

ROYAL DEVON & EXETER  
**'HOTSPOT'** GREEN TEAM COMPETITION 2019  
IMPACT REPORT



CENTRE *for*  
SUSTAINABLE  
HEALTHCARE  
inspire • empower • transform

POTENTIAL YEARLY SAVINGS FROM GREEN  
WARD COMPETITION PROJECTS



£21,402



58,332 kgCO<sub>2</sub>e

CENTRE FOR SUSTAINABLE HEALTHCARE

CARBON SAVINGS EQUIVALENT TO



The amount of CO<sub>2</sub> 29,166  
trees absorbed in 1 year <sup>1</sup>



233,431 km car travel <sup>2</sup>  
(166 x Land's End - John O'Groats)

CENTRE FOR SUSTAINABLE HEALTHCARE

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### Sound Foundations

A very successful Foundation 'Green Team Competition' was run in 2018 at the RD&E.

Key achievements included:

- The Housekeeping team were Winners in the waste category of the 2019 NHS Sustainability Day Awards.
- The Emergency Department team were Finalists at the HSJ Value Awards 2019.
- Forecast annual savings of 15,430kgCO<sub>2</sub> and £37,570 from all the projects together.
- the projects were sustained over time and continue to deliver savings (see 'spread' report)
- key inter-departmental relationships (including between clinical and operational staff) were formed as a good basis for developing sustainable healthcare at the Trust.
- participants formed a community of staff who are passionate about sustainability but who are now, as a result of the competition, knowledgeable about sustainable healthcare and empowered to make changes and encourage others to make changes towards more sustainable healthcare practices.
- Developing staff, as demonstrated by this quote:



[The Green Ward Competition] helped me to look at my career. Having previously been a project co-ordinator at the Eden Project...I was keen to...use [that experience] to help with positive change in the health service from a sustainability perspective. The competition gave me the opportunity to start doing this and led me to feel more confident with applying for this secondment role [from pathology lab technician as a project and service change facilitator in the transformation team at RD&E]. The Green Team is great at empowering people!

*Olly Mawson, Green Ward Competition Participant & Project & Service Change Facilitator in the Transformation Team, Royal Devon & Exeter Hospital, July 2019*

Luke Mitchell, Sustainability Programme Co-ordinator at RD&E, commissioned CSH to run the 'Green Team Competition' for a second year in 2019/20.

### What's new in 2019?

Nationally the recognition has grown over the last year of the urgency of acting to prevent further climate change, this action as protecting health and the key role of the health service in this effort. An example of this change is Newcastle Hospitals becoming the first hospital to declare a climate emergency and make a clear commitment to become carbon neutral by 2040. Locally to the RD&E, cross-sector action is being taken to care for the environment and the health of the local population as part of the Exeter City Futures initiative, in which the RD&E is taking an active role.

In order to reflect the national and local action and to build on last year's achievements at the RD&E the following additions were made to the Green Team Competition:

**Green Team 'Hotspot':** the focus this year was to reduce the carbon footprint of the hospital in areas identified as having a high footprint related to specific clinical activities; the strategy included recruiting the anaesthetics and respiratory medicine teams as both anaesthetic gases and propellants used in some inhalers are greenhouse gases.

**SusQI:** running projects as quality improvement (QI) using a specific QI methodology that includes sustainability, SusQI. Using this method helps to integrate environmental issues into every decision made in the hospital in a systematic way, alongside clinical, financial and social factors. In this model healthcare value is defined in the following way:

$$\text{Value} = \frac{\text{Outcomes for patients and populations}}{\text{Environmental + social + financial impacts (the 'triple bottom line')}}$$

Project impacts are presented in terms of 'the triple bottom line'.

Charlotte ('Lottie') Edwards, Project Lead in the Transformation Team was seconded to the competition this year to work alongside CSH in mentoring teams. This collaboration was a first step in integrating sustainability into the QI processes in the Trust; Lottie had an opportunity to learn about sustainability and she provided existing QI materials from the Trust for the teams as well as providing face-to-face follow-up.

**Single-use plastic** remains high on the public agenda and this concern was included as a thread in this years' competition.

### What happened

Green Ward Competition Hotspot was launched in March 2019. Selected teams were booked into workshops run by the Clinical Programme Director for the Centre for Sustainable Healthcare (CSH), Dr Olivia Bush, an experienced physician with a special interest in sustainability.



The workshops started with Dr Bush explaining the links between health of populations and health of the environment and the urgent need for clinical teams to act. In the second half of the workshops, teams were given time and space to think about how their service was run, consider areas where services could be run more sustainably and devise impactful projects. Projects were run over 8-12 weeks, supported by Dr Bush and Lottie Edwards. Lottie provided some RD&E QI materials, assisted with project management and Dr Bush provided overall leadership and specialist sustainable healthcare advice. Data analysis was started by teams and completed by Dr Bush and Ingeborg Steinbach, Carbon Consultant at CSH.

### 1. "TRASH IT, DON'T FLUSH IT!" - Estates Department

**TEAM MEMBERS:** Emma Harris (Administrator) and team.

**\*\*WINNER\*\***



#### **Background:**

There are a high number of drain blockages in the Trust in common with national trends in the NHS and general sewers<sup>1</sup>. Prior to the project the impact of blockages was not being monitored. On investigation it was found that 714 requests regarding blockages were made to estates at the Wonford site January -July 2019.

Dealing with these blockages is costly financially, often requiring an external contractor from 'Exjet' to attend; Exjet were called out 57 times between January and July 2019.

Blockages contribute to low morale in Trust trade-staff as the blockages are unpleasant and hazardous to deal with (there is a risk of infection, especially gastrointestinal infection, from contact with human waste) and it is frustrating for trade staff to see blockages occurring recurrently, especially in certain areas, whilst no effective preventative action taken.

From a clinical perspective when a toilet or macerator becomes blocked it causes **disruption to staff** as they are **unable to dispose of bodily fluids**, which can lead to a health hazard occurring, or have **fewer toilets** to serve the patients. For **patient dignity** it is important to have private area where they can toilet near to their bed space, especially for those patients experiencing bowel disturbance, reduced mobility, urinary incontinence or vomiting. Blockages can also cause **flooding**, which can be an **infection risk** as well as a **slip hazard**. Blockages impact on the quality of the care environment which is measured Trust-wide as part of the Patient Led Assessment of the Care

'Call outs [out of hours] leads to lack of sleep and irritation when called to the same problem over and over again. No matter how often wards are advised of both these problems they...keep happening.'

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<sup>1</sup> <https://www.theguardian.com/environment/2017/dec/12/baby-wipes-93-percent-matter-causing-uk-sewer-blockages>

Environment (PLACE) and cause the healthcare setting to fall below the CQC standards set out in regulation 15.

Environmental issues related to blockages include **emissions** due to call outs of contractors with consequent impact on air quality and high-volume **water usage** to clear more significant blockage. One significant contributor to blockages is when staff inappropriately dispose of wipes in drains and macerators rather than in domestic or clinical waste. These wipes contribute to **microplastic pollution**; microplastic pollution may adversely affect aquatic life when organisms ingest microplastics and enters our food chain with concerns around toxins in the plastics and toxins that associate with microplastics. Unfortunately, some manufacturers contribute to the problem by incorrectly labelling wipes as 'flushable', when no wipes are suitable for flushing<sup>2</sup>.

The team saw entering the competition as an opportunity to raise awareness more broadly of the problem of drain blockage and to work on inter-departmental solutions to reduce the number of blockages, starting with the estates department meeting with clinical staff to engage them in a collaborative approach to solving this problem.

**Goal:** to reduce the number of blocked toilets and macerators at the Wonford site in both public and clinical areas.

**Approach:**

**Orientation:** Emma does not have a clinical background and is not familiar with the clinical environment, being office-based in the estates department. She arranged a meeting on a ward with 2 members of the housekeeping team to learn about how the ward is structured, view the sluice and to see how widely wipes are used on the wards. She estimated that 15 - 20 opened packs of wipes were present on a single ward.

**Pictorial data:** the team asked Estates Supervisors and Trade-staff to photograph blockages in toilets, drains and macerators, especially when wipes are the main blockage, to gather information on the cause of the blockages and to be used in an awareness campaign.

**Staff Engagement Strategy:**

- Interviews with trade staff to ascertain the impact of call-outs to deal with blockages with within and outside working hours.
- Attending a matrons' meeting to listen to the matrons' perspective on blockages, address any misconceptions and work together on solutions.
- Meeting with ward housekeepers.



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<sup>2</sup> <https://www.theguardian.com/environment/2017/dec/12/baby-wipes-93-percent-matter-causing-uk-sewer-blockages>

- Meeting with infection control leads to discuss this project and consider how they could collaborate in making changes to reduce the infection risk caused by blockages and maintain clinical standards of cleanliness (given that wipes are used for cleaning but are also a significant cause of blockages).
- Walkabout in hospital to engage staff ad hoc.

### Campaigns:

- Poster campaigns; Emma devised posters to display in the hospital.

**Quantitative data:** the team generated reports from the Estates system, Backtraq, with information on the number of blockages (date, time, location) occurring per month and costs for internal and external staff dealing with the blockages. A run chart (QI method) was used to keep track of the data trends over the duration of the competition. Exjet was contacted to gather information on the type of vehicle, distance travelled, and amount of water used to allow a calculation of the carbon footprint of call-out of external contractors to be made.

### Results:

**Pictorial data:** Staff were surprised when presented with photographs of the items contained in blockages. Staff could see that the blockages were caused by wipes and other clinical items that were inappropriately disposed of in macerators or down toilets. Previously clinical staff believed that blockages were caused by faulty macerator or WC design.

*Macerators [get] blocked when [the] complete contents of bed pans are emptied into macerators including wipes, syringes, plastic materials, pants, nappies etc.*

### Staff Engagement:

- **Trade staff:** reported that out-of-hours call outs had a negative impact on their wellbeing and productivity due to loss of rest time or sleep, especially as they would have to work a full day following the call out. Staff take compensatory leave after lengthy jobs out-of-hours which leaves the day shift short staffed. Of the 51 reports of blockages received and attended by RD&E staff between 6<sup>th</sup> June and 6<sup>th</sup> July, 6 were out of hours. There were also reports of gastrointestinal upset following dealing with blockages.
- **Nursing and Housekeeping staff:** Emma Harris attended a Matron's Meeting to highlight discuss the cause of the blockages. Staff incorrectly believed that blockages were due to poor design of the WCs and macerators. Emma was able to show the photographs of blockages that the trade staff had taken as evidence that blockages were due to staff placing items in the macerator inappropriately. The matrons agreed for posters to be displayed in sluices to help raise awareness of what items were suitable for maceration as a first step in changing the practice of ward staff. The matrons suggested repeating poster campaigns every 2 months, letting staff know how many blockages there have been in their department.
- **Ward Housekeepers:** the team would be interested in switching back to using jay cloths that staff are more likely to dispose of in the bin rather than in the macerator or toilet.
- **Infection Control:** Emma visited a selection of wards with the Lead Nurse for Infection Control to ascertain what wipes were used, the purpose of use and what the advice was on disposal. They found that 3 types of wipes were used on wards:

1. Personal washcloths (used for hands before meals and also general skin friendly wet wipes) – cannot be flushed or macerated.



2. Detergent wipes for surface cleaning – cannot be flushed or macerated



3. Dry Wipes used for patient washing – cannot be flushed but **can** be macerated (although not large amounts can be macerated at once) according to manufacturer instructions.



So, none of the wipes are suitable to flush down WCs and the dry wipes are the only wipes which can be macerated, according to manufactures' instructions, although it is known that disposing of wipes in the macerator contributes to microplastic pollution.

Emma also attended an Infection Control Link Nurse Course; explained the role of estates and the problem faced with wipes, paper towels and other items flushed down WCs and macerators. Response; amazed that this is happening when show pictures. The nursing staff were shocked by the photographs that had been taken by trade staff and motivated to support the campaign in their clinical areas.

**Ad hoc engagement:** Emma visited a number of wards and areas in the hospital, focussing on areas with the highest frequency of blockages, to put up posters in WCs and sluices. She had the opportunity to chat with ward clerks and nursing staff about the campaign and when ask for permission to display posters.

### Campaigns:

**Poster Campaign:** an initial campaign to inform staff that only 'pee, poo and paper' were flushable (see appendix 1) was followed by a further campaign started on 23 July linking disposing of wipes down the drain with environmental pollution (see appendix 2). This was accompanied by a post on HUB, a Twitter post and information on all comm cells. Some teams got back to Emma with requests for more posters. Emma designed the posters for these campaigns with feedback from CSH.

**Collaboration with South West Water:** this was set up a collaboration with South West Water, following a suggestion from CSH. The water company provided pamphlets and posters that were placed in high risk areas. They have also offered to help with staff engagement by visiting wards.

### Quantitative Data:

The average number of blockages per month sorted by the inhouse team were 123 pre-project (with an average of 9 out-of-hours attendances) and an average of 111 post-competition (3 out-of-hours attendances on average meaning a member of staff drove into the hospital from home). Pre-project data was an average of data gathered in January-May 2019. Post-project was an average of data from June and July.

Exjet contractors travelled 50 miles round trip to visit the RD&E, carrying 700 litres of water to use to clear blockages, of which they used 400-500 litres and returned to their depot with approximately 300 litres of water. The number of Exjet call outs pre-project were 9.2 visits per month increasing to 13 visits post-

project (6<sup>th</sup> June-6<sup>th</sup> July). The number of visits increased but interestingly the costs went down, suggesting that visits were shorter and therefore blockages less severe. If trend continues then can reasonably assume that Exjet visits will decrease so decreasing carbon and financial costs.

The total number of call outs were monitored using the RD&E Run Chart template, provided by the QI team.

<b>Environmental benefit</b>	<p>Emissions for the RD&amp;E team related to travel for out of hours calls decreased by 71% from 51 kgCO<sub>2</sub>e pre-project to 15 kgCO<sub>2</sub>e (June-July).</p> <p>Emissions associated with Exjet in the month 6<sup>th</sup> June- 6<sup>th</sup> July were 560 kgCO<sub>2</sub>e, a 45% increase on the monthly pre-project average of 438 kgCO<sub>2</sub>e, due to an increased number of visits. The cost of visits decreased however, suggesting shorter visits and blockages that were cleaned more easily. This may mean a reduction in the amount of water used to clear blockages.</p>
<b>Social sustainability; benefit to patients, staff and community</b>	<p>Not formally assessed. Benefits in building relationships between clinical and estates teams to reduce frustration on both sides and to help encourage collaboration on solving a problem that has an impact on both teams.</p>
<b>Financial benefit</b>	<p>There was an 18% reduction in costs incurred for the RD&amp;E estates team; the spend decreased from £3,382 per month pre-project to £2,778 per month post-project.</p> <p>The cost of blockages handled by Exjet decreased from £1,919 per month pre-project to £1,383 per month post-project, a reduction of 28%.</p> <p>If these numbers are representative, then forecast for annual savings is £13,680, although longer is needed for the campaign to embed and the impact of the campaign to be assessed.</p>
<b>Clinical outcomes</b>	<p>Not formally assessed. There is a potential to improve continence and reduce falls through availability of toilet facilities and to help to control infection if fewer blockages occur.</p>

#### Next steps:

#### Campaign:

- Emma will visit the next housekeeping team meeting with the aim of recruiting housekeepers to act as champions on this project in their different ward areas. This follows on from feedback from an HCA & member of domestic staff that 'people know not to flush wipes down the toilet or sluice, but it happens through bad practice'. Having champions in place to model good practice will therefore be key.
- Regular reminders via the HUB, Twitter and on Comm Cells
- Ensure posters are in all sluices and areas where there are toilets, with a focus on areas with a high frequency of blockages.
- Display posters in paediatrics so that older children can influence their parents

## Systems change;

- Start reporting blockages via the Trust's Datix incident report system, with reports sent to the ward matrons and possibly infection control. This will help to keep momentum going on the project. The trends could also be discussed at the Estates Governance Group and reported to the Trust Health and Safety Group meeting.
- One ward carries out preventative action and they see this as part of their job. Could they influence their colleagues?

## Data Collection:

- Continue collecting and analysing data using the systems (including run chart) set up during the Green Ward Competition to assess the impact of engagement, continue to focus on 'hotspots' of the highest frequency of blockages. This will be especially important when, as part of the Energy Performance Contract, the Trust installs low flush cisterns. This will reduce the water flow and reduce water use; it will be interesting to see if blockages also increase.

## Collaborations:

- To set up a meeting with John Malloch, Head of Procurement, to investigate possible alternative and relative costs.
- Rose Gallagher, MBE, Lead in Sustainability & Infection Prevention and Control has asked the team to contribute to a national consultation on blockages in the NHS and use of wipes.

## 2. BLUE GAS THINKING; raising awareness of the environmental impact of nitrous oxide use in anaesthesia – Anaesthetics Department

**TEAM MEMBERS:** Dr Clare Swarbrick, Dr Pete Valentine, Dr Fiona Martin, Dr Pete Ford & Dr Alastair Martin.

**\*\*HIGHLY COMMENDED\*\***



### Background:

5% of the carbon footprint of acute NHS trusts comes from anaesthetic gases. Gases used in anaesthesia are released into the atmosphere where they have a high global warming potential. The large percentage of carbon emissions coming from anaesthetic gases places anaesthetic departments in a position of influence in reducing the carbon footprint of the wider NHS.

Measuring, monitoring and reporting anaesthetic gas use is essential to reducing emissions. Across all trust sites at the RD&E 315 000L of nitrous oxide are used (not including Entonox), this is equivalent to 185 tonnes of carbon dioxide. This would have the same carbon footprint as 26 return flights from the UK to Sydney!

When the compared the marginal gains that were possible through projects such as recycling and use of reusable items, it was clear that these did not fulfil their potential massive reduction in environmental impact. The team noted that there are alternatives to nitrous oxide available, such as oxygen, that maintain clinical outcomes but do not have the negative environmental impact. The team thought that this project gave them the biggest potential target reduction in carbon footprint though they knew that it would be a challenge to change attitudes towards a gas that is so well established in clinical practice.

### Goal:

To eliminate the use of nitrous oxide in theatres (apart from maternity) at the RD&E.

**Approach:**

The team used the following methods to start changing the use of nitrous oxide in the department:

- informal conversations with colleagues, both face-to-face and by email.
- an education session, during a departmental clinical governance meeting, followed by a debate. The team calculated the carbon impact of this amount of nitrous use and carried out further calculations to make the figures relatable to 'real world situations', such as distance flown in an aeroplane and number of miles driven in a car.
- reminder stickers on anaesthetic machines to encourage anaesthetists to use the minimum amount of gas required for effective anaesthesia.

*Measurement:* the team estimated use of nitrous based upon the ordering accounts for nitrous oxide per month and then took an average of monthly use. 2018 figures were compared with 2019 figures. Measurement was put in place for ongoing monitoring as, given that the figures were amount ordered rather than used, data for the 2.5 months of the competition would not provide an accurate estimate of use.

## Results & discussion:

### Litres of Nitrous Oxide Used

The figures showed that there was a reduction for use in January-July of 60,000 litres in 2019, compared with 2018, with an estimated annual reduction of 102,857 litres forecasted. This is a 25% reduction.

This may represent a general trend in the decrease of use, although we do not have the data for the rate of reduction over previous year. The project aimed to accelerate this reduction in the light of the climate crisis.

If the campaign was effective in maintaining this rate of reduction a further saving of 70,714 litres of nitrous oxide would be saved in 2020.

<b>Environmental benefit</b>	<ul style="list-style-type: none"><li>- There was a saving of 29,112 kgCO<sub>2</sub>e or 29 tonnes CO<sub>2</sub>e over January-July 2019 in comparison with 2018. This is a 25% reduction. The forecast for the reduction for the forthcoming year is a saving of <b>49,906kgCO<sub>2</sub>e</b>. The average British citizen uses 10 tonnes of carbon per year.</li></ul>
<b>Social sustainability; benefit to patients, staff and community</b>	<ul style="list-style-type: none"><li>- The use of nitrous oxide for paediatric induction slightly increases the rate of miscarriage in staff. This side effect is unusual, but as it is a significant side effect it would be best to avoid especially as there are good alternatives available.</li><li>- Recently there have been thefts of nitrous oxide from the Nuffield Hospital in Exeter and from the local BOC depot. By reducing nitrous oxide use this reduces the overall availability of this much-abused gas on the streets and so help prevent this public health problem.</li></ul>
<b>Financial benefit</b>	<ul style="list-style-type: none"><li>- The total cost of supplying nitrous oxide for a year and hiring the relevant cylinders is £2117.25. Added to this is the cost of maintaining the pipes and manpower required to change cylinders and monitor use. If the reduction continues this year in line with use this year, forecasted as 25% then the saving in 2019 would be <b>£529</b>, not considering the potential savings of maintenance and labour required.</li></ul>
<b>Clinical outcomes</b>	<ul style="list-style-type: none"><li>- Avoiding adverse effects of nitrous oxide, including nausea and hypoxia.</li></ul>

### Staff Engagement:

- raising awareness of the environmental impact of nitrous oxide.

'I had not really thought of the environmental aspects of using it until we made a green team' I asked a colleague in a hospital which was recently rebuilt and at this point nitrous oxide was removed about how people managed when they moved into the new building and he said "it makes exactly no difference at all. Makes no difference for gas inductions." They've also almost ditched desflurane for environmental reasons.' **Fiona Martin, Consultant Anaesthetist**

- finding that practice varied very widely in the department, from those who never used nitrous oxide due to potential adverse effects for patients and those who felt that it was an essential part of their

'I do not use nitrous oxide and haven't done so for about 5 years. I got rid of it because I changed to using low flows and felt that the added burden [risk] of easily delivering a hypoxic mixture was best avoided.' **Consultant Anaesthetist**

practice.

- most anaesthetists attending the debate felt that they would reduce their usage of nitrous though they still wanted the option of using it. The debate did not support the goal of removing piped nitrous oxide from theatres (apart from maternity).
- persuading some members of staff to use less nitrous or to stop using nitrous in their practice.

'Discussion and presentations within the anaesthetic department on the contribution of N<sub>2</sub>O and volatiles to global warming prompted me to look again at the figures. While N<sub>2</sub>O from anaesthetics is only a very small contribution to global greenhouse gases, it is a huge contribution to my own carbon footprint on the occasions that I use it. Since I can easily avoid it, I am happy to stop using N<sub>2</sub>O entirely.' **Dr R Price, Consultant Anaesthetist**

Learning points:

- making sure as many stakeholders as possible are present at meetings where decisions are to be made. The debate was only attended by a small subgroup of the department (as many were at an academic meeting); this small subgroup did not contain those members of staff who the team had been able to engage in conversation.
- the goal was very ambitious in removing nitrous entirely so it may have been more realistic to aim for a smaller change initially.
- the goal and was set by the Green Team, without discussion with the rest of the department as the case to remove nitrous seemed so obviously beneficial. It became clear that practice and attitudes varied more widely than was supposed and so a period of listening to people's views followed by inviting comment on facts presented and asking for suggestions on a course of action may be more effective than presenting a course of action (such as removing nitrous oxide entirely from the department) as a fait accompli.

### **What steps have been taken to ensure lasting change?**

The team aim to present the figures on monthly nitrous oxide use regularly at the departmental clinical governance meetings.

Dr Clare Swarbrick and Dr Pete Valentine have set up a study day for anaesthetic trainees to encourage the use of total intravenous anaesthesia (TIVA) as an alternative to anaesthetic gases. This is an opportunity to discuss the environmental impacts of anaesthetic gases and the environmental benefits of alternatives. Over time, such education sessions will change culture through junior staff influencing the departments they work in and later as they become the consultants.

The team plan to arrange another departmental discussion on whether the piped supply of nitrous oxide should continue to be delivered to RD&E theatres once the effect of the project and the plans for embedding the changes has had time to effect a cultural change.

Key Elements of Project:

The key elements of our project to reduce anesthetic use of nitrous oxide include:

- Up to date data for departmental use of nitrous oxide
- Accurate carbon calculator
- Engaging information about nitrous oxides' environmental impact
- A platform for debate with all influencing parties present

### 3. "PLASTIC—NOT A TRIFLING MATTER" - Catering Team

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**TEAM MEMBERS:** Natalie Turney (Administration Team Leader), Shirley Jones (Catering Manager), Angela Jones (Patient Meals Service Team Leader).

**\*\*HIGHLY COMMENDED\*\***



The catering team carried out 4 projects;

- 3 projects focussed on preventing plastic waste in catering after the housekeeping team, who were winners of last year's competition, challenged the catering team on their widespread use of plastic. Staff and patients had also expressed concerns about certain patient groups (primarily older people and those with less dexterity) who were struggling with eating their desserts out of the small plastic pots and opening small milk containers. This led to many patients having 'hospital acquired disability', needing help with eating, which they could do independently at home.
- The 4<sup>th</sup> project was related to decreasing the carbon footprint of meals by introducing more plant-based meals.

#### **Project 1: Plastic – not a trifling matter**

##### **Background:**

**Desserts:** 200 dessert portions are served to patients each day. Prior to the competition desserts were made in plastic pots with a lid and then distributed to patients. Afterwards the pots and lid would be disposed of in the domestic waste stream.

**Cups:** plastic cups were available beside the water cooler in the canteen.

**Milk:** individual milk servings, contained in plastic cups were provided in the hospital canteen for staff, patients and visitors to add to hot drinks. Prior to the project 200,000 individual milk portions were annual at the Wonford site.

##### **Approach:**

**Desserts:** The team carried out an initial consultation phase. Gastronomes (large metal trays) were then ordered and the chefs made desserts in gastronomes rather than individual pots. The gastronomes were taken to wards and the desserts are served to patients in china bowls. At all points in the project the team communicated the changes to:

- Catering Staff: this was done via Comm Cells (a notice board in each department where information on quality improvement initiatives is posted and where the team meets regularly) to advise and ask for input.
- Ward Staff: The Patient Meals Service Team Leader, informed the ward staff of the changes and the reasons behind the changes. This allowed an opportunity for staff to express any concerns; for example, some staff were concerned about the potential of increased wastage. Updates were posted on the Trust intranet site, 'The Hub'

The team then undertook several improvement Plan, Do, Study, Act (PDSA) cycles. Key issues that needed resolving were:

- Refining recipes – many of the recipes were perfect for individual pots, but on a larger scale were not the correct consistency, resulting in 'sloppy jelly'. However, working with the chefs, different recipes were tested until the perfect recipe for large scale dishes were found.
- Piping nozzles were purchased to allow the desserts to be 'dressed' to look more appealing now made on a larger scale

**Cups:** Plastic cups provided next to the main restaurant's water dispenser were replaced with paper cones. The team received feedback that the cones were suitable for a quick drink on the way past the canteen, but alternatives were needed for people wanting a drink with their meal. Paper cups are now available at the tills. The team have put up posters to advertise this change; this was a good project to demonstrate the commitment of the Trust to sustainability.

Aspirations:

- spread the substitution of paper for plastic cups across all catering areas within the Wonford and Heavitree sites.
- stocking and selling reusable, sustainable travel mugs and water bottles in near future.

**Milk portions:**

The team stopped ordering individual milk portions and starting ordering 4 plastic bottles of milk that they served in reusable milk jugs.

**Project 2: Veggie Monday**

**Background:** vegetarian options often have lower carbon footprints

**Approach:** introducing a 'Meat free Monday' at the canteen was discussed but the team felt that this would be poorly received by staff and patients. Instead the team have trialed introducing a second vegetarian hot food choice on the menu on Mondays. Examples of new recipes introduced included:



**Results:**

**Meals:** Due to warmer weather, the team feels there has been less demand in general for hot food and are confident that there is potential for these figures to grow even further.

**Desserts:** The kitchen were using 200 dessert pots per day, so 73,000 annually. Transport was included as the number of deliveries from 3 to 2 were reduced due to stopping using the pots; 1, 206 kgCO<sub>2</sub>e of the total saving.

Waste has not been an issue as any remaining dessert when portioned has been offered to patients who may like a larger portion.

*A summary of the results is displayed on the following page.*

**What steps have been taken to ensure lasting change?**

The changes have been embedded through establishing different ways of working and of ordering. Moreover, the feedback gathered from staff and patients persuaded the members of staff in the catering department who were not involved in the project, that these are changes worth making and the team as a whole is keen for these changes to continue.

**Key Elements of Project:**

- For reusable items there needs to be adequate storage space and adequate staffing and dishwashing equipment would be required to clean the equipment.

<p><b>Environmental benefit</b></p>	<p><b>Dessert pot and lid:</b> 1,964 kgCO<sub>2</sub>e in first year, after that save 2,250kgCO<sub>2</sub>e in following years. Carbon (and costs) calculations include the impact of using a dishwasher to clean the china bowls used to serve desserts.</p> <p><b>Plastic to paper cups:</b> forecast <b>increase in 152 kgCO<sub>2</sub>e</b> annually due to weight of paper. The carbon cost of waste disposal will go down, but the carbon cost of manufacturing paper cup is higher as paper cups are heavier than plastic cups. Unfortunately, the cups were lined with plastic so they could not be recycled in the general recycling and there is still reliance on fossil fuels due to the use of plastic.</p> <p><b>Milk containers:</b> 12ml being replaced by 4pt plastic bottles. 1,240kgCo<sub>2</sub>e</p> <p><b>Vegetarian:</b> 3,109 kgCO<sub>2</sub>e over one year.</p>
<p><b>Social sustainability; benefit to patients, staff and community</b></p>	<p><b>Dessert pots:</b> Patients have found that the weight of the bowl makes it easier for them to eat their dessert and the quantity can be tailored to their appetite. Catering staff have found that it is easier for them to make up the desserts in the gastrornoms rather than in 200 individual pots. There is a reduced workload for the admin team/storeman as they no longer have to order and store plastic pots weekly.</p> <p>Staff pleased to see a decrease in single use plastic. Many people are concerned about the waste of resources in single use plastics and plastics pollution so projects like these that reduce plastics use and waste allow staff to live out their values at work; evidence shows that working in line with values increases staff resilience and satisfaction.</p>
<p><b>Financial benefit</b></p>	<p><b>Dessert pots:</b> will save <b>£1,830</b> annually for first year, but second year savings should be <b>£2,701</b>, taking the capital investment of gastrornomes into account. Based on cost of pots and cost of disposal.</p> <p><b>Plastic to paper cups:</b> decrease annually as the paper cups were cheaper than plastic cups, <b>£68</b> annually.</p> <p><b>Milk containers:</b> annual saving of <b>£4,537</b>. Use 586 per day, now use 2L plastic bottles.</p> <p><b>Vegetarian meal:</b> over 7 weeks, Mondays of last year compared to 2019, increase in number of vegetarian meals was 146 over 7 weeks, approximately 40/Monday. Normal meal costs <b>£5.85</b>, vegetarian <b>£5.50</b>, equated to a cost saving of <b>£380</b>. Cost savings could be increased by incentivising people to eat more vegetarian meals and offering vegetarian options on more days.</p>
<p><b>Clinical outcomes</b></p>	<p><b>Dessert pots:</b> may contribute to improved nutrition if patients find it easier to eat their meal.</p>

#### 4. "OPTIMUM INHALERS FOR PATIENTS" - Respiratory Team

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**TEAM MEMBERS:** Dr Thomas Burden (Respiratory Consultant), Katy Converso (Respiratory Nurse Specialist) & Belen Carballido Romero (Respiratory Pharmacist).



#### **Background:**

Inhaled therapy is a vital part of respiratory care and selecting the optimum device is a cornerstone of good practice. When deciding on which device is best for the patient, a number of factors including the drug choice, the patient's lung capacity and patient preference, are considered. Since April 2019 the National Institute of Clinical Excellence (NICE) are recommending that environmental impact of inhalers is also considered as part of the decision-making process in selecting the optimum device for each patient.

Why should the environment be considered when deciding what inhaler to use? It is a little-known but important fact that inhaler use can have a large carbon footprint. The most commonly used inhaler in the UK for instance, Ventolin Evohaler™, has a carbon footprint equivalent to 28kg of CO<sub>2</sub>. Ventolin Evohaler™ is an example of a metered dose inhaler (MDI). MDIs contain greenhouse gases as propellant and so contribute to the greenhouse effect and climate change. The World Health Organisation and others recognise climate change as a health problem. As such it is important to reduce the carbon footprint of the healthcare services that the NHS offers so that the healthcare system does not undermine its constitutional commitment and efforts to maintain and improve the health of those it serves. Many members of the public are concerned about climate change and wish to reduce their carbon footprint; integrating environmental concerns into decisions about inhaler devices contributes towards patient choice if caring for the environment is one of their values. It could also be argued that all healthcare professionals have a responsibility to promote health rooted in the ethical principle of justice; since environmental health directly impacts human health, including environmental impact in the clinical decision-making process could be seen as acting as an ethically responsible practitioner. There are a number of measures that can be taken to reduce the carbon footprint of inhaled therapies. The Green Respiratory Team chose to act on 2 of these measures.

#### **Approach:**

##### **Project 1; Consultation Skills for Sustainable Respiratory Care & Prescribing Practice**

**Consultation:** The respiratory consultant changed his consulting practice to ask patients about preferences for short acting beta agonists and inhaled corticosteroids. If patients are in equipoise regarding inhaler choice during the discussion, he included the question; "Do environmental issues concern you?". If the patient answered 'yes', the follow-up question used was; "Would it affect your choice if one inhaler was better for the environment?".

### **Prescribing practice:**

When reviewing inhaler regimes in clinic the following actions were considered to reduce environmental footprint:

- Switching from MDIs, containing greenhouse gas propellants, to dry powdered inhalers (DPIs), which do not contain propellant and have a lower carbon footprint. For some patients, switching inhalers could save as much greenhouse gas as becoming vegetarian. [ref <https://www.sduhealth.org.uk/news/66g/green-inhaler--making-your-inhaler-more-environmentally-friendly/>] Not all patients have sufficient lung capacity to be able to use a DPI so switches need to be made as part of a full assessment.

The **respiratory nurse specialists** redesigned the COPD bundle of care and to identify patients who have sufficient lung capacity to be able to use a DPI when checking inhaler technique. They are now able to make a recommendation (not prescription) for optimum device that includes environmental elements in decision making.

These actions were supported by **the respiratory pharmacists** who ensured that DPIs for inhaled corticosteroids for short acting beta agonists are part of the formulary; this means that clinicians may now prescribe DPIs for both inpatients and outpatients.

- The prescription of multiple devices for patients using multiple techniques remains common. Using combination inhalers, rather than multiple separate inhalers reduces costs environmental (amount of propellant), financial, and social (patient time to use multiple rather than single inhaler).

### **Measurement:**

Data was collected on the number of switches made and the devices used before and after the switch.

### **Project 2; Increasing inhaler recycling or correct disposal**

This is important as if inhalers are neither recycled or returned to pharmacies for incineration then the residual propellant gases will escape and contribute to the greenhouse effect.

### **Approach:**

The respiratory nurse specialists signposted patients to their nearest inhaler recycling schemes and spoke to them about finishing their current inhaler before re-ordering. They have also had conversations with community colleagues to ensure that they were aware of these schemes and to encourage them to pass on the information to patients.

Aim to introduce GlaxoSmithKline inhaler recycling scheme at the hospital.

### **Results:**

#### **Project 1;**

**Conversations:** Approximately 1/3 patients wanted environmental factors to be considered when making an inhaler choice:

*"I never thought about the effect on the environment; I'd prefer an environmentally friendly option"*

**Switches:** Approximately **20 switches were made over 10 weeks, an average of 2 switches a week.** Since this is at the beginning of the journey of the team towards more sustainable care pathways and involved only two clinicians of a much larger department, then there is considerable potential for further switches and for reducing the carbon footprint of the service. Moreover, as inhalers are generally prescribed for life, even small numbers changing from solely MDI to DPI will have a significant environmental impact over time.

<b>Environmental benefit</b>	<b>414kgCO<sub>2</sub>e</b> saved from 20 switches over 10 weeks. If switches continued at the same rate and type over 1 year then <b>2,153kgCO<sub>2</sub>e</b> would be saved. This only considers the carbon saving from the initial switch, not the cumulative saving made over time, which is important as patients often use inhalers for life.
<b>Social sustainability; benefit to patients, staff and community</b>	Using fewer inhalers will <b>save patient time</b> required to take medicines. Adding in a question about the environment allows <b>patients live out their values</b> around care of the environment, if this is a concern for them. This question also allows the <b>clinician</b> to act in accordance with <b>professional responsibilities</b> around <b>health promotion and protection</b> .
<b>Financial benefit</b>	The greatest savings were made when 2 inhalers (total 3 drugs) were switched to a single inhaler (containing 3 drugs) of £10 on average.  There was very little difference between MDI and DPI costs for single drug switches; there was a decrease in £2 when switching from MDI ICS to DPI ICS and increase of £2 when switching from MDI Ventolin to DPI Salbutamol.  <b>If this rate of 2 switches per week were to continue, then saving of £466/year would be made.</b>
<b>Clinical outcomes</b>	The patients were carefully selected, and <b>no adverse events were reported</b> . Changing to fewer inhalers may improve adherence to treatment and in turn improve health outcomes.

**Limitations:** the detail on which drugs and devices involved in the switch was only known for 5 switches, for the remaining 15 only the class of drug and class of devices involved with the switches were known so some assumptions were made in the calculations. Moreover, precise carbon footprints (ranges only) are available for inhalers.

**Recycling:** Approximately 30 patients were signposted to recycling schemes (there was no formal data collection).

["I didn't know that inhaler choice mattered \[to the environment\] but my practice has started an inhaler recycling scheme"](#)

The team did investigate introducing the GlaxoSmithKline recycling scheme to the hospital but on further investigation by CSH it was found that their scheme is at full capacity and no new sites are being added to the scheme.

**Actions taken to embed the changes:**

- 2 DPIs added to the formulary so that prescribers have wider prescribing options.

- Assessment for suitability for DPIs added to established COPD bundle assessment.

### Next steps:

The team are in discussion with the on-site pharmacy regarding handing out of leaflets/introducing signage to encourage patients to either return their used inhalers to recycling points or to pharmacies for incineration.

The team aim to gather data systematically on inhaler prescribing when e-prescribing is introduced with the aim of developing a governance structure.

### Key Elements of Project:

It is important to be clear that the aim of sustainable respiratory care is to maintain or improve clinical outcomes whilst reducing environmental impact so choosing inhalers should continue to be guided by the usual range of considerations including clinical factors and patient preferences, with environmental factors as one of but not the over-riding factor in decision-making. It is important to ask permission before introducing environmental issues and to tread gently and not to be overzealous.

Broad involvement from the MDT, including respiratory nurse specialists and pharmacists, is key in providing sustainable respiratory care that spans the integrated care system.

Correct inhaler disposal and inhaler recycling is a non-controversial intervention and information on this can easily be given to staff and patients (verbally or written).

5. "TRASHING WASTE" A project to improve the appropriate bin use within the Emergency Department and increase our commitment to recycling – Emergency Department Team
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**TEAM MEMBERS:** Jo Webber, Consultant Emergency Physician and Team.



### Background:

The NHS produces 600,000 tonnes of waste per year. Domestic waste from RD&E is transported to the South West Devon Waste Partnership in Plymouth. The waste is incinerated; electricity is generated, and heat is captured in a combined heat and power (CHP) system. This saves valuable fossil resources and reduces carbon dioxide output.

Clinical waste from the RD&E is transported to Cornwall and disposed of at Peake (GB), a centre which incinerates the clinical waste. The 'clinical waste' is incinerated at a high temperature, using more energy than for incineration of domestic waste. Unfortunately, no energy saving system is in place for this process.

The team members had noticed that there appeared to be a great deal of waste disposed of inappropriately in clinical waste that should instead be disposed of in domestic waste (where waste burnt generates energy) or recycled (preventing resource loss).

The team chose the project as they hoped to make environmental and cost savings. The costs of the waste streams vary; clinical waste £365/ tonne, recycled waste is marginally more expensive at £368 per tonne and domestic waste has the lowest disposal cost at £124 per tonne.

**Approach:**

As a baseline measure, a clinical waste bag in the Emergency Department was selected at random and the contents examined. A brief assessment was also carried out of the appropriateness of the position of the different type of bins.

Over 1-week measures taken to engage the wider team in the project included a 5-minute educational “learning bite” outlining the importance of waste management at the RD&E in the context of the environmental crisis. 3 common waste items per day were chosen to highlight what bin they should be going in.

Clinical waste and domestic waste bags in the Emergency Department were weighed by the domestic staff both before and after this educational week to ascertain whether practice had changed.

**Results:**

The team noticed that there were few recycling bins in the department and that all existing bins were not placed in positions that would encourage correct waste bin use (e.g. beside basins sometimes only clinical waste bins were present; given most waste would be hand towels it would have been more appropriate to have a domestic waste bin in that position).

The team collected 3 days of data; 2 days before the campaign and 1 day after the campaign. There was considerable variation in weight of bags in the pre-campaign phase, so it is difficult to draw conclusions from the single data collection after the campaign. There was a reduction in the number of bags of waste after the campaign, but this was not reflected in the weight, so it’s not clear if the waste was heavier or if the bags were fuller.

The most interesting finding was from a waste audit; from emptying a single sample bag of clinical waste it was estimated that 50% of the waste was inappropriate for that waste stream. If we assume that, of the waste inappropriately placed in the clinical waste, 50% would be disposed of in domestic waste and 50% in recycling then the following potential savings would apply.

<b>Environmental benefit</b>	50 domestic:50 recycling: potential saving of <b>703 kgCO<sub>2</sub>e</b> per tonne.
<b>Social sustainability; benefit to patients, staff and community</b>	None
<b>Financial benefit</b>	50 domestic:50 recycling: potential saving of <b>£211</b> per tonne.
<b>Clinical outcomes</b>	None

## Learning:

- **Availability of bins** may drive which waste stream is used for disposal of waste. There was a lack of bins in the department as some bins had been removed from the shop floor as they were damaged. Replacements were ordered but these were mistakenly placed elsewhere in the hospital. The consequence of this was that in some areas the clinical waste bins were most readily available to staff.
- Building a more numerous Green Team and making sure that one member of the Green team is available throughout the project is essential to **maintain momentum** and to keep the wider team engaged. During this project team members were away on leave for significant periods leading to loss of momentum.
- **Strategic project choice is key**. Over the duration of the project the clinical staff were under particular pressure with unusually high numbers of patients attending ED. Given that the project was not related to clinical work and did not have benefits for staff, the Green Team leadership felt that it would not be appropriate to raise awareness of the project whilst the team were under stress. If a project had been chosen that had staff or patient benefits as well as environmental/cost benefits it may have been easier to maintain engagement during busy periods.
- Better attendance at the workshop where a larger number of team members would be present to generate ideas would engender greater **engagement** from the beginning of the project. Another idea was to ask the remaining staff who were not able to attend the workshop to vote for the different proposed projects and then implement with the most popular.
- Separating out these elements is a quick but nonetheless more time-consuming than disposing off all such waste in one waste bin and **staff time** is the most precious resource in healthcare. It may be more effective to have a less ambitious goal and aim for more waste to be put in the domestic bins rather than clinical waste, and to not to introduce recycling at this stage.

## What are the next steps?

Liaison with Nursing staff to improve the number and location of bins to make it easier for staff to segregate waste. A trio of bins (clinical/domestic/recyclable) may facilitate appropriate waste disposal more readily.

## 6. "GO GREENER" — NEONATAL UNIT

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**TEAM MEMBERS:** Tania Nightingale (Staff Nurse) and colleagues.



### **Background:**

Recently the unit has switched from procuring reusable items that could be autoclaved to single-use items. As a mitigating measure recycling bins have been placed in the Neonatal Unit at the staff base and staff room prior to the project.

The project was prompted by a parent asking why a formula milk bottle was being thrown away in the domestic waste. For staff, this has highlighted the difference between their behaviour at home (where they would segregate waste for recycling) and at work.

### **Goal:**

The initial goal was for 90% of recycle symbol 5 bottles used for storing breast milk and formula milk bottles to be rinsed, dried and disposed of in the dry mixed recycle waste bins instead of either clinical waste or domestic waste by end of the 10-week project period. However, after meeting with waste management the team learnt that many more items could be disposed of in the dry mixed recycle bins than was common practice on the unit. The team then adjusted the aim to increase the use of dry mixed recycle bags.

### **Approach:**

The team launched a 'Go Greener' campaign for staff; encouraging recycling on the neonatal unit:

- Quick Quizzes – the Green Neonatal Team collected a bag of waste items and ask staff to sort them into the different waste streams of clinical waste, domestic waste and dry mixed recycling.
- Questions bag – for staff to place waste items when they were not sure which waste stream to use; the waste team later visited and advised the staff on how to dispose of the 'question' items.
- Updates on the amount of waste in the recycling and clinical waste streams for the unit were placed on the Neonatal Unit Comm Cell. This helped to keep momentum going and generate some healthy competition between staff to recycle as much as possible during a shift.
- 3 more recycling bins were placed on the ward to support this project.
- Measuring the weight of dry mixed recycling (DMR) and clinical waste (CW) during shifts before and after the start of the project.

**Results:**

- The weights of DMR and CW were measured after 3 shifts pre-project and 5 shifts post-project. Both CW and DMR increased (CW doubled and DMR tripled) so this may simply represent more waste on the ward on those days or increased weights of waste (e.g. wet nappies are heavy).
- The team also measured the number of bags to add context to the data, given that waste for recycling is often less heavy than clinical waste as it is dry. There was very little change in number (volume) of bags.
- Domestic waste weights and volumes were not measured.
- It is difficult to draw conclusions given the small amount of data collected and lack of contextual information (e.g. occupancy of the unit).

The project was successful in engaging the team in considering how waste is disposed of in a clinical environment although some staff found segregating waste for recycling an additional burden in a high-pressure clinical area.

The waste team gave good support to this team. Could a waste audit service be a workstream that the RD&E develop/contract in line with other hospitals such as Barts Health, London?

## AWARDS

The awards were a great success. The judges, members of the senior leadership team at RD&E and CSH, visited teams in their clinical areas or listened to a presentation of their work. All participants then got together to join an excited audience of over 25 people at the RILD on the Wonford site of the RD&E to receive their certificates and prize.

After prize giving all were invited to relax over a delicious, sustainable tea...including Devon scones!

### WINNERS: Estates Team



### HIGHLY COMMENDED: Anaesthetics Team & Catering Team



## Potential annual savings

The following table provides detail on the **annual** savings available to the Trust from the 2019 Green Ward Competition projects when projects are fully implemented and embedded. **These carbon and cost savings will increase if the projects are scaled up across clinical areas throughout the Trust.**

Project	Money	Carbon & environmental benefit	Social	Clinical outcomes
<b>Blue Gas Thinking</b>	<b>£529</b>	<b>49,906kgCO<sub>2</sub>e</b>	Avoid risk of miscarriage in staff. This side effect is unusual, reducing availability of nitrous oxide for recreational use.	Avoiding adverse effects of nitrous oxide.
<b>Trash it, don't flush it!</b>	<b>£13,680</b>	<p>More data required. For the carbon footprint to be reduced the number of visits from Exjet and out-of-hours RD&amp;E staff call outs needs to reduce. There is evidence that the severity of the blockages when call outs are made is decreasing so it is likely that the number of call outs will also decrease over time.</p> <p>Reduction in microplastic pollution is hard to quantify. Pictures of blockages is likely to be the best method.</p>	Not formally assessed. Benefits in building relationships between clinical and estates teams to reduce frustration on both sides and to help encourage collaboration on solving a problem that has an impact on both teams.	Not formally assessed. There is a potential to improve continence and reduce falls through availability of toilet facilities and to help to control infection if fewer blockages occur.

<p><b>Green Inhaler Practice</b></p>	<p><b>£466</b></p>	<p><b>2,153kgCO<sub>2</sub>e</b></p>	<p><b>Save patient time,</b> allows <b>patients live out their values</b> around care of the environment, <b>clinician</b> to act in accordance with <b>professional responsibilities</b> around <b>health promotion and protection</b> rooted in the ethical principle of <b>justice.</b></p>	<p>Changing to fewer inhalers may <b>improve adherence</b> to treatment and <b>in turn improve health outcomes.</b></p>
<p><b>Catering single-use plastic; No Trifling Matter</b></p>	<p>Dessert pots: <b>£1,830</b> annually for first year, but second year savings should be <b>£2,701</b>, taking the capital investment of gastronomes into account.</p> <p>Plastic to paper cups: <b>increase in £20</b> annually due to increase in weight of waste and costs of recycling.</p> <p>Milk containers: <b>£4,537.</b></p> <p>Vegetarian meal; <b>£380.</b></p>	<p>Dessert pot and lid: <b>1,964 kgCO<sub>2</sub>e</b> in first year, after that save <b>2,250kgCO<sub>2</sub>e</b> in following years.</p> <p>Plastic to paper cups: <b>increase in 40 kgCO<sub>2</sub>e.</b> The benefits not captured in the carbon footprint are related to the <b>avoiding environmental pollution with microplastics if cups are not disposed of correctly,</b></p> <p>Milk containers: <b>1,240kgCo<sub>2</sub>e</b> annually</p> <p>Vegetarian; <b>3,109 kgCO<sub>2</sub>e</b> annually.</p>	<p><b>Patients</b> find it easier to eat from bowls, <b>catering staff</b> have found the reduced workload when using gastronomes, staff pleased to see a decrease in single use plastic.</p>	<p>Dessert pots: may contribute to improved nutrition if patients find it easier to eat their meal, which can have knock on health benefits.</p>

ED	Potential saving of £211 per tonne.	Potential saving of 703 kgCO <sub>2</sub> e per tonne.	None	None
Neonates	Not quantified.	Not quantified. May contribute to saving resources if more items are recycled.	Demonstrates responsiveness to concerns of parents; the project was set up in response to a challenge from a parent on lack of recycling facilities on the unit.  Engaged staff in thinking about how they dispose of waste and surfaced a range of attitudes towards recycling in a healthcare environment; some positive and some negative.	None
<b>Total Savings</b>	<b>£21,402</b>	<b>58,332 kgCO<sub>2</sub>e</b>		

#### Conclusions:

The competition this year yielded a return on investment of over £2 for every £1 spent and **made substantial carbon savings**, which was the aim of this year's competition. The **entries** this year were much more **ambitious** tackling as they **tackled knotty problems** in several carbon 'hotspot' specialties including respiratory medicine, anaesthetics and estates. It was exciting to see teams tackling these more complex problems.

Since these problems were more ambitious, involving considerable behaviour change, there is considerable potential for the **benefits to be magnified** over the next 6-12 months (and longer) if the projects are supported and successfully embedded. I am encouraged to see that teams are embedding ongoing monitoring of these projects into their **governance systems**. I look forward to working with the teams in the 'spread' phase of the competition.

## NEXT STEPS

Having run these pilot projects, CSH will support the Trust and the teams in developing their projects. The progress of these projects will be recorded in a further report.

## ACKNOWLEDGEMENTS

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

**Chris Tidman**, Chief Financial Officer and **Luke Mitchell**, Energy Manager and Chair of the Devon Energy Group, commissioned the competition for the second year running. Thank you for partnering with us.

Thank you to the **Transformation team** for seconding **Lottie Edwards** to the competition. Lottie provided some face-to-face follow up with the teams, offered the teams the Trust's own quality improvement resources as a first step in integrating the CSH Sustainable Quality Improvement methodology with the existing RD&E QI resources and encouraged teams to use their Comms Cells...amongst many other ad hoc tasks. Thank you, Lottie for your help and enthusiasm.

Thank you to **Chris Tidman**, Chief Financial Officer, **Marina Morgan**, Consultant Microbiologist, and **Frances Mortimer**, Medical Director of the Centre for Sustainable Healthcare, who acted as judges for the competition.

I was humbled by the sheer enthusiasm of colleagues in all disciplines, making sustainable changes with genuine tangible benefits for the environment and patients. The submissions were innovative, useful and 'doable'. Much of the work had been done in people's own time, reflecting their passion for making a difference.

Assessing the excellent projects was a real education. I learned so much. I was completely unaware of the fact that hospital staff, like me, will have a much greater impact on the total environmental footprint by changing their daily practice to **prevent** waste rather than by recycling. I have been working here for 30 years as a 'bug doc' and I came away feeling that infection control policies may lead, too often, to discarding unused products when it might not be necessary; this made me think about how I might take environmental aspects into account when making decisions in the future.

The whole experience was incredibly enlightening and rewarding.

**Dr Marina Morgan, Consultant Microbiologist, the Royal Devon & Exeter Hospital.**

**We look forward to working with the RD&E in the future.**