SusQI Case Study Report
Reducing paper usage in the Research and Innovation Team

Team Members:

- Andrea Kempa - Research Nurse
- Claire Woolhouse - Research Nurse

Background:

As research nurses our role is to facilitate research studies throughout the hospital. We help recruit patients to studies according to the individual study protocols and carry out trial treatments while maintaining patient safety.

All studies have different sponsors and protocol requirements which means we are unable to make direct changes to study visits and how they are conducted, making it difficult to change patient care to improve sustainability. However, as a team, we use tremendous amounts of paper, identifying this as a carbon hotspot of our service. We have approximately 45 studies open to recruitment and 39 studies in follow up currently, and each study may have between 2-10 large A4 folders full of paperwork – that's a lot of paper!

Reducing paper usage by 50% and switching to 100% recycled paper by 2025 is one of the 13 key interventions set out in the Delivering a Net Zero NHS report[1] to achieve a net zero NHS supply chain. Having recently completed a Digital Heroes course, Andrea felt inspired to share some of her knowledge to find alternative ways of storing information and so reducing our paper usage. Claire is also very committed to helping the department become more sustainable and enjoys learning and sharing new IT skills.

Specific Aims:

To significantly reduce printing in the Research and Development team to reduce our paper waste and carbon footprint.

Method / Approach:

Studying the system: We reviewed our current printing systems and team printing behaviours. We have two printers in the office, that require user codes which ensures no pages are printed without staff going to the printer, entering their code, and selecting print. We identified that we use 100%

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primary paper and quickly made a switch to 100% recycled paper. We then established a list of the varied reasons for why we print in the R&I team and identified suitable changes that could be implemented to reduce printing in each area.

Reasons for printing and identified change ideas are detailed in the table below.

Reason for printing	Current practice	Change ideas identified
Study Protocols and Manuals	It is often a requirement from the study sponsor that a physical site file is printed and made available. This includes a study protocol and manual. Staff often print their own protocol for reference and to make notes in.	Ask sponsor at study set up whether the full site file, or sections of the site file, can be in electronic format. Add a note to the site file re. which sections and data can be found online. Avoid printing off extra copies of the protocol by using the copy in the site file or online. Staff training to be given on how to add comments/notes to electronic (PDF) documents. A digital champion to be nominated for each of the nursing offices to offer extra support and the Admin Team to also give support as needed.
Patient information sheet (PIS) and consent forms.	The PIS is given to all eligible patients prior to consenting to the study. Once consent is signed, a copy is given to the patient, the GP and a third placed in the patients' medical notes.	Send copies to patients via email in advance of consenting when appropriate to do so. If information governance (IG) agreeable, copies to be emailed to the patient (if the patient agrees). To do this, a standard operating procedure (SOP) is to be developed to ensure patient identifying data is not compromised. The signed consent must be on paper, but if patient notes are electronic (MediViewer) then a copy (including PIS) can be scanned and uploaded. If paper notes, then copy (including PIS) must be made to go in patient notes.
Prescriptions	All prescriptions must be printed to be signed.	Investigate digital signatures and for prescriptions to be emailed to pharmacy in the future.
GP letters	GP letters printed and placed in envelope by R&I staff and sent via post room.	Inform team GP letters do not need to go in an envelope as letters are sorted in posting room and sent in one envelope to GP surgeries. Discussions to be held with IG so that GP letters can be emailed directly to GP surgeries. A SOP to be written to cover this change to standard practice. Set up a contact email list for all GP surgeries. GP letters directly uploaded to MediViewer for those patients who have digital notes.
Clinical Research Form (CRF - data capture form)	Some studies have a paper from to be completed which captures the study visit information, stored in the paper site file, but copies are made and sent to the trial office.	At trial set up, staff will ask if an encrypted email is available to save copying, envelope, and postage costs by emailing CRF form.

Emails	All important emails from trial sponsor are printed and added to paper site file.	Emails saved to electronic trial shared folder with note placed in paper site file explaining where to find communication.
Other (e.g., letters, schedule of visits)	Schedule to track when patient visits are due is kept on paper. Individual checklists on paper are made for some study patients to ensure the visit is fully completed. Nursing evaluation forms are completed after every patient contact.	Training to help staff develop and use Excel spreadsheets for patient logs, schedules of visits and checklists etc. Staff will be encouraged to ask Admin team for support in setting up spreadsheets on the shared folder for all to access. To develop an electronic nursing evaluation proforma, so that the evaluation can be typed up for patients and uploaded to MediViewer.

Staff engagement:

We created a short PowerPoint presentation that was emailed to the team. This included detailed data on our current paper use along with ideas for how to reduce this use as per the above table. We also shared the NHS key printing principles from the Greener NHS How To Guide[2], *w*hich includes recommendations such as:

- only print when necessary, using default settings (monochrome and double sided);
- electronically sign documents if possible;
- consider additional costs from printing such as the need to use confidential waste disposal. A poster was placed by both photocopiers to remind staff to "Think before we print" and only print what is necessary.

Following the presentation being sent, we engaged in face-to-face mini 'Green Workshops' with our colleagues. During these conversations, we were able to identify helpful tools/tips that would support colleagues to personally reduce their printing based on their current printing preferences and behaviours. Staff were trained in using Excel, One Note, MS lists, Snipping Tool and adding comments to a PDF document to prevent excessive printing of protocols and manuals etc. One IT savvy member of the Admin Team was approached and agreed to send daily shortcut tips via MS Teams. This has helped improve both the department's digital skills and encouraged a transition away from the reliance on emails and a move to MS Teams Chats as another communication method.

An electronic nursing evaluation pro forma has been devised so that nursing notes can be typed up for patients whose notes are on MediViewer. When staff had their MediViewer training, they were shown how to upload this nursing evaluation proforma as well as GP letters; PIS and consent (original is kept in the paper site file). Staff were also shown how to annotate their uploaded evaluation form so that their typed signature can be confirmed as their individual signature.

Measurement:

We completed a pre and post audit checklist in which staff entered in how many pages they were printing and why they were printing. This checklist was placed on the printer so was easily visible to all staff at the time of printing.

We also collected 7 months of data from our IT team which showed how many pages have been printed/copied in black and white and colour in both our main office and R&I office since November

2021. This data was collected for the month of July as a comparison once digital skills training had been given to staff.

Environmental sustainability:
We obtained an emissions factor for a ream of primary paper from the 2022 BEIS UK Gov emissions database. We used an emissions factor for a ream of recycled paper from our supplier Blue Angel, Ecolabel. We divided the total emissions factor for a ream by the number of sheets to get a factor per piece of paper. To calculate savings from ink, we used an emissions factor based on pounds spent from the Small World Consulting Database provided by CSH (this database is not publicly available).

Economic sustainability:
We obtained costs of paper from our procurement team and ink from RICHO.

- Premium paper costs £11.40/box (2500sheets) = 0.00456/sheet
- Recycled paper costs £9.74/box (2500 sheets) = 0.003896/sheet.
- B&W ink costs 0.0036/page, Colour ink costs 0.0112/page.

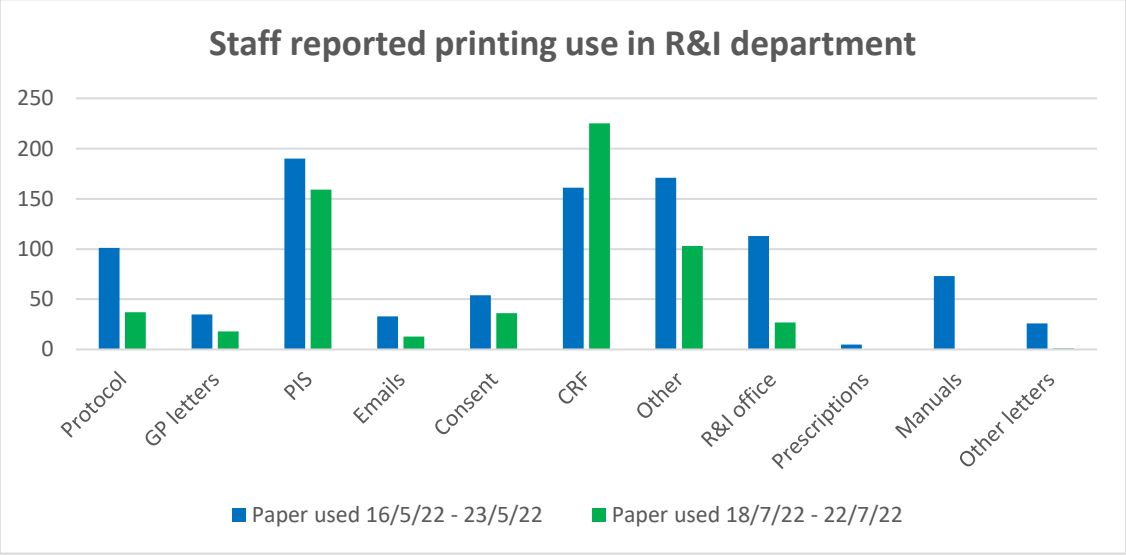
There will be a small cost saving from reduced use of envelopes for sending GP letters and the PIS to patients (where email can be used) however we did not have access to accurate data to include this in our saving.

Social sustainability: Data was gathered qualitatively by discussions with staff and patients.

Results:

Environmental sustainability:

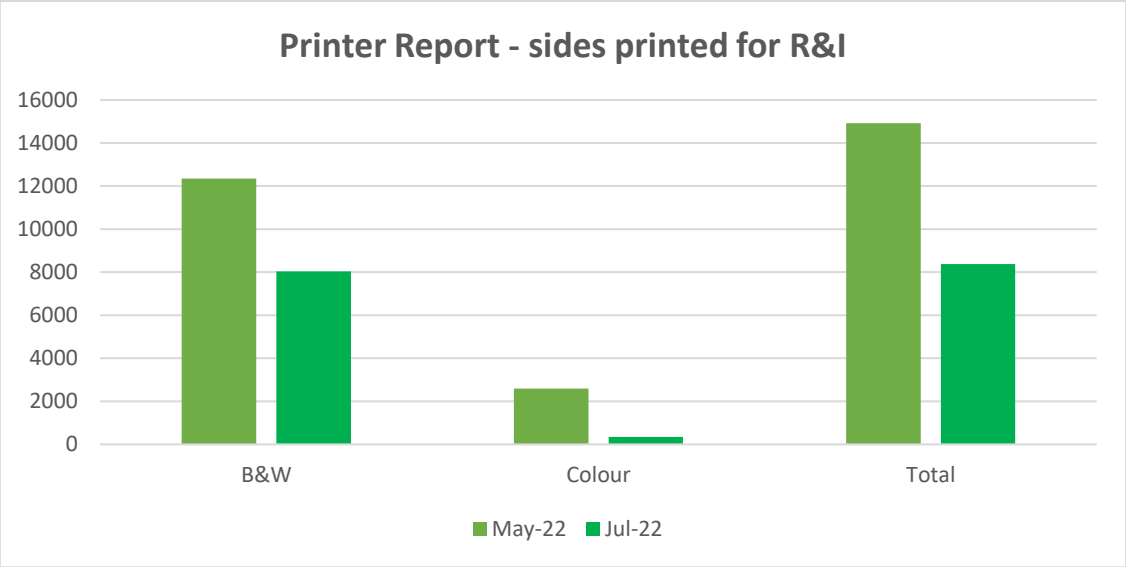
The chart below shows the reduction in paper usage across each reason for why the team print as reported by staff. Pre changes staff reported 962 pages were printed in one week, reducing to 619 pages for one week in July following awareness and digital skills training.



However, when we carried out the initial audit, staff commented that they reduced their printing and copying simply because they knew that there was an audit, and they were more aware of what was or was not essential to print. Staff at times forgot to record what they had copied/printed. The IT data

(as shown below) also indicates this staff report is an underestimation of printing both pre and post changes.

The chart below shows how many pages were printed in one-month pre and post our interventions.



Our IT department captures the sides printed, but not capture the number of single vs double-sided pages printed. We therefore assumed that 50% pages were printed as single sided and 50% were printed as double-sided. The results show a decrease in the overall number of sides printed from 14929 (11,197 pieces of paper) in May to 8374 (6,287 pieces of paper) in July. This is equivalent to a reduction of 4,910 pieces of paper, a 43.8% reduction in our paper usage.
Our carbon savings are demonstrated in the table below.

50% single sided printing / 50% double-sided printing	Pre changes	Post changes (recycled paper and staff education)
Average number of pages printed black and white / month	9259	6031
Average CO2 / month	68.51kgCO2e	25.33kgCO2e
Average number of pages printed colour / month	1938	256
Average CO2 / month	33.33kgCO2e	3.58kgCO2e
Total CO2e:	101.84kgCO2e	28.91kgCO2e
Annual total CO2e	1222.08kgCO2e/year	346.92kgCO2e/year
Total annual saving CO2e:	**875.16kgCO2e/year**	

Carbon savings of 875.16kg CO2e is equivalent to 2,520.6 miles driven in an average car (3.7 return journeys from Northampton to Glasgow).

Economic sustainability:
Calculations are based on the more realistic figure of 50% single sided and 50% double-sided printing. With a reduction of 3,228 pages of primary paper printed with black and white ink we will save £30.34

per month. With a reduction of 1,682 pages of primary paper printed in colour we will save £26.67 per month. This is an annual reduction of £683.52.

Social sustainability:

Emailing letters is faster and reduces the risk of information being lost, ensuring patients receive information on their appointments, care, etc. promptly. Our changes also ensure that patients can receive information when they are not at home (e.g., if a patient is on holiday). Anecdotally, some patients have commented that email is more convenient, as they are given too much paperwork which is easily lost. They also like that an email can be enlarged so that it is easier to read. However, for those who prefer to receive paper copies, we will continue to post the information to them.

Both nursing and admin time is reduced by moving to virtual ways of working. Staff are keener to learn new digital skills and help reduce paper usage, especially now they have seen the environmental savings we have made in a short space of time.

Following our audit of printing/copying habits, our colleagues have been inspired and are keen to be on board with the new changes to working. Some of the comments we have received since making the changes are:

"It saves time"

"Made me more IT literate"

"Increased awareness of what I am printing/copying"

"Completely changed my way of working and has brought my digital skills into the 21st century"

"I feel that I am more organised with increased use of spreadsheets and get to the information much quicker."

Clinical and health outcomes:

Email is faster and may reduce risk of lost information, ensuring patients are kept well informed of their care. Email is also more private than letters which may be accessed during their delivery or by other members of the patients' household. Alongside team training in MediViewer, we also developed a proforma which ensures notes are more legible and therefore have less errors in interpretation, which may improve quality and efficiency of care. Staff then annotate the evaluation form to confirm their signature.

Barriers encountered:

To be able to email paperwork to patients and GPs directly, the IG department have carried out an assessment and provided an information agreement for the department. They have advised that the research department must create a SOP to ensure procedures are followed which mitigate the risks of patient identifiable data being accessed inappropriately. The SOP is currently being developed and, in the meantime, paper copies of both the GP letter and patient consent forms are being posted. We therefore expect to reduce our paper usage even further in the future.

We work with many different sponsors; who make decisions around how a study is run. Some are gradually changing to online site files and in these cases only patient facing documents require printing. However, for most sponsors a paper site file is still required. Discussions are underway with our IT department regarding the safety of storing site files online (site files must be archived and easily

accessible for up to 25 years once the study has been completed), we can then proceed to contact individual sponsors to negotiate which parts of the site file need to be printed and which parts can be stored electronically. A template email could be devised to send to all sponsors to identify what needs printing and what can be stored online.

Conclusion:

It was very satisfying to find the whole R&I department came together as a team to reduce their paper usage in a relatively short space of time with awareness and ownership of the issue developed among our colleagues. We expect that as more staff start to practice and utilise their new IT skills, that fewer documents will be printed. In addition, as more patient notes become available on MediViewer, we will need to copy less and therefore we expect our savings to improve. Once we have also resolved the issue of ensuring that all documents stored on SharePoint can be saved safely electronically for 25 years, this will have a much larger impact on our paper usage as whole sections of the paper site file can be stored electronically without the need for printing any documents.

If these changes were applied over many years and across other departments within Northampton General NHS Trust, then savings both in emissions and financially would be far more significant.

References

1. Greener NHS: Delivering a Net Zero NHS Report, 2020. Accessible from: Greener NHS » Delivering a 'Net Zero' National Health Service (england.nhs.uk)
2. Greener NHS How-To Guide: Reducing carbon emissions from copy paper – not publicly available. Downloadable for NHS staff via the FutureNHS sustainability hub, FutureNHS Collaboration Platform - FutureNHS Collaboration Platform