



CENTRE *for*
SUSTAINABLE
HEALTHCARE
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GREEN TEAM COMPETITION

CENTRE FOR SUSTAINABLE HEALTHCARE



2022 IMPACT REPORT NORTHAMPTON



Northamptonshire Healthcare
NHS Foundation Trust



Northampton
General Hospital
NHS Trust

GREEN TEAM COMPETITION

POTENTIAL YEARLY SAVINGS FROM GREEN WARD COMPETITION PROJECTS



£71,529



53,221kg CO2e

CENTRE FOR SUSTAINABLE HEALTHCARE

CARBON SAVINGS EQUIVALENT TO



The same amount as 2,128.8 mature trees absorb on average per year



153,286.3 miles in an average car (225.4 return trips between Northampton and Glasgow!)

CENTRE FOR SUSTAINABLE HEALTHCARE

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INTRODUCTION

Climate change is having far reaching consequences for planetary health, including within the United Kingdom, and is accepted as one of the greatest threats to the health of global populations¹. In addition to climate change, the integrity of our environment, on which we depend, is threatened by pollution (air, plastic and chemical pollution), water scarcity, soil degradation, deforestation, and loss of biodiversity.

Whilst healthcare systems have a key part to play in maintaining health in the face of the threat of climate change, the delivery of healthcare is also undermining the health of our populations, by contributing to the problem. If healthcare were a country, it would be the 5th largest carbon emitter in the world².

However, climate change can also be viewed as ‘the greatest global health opportunity’³. The NHS was the first health service globally to commit to net zero carbon and was cited by the Intergovernmental Panel on Climate Change (IPCC) as a global leader⁴. In the delivering a net zero NHS report⁵, strategies to achieve this target are laid out. While National and international government action will be required, e.g., to decarbonise electricity, transport and supply chains, net zero will not be possible without front line NHS staff.

Clinicians have intimate knowledge of a vast range of medications, resources and equipment used for their daily practice to provide best, evidence-based care for their patients. Non-clinical teams are too essential to ensure that resources and patient care pathways are effective. The combined knowledge and understanding across of all aspects of care is vital when making the carefully nuanced decisions on how to maintain or improve clinical care whilst reducing environmental, social and financial cost.

The Green Team Competition is a clinical leadership and engagement programme for NHS Trusts wishing to improve their sustainability practice. Rachel McLean, Green Ward Programme Manager with the Centre for Sustainable Healthcare (CSH), has worked directly with four teams across Northampton to develop, run and measure projects that add sustainable value within their service, by considering the ‘triple bottom line’ of reduced environmental harm, reduced financial waste, and adding social value.

Running the competition in an organisation also builds a community of clinical staff who are empowered, enthused, and equipped to further improve their services for the future, guided by the concepts of the triple bottom line and sustainable healthcare.

References

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1: A NOVEL CARE PATHWAY FOR STABLE HIV PATIENTS – A STREAMLINED AND SUSTAINABLE COUNTYWIDE APPROACH FOR NORTHAMPTONSHIRE, Integrated sexual health service team

TEAM MEMBERS: Dr Lynn Riddell - Clinical Service Lead for Northamptonshire Integrated Sexual Health and HIV services (NISHH), Ms Eleanor Ingate - PA to Service Manager and Consultant Lead in NISHH, NISHH administrators, nurses, pharmacy and medical team.



Background:

The increasing robustness and tolerability of antiretroviral treatment regimens for HIV over the last decade allows practitioners to seriously consider the impact and necessity of multiple attendances by patients to hospital sites for pathology testing and examination. Most adherent patients are now physically stable, living normal lives with personal and other employment commitments. Yet across the UK, most stable HIV patients attend NHS services with the same frequency and undergo the same/similar pathology investigations as those HIV patients who are relatively newly diagnosed or considered unstable. Changing the clinical pathway for very stable patients to achieve a reduction in face-to-face appointments has the potential to provide environmental, financial, social and clinical benefits whilst maintaining patient confidence and safety.

As the countywide Clinical Service Lead for Northamptonshire Integrated Sexual Health and HIV services (NISHH), it is within my brief to be able to deliver this system-wide change with a specific quality improvement and sustainable focus. With key members of the service team across all work streams, including junior through to senior team members, and capturing patient voices, we aim for this new pathway of care for “Very Stable” HIV patients to be rolled out across the entire HIV cohort of Northamptonshire with clear benefits and value very easy to see.

Specific Aims:

To reduce the frequency of face-to-face appointments and phlebotomy testing for a defined ‘very stable’ section of the county HIV patient cohort in Northamptonshire from twice a year to once a year.

Methods:

We reviewed our service and identified the existing minimum 6-month cyclical attendance pathway applies to all HIV patients, regardless of the stability of their condition and treatment. We therefore proposed dividing the existing HIV cohort into three, as defined below;

- Cohort A / “Very Stable” patients: A definition of a “Very Stable” HIV patient was agreed between the county HIV consultants. Patient meeting the criteria will require annual attendance. Please note: “Cohort A” patients will be referred to as ‘Very Stable’ in correspondence with patients.

- Cohort B: Patients considered stable who still require more frequent (6 monthly) monitoring due to adherence issues or resistance to antiretroviral regimens requiring medication changes.
- Cohort C: Patients new to the service or newly diagnosed with HIV infection. They will have not commenced antiretrovirals or have commenced recently but their viral load is not yet undetectable. Cohort C will also include patients who are pregnant or clinically unwell with an HIV related illness. Cohort C will require frequent (sometimes monthly) monitoring with specific additional tests depending on their current issue.

The three Cohorts were explained to all staff in the HIV arm of the service known as the Summers Unit (SU). A detailed flowchart depicting what investigations are required for the individual Cohorts at specific time points was developed (Appendix 1). With this change, the pharmacy team will be required to accommodate a mid-cycle Pharmacy Prescription Review by telemedicine. (See flowchart in Appendix 3).

All patients registered with the SU were sent a letter (Appendix 2) notifying all patients registered with the NISHH countywide HIV cohort of potential upcoming changes to their attendance schedule. This letter was sent via our electronic Text Link system. The letter indicated that changes would be discussed with every patient at their next face to face appointment and that no patient would be moved to the annual pathway without their consent.

At each patient's next doctor appointment, a joint decision between the patient and the HIV doctor will be made as to whether this new pathway is suitable for the patient. It will be emphasised to the patient that emergency access telephone and attendance arrangements will remain in place. This system will have a safety net for patients who become unwell or pregnant whereby the patient will simply transition seamlessly back to Cohort B or C monitoring schedules. To reinforce this information a detailed document including a pictorial flow chart (Appendix 3) will be offered to every patient during this discussion and for them to take home. Patients designated as suitable for and consenting to being in Cohort A/Very Stable will have this documented in their EPR and will begin the 12- month review schedule from this appointment.

Measurements:

We audited the HIV patient cohort data on our electronic records system (Lilie). This included a search for information of patients categorised as being stable on the HARS national dataset. Initial results suggested that 73% of the cohort were likely to meet criteria for 'Cohort A/very stable' status. However, HARS relies on clinicians filling in forms every time there is a clinical contact and is not always up to date. By looking additionally at individual pathology results held on the ICE pathology system for Viral Load, and at individuals in clinic, we are finding that there many patients not picked up by the HARS dataset who are eligible to move to cohort A. We are therefore confident in the assumption that 90% of our patient cohort will be eligible to move to Cohort A in the next 6-12 months. This figure will become a "soft aim" for service staff and while not possible within the 10-week project phase of the competition, this will be measured annually using the same audit processes as previously defined.

Social sustainability:

Patients who attended the clinic during our project phase were surveyed. To avoid bias, the patients were asked to complete the survey without staff assistance and before information was disseminated to patients on the proposed cohort changes. Approximately 10% (102 of the entire 950 patient HIV cohort) were surveyed. The survey focused particularly on environmental and social impact factors with full list of questions available in Appendix 4.

Impacts on staff have been reviewed informally through conversations about current pressures on their job plans. Pressures are compounded by ongoing and unpredictable colleague sickness absence related to covid, increasing demand and complexity of the cohort, increase Trust requirements around training and mandatory training and movement of trained staff relating to retirements and promotions. Freeing up staff time would allow focus on difficult cases and time to discuss issues that might affect adherence to medication.

Clinical and Health outcomes:

Over time, it is possible that the desire to be classified as “Very Stable” might drive HIV antiretroviral adherence.

There is considerable pressure with expanding demand on the sexual health, contraceptive and HIV service in the county. The county has an increasing population with an increase in those from higher HIV acquisition risk areas of the world. This project offers potential clinical benefits by freeing up staff time (as per above in social impacts), allowing the cover other pressure points within the service and crucially, allowing nurses to undertake important non patient facing activities.

Environmental sustainability:

Emissions factors from the Carbon factors Greener NHS Team 2020-21 were applied to a list of all consumables (excluding PPE) used in a single appointment including processing of blood tests. The weight of the consumables (excluding PPE) was obtained to calculate a waste reduction saving using emissions factors from Rizan et al 2021¹. PPE emissions factors which include disposal were taken from Rizan et al 2021².

Detailed travel data for 77 patients was used to develop a mean return distance. The emissions factor for average car of unknown fuel from the UK Gov BEIS greenhouse gas emission database was used to determine an average CO₂e per patient journey.

Economic sustainability:

The cost of all consumables used in the 6 monthly appointment was obtained from the NHS Supply Chain and Aggresso system website used by the Trust procurement team.

Although the change will remove up to 855 x 30 minute Band 6 nurse appointments per year, actual costs in pounds have not been included as “direct savings”. It is not anticipated that these hours will be “let go”, and instead will enable current Band 6 nurses to undertake higher value work as outlined in Social and Clinical impacts.

Results:

Clinical and Health outcomes:

Discussing the change with each individual and moving all eligible and consenting patients to Cohort A /Very Stable will take a full 6-month cycle to complete. Therefore, it is too early to determine if the pathway will improve health outcomes for patients. However, preliminary discussions with some patients who are not currently eligible has suggested annual attendance that would be linked to their adherence could be a powerful incentive to improve their adherence to medication. The additional time gained by staff may also be supportive in helping to focus discussions on adherence and other issues that prevent categorisation into Cohort A.

The proven U=U (undetectable is untransmissible) is a powerful public health aim and anything the service can do to achieve 90% viral load undetectable levels within the cohort should be strongly encouraged. This would have a significant positive impact on the wider public and reduce the frequency of new HIV infections locally and in the UK. We plan to measure this impact at our first review of the new “Very Stable” cycle.

Social sustainability:

100 HIV positive patients completed the survey. We found that;

- 84% of respondents indicated that the environment was important to them. 10.6% indicated it was not and the remaining 5.4% were not sure and/or did not see the link between the NHS and the environment.
- 84% of respondents answered ‘yes’, it would be helpful if the number of routine appointment attendances was reduced. 9% responded ‘no’, however subsequent anecdotal discussions with two patients determined both had not understood that emergency access would remain in place. This suggests that the face-2-face appointment with the doctors before moving the patient into Cohort A is an important opportunity to provide reassurance. 3% of patients who answered ‘not really’ subsequently indicated they were retired and it made no difference to them personally. Thus, there was over a 90% approval rating for this change.
- 95% of respondents approved the method of communication (Text Link system). The remainder either did not like it or did not specifically answer the question but mentioned preferring email communication or concerns re Google security. Anecdotally, some of this might relate to some patients not having a smart phone which needs to be considered to ensure fair distribution of all information.
- Impacts on employment and salary were varied and more difficult to interpret.
 - 5.5% were self-employed but did not indicate if absence from work had negative impacts.
 - 7.7 % attended clinical appointments during work time that continued to be paid.
 - 9% chose to attend on a non-working day or in non-working time. Anecdotally staff have been informed this is because patients do not wish to disclose their HIV status or presence of a long-term medical condition to their employers.
 - Notably, 20% took annual leave or sick leave to attend, again some anecdotally disclosing the same confidentiality reasons.
 - Notably, 36.6% indicated that they received no payment when they attended. The SU is very aware that we serve a high proportion of patients who are on zero hours contracts and work within the many warehouses in the county. However, we did not specifically capture this information. Anecdotally, we are aware that implications of losing earnings to attend appointments needs to be considered. This is a reason given to us by patients who fail to attend scheduled appointments despite receiving reminders. Many zero hours contractors are given very little notice to attend for shiftwork which does not enable them to cancel/reschedule as many commence work before clinic opening times and do not have access to their phones.
 - 24.4 % said this question was not applicable, potentially due to retirement.
 - One patient indicated he was responsible for caring for a relative and needed to make alternative care arrangements to attend.
- Patients travelled varied distances in a range of 4-140 miles return journey to attend their appointments. The average return journey was 32.9 miles. This equates to an average cost of £9.20 per patient per appointment. The average time taken to attend appointments and return home/work was 110 minutes. Sexual Health and HIV services in the UK are classified as ‘open access’ which means patients can choose to be seen out of area. Northamptonshire is a rural county with many patients not living near the Hub sites.

The outcomes of the change in frequency of attendance for a large proportion of the cohort may increase staff job satisfaction. Staff will gain time for higher value work, time to cover existing pressure points and have appropriate time to reasonably fulfil their job plans. Staff are currently working within an environment of increasing patient numbers/complexity and demand within a decreased financial envelope following a tender process in 2019. A staff member noted

“if we can keep our patients well and safe and have time to concentrate and give more time to those who need more time...that can only be a good thing, right?”

Environmental sustainability:

For each face-to-face appointment removed, we will save 20.15 kgCO₂e attributed to blood tests (including laboratory processing), consumables used and waste disposal. Additionally, an GP appointment letter is no longer required, reducing emissions further by 0.011 kgCO₂e per appointment. The mean return travel per patient journey was 32.9 miles, equating to a mean of 10.2 kgCO₂e. Therefore, the total saving per face-to-face patient appointment equates to 30.36 kgCO₂e.

We project that within circa 12-18 months 90% of the total Northamptonshire HIV cohort could be Cohort A patients (855 of the existing patient cohort). This would suggest a potential annual carbon saving of 25,957.8 kgCO₂e, equivalent to 74,763 miles - 108.3 return journeys from Northampton to Glasgow.

Economic sustainability:

There were no specific Trust investment costs required to undertake this project. Dedicated time at senior doctor level was required to both design and implement the system.

The potential financial savings for the Trust are estimated to be £52.52 per patient appointment (including purchase and disposal of consumables and laboratory blood test processing). Based on 90% of the existing patient cohort moving to Cohort A within the next 12 – 18 months, this would suggest a potential annual saving of circa £44,904.60.

It is expected we will gain approximately 350 nursing hours across the year (based on 700, thirty-minute appointments being removed. Again, a 90% roll out would increase this to 427 hours). The cost of staffing changes has not been included in these savings because it is considered that the staff would remain in place as outlined in the social sustainability section. This might however not be the case should similar changes be implemented in other HIV services within the UK. There will also be a saving in laboratory staff testing time.

Barriers encountered

There exists within the NHS service(s) staff members and patients who do not like or deal well with change. It is infrequent that patients are asked specifically about the social impact of their attendance to NHS sites and many NHS staff feel that patients wish to attend regularly. However, the patient survey showed a *clear and strong patient voice* in favour of reduced attendance. This supported the subsequent detailed discussions with staff to explain the merits of and request support for this change programme.

Conclusions:

The potential financial and environmental savings across the UK, where in 2019 there were nearly 99,000 HIV patients accessing care³, are irrefutably significant. However, this pathway re-evaluation does not need to be limited to HIV care programmes with multiple outpatient pathways seeking to manage chronic conditions. However, there is no incentive for NHS staff to reduce attendances if their services are dependent

on payment allocated per attendance. For our integrated sexual health service, we are on a block contract making this change possible.

The social benefits of our pathway change are significant both for staff and patients. Staff have been under increasing pressure and report disappointment at not having sufficient time to deal with those who need particular additional care/time. Our hope is that the freed-up appointment time will allow time to focus on those that do not adhere to their medication and to understand this on a person-by-person basis, with the aim of solving any barriers. It is the only way we will achieve all patients being virologically undetectable and therefore the virus being untransmissible.

We plan to review the cohort system after 12 months. At this time, and with hindsight, we would try and interview the patients from a more detailed perspective to look at cohort demographics and how/if this related to some of the answers given. For example, are all the patients on zero hours contracts foreign citizens and if they are, is there an easier way to make their transition into UK society and hopefully their attendance and adherence easier. We would also seek to be fully reassured about the safety of the system and identify any unforeseen problems that may have arisen.

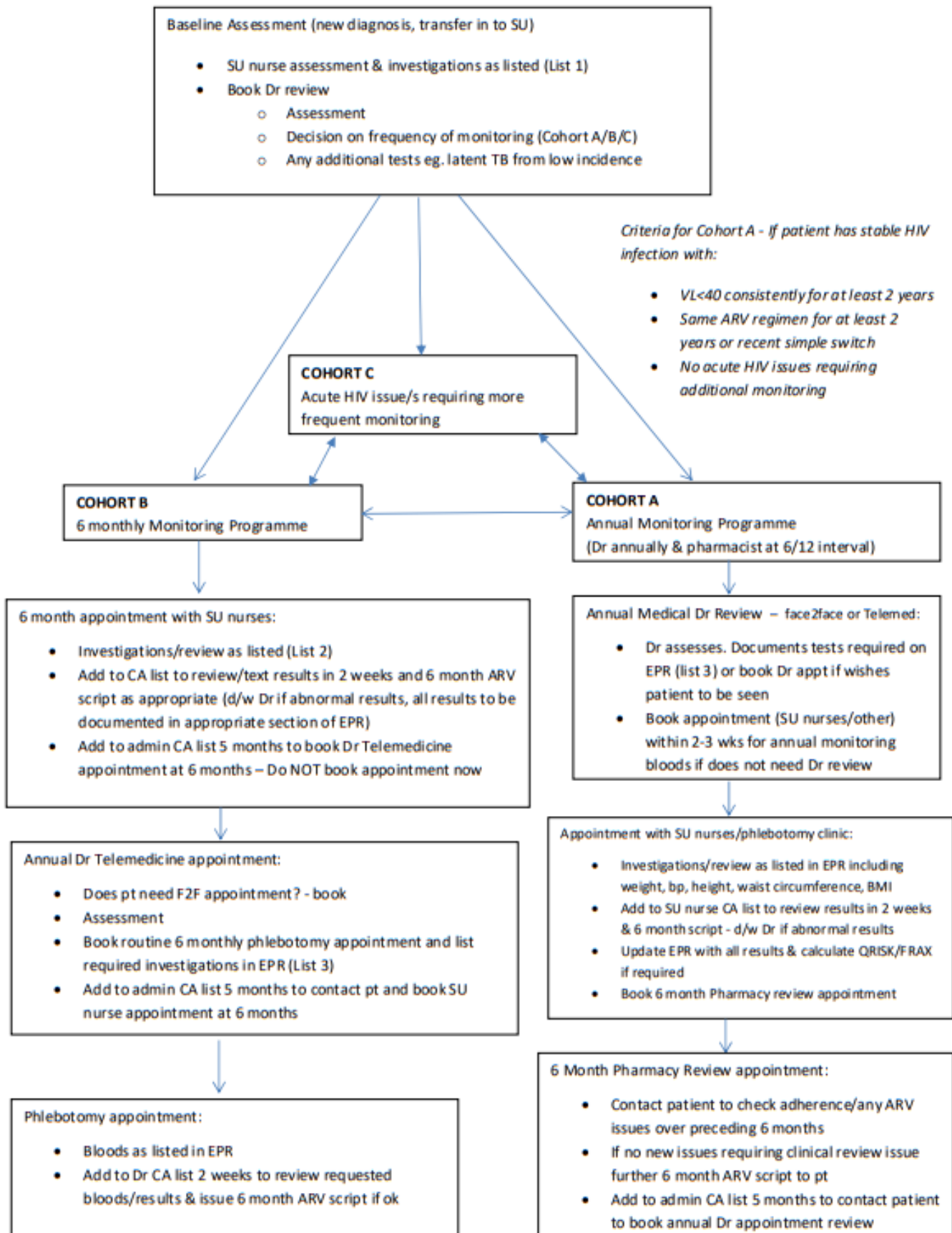
The environmental savings indicated in this project, were considered “staggering” by our staff. Indicating these savings in terms of equivalence to car journeys made it relatable and simplified staff understanding, and they voiced that it was still overwhelming to see the NHS effect on the environment.

On completion of this project, we will seek recognition of the value of our outcomes from our colleagues within our Trust with its many outpatient departments. We would then try to extend it to a system wide approach across our county (which has three NHS Trusts and Primary Care) as the county moves towards integrated care systems.

References

1. Rizan C, Bhutta M, Reed M, Lillywhite R. The carbon footprint of waste streams in a UK hospital. *Journal of Cleaner Production* 286 (2021) 125446. <https://www.sciencedirect.com/science/article/abs/pii/S0959652620354925>
2. Rizan C, Reed M, Bhutta M. *Environmental impact of Personal Protective Equipment supplied to health and social care services in England in the first six months of the COVID-19 pandemic. Journal of the Royal Society of Medicine; 0(0) 1–14, DOI: 10.1177/0141076821100158*
3. www.nat.org.uk (National Aids Trust)

Appendix 1: Summers Unit Pathology Monitoring 2022



LIST 1: Baseline/diagnosis/transfer in

- Confirmatory HIV test – unless result in formal transfer letter from UK site
- CD4
- VL
- HLA B5701 – unless result in formal transfer letter from UK site or pt already on abacavir
- HIV resistance test – unless result in formal transfer letter from UK site or undetectable VL
- Hepatitis IgA Ab
- Hepatitis B cAb, sAg, sAb
- Hepatitis C Ab – if positive check HCV -RNA
- FBC/differential
- U&E
- LFT
- Bone profile
- Lipid profile
- HbA1c
- Urinalysis, UPCR/ACR
- STI screening and syphilis serology (under GU number)
- QRISK3 score – if aged 40yrs and over
- Bone fracture risk assessment FRAX score – do every 3 years if aged over 50yrs, post-menopausal women, and other patients at high risk (hypogonadism, low body mass, smoking, high alcohol intake and glucocorticoid use)

LIST 2: 6 Monthly Follow-up SU nurse Appointment (Cohort B)

- VL
- CD4:
 1. Not on ART
 2. Started ART in last 6 months and previous CD4<350
(CD4 not needed if:
 - CD4 >350 on 2 occasions >1 year apart
 - If pt stable on ARVs with VL<40 for 2yrs and CD4 remains below 200)
- FBC – not required in men stable on ART with VL<40 unless requested by Dr
- U&E, LFT, Bone profile
- HbA1c – if requested at Dr review
- Lipids – if requested at Dr review
- Urinalysis & if proteinuria send UPCR/ACR – if on tenofovir or requested at Dr review
- If hepatitis B/C co-infection – follow NHFT/NGH co-infection flowchart 2022
- STI screen (under GU number) where appropriate including hepatitis C (under SU number) if risk
- If previous HBV vaccination:
 - sAb<10: revaccinate with double dose up to 2 courses (once VL<40). If no response document and no further vaccination
 - sAb>10: boost 5 yearly (unless no ongoing risk)
- Weight, bp, waist circumference, BMI
- QRISK3 score – if aged 40yrs and over
- Bone fracture risk assessment FRAX score – do every 3 years if aged over 50yrs, post-menopausal women, and other patients at high risk (hypogonadism, low body mass, smoking, high alcohol intake and glucocorticoid use)

LIST 3: Annual Monitoring/Doctors guide (Cohort A)

- VL
- CD₄ (not needed if CD₄ >350 on 2 occasions >1 year apart) if:
 1. Not on ART
 2. Started ART in last 6 months and CD₄<350
(CD₄ not needed if:
 - CD₄ >350 on 2 occasions >1 year apart
 - If pt stable on ARVs with VL<40 for 2yrs and CD₄ remains below 200)
- FBC – not required in men stable on ART with VL<40 unless requested by Dr
- U&E, LFT, Bone profile
- HbA_{1c} – consider if risk
- Lipids – if >40yrs or other indication
- Urinalysis & if proteinuria send UPCR/ACR – if on tenofovir or another indication to do
- If Hepatitis B co-infection: AFP, HBV-DNA, HBsAg, request liver USS, check follow up with hepatitis team and fibroscan (as per NHFT/NGH co-infection flowchart 2022)
- If Hepatitis C co-infection: check had AFP, liver USS, check follow up with hepatitis team and fibroscan (as per NHFT/NGH co-infection flowchart 2022)
- STI screen (under GU number) where appropriate including hepatitis C (under SU number) if risk
- If previous HBV vaccination:
 - sAb<10: revaccinate with double dose up to 2 courses (once VL<40). If no response document and no further vaccination
 - sAb>10: boost 5 yearly (unless no ongoing risk)
- Weight, bp, waist circumference, BMI
- QRISK₃ score – if aged 40yrs and over (please date)
- Bone fracture risk assessment FRAX score (please date)– do every 3 years if aged over 50yrs, post-menopausal women, and other patients at high risk (hypogonadism, low body mass, smoking, high alcohol intake and glucocorticoid use)
- Latent TB as appropriate – as per BHIVA guidelines:
 - if from country of high (>151/100,000)/medium (40-150/100,000)TB incidence for latent TB infection (see links below for TB incidence by country)
<http://www.gov.uk/government/publications/tuberculosis-tb-by-country-rates-per-100000-people>;
http://www.who.int/tb/publications/global_report/en
 - Consider if from low incidence countries for latent TB infection if additional risk factors 'such as exposure to a known TB case (which should be identified through routine contact tracing) or travel to or periods of time (>12 months) spent consecutively in higher incidence countries

Radiology

Request test and add to CA list in one month to review results (sooner if urgent)

Check results at one month:

- If results available – Dr to review and document in EPR
- If results not available – add to CA list to check in one month

Message from Dr LR, Dr SH and Dr AMcK – 1.7.2022

Dear all

We hope this letter finds you well. It has been a real pleasure to see some of you again in the clinics following the lifting of the restrictions during the COVID pandemic. As a healthcare service, we have learned a lot over the time that we were unable to physically see you on the hospital site(s). We have also spoken to many of you about how we communicated with you and how we provided your medication during the national and local lockdowns. We have recognised that many patients at our service are **'Very Stable'**. This means being both:

- **Clinically stable** (your health is good/well managed), **and**
- **Virologically stable** (virus is undetectable)

Research studies in this country and abroad show that 'very stable' patients can safely be seen less often for monitoring. Seeing patients less often has other benefits such as reduced travel, and time off work. If you are considered to currently be **'Very Stable'**, we are proposing to only see you once a year for your blood tests.

Very stable patients are those people who:

1. have had an undetectable viral load for at least two years, **AND**
2. are clinically stable with no other health issues requiring management by the Summers Unit or which might affect your management with us.

We have developed some written information for you to explain this in more detail. This will be given to you, or sent to you after your next appointment with the doctor or nurse where we will take the time to explain all of this to you. If you are pregnant or have any other conditions that we are currently managing, you will not be considered 'very stable' at the moment, but this is likely to change (for example after you have had your baby you may then be considered 'very stable'). You might also be considered very stable if you have recently needed to change medication because of side-effects or to simplify your drug regimen. We will not change your monitoring to yearly without speaking to you first and making sure we answer any questions you have. We are also here for you if there are any problems between visits, just as we are now.

We look forward to seeing you soon,

Best wishes.

Dr Lynn Riddell, Dr Sophie Herbert and Dr Anna McKendry

Appendix 3: Details of Very Stable Pathway SU 2022

Details of Very Stable Pathway SU 2022

You should have received a letter via our text system on 1/7/2022. This was to advise you of how we will be monitoring **Very Stable** patients going forward. This document provides you with more details and an explanation.

We are going to be offering those of you that are 'very stable' some changes to the number of times that you are required to attend the hospital for blood tests. Essentially, you will only need to come to the hospital once a year. We hope this will help you with the social aspects of attending (cost, time off work, time out of your day, parking, impact on the environment, etc) and we are confident that from a medical point of view, provided you continue to take your medication as prescribed, you should remain well in terms of your HIV care.

"Very Stable" means being both:

- ***Clinically stable (your health is good/steady/well managed), and***
- ***Virologically stable (virus is suppressed/controlled).***

For "Very Stable" patients, we have been able to review the current schedule of attendance at the Summers Unit. We have looked at how often routine blood tests are needed and where they can be taken. Based on our experience, we consider that "Very Stable" patients can be safely and effectively looked after without so many hospital attendances, provided you continue to take your medication and stay "very stable", **and** provided emergency contact arrangements remain in place. Our aim is always to make sure that you are managed safely and that your medication is working well to control your condition.

Summers Unit staff will now determine what is the safe and essential monitoring/testing that *you require as an individual*, and when physical attendance is not necessary. At the same time, we want to reassure you that emergency contact arrangements to our service will remain in place for anyone that needs them. We want everyone to continue to feel confident that both yourself and your condition are being well managed.

The points below outline our guidance for being considered **"Very Stable"**:

1. **If you have had a viral load that is less than 40 c/ml for at least two years, AND**
2. **You are clinically stable with no other health issues requiring management by the Summers Unit or that might affect your management with us.**
3. **If you are pregnant or have any other conditions that we are currently managing, you might not be in this category at the moment.**
4. **If you have recently needed to change medication because of side-effects or to simplify your drug regimen, and you meet the other criteria, you might still be considered "Very Stable".**

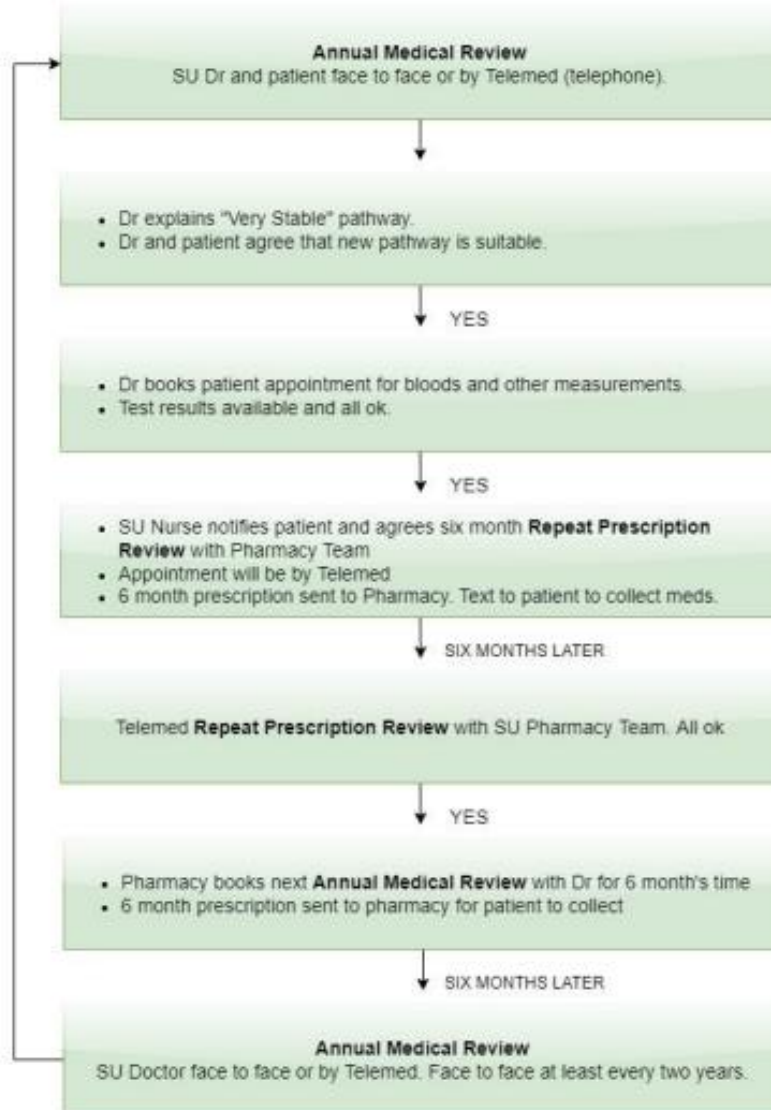
If you are not considered "Very Stable" currently , do not worry. This simply means that you require the same level of monitoring/testing that we had in place before the pandemic. Anyone who does not meet the above criteria might well be considered "Very Stable" at a later date. At all times, we will discuss this change and any concerns with each of you on an individual basis.

What are the changes?

The main change is that those who are "Very Stable" will only need to attend the hospital site(s) for blood testing and physical measurements **once a year**. Other than these yearly attendances, you will be offered telephone management if it is safe to do so. During a telephone appointment, if any issues in your care are identified by either you or NISHH staff, you will be offered/asked to attend a hospital site. If you are considered "very stable" and do not want to move to only having bloods taken once a year, just tell us. After we have run this system for a period of time, we will ask you for your feedback. Please see the flowchart on the next page to help you understand the process. Again, do not worry about it if you do not understand it or do not have the time to take it all in. Staff in the Summers Unit will explain it all to you.

PLEASE SCROLL DOWN TO SEE THE PICTORIAL CHART ON THE NEXT PAGE

FLOWCHART FOR "VERY STABLE" PATIENTS 2022



Best wishes

Dr Lynn Riddell, Dr Sophie Herbert and Dr Anna McKendry

Patient Questionnaire SU 2022

Patient ID

When you attend an appointment at the Summers Unit NGH /Ashwood, how do you travel?
car/bus/train/bike/walk/other

If you use a car, is it petrol or diesel and how many miles do you travel each way

If you use a bus, how much does it cost you and about how many miles is it each way

To attend on site, are you incurring any of these other expenses parking fee/ childcare/other

Do you have to take time off from work (you still get paid) to attend your appointments or do you have to take this time to attend clinic as annual leave or unpaid leave ?

From the time you leave to come to your appointment at the Summers Unit until the time you are back doing your normal day, approximately how many hours is it?

If we could reduce the number of times you have to attend for ROUTINE appts but still make sure you have emergency access when you need it, would this help you?

What times of day would it suit you to attend for blood tests?

Over the pandemic lockdown period when you were not able to attend the hospital, did you receive the letters we sent to your phone telling you about how we would be managing your prescriptions etc? What did you think of this method of communication?

Are environmental issues important to you?

Thank you

2: GREENER PERSONAL PROTECTIVE EQUIPMENT: HOW WE REDUCED PPE SUCCESSFULLY, Infection Prevention and Control (IPC) team

TEAM MEMBERS:

- Project managers: Holly Slyne, Interim Director of IPC and Jasmine Lowdon Personal Protective Equipment (PPE) Co-ordinator
- Video designer/editor: Risna Ferrer (IPC Nurse)
- Significant help was also given by; Ros Pounds (IPC Matron), Meera Antony (IPC Nurse), Paul Scotland (Procurement Manager) and Rachel Pell (Head of Procurement)

Background:

The need for the 'be PPE Free' project was evident because from 25th February 2020 to 24 February 2021, over 8.7 billion items of PPE were distributed to health and social care services in England, compared to approximately 2.43 billion items between 1 January and 31 December 2019¹. Whilst due to the pandemic, this substantial growth in PPE comes with environmental, financial, and social costs.

The manufacturing/ transportations and disposal of PPE increases greenhouse gas admissions and global warming, one of the biggest global threats to mankind². While essential that adequate PPE is provided to keep employees safe³, IPC audits and observations have identified PPE overuse continuing beyond the pandemic. The increased financial cost associated with increased purchase and dispose ultimately reduced money available for other healthcare services. Social costs of excessive PPE usage include communication barriers, and excessive use of gloves has been linked to increased contact dermatitis for staff⁴ and increased infection rates for patients^{5,6}.

Many companies are manufacturing alternative reusable products⁷ and while the Trust has recently made changes to use some reusable equipment (e.g., eye protection) disposable gloves and aprons continue to be required. Therefore, this project aimed at reducing inappropriate use of single use gloves and aprons. As PPE guidelines are enforced and audited via the IPC team, we were best place to undertake this project.

Specific Aims:

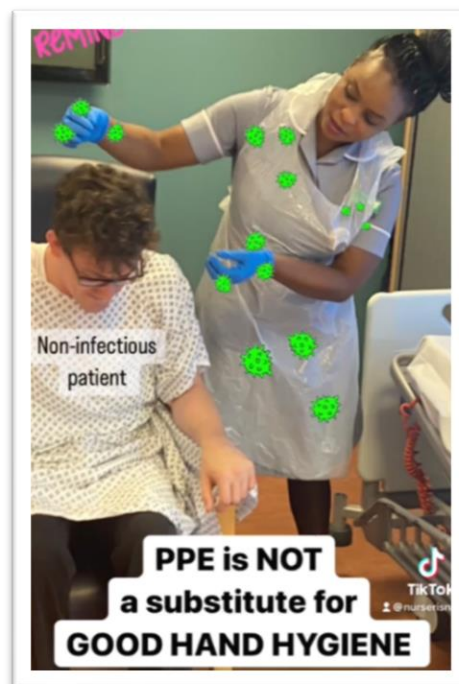
Within the 10 week competition period to;

- reduce inappropriate PPE usage by 10% at Northampton General Hospital
- increase staff's knowledge on appropriate PPE use by 20%.

Methods:

We reviewed current practice of PPE by;

- Observing usage on a surgical and medical ward (See Appendix 2 for audit data).
- A survey posted on the staff Facebook page to determine whether staff felt PPE was required for a specific task (PPE was not required for the task).
- The PPE policy was updated and emailed out to ward managers asking them to educate their staff on when PPE is and isn't required.



Change implemented:

Using the observation and survey findings, 8 trends of PPE overuse were identified:

- 1) to make a clean bed
- 2) to take patient's observations
- 3) transporting patients
- 4) transferring patients
- 5) wearing the same PPE between patients
- 6) to collect clean linen from the linen trolley
- 7) writing in patient notes
- 8) using the phone / computer at the nurse station

At the Infection Prevention link meeting the project was discussed and the Infection Prevention link nurses were educated on the overuse PPE themes identified. An education package to reduce inappropriate PPE usage in clinical environments was developed (Appendix 1) to address these themes. One theme was targeted in the education campaign per week via;

- short educational videos posted on the staff's Facebook page and on the wards Whatsapp groups.
- A screen saver with the theme was also posted on the staff's intranet
- posters were placed throughout the trust
- Ward sisters and IPC team also educated staff on audits and huddles.

Following the final themes promotion, we repeated our baseline data collections through ward observations and a survey was posted on the staff Facebook page asking staff to determine whether staff felt PPE was required for a specific task. Gloves and Apron usage from the final month of the campaign was compared to the month before the campaign started.

Measurements:

Environmental sustainability:

The environmental impact was measured using raw procurement data. We compared the average number of gloves and aprons used from the 4 months prior to the project to the 2 months during the project. Across the Trust, volumes of PPE delivered is worked out on a rolling weekly basis, so we can assume that any reductions in procurement from implementation of our change is a genuine reduction.

We also gained information via an observational audit pre (Appendix 3) and post (Appendix 4) of both a medical and surgical ward and compared our observations to the procurement data. Carbon emissions factors for gloves and aprons were taken from Rizan et al (2021)⁹. Carbon emissions factors for clinical waste was taken from Rizan et al (2021)¹⁰.

Economic sustainability:

Financial savings were measured by applying the reduction in procurement identified in the procurement data (as above) to the costs of individual items from NHS Supply Chain (2022) data⁸. The waste disposal cost saving was also calculated using the weight of the reduction of PPE from the procurement data and multiplying this by the cost of offensive waste disposal (26.6p per kg).

Social sustainability:

The social impact was measured by qualitative quotes from patients during the pre and post intervention audits and from Ward Managers and Staff that commented on WhatsApp or Facebook when the videos and surveys were posted.

Clinical and health outcomes:

The education campaign and videos will raise awareness of the potential harm caused to patients by spreading pathogens and infections from patient to patient unknowingly. We would expect increased staff awareness and reduced inappropriate use of PPE to have a positive impact on infection rates. We are planning to review and compare rates of common infections (e.g. CPE) in the 12 months pre and post our PPE free campaign.

We will measure health impact on staff by comparing pre and post rates of contact dermatitis reported to occupational health.

Results:

Clinical and health outcomes:

Our pre intervention staff survey (8th June 2022) had 149 votes with 12% answered correctly. Post our education and awareness campaign, the survey (12th July 2022) the survey had 146 votes with 98% answered correct. Therefore, staff knowledge of appropriate PPE increased by 86%, surpassing our goal of 20%. We are planning to review and compare rates of common infections (e.g. CPE) in the 12 months pre and post our PPE free campaign and expect to see a reduction in rates.

Environmental sustainability:

Observational audit results: The number of inappropriate glove and apron uses are summarized below:

	Medical ward	Surgical ward
Number of inappropriate glove uses before intervention in 1 hour	12	16
Number of inappropriate apron uses before intervention in 1 hour	7	10
Number of inappropriate glove opportunities post intervention in 1 hour	4	1
Number of inappropriate apron opportunities post intervention in 1 hour	0	1
Inappropriate glove use difference	8	15
Inappropriate apron use difference	7	9
Percentage difference gloves	66% reduction	94% reduction
Percentage difference aprons	100% reduction	90% reduction

The observational data showed a 66%-94% reduction (mean = 80%) in inappropriate gloves use and 90-100% reduction (mean = 95%) in inappropriate apron use because of the education package intervention. The themes of inappropriate PPE use targeted in our campaign were not observed in our post change observation.

Procurement data: The following table presents the procurement data of gloves and aprons used and the reduction seen over the two-month campaign.

PPE type	Average use in 2 months before project	Average use in 2 months during project	Difference / 2 months	Reduction (%)	Carbon saving
gloves	1,099,700	1,052,600	-47,100	4.3%	1,225 kgCO ₂ e
aprons	216,163	168,406	-47,757	22.1%	3,104 kgCO ₂ e
TOTAL CARBON REDUCTION IN 2 MONTHS					4,329 kgCO₂e

The procurement data shows a 4.3% reduction in inappropriate glove use and a 22.1% reduction in inappropriate apron use across 2 months. Therefore, our aim to reduce inappropriate PPE usage by 10% was achieved. If extrapolated across a year, a minimum annual saving of 25,974 kgCO2e would be achieved. This is equivalent to 74,809.9 miles driven in an average car (110 return journeys from Northampton to Glasgow). This is also an average reduction of 96.5kg (gloves) and 222.1kg (aprons) of plastic per month.

It is possible that as the data above was collected during the 'PPE free' campaign, there will be further reduction as the change is embedded into everyday practice and further reflected in procurement data. Our observational audit showed an 80% mean reduction in glove use. If an 80% reduction was applied to the procurement data, a significantly higher saving of up to 11,436.5 per months in gloves alone could be achieved.

Social sustainability:

Pre intervention one member of staff commented that

“the aprons are poor quality and you often have to take 2 or 3 before finding one that isn't broken. I feel there is lots of PPE overuse, for example, staff are wearing PPE when there is no patient contact or just to mobilise a patient it makes no sense to me!”

The feedback from staff on the social media platforms was overwhelmingly positive. They found the videos informative and are clearer about when PPE is required and when it isn't. This has made them more confident to use PPE appropriately, as reflected in the post intervention audit data. Staff are happier not having to wear PPE when they don't need to.

The Matrons and Ward Managers really supported and engaged with the videos and asked for them to be shared on Ward Managers Whatsapp groups and ward Whatsapp groups. One Ward Manager commented post intervention

“this is such a great campaign, it is refreshing and so visual you can't help but think about it the next time you go to grab those gloves, our team have loved it!”

Since implementation of the project the IPC team have been approached by staff asking them to look for more reusable and sustainable PPE options in other areas of practice, which is a fantastic outcome.

Interestingly 2 of the 3 patients that commented within the observational audits felt that staff wore the right amount of PPE, so patient awareness and engagement needs to be addressed as part of the lasting change of this project.

Economic sustainability:

Based on the reduction identified in the procurement data, a financial saving of £3781.14 has been achieved in two months. Additionally. £169.47 was saved from reduction in clinical waste disposal.

Type of PPE	Cost (£ / item)	Weight (kg / item)	Saving from reduced procurement	Saving from reduced waste disposal
Single glove	0.06	0.0041	£2,826	£51.32
Apron	0.02	0.0093	£955.14	£118.15
TOTAL COST REDUCTION IN 2 MONTHS			£3,781.14	£169.47

If extrapolated across a year, a minimum of **£23,703.60** would be saved (£22,686.84 in procurement and £1,016.76 in waste disposal), Approximately 3,822kg of plastic would be eliminated. As in the environmental results, it could be suggested that this would increase as the 'PPE free' campaign embeds further into clinical practice across the Trust.

Barriers encountered

We planned time, added the project to our project team member calendars, discussed with other staff their time and availability and set realistic SMART goals to ensure the project continued successfully despite other clinical and operational pressures.

The weather may potentially have caused bias in the results through staff choosing not to wear PPE in warmer months, however this may have been balanced by entering another wave of COVID mid June requiring more PPE to be worn for some patients.

Communicating messages clearly to all staff member in a large Trust is challenging. Reinforcing the message due to staff turnover, fatigue from the pandemic and decreased memory are also potential barriers to successful implementation and long term change. To overcome this, a range of communication messages were used; social media, link nurses, Whatsapp, posters and screensavers.

On discussing with staff anecdotally they reported having viewed at least one communication method, reinforcing to us that a variety of communication platforms is essential in a workforce that are so varied. It is hoped that the really simple and visual approach used overcomes these potential limitations.

Conclusions:

Our education package was extremely successful in showing that PPE can be reduced, with impressive reductions in just 10 weeks, forecasted to be 25,974 kgCO₂e and £22,687 across a year. The additional benefits to patient safety and staff wellbeing are also significant.

Our project has been a positive social change, delivering key messages in a way in which staff have not only gained knowledge, but applied this knowledge to their practice. We plan to continue creating new monthly PPE videos to sustain and embed the success of this project. The videos created so far have also been incorporated into annual IPC mandatory refresher training and the 'be PPE Free' project has been added to the annual IPC Campaign Plan to have a monthly focus on this important topic once a year to ensure the change is sustained.

This project was delivered Trustwide at our hospital. However, regionally other IPC Teams have seen overuse and inappropriate use of PPE post-pandemic and a regional collaborative piece of work is being organised for September 2022 to improve PPE practice. The method and measures utilised are easily transferrable to other healthcare contexts such as reducing waste from dressing packs, or reducing disposable PPE (e.g. by use of reusable visors or masks). The IPC team are already applying the principles of this project to implement the latter!

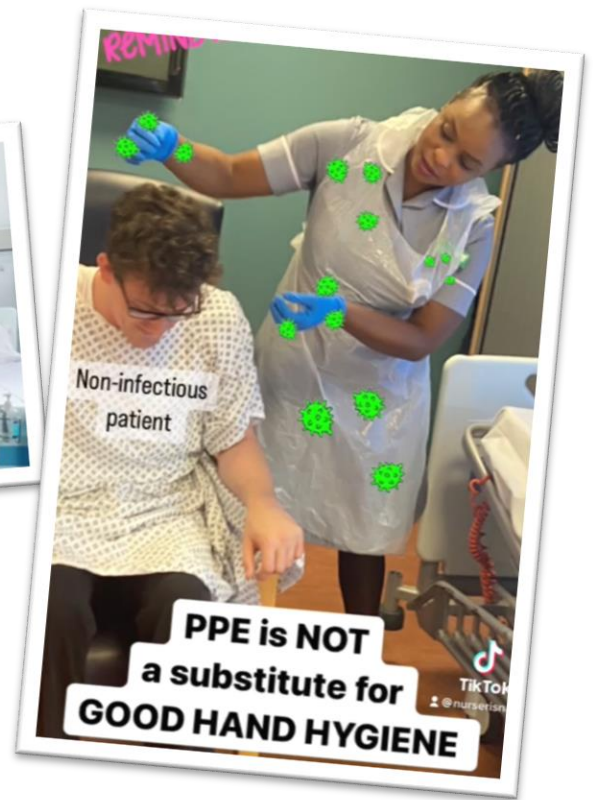
The IPC Team are delighted that NHS England have engaged with the project and want us to showcase it regionally to help reduce inappropriate PPE across the whole of the Midlands. Additionally, the project has been accepted as an oral presentation at the national IPC Conference in October 2022 where the project will be shared nationally.

References

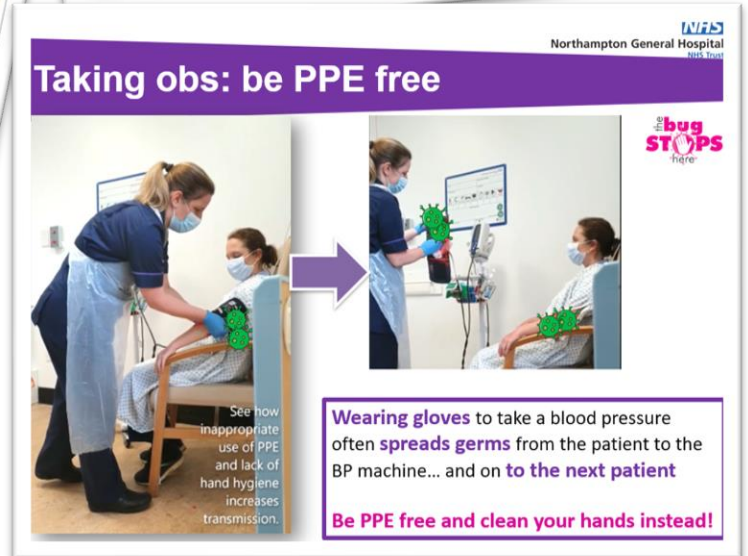
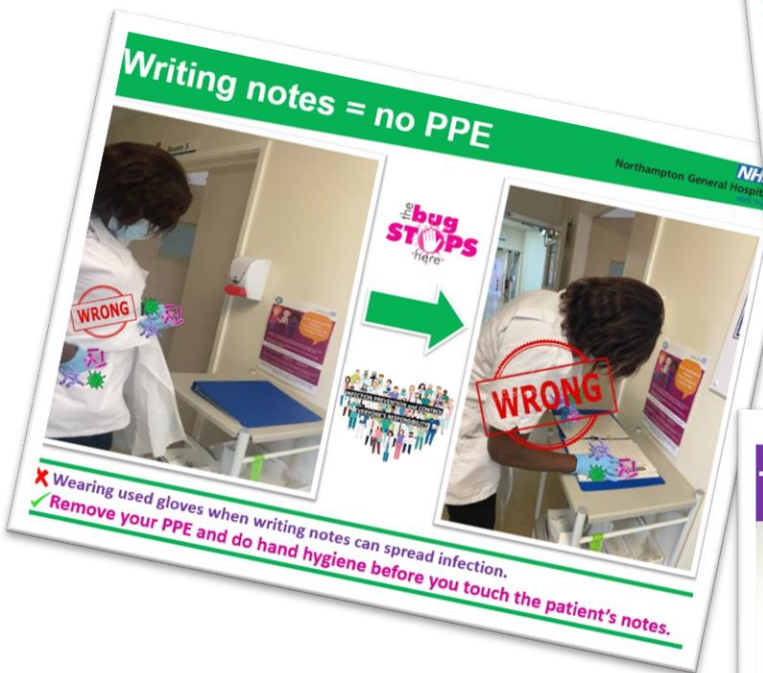
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Appendix 1 – Project change package

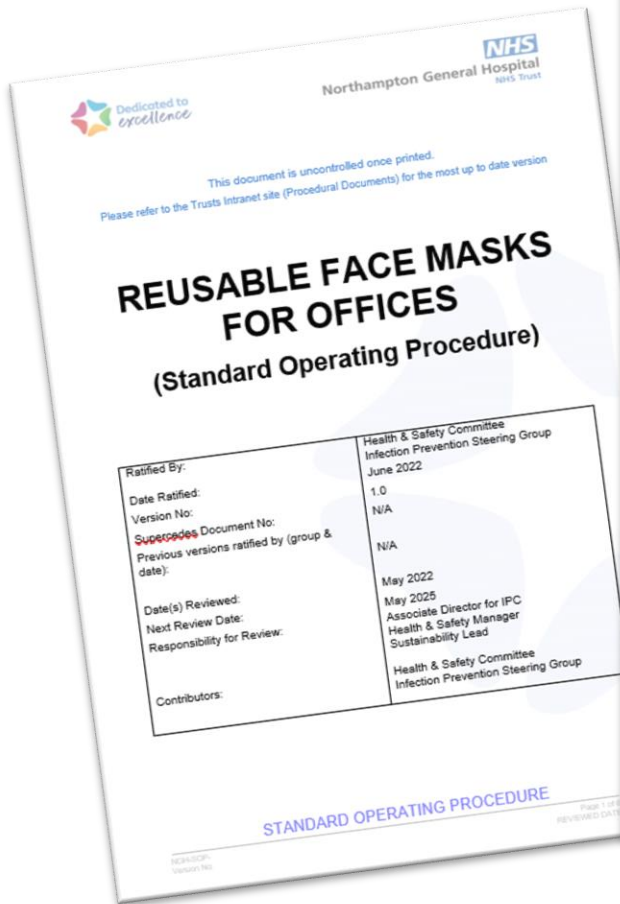
Videos



Posters and screensavers



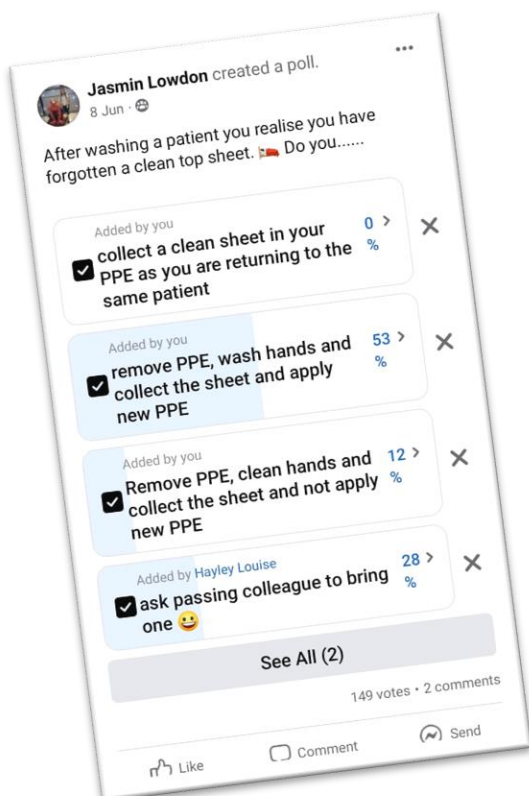
Policy changes



ACTION CARD: PPE and COVID

Ward / zone	PPE required
Blue zone	<ul style="list-style-type: none"> Surgical mask at all times
Green zone	<ul style="list-style-type: none"> Add gloves and apron if: <ul style="list-style-type: none"> at risk of contact with blood & body fluids handling chemicals isolation precautions required e.g. C diff, CPE Add eye protection if risk of splash to eyes Patients encouraged to wear surgical mask Visitors encouraged to wear surgical mask
Outbreak bays and COVID exposed bays	<ul style="list-style-type: none"> Surgical mask at all times If there is no direct contact with the patient or their environment, gloves and apron are not needed Gloves and apron for direct contact with the patient or their environment – change after each patient Add eye protection if patient is symptomatic / risk of splash to eyes Change mask and clean hands when leaving an outbreak / exposed zone Patients encouraged to wear surgical mask Visitors encouraged to wear surgical mask, add further PPE if they are providing direct patient care
Yellow zone	<p>Only visit the ward if essential</p> <ul style="list-style-type: none"> Surgical mask or fit tested FFP3 at all times If there is no direct contact with the patient or their environment, gloves and apron are not needed Gloves, apron and eye protection for direct contact with patient or their environment – remove after each patient
Red zone	<ul style="list-style-type: none"> Change mask, clean eye protection and clean hands when leaving a red / yellow zone Patients to wear surgical mask if able to tolerate (or oxygen mask if required) Visitors to wear surgical mask, add further PPE if they are providing direct patient care

Staff engagement on hospital closed social media platform



Appendix 2

Surgical ward Pre-Intervention observational audit results: 17/5/22: 10am to 11am

What PPE was the staff member wearing?	What was the task they were doing?	Was the PPE appropriate?	What is their job role?
Gloves and apron	Observations	No	Nurse
Gloves and apron	Observations	No	Nurse
Gloves and apron	Observations	No	Nurse
Gloves and apron	Observations	No	Nurse
Gloves	I.V fluids	yes	Nurse
Gloves and apron	Changing a patient	Yes	Nurse
Gloves	Making a bed	No	HCA
Gloves	Cannulating	Yes	Nurse
Gloves and apron	Giving an injection	No	Nurse
Gloves and apron	Observations	No	HCA
Gloves	Making a bed	No	Nurse
Gloves	Talking to a patient who is in bed	No	Nurse
Gloves	Carrying a tied linen bag outside	No	HCA
Gloves and Apron	Talking to a patient who is in bed	No	Nurse
Gloves and apron	Observations	No	Nurse
Gloves and apron	Transferring a patient	No	Nurse
Gloves	Observations	No	Nurse
Gloves and Apron	Vac dressing	Yes	Nurse
Gloves and apron	Observations	No	Nurse
Gloves	Talking to a patient who is in bed	No	Nurse

Staff comments

Staff were asked what their views were about the current PPE policy, do they feel protected, is it too much PPE, what do they think?

Nursing student	Feels protected	Felt the current policy on aprons and gloves on red wards was needed and didn't feel they were needed on green wards (unless risk of blood or bodily fluids).	Feels eye protection shouldn't be worn if wearing glasses.
Discharge Co-ordinator	Feels Protected	Felt the current policy on aprons and gloves on red wards was needed and didn't feel they were needed on green wards (unless risk of blood or bodily fluids).	Feels surgical masks are not required on green wards.
O.T	Feels Protected	Felt the current policy on aprons and gloves on red wards was needed and didn't feel they were needed on green wards (unless risk of blood or bodily fluids).	Aprons poor quality- thus often take 2 or 3 before finding one that isn't broken. Doesn't feel it is necessary to change surgical masks between green wards. Feels lots of PPE overuse, for example, staff are wearing PPE when there is no patient contact or just to mobilise a patient.
Domestic	Protected	Felt the current policy on aprons and gloves on red wards was needed and didn't feel they were needed on green wards (unless risk of blood or bodily fluids)	Doesn't believe surgical masks on green wards is necessary. Stated when she worked on ITU she had to wear scrubs, which she felt was a waste or resources.

Patient comments

Ask 5 patients what their views are about the current PPE they see staff wearing, do they feel protected, do they see staff clean their hands, what do they think?

Bed 19	Feel staff over use PPE	Would like biodegradable PPE. Feels it is unnecessary for patients to wear masks	Stated staff have good hand hygiene with them.
Bed 26 and Bed 23 (spoke to both together)	Feels staff use PPE correctly	None	Staff are struggling to wash hands when removing PPE as the sink in the bay is too hot.
Bed 27	Feels staff use PPE correctly	None	Stated staff have good hand hygiene.

Medical ward Pre Intervention observational audit results: 17/5/22: 10am to 11am

What PPE was the staff wearing?	What was the task they were doing?	Was the PPE appropriate?	What is their job role?
Gloves	Walking between bays	No	Dr
Gloves & Apron	Passed Patient washbag	No	HCA
Gloves & Apron	Getting rid of washbowl	Yes	HCA
Apron	Talking to Patient	No	SN
Gloves & Apron	Walking around bay	No	HCA
Gloves & Apron	@ Linen trolley	No	SN
Gloves & Apron	Mopping around bed spaces	No	Domestic
Gloves & Apron	Doing observations	No	HCA
Gloves	Pushing Trolley	No	Porter
Gloves & Apron	Taking bloods	Yes	Phlebotomist
1 Glove	Cleaning Patient table	No	SN
Gloves & Red apron	Assisting patient in bed	No	SN
Gloves & Apron	Taking bloods	Yes	Phlebotomist
Gloves	@ Linen trolley	No	Nursing associate
Gloves	Taking blood	No	Phlebotomist
Gloves & Apron	Disposing of bedpan	Yes	SN
Gloves & Apron	Sitting patient up in bed	No	HCA
Gloves	Putting clean sheet on bed	No	Student Nurse

Appendix 3

Surgical ward Post Intervention Observational Reaudit. 12/7/22: 1 hour spent auditing

What PPE was the staff member wearing?	What was the task they were doing?	Was the PPE appropriate?	What is their job role?
Nothing	In patient's environment, sitting with patient	Yes	HCA
Nothing	In patient's environment talking to patient.	Yes	Doctor
Nothing	Writing in a patient's notes	Yes	HCA
Gloves and Apron	Assisting a patient.	No	Therapist
Nothing	Assisting a patient	Yes	Therapist
Nothing	Performing observations	Yes	HCA
Nothing	In patient's environment	Yes	Hostess
Nothing	At end of patient's bed	Yes	HCA
Nothing	Assisting a patient with a drink	Yes	HCA
Gloves	Mopping floor/ cleaning	Yes	Domestic

Medical ward Post Intervention Observational Reaudit on 12/7/22

Please note only 30 minutes spent auditing so results have been doubled to equal 1 hour.

What PPE was the staff member wearing?	What was the task they were doing?	Was the PPE appropriate?	What is their job role?
Gloves only	In patient's environment, picking up items off the floor.	No	HCA
Nothing	Performing observations	Yes	HCA
Gloves only	Administering an I.V	Yes	Nurse
Nothing	Transferring a patient	Yes	Porter
Nothing	Performing observations	Yes	HCA
Nothing	Collecting Linen from the Linen trolley	Yes	HCA
Nothing	Performing observations	Yes	Student Nurse
Gloves only	Transferring a patient on to the commode	No	HCA
Nothing	Talking to a patient at the end of their bedside	Yes	Doctor
Nothing	Performing observations	Yes	Student Nurse
Nothing	Repositioning a patient	Yes	Nurse
Nothing	Performing observations	Yes	Student Nurse
Nothing	Transferring a patient from bed to weighing scales	Yes	Student Nurse
Nothing	In patient's environment	Yes	Nurse
Nothing	Assisting a patient with food	Yes	Therapist
Nothing	Repositioning a patient	Yes	Nurse
Gloves and aprons	Meeting a patient's hygiene needs	Yes	Nurse
Nothing	In patient's environment	Yes	Nurse
Nothing	Changing a patient's gown	Yes	HCA
Nothing	Assisting a patient with a drink	Yes	Nurse

Appendix 4

PPE Procurement data from Jan 2022 – June 2022

Code	Item Description	Jan-22	Feb-22	Mar-22	Totals (Each)	Totals (Boxes)
FTG569	XL Gloves	900	2240	4220	7360	37
FTG570	L Gloves	277200	298200	332200	907600	4538
FTG571	M Gloves	422200	468200	480200	1370600	6853
FTG572	S Gloves	333600	320800	356800	1011200	5056
NBTB0017	Aprons	238417	202813	224407	665637	3328

Item Code	Item Description	Apr-22	May-22	Jun-22	Totals (Each)	Totals (Boxes)
FTG569	XL Gloves	3460	5900	2380	11740	59
FTG570	L Gloves	356800	284400	281800	923000	4615
FTG571	M Gloves	435200	452400	432800	1320400	6602
FTG572	S Gloves	317400	330800	323000	971200	4856
NBTB0017	Aprons	199016	168000	168813	535829	267

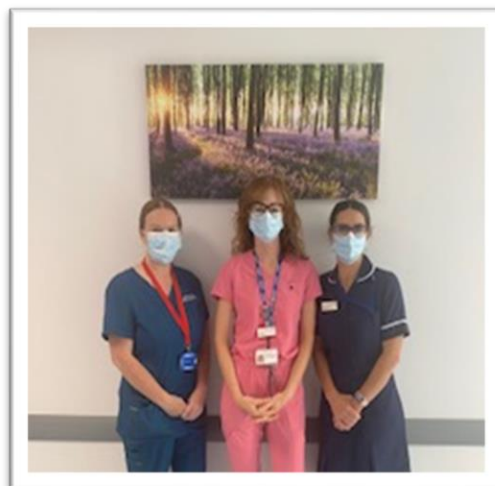
3. CRITICAL CARE GETTING PUMPED UP TO REDUCE UNNECESSARY DOSES OF PROTON PUMP INHIBITORS, Critical Care team

Team Members:

- Leeanne Hardy: Senior Sister, Quality Service and Improvement, Critical Care
- Laura Moven: Junior Sister. Practice Education, Critical Care
- Laura Robinson: Advanced Pharmacist for Critical Care.
- Rachel Kontogonis: Advanced Pharmacist for Critical Care

Background:

Within critical care and nursing care in general, we often use research based 'care bundles' with the aim of bringing together focused interventions to improve care given and avoid unnecessary harm. This has a very positive impact on quality of care, however, can sometimes lead to interventions continuing when no longer necessary. For example, a medication may commence in an acute phase of illness or post operatively, but then continue beyond this and even after discharge into the community.



Overuse of medication comes with huge financial and environmental costs¹. Pharmaceuticals alone count for about 25% of carbon emissions in the NHS, the largest single contributing factor. Breaking this down, the impact comes from the manufacturing and distribution, the active pharmaceutical ingredients (APIs) and pharmaceutical waste². APIs have been found in many river sites worldwide at levels deemed unsafe for aquatic organisms, which can have negative effects on the health of ecosystems and humans³. The UK Governments 2021 National overprescribing review estimates 10% of medications dispensed in primary care are overprescribed⁴.

Literature has suggested that patients often continue taking proton pump inhibitor (PPI) medications for extended periods of time when no longer clinically indicated. This may be due to PPI being prescribed in an acute setting and continued through to and beyond discharge or prescribed in the community and dispensed on repeat. PPI use has been linked to several negative health outcomes including gastric neoplasia, renal disease, increased risk of fracture, dementia, liver disease and micronutrient deficiency⁵

Within our trust an 'Infection Prevention Collaborative' has been formed to look closely into the relationship between PPI's and Clostridium difficile infections (CDI) with research identifying increased risk for patients to acquire CDI when given PPIs, particularly if long-term^{6,7}. CDI can increase patient length of stay in hospital and lead to increased risk of moisture lesions (If bed bound)⁸. Evidence suggests long-term use of PPIs is associated with increased risk of community acquired CDI⁹ however if a PPI is discontinued within one month the risk of developing CDI is diminished⁶. CDI is recognised as one of the major preventable causes of increased morbidity, mortality, and increased health care costs¹⁰.

The critical care environment is dynamic by nature and held together by very experienced and forward-thinking professionals with a keen interest in challenging practice and improving patient care. This ideally places our team to lead a review into PPI medications prescription and use. If we can stop low value (not clinically required) prescriptions and unnecessary doses, we can positively effect patients, the critical care

team, and the wider community. A reduction in medications will also support our team in reducing our impact on the environment and supporting the NHS ambition to be a net zero healthcare system by 2040.

Specific Aims:

To reduce the number of unnecessary doses of proton pump inhibitor (PPI) medications given to patients within critical care in order to;

- Improve patient care and reduce potential risk of side effects of medication (including increased infection risk).
- Reduce the carbon footprint associated with PPIs on critical care.
- Provide a financial saving to the NHS.

Methods:

Studying the system:

Our Critical Care facility in Northampton is a 16 bed unit that cares for patients with a variety of needs; surgical emergencies, post op elective surgical patients and medical emergencies. We reviewed our current practices to determine if unnecessary doses of PPI were a problem, and to understand the extent of this problem. We;

- Conducted a literature review into the relationships between PPI medication and poor health outcomes such as increased risk of CDI.
- Reviewed the indications and contraindications of PPI's, using information from the Critical Care Compendium-Stress Ulcer Prophylaxis Guide¹¹
- Completed an audit of PPI prescriptions and administered doses for all elective patients to establish whether a PPI prescription or dose was necessary or not.

Planned changes:

We plan to cascade our project findings and reduce unnecessary doses of PPIs by;

- Delivering teaching sessions to both medical and nursing teams
- Adding pertinent information in the patient's communication book
- Expanding on the current checklist on ward charts to include 'Review requirement for PPI'
- Include review of PPI in Fresh Eyes tool (NHS England & Improvement¹²)
- Increasing awareness of and engagement with an algorithm in the Management of patients with CDI Trust protocol. This algorithm allows health professionals to refer and review patients admitted with a PPI and to identify if they should be discontinued.
- Interviewing the medical team to assess if there are any knowledge gaps in when a patient requires a PPI and when it is clinically appropriate to stop.
- Set up a sustainability group on the unit to ensure changes remain embedded, and to complete future projects.

We plan to repeat our initial audit following implementation of the above changes to look at actual savings.

Measurements:

We included both emergency and elective patients in our audit data collection. With consideration of shift patterns, weekends, and bank holidays we were able to audit PPI prescriptions and doses for 19 days to identify the number of unnecessary doses. We captured data on

- Patients' medical history and reason for admission
- Current dietary intake status (NBM, oral diet, NG gut protection or full established NG feed)

- Other medications which would increase risk of a stress ulcer (e.g. anti-platelets), as patients on these medications would still require PPI medication.
- Number of PPI doses given and administration method (IV, oral or NG)
- If each dose was necessary or unnecessary (as per the Critical Care Compendium-Stress Ulcer Prophylaxis Guide).

Environmental sustainability:

We listed all items used in administering 1 dose of IV pantoprazole, NG lansoprazole and oral lansoprazole (The most used PPIs in critical care at NGH). This included the actual drug and syringes, needles diluents, flushes and cleaning wipes. Using the cost per item, we applied emissions factors available from the Greener NHS database to identify the total CO2e attributed to administration method.

Table 4: Total CO2e per single PPI dose

	Total Calculated KgCO2e per item of dose	Total Calculated kgCO2e of waste per dose	Total kgCO2e per dose*
IV	0.662	0.0316	0.6936
Oral	0.129	0.000021	0.129021
NGT	0.427	0.0038764	0.430876

*While each administration method is associated with a different amount of kgCO2e per dose (as the medications are different prices and require different consumables), our data cannot be used to compare environmental impacts of different administration methods, which would require a process-based carbon footprint method, rather than a cost based analysis.

Economic sustainability: The cost of individual consumables was sourced from the hospital procurement team and the cost of PPI medications from the pharmacy team. We weighed every consumable (including packaging) and applied the weight of each item to the corresponding waste disposal stream to identify cost savings from reduced waste disposal.

Social sustainability: Social impact was evident from when we started to collect our baseline audit information. Both medical and nursing colleagues were aware of the audit and therefore, anecdotally began paying more attention to PPIs and commenting they had reviewed the PPIs. Therefore, our baseline audit may reflect an underestimation of potential savings.

Staff feedback was gained via conversations with colleagues. Moving forward, we would like to create a survey to gain feedback from the multidisciplinary team on whether our project has raised awareness and/or improved confidence to question prescriptions (whether it be the route prescribed or de prescribing).

Clinical and health outcomes: It is too early to comment on whether the project has reduced incidence of poor health outcomes and CDI, however this is something we plan to measure with our changes fully embedded in liaison with the infection prevention and control (IPC) team.

Results:

Clinical and health outcomes:

As per our literature review, reducing the number of unnecessary doses or prolonged use of PPI's (without review), is likely to ensure patients are not put at any additional risk, and has the potential to reduce incidence of several negative health outcomes. This may increase quality of life for patients and reduce pressures on both community and acute health and social care systems. With all the benefits outlined this will positively affect the wider community.

Additionally, reducing incidence of CDI may decrease the use of antibiotics used to treat CDI, which may combat antibiotic overuse, a growing concern as suggested in the NHS Long-term Plan on antimicrobial resistance¹³. While it is too early to assess this, we plan to measure with our changes fully embedded in liaison with the infection prevention and control (IPC) team.

Environmental sustainability:

Our audit identified there are potentially a total of 2.8 doses of PPI given unnecessarily per day, equating to 21.221kgCO₂e saved during the 19 day audit period. Extrapolated across a year, with our changes implemented and embedded successfully, we anticipate a reduction of 414.263kg CO₂e. This is equivalent to 1,193 miles driven in an average car (1.7 return journeys from Northampton to Glasgow).

With the assumption that reduced unnecessary doses of PPI will reduce incidence of medical complications and infections such as CDI, there would be further environmental savings by reduced need to treat these, as well as potential for reducing length of hospital stay.

Social sustainability:

Nursing staff would gain valuable time from reduced medication administration, including time to collect the medication from the Omnicell, collecting the consumables, to locate a second nurse to check the IV medication against the prescription and patient identity, to administer the medication, disposing of waste and lastly cleaning, hand washing etc. Reduced cases of illness and CDI associated with PPI medications may reduce nurse's workload and time spent caring for patients.

Whilst carrying out the audit, we explained to staff, doctors and patients (if they were awake), what we were doing and what we were hoping to identify and benefits that could be gained. Colleagues on critical care engaged in the project and showed an interest in the work we were doing. Staff were keen to learn more about the risks associated with prolonged PPI use and helped us to complete our baseline audit.

Our management team were also supportive of the project and potential benefits to patients, staff, and the environment. We were pleased to hear many colleagues agreed that PPIs often continue to be given to patients for longer periods than necessary. One colleague who recently joined the team from overseas commented that he was very glad to see this project take place and he used to see PPIs given unnecessarily back in his home country.

Anecdotally, we witnessed evidence of behavior change in our colleagues prior to implementation of any changes. As awareness of the audit and project grew, we noted that PPIs were being discontinued sooner than they would have been previously. In addition, a new gastroprotection guideline was introduced in the hospital which helps to give guidance as to when a patient should be prescribed the PPI, giving clarity to the medical team.

We also discussed the project as part of a band 6 study day to communicate actions and projects taking place within critical care. This sparked lots of conversation and ideas to improve sustainability in many of other aspects of care. The matron for critical care has suggested we form our own 'Green team'.

Economic sustainability:

Based on our 19 day audit, we identified a potential cost saving of £131.07. Extrapolated across a year, critical care has the potential to save £2,237.16.

These financial savings are based upon the direct cost of the medication and consumables required to administer each type. Using the NHS Efficiency Map Tool 2019¹³, this is a 'service productivity improvement' whereby there is potential to improve patient care in additional ways (e.g. by reducing side effects, etc.) and therefore making additional future cost savings. For example, if CDI infections are reduced, the resources used in managing infections such as faecal management systems, pads, wipes, syringes, needles, saline/water for injection and specialized pressure mattresses would not be needed.

The NHS led Clinical Commissioning Groups (CCG) fine hospital for high rates of CDI infection associated with a lapse in care. Reducing PPI medication and the risk of CDI infections, has potential cost savings from reductions in fines.

Barriers encountered

Our audit happened to fall on the long bank holiday weekend which affected elective patient lists and therefore our data collection. We decided to extend our audit to ensure we were collecting data collection to obtain more accurate findings.

An added barrier we encountered was the audit and how data was completed by different individuals. This made some of the data interpretation complicated, for example, on occasion people forgot to specify the PPI the patient was receiving and just wrote yes. However, we extended our audit to ensure that we obtained enough data and fed back to the team about being more accurate when completing the audit.

Once medical staff became aware of the project, we noted behaviour change within the team which may have negatively influenced our baseline data collection. However, conversely this highlighted that our project promotion was good, and staff were more aware of the risks of PPI overuse which ultimately benefits patients, with changes made by the team before we specifically targeted awareness and behaviour change.

Conclusions:

We have successfully shown that financial, environmental and health outcomes can be positively influenced by closer monitoring and reduction of unnecessary PPI doses. In addition, we found that the potential savings were significant over a year's projection, with benefits that may reach staff, patients and the wider community.

A key element that contributed to success of the project has been positive staff engagement. While awareness during our audit influenced behaviour and may have led to an underestimation of the problem, ultimately behaviour change is the goal, and shows staff care about patients and want to improve their care. This is a positive indication that our planned changes to target staff awareness and behaviour will be very successful.

If repeating the audit, we would be more discreet during baseline data collection in order to not influence behaviour at the time. We would also seek further information on duration of the patient being nil by mouth (NBM). Prescription of PPI also needs to be considered, as some of our elective patients only remain NBM until they have been reviewed by the doctors the next day resulting in unnecessary doses. We will liaise with our Infection prevention and control team who recently worked with Nye Bevan ward to review PPI prescription and clinical need on admission to their ward enabled doctors to review patients admitted already taking a PPI. This could be adopted in critical care to improve review of PPI prescriptions, to help clarify if a patient requires a PPI and if it could be stopped prior to transfer from critical care. This will prevent patients being discharged from hospital on an unnecessary PPI.

We feel that this project would be excellent to cascade across the wards in the Trust, having greater patient numbers and perhaps being able to 'catch' those who have continued taking PPI on a longer-term basis. The data collection sheet is straight forward and not critical care specific, therefore making it readily transferrable to other departments.

Following on from the learning gained from this project we could consider focusing on other pharmaceuticals given in critical care. We administer numerous doses of IV paracetamol; however, this could be converted to an oral or nasogastric dose. There could be significant cost financial, social and carbon savings from carrying out a project in this area.

At NGH we have several platforms which enable us to promote and spark interest in these types of projects across the trust. The Quality Improvement team are very encouraging to support staff to carry out projects to help improve the quality of care we provide. We have access to rolling screensavers that would reach all areas within the trust to raise awareness. We could also use the weekly bulletins, senior nurse forums and shared decision-making groups which aim to give staff at all levels the autonomy to improve care. Our trust also has an excellent energy and sustainability manager, the 'Eco Ninja', who produces an inspirational monthly newsletter to all staff, which would be a perfect platform to promote project ideas that reduce unnecessary medication doses.

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Appendix 1: Financial cost, emissions factor and Co2e per item used in administering a PPI dose.

	Item	Cost (£)	Emissions Factor	GHG emissions (kgCO2e)
IV	IV Pantoprazole 40mg	3.26	0.127682	0.416
	Blunt fill needle	0.02	0.464916	0.0093
	10ml syringe	0.04	*	0.059
	water for injection	0.77	0.127682	0.0983
	prefilled saline	0.22	*	0.0466
	Clinell chlorhexidine wipe	0.01	*	0.328
	Total	£4.32		0.662
Oral	oral lansoprazole 30mg	0.96	0.127682	0.1226
	Paper tablet pot	0.015	0.464916	0.00697
	Total	£0.98		0.12957
NGT	Oral lansoprazole 30mg	0.96	0.127682	0.1226
	Single use purple syringe (50ml)	0.27	0.464916	0.1256
	White plastic cup	0.2	0.464916	0.093
	Sterile water	0.68	0.127682	0.086
	Total	£2.11		0.4272

Appendix 2: Breakdown of consumables by weight and waste stream.

	Item	Clinical Waste (g)	Domestic Waste (g)	Recycling (g)
IV	Pantoprazole vial	12g		
	Pantoprazole box			8g
	Blunt fill needle	1g		0.5g
	10ml syringe	5g		1g
	Water for Injection			5g +1g packaging
	Prefilled saline 10mls	11g		
	Clinell chlorhexidine wipe		1g	
	Total IV waste weight (per dose)	29g	1g	15.5g
Oral	Paper tablet pot			1g
	Total oral waste weight (per dose)			1g
NGT	Single use purple enteral 50ml syringe	36g		3g
	White plastic cup			1g
	sterile water 1litre bottle			96g
	Total NGT waste weight (per dose)	36g		100g

Appendix 3: Carbon emissions in kgCo2e created by waste per single PPI dose

	Clinical waste (tonnes)	Clinical Waste emissions (kgCo2e)	Domestic waste (tonnes)	Domestic waste emissions (kgCo2e)	Recycling waste (tonnes)	recycling waste emissions (kgCo2e)	Total waste emissions (kgCo2e)
IV	0.000029	0.031146	0.000001	0.000172	0.0000155	0.0003255	0.0316435
Oral					0.000001	0.000001	0.000021
NGT	0.000036	0.038664			0.0001	0.0001	0.038764

4. REDUCING PAPER USAGE, Research and Innovation team

Team members: Andrea Kempa and Claire Woolhouse - Research Nurses



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 report¹ 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% 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	<p>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.</p> <p>Staff often print their own protocol for reference and to make notes in.</p>	<p>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.</p> <p>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.</p>

Patient information sheet (PIS) and consent forms.	<p>The PIS is given to all eligible patients prior to consenting to the study.</p> <p>Once consent is signed, a copy is given to the patient, the GP and a third placed in the patients' medical notes.</p>	<p>Send copies to patients via email in advance of consenting when appropriate to do so.</p> <p>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.</p> <p>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.</p>
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.	<p>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.</p> <p>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.</p> <p>GP letters directly uploaded to MediViewer for those patients who have digital notes.</p>
Clinical Research Form (CRF - data capture form)	Some studies have a paper form 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)	<p>Schedule to track when patient visits are due is kept on paper.</p> <p>Individual checklists on paper are made for some study patients to ensure the visit is fully completed.</p> <p>Nursing evaluation forms are completed after every patient contact.</p>	<p>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.</p> <p>To develop an electronic nursing evaluation proforma, so that the evaluation can be typed up for patients and uploaded to MediViewer.</p>

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 Guide², which 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 RICH0.

- 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.

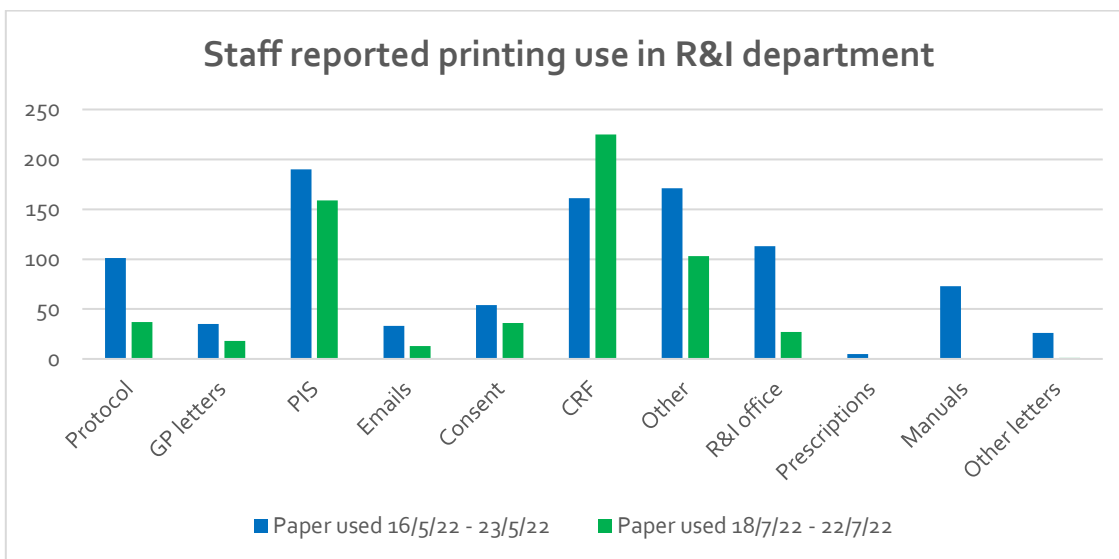
There will be a small cost saving from reduced use of envelopes for sending GP letters and the PIS to patients (where email can be used) however we did not have access to accurate data to include this in our saving.

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

Results:

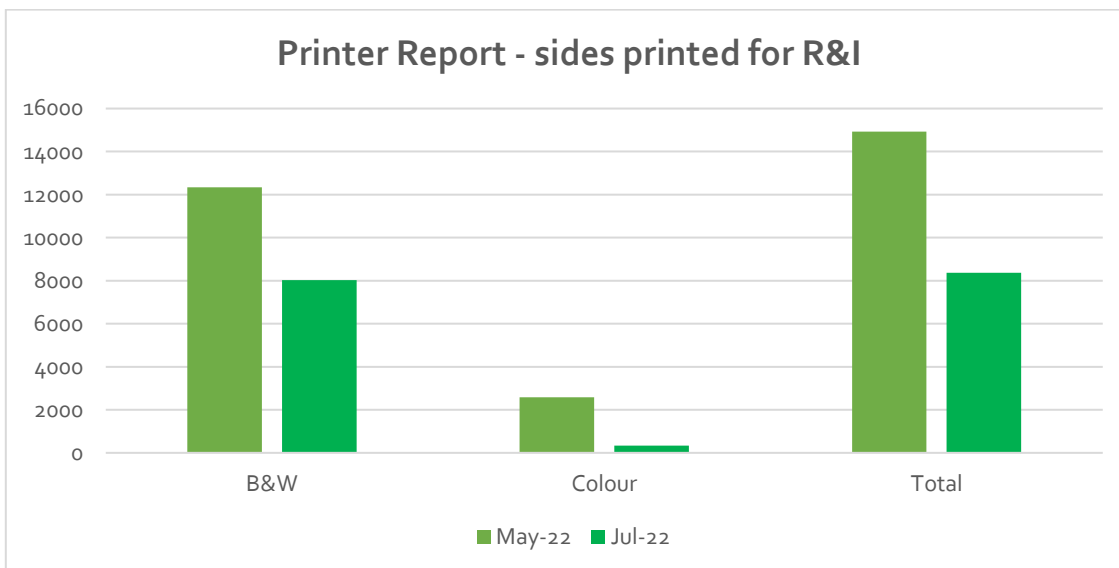
Environmental sustainability:

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.

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AWARDS



WINNERS: The Integrated Sexual Health Service team with their project ‘A novel care pathway for Stable HIV patients’.

HIGHLY COMMENDED: The Infection Prevention and Control team with their project ‘Be PPE Free!’

Congratulations to the WINNING team, the Integrated Sexual Health and HIV service, led by Dr Lynn Riddell. The project challenged the team to question their service habits and ask, ‘why are we doing this?’, and ‘who are we doing this for?’. The team kept patient voice at the heart of their changes, and their resulting impacts are a great exemplification of the triple bottom line of sustainable value in practice.

The winning team received a prize of £500, and the highly commended team a prize of £250, to invested into their sustainability work.

NEXT STEPS

Having run these pilot projects, we encourage the teams to build on their work to further embed and scale their projects, and to continue to view their work through a ‘Sustainability Lens’. We encourage other teams across Northampton NHS Trusts to learn from the Green Teams and spread suitable projects to their own workplace and clinical specialties.

ACKNOWLEDGEMENTS

CSH would like to thank the teams for all their enthusiasm, dedicated work & creativity in devising and completing their projects.

Thank you to Clare Topping, Energy & Sustainability Manager, for commissioning the competition, partnering with us and for wholeheartedly working to support and mentor teams.

Thank you to our judges, for your time and keen interest in the projects.

- Paul Slater - Clinical Director Anaesthesia, Northamptonshire General Hospital NHS Trust
- Jean Knight - Chief Operating Officer, Northamptonshire Healthcare Foundation Trust
- Stuart Finn - Director of Estates and Facilities, University Hospitals of Northamptonshire Group
- Keith Brooks - Director Northamptonshire Health Charity
- Cath Richards - SusQI Programme Lead, Centre for Sustainable Healthcare

Thank you to Ingeborg Steinbach - Carbon Consultant, and Rosie Hillson - Carbon Modelling Assistant, both with The Centre for Sustainable Healthcare for their careful and highly skilled work in carbon footprinting. Inge and Rosie supported the teams in carrying out their own carbon footprinting and equipped teams with the knowledge and tools to carry out future calculations for projects in the future. Carbon calculations are essential to ‘triple bottom line’ integrated project reporting and make plain the true cost and impacts of services to allow better, safer and more responsible decisions to be made in healthcare organisations.

POTENTIAL ANNUAL SAVINGS:

The table provides detail on the annual savings available to the Trust from the 2022 Green Team Competition projects when projects are fully implemented and embedded. These carbon and cost savings will increase if all projects are scaled across clinical areas throughout Northamptonshire.

Project	Financial Outcomes	Environmental (CO2e) Outcomes	Social Outcomes	Clinical Outcomes
A Novel Care Pathway for Stable HIV Patients	£44,904.60	25,957.8 kgCO2e	Over 90% approval for reduced attendance, particularly for patients who lose income to attend appointments. 95% approved electronic forms of communication over paper. Average saving of £9.20 per patient in reduced travel costs. 84% patients responded environment is important to them. Staff will gain time for higher value work, time to cover existing pressure points and have appropriate time to reasonably fulfil their job plans	Annual attendance could be a powerful incentive to improve adherence. U=U (undetectable is untransmissible) is a powerful public health aim. this would have a significant positive impact on the wider public and reduce the frequency of new HIV infections locally and in the UK.
Greener PPE: How we reduced PPE successfully	£23,703.60	25,974kg CO2e	Positive feedback from staff who are happier to wear less PPE and have increased confidence in appropriate use. Has led to IPC team being approached for staff enquiring into other ways of increasing sustainability. Patient felt that staff wore the right amount of PPE, so patient awareness and engagement needs to be addressed as part of the lasting change of this project.	Staff knowledge of appropriate PPE increased by 86%. Team planning to review and compare rates of common infections in the 12 months pre and post PPE free campaign and expect to see a reduction in rates.
Critical Care getting 'Pumped Up' to reduce the unnecessary doses of PPI	£2,237.16	414.26kg CO2e.	Nursing staff would gain valuable time Staff were keen to learn more about the risks associated with prolonged PPI use and helped us to complete our baseline audit sparked conversation and ideas to improve sustainability in many of other aspects of care.	potential to reduce incidence of several negative health outcomes to increase quality of life for patients and reduce pressures on both community and acute health and social care systems. reducing incidence of infection may decrease use of antibiotics, in turn combating antibiotic overuse.
Reducing Paper Usage	£683.52	875.16kgCO2e	Emailing is faster, ensuring patients receive information promptly. Patient feedback that emails more convenient and for some easier to read (text can be enlarged). Both nursing and admin time saved by virtual ways of working. Staff are keener to learn new digital skills and help reduce paper usage.	Email may reduce risk of lost information, more private than letters. New evaluation proforma ensures notes have less errors in interpretation, which may improve quality and efficiency of care.
Total:	£71,529	53,221kg CO2e		