



# Sustainability in Quality Improvement (SusQI)

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Education Fellow

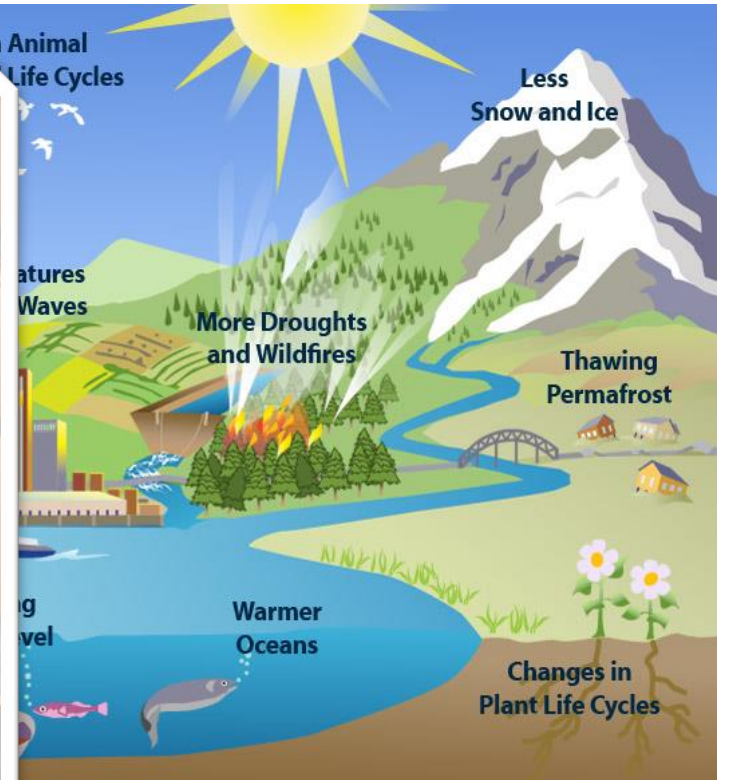
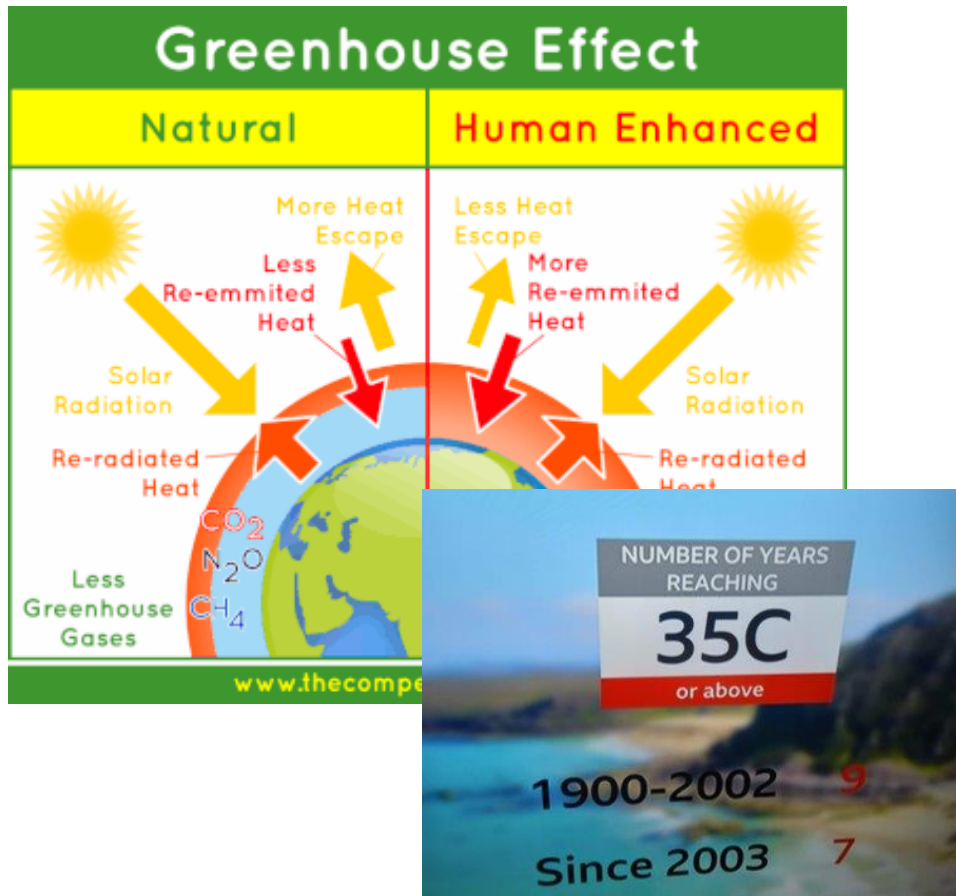
Centre for Sustainable Healthcare

# Aims

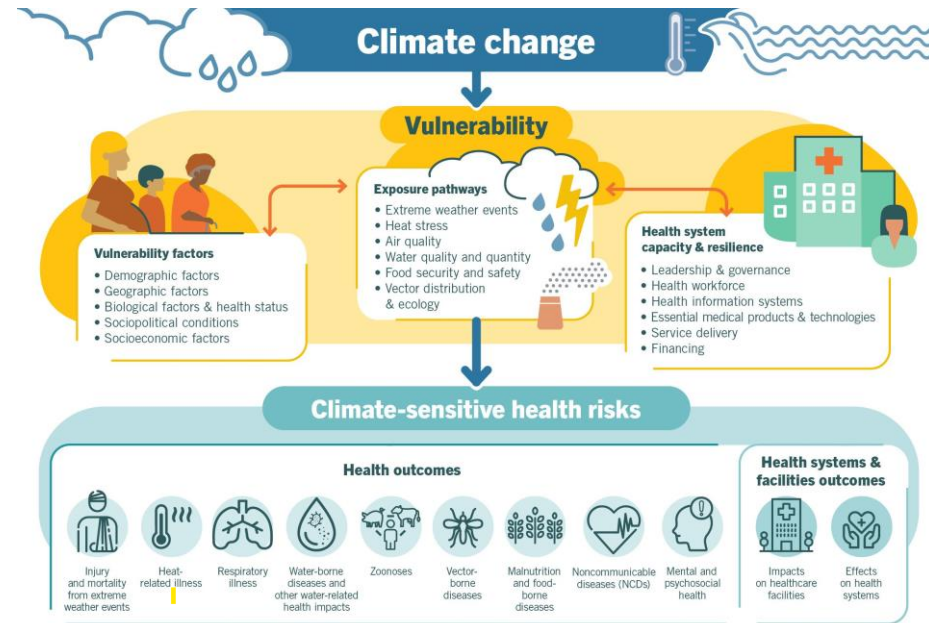
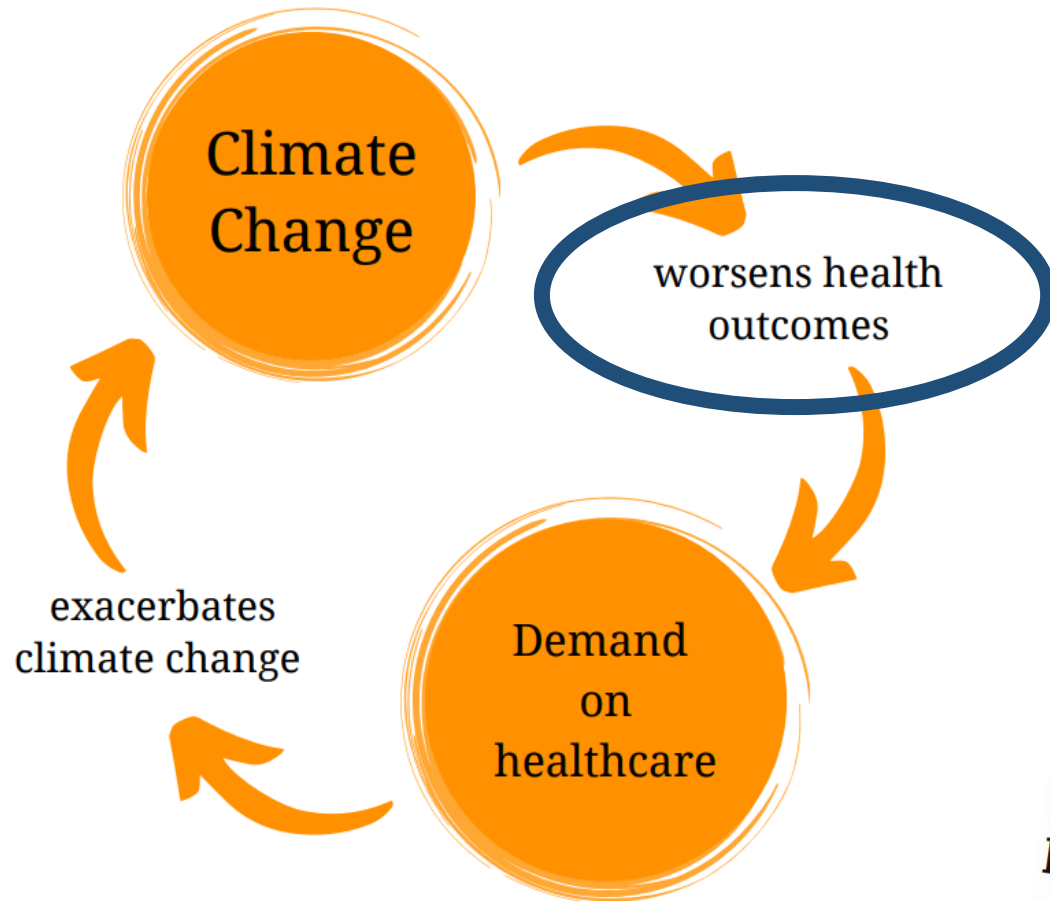
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- What is the climate crisis and how does it relate to healthcare
- What is sustainable clinical practice and how to apply the principles in the design of a QI intervention.
- Introducing the SusQI framework
- SusQI in practice, real case studies in the NHS.

# What is climate change?



# Climate change and Healthcare



London NHS trust cancels operations as IT system fails in heatwave

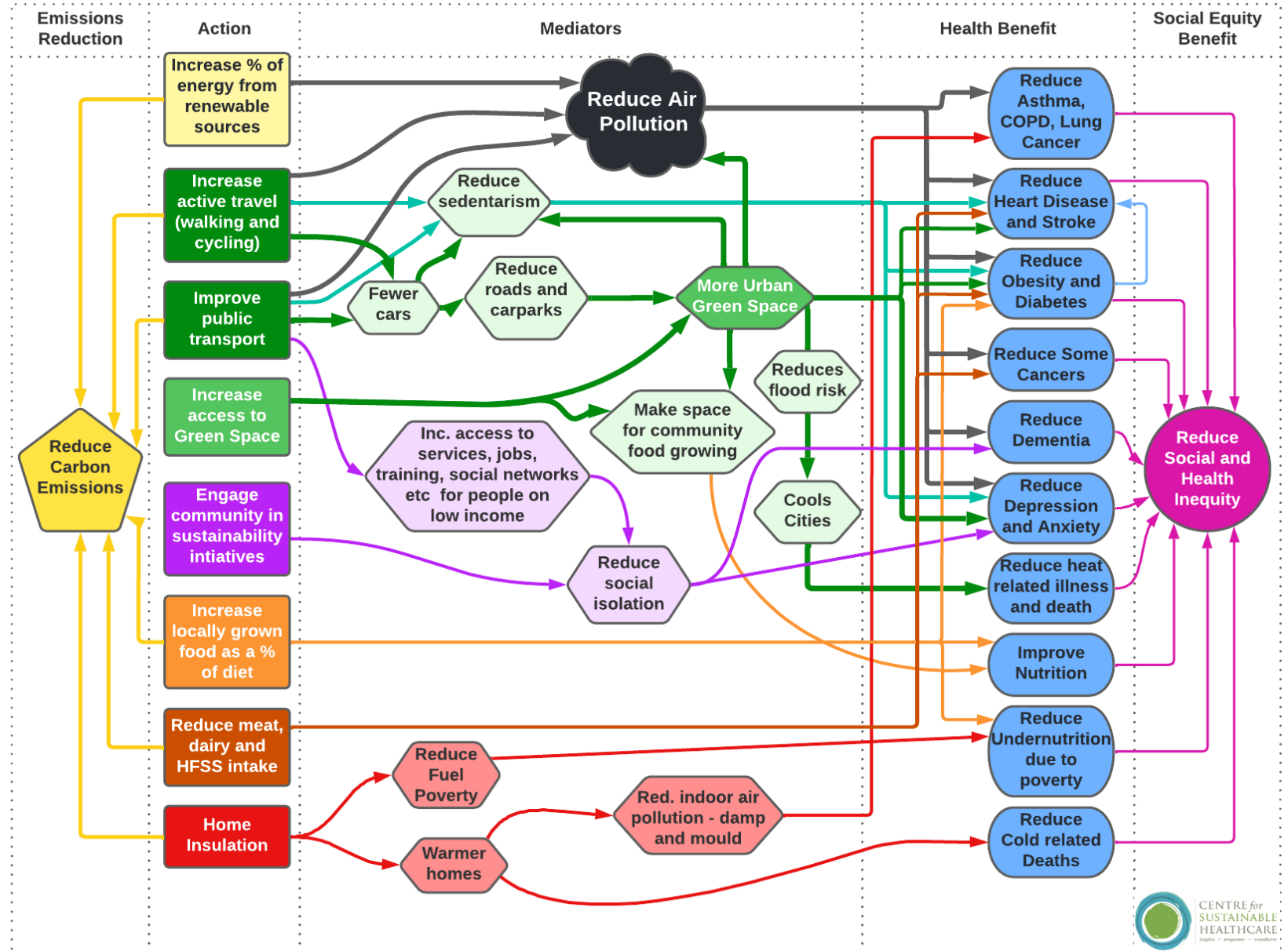
Whipps Cross Hospital patients evacuated after flooding

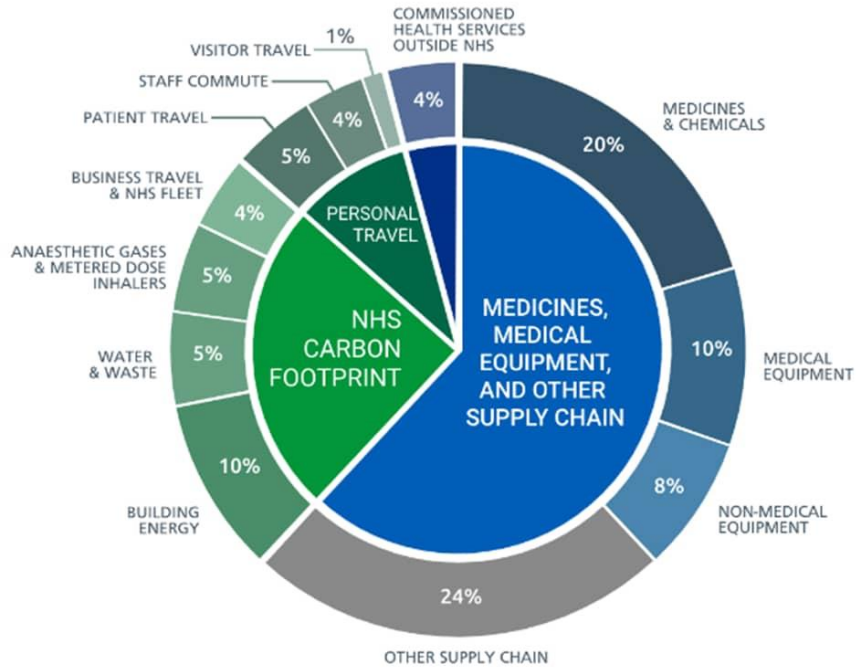
Record excess deaths in UK's heatwave summer

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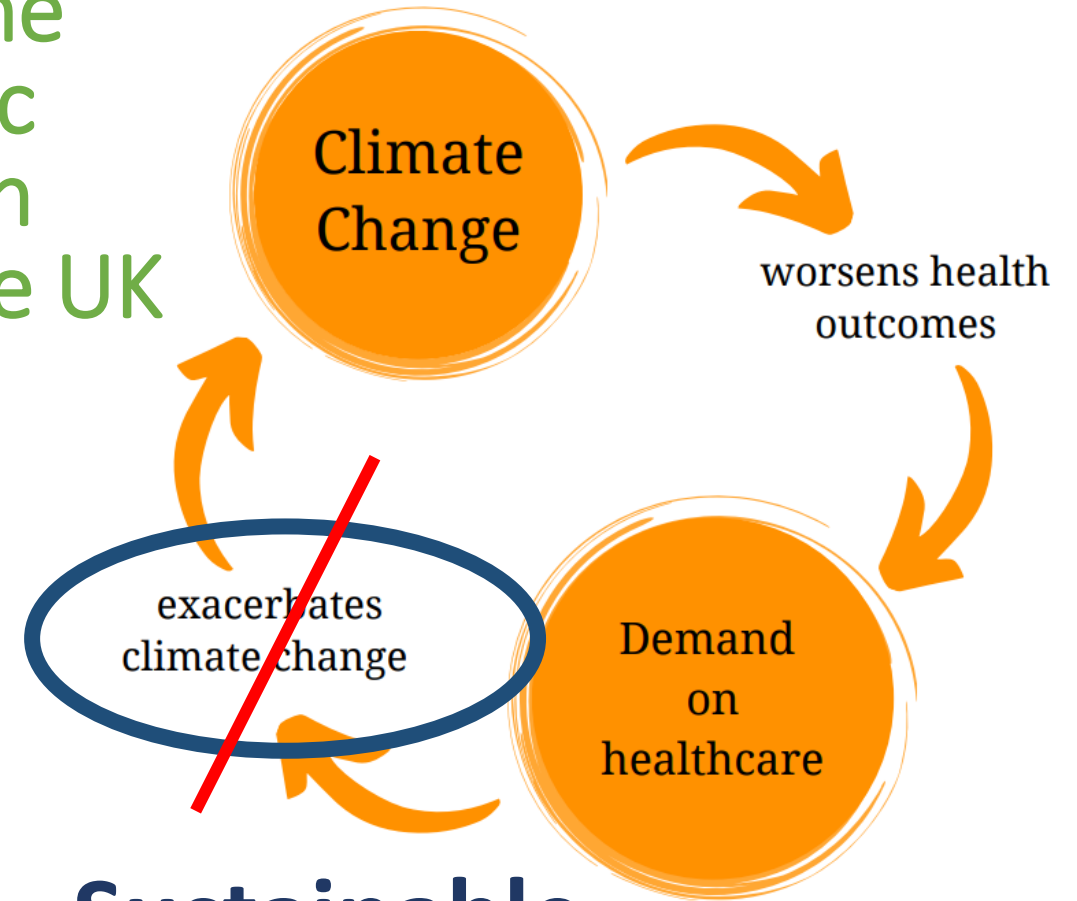
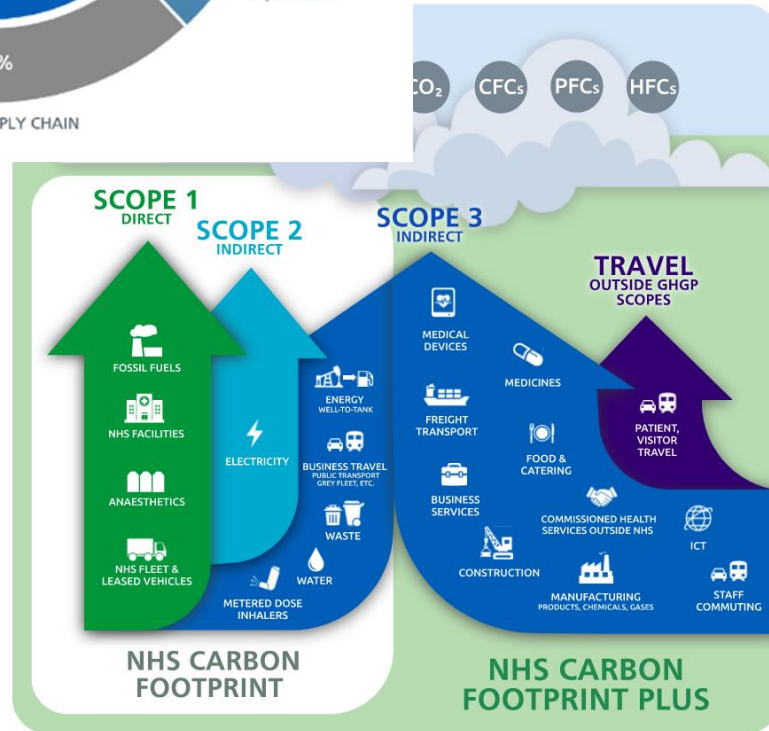
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# Health co-benefits of climate action





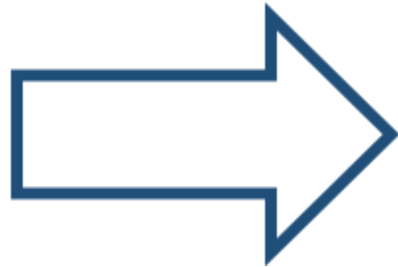
The NHS is the biggest public sector carbon emitter in the UK



Sustainable healthcare



# Knowledge into action



## knowledge

about the need for  
sustainable healthcare

## action

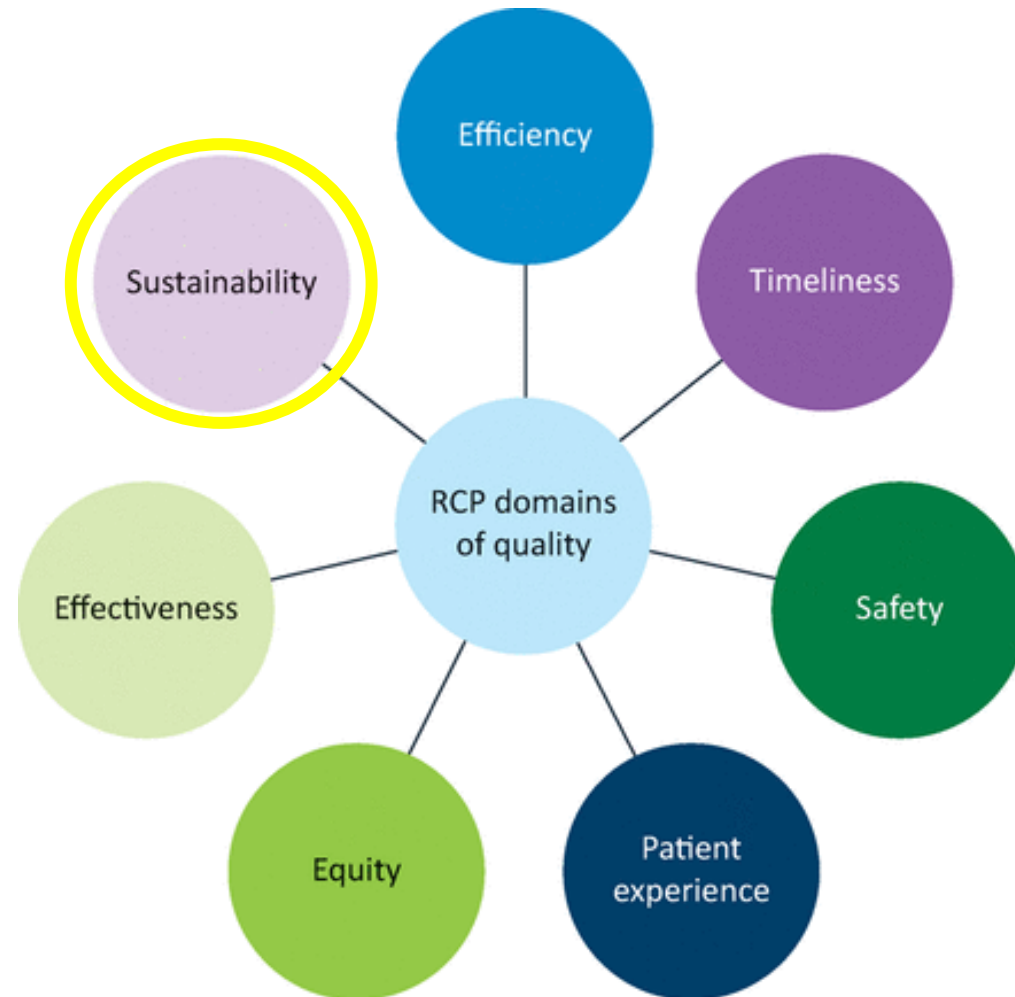
to make healthcare  
sustainable



CENTRE for  
SUSTAINABLE  
HEALTHCARE  
inspire • empower • transform

# Sustainability as a domain of quality

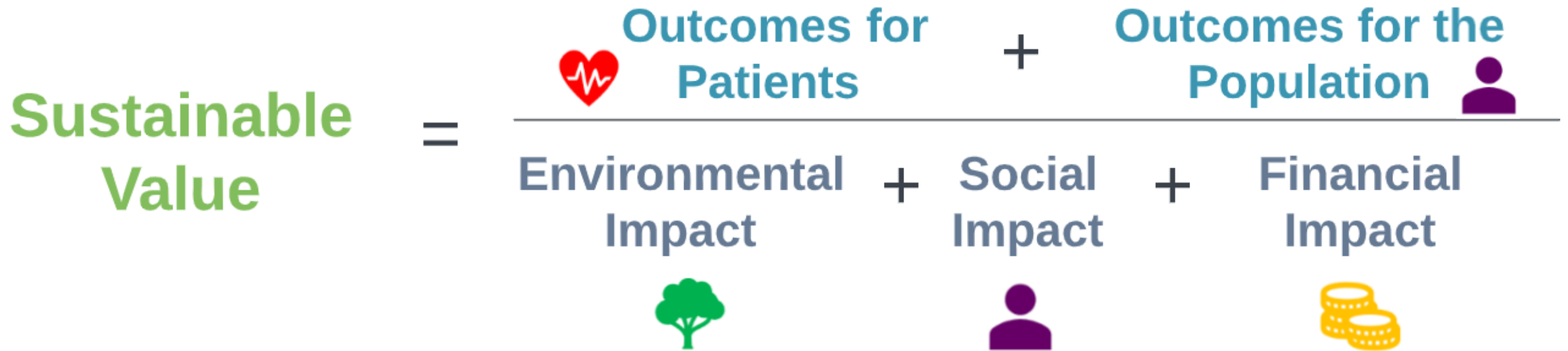
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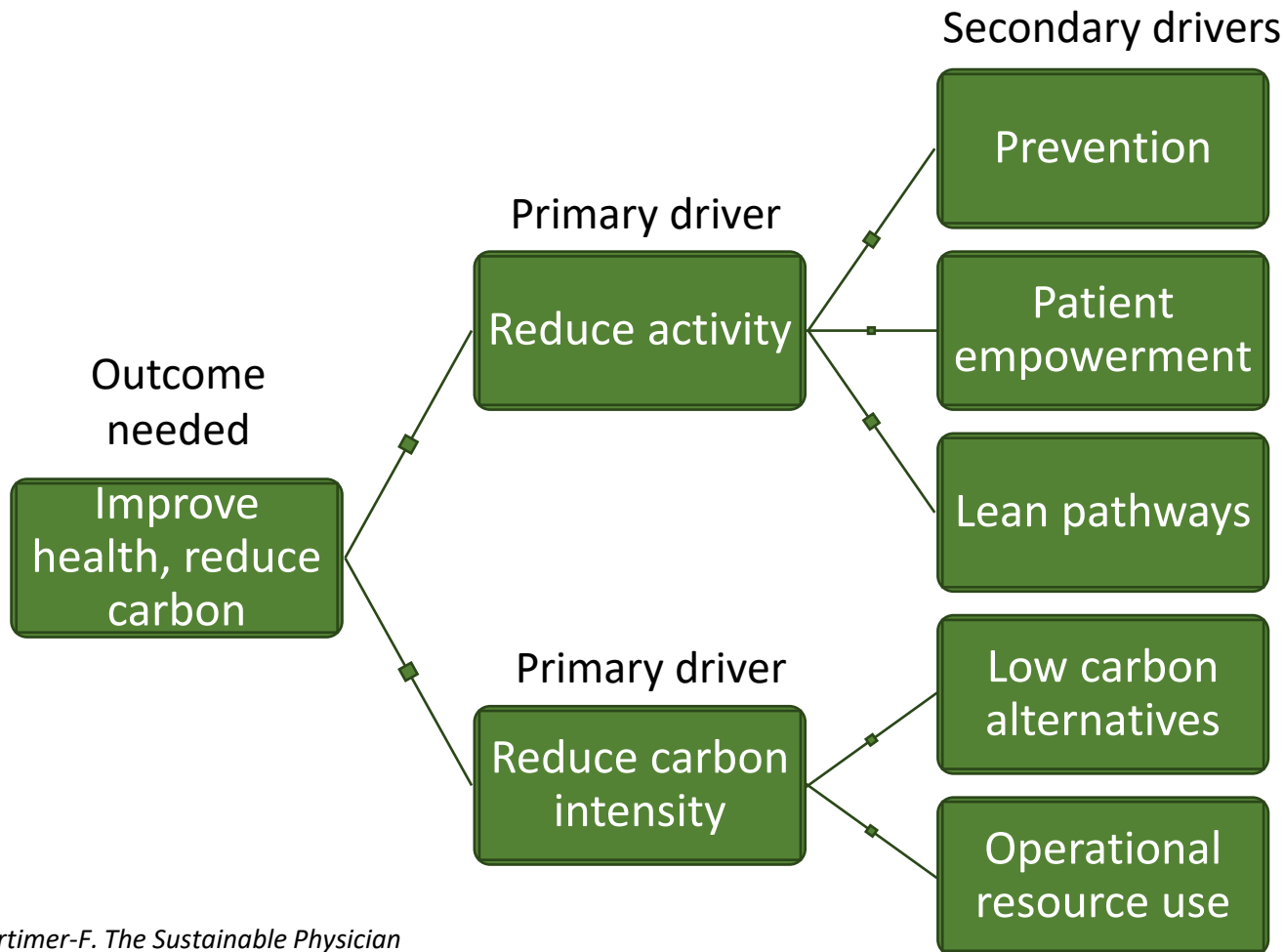
Quality is not enough – we need to improve value



Mortimer F, Isherwood J, Wilkinson A, Vaux E. Sustainability in quality improvement: redefining value. *Future Healthcare Journal*, 2018 Vol.5(2):88-93



# How can we improve sustainable value



## 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



## 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

Mortimer, F. The Sustainable Physician. Clin Med 10(2). April 1, 2010. D110-111.

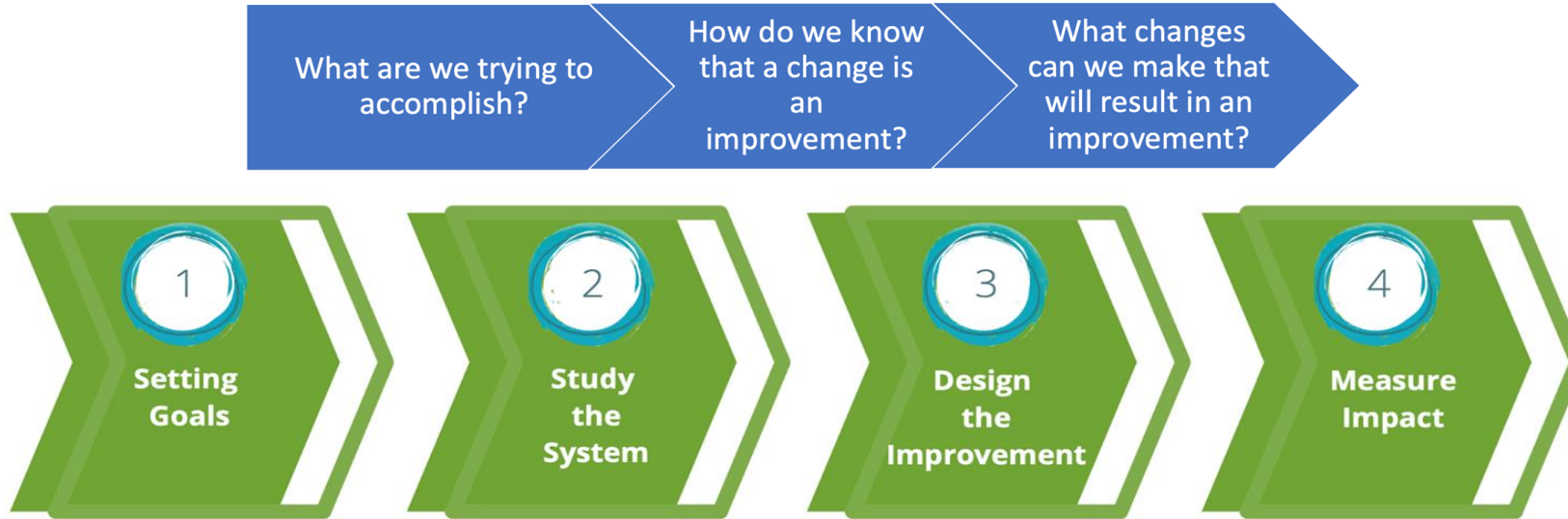


## CSH Principles of Sustainable Clinical Practice

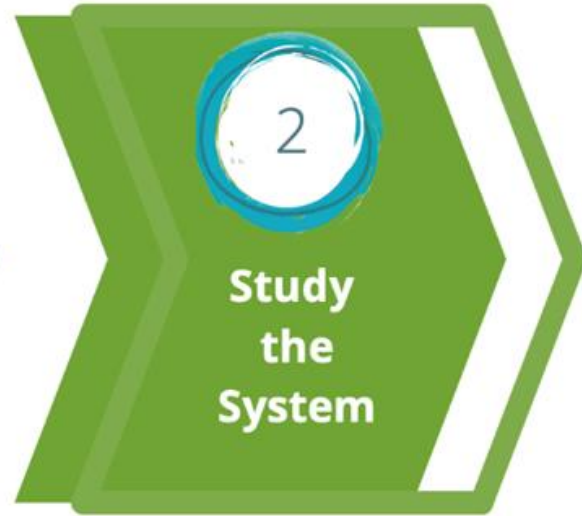




# The SusQI framework



1. Aims to improve sustainable value:  
*by...*
2. **Understanding** environmental, social and financial impacts of **the current system**
3. Using the principles of sustainable clinical practice to **design improvements**
4. **Measuring the impact** on sustainable value



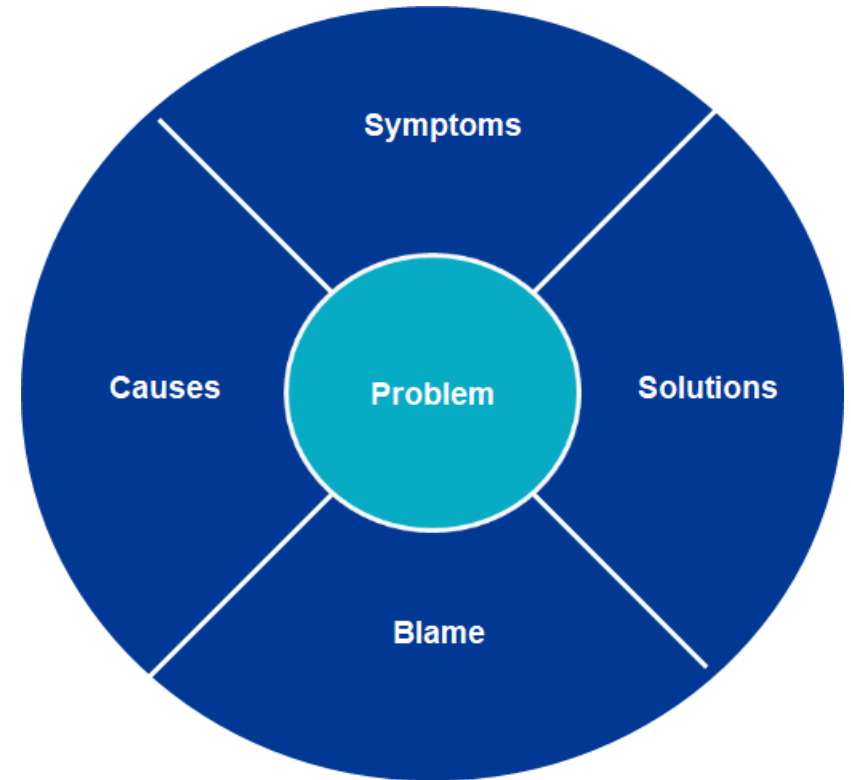
## Setting QI goals



# 1. Setting goals - defining the problem

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- Develop a sustainability lens to assess the problems that we encounter and wish to tackle
- Include climate impact as a problem to be solved





## Study the system

Understanding environmental and social resource use and impacts

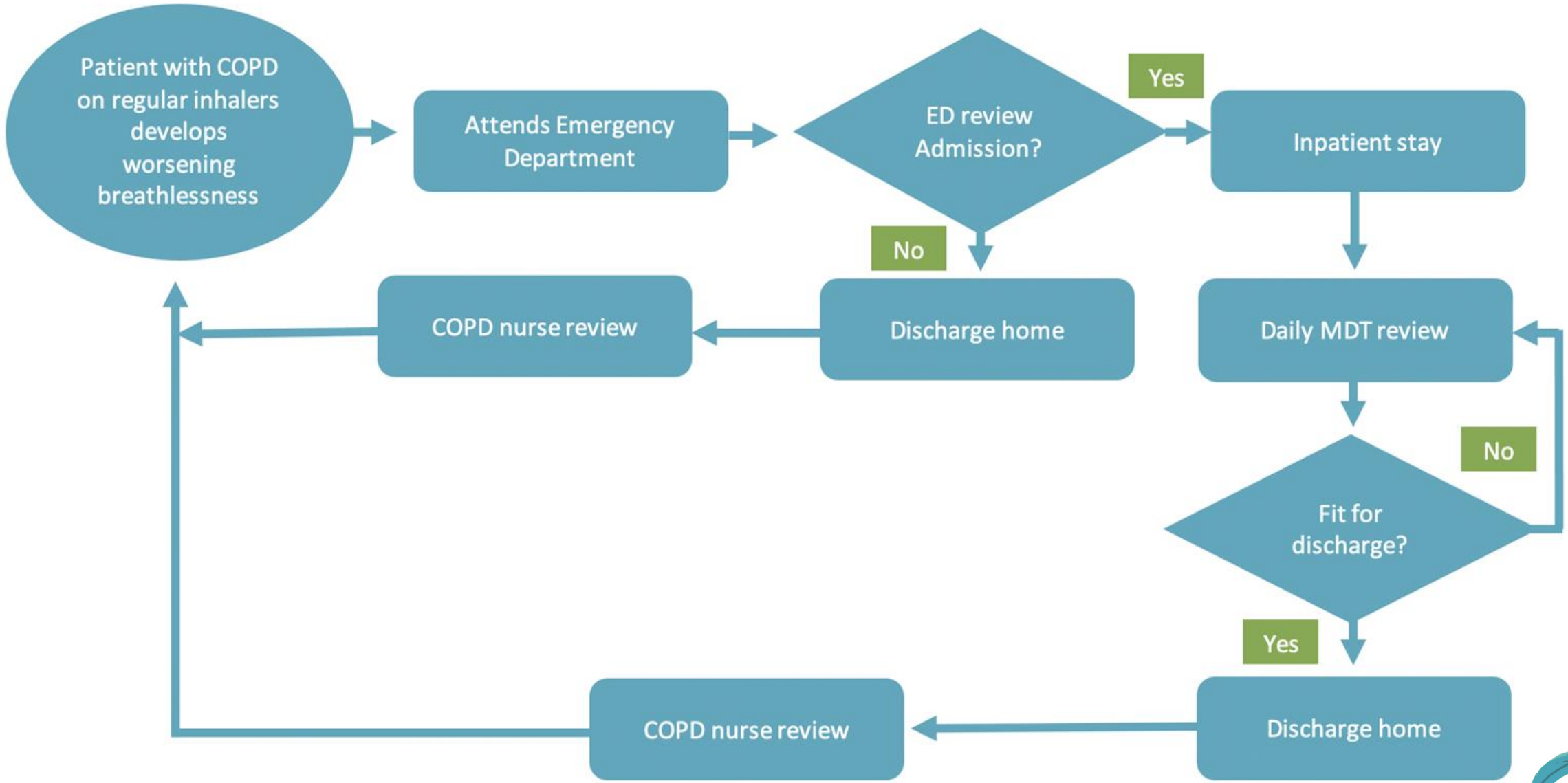
# 2. Studying the system

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- What do you need to find out about **how things work currently?**
- Who will you ask?

We all have our own “lens” through which we see the world, if you can build an MDT QI team you have a better chance of capturing the whole picture.

- **How will you go about this?**







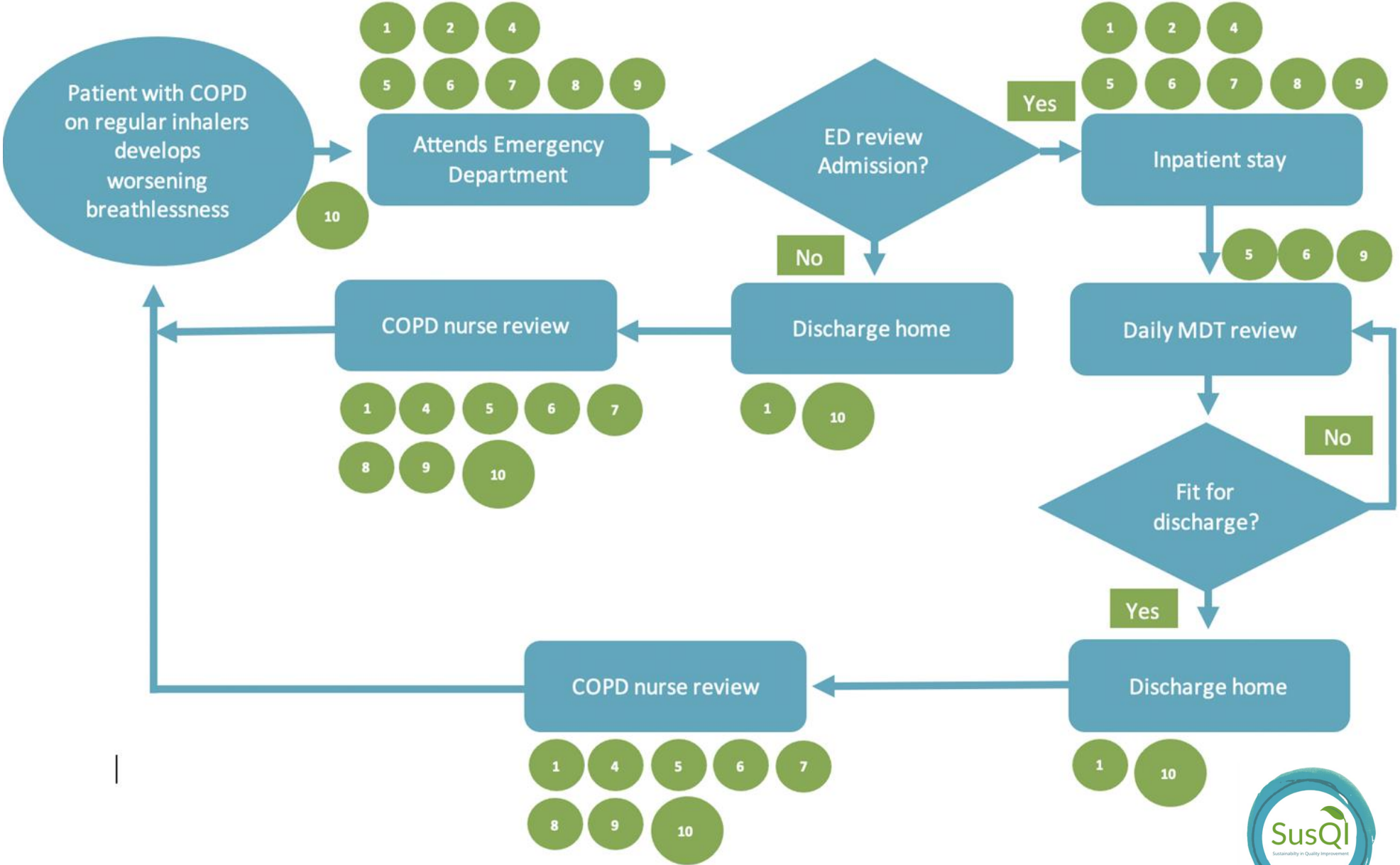
Sustainable value =  $\frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts (the 'triple bottom line')}}$

*“to deliver care in a way that maximises positive health outcomes and avoids both financial waste and **harmful environmental impacts**, while adding social value at every opportunity.”*

# RESOURCE USE KEY

## Environmental resources

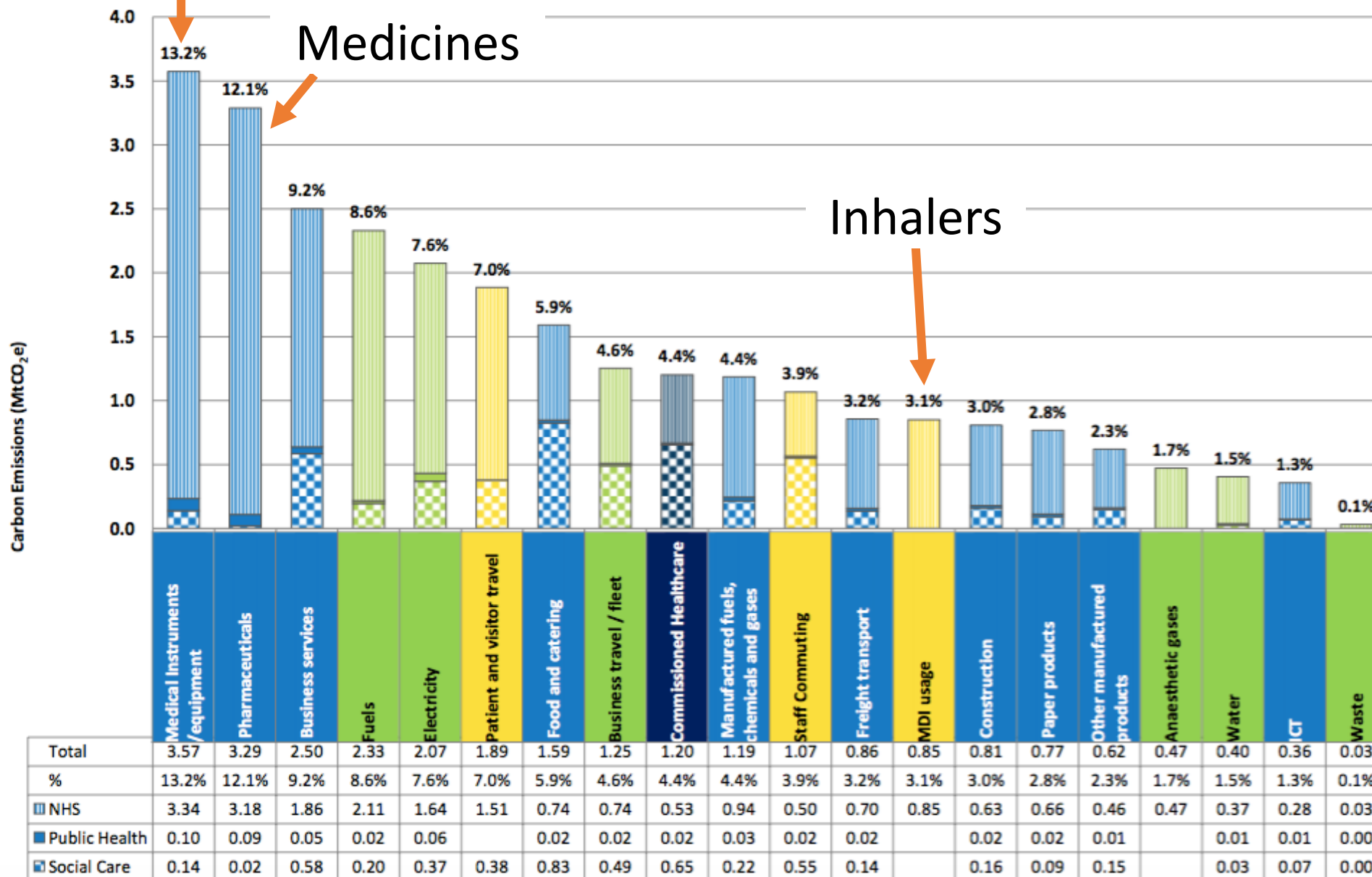
- 1 Medications
- 2 Medical supplies
- 3 Anaesthetic gases/nitrous oxide
- 4 Propellant inhaler (MDI)
- 5 Non-medical supplies
- 6 Energy use
- 7 Waste disposal
- 8 Water use
- 9 Staff travel
- 10 Patient travel



# Medical equipment

Medicines

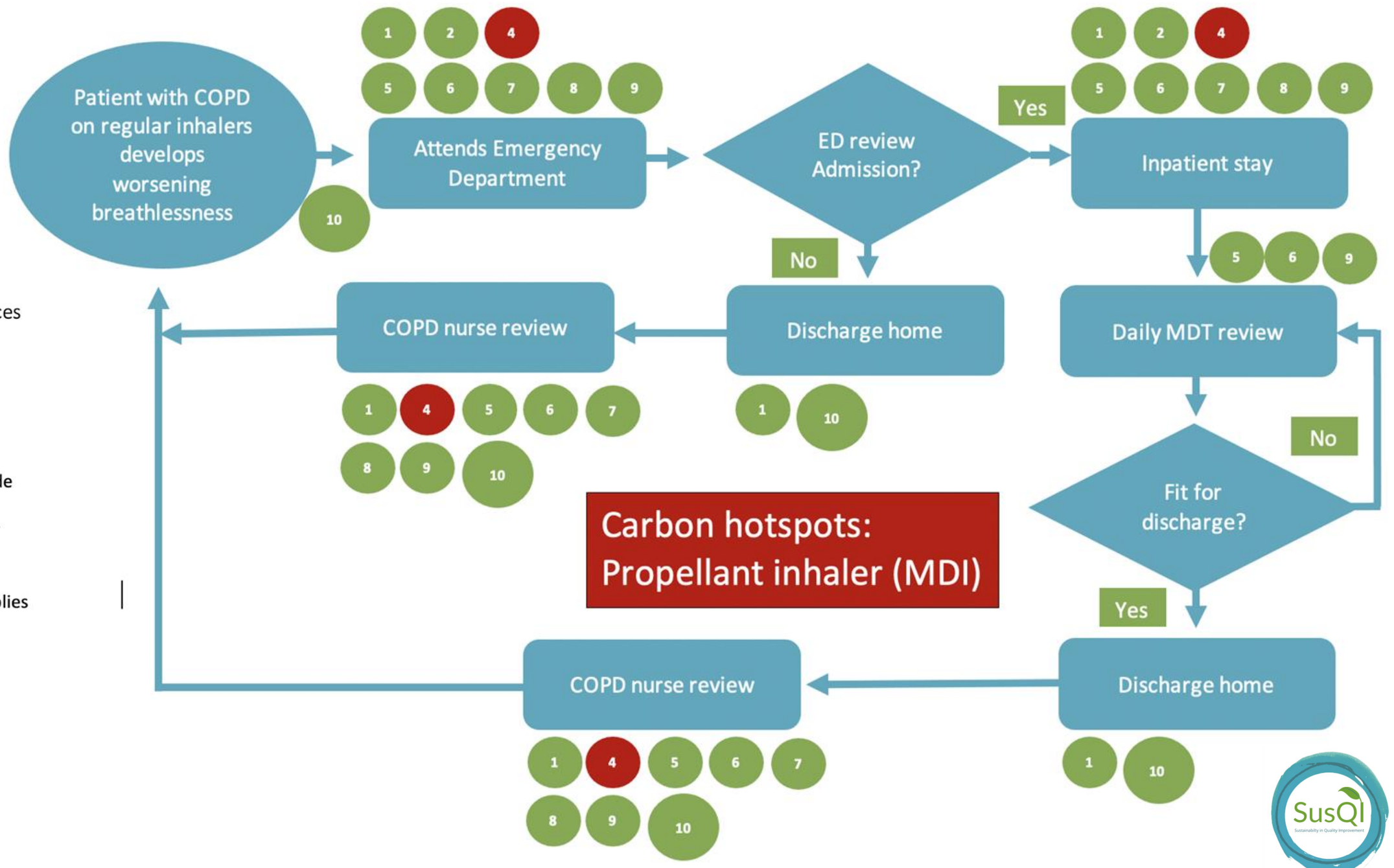
Inhalers



**RESOURCE USE KEY**

Environmental resources

- 1 Medications
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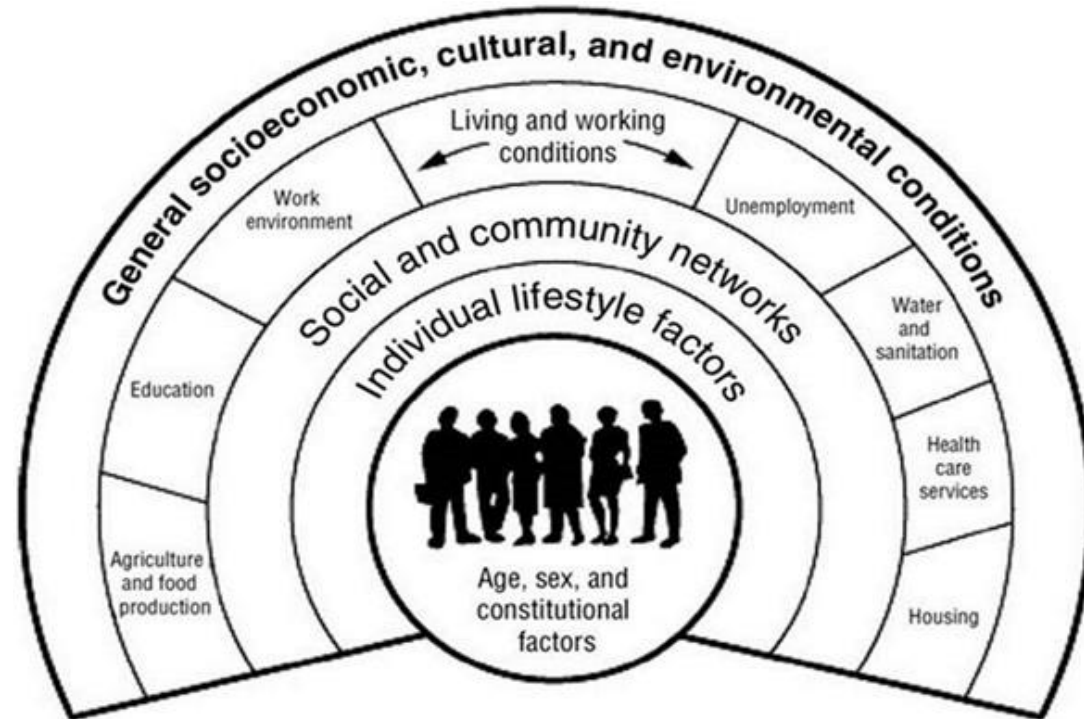
$$\text{Sustainable value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts (the 'triple bottom line')}}$$

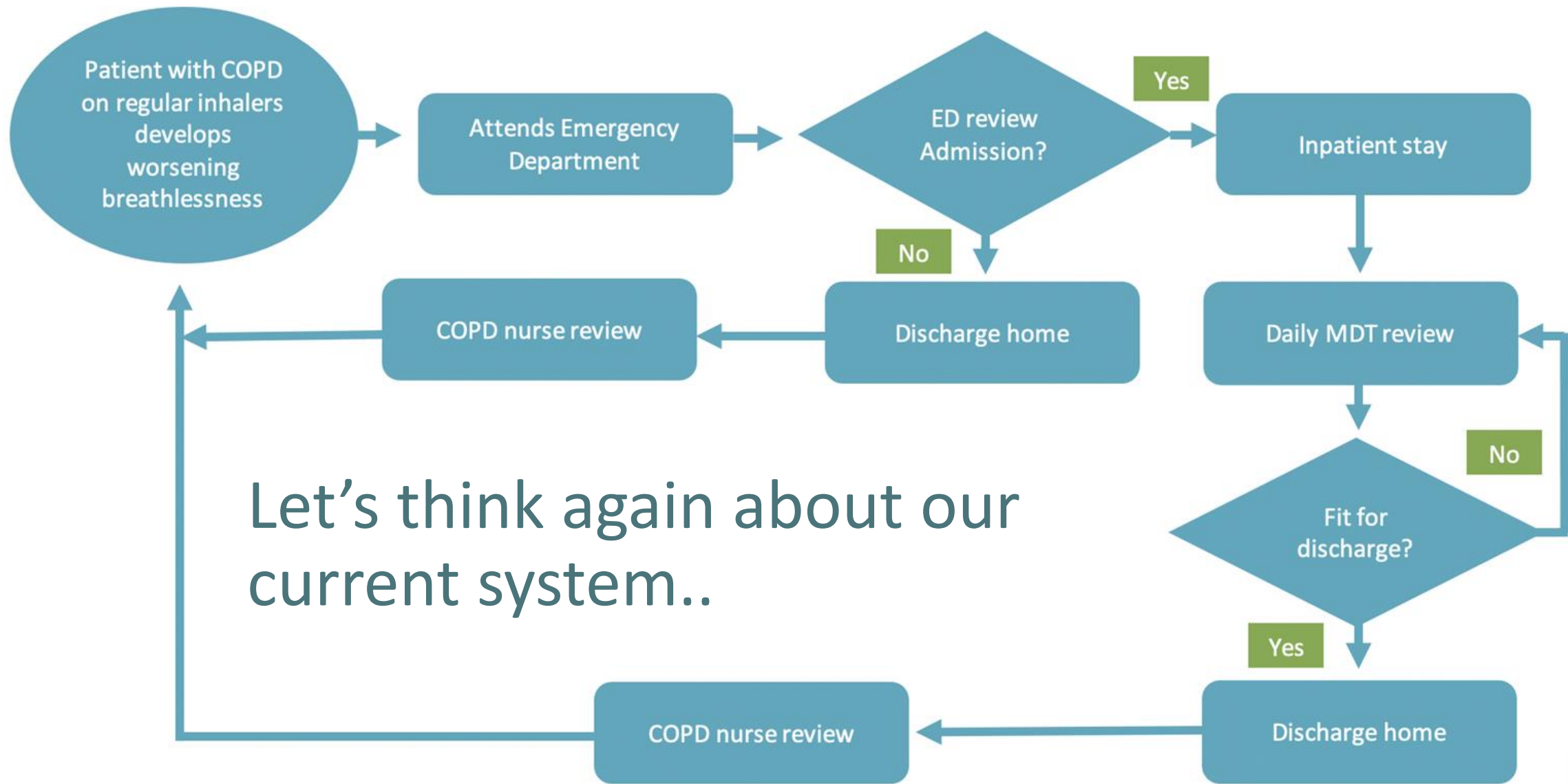
*“to deliver care in a way that maximises positive health outcomes and avoids both financial waste and harmful environmental impacts, while **adding social value at every opportunity.**”*

# Social sustainability: avoiding social harm and building social value

“Health inequalities and the social determinants of health are not a footnote to the determinants of health. They are the main issue.”

– *Sir Michael Marmot*





Let's think again about our current system..

## What are the positive or negative social impacts on each of these groups?

Think about the social determinants of health:

*EDUCATION, WELLBEING, EMPLOYMENT STATUS, SATISFACTION & QUALITY OF LIFE, ACCESS TO SERVICES, INVOLVEMENT IN COMMUNITY NETWORKS, HOUSING*

<b>Population groups</b>	<b>Impacts (positive or negative)</b>	<b>How will it be measured?</b>
<b>Patients</b>	<p><i>Patient time, patient travel</i></p> <p><i>Negative impact on patient satisfaction and quality of life</i></p> <p><i>Negative impact on wellbeing</i></p> <p><i>Decreased motivation for self-care resulting from cycle of readmission and increased institutionalisation</i></p>	<p><i>Patient surveys</i></p> <p><i>Patient interviews</i></p>
<b>Staff</b>	<p><i>Negative impact on wellbeing-stress and frustration</i></p>	<p><i>Staff surveys</i></p> <p><i>Proxy measures: staff sick days</i></p>
<b>Wider Community (e.g supply chain)</b>	<p><i>Over-use of resources: impacts on those within the supply chain (human rights, child labour)</i></p>	<p><i>Procurement data</i></p>
<p><b>Vulnerable groups</b>  <i>(staff and patients can fall into this group)</i></p> <ul style="list-style-type: none"> <li>-Unemployed, or those receiving benefits</li> <li>-Carers (including single parents)</li> <li>-Disable people (includes physical disability, learning disability, sensory impairment, long-term medical conditions, mental health problems)</li> <li>-Ethnic minorities</li> <li>-Homeless, or those without fixed or permanent accommodation (refugees asylum seekers)</li> </ul>	<p><i>Repeat admission particularly difficult for those with disabilities who may find the hospital setting distressing</i></p> <p><i>Patients from communities with lower English literacy may struggle to understand the system and fail to have concerns addressed with frequent discharges and admissions</i></p>	<p><i>Patient and carer surveys</i></p>



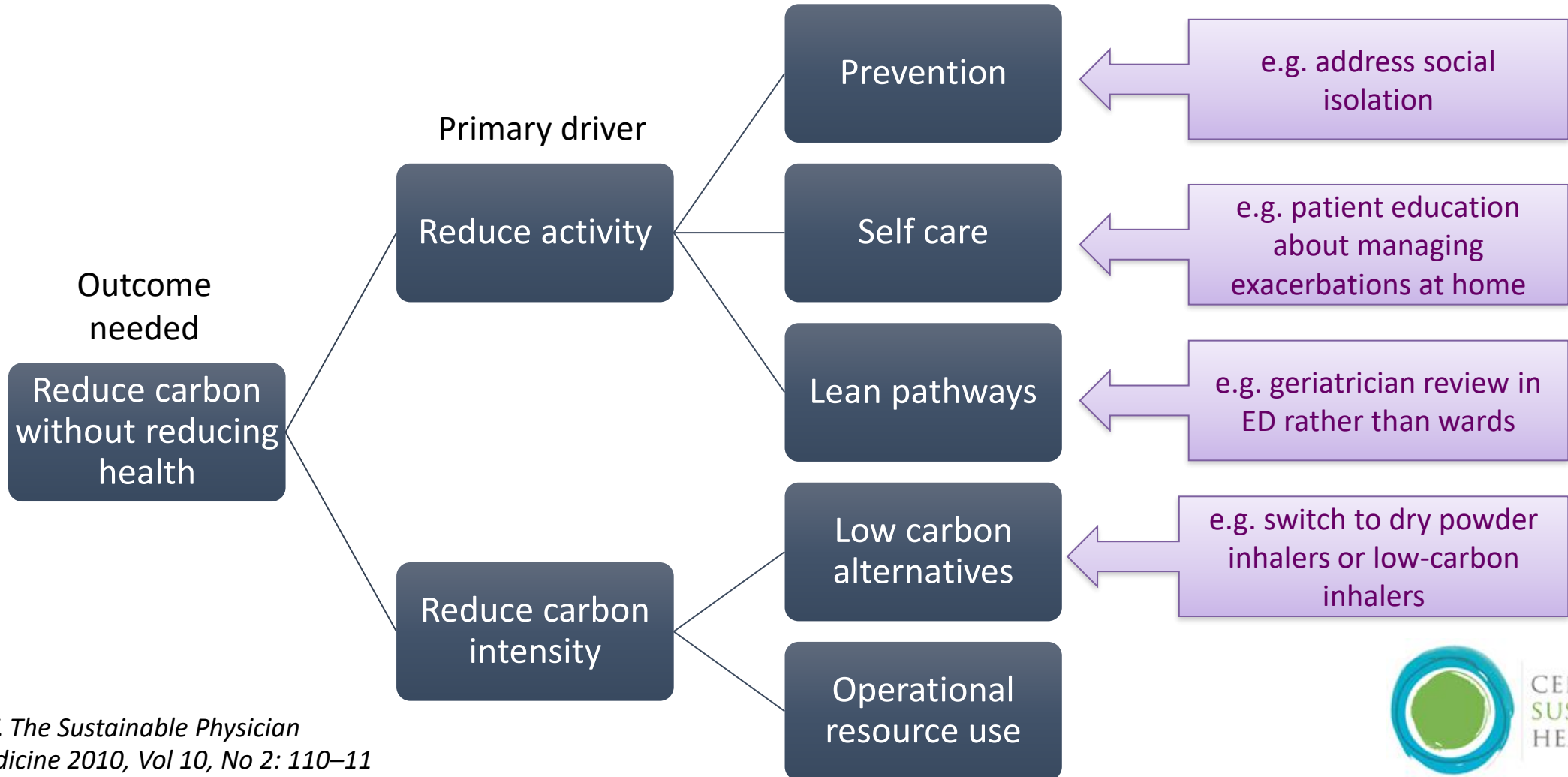
Social Determinant of Health	How do these determinants contribute to the problem?	How can we measure how much they contribute?
<b>Housing</b>	Mould, poor ventilation, indoor air pollution → respiratory disease exacerbations, increased admissions	Social histories, OT input <i>Eg. 20% of patients report mould or poor insulation</i>
<b>Education level, including health education</b>	Poor understanding of disease including self-managing exacerbations → poor prognoses and readmission	Social histories, patient surveys <i>Eg. 30% of patients feel unsure about how to self-manage their respiratory exacerbations at home</i>
<b>Access to essential services (health, social services, transport, amenities)</b>	Poor access to transport → poor social mobility, social isolation	Patient surveys, local geographical information e.g. 40% of patients have no access to regular free transport
<b>Involvement in community networks</b>	Social isolation → poorer cognitive outcomes, institutionalisation, mental health, deteriorating self-care	Patient/population surveys, local/national statistics <i>e.g local ONS statistics show 16% feel lonely 'often or always'</i>
<b>Food security</b>	Malnutrition → increased infections and exacerbations of chronic illness, increased frailty	Patient survey, dietician reviews e.g. 45% of patients have malnutrition, with 10% having no access to fresh food
<b>Green and blue space access</b>	Increased air pollution → chronic disease exacerbation Negative impact on mental health and chronic stress	Local Daily Air Quality Index (DEFRA), geographical data and postcode review e.g. 40% of patients live >1 mile from green space
<b>Poverty</b>	Fuel poverty → cold homes → respiratory disease exacerbations	Local social deprivation index, integrated health assessments (PH colleagues), liaise with social work colleagues  <i>Eg. local deprivation index of 2 (2<sup>nd</sup> decile) for 80% of patient postcodes</i>



## Designing the Improvement

Applying the principles of sustainable clinical practice

# 3. Designing the innovation



# Which improvement idea to prioritise?

Opportunity	Health Impact (0-3)	Environmental Impact (1-3)	Social impact (1-3)	Feasibility (1-3)
<i>Address social isolation</i>	3	3	3	1
<i>Patient education about managing exacerbations at home</i>	2/3	3	3	2/3
<i>Geriatrician review on ED rather than wards</i>	3	2	2/3	2/3
<i>Switch to dry powder inhalers or lower carbon MDI</i>	1	3	0	3



Measuring environmental & social costs/impact

# 4. Measuring the impact

## a) Non- carbon method

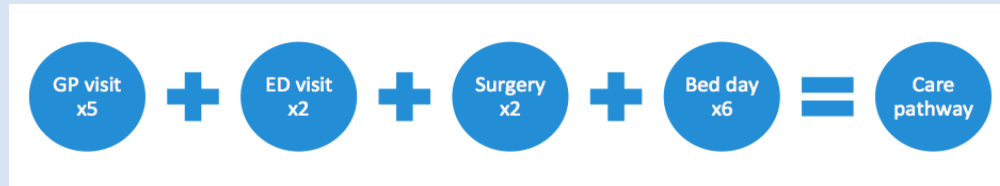
[Quickest & easiest]

No of resources used before **vs** no of resources used after the improvement is implement.

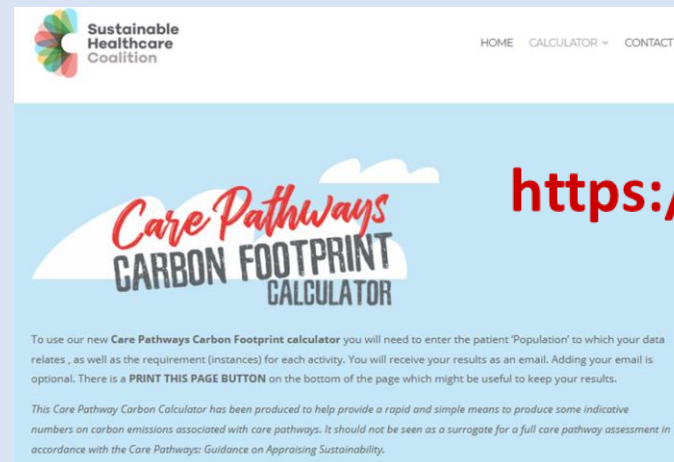
i.e. disposable vs reusable PPE



## b) Carbon foot-printing



Carbon by units of healthcare activity

A screenshot of the Sustainable Healthcare Coalition website. The page features the logo of the Sustainable Healthcare Coalition at the top left, with navigation links for HOME, CALCULATOR, and CONTACT. The main heading is "Care Pathways CARBON FOOTPRINT CALCULATOR". Below the heading, there is a brief description of the calculator and a "PRINT THIS PAGE BUTTON" at the bottom.

<https://shcpathways.org/>



# Measuring environmental cost: carbon footprint

Carbon footprint (kg CO<sub>2</sub>e) = Activity/resource use x GHG emissions factors

Resource use	x emissions factor	= (CO <sub>2</sub> equivalents)
Energy (kWh)	0.35276 kgCO <sub>2</sub> e/kWh	
Travel - staff, patients (km)		
Medical supplies (£)		
Non-medical supplies (£)		
Anaesthetic gas (bottles)		
Waste (kg)		
	<i>Total :</i>	

# Measuring Social Impact

## What are the positive or negative social impacts on each of these groups?

Think about the social determinants of health:

*EDUCATION, WELLBEING, EMPLOYMENT STATUS, SATISFACTION & QUALITY OF LIFE, ACCESS TO SERVICES, INVOLVEMENT IN COMMUNITY NETWORKS, HOUSING*

Population groups	Impacts (positive or negative)	How will it be measured?
<i>Patients</i>	<p>Either with your improvement idea in mind or after you have implemented the change, use this table again to understand how you have increased or decreased the overall social impacts of your system with your intervention.</p>	
<i>Staff</i>		
<i>Wider Community (e.g supply chain)</i>		
<p><b>Vulnerable groups</b>  <i>(staff and patients can fall into this group)</i></p> <ul style="list-style-type: none"> <li>-Unemployed, or those receiving benefits</li> <li>-Carers (including single parents)</li> <li>-Disable people (includes physical disability, learning disability, sensory impairment, long-term medical conditions, mental health problems)</li> <li>-Ethnic minorities</li> <li>-Homeless, or those without fixed or permanent accommodation (refugees asylum seekers)</li> </ul>		







# SusQI in action!

# Reducing routine blood testing, Frailty and Care of the Elderly Wards Team



**GREEN TEAM  
COMPETITION**  
CENTRE FOR SUSTAINABLE HEALTHCARE

Aim: To reduce low value and unnecessary blood testing on Care of the Elderly inpatients.

Outcome: **The team successfully reduced testing across 3 wards by 9.8% (from 234 to 211 requests per week).**



Clinical

- Reducing bruising and skin damage of excessive blood testing
- Reduced distress/pain during procedures for patients who are vulnerable and/or have cognitive impairment
- Potential to reduce discharge delays and improve patient flow



Environmental

937 kgCO<sub>2</sub>e per year from reduced consumables and blood processing.  
Saving equivalent to driving 2,767 miles (average car).



Financial

£18,444 per year



Social

- Staff and patient agreement that excessive testing was a problem
- Staff gain time
- Potential for lab staff to save 4,784 hours a year in processing time
- Less testing will likely improve patient satisfaction

# Elective Theatres Shutdown Check, Anaesthetics Team



**GREEN TEAM  
COMPETITION**  
CENTRE FOR SUSTAINABLE HEALTHCARE

Aim: To reduce operational resource use in elective theatres

Outcome: **Almost 50% of equipment switched on in operating theatres that were not going to be used during the night**



Clinical

- No impact on patient care



Environmental

144,774 kgCO<sub>2</sub>e per year from reduced energy usage  
Saving equivalent to driving 128,958 miles (average car).



Financial

££26,000 per year



Social

- Improvement to immediate ward environments in the vicinity of the operating theatres
- Noise reduction when the ventilation systems are shut down
- Behaviour change in staff

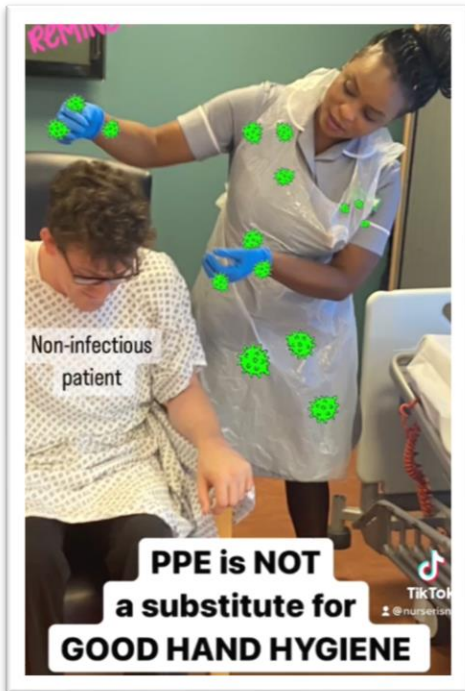
# Greener Personal Protective Equipment



**GREEN TEAM  
COMPETITION**  
CENTRE FOR SUSTAINABLE HEALTHCARE

Aim: To reduce inappropriate PPE use

Outcome: **Procurement data demonstrated 4% reduction in glove use, 22% reduction in apron use**



- Staff knowledge of appropriate PPE increased by 86%
- Suspected reduction in common infections pre and post PPE



25,974 kgCO<sub>2</sub>e per year equivalent to driving 74,809 miles



£23,704 per year



- Positive feedback from staff
- Increased confidence in appropriate PPE use



CENTRE for  
SUSTAINABLE  
HEALTHCARE  
inspire • empower • transform



Northamptonshire Healthcare  
NHS Foundation Trust

# SusQI free resources – [www.susqi.org](http://www.susqi.org)



[About](#) [Do a Project](#) [Teach Others](#) [Case Studies](#)

## Your SusQI journey starts here

This step-by-step guide will take you through the stages of a SusQI project. These steps can be incorporated into existing QI models.



### STEP 1: SET GOALS

Set sustainable goals for your quality improvement project, within the overarching goal to deliver maximum health gain with minimum financial cost and harmful environmental impacts, whilst adding social value at every opportunity.

[More info](#)



### STEP 2: STUDY THE SYSTEM

Recognise the use of environmental and social resources in your current service, and identify opportunities to improve.

[More Info](#)





# The **Community**

An inclusive community of healthcare professionals, patients, researchers, students and more.



29+ specialty and discipline specific networks



**Carbon Footprinting for Healthcare**



**Mental Health Sustainability Network**



**Allied Health Professions Sustainability Network**



## Short courses in **sustainability, health, and healthcare**

Offer a mix of core concepts and case studies, followed by live online workshops with expert advice on applying theory to practice in your setting.



Introduction to Sustainable Healthcare



Sustainable Mental Healthcare



Sustainable Primary Care



Sustainable Kidney Care



Sustainable Respiratory Care



Sustainable Dentistry



Public Health Leadership for Sustainability



Green Space and Health



Sustainable Anaesthetics



Sustainable Procurement



Sustainable Child Health



Carbon Footprinting for Healthcare



Sustainability in Quality Improvement



Teaching Sustainability Quality Improvement

# Summary

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- Explored the relationship between climate crisis and healthcare
- Applied the principles of sustainable clinical practice in the design of a QI intervention
- Explored the SusQI framework and how to apply this to quality improvement projects
- Looked at SusQI examples in the NHS