Greenviu - The Green Clinic Society

Guidelines for an ecologically sustainable clinic

These guidelines will save you money and reduce your ecological footprint

Principles:
1. Reduce
2. Replace
3. Compensate

Reduce

A. Energy Saving

Assign one staff member to the task of an energy officer. That member will set the rules for the clinic and help the staff to comply with them.

Identify the largest energy consumption:
✓ Computers
✓ Air conditioner
✓ Sterilization unit
✓ Heating
✓ Operation Theater
✓ Kitchen and hospitality areas

How can you calculate your energy consumption?
On the one hand you can resort to your utility bill. While the bill can give you a comprehensive overview of the entire energy consumption of your practice/office/hospital, it won't give you a detailed insight into each functional unit's energy consumption. This however is essential to identify energy guzzlers and reduce effectively.
There are special applications that allow you to track energy use in certain rooms but you will need a Smart Solution in place for this to work. Alternatively, you can proceed the traditional way and simply calculate the energy uptake of each device and multiply it by the hours it is operating.

If you do not have the exact numbers for your appliances the data in this article may prove helpful:

Set Up An Energy Saving Plan:
Not all areas in the clinic are in use all of the time. There are simple daily actions that can be taken to significantly reduce energy waste.

- ✓ Keep lights off unless in use.
- ✓ Keep windows closed when A/C is on. Regulate the use of A/C and Heating where the temperature allows it. Office clothing may also be adapted to compensate for fewer resources in use.
- ✓ Heating is a large part of energy consumption. 1°C higher room temperature uses 6% more energy use (https://www.vaillant.de/21-grad/rat-und-tat/die-sieben-groessten-heizmythen-entkraeftet/). Define how warm the rooms should be (21°C is often optimal) and maintain that temperature. Do not completely turn the heating off at night as heating the room back up takes more energy than keeping it on. Keep the doors closed to maintain the temperature in the room.
- ✓ Completely turn off electronics when not in use for a long duration. If we assume a desktop computer uses around 150 - 200W per hour https://www.researchgate.net/publication/331617162_Environmentally_sustainable_dentistry_energy_use_within_the_dental_practice, https://www.energuide.be/en/questions-answers/how-much-power-does-a-computer-use-and-how-much-co2-does-that-represent/54/ and you use 10 computers in your office, only having your computers on when you need them (approximately 10 hours per day for 280 working days in a year) will save you more money than you spend for your Greenviu membership: 10PC´s with 150W will use 1500W per hour. Keeping them off for 14 hours per day on 280 work days results in 5.880kW hours saved in a year. With a price of 0.3€ per kWh this is more than 1700€ saved per day.

Green Energy Supply:
There are various retail energy suppliers available in many countries depending on where you are in the world. Have an employee search for the three lowest total cost energy suppliers that run solely on green energy. Then you will have the option to switch.

Solar Energy:
If you own the building in which you work consider going solar yourself - the investment will pay off in a few years as the efficiency of the solar panels rise throughout the years.

If you are on a rental basis speak with your landlord, they may go green with you and apply solar energy on the roof. Additionally, some governments offer financial benefits for going solar.

Thermal Heat Pump:
When you have access to green energy a thermal heat pump helps you save significantly on your gas and oil consumption. Depending on your office structure, and in combination with solar panels, this might additionally save you money. In some countries you may also find governmental aids for this process.

Transportation and Travel:
A large contributor to the CO2 footprint of medicine is travel and transport.

Smart Appointment Management can save your patients travel distances and therefore help reduce the Impact Data:
https://www.ugpti.org/resources/reports/downloads/dp-236.pdf
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6465872/
https://noharm-europe.org/sites/default/files/documents-files/5624/2018-09-25_Reducing_carbon_footprint_healthcare%20WEB.pdf

We suggest:

- ✓ Smart appointment management to save the patients travel.
- ✓ Install a public transport plan for your employees and patients: Check what kind of bus and train lines make it easy to reach your office and write a schedule that is orientated towards the ARRIVAL time at your office. (e.g. for your 10am appointment you can use bus line A from the grand station leaving at 09.34am…)
- ✓ Have an e-mobility offer for the employees at the office such as a e-car lease plan.

B. Water
Water consumption in dental/medial clinics is a complicated topic. IT is vital to combine the needs of hygienic processes with the demand to use water responsibly. One of the largest areas of water consumption that can be altered in the clinic is hand washing. Applying a Hand Washing Protocol involves washing hands correctly and knowing how often one should wash their hands. Not only will this protocol save your clinic unnecessary amounts of water but it will also protect skin from unnecessary damage.

C. Materials
Packages and Transport of Materials:

Order larger amounts of supplies at at time (less package material, less transport carbon footprint, better price and savings)
https://www.arup.com/-/media/arup/files/publications/h/health-cares-climate-footprint.pdf

Reusable Materials that are Commonly Wasted:

Sounds crazy but waste (especially packaging waste) can be reused before being thrown away therefore saving you resources. Combining the two following tips will easily save you large amounts of waste and hundreds of dollars per year.

Sterile Drapes
Many medical procedures require sterile coverage of the surrounding areas in which we are active. A sterile drape of 45x75 cm costs between 0,5€ - 1,5€ per piece. When you perform a treatment that needs sterile coverage you also need sterile gloves. Why not simply use the paper in which the gloves are packed as a coverage.

Sterile Covers for Light Handles
During sterile procedures you will sometimes need to readjust the light. Either you have someone on hand to do that for you or you need sterile covers for the lamp handles. We have found retail prices between 0,8 to 1,9€ per piece. Many medical consumables come wrapped in plastic hoses, such as suction pieces. These are sterile and can easily be adapted to cover many lamp handles.

You will surely find additional uses for your waste as well. Be creative and please send your ideas to us so that we can share with the other members within the Green Clinic Society!

Paper Towels

Paper towels are superior to hand dryers from a hygiene standpoint, however they have a higher ecological impact (see replace section of this guideline for details). One of the simplest steps one can take is to limit oneself to a single paper towel at a time, although unfortunately the material of the towels does not always cooperate. If you have the resources to do so, reusable cotton towels can be an alternative, however, you will need to make sure that washing the cotton towels does not use more resources than using the sustainable product version you will find in our replace section.

Replace

Not all of the areas will necessarily apply to your clinic. Please use this section as a suggestion. We are always open to new products so if you find something to add please let us know!

Consumables that have the Highest Impact on the Ecological Footprint:

- ✓ Gloves
- ✓ Masks
- ✓ Cups
- ✓ Disinfecting Agents
- ✓ Paper Towels
- ✓ Medical Gowns
- ✓ Operation Trays
- ✓ Cotton rolls
- ✓ Dressings
- ✓ X-Rays

https://pubmed.ncbi.nlm.nih.gov/31652534/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5012496/
https://www.researchgate.net/publication/266379512_Solid_Waste_Production_and_Its_Management_in_Dental_Clinics_in_Gorgan_Northern_Iran
https://www.arup.com/-/media/arup/files/publications/h/health-cares-climate-footprint.pdf

Gloves:

Nitrile gloves are an essential product used by medical professionals to assist in the health of patients and create a safe experience. The consequences of the disposable nature of these non-biodegradable gloves, however, is not often given adequate consideration in regards to an ecologically responsible lifestyle.

The journey of a nitrile glove begins in a large factory, produced using great energy resources. From the factory they travel to hospitals and medical offices to aid doctors in their rigorous procedures and allow a safe experience for both the doctor and patient.

However, after a single use these gloves are disposed of and find their way to a landfill creating significant waste and harm to the environment. A product that at first begins its journey for good becomes a product that pollutes.

To change this negative impact on nature, it is essential for modern medicine to cultivate an environmentally friendly lifestyle by using products that will sustain natural resources.

What we suggest:
Greenviu provides access to biodegradable gloves

Masks:
Surgical masks are responsible for thousands of tons of waste, and that waste has risen exponentially during COVID

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7543915/
https://www.greenpeace.org/international/story/44629/where-did-5500-tonnes-of-discarded-face-masks-end-up/
https://www.sciencedirect.com/science/article/abs/pii/S0048969721026991

What we suggest:
Greenviu provides access to masks made using Green Energy and European Fair Conditions

Cups:
Normal cups made from plastic, and many paper cups are lined with plastic to stabilize the water containment. Plastic cups are not biodegradable.

https://pubmed.ncbi.nlm.nih.gov/24994469/

https://solarimpulse.com/news/cleancup-fighting-plastic-pollution-one-cup-at-a-time#

https://plastic.education/the-problem-with-disposable-cups/

What we suggest:
Greenviu provides access to cups that are biodegradable
Other Options: Reusable Steel or Ceramic Cups

Disinfecting Agents / Hand Sanitizers:
Hand sanitizers are largely used as a basis for our daily hygiene.
Many people use them by pumping huge amounts on their hands thinking the more the better. This however is not only wasteful but an inaccurate assumption.

Additionally, one issue with hand sanitizing dispensers, especially those that are wall mounted, is that there is an internal plastic hose system that is prone to superinfection e.g. Pseudomonas Aeruginosa. Therefore these hoses need to be changed regularly which produces more waste and cost for the office.
What we suggest:
Sustainably produced hand sanitizers
Formula that is a more gel like consistency so that less is wasted and the same volume of use compared with traditional sanitizers lasts up to 20% longer - therefore saving resources
Plastic-hose-free hand sanitizing dispensers to remove the internal problem

Paper Towels:
From a hygienic standpoint paper towels are superior
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3538484/
but they are part of the huge waste pile that medicine produces
https://pubmed.ncbi.nlm.nih.gov/23063307/
and the ecological impact is worse than modern hand dryers:
https://ec.europa.eu/environment/biodiversity/business/assets/pdf/case-studies/Case%20study%2016_ReCiPe%20Hand%20drying%20systems_final.pdf

https://www.exceldryer.com/wp-content/uploads/2017/02/LCAFinal9-091.pdf

Since the hygiene of paper towels is far superior to that of hand dryers and the level of hygiene exceeds the negative ecological impact of paper towels we must find paper towels that are more sustainably produced.

What we suggest:
Greenviu provides access to sustainably produced paper towels

Sterile Dressings and Gowns:
If you are performing surgery on a highly sterile level you will need complete sterile covering of the site and you. This results in a huge pile of waste. As an alternative, reusable and washable cloth may be an option.

What we suggest:
Using a service that supplies, cleans, and resupplies reusable sterile dressings and gowns - the ecological footprint will still be smaller in comparison to single use materials

Individually Packed Operation Trays:
In many clinics sterile instruments are individually packed and are specifically opened for surgeries. A way to avoid the amount of waste in this area is to use an individually outfitted surgical set up that comes in a washable and sterilizable tray so that only one package needs to be opened per surgery. This tray can be individualized for your personal surgical needs.

What we suggest:
Reusable sterile washing trays that are appropriate for your clinical needs

X-Rays:
Digital x-rays require only a small fraction of the radiation exposure to patients than do analog x-rays. Not only does lower x-ray exposure benefit the patient, but it also requires lower energy consumption to produce the x-radiation.

Analog radiographs create waste in the form of plastic film that is not biodegradable, developing and fixing chemicals that adversely effect the environment and increase water consumption. For example, the silver in the developing chemicals for analog radiographs kills the bacteria in the sewage treatment plants which significantly impacts the ability of the sewage treatment plant to function efficiently and effectively.

What we suggest:
Replace analog with digital