



A GREENER 'HUB' - A MORE SUSTAINABLE VISION FOR MEDICAL EDUCATION WITHIN THE UNDERGRADUATE HUB.

TEAM MEMBERS: Cleone Pardoe – Clinical Teaching Fellow, Post-IMT2 Doctor, Alexander Strother – Clinical Teaching Fellow, Post-FY2 Doctor, Linh Mao – Undergraduate Medical Education Clerical Officer & Receptionist, Amanda (Mandy) Shotton – Undergraduate Medical Education Service Manager



Project Aims:

1. Reduce the impact of our self-directed practice (SDP) rooms across the triple bottom line, by streamlining equipment packs for our 5 most popular skills: NGT, ABG, cannulation, venepuncture and catheter skills.
2. Empower students to be conscious of the financial and environmental cost of items they use in the SDP and clinical environments.
3. Save the Undergraduate department money, that can be better invested into improving the student experience and promoting sustainable healthcare.

Background:

Based at St James's Hospital, the 'Hub' represents the heart of Undergraduate Medical Education at LTHT. We consist of a diverse education and administration team and are committed to being a place of teaching excellence to the roughly 200 MBChB and Physicians Associate students rotating through our department every month. Further, not only do we facilitate teaching sessions on countless topics, we deliver simulation training, run mock examinations and have two dedicated 'self-directed practice' (SDP) rooms, equipped with everything students need to hone their clinical skills independently.

As a Medical Education team, we believe we are uniquely placed to promote 'greener' healthcare systems by preparing future clinicians to deliver first-class care to an ever-more complex patient population. As individual clinicians, we will likely care for thousands of patients throughout our career. But as educators, we play a role in training hundreds of students every year, who will in turn care for hundreds of thousands of patients. We believe that by educating future clinicians at this early stage in their training on the importance of sustainable healthcare, we can support delivery of truly holistic care that both protects and promotes the health of current and future generations.

Approach:

Studying the system: A review of the booking system identified which skills were most popular in the past 12 months as well as then process students would go through to use the room. This process involved an online booking system where students detailed when and what skill/s they wished to practice. Upon arrival at the hub

students were given equipment they needed in the form of a specific 'pack', according to a list that had been in use for many years.

A baseline audit of storeroom inventory and SDP room use audit identified items that were

- Not required (unnecessary to the student experience nor reflective of real-life clinical practice)
- Required and potentially reusable
- Required and single use (needs to be replaced and purchased each time)
- Damaging to expensive equipment (e.g., alcohol-based cleaning solutions damaging to material of training arms, reducing their life span)
- Missing from the packs, which would be beneficial for student experience (e.g., gauze).

Engagement: Students were engaged to ensure a balance between sustainable changes and keeping an authentic and realistic experience for the students to practice their skills. A brief electronic questionnaire accessible via QR codes provided insight into why current students were using the SDP rooms, what an 'ideal' SDP was for students, and their thoughts on sustainable practice. This also supported us in developing our change ideas.

Changes implemented

We created new, sustainable 'packs', that could be collected by students when they arrived for their session. Metal trolleys were added to each SDP room, stacked with repurposed, labelled containers for students to put their unused and potentially reusable equipment in when finished (see image). Each label included the price of the relevant item, demonstrating how much money their simple actions could save, empowering students to take their learning into the clinical environment.

The sustainable packs are remade at the end of each week with the reusable items students have placed in the trolley, with single use items (e.g., canula) added as needed. Each skill pack has a clear, illustrated document of what needs to be included to facilitate this process.

A running total of CO2e savings with equivalent to miles driven in a car is shared on each room whiteboard and will be updated at the end of each month highlighting the environmental savings from their actions.



Measurement:

Financial: Price per unit was obtained from a comprehensive costing list from the Trust Supplies and Procurement team. We calculated savings by reviewing what we had saved through: a) removing unnecessary items; and b) reusing items that were previously thrown away. We added an additional cost to purchase cannulas, which were previously included as part of a larger pack (given free to the hub) that had contained several unnecessary items.

Environmental: CO2e were calculated for every piece of equipment based on the item cost or weight with the relevant emissions factor from the Carbon factors Greener NHS Team 2020-21. We used our audit to compare how many items were required pre and post introduction of our new sustainable packs.

Social: A questionnaire (Appendix 1) to collect both qualitative and quantitative data from our students ensured their voices were heard and at the heart of our initiative. This questionnaire sought to determine a number of important variables, including the students' wider views on the importance of sustainable healthcare as discussed above. It could be completed quickly and easily by scanning one of QR codes found in each SDP room, which would direct students to our Google form. These QR codes will remain available to the students beyond the Green Ward; we are always open to ideas on how we can improve these spaces for their learning and the planet. Informal, qualitative data from the wider education team on how they have been inspired by the project and how they might change their practice as a result.

Results:

The balance for each 'pack' was calculated and used to predicted savings over 12 months, based upon the previous 12 months' usage of the SDP room.

Environmental benefit: The total predicted savings amounted to **538.16 kgCO₂e**. This is the equivalent to 1,544.12 miles driven in an average car.

Financial benefit: The new packs will save our department **£623.39 per year**.

Clinical and health outcomes: The potential clinical impact is vast due to the huge number of students who come through our SDP rooms and already work in clinical environments on their placements. Our student feedback questionnaire identified 42.9% students had never previously considered the environmental impact of their clinical skills.

When asked whether students had changed their practice to reduce waste, their responses were again encouraging:

"Yes - not using what is not necessary to practice examination"

"After this, I will be more mindful of how much equipment I take out of their packets on the ward"

Social sustainability: We were pleasantly surprised by how engaged students were in this process; the trolleys were overflowing with unused and potentially reusable equipment, and everything was in its correct tray. In response to asking if there was anything more we could do in addition to our current, thoughtful changes, the students responded positively:

"Not based on the environmentally friendly packs given today. They were sufficient for practicing the technique"

Without the engagement of our students in this culture change, the remaking of the kits at the end of each week would be time consuming to our staff. Fortunately, we found that both staff and students have very willingly engaged, and there have been no issues in terms of compliance for students to return equipment as requested, and no complaints from staff into the time taken to remake packs at the end of the week.

Our project has also sparked enthusiasm and conversation for sustainable medical education not only within our own team, but across the student cohort, management and Postgraduate teams. Amanda, Undergraduate Medical Education Service Manager, attended regular meetings and updated key stakeholders throughout the project which was vital to this engagement. Please see below some reflections from the Undergraduate team:

Ellie (CTF): *"This project has changed my clinical practice - I now ensure I only take the equipment I need for each clinical skill"*

Jordan (Medical Education Administrative Coordinator): *"The whole project has been eye-opening. It has been great to see how much the students have got on board with the initiative"*

Barriers encountered:

A proportion of equipment required to assemble our clinical skills 'packs' was derived from pre-prepared, sealed packets, supplied to the department free of charge. These packs often contained one essential item with several unnecessary items. We ultimately made the decision to stop using the packs and purchase the individual items, such as Tegaderm IV cannula dressings and cannulas. Despite the additional cost, we overall have made financial savings.

When making our changes, we were left with unused equipment in our storeroom which was no longer needed in the sustainable packs. While in-date equipment was returned to clinical environment for patient care, this was not possible for out-of-date equipment. We are currently in discussion with other teams to find them an alternative home.

Steps taken to ensure lasting change and conclusion:

We believe the ongoing success of this project is possible due to the positive engagement and dedication of staff and students alike. Through our discussions with staff, clinicians and students, one thing is clear: people genuinely *care* about sustainability, especially students. We believe we have empowered students to be more mindful of the financial and environmental impact of their clinical practice. Both 'mindful' and 'conscious' were words used by our students in their questionnaire responses. This will ensure not only that our SDP room changes continue, but that students will move on to clinical work with both competence in their skills and awareness of environmental impact of their care.

We have further ideas to further enhance our sustainable teaching including going paperless via use of QR codes to share information, a digital educator platform, and use of iPads which have recently been funded (saving 26,280 sheets of paper and additional 113.72KgCO₂e per year). We are also working on delivering an interactive workshop on sustainable healthcare to newly graduated junior doctors, on the principles of sustainable care and how we can integrate these with practice.

Our project has sparked enthusiasm and conversation for sustainable medical education across the student cohort, management and Postgraduate teams. We are motivated to ultimately extend this platform to those involved in medical education across the region and are equally inspired by our interactions with students from the Leeds Healthcare Students for Climate Action (HESCA) and Planetary Health Report Card; two student-led initiatives which seek to inspire medical institutions to adopt and promote sustainable healthcare practices in the UK and worldwide.