

# Healthcare sustainability & environmental sustainability – two sides of the same coin

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**Value based Healthcare**



# We have had 2 healthcare revolutions, with amazing impact

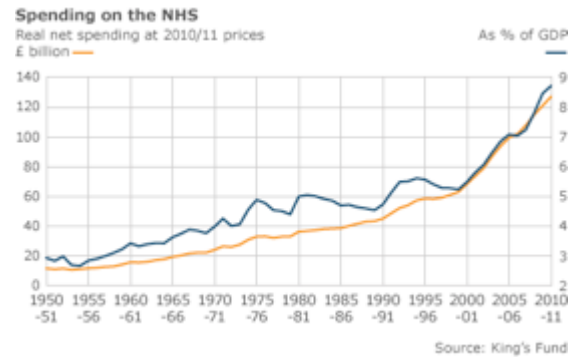
## The First was the public health revolution



The Second has been the technological revolution supported by 50 years of increased investment & 20 years of evidence based medicine, quality and safety improvement eg

- Antibiotics
- MRI & CT
- Coronary artery bypass graft surgery
- Hip & knee replacement
- Chemotherapy
- Radiotherapy
- Randomised controlled trials
- Systematic reviews

# But after 50 years of progress, all societies face major problems:

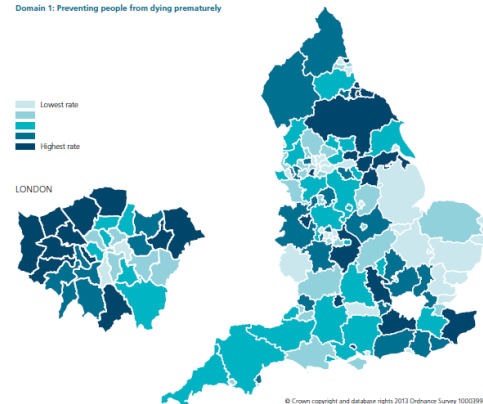


- ### COST
- Rising demand
  - Financial crisis
  - Waste

- ### CARBON
- Climate change
  - Carbon reduction



**Map 3:** Rate of non-obstetric ultrasound activity per weighted population by PCT 2012/13  
Domain 1: Preventing people from dying prematurely



- ### QUALITY
- Safety
  - **Variation – overuse & underuse**
  - Patient experience



# Health service sustainability

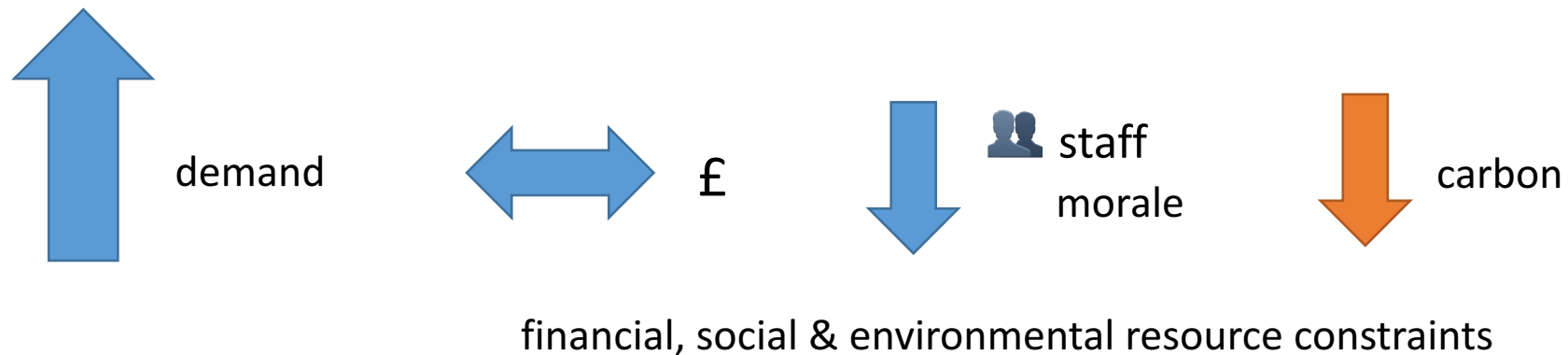
1. Protecting the health service for (current and) future generations
  - Will the NHS still be with us in 2025 / 2035?
2. Protecting health for (current and) future generations
  - Does healthcare activity build health – or undermine it?



# Health service sustainability

## 1. Protecting the health service for (current and) future generations

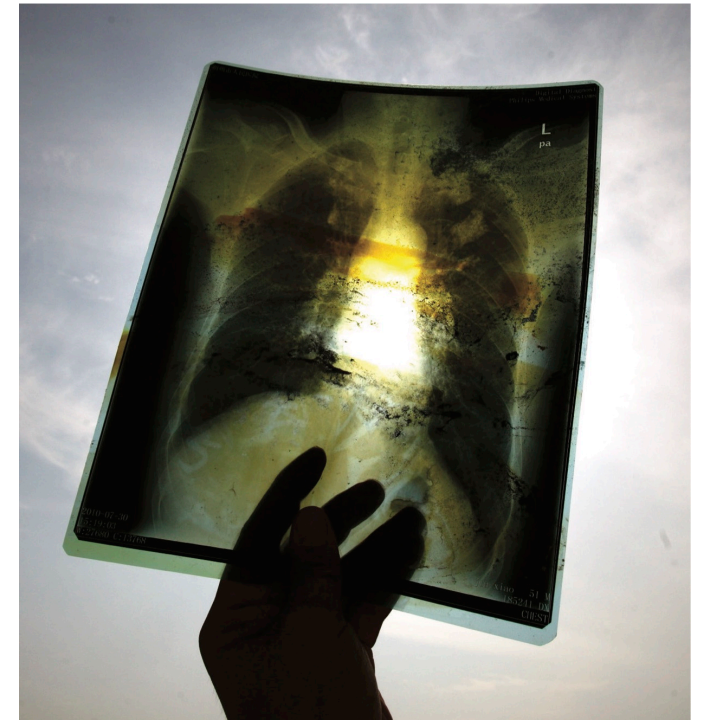
- Will the NHS still be here in 2025 / 2035?



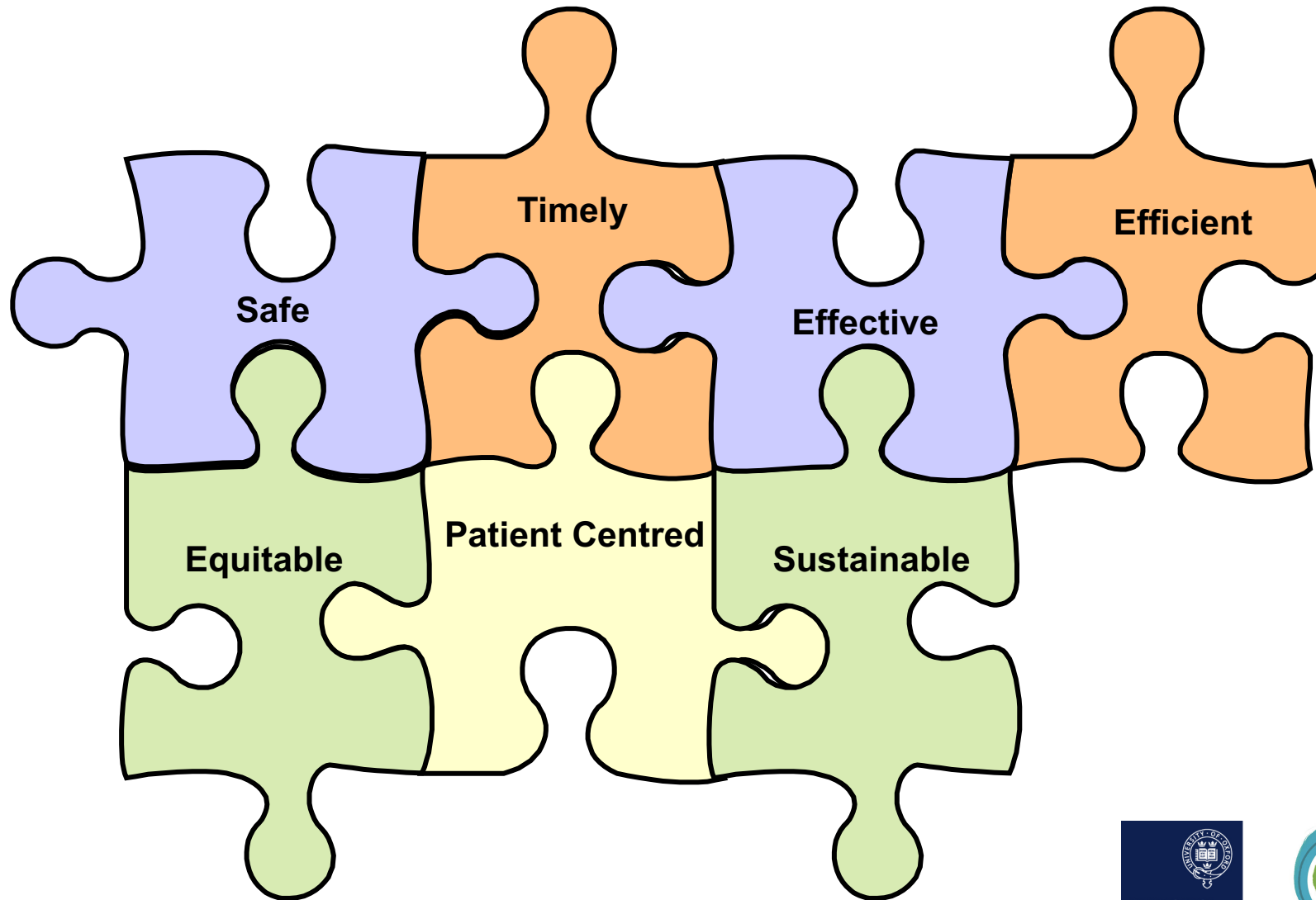
# Health service sustainability

## 2. Protecting health for (current and) future generations

- Does healthcare activity build health – or undermine it?



# Sustainability and quality



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But quality is not enough - we  
need to improve value



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# The Aim is ~~triple~~ sustainable value

- **Allocative value**, determined by how well the assets are distributed to different sub groups in the population
  - Between programme
  - Between system
  - Within system
- **Technical or utilisation value**, determined by how well resources are used for outcomes for all the people in need in the population
- **Personalised value**, determined by how well the outcome relates to the values of each individual
- **Sustainable value**, broadens ‘resources’ to include environmental and social - the ‘triple bottom line’

*Waste is anything that does not add value –  
we need to develop a ‘culture of stewardship’*

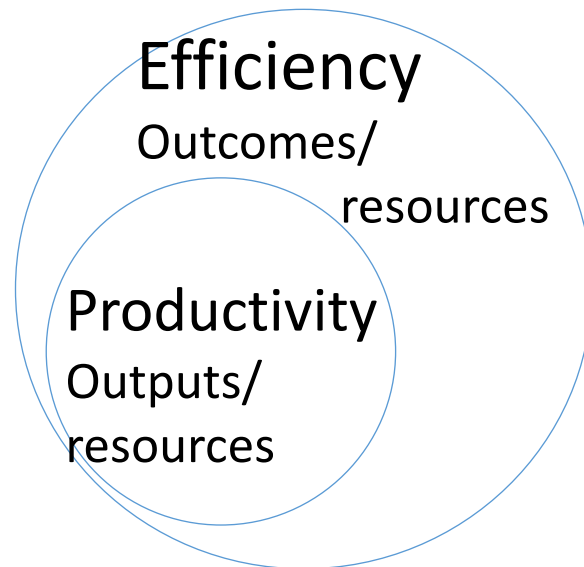


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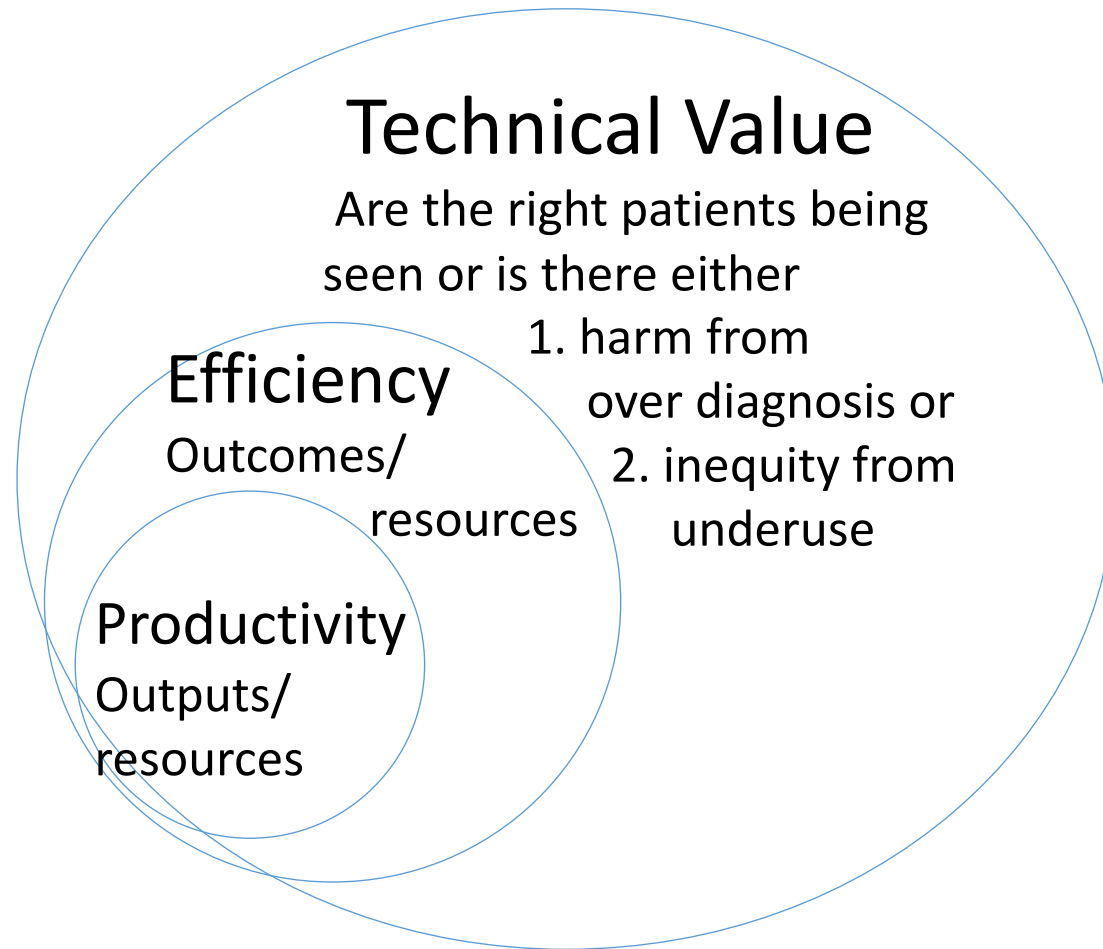
Productivity  
Outputs/  
resources

FOR EXAMPLE , AVERAGE  
DURATION OF STAY FOR  
KNEE REPLACEMENT



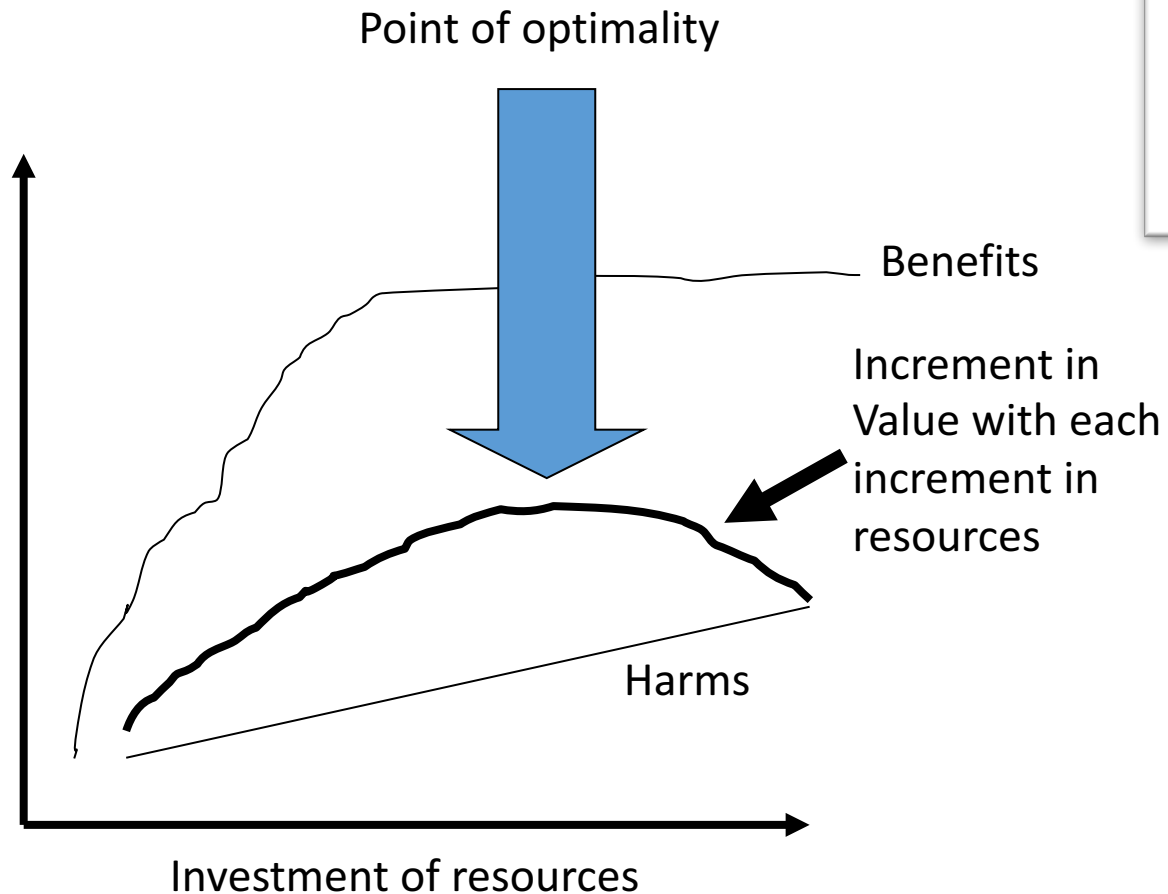


FOR EXAMPLE,  
% OF PATIENTS WHO HAVE A KNEE  
REPLACEMENT AND REPORT THAT  
THE OUTCOME IS GOOD OR VERY  
GOOD



# Overuse of lower or zero value interventions results in

1. waste of resources
2. harm



*Br J Sports Med* 2015;**49**:1223-1224 doi:10.1136/bjsports-2015-h2983rep

## Republished editorial from The BMJ

Republished editorial from *The BMJ*

### Arthroscopic surgery for degenerative knee: Overused, ineffective, and potentially harmful

Andy Carr

The most frequent indication for knee arthroscopy is degenerative joint disease poorly described and given at a suboptimal dose.

variety of factors that alter beliefs and expectations.<sup>12</sup>

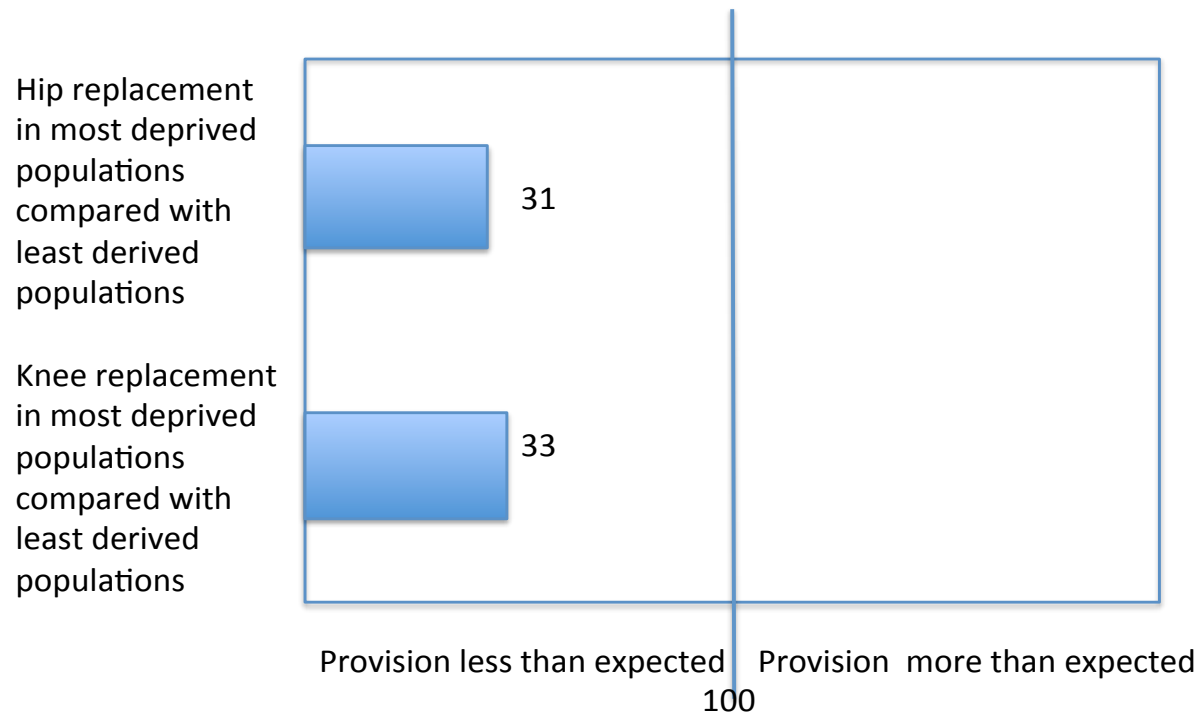
Importantly, Thorlund and colleagues also review the harms associated with arthroscopic knee surgery. They were unable to identify harm from randomised trials alone because the trials were too small, so they did a wider review including observational studies. These studies were heterogeneous and inconsistent, but the risks associated with non-surgical treatment including exercises are clearly

# Underuse of high value interventions results in

## 1. Preventable disability and death

eg. if we managed atrial fibrillation optimally there would be 5,000 fewer strokes and 10% reduction in vascular dementia, and

## 2. Inequity



# Sustainable Value

Are the best possible outcomes being achieved for individuals and populations from the use of **economic, social and environmental** resources

## Technical Value

Are the right patients being seen or is there either

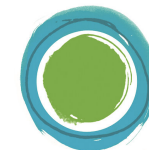
1. harm from over diagnosis or
2. inequity from underuse

## Efficiency

Outcomes/  
resources

## Productivity

Outputs/  
resources

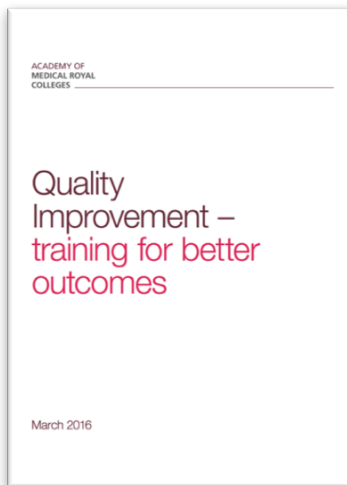


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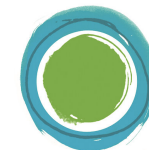
# Sustainable value in healthcare:

Informed by  
patient *values*

Value = 
$$\frac{\text{outcomes for patients and populations}}{\text{environmental + social + financial costs}}$$
  
(the “triple bottom line”)



Centre for Sustainable Healthcare &  
Academy of Medical Royal Colleges, 2016



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# The Better Value Healthcare method of increasing sustainable value for populations AND individuals by

- 1. Ensuring that every individual receives high personal value** by providing people with full information about the risks and benefits of the intervention being offered
- 2. Shifting resource from budgets where there is evidence of overuse** or lower value to budgets for populations in which there is evidence of underuse and inequity
- 3. Develop population based systems** that
  - Address the needs of all the people in need, with the specialist service seeing those who would benefit most
  - Implement high value innovation funded by reduced spending on lower value intervention
  - Increase rates of higher value intervention funded by reduced spending on lower value intervention eg shift resources from treatment to prevention
- 4. Measure resource use as environmental, social and financial costs**



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Where is there overuse in the systems that you are trying to improve?



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# Sustainability in Quality Improvement (SusQI)



**Table 1 Benefits of building sustainability into quality improvement** <sup>51</sup>

<i>QI element</i>	<i>Sustainability content</i>	<i>Benefits</i>
1. Setting goals	Sustainability as a domain of quality; relationship to other domains	New motivation to contribute to quality improvement, energy for change
2. Studying the system	Understanding environmental & social resource use/ impacts; carbon hotspots in the NHS; “seven capitals” matrix	Highlights wastes and opportunities which are often overlooked; stimulates radical thinking
3. Designing the improvement effort	Four principles of sustainable clinical practice (prevention, patient empowerment and self-care, lean systems, low carbon alternatives) – drivers & process changes	Directs towards highest value improvements, future proofing
4. Measuring impact/ return on investment	Triple bottom line/ sustainable value equation; measuring carbon	Allows benefits to be communicated to broader audience, not exclusively re financial cost-benefit

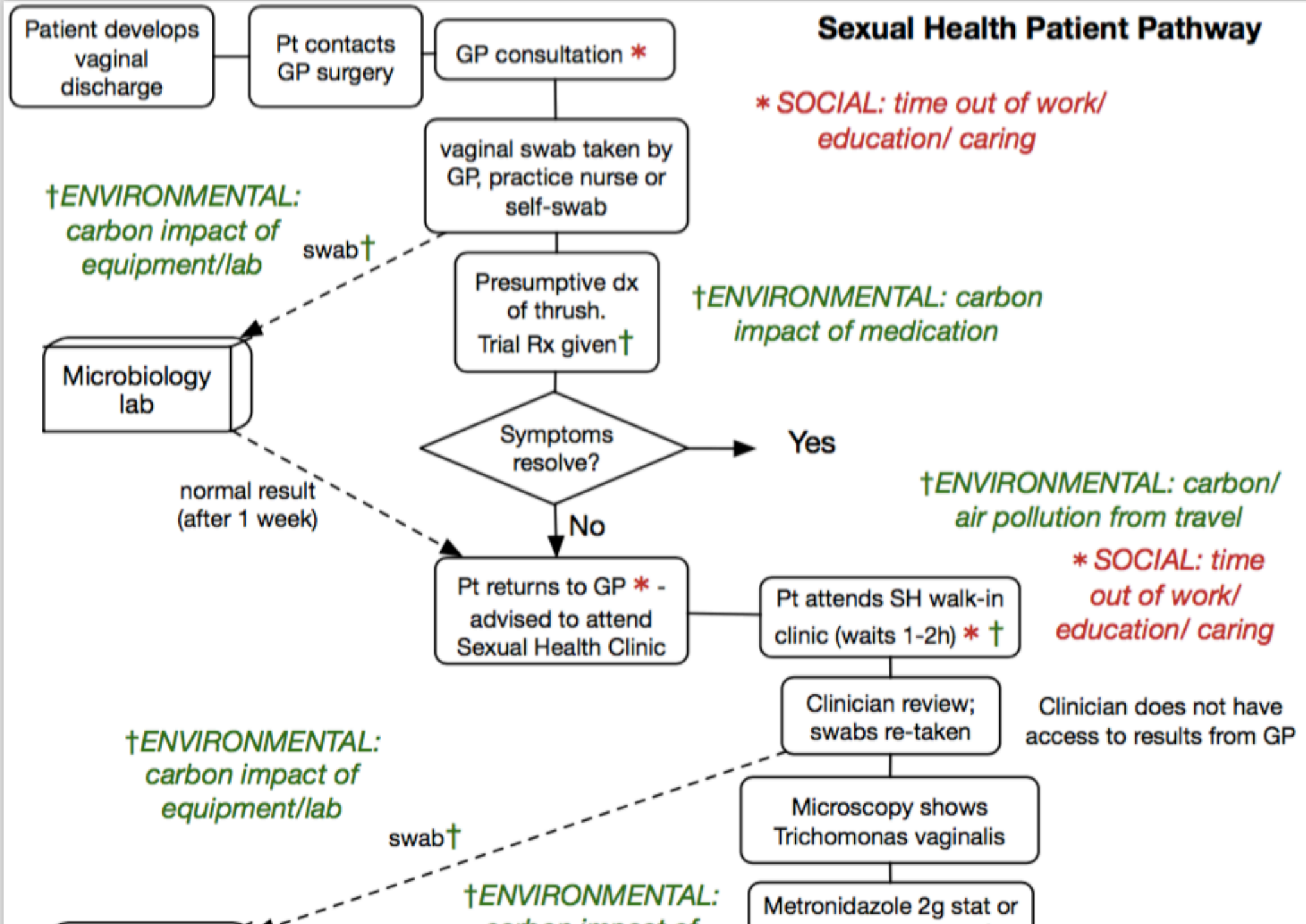
# Aim of Sustainable QI:

- “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.”



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# Sexual Health Patient Pathway



# Social value / impacts – on whom?


 Patient

 Staff

 Carers

 Dependants

 Local community

 Distant communities (e.g. supply chain workers)

# Social impacts on distant communities



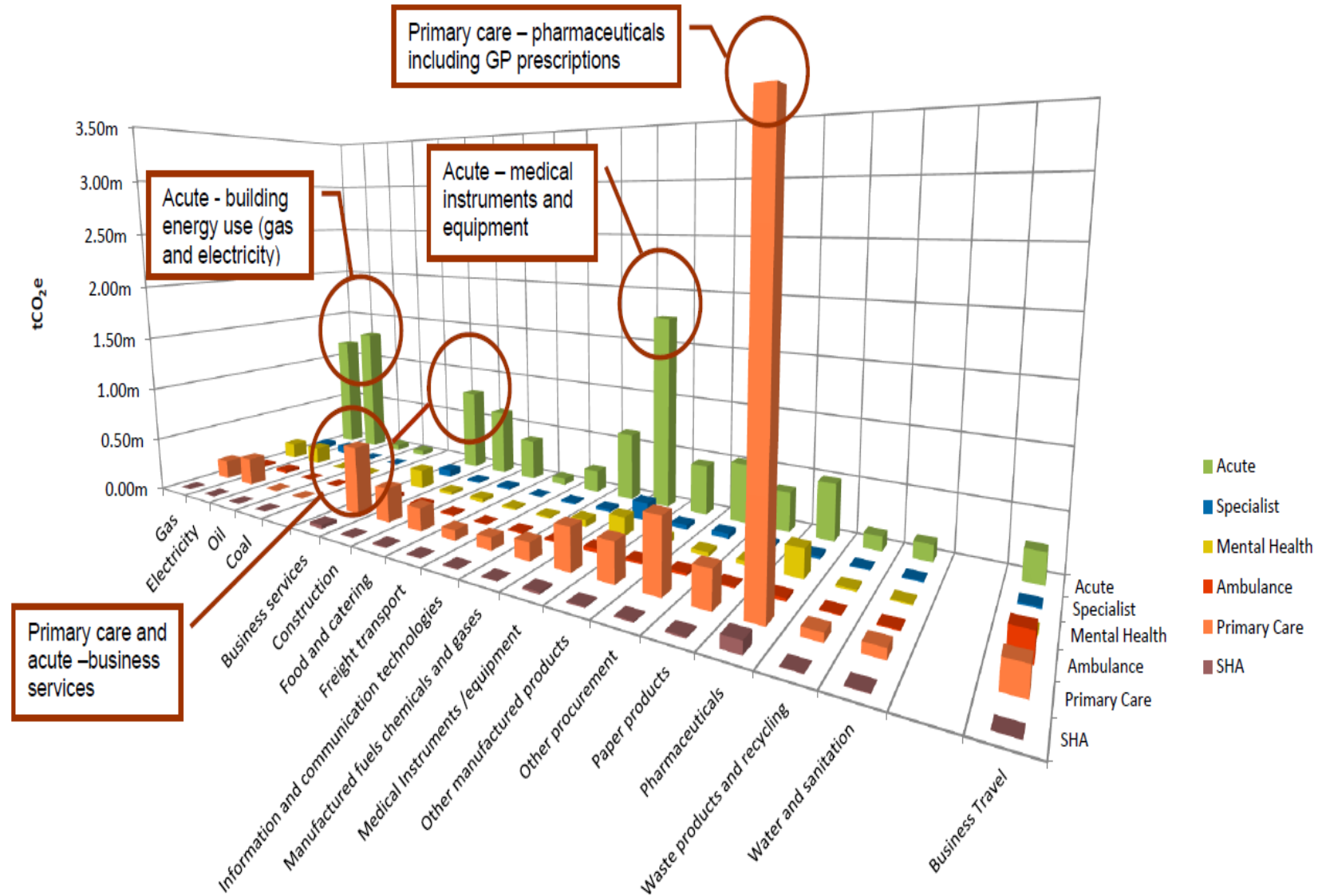
“Labourers in surgical instrument manufacture are often paid less than US\$1 per day, have poor job security, have woefully inadequate protection of health and safety, and many employees are children, some as young as seven years old.”

BMA Medical Fair & Ethical Trade Group

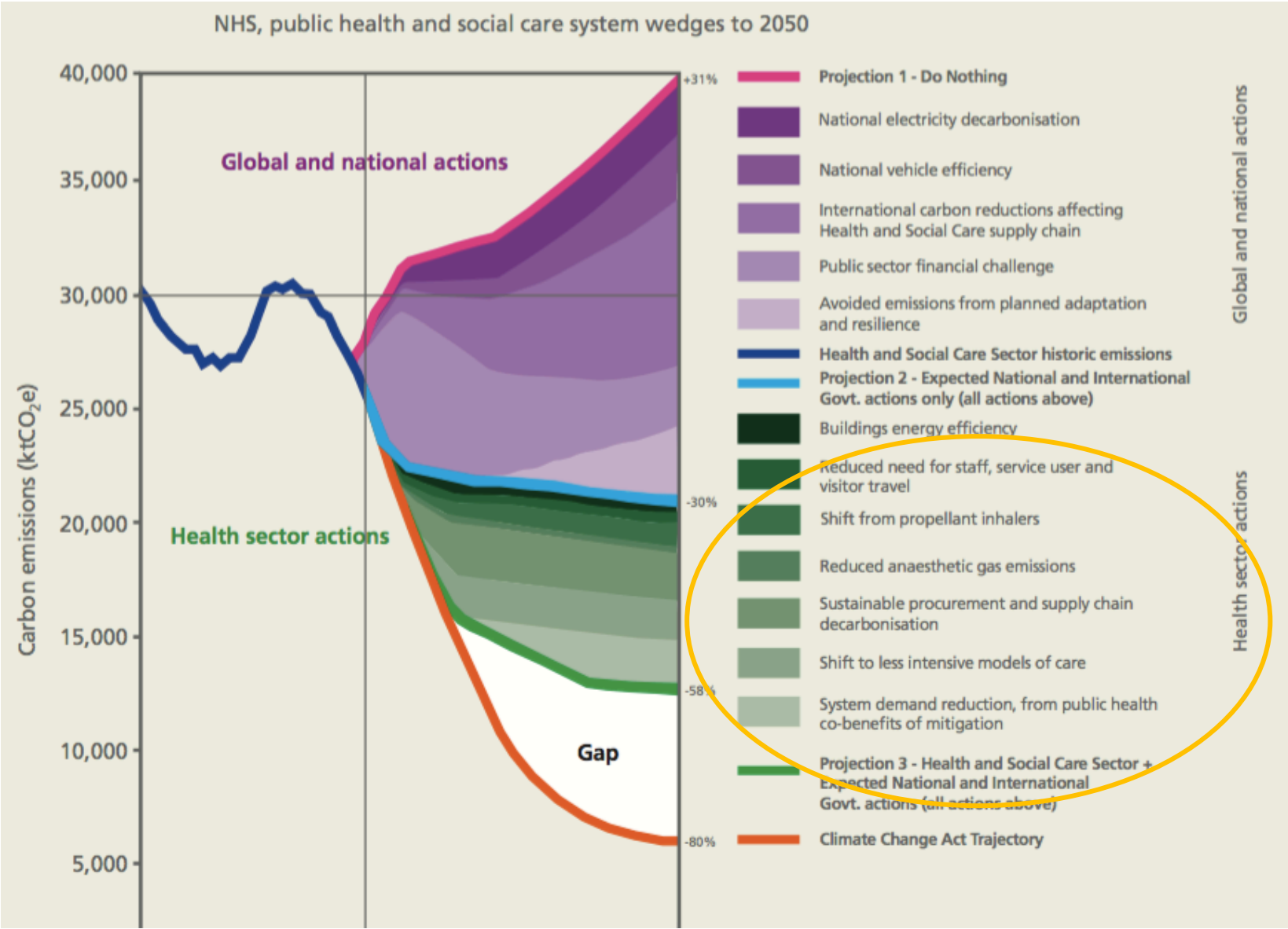




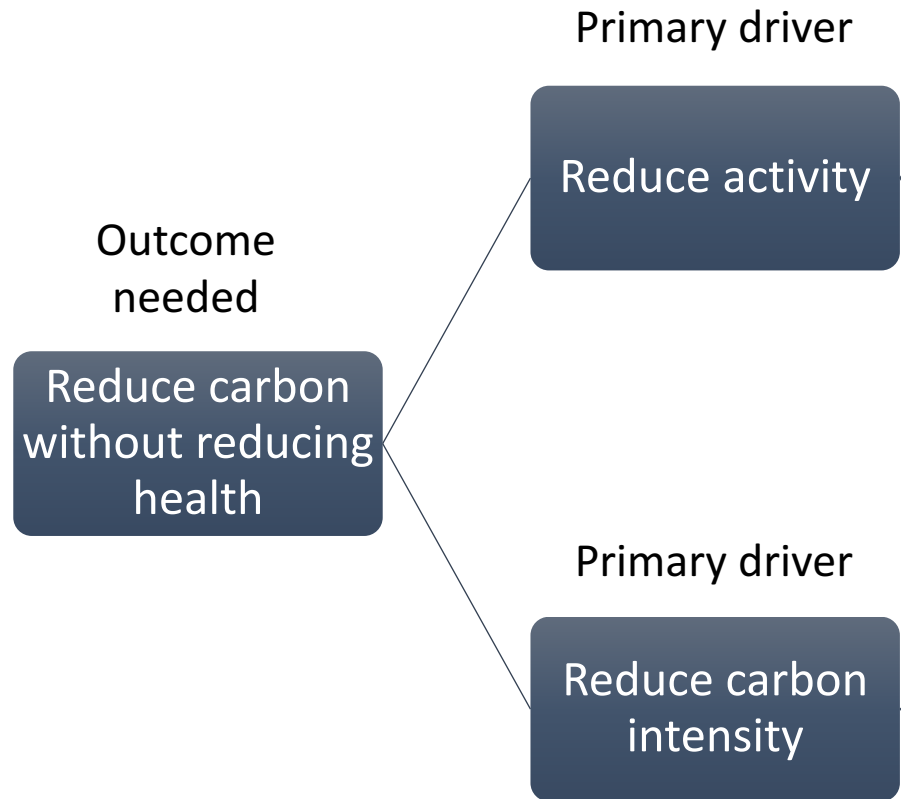
# Carbon hotspots



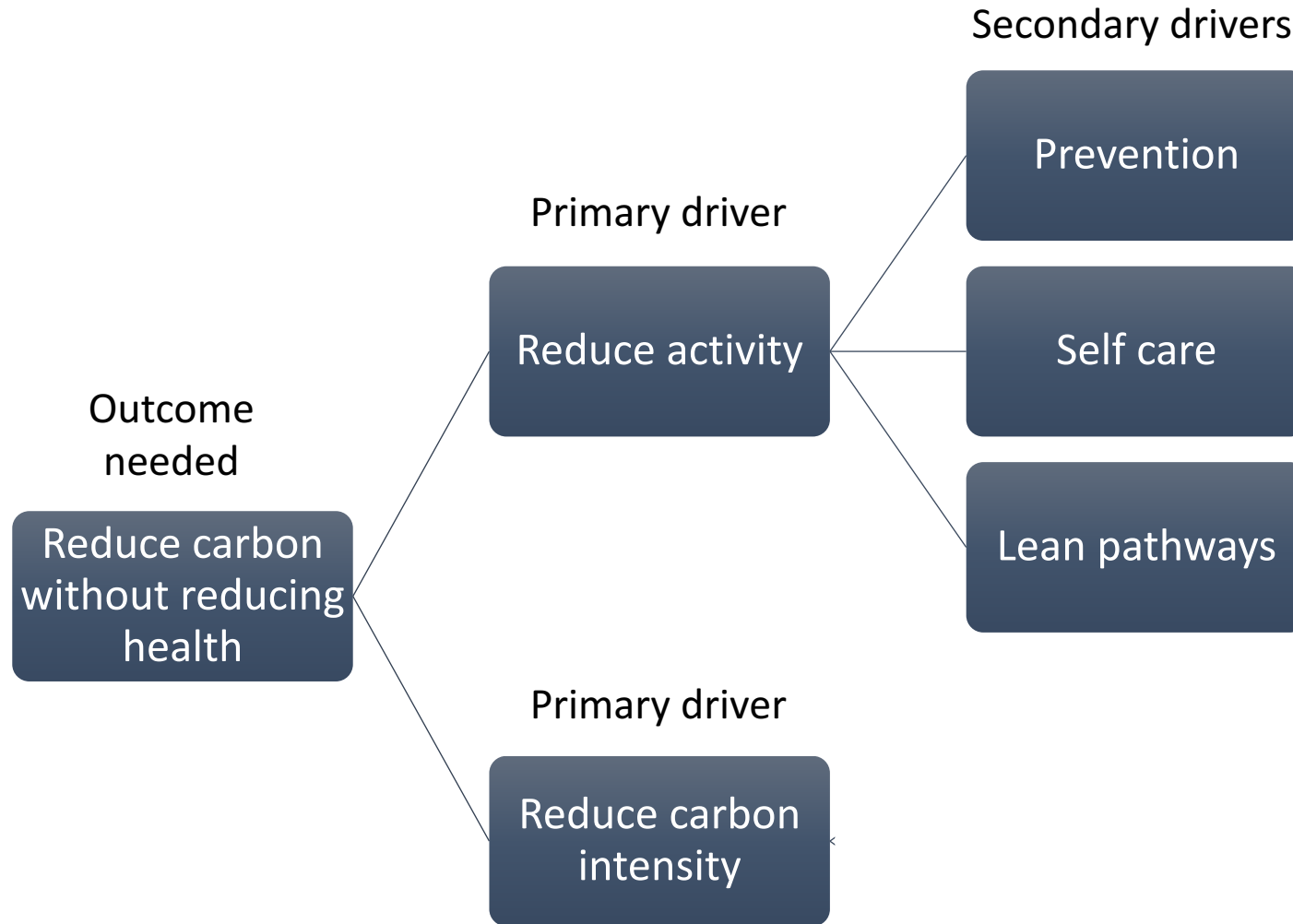
# How will 80% carbon reduction be achieved?



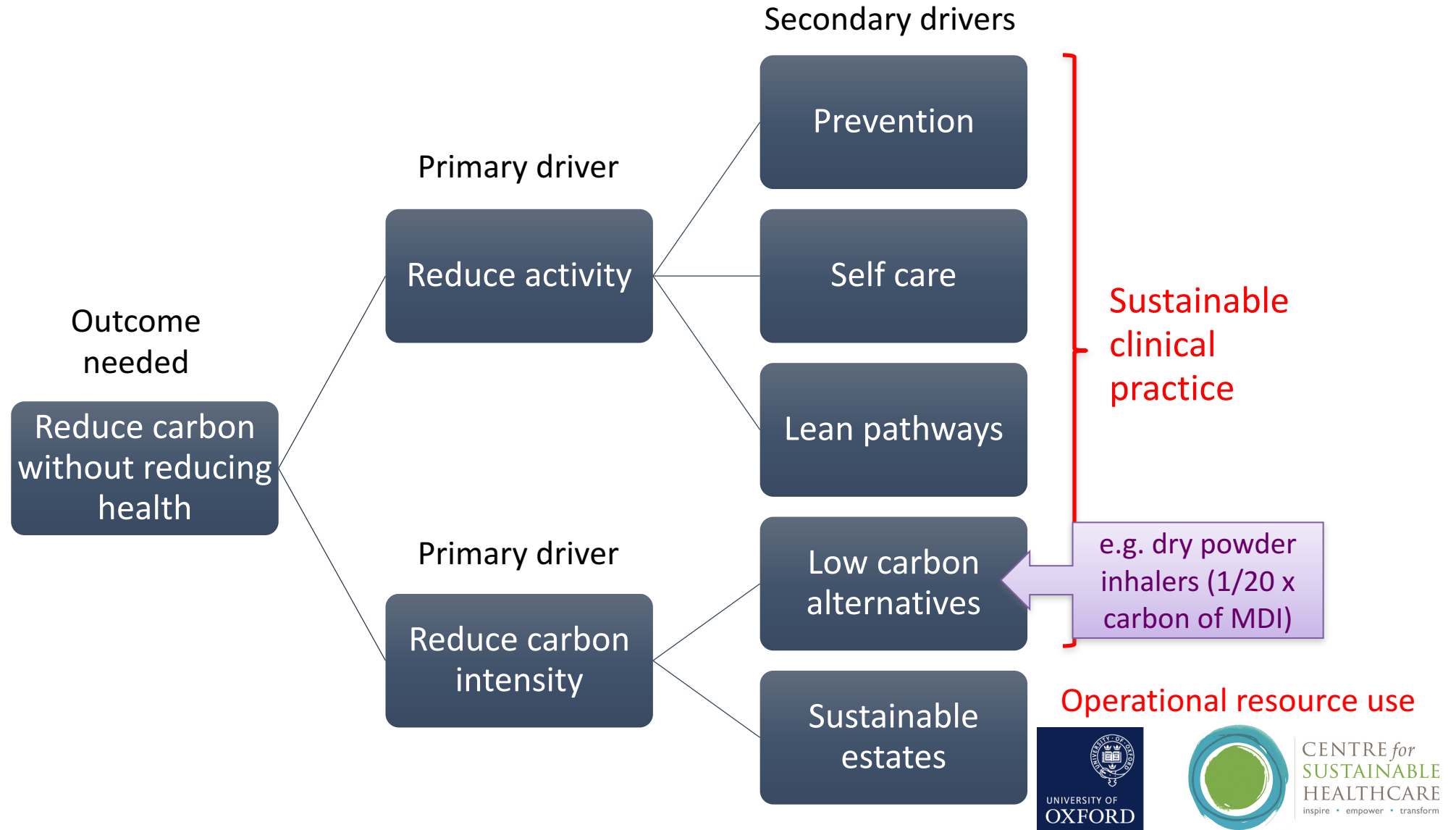
# Sustainable clinical practice: principles



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# Sustainable clinical practice: principles



Improve sustainability of respiratory inhaler prescribing

1. Prevent avoidable respiratory disease

Reduce smoking

Review referral rates to smoking cessation service

Reduce cold/mould exposure

Investigate housing improvement referral scheme

Reduce air pollutant exposure

Input to local transport policy

Ensure patients receive air quality health advice

2. Empower patients to improve disease management

Co-production

Ensure yearly care planning

Rescue packs for acute exacerbations

Social prescribing

Singing/ pulmonary rehab referral forms

3. Ensure lean prescribing and dispensing systems

Lean communications

Introduce paperless prescribing/ repeat requests

High value prescribing

Introduce annual inhaler reviews

4. Switch to lower carbon alternatives

Preferential use of DPI vs MDI inhalers

Update prescribing guidelines

Write article for local GP newsletter

5. Improve operational resource use

Inhaler recycling

Signpost recycling points

Waste, energy, travel

Relevant actions



# Case study: measuring environmental costs

A primary care team noticed that some patients who were referred for hip and knee replacements were being referred back to the GP surgery after pre-operative assessment at the local hospital. This was because parameters, such as blood pressure, were either outside the target range or were not communicated properly in the referral information. An audit revealed that 1 in 6 patients looped through the system – 10/ year.

Activity	Financial cost (£)	Environmental cost (CO <sub>2</sub> e)
Extra GP consult	£45 <sup>1</sup>	18 kg <sup>2</sup>
Extra Hospital consult	£112 <sup>1</sup>	23 kg <sup>2</sup>
<b>Total savings (for 10 loops)</b>	<b>£1570</b>	<b>410 kg</b>

1. Unit Costs of Health and Care, PSSRU, December 2015. Available at: <http://www.pssru.ac.uk/project-pages/unit-costs/2015/index.php>
2. Carbon Hotspots update for the health and care sector in England 2015, Sustainable Development Unit, January 2016.

# Measuring social impacts?

	Patients	Carers	Community	Supply chain	Staff
Housing					
Poverty					
Health					
Education					
Employment					
Safety/security					
Wellbeing/ satisfaction					
Participation					
Social gradient					



# Case study: smoking cessation QIP

1. Setting goals: QIP goal aligns with SusQI
2. Understanding resource use: not explicitly considered
3. Applying sustainability principles:
  1. Prevention ✓✓
  2. Empowerment ±
  3. Lean ✓
  4. Low carbon ✓ eCBD
4. Measuring impact: £ cost to the NHS and total carbon impacts (from estimated ↑ nicotine replacement therapy minus estimated avoided bed days, ↓ inhaler use and ↓ carbon impact from not using tobacco) were estimated at £7000 saving / year and 16,000kgCO<sub>2</sub>e saving / year. Cost savings to the patients ++.

# Case study: A sustainable early memory service

1. Setting goals: ✓
2. Understanding resource use: staff/patient travel, overuse of CT scans, staff disempowerment identified as issues to address
3. Applying sustainability principles:
  1. Prevention ✗
  2. Empowerment ✓
  3. Lean ✓
  4. Low carbon ✓
4. Measuring impact:
  - Time to diagnosis reduced 63 > 20 days; positive patient experience maintained; staff empowerment – self assessment Q;  
Carbon: staff travel 513.5 > 509 kg CO<sub>2</sub>e per pt; patient travel 12.3 > 7.7 kg CO<sub>2</sub>e per patient; ↓ CT head scans 60%

# How could your quality improvement work take into account

- Social impact?
- Environmental impact?



Who in your team would run with  
a sustainable value approach?



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