

Environmental sustainability: measuring and embedding sustainable practice into the dental practice

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Key points

Describes a number of actions which a dental practice can undertake to help become more sustainable, including appointing a practice lead and writing a practice sustainability policy.

Suggests the practice could consider measuring elements of sustainability and communicating its success to its team and patients.

Highlights potential barriers to embedding sustainability into a practice, while providing facilitators to help overcome these.

Abstract

This final paper within the sustainability series focuses on creating a framework for embedding sustainability within a dental practice and builds upon sustainability principles and practices explored in the preceding papers. The dental practice could be a high street dental practice, a community setting or a trust.

Introduction

As discussed in the first paper in this series, the Sustainable Development Unit (SDU) and the Centre for Sustainable Healthcare (CSH) support the development of sustainable healthcare. Within dentistry, the World Dental Federation (FDI) and National Dental Associations are important bodies to coordinate work and interact with local authorities to advocate change in sustainable dentistry. The FDI recently published its policy statement on 'sustainability in dentistry'. Within the UK, the British Dental Association is supporting sustainability with involvement in national sustainability groups and publications.^{1,2,3} Support is also growing among other dental associations; examples include the Australian Dental Association's policy statement on sustainability and various Canadian Dental Association publications.^{4,5}

To influence sustainability within dentistry regionally, it is important to engage the wider

dental community; specifically, local dental committees and networks, managed clinical networks, and commissioners of dental services. To create a sustainable practice, it is important to engage staff, public and patients, frame a vision for the practice and then undertake a change management process.⁶ There are many organisations and tools that can assist dental practices to address, improve and embed sustainability within their practice. These include: Carbon Trust, Global Action Plan and the Green Impact Toolkit.^{7,8,9} Sixty dental practices have taken part in the 'Green Impact' programme in the South West of England and saved energy, carbon emissions and money by taking part in the scheme.¹⁰

Embedding sustainability

To break down the broad topic of sustainability into manageable and understandable portions, readers are encouraged to make use of these tools. Such tools will also enable staff to feel a sense of achievement as identified actions are completed. Using Kotter's change management theory, embedding sustainability can be viewed as eight steps.¹¹

Create urgency

The dental team has to understand the need for change and feel inspired to act. Part of this process is to help the dental team to think about sustainability not as a separate

entity but as integral to the patient's overall health, their duty as healthcare professionals and the successful everyday functioning of the dental practice. To provide information and encouragement, staff members could be provided with sustainability resources such as the e-dentistry resource, online videos, information from the CSH website, and other academic papers.^{6,12,13,14,15,16,17,18,19,20,21}

Form a powerful coalition

Depending on the size of the dental practice, the dental team should identify a team member passionate about sustainability to lead the change; in a larger or corporate practice this might require a multidisciplinary team. The SDU advises all NHS trusts to have a sustainability lead, and this principle would also work within smaller healthcare organisations such as dental practices.²² The lead person will ultimately be responsible for directing the change process within the dental practice and, if possible, with the local population in order to support external community events.^{23,24} They will also be responsible for communicating with the rest of the team; both keeping them informed and listening to their thoughts and ideas.

All staff and patients should be encouraged to share their personal values and solutions to support the practice in becoming more sustainable.²⁴ They will see the dental practice from a different perspective from the practice team, so may come up with additional and/

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Fig. 1 Top ten tips for sustainable dentistry

or alternative ways of improving sustainability. The United Nations Environment Programme (UNEP) Finance Initiative created a mailbox to which employees could direct their questions and suggestions regarding sustainability issues.²⁵

Although not applicable to dental settings, increasingly for commissioning decisions, public engagement is now required by legislation.^{26,27,28,29} Practices can actively seek contributions and ideas from their patients by providing a 'sustainability suggestion box' in the reception area. Dental practices are an important space for general education. Health professionals such as dental registrants are viewed as role models and, along with GPs, are often the public's first contact with the healthcare system. By modelling and providing education about sustainable development and the practice's work, dental professionals influence sustainability becoming part of normal dental care.

Create a vision for the change

The dental lead should consider working with the rest of the practice team to draft a sustainability vision or mission statement to help articulate how sustainability relates to their specific dental practice. Ownership by the team is important here and it is useful to set achievable actions for individuals and timescales. Once this vision has been outlined, it will help form the basis for the sustainability plan.³⁰

Communicate the vision

The practice should communicate the vision both internally and externally. This communication could include putting sustainability information on the practice website, social media and within the waiting room (Fig. 1) and, once sustainability is embedded into the practice, information demonstrating progress can also be relayed in a similar manner. For example, if a practice has recently switched from a standard electricity provider to one which uses only sustainable energy, this action could be displayed in the public waiting area.

Overcoming barriers and enhancing facilitation/empowering others

There are numerous potential barriers to embedding sustainability into a dental practice including financial constraints, resource limitations and lack of support and cooperation (perhaps due to insufficient understanding of the need to become more sustainable). There are, however, enablers to enhance the adoption of sustainability principles. The practice can be encouraged to use financial incentives such as subsidies on solar energy (currently must have been fitted by April 2019 to qualify) and cycle-to-work schemes.^{31,32,33} The Carbon Trust, through the 'Green Business Fund', also offer incentives to take up energy saving initiatives such as interest free loans and enhanced capital allowances (tax relief) on energy saving equipment.^{34,35} The practice

lead on sustainability can encourage peers to access educational materials to enhance their knowledge of dental sustainability.

Looking to the future, NHS practices should also consider the statutory obligations commissioners have through the Public Service (Social Value) Act 2012. This act requires commissioners of public services to consider not just the economic aspect when they procure services, but also the social and environmental value of the contract.³⁶ In becoming more sustainable now, dental practices will be better prepared when commissioners start increasing sustainability requirements within service specifications which underpin dental contracts. From a financial perspective, practices should consider the long-term economic value of embedding sustainability into day-to-day practice, as well as considering each sustainability intervention. The *British Dental Journal* series of papers does give examples of investments in sustainability that also provide effective returns (for example, some forms of insulation, LED light bulbs).^{12,13,14,15,16,17} More research is needed to produce detailed return on investment perspectives for sustainability in dentistry.

Create short-term wins

The dental practice should consider taking simple steps initially, perhaps focusing on quick wins. As highlighted in this series of papers, these could be economic wins; such as replacing incandescent light bulbs, insulating the water tank or using waiting room displays to communicate to patients about the importance of sustainability and what the practice has achieved. Ideally, these ideas should come from the whole dental team, rather than be directed as a top-down approach decided by one senior individual.⁶

Build on the change

Once the dental practice has implemented simple changes, it should consider how they can be built upon. Applying for awards, such as an NHS sustainability award, and publicly celebrating achievements can be a key motivator for staff to continue taking an active part in sustainability activities.³⁷ As an example, practices such as Frome Medical Practice and Litchdon Medical Centre were recently crowned gold award winners at the National Union of Students (NUS) Green Impact award programme.³⁸ If the practice is part of a larger group or corporate, consider sharing information on the successful changes

made; this might help facilitate institutional changes within the wider organisation.

Anchor the change

The final part of the change management process is to embed the change in organisational policies and procedures so it becomes part of the day-to-day running of the dental practice.

A practice policy or plan

A practice policy or plan can be quite simple for a smaller practice, but a larger practice may require more complex documentation. Although not a requirement for dental practices, larger healthcare organisations are encouraged to have sustainable development management plans and this is an indicator in the Public Health Outcomes Framework.²² Building on the policy, the practice should also consider an action plan which includes SMART (specific, measurable, attainable, relevant and timely) targets, and have allocated staff members responsible for specific actions. A policy could include a process to:

- Establish a sustainability lead
- Engage staff/patients
- Collect feedback, ideas and offers from patients on sustainability
- Encourage patients and staff to travel sustainably
- Manage waste, energy and biodiversity
- Manage communications raising awareness about sustainability in a network of dental practices.

The practice needs to consider the resources needed to implement the planned changes. These may require short-term financial investment for longer term financial gains. For example, the purchase of LED lightbulbs requires short-term investment but yields long-term financial gains.

Staff induction

The practice's sustainability vision and plan should be included in all future staff induction packs. This could include information on educational resources such as the ten top tips (Fig. 1) and general information on sustainability (for example, carbon emissions of active travel, significant carbon emissions associated with dentistry). New staff are more likely to consider sustainability as an integral part of their role if it is introduced during induction. For current members of staff, it is important that they are kept fully informed on the practice's sustainability initiatives; perhaps

during a continuing professional development session.

Staff personal development plans

Sustainability could also be included in staff personal development plans and/or staff appraisals. This action would further highlight the staff member's responsibility for implementing sustainable change within the dental practice.

Education

Staff should be supported with training on sustainability. As well as the educational resources discussed previously, staff could be encouraged to join the 'dental susnet' (sustainable dental network on the website of the Centre for Sustainable Healthcare), or their local sustainability and health network supported by the Sustainable Development Unit.^{12,13,14,15,16,17,18,19,39} Increasingly, there are CPD events on sustainability and health care. Dental registrants could check conference sites like Eventbrite for more information.⁴⁰ Larger practices and corporates could also run internal themed campaigns on issues such as supporting staff to help reduce travel as well as conserving water and energy.

Measuring and embedding; use of indicators

Embedding sustainability into a healthcare setting is an aspect of quality improvement.^{41,42} A dental team that is familiar with quality improvement processes will be aware that an integral part of quality improvement is the use of measurement (you cannot manage what you do not measure).⁴³ There are a number of indicators that can be recorded in order to measure sustainability within the dental practice. Like any other quality improvement indicator, these should be SMART:

- Specific: the measure should quantify an important result (for example, kWh of electricity)
- Measurable: the indicator can be measured (using an actual unit, such as kWh)
- Achievable: this should be a realistic target, otherwise people may get dis incentivised by failure (for example, a 10% reduction in energy use, as this is achievable in most cases)
- Relevant: that is, related to sustainability (energy use is related to sustainability)
- Time specific: for example, over one year (the 10% reduction will take place over a one-year period).

The Sustainable Development Unit has developed a series of integrated metrics for use in both primary and secondary care, which are applicable within the dental setting.⁴⁴ SMART indicators that dental practices could consider are:

- Energy use per unit activity (for example, unit of dental activity [UDA] or patient appointment)
- Travel per unit activity
- Procurement (purchases) per unit activity
- Organisation water use per unit activity or patient appointment
- Organisation waste in kg or bags to landfill per unit activity or patient appointment.

Additional useful indicators⁴⁴ could be:

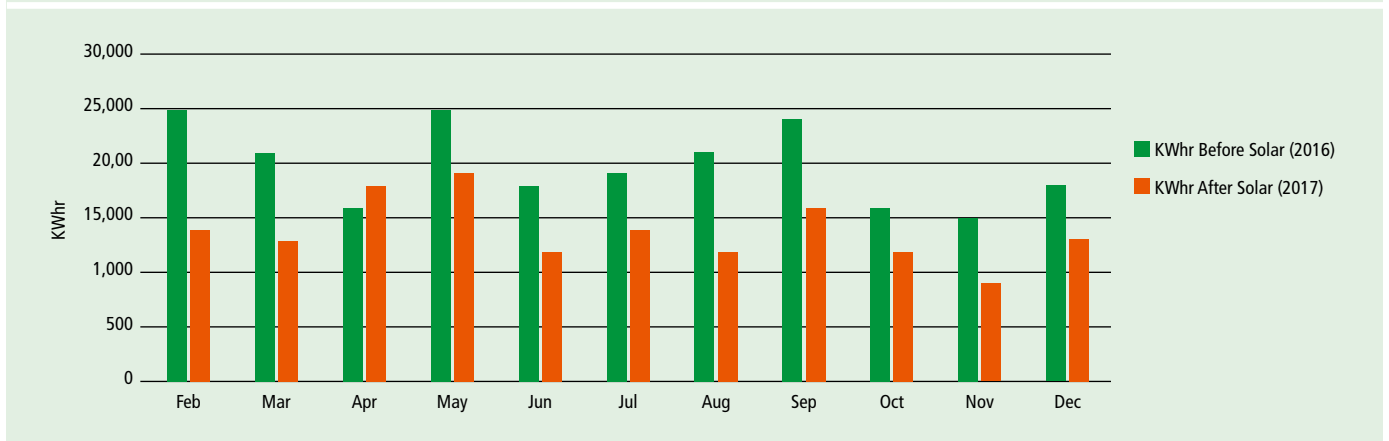
- Evidence the organisation promotes sustainability to its employees
- Proportion of procurement spend in the local community
- Measures recognising work towards more sustainable care pathways.

Within secondary care, a number of these metrics are reported on through the ERIC report (Estates Returns Information Collection). Progress on achieving agreed targets is reported nationally on the SDU site.⁴⁵ There are currently no contractual requirements for dental teams to report on sustainability metrics in the NHS contract. If one considers the work developed by the SDU, it is not unreasonable that metrics within dentistry could be incorporated in future NHS dental contracts or commissioning specifications.

The use and effectiveness of smart meters has been discussed in the energy paper in this series.¹³ Measuring energy across a larger practice or group of practices could be undertaken using a more sophisticated Building Energy Management System (BEMS), computer-based systems which monitor and control energy use to optimise energy efficiency. These are explored in a recent paper by Manic *et al.*⁴⁶

A broad sustainability measure is the carbon footprint; see the introductory paper in this series for more information.¹² There are no ready-made carbon footprint calculators for a health service such as an independent dental practice. There are, however, alternatives: the Royal College of General Practitioners funded a carbon calculator created by Best Foot Forward for use by its members (now called Footprint Reporter).^{47,48} Other organisations offering specialised services for healthcare providers, at a cost, include the Carbon Trust, Low

Fig. 2 Electricity use before and after solar panels installed (example only)



Carbon Europe and the Centre for Sustainable Healthcare.^{49,50,51} These groups use standards such as ‘PAS 2050:2011’ to calculate the carbon footprint, enabling broadly consistent comparisons to be made between different time points with a specific healthcare provider or between individual healthcare providers. Although accurate carbon footprinting is not a simple process, a dental practice can capture a significant part of its carbon emissions by collecting information on electricity and gas use (kWh), a sample of patient and staff travel details, and procurement. The carbon footprint is then calculated by converting these data into emissions using the DEFRA (Department for Environment, Food and Rural Affairs) or SDU figures.^{52,53} This methodology is used within the Scottish and English carbon footprint studies and discussed in various publications.^{54,55,56}

From a patient perspective, measurable and simple to understand elements of sustainability could be presented on patient information boards within the dental practice. Such displays simultaneously educate staff and patients.⁵⁷ Waiting room posters have been shown to be effective in helping people remember health promotion messages and could also be used to teach sustainability.⁵⁸

Meetings

The formation of a practice short-life sustainably working group (Green Impact suggests over a period of two months) will be useful in order to embed sustainability within the practice. Membership of the group should, ideally, where possible, include both full- and part-time staff, as well as maintenance and cleaning staff.¹⁰ Meetings of the working group should have an agenda, minutes and action notes, and also should be communicated to all staff including those external to the group.

When sustainability is embedded into practice process, it can simply be incorporated as a single agenda item as part of normal team meetings.

Communication/figures

The information regarding sustainability measures can be placed alongside sustainability posters and success stories. Figure 1 provides information for the dental team and patients to help communicate sustainability principles. The poster is freely downloadable from the Susnet site.⁵⁹ Success stories could be displayed graphically. Examples might include Figure 2, after the practice introduces solar panels. Measurements could also be used in the future for dental practices to benchmark their sustainability performance against other practices, and it is possible that sustainability metrics could also be used to inform commissioning decisions.


































For practices which wish to undertake a more formal evaluation, this can be performed quantitatively (using data) or qualitatively (using non-data information such as descriptions of sustainability improvements). Evaluation can either be process-based (how an outcome was achieved) or outcome-based (the actual change, or how effective the programme was in producing change). Practices requiring a more formal evaluation could use a template as seen in Table 1.

Within the UK, there are formal evaluations and audits for sustainability. As discussed, practices can be involved in the Green Impact tool and should contact the NUS directly. Larger dental care settings could consider the more in-depth Sustainable Development Assessment Tool (SDAT), an online, self-assessment system that aligns itself to the UK sustainable development goals (SDGs).⁶⁰ The tool consists of a number of aims, ten

Table 1 Evaluation indicators for sustainable dentistry

Indicator	Process evaluation examples	Outcome evaluation examples
Energy use	Insulation used LED lights installed Zero emissions supplier now used	Energy use change in kWh Cost Percentage renewable energy
Travel	Travel policy Use of teledentistry Use of electronic referrals Secure cycle parking, showers	Number of appointments Patient and/or staff travel reduced (using patient or staff questionnaires), increased active travel etc
Procurement	Use of supplier’s questionnaire Social value in contracts	Amount spent per patient on procurement Amount spent locally Social value achievements in contracts
Waste	Waste audit Waste policy	Amount of waste sent under each category
Biodiversity	List of actions undertaken to improve biodiversity	Increase in biodiversity for example, insect counts
Embedding sustainability	Appointing a lead Staff education Practice policy	Sustainability widely understood, evidence of narrative and action

Fig. 3 Action on measuring and embedding sustainable practice into the dental setting

		£		
Create a practice policy on sustainability	☺☺☺	£		
Incorporate sustainability into your staff induction	☺☺☺	£		
Provide education sessions for your staff on sustainability	☺☺	£	 	
Hold meetings on sustainability	☺☺	£	 	
Do some quick sustainability changes to build excitement and momentum	☺☺	£ £	 	 
Measure what your practice has been doing	☺	£		
Communicate the vision to your staff and patients	☺☺☺	£		
Implementation:				
Easy    ... Less easy 				
Investment costs: low £ ... high £££				
Financial return on investment (ROI)				
Low  ... High   				
Environmental benefit:				
Small  ... Large   				

modules and four themes: governance and policy, core responsibilities, procurement and supply chain, working with staff, patients and communities to help larger organisations to benchmark current progress and develop sustainability plans.

Further partnership working/networking

The Sustainable Development Unit suggests working with others to spread improvements throughout the wider healthcare system.⁶¹ This could be dental professionals working and sharing ideas with other dental professionals, or shared learning experiences across the wider healthcare workforce. The dental team can share experiences with the online network Dental Susnet.¹⁸ With contributors from across the UK and internationally, this network brings together staff, patients and others from dentistry to share ideas, resources and events.¹⁸ Staff could also take part in local networks such as those supported by the SDU or be encouraged to engage in local volunteering activities. Some networks focus on specific issues or topics like air quality or plastics, which may be of particular interest to some staff members.

Dental practices should also consider contacting their local professional network to

inform them of their practice’s achievements in implementing sustainable change. Highlighting your practice as an ‘early adopter’ could help to influence change upstream and possibly secure funding and support for future ventures.

Action points

The following action box (Fig. 3) provides some summary for readers to consider when measuring and embedding sustainable practice into the dental setting. The reader should be advised that the judgement of ease, cost and impact is subjective and more evidence is needed.

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