

Gwaun Cae Gurwen Dental Practice, Swansea Bay University Health Board

WHAT WE DID

As a dental team we recognised the need for a more sustainable approach to primary care services. We decided to initiate a quality improvement (QI) project focusing on environmental sustainability.

We initially considered multiple avenues to investigate including travel and energy consumption, however, we decided to focus our project on waste. Waste is something the whole dental team contributes to in and out of surgery, allowing a team approach to the project. It is also easily measured allowing us to monitor outcomes.

We carried out an initial scoping exercise to determine the different types of waste we were producing; we soon realised that clinical waste was by far our greatest output and so decided to focus the project in this area. We held a data collection exercise over 10 weeks to determine our baseline. As a 5-surgery practice, we were producing around 20kg or 5 bags of clinical waste per week. It was agreed that the process measure of the project would be the number of clinical waste bags, and the outcome measure would be the weight of the clinical bags. On a larger scale, this could also be considered by CO₂ emissions.

We subsequently completed four initial PDSA (Plan, Do, Study, Act) cycles which are detailed overleaf.

WHAT ARE WE MOST PROUD OF

We are the very proud winners of the first Greener Primary Care Award at the NHS Wales Sustainability Awards 2025. Winning this award means so much to the team who have worked hard over recent years to become more sustainable.



The change in the team's attitude and approach to sustainability is one of the biggest successes; the whole team has really engaged and reflected on their own environmental impact promoting lasting change at work and at home.

We have also participated in Greener Primary Care Wales, achieving a gold award in 2024, through completing 47 broad-ranging actions. We appointed an Environmental Sustainability Lead who has written a Sustainability Policy for the practice and completed over 12 hours of Continuing Professional Development in sustainability.



GWAUN CAE GURWEN DENTAL PRACTICE RECEIVED A GREENER PRIMARY CARE WALES GOLD AWARD IN 2024



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<https://gcgdentist.com/>

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WHAT DIFFERENCE DID IT MAKE

Environmental

Considering the waste management hierarchy, we have focused on reducing our consumables and procurement of items, particularly single use plastic. Secondly, we have changed our processes to include the recycling of items over their disposal. We now only produce 2 bags of clinical waste per week (approx. 13kg) in comparison to 5 bags (approx. 20kg) at the start of the project, therefore achieving a **40% reduction**. We estimate that this reduction has generated a saving of **356kg CO₂e**.

Financial

We have reduced our clinical waste disposal contract resulting in an **annual saving of £800**. We have also reduced our procurement costs for disposable items (e.g. plastic cups, plastic suction tips, sterilisation pouches) equating to an **annual saving of over £4000**.

Clinical

We are always committed to ongoing excellent standards of care for our patients, now with a focus on sustainability. Procurement of new autoclavable equipment allows for more sustainable treatment, and a more sustainable approach to treatment planning.

Social

This has been an excellent team building exercise. The team has developed skills in QI and raised their awareness of environmental sustainability. The project has gained significant patient engagement, notably following the introduction of autoclavable metal cups. Patients are aware of our commitment, and this has resulted in ongoing conversations around sustainability in dentistry and in general.

WHAT NEXT

We have been running this longitudinal QI project for the past 2.5 years. Our next step is to spread and scale! We are committed to raising awareness of the climate emergency and sharing ideas with colleagues.

Our project could easily be adopted across dental practices, with minimal cost involved. In addition, we feel there is huge potential to adopt these changes across all primary care providers including GP, pharmacy and optometry. This is something we have discussed with the local dental collaborative and hope to discuss with the local cluster team for their input.

We are also keen to move to tiger waste instead of clinical waste in the dental practice. This would reduce carbon emissions further as it is not incinerated like clinical waste.

TOP TIPS

- Join the Greener Primary Care Wales Scheme! This is a great framework to start making sustainable changes within primary care.
- Use quality improvement methods to plan your project. This has been a fantastic learning opportunity for the whole team.
- Remember small changes can have a big impact, environmentally, socially and financially!

CONTACT

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Gwaun Cae Gurwen Dental Practice, Swansea Bay University Health Board

PDSA 1 Introduction of plastic storage boxes

Plan: We noticed significant numbers of sterilisation pouches disposed of in our clinical waste bags - over 400 per week. Mirrors and probes are the most utilised instruments within our dental practice, and they were individually packed and sterilised. Once in surgery these would often be opened and disposed of straight away, creating unnecessary waste. We ran a pilot study in one surgery to assess the viability of this change idea and received good feedback from staff.

Do: We introduced storage containers for mirrors and probes in each of the 5 surgeries. The box was changed daily, allowing a reduction of sterilisation pouches used and disposed of, whilst still adhering to WHM01-05 protocols.

Study: This change was adopted well across the surgeries; however, difficulties arose with changes to decontamination protocols. Staff training was held to ensure that the mirror and probes were re-sterilised at the end of each day and bagged in one large pouch overnight. The data showed a shift in the number of clinical waste bags produced.

Act: This change was adopted across our five surgeries.



Three further PDSA cycles were tested:

- PDSA 2 Waste segregation in surgery
- PDSA 3 Reusable patient cups
- PDSA 4 Recycling in surgery



Building a Healthcare workforce for Improvement in Wales

Reduction of Clinical Waste in Primary Care: GCG Dental Practice

Yvonne Powe, David Johnstone, Sir Gwyn, Simon Bond, Carol Ann Lewis, Alan Griffiths, Annemarie Gregory, Natalie Rees, Lisa Williams, Gemma Pritchard, Jessica Rees, Wendy Griffiths, Jessica Chappell, Rhian Clentfield, Annette Paddock

Context and Problem

NHS Wales is committed to reaching net zero by 2030, sustainability within the NHS must be prioritised. Dental practices follow guidance HTM07-01 relating to disposal of different types of waste. Confusion over classification of waste and many single use items often result in inappropriate waste production and disposal, with increased eCO2 on incineration.

Flashbone diagram - Inappropriate clinical waste production

Strategy for Change

Baseline clinical waste production was established via a 4 week data collection exercise, around 20kg produced per week. Staff reviewed the contents of clinical bags and waste disposal guidance reinforced. Changes were considered, see Driver diagram.

Involving others:
Practice owners, Dentists, Dental care professionals, Admin team - 15 members of staff. Potential opposition to project as increase in processes in a busy practice. Potential for increased costs. Discussion on possibility of cost savings/benefit of environmental impact.
Waste company - Liaison required, reduction in waste collection.
Local Authority - Liaison needed, increased domestic/recycling waste.
Patients - Promotion of sustainability in dentistry, wider implications.

Aim - Reduce the amount of clinical waste produced from 20kg a week to 18kg a week (10%) within 6 months.
Outcome measure: weekly weight of clinical waste bags in Kg.
Process measure: number of clinical waste bags produced.

Measurement of Improvement

CHANGES: Weekly number and weight of clinical bags were recorded and PDSA cycles implemented.

PDSA Ramp:

PDSA 1 - Storage box
PDSA 2 - Waste segregation in surgery
PDSA 3 - Autoclavable cups and suction tips
PDSA 4 - Segregated paper/thermo cycle in surgery

Lessons Learned

Run charts show a shift below median for number of bags produced as well as weekly weight of bags. There is also a reduction in variation in the number of clinical waste bags, allowing the practice to predict usage for clinical waste contract negotiation. Over 18 months the practice has adopted changes and now consistently produces 2 bags of clinical waste a week (~8kg), compared to 5 (~20kg) at the start of the project, this is above expectations of our 10% aim achieving 40%.

Health: Ongoing standards of care for patients, focus on sustainability.
Environmental: Reduction in consumables, incinerated waste, carbon emissions. Staff engaged in promotion of sustainability.
Social: GCG team proficient in QI tools, patient engagement and promotion of discussions around sustainability in dentistry.
Financial: £300 annual saving in clinical waste collection/disposal alone. Additional costs reducing procurement of disposable items.
 Next we aim to investigate the carbon equivalent saving of our project.

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Effects of Changes

OUTCOME MEASURE:

Run Chart showing weight (kg) of clinical waste bags collected for weekly disposal

PROCESS MEASURE:

Run chart showing number of clinical waste bags collected for disposal weekly

Driver diagram - Reducing clinical waste

Lessons Learned

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PDSA 2 Waste segregation in surgery

Plan: We reviewed the contents of the clinical waste bags again and still noticed an excess number of sterilisation pouches.

Do: We introduced 'non-clinical' waste bags into surgery, allowing for waste segregation in line with HTM0701. We held staff training and reinforced correct waste disposal, ensuring all staff were aware of the definition of clinical waste. The non-clinical bags were used to dispose of instrument storage bags, paper towels and material packaging that had not been in contact with the patient.

Study: There were difficulties ergonomically implementing bags in each surgery, especially in changeable left/right-handed units. Team assessments of each surgery were conducted to determine appropriate places for non-clinical bags. Initially, the team were unsure of appropriate waste disposal therefore posters were printed for each room. As a balancing measure, this change resulted in a significant increase in our general waste. This needed liaison with the practice cleaner to ensure her workload was being managed.

Act: This change was adapted with the introduction of signage.



PDSA 3 Reusable patient cups

Plan: A pilot study was run in one surgery which found that in one week over 50 plastic cups were used and disposed of. Applied across the whole practice this could equate to over 250 plastic cups being disposed of in one week.

Do: We introduced stainless steel cups which are autoclavable. The introduction of reusable cups would reduce the use of single use plastic in surgery and be a visible change for patients to promote sustainability.

Study: There were initial difficulties with decontamination as the cups were too tall to fit into the autoclave. As a team we reflected on this and rearranged the autoclave shelving. Each spittoon had to be re-adjusted to allow the correct dispense of water. This was a very successful change which received lots of positive feedback from patients. This change also had the potential to save costs long term with the reduction in procurement of plastic cups, reduction in the number of deliveries and procurement packaging.

Act: This change was adapted and implemented across the practice.



PDSA 4 Recycling in surgery

Plan: We considered the increase in our domestic waste and contacted the sterilisation pouch manufacturer who advised if separated, the pouches could be recycled. The whole sterilisation pouch could then be recycled via paper and Terracycle, instead of disposed of in general waste.

Do: Paper and Terracycle waste bags were introduced into surgeries. This change was piloted in one surgery, to test viability as well as providing training to all staff on how to separate the pouches correctly.

Study: There were initial difficulties physically introducing four bin bags into each surgery. There were also concerns over the increase in workload due to physical separation of the sterilisation pouches. Some procedures within the dental setting may produce over 30 pouches, adding significant time to an appointment for separation. Staff training was held to ensure everyone was aware of the change, and that clean gloves were used when opening the bags to ensure they could be recycled. Difficulties also arose with the disposal of the Terracycle, as it is a soft plastic that is not yet recycled by our local council. Disposal of this waste involved staff members visiting local recycling centres. We also saw an increase in paper recycling as a balancing measure of this change, and had to plan for this accordingly with the council collection services, again liaising with the practice cleaner.

Act: Paper and Terracycle recycling bags adopted across all surgeries.

