East Kent Hospitals University NHS Foundation Trust

Sustainable Healthcare Quality Improvement

Registration Triage Checklist

Concept Model (V1)

The aim of this decision tree is to guide inclusion of environmental sustainability into quality improvement projects.

You'll be guided through four questions with follow up instructions, resources and prompts.

For further information please see the resources at the end or email james.lee58@nhs.net

START

Medical Education
ASHFORD CANTERBURY MARGATE

East Kent Hospitals University NHS Foundation Trust

This checklist will take you through four simple questions to identify the potential inclusion of environmental sustainability in registered QIP.

You'll then be guided through further resources to support project leads quantify the environment impact of their initiative.

START

Medical Education ASHFORD CANTERBURY MARGATE

East Kent Hospitals University NHS Foundation Trust

Question 1:

Prevention

Does the project aim to reduce the number of appointments, patient visits, hospitals admissions or length of stay?

No **Yes**

East Kent Hospitals University NHS Foundation Trust

Question 1:

Prevention

This is a travel and resource win!

Advice to the project lead:

- Quantify the change (miles of travel, days of admission)
- Identify the associated emission factor
- Calculate the carbon foot print (see here)

Inpatient hospital care is resource intensive:
Every unnecessary night in hospital comes at a significant financial cost but also an environmental cost too. Getting patients out of hospital safely and efficiently has a significant opportunity to improve flow, improve healthcare, save money and contribute towards NHS net zero.

Resources:

Sustainable Healthcare Coalition. 2015. Care Pathways: Guidance on Appraising Sustainability – Inpatient Bed Day Module. Full technical guidance on typical emission factor for one night in a UK NHS hospital. **1 night = 37.9kgC02e**

Prasad, P. et al. 2022. Research paper estimating the carbon emissions of an acute hospital bed stay: 45kgCO2e per hospital stay on acute medical ward. 138kgCO2e per ITU day.

Quality Improvement Case studies:

Rehabilitation Assistants in supporting the recovery of critical care step-down patients.

Trial without catheter pathway optimisation. Reduced bed stays due to catheter complications. Environmental and economic savings quantified.

Next Page

East Kent Hospitals University NHS Foundation Trust

Question 1:

Prevention

This is a travel and resource win!

Patient Travel:

Every avoided trip means fewer miles driven, reducing patient transport-associated emissions.

Calculating the travel distances: Project leads can either use a sample of patient postcodes to calculate an average travel distance to a clinic or service, or use national NHS averages (see below)

Resources:

Comprehensive guide to calculating patient travel emissions. Quick model to calculate estimated savings based on national patient transport averages:
Average return hospital journey: **21.25 miles or 5.8kgCo2e**
Average emission factor per mile: **0.29kgCO2e**

National average emission factors: Sustainable Healthcare Coalition – Emission (carbon) factors table:
Travel – self – to GP: **0.56kgCO2e** (one-way trip)
Travel – self – to Elective care: **2.9kgCO2e** (one-way trip)
Travel – emergency - ambulance**: 36kgC02e** (one-way trip)

For a full comprehensive methodology see Travel Greenhouse Gas Emissions Calculator. Centre for Sustainable Healthcare 2023.

Quality improvement case studies:
Reducing patient travel by providing ‘same day’ ultrasound and nuclear medicine appointments.
Reducing travel for blood tests used for Radiotherapy planning.

Next Question

Question 2:

Resource use

Does the project aim to **reduce** a resource used?

For example:

- Investigations (blood tests, scans),
- Interventions (procedures, prescription)
- Clinical items (cannulas, single use items)
- Non-clinical items (paper, lights, monitor brightness).
- Energy, Electricity, Water

No **Yes**

East Kent Hospitals University NHS Foundation Trust

Question 2:

Resource use

This is clinical resource win!

Advice to the project lead:

- Quantify the change (number of tests, scans, units of item)
- Identify the associated emission factor
- Calculate the carbon foot print (see here)

The financial savings can be calculated in the same way, swapping the emission factor for cost factor.

Resources:
Electricity: (UK Government Green House Gas Emission Factors 2024) – based on the renewable composition of the UK energy grid). **1 kWh = 0.225kgCO2e**

Healthcare product emission factors:
Healthcare Life Cycle Assessment database (clinical products)
Annex C – Sustainable Healthcare Coalition. 2015. Sustainable Care Pathways. Go to page 66.

Non-clinical items emission factors:
Annex C – Sustainable Healthcare Coalition. 2015. Sustainable Care Pathways. Go to page 66.

Example Quality Improvement Projects:
Reducing Group and Save Blood tests in Laparoscopic cholecystectomy pathway.
Describing in frail patients to reduce medication waste.
Reducing 100ml Saline bags for Antibiotic infusion in ED
Reducing carbon intensive inhaler usage through improved respiratory care.

Next Question

East Kent Hospitals University NHS Foundation Trust

Question 3:

Reduce waste

Does the project aim to **reduce waste**?

For example:

- Reduce items thrown away
- Reduce amount of clinical or sharps waste
- Increase recycling
- Decreasing food waste

No **Yes**

East Kent Hospitals University NHS Foundation Trust

Question 3:

Reduce waste

This is waste reduction win!

Advice to the project lead:

- Quantify the change (in kg of waste, or bags of waste, or units saved from rubbish)
- Identify the associated emission factor
- Calculate the carbon foot print (see here)

Emission factors for common waste: (ref Rizan et al., 2021):

High temperature incineration: yellow clinical waste bags: 1.074kgC02e per kg of waste.
Low temperature incineration: non-clinical waste: 0.172kgC02e per kg of recycling.
Recycling: 0.021-0.065kgC02e per kg of recycling.

Healthcare products emission factors:
Healthcare Life Cycle Assessment database (clinical products)
Annex C – Sustainable Healthcare Coalition. 2015. Sustainable Care Pathways. Go to page 66.

Non-clinical items emission factors:
Annex C – Sustainable Healthcare Coalition. 2015. Sustainable Care Pathways. Go to page 66.

Example Quality Improvement Projects:
Reducing milk waste on ward tea rounds
Switching to reusable speculums to reduce single use items.
Reducing paper usage in research and innovation team

Next Question

East Kent Hospitals University NHS Foundation Trust

Question 4:

Care setting

Does the project aim to move care from a high intensity setting to a lower one?

For example:

- Reduce ITU length of stay
- Prevent a theatre attendance

No **Yes**

East Kent Hospitals University NHS Foundation Trust

Question 4:

Care setting

This is an energy and infrastructure win!

Advice to the project lead:

- Quantify the change (days of ITU admission, theatre visits)
- Identify the associated emission factor
- Calculate the carbon foot print (see here)

ITU and theatre settings are particularly resource intensive both financially and environmentally too! Transfer of care or preventing the need for ITU admission or theatre admission potentially has huge environmental and financial savings.

Emission factors:

Sustainable Healthcare Coalition: Emissions factor table.
Average surgical procedure in the UK**: 38.4kgCO2e per hour in theatre.**
Average low intensity inpatient bed stay**: 38kgCO2e per day**
Average high intensity inpatient bed stay (ITU): **90kgCO2e per day.**

Next Page

East Kent Hospitals University NHS Foundation Trust

If you answered yes to any of the above questions, there is a clear environmental sustainability consideration to the proposed project.

If you answered no to all the questions (click here)

For each question, consider how to optimise the environmental benefits and attempt to quantify the environmental impacts through carbon equivalent calculation.

Further resources:

Email template to project lead

How to calculate a carbon footprint

Further resources (SusQI CSH)

East Kent Hospitals University NHS Foundation Trust

If you answered no to all the questions:

Consider how you might encourage the project lead to integrate environmental sustainability into their project or other aspects of sustainable healthcare, including social and financial sustainability.

Consider sharing the below resources with the project lead to inspire their next project:

Email template to project lead

How to get started with SusQI

Case studies (SusQI CSH)

Medical Education
ASHFORD CANTERBURY MARGATE

East Kent Hospitals University NHS Foundation Trust

Calculating a carbon footprint:
Basic principles

Three steps:

Quantify the change

Count the pre and post intervention change

Units of change:

Clinical item (cannula)

Bed days

Travel miles

Electricity kWH

Water M3

Waste (kg)

Surgeries

Important: record the time period of change.

Identify the associated emission factor

Click here to see Appendix 1 common emission factors

Sources:

SHC Emissions factors table.

SHC Bed Day module

Clinical Waste Emission factors

Healthcare Life Cycle Assessment Database

(clinical items)

Calculate a carbon saving

Simple calculation:

Units of Change

X

Emission Factor

=

Environmental Savings

East Kent Hospitals University NHS Foundation Trust

Email Template:

To project lead. Identified opportunity to integrate environmental sustainability.

Dear [Project Lead],

Thank you for submitting your Quality Improvement Proposal.

… [standard email reply]…

We've identified that your project may have a sustainable healthcare benefit and has the potential to benefit the NHS's ambitions to work towards Net Zero.

EKUHFT has just published its Green Plan and we'd like to support you with the opportunity for your project contribute to our environmental sustainability goals.

You can read more about the Green Plan here but as you progress with the project, please:

1. Attempt to quantify the units of change.
2. Identify an associated emissions factor.
3. Calculate an estimated carbon footprint of the environmental savings.

Doing this will allow you quantify the environmental impact your project has. Please review the below guidance for further information:

- Sustainable Quality Improvement: Step by Step Guide
- Sustainable Quality Improvement: National case studies

East Kent Hospitals University NHS Foundation Trust

Email Template:

To project lead. No inclusion of environmental sustainability.

Dear [Project Lead],

Thank you for submitting your Quality Improvement Proposal.

… [standard email reply]…

We'd like to let you know about EKUHFT's new Green Plan. Part of this plan outlines environmental sustainability as a new domain of quality improvement.

We'd like to support project leads with the opportunity for your project contribute to our environmental sustainability goals.

If you are interested in integrating environmental sustainability please see the below further resources for inspiration and consider how your current or future projects might consider the environmental impact of your initiative:

- Sustainable Quality Improvement: Step by Step Guide
- Sustainable Quality Improvement: National case studies

Appendix 1: Common emission factors.

Updated March 2026

Unit	Details	GHG Emissions kgCO2	Source
GP consultations	1 GP visit not including travel	1.10 per visit	SHC Care Pathways: Sustainability. 2015
MRI Non-contrast	Per scan	24.70	SHC Case Study MRI Scan 2019
CT Scan	Per scan	9.20	McAlister et al 2022. PMID: 3553895
Ultrasound	Per scan	0.5	McAlister et al 2022. PMID: 3553895
ED visit	Per avg visit	14.0	SHC Care Pathways. 2015
Surgery (with desflurane)	Per one average theatre visit	54.40	SHC Care Pathways. 2015
Surgery (without desflurane)	Per one average theatre visit	38.40	SHC Care Pathways. 2015
Inpatient admissions	LOW intensity per day	38.00	SHC Care Pathways. 2015
Inpatient admissions	High intensity per day (ITU)	90.00	SHC Care Pathways. 2015
Travel	Average home to GP travel	0.56 per trip	SHC Care Pathways. 2015
Travel	Average home to elective care	2.90 per trip	SHC Care Pathways. 2015
Travel	Ambulance	36.0 per trip	SHC Care Pathways. 2015
Self-management	Pt education session	1.6 per education session	SHC Care Pathways. 2015
Clinical waste	Per kg of yellow bags	1.07	Rizan et al., 2021
Non-clinical waste	Per kg of black bags	0.172	Rizan et al., 2021
Recycled waste	Per kg of recycling	0.065	Rizan et al., 2021