COLLABORATIVE REPORT OF PAPER LITE AND CONTRAST RECYCLING PROJECTS, ENDOSCOPY TEAM

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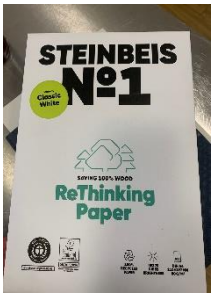

Background:

A report published by NHS Supply Chain (2020) revealed that by changing to recycled copier paper in 2019, the NHS has saved the equivalent of watching 85,503 hours of a plasma TV in energy, filling 161 Olympic size swimming pools with water, felling 20,000 trees, travelling 10 times around the world on an aeroplane in Co2. In our Endocopy units, we already use recycled paper, however believed there was room for us to reduce our printing and paper usage in the first place. Swansea Bay University Health Board has stated it wants to reduce its carbon footprint by around 3,000 tonnes and this small changes we can make to our paper usage can help towards this target.

There are 3 Endoscopy Units within the SBUHB, and each unit uses a significant amount of paper. Contrast is also used in the endoscopy unit for procedures that require x-ray input i.e. ERCP, Dilatation and Colonic Stenting. We have targeted both paper and contrast waste to improve our carbon footprint.

Specific Aims:

1. Reduce printing and paper use in the Endoscopy department by transitioning to electronic ways of working
2. To redirect Contrast waste from sharps (incineration) disposal to be recycled.

Methods:

1. Paper reduction project: We targeted 3 reasons for paper use within our Singleton unit.

a) **Patient information leaflets:** Post procedure the reporting endoscopist will request recovery nurses give patients advice leaflets on conditions they are at risk of such as haemorrhoids, diverticulosis and colitis. When our patients have had an endoscopy procedure there is often follow up advice to give. We have pre-printed advice sitting on the unit and this is given out on the clinician's request. But guidance changes all the time in healthcare. We run the risk of given our patients outdated and advice. A single sheet or two of paper is limiting and often will get shoved in a bag and eventually thrown out without the consumer really having the time to take it in absorb the information.

A single endoscopist working across 3 endoscopy sites would scope approximately 16 patients per week, where 10 would require follow up information in the method of a leaflet. Instead of printing this information, we proposed giving the patient a link to a website, or copying and pasting a link onto the patients report (of which they receive a copy) using already established online leaflets[1].

b) Endoscopy reports: We print multiple reports of up to 10 pages following each procedure. We considered if all copies and all pages were necessary per procedure depending on who was receiving the report, and whether we could provide copies electronically. Team meetings were held to ensure patient follow up and care pathway would not be effected. When we had reassurance from senior management that this was no longer required we were able to implement this change to roll out to our units.
   - Patients notes: A meeting with the paperlite team revealed that there was no need to add a copy to patient notes as our electronic reporting system Endoscopy Management System (EMS) now uploads to the Welsh Clinical Portal (WCP).
   - Endoscopy images – Not necessary as images available on WCP
   - Histology – Encourage consultants to register for WCP alerts.
   - Referring consultant – Encourage consultants to register for WCP alerts
   - Patient – Encourage patients to register to patient knows best scheme to able to access reports and results.
   - GP – Some practices are unable to access WCP. We are looking to trial digital alerts with a single practice or cluster.
   - Our endoscopy reports can often be printed with errors in this instance we have confidential waste which requires disposal. This increases our waste output and further adding to the problem. The less reports we print the less the outcome of printing in errors.

c) Patient questionnaires: Currently out-patients are asked to complete a paper questionnaire post oesophagogastroduodenoscopy (OGD), flexible sigmoidoscopy and colonoscopy procedures to give feedback on their experience in the Endoscopy Service and to maintain standards. The questionnaire is 6 or 12 pieces of A4 paper (depending on single or double-siuded printing).

   An audit was carried out, based at Singleton Endoscopy Unit, to obtain an average number of questionnaires that are completed per given time frame. We identified an average of 10, 6 page surveys are completed per week.

   The Patient Experience Feedback team were involved ensuring they had capability to receive questionnaires in electronic form. The Patients in Singleton Endoscopy Unit can now complete their post procedure questionnaire on a tablet instead of paper. There are laptops in Morriston Endoscopy Unit and Neath and Port Talbot Endoscopy Unit that can be used for the purposes of the electronic questionnaire submission.

2. Recycling of contrast: Previously contrast waste from Endoscopy procedures was disposed of in sharps bins and incinerated. We have recently established a contrast recycling process by sending contrast back to supplier within recycling pots rather than waste in sharp bins.

Measurement:

Patient outcomes:

Patient outcomes were not measured.

Environmental sustainability:

An emissions factor for one A4 piece of recycled paper (0.003 kg CO2e) was provided by our paper supplier, Steinbeis. To calculate savings from ink, we used an emissions factor based on pounds spent from the Small World Consulting Database of 0.392 per pound spend, provided by CSH (this database is not publicly available). The CO2e for one piece of paper printed with double-sided ink is 0.0284 kgCO2e.

For patient questionnaires, we assumed that it takes patients 5 minutes for a patient to fill out questionnaire on an iPad to calculate the energy consumption of this, using the emissions factor for energy from the Government Database.

Economic sustainability:

Costs of our paper (2.4p) and ink (£78.07 / cartridge) were obtained via the HB procurement team and used to estimate potential financial savings.

Social sustainability:

The quantitative data was received from the Sister of Singleton Endoscopy Unit in the number of questionnaires completed per week on average.

Results:

Environmental sustainability

1) Paper reduction

a) Patient information leaflet

Across our 3 units we are funded for 38 patient lists per week, with an average of 5 patients per list (this includes a range of procedures). We estimate approximately 95 (50%) of patients require follow up advice. This is a reduction of 1-2 pieces of paper per patient, or 95-190 pieces of paper per day. We have taken an average of 142.5 pages per day to calculate our savings.

- Saving: 142.5 double sided pages per week = 4.047 kg CO2e

b) Endoscopy reports

We have used assumptions that 20 patients are seen per day in each unit. This is a total of 60 patients seen per day across our 3 units. Our service runs 5 days a week. This is a total of 15,600 patients seen per year.

We anticipate a reduction of 7-8 pages printed per endoscopy report, equivalent to 420-480 pages saved per day. We have taken an average of 450 pages per day to calculate our savings.

- Saving: 450 double sided pages printed per day = 12.78 kg CO2e
- Saving per week: 63.9 kg CO2e

c) Patient questionnaires

We will save 6 pieces of A4 double sided printing per questionnaire. Assuming 100% of patients are given a questionnaire, we will save 360 pieces of paper per day. Assuming it takes 5 minutes for each questionnaire to be completed, the energy consumption per use on iPad for filling out questionnaire is 0.000268 kWh, equating to 0.00007012 kgCO2e per questionnaire.

- 360 double sided pages printed = 10.224 kg CO2e

- 360 questionnaires completed on iPad = 0.25 kg CO2e
- Saving per day = 9.974 kg CO23
- Saving per week = 49.87 kg CO2e

Total reduction per week: 117.8 kg CO2e.

Projected across a year across the three units, we could save **6,126.48 kg CO2e per year** (2,042.16 kg CO2e per unit). This savings may vary dependant on single vs double sided printing. They may be underestimated as they do not include reduction in printing that can be made from waiting list initiative and weekends.

1) **Recycling of contrast.**

We estimate that 375 ml of contrast per week is being redirected from sharps waste disposal to recycling. This is a reduction of 19.5kg / year (0.0195 tonnes / year). This equates to a saving of **21 kg CO2e / year.**

Our project combined will save **6,147.48 kg CO2e per year**, equivalent to driving 17,705.9 miles in an average car.

Economic sustainability

Based on a reduction of 855 double sided pages printed per day, we anticipate savings of £2.11 per day. This is an annual saving of **£548 per year.** We will have a small additional saving of £10 from recycling of contrast.

Patient outcomes:

Patients attending Singleton Endoscopy Unit can ensure high standards of care for future patients needing an endoscopic procedure by completing the questionnaire and supporting the Endoscopy Service to audit and make improvements where needed.

We are also empowering patients to support own health with reliable evidence-based resources. Electronic information can be kept more regularly up to date, which is important as healthcare is constantly evolving with the latest research. By reducing paper we can potentially provide faster digital communication to deliver patient care, as patients can access websites that will provide them with further tools to assess and treat their condition quickly and at any time they wish without risk of losing the information.

Social sustainability:

Working on these projects is supporting change of workplace culture. We have made sustainable changes part of the 'normal' way of practice, e.g. by making contrast recycling on a ERCP list the normal way to dispose of this drug.

Information leaflets: Patient feedback was positive and very few patients were not candidates to receive digital links on their reports. With electronic information patients have long standing resource to support them with their gut health. They can share the knowledge and the link with friends and family and empower a culture from a reliable resource.

Discussion:

Information leaflets

With so much information available on the internet, it can be confusing for patients to find accurate, reliable, and non-conflicting information. We often advice patients not to research and self-diagnose on the internet. By providing patients with an evidence-based link as a resource for them to educate themselves we can ensure they receive optimal up to date advice and prevent research on non-reputable websites. Patient leaflets are everywhere in the healthcare sector in both primary and tertiary care settings. We have seen a rise in QR codes to deliver information, but these methods take time to implement.

Implementing change can be difficult however supporting staff nurses liked the idea and could see benefits if all clinicians changed this one simple thing about their practice. The attractive element of this change is that it also provides a positive change in patient empowerment and education.

Questionnaires

We have successfully implemented electronic questionnaires in the Endoscopy Unit at Singleton Hospital. The resources are there for the same change to be implemented in Morriston and Neath and Port Talbot hospitals in the near future. When this takes place the laptops currently available at these sites will need the software installed so the patients can complete the questionnaire post procedure and staff trained in submitting the questionnaire to the Patient Feedback Team.

Reports

The issues we faced with removing the paper copy for referring clinicians and GP's were the fact that these paper notifications act as an alert to action review, putting care and/or treatment into action for the patient. Meetings with IT informatics showed us the options we had in place for alternative methodology. Consultants can receive alerts through WCP for histology and updates for patients in their care. We currently have all of our Singleton consultants receiving these alerts and two from our Morriston and Neath Port Talbot sites. We plan to present these findings in user groups and team meetings to encourage up take of the system so we can negate the referring consultant copy completely in future practice.

The GP copy is presenting more of a challenge as a number of GP's don't have access to WCP. We will further explore this area and look to trial a paperless alerts with a single GP practice or cluster service to highlight best practices so we can roll this out in the future. This meeting with IT also gave us options for removing the patient copy. Patients routinely take a copy of their reports home. Patients that are registered to the patient knows best service can receive their results and reports digitally. This is slowly being rolled out across the health board. We plan to champion this service by making patients aware of the service and encouraging them to sign up where appropriate. This will remove the need to send mail from many services not just endoscopy. Allow appointments and patient advise to be sent digitally.

It became apparent that our paperlite projects required the implementation of technology to replace paper documentation. We must consider the reliability and confidentiality of the computer software we use as alternatives. We discussed developing more digital communication with our patients to reduce the paper we send out to them pre-procedure. Whilst text alerts, QR codes etc.. are plans for the future the technology available to us is not ready to replace this method of

communication at this time. We have a lot of work to do and lot research and discussion need to take place before we can imbed these changes into our practice.

On reflection key learning points from this project were to persist with the initiative even when it didn't appear things were progressing. Colleagues are busy and we must allow them time to respond and adapt to change. Most of the conversations regarding this initiative were via e-mail and again due to busy workloads, staff issues etc. it was sometimes frustrating waiting for responses from colleagues.

Conclusions:

We have seen positive benefits across the triple bottom line from our paper reduction initiative. Future trials and projects could furthermore improve these figures. The reduction of paper in the NHS is something that all Departments should be looking at to reduce costs and carbon footprints. Any Departments that have paper post procedure care audits should be able to change to completing them on tablets and sending them directly to the relevant Departments.

Whilst this project has presented with its challenges, it has pushed us into a direction of positive change. The initiative has allowed us to communicate with other areas in the health board making them aware of our mission and desire to achieve change. We have gained many ideas and insights into our current projects and future projects we can undertake. It is hoped that eventually the majority of paper can be removed from the current systems in place within the Endoscopy Service.

References

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Appendices

- Iodine Recycling Video - YouTube
- Green Endoscopy Champions – Working towards a Sustainable Future - The British Society of Gastroenterology (bsg.org.uk)