SusQI Case Study

Environmental Impact of the new Dermatology Site

Start date of project: September 2024

Date of report: December 2024

Team members: Staff members at the Warwick Dermatology Centre;

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Background

This year the dermatology department has moved from the main hospital site to a separate building within Priory Park. The department was relocated due to the building works currently ongoing in the hospital; the new site is a 20-minute walk from the main hospital. As this is a separate site purely for the dermatology department, this has provided an opportunity to monitor and reduce the department's carbon footprint as we are no longer combined with the hospital. To do this we focussed on electricity, water and gas utilities and educated our staff regarding sustainability, in the hope of altering their behaviours to significantly reduce our carbon footprint.

Furthermore, the study, "The relationship between greenspace and the mental wellbeing of adults: A systematic review" highlighted the positive relationship between good mental wellbeing and greenspace.1 This project has allowed us to explore this relationship further by utilising a questionnaire to understand the impact of the improvement of green space since moving to the new site.

A different way that we aimed to reduce our carbon footprint was by reviewing our melanoma cases. Literature reported the 2022 melanoma follow up guidance had a reduced carbon footprint when compared to the 2015 follow up guidance for the vast majority of melanoma stages except stage 3b (the follow up duration is typically 5 years in total).2

Specific Aims:

To improve the sustainability of the Warwick Dermatology Centre by implementing an educational package to reduce the electricity, water and gas usage.

To develop a greater understanding of the impact of the green space on both patients and staff since moving to the new site from the hospital.

To ensure melanoma guidance is being followed in all suitable cases to optimise care while minimising resource use.

Methods:

Environmental sustainability regarding relocation:

The estates team kindly supported in providing the water, gas and electricity readings for the months of October and November. An educational package was implemented following the October readings for all of the staff including admin and clinical staff at the Warwick Dermatology Centre. We developed a PowerPoint package and followed up with a staff discussion and distributed the PowerPoint via email for them to read over and implement into their own practice. The discussion with the staff was informal as the aim was for the staff members to understand the package and utilise the information in the most efficient way. We explained that we are trying to make the centre a more sustainable environment and gave them the opportunity to ask any questions. The PowerPoint package included methods that each staff member can utilise to improve the sustainability of the dermatology centre including turning off the lights, turning off computers at the wall and using hand gel instead of washing hands where possible, please see appendix 1 for full package.

As this project is dependent on staff willingness to change, to ensure longevity we plan to re-circulate the package each winter and potentially have a yearly staff teaching session.

Social sustainability:

To calculate the green space for both sites (Warwick Dermatology Centre and Warwick Hospital) at each site a 360 degree view was conducted, the percentage of green space was visualised, to allow a comparison to be generated. Following on from this a staff questionnaire was produced, this included six questions, such as impact of the green space on wellbeing and method of commuting. Please see appendix 2 for the questionnaire. These were completed by the staff at the dermatology centre and the information was collated.

To assess the impact of the new site on patient well-being, we asked ten patients following their consultations to compare the new and old site in terms of ease of parking, and overall impact of parking and increased green space on their mental health.

Care pathway:

To attempt to ensure we are following national guidelines (including 'Get it Right First Time') an audit was conducted to check if all of the patients have transitioned to the new 2022 melanoma follow up pathway. This involved reviewing a sample of all cases with stage 1b melanoma and above from a 6 month period between July to December 2020.

The audit highlighted that 57% of patients with stage 1b melanoma between July and December 2020 were transitioned to the 2022 melanoma follow up guidance. For the patients that have not been transitioned the cases have been reviewed and they all have legitimate reasons for not transitioning such as due to clinical need or additional skin diseases requiring more frequent follow up. Therefore, no further actions were required for this strand of the project and it is not discussed further in the report.

Measurement:

Patient outcomes:

This project will not have an impact on the standard of care or health outcomes patients receive.

Environmental sustainability:

The estates team kindly supported the analysis in providing the water, gas and electricity readings for the months of October and November. The impact of the educational package on the carbon footprint associated with energy and water use was calculated by utilising the meter readings, comparing the readings prior to and following the educational package. Following this, the carbon savings were calculated by multiplying the difference between the utilities readings from the month of October (prior to implementation) and November (post implementation) by the carbon emission factors. The carbon emission factors for water, electricity and gas were taken from the UK government DESZN database. The percentage reduction per patient for each utility was calculated by working out the difference between the readings per patient divided by the reading per patient prior to the intervention and multiplied by 100.

Economic sustainability:

The financial implications of improving the sustainability of the site were calculated by acquiring the utilities costing and using our meter readings calculating the cost prior and post implementation of the educational package.

Social sustainability:

To understand the impact of the new dermatology site including change in green space on the staff members activity levels and psychological well-being via a questionnaire. As well as highlighting the impact of an educational resource delivered to staff on their actions and behaviour towards sustainability in the dermatology centre.

The team calculated the green space for both sites (Warwick Dermatology Centre and Warwick Hospital). At each site a 360 degree view was conducted, the percentage of green space was visualised, to allow a comparison to be generated. Following on from this a staff questionnaire was produced, this included six questions, such as impact of the green space on wellbeing and method of commuting. Please see appendix 2 for questionnaire. These were completed by the staff at the dermatology centre and the information was collated.

Results:

Patient outcomes:

The project will have no impact on the standard of care and outcomes for patients.

Environmental sustainability

The overall carbon saving for the month prior to and following the educational package intervention was calculated to be **382.4kgCO2e** (please see table 1). Following this we calculated the individual percentage reduction per patient following the educational package. The number of patients within the Dermatology department was **1,313 patients** throughout November and **1,346 patients** in

October. For the electricity usage the percentage difference was a 33.2% reduction per patient, in terms of water usage there was a 38.9% reduction per patient and 63.9% increase per patient in gas usage following the intervention.

Table 1. Overall carbon saving for each of the utilities prior to educational package (September-October) and following the educational package (October-November)

Utilities	October readings	November readings	Carbon emission factor	Carbon saving (kgCO2e)
Energy use for heating, e.g. gas	175kWh	294kWh	0.213/kWh	-25.36
Electricity use	4672kWh	3200kWh	0.275/kWh	405.12
Water use	23.2 cubic meter	14.5 cubic meter	0.302/cubic metre	2.62
Total				**382.38**

Projected across a year, assuming behaviour change is maintained and similar energy requirements, we anticipate annual savings of **4,588.7 kgCO2e**, equivalent to driving 13,520 miles in an average car.

Economic sustainability

The overall financial saving for electricity as a result of the implementation of the education package was £390.08/month and the financial saving for water was £16.53/month (please see table 2 below). There was an overall loss of £4.76/month in energy used for heating e.g. gas. We believe this could be as a result of the colder weather and therefore an increased need for heating. We would like to repeat this again in the summer to be able to measure the impact on the gas readings accurately.

Table 2. Overall financial saving for each of the utilities prior to educational package (September-October) and following the educational package (October-November)

Utilities	October cost (£)	November cost (£)	Cost difference (£)
Energy use for heating, e.g. gas	16.48	21.24	-4.76
Electricity use	1,268.08	878	390.08
Water use	44.48	27.95	16.85
Total			**401.85**

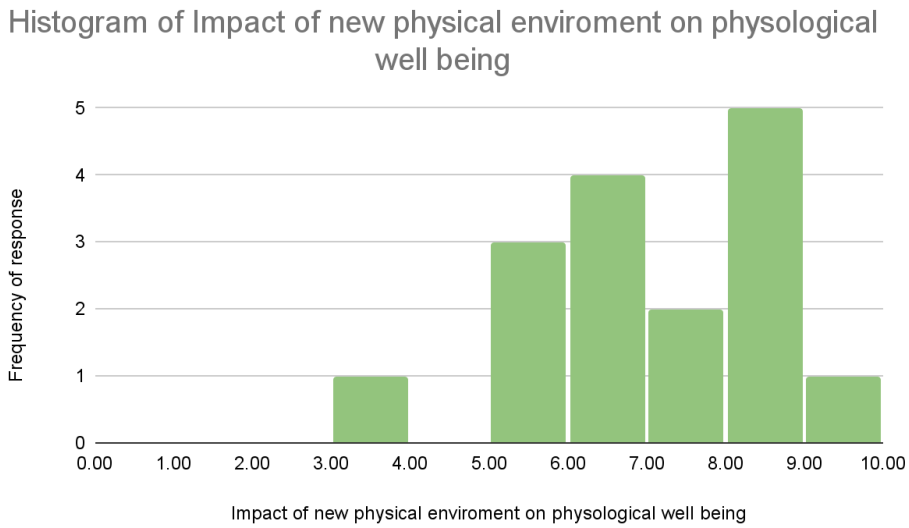
Therefore, overall per annum, assuming staff behaviours and the utilities requirements remain similar, this will result in an overall saving of **£4,822.22** (excluding VAT) for the trust.

Social sustainability:

We informed the dermatology staff of our overall carbon saving and they were extremely happy and proud to achieve such a result. They have said that they plan to continue with their sustainable behaviours, especially now they can see the great impact it can have. The project has therefore demonstrated improved awareness and motivation for sustainable action.

The staff questionnaire highlighted that most of the staff have felt that the green space has **improved their psychological well being** (median = 7). Please see graph 1 below. Almost two thirds of staff were utilising the surrounding areas of green space at least on a monthly basis. However 65% of staff commuted to work via car, with very minimal numbers walking or utilising public transport, and for most individuals moving to a new site has not impacted their method of commuting. At the new dermatology site parking is next to the door in comparison to the hospital there is a 10-minute walk to the entrance, this has clearly impacted the activity of the staff members commute with 44% of staff reporting their commute is less active than previously.

Graph 1. Impact of the new site on staff well-being (0 - worse, 5 - no change, 10 - improved)



All ten of the patients asked preferred the new site, the common theme amongst them was that they found it much easier to find parking and this therefore improved their general wellbeing.

Discussion:

The results of the projected have highlighted that implementing an educational package can successfully alter behaviours relating to sustainability and result in significant carbon savings. This could be implemented throughout the hospital as the educational package included aspects that could be utilised by all members of staff throughout the hospital. If this was implemented on a larger scale it could generate a trust wide carbon saving and therefore also a financial cost saving.

We informed the dermatology staff of our overall carbon saving and they were extremely happy and proud to achieve such a result. They have said that they plan to continue with their sustainable behaviours, especially now they can see the great impact it can have. Since the project was performed, we are continuing to strive to improve our sustainability further. We have altered our practice, instead

of sending printed clinical letters to correspond with other clinicians and clinics teams we now send this correspondence via email. This will save 2,000 printed letters per year.

As this project was conducted over the autumn to winter period this explains why the gas usage significantly increased between October and November as the weather became colder, the heating was turned on. In the future it would be very useful to conduct the project again within the summer months to highlight if the gas readings would have improved following the educational package.

The psychological wellbeing of almost all staff has been improved as a result of the green space at the new site. A significant number of staff are commuting via car and many are reporting that they are now less active than previously as the car parking is considerably closer. To improve this a car share programme could be presented, a walk to work or weekly well-being walk initiative could be implemented.

The results also showed that we are currently following the current melanoma guidelines and by doing so we are making the centre more sustainable. To ensure this continues it would be important to perform a second cycle of the audit at a later stage so if any patient circumstances change, this can be highlighted and these patients could potentially be moved onto the 2022 guideline.

Conclusions:

Implementing an educational package has the ability to alter staff behaviours and therefore create a more sustainable workplace.

The projected highlighted certain areas of achievement:

- Significant carbon saving, making the dermatology centre a more sustainable workplace
- Cost saving
- Improvement of staff well-being as a result of the green space
- Improved patient satisfaction due to easier parking
- The department are practicing in line with melanoma guidelines and therefore improving their carbon footprint

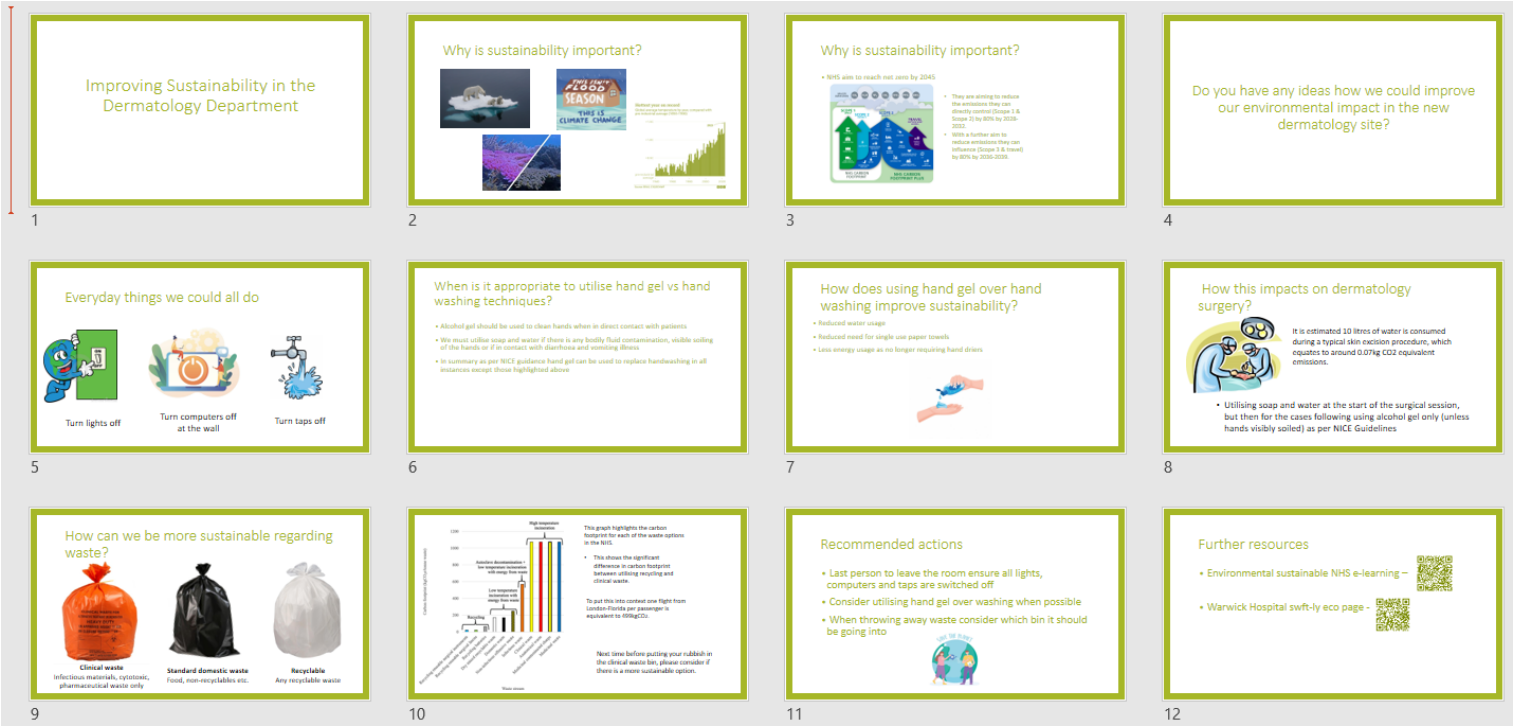
References

1. Houlden V, Weich S, Porto de Albuquerque J, Jarvis S, Rees K. The relationship between greenspace and the mental wellbeing of adults: A systematic review. PLoS One. 2018 Sep 12;13(9):e0203000. doi: 10.1371/journal.pone.0203000. PMID: 30208073; PMCID: PMC6135392
2. Grover S, Patel N, Tso S. Relative carbon footprint differences between National Institute for Health and Care Excellence melanoma follow-up pathways 2015 and 2022. Clin Exp Dermatol. 2024 May 21;49(6):633-635. doi: 10.1093/ced/llae043. PMID: 38345169.

Appendices

Appendix 1.

Sustainability learning package:



Appendix 2.

Environmental Impact of the new Dermatology Site Staff Questionnaire

1. Since moving from the old to the new dermatology site, has the change in the physical environment around your workplace had an impact on your general psychological well-being?

Worsen No change Improved

0 1 2 3 4 5 6 7 8 9 10

2. During breaks or after work how often have you been utilising the surrounding green spaces?

Daily Weekly Monthly Never

3. What mode of transport did you use to commute to work for the old site? (Warwick Hospital)

Walk Cycle Car Bus Train Other

4. Has this mode of transport changed since moving to the new Dermatology Centre?

Yes No

(If yes please say which mode of transport you are now using in the box below)

5. Since moving to the new Dermatology Centre has your commute been more or less physically active (i.e. walk more and cycle more) than commuting to the old site?

More Less

(If more please explain in the box below)

6. Since moving to the new Dermatology Centre have you prepared your own lunch more often or eat out more than before the move?

Self-prepared lunch more Eat out more No change

Critical success factors

Please select one or two of the below factors that you believe were most essential to ensure the success of your project changes.

People	Process	Resources	Context
☐ Patient involvement and/or appropriate information for patients - to raise awareness and understanding of intervention ☒ Staff engagement ☐ MDT / Cross-department communication ☐ Skills and capability of staff ☐ Team/service agreement that there is a problem and changes are suitable to trial (Knowledge and understanding of the issue) ☐ Support from senior organisational or system leaders	☐ clear guidance / evidence / policy to support the intervention. ☐ Incentivisation of the strategy – e.g., QOF in general practice ☐ systematic and coordinated approach ☐ clear, measurable targets ☐ long-term strategy for sustaining and embedding change developed in planning phase ☐ integrating the intervention into the natural workflow, team functions, technology systems, and incentive structures of the team/service/organisation	☐ Dedicated time ☐ QI training / information resources and organisation process / support ☐ Infrastructure capable of providing teams with information, data and equipment needed ☐ Research / evidence of change successfully implemented elsewhere ☐ Financial investment	☒ aims aligned with wider service, organisational or system goals. ☐ Links to patient benefits / clinical outcomes ☐ Links to staff benefits ☐ 'Permission' given through the organisational context, capacity and positive change culture.

This template is adapted from SQUIRE 2.0 reporting guidelines.

Template References

- SQUIRE | SQUIRE 2.0 Guidelines (squire-statement.org)
- Home | Sustainable Quality Improvement (susqi.org)