Spacer	DPI
Slow steady inhalation over 3-5 seconds	Breath in and out slowly and steadily 5 times	Quick deep inhalation 2-3 seconds
Need to coordinate breath in with actuation of the inhaler (unless breath actuated)	Coordination not required – release dose into the spacer then breath from the spacer	No coordination required – breath actuated

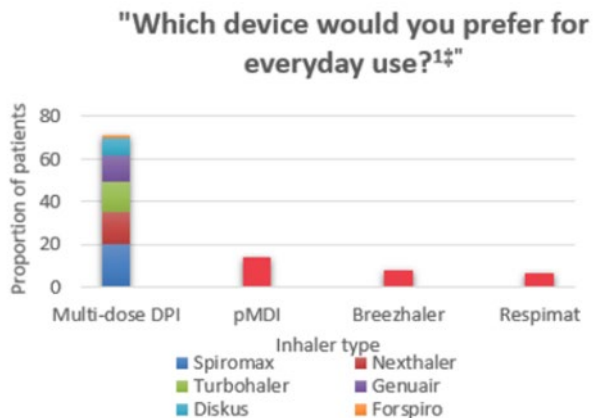
The right inhaler is the one the patient can use effectively, regardless of environmental impact. Poorly controlled asthma is bad for the patient but also bad for reducing emissions, given the carbon impact of acute hospital care. Therefore we do not recommend blanket switches, except possibly for Ventolin Evohaler to Salamol, which is an MDI with the same technique.

Choosing the right inhaler involves 2 considerations:

**Can they use it effectively?** - This should be checked during the consultation and largely depends on their inspiratory effort and ability to coordinate use of the device.

**Will they use it as prescribed?** - although spacers are effective for most people, many don't use them. Older children may find them bulky to carry around in packed school bags or embarrassing to use. DPIs are often preferred by patients.

## Patients' preferences

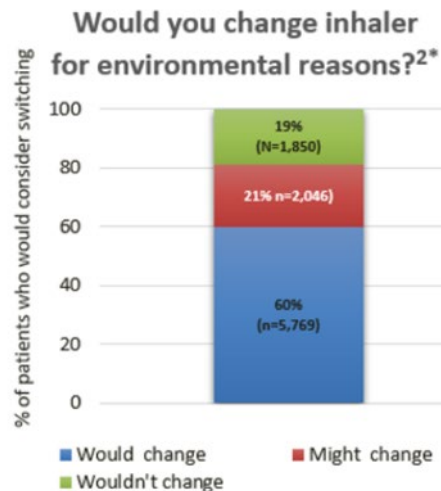


Adapted from Schreiber J et al 2020

<sup>†</sup> Prospective, open-label cross-sectional study (n=105); 58% asthma 42% COPD. The study examined validated checklists to assess patient inhaler technique and errors for 10 placebo devices. Patients were also assessed on device name, properties and preference.

\*12,145 patients/carers asked as part of an Annual Asthma Survey

1. Schreiber, J et al. *BMC Pulm Med* 2020 20, 22; 2. D'Ancona G et al (2021). The sustainability agenda and inhaled therapy: what do patients want? ERS 2020, virtual conference 8: PA3399; DOI: 10.1183/13993003.congress-2021.PA3399



Adapted from D'Ancona G et al 2021



# DPI use in children

It is commonly thought that DPIs cannot be given to children who should always be prescribed MDIs with a spacer. This is certainly the case with very young children . However, [Nice](#) guidance suggests DPIs may be used in children as young as 3 if they can be taught to use it correctly. Use of an [In-check Dial](#) device helps to assess whether sufficient inspiratory flow is generated for effective use. Choice of DPI is important. One [study](#) found that nearly all children aged 3 and above could generate an adequate PIFR for the Diskus (30 L/min), but only about 2/3 could manage a Turbohaler.

So can we 'kill two birds with one stone', improving care whilst also reducing emissions? - Yes!

This entertaining [8-minute](#) video covers the main issues and explains how to use open prescribing to check your practice prescribing.

## Costs

When DPI use was [modelled in line with current patterns](#), 10% MDI switching resulted in an estimated increased cost of £12.7 million annually. However, when MDIs were replaced with the cheapest DPI equivalent, prescribing costs decreased by £8.2 million annually. The biggest potential savings came from less expensive MART inhalers. There are also potential savings from optimised care resulting in reduced use of reliever medication.



# Policy context

Inhalers are a carbon hotspot and a priority area for the Net Zero NHS program.

Policies and guidance supporting this include:

The [Pharmacy Quality Scheme](#) - pharmacists are now incentivised to check inhaler technique and inform patients of the need to return inhalers for safe disposal

NICE has published a [patient decision aid](#) to help explain the environmental impacts to patients.

GP practices are incentive via the NHS England PCN Impact and investment fund 2022-2025 with targets to achieve

- An increase in prescription of inhaled corticosteroids for patients on the asthma register
- A reduction in patients on the asthma register prescribed 6 or more SABA inhalers annually



# Using Data

[OpenPrescribing](#) allows you to identify patients at risk and monitor your progress so you can feedback on carbon saving, improved care and (possibly) financial savings to your team. Choose respiratory or greener NHS from the topic list.

How to start:

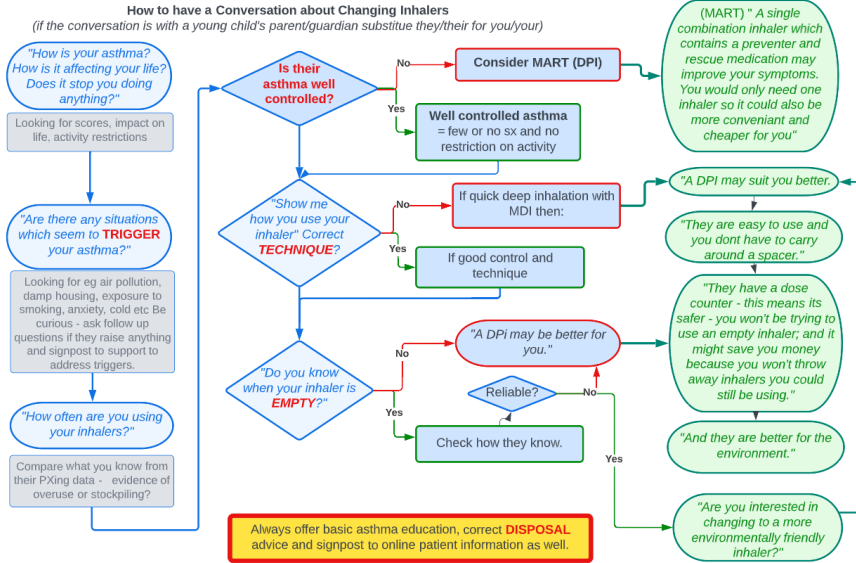
1. Educate your team. Find allies to help you.
2. Consider developing a local policy on inhaler choice and reminders e.g. posters on clinic walls or alerts on your electronic patient management system.
  - Use [open prescribing](#) to identify asthma patients to call in for review. Start with those who:
    - are requesting more than 6 SABA /year (or work down from 20!)
    - have had a recent exacerbation, especially those requiring admission
    - have no diagnosis
    - are under-using/ordering their preventers
    - are on different types of inhalers (this is known to exacerbate the risk of poor technique)
3. Consider updating your asthma review template. This should include a
  1. review of the diagnosis (not all that wheezes is asthma)
  2. their symptom control and
  3. optimisation of treatment.
  4. Consideration of changes to reduce the environmental impact





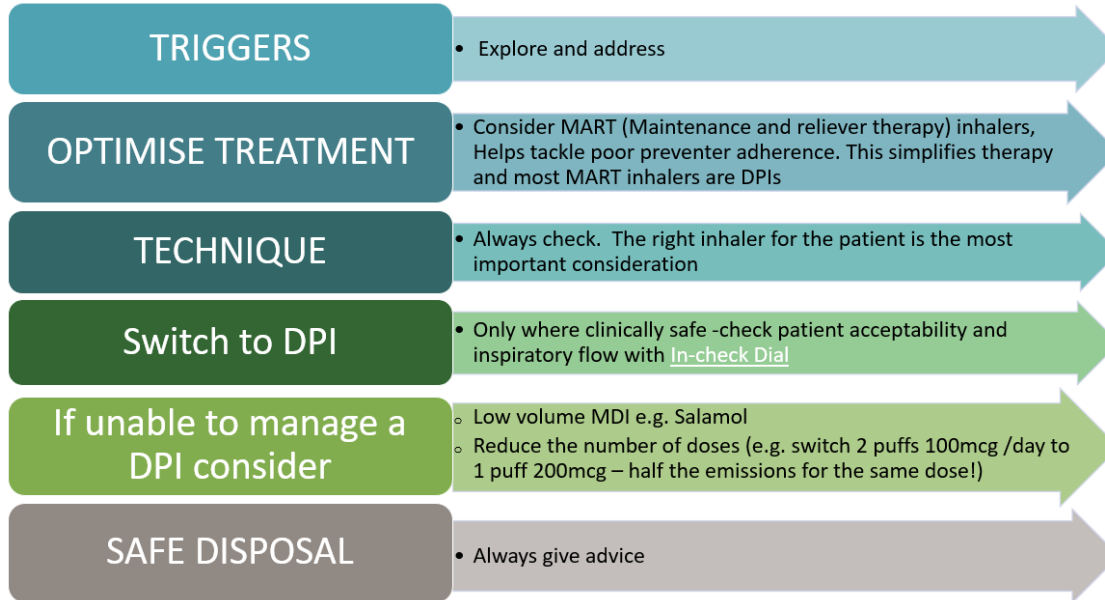
## How to have a conversation with patients about reducing the environmental impact of treatment

It's often best not to lead with suggestions about reducing the environmental impact of the inhaler as some may misinterpret this as being less effective treatment or, if they are unable to manage a DPI may feel reluctant to use their MDI. A suggestion for how to manage the review is outlined below.





# Summary - Top tips for improved sustainable asthma care:





# Case Study - Frimley inhaler project

In 2020, Frimley Trust Paediatric department conducted a SusQI project to reduce the environmental impact of their inhaler prescribing as part of the [Green Ward competition](#).

Results - Over 10 years their inhaler switches would equate to 21180 Kg CO<sub>2</sub> (someone driving over 5 times round the earth's circumference) saved per clinician hour invested! Find out more [here](#)

Tips from the Frimley inhaler project:

- Optimising Asthma care is the priority
- Work with nearby pharmacies to promote and encourage conversations/discussions
- Respiratory nurse practitioners could introduce these conversations at routine asthma/COPD reviews
- Letters/emails/SMS could be sent out to all patients who use inhalers asking them to book in for an appointment if they are interested in discussing options.
- Raise the topic in any relevant consultation.

# Resources -Toolkits



There are two excellent websites offering practical support for projects to reduce emissions from inhalers:  
Greener practice:

[How to Reduce the Carbon Footprint of Inhaler Prescribing](#) - reviewed and approved by NHS England, the NHS Inhaler Working Group, Asthma UK and the British Lung Foundation this resource includes the principles of how to approach this work, a frequently asked questions section and a handy table of inhaler devices and their carbon footprint category

[High Quality and Low Carbon Asthma Care –Practice QI Toolkit](#) – includes short helpful videos and a practical step by step guide to carrying out a project, including templates for audits and editing prescriptions.

Primary care respiratory society:

- The [Greener Healthcare Quality Improvement Toolkit](#) - assists with identifying quick wins, longer -term strategies and working with other stakeholders.
- The [Greener inhaler](#) website has useful information about inhaler switching and information for patients.
- [Asthma UK](#) has fantastic patient friendly resources for all aspects of asthma care.
- NICE have produced a [patient decision aid](#) to support shared decision making with patients.
- [Open prescribing](#) have created a measuring tool for the [Environmental Impact of Inhalers](#) and can be useful to compare local data across NHS England.
- [Primary Care Respiratory Society Asthma Guidelines](#)
- [Greener asthma treatment – a golden opportunity or a red flag? – Paediatric FOAM](#)
- [Beat Asthma](#)

(Thanks to Dr James Smith, Dr Aarti Bansal and Dr Joe Barron-Snowden for developing these resources)