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## Review

# Greening the office: Saving resources, saving money, and educating our patients



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## ABSTRACT

**Objective:** Dermatologists can benefit from adopting environmental sustainability in the management of their practices. We can also use opportunities to share best practices in environmental stewardship concepts with our colleagues, patients, and communities. Herein, we review easy steps for any health care professional, and dermatologists in particular, to adopt environmental sustainability and become more active in the fight against climate change.

**Methods:** This study included a select literature review, an identification of resources, and an overview of MyGreenDoctor.org.

**Results:** Many simple, cost effective, energy saving resources were identified. A reference list of climate change resources for health care organizations to help with lower their carbon footprints, educating their staff and patients, and advocacy for better environmental stewardship is presented.

**Conclusion:** Going green is an easy process that can save money, boost morale, and help educate patients while reducing the carbon footprint of any size medical practice.

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## Introduction

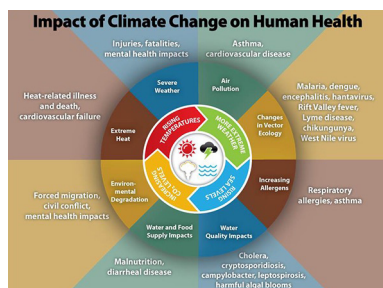
Health care is among the most carbon/energy intensive industries when we consider the transportation of supplies, waste, energy to run equipment, and development costs of medications.

Medical practices, both large and small, have been going green for years to be environmentally responsible, save money, and reduce their carbon footprints. Many report that the nonmonetary advantages are attractive but that there are bigger rewards to be gained for businesses that not only go green but also stay green.

Herein, we review some easy steps for any health care professional, dermatologist in particular, to adopt environmental sustainability and become more active in the fight against climate change. In addition, readers are encouraged to read "Combating climate

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**Fig. 1.** Impact of climate change on human health. (Source: National Center for Environmental Health, Impact of Climate Change on Human Health, Centers for Disease Control and Prevention; [www.cdc.gov](http://www.cdc.gov); 2019).

change in the clinic” by Fathy et al. in this same issue for a detailed analysis of the carbon footprint of a medical building and other methods to save energy and money.

Climate change and its threats to human health are now major concerns for most health care professionals. Climate change is a true public health emergency with well-documented deleterious effects on human health (Fig. 1). Extremes in weather patterns can put the most vulnerable patients at risk. For example, flooding not only directly causes death but also destroys homes and businesses and increases infections from contaminated water. Droughts lead to food shortages, population displacements, and malnutrition. Increasing temperatures promote heat-related injuries and deaths. Changes in ambient temperatures can lead to the spread of vector-borne illnesses, such as Lyme disease, dengue fever, Zika virus, and yellow fever (Coates et al., 2019; Friedrich, 2019; Patz and Kovats, 2002).

Even though climate change is a global problem, small steps in resource conservation within the health care sector, one of the most carbon-intensive industries, can lessen the overall burden of carbon pollution and ultimately protect the wellbeing of future generations (García-Sanz-Calcedo et al., 2019). Moreover, health care professionals can serve as role models to help guide the choices of their colleagues, patients, and communities.

### What does it mean to go green?

To go green means to actively promote environmental sustainability through natural resource conservation, waste reduction, and pollution and climate change prevention. Environmental sustainability was defined in 1987 by the United Nations World Commission on Environment & Development as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations, 1987). Robert Kennedy Jr (2007) more poetically said: “We did not inherit this planet from our ancestors; we borrow it from our children.”

There are established benchmarks that are helpful to follow in the process of converting to a more environmentally friendly business model. Benchmarking is the process of identifying, understanding, and improving practices that lead to higher performance (Castro et al., 2015). The greening benchmarks quantify the use of energy, water, paper products, and other resources. Greening can encompass many additional aspects of how we manage our offices: transportation options for staff and patients, food choices in the office, the uses of chemicals, recycling, advice for recreation, and even community advocacy.

### Why go green?

Health care facilities of all sizes can join in the effort to create a more sustainable business model. The healthcare sector accounts

for approximately 8% of all U.S. greenhouse gas emissions (Chung and Meltzer, 2009). Hospitals are especially energy intensive due to their constant operation, 24 hours a day, 365 days a year. Many large health care systems have already responded to the climate change crisis.

Some hospitals have achieved Leadership in Energy and Environmental Design certification, the internationally recognized building certification program of the U.S. Green Building Council. Facilities that achieve Leadership in Energy and Environmental Design certifications report lower operating costs, improved medical outcomes, better patient safety, and higher employee satisfaction (Ulrich et al., 2004; Xuan, 2016). Retrofitting of existing hospital facilities has also been shown to provide both energy and cost savings. One example is an Egyptian hospital that has projected annual energy savings of 41% after switching to an on-demand controlled ventilation system (Radwan et al., 2016). García-Sanz-Calcedo et al. (2018) showed that a single hospital can reduce its annual electricity use by 6.88 kWh/m<sup>2</sup> per year (a saving of €1.25/m<sup>2</sup> per year) by making improvements in its heating, ventilation, and air conditioning units, lighting, thermal insulation, water heating, and building maintenance.

Another method for energy conservation is trying to source materials and food locally. Several authors of this paper work in the St. Joseph Mercy Health System in Ann Arbor, Michigan, which operates its own 25-acre farm to provide local food for the hospital and surrounding community. The food is fresh, buying locally supports the local economy, and local procurement reduces fossil-fuel usage for transportation and storage, as well as lowering packaging waste.

Advantages to making environmental sustainability part of the workplace can include more responsible use of resources, cost savings, a healthier work environment, improved team building, improved employee retention, enhanced public relations, and a healthier community with decreased pollution. These benefits are available to hospitals and large medical groups as well as small practices. For dermatology practices, even seemingly small changes can produce big results.

Ways to make the office more environmentally-friendly include the following (the asterisk indicates methods in use at Fivenson Dermatology):

- Place recycling bins in convenient locations throughout the office.\*
- Turn off lights and machines at night.\*
- Set electronic equipment to sleep mode while not in use.\*
- Install light-emitting diode light bulbs.\*
- Install motion-activated switches for lights, sinks, or toilets.
- Install low or no-flush toilets and urinals.
- Use blackout blinds to decrease the need for excessive cooling or heating. Use smart plug strips to prevent chronic power draining from office equipment that must stay plugged in.\*
- Set air conditioners to 74°F/24 °C and heaters to 68°F/20 °C. Keeping heating and cooling systems regularly maintained and changing/cleaning filters saves energy and money.\*
- Convert to a solar hot water heater. Many utility companies offer discounts and tax incentives when you install these. Consider buying solar panels to generate electricity if you have a suitable roof and will be in the building for at least 10 years more.
- Use cold water for handwashing; hot water is not required for proper hygiene ([MyGreenDoctor.org/renewable-energy](http://MyGreenDoctor.org/renewable-energy)).\*
- Do not buy antibacterial soaps for your practice. Antibacterial chemicals are expensive, often irritate human skin, are toxic to the environment, and are not needed with proper handwashing technique (Kovacina et al., 1989).\*
- Switch from disposable to reusable instruments.
- Use multi-dose vials when available.\*



**Fig. 2.** Solar panel installation at the Escambia County Health Department in Pensacola, FL. (Source: My Green Doctor-Florida Medical Association, Success Stories, <https://www.mygreendoctor.org/profiles/>; 2019).

- Offer charging ports to encourage the purchase of electric vehicles.
- Install bike racks outside the office to encourage carbonless transportation.
- Reduce travel for local, regional, or national meetings by video conferencing.\*
- Encourage the purchase of carbon offsets to help decrease the carbon footprint of necessary travel ([MyGreenDoctor.org/travel-green](https://www.mygreendoctor.org/travel-green) 2018).
- If you cannot convert directly to renewable energy sources for your office, see if your local power company offers the option to purchase your energy through a renewables plan.
- Support organizations that focus on energy and habitat conservation.\*

See also Fathy et al. in this issue for more on the cost/benefits of these and other practices.

### Get started, get certified: My Green Doctor

In 2019, the American Academy of Dermatology (AAD) began offering members free use of a web-based service called My Green Doctor (<https://www.MyGreenDoctor.org/>). My Green Doctor is a not-for-profit practice management tool designed to help health care offices reduce their carbon footprint. It offers a simple, step-by-step program to help offices of any size become more environmentally sustainable by involving physicians, staff, and patients in resource conservation and education. Saving energy, climate change, and healthy foods are among the dozens of topics discussed. Offices can qualify for the Green Doctor Office certificate provided by My Green Doctor and the AAD.

Using My Green Doctor, the office manager or physician leader adds 5 minutes of Green Team business to each regular office staff meeting. Each meeting's Green Team activities are spelled out in the Meeting-by-Meeting Guide, so there is nothing to study or prepare: simply print out the page for that meeting. At each meeting, small changes are made to the practice that over time add up to big savings.

Staff and patient education are a big part of a practice getting certified. My Green Doctor provides access to patient resources, including dozens of free brochures, waiting room handouts, posters, and other teaching tools. This service requires no investment other than a few minutes of staff time each month. Hundreds of health care offices around the world are using this program and

have substantially lowered both their carbon footprints and office expenses.

Fivenson Dermatology in Ann Arbor, Michigan, began the My Green Doctor program in mid-2018 and was certified later that year as a Green Doctor Office. The office has implemented several of the eco-friendly suggestions previously listed and is saving money; the staff enjoys working under healthier conditions; and the practice website receives 20 to 30 unique page views per month related to their green office website posts using materials from My Green Doctor. Both patients and staff report finding these materials helpful and informative.

### What are the benefits of going green? Bigger benefits for bigger practices

Reducing waste, conserving resources, and preventing climate change are just some of the benefits of becoming an environmentally sustainable business. Monetary benefits of the change to an eco-friendly office can be a motivating factor as well. One large primary care group in Florida began saving money and energy within 1 month by making minor adjustments to thermostats and hot water heaters. They continue to save >\$2000 per doctor annually. The Escambia County Health Department in Pensacola, Florida, reported annual energy use reductions across its five offices of 5.2%, an emissions reduction equivalent to 85,600 pounds of carbon dioxide, and a real cost savings of \$14,000 annually. These savings allowed them to purchase solar photovoltaic panels to generate electricity for the practice in 2019 (Fig. 2) ([MyGreenDoctor.org/profiles](https://www.mygreendoctor.org/profiles/), 2017).

In addition, green office employees report a better work environment. Greening activities foster a sense of teamwork, with new ideas being contributed by all employees. This likely improves employee retention. Promoting a healthier community enhances the practice's public relations profile, improves patient confidence in their health care professionals, and may encourage individuals within the community to make personal and/or professional changes as well.

### Education and advocacy

The medical community has both a responsibility and an opportunity in having a voice in the climate change debate because climate change affects the health and safety of our patients. Dermatologic consequences of climate change are reviewed else-

**Table 1**  
Climate change resources for health care professionals.

Organization	Website	Key services
American College of Physicians	<a href="http://www.acponline.org/advocacy/advocacy-in-action/climate-change-toolkit">www.acponline.org/advocacy/advocacy-in-action/climate-change-toolkit</a>	Advocacy and toolkits to help doctors practice green
American Hospital Association	<a href="http://www.energytocare.org">www.energytocare.org</a> <a href="http://www.sustainabilityroadmap.org">www.sustainabilityroadmap.org</a>	Energy to Care: Tools to reduce energy usage. Ability to track energy data, awards for achievements in energy production Sustainability Roadmap: Reliable resources that can help organizations integrate sustainable practices
American Medical Association	<a href="http://www.ama-assn.org">www.ama-assn.org</a> <a href="http://www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/ps2/transition-green-physician-practice.pdf">www.ama-assn.org/sites/ama-assn.org/files/corp/media-browser/public/ps2/transition-green-physician-practice.pdf</a>	Short guide on how to adopt sustainable practices and save money
Centers for Disease Control and Prevention; Climate and Health	<a href="http://www.cdc.gov/climateandhealth/">www.cdc.gov/climateandhealth/</a>	Supports state, tribal, local, and territorial public health agencies in preparation for specific health impacts of a changing climate. BRACE = Building Resistance Against Climate Effects
Columbia University School of Public Health	<a href="http://www.mailman.columbia.edu/research/global-consortium-climate-and-health-education/courses-resources">www.mailman.columbia.edu/research/global-consortium-climate-and-health-education/courses-resources</a>	Core competencies and resources for incorporating climate change education into health professional schools
Doctors for Climate Change	<a href="http://www.twitter.com/docsforclimate">www.twitter.com/docsforclimate</a>	Consortium of health care providers to share information about climate change and public health
Global Green and Healthy Hospitals; Part of Health Care Without Harm	<a href="http://www.Greenhospitals.net">www.Greenhospitals.net</a> <a href="http://www.noharm.org">www.noharm.org</a>	Environmentally responsible health care, works to transform health care worldwide and promote local community anchors for sustainability, environmental health, and justice
Intergovernmental Panel on Climate Change	<a href="http://www.ipcc.ch">www.ipcc.ch</a>	Prepares comprehensive assessment reports on climate change
Medical Society Consortium for Climate & Health	<a href="http://www.medsocietiesforclimatehealth.org">www.medsocietiesforclimatehealth.org</a>	Information for patients and health care providers, help with lobbying and advocacy
My Green Doctor	<a href="http://www.mygreendoctor.org">www.mygreendoctor.org</a>	A fully-scripted, free guide to going green that adds only 5 minutes to office staff meetings
National Aeronautics and Space Administration	<a href="http://www.climate.nasa.gov">www.climate.nasa.gov</a>	Collection of global warming resources for media, educators, weathercasters, and public speakers
National Oceanic and Atmospheric Administration	<a href="http://www.noaa.gov/resource-collection/climate-change-impacts">www.noaa.gov/resource-collection/climate-change-impacts</a>	Resource collection about climate change impacts, education, and adaptation
Physicians for Social Responsibility	<a href="http://www.psr.org">www.psr.org</a>	Mobilizing health care professionals to get involved in global health care issues: environment, health, and nuclear weapons
Practice Green Health	<a href="http://www.practicegreenhealth.org">www.practicegreenhealth.org</a>	Resources to practice green with focus on hospitals and large group environmental responsiveness and reducing footprints
Public Health Institute; Center for Climate Change and Health	<a href="http://www.climatehealthconnect.org">www.climatehealthconnect.org</a> <a href="http://www.usclimateandhealthalliance.org">www.usclimateandhealthalliance.org</a>	Building healthy and climate-resilient communities to mitigate and adapt to climate change
Union of Concerned Scientists/ Fight Climate Change	<a href="http://www.ucsusa.org">www.ucsusa.org</a>	Fighting corporate and political attacks on science and combating global warming. Developing sustainable methods for food, power, and transportation resources
U.S. Forest Service; Climate Change Resource Center	<a href="http://www.fs.usda.gov/ccrc">www.fs.usda.gov/ccrc</a>	Resource center for climate change information and adaptation
U.S. Global Change Research Program	<a href="http://www.health2016.globalchange.gov">www.health2016.globalchange.gov</a>	Information on health risks of climate change, hub for information from multiple federal agencies and the U.S. Departments of Defense, Interior, Administration, Commerce, State, and Transportation, as well as the Environmental Protection Agency, National Aeronautics and Space Administration, and the National Science Foundation
World Health Organization	<a href="http://www.who.int/globalchange/en/">www.who.int/globalchange/en/</a>	Health care education and support in mitigation of climate related disease. Supports the Intergovernmental Panel on Climate Change goals

where in this issue. As physicians, we can motivate government actions by engaging at the political level and encouraging our medical professional organizations to do the same. The AAD established the Climate Change and Environmental Issues - Expert Resource Group in 2018 and has been a leader in advocacy. The AAD joined the Medical Society Consortium on Climate and Health, which has become a hub for education and advocacy, representing approximately 600,000 clinicians across various health care disciplines. Their website, <https://medsocietiesforclimatehealth.org/>, is also a rich source for education and information for professionals and patients alike.

The 2019 U.S. Call to Action on Climate, Health, and Equity is currently endorsed by the American Medical Association (AMA)

and >70 other medical organizations. This document outlines actions that are necessary to transition to cleaner and safer energy, food, transportation, as well as ways in which the health care sector can incorporate proactive climate considerations ([Medical Society Consortium for Climate and Health, 2019](#)). The AMA adopted a policy to divest from oil, coal, and other high-carbon energy investments ([AMA, 2019a,b](#); [Law et al., 2018](#)). In 2020, the AMA is expected to release a guide to help all health care professions with divestment for their personal investment portfolios and those of their hospitals, medical schools, and houses of worship.

The education of health care professionals is a key factor in initiating change within the health care sector. There is a strong push



to incorporate climate-related education into the medical school core curriculum (Friedrich, 2017; Maxwell and Blashki, 2016; Norling, 2017). In 2019, the AMA adopted a strong policy to support teaching about climate change and its health threats to all physicians, including medical students, residents, and fellows (AMA, 2019a,b). The AMA is also developing Internet-based continuing medical education courses for physicians in practice. The goals are for physicians to have a basic understanding of climate science, to be able to identify patients who are at risk of health threats from climate change, and to be able to advise patients on how to avoid those threats.

The Global Consortium on Climate and Health Education is a network of 175 hospitals and medical schools launched by Columbia University's Mailman School of Public Health in 2017. The Global Consortium on Climate and Health Education supports climate change education and offers a list of core competencies and model curricula for programs that train health care professionals.

Physicians have an opportunity to educate our patients on the myriad health risks related to climate change as well as to set an example for our communities. When we manage our use of energy, recycle, choose healthy foods, bicycle to work, or drive energy-efficient cars, our patients and neighbors will pay attention. In today's world of instant information and social media influences, a green office will stand out and resonate with like-minded patients. Office colleagues will take ideas home to their families and friends. Moreover, this exchange of information is often a two-way street, with staff and patients bringing green ideas to the office as well. By going green, your office can play a pivotal role in improving the health of your entire community.

### Where to get more help?

Table 1 describes numerous additional resources that are available to health care offices interested in going green. The AMA offers a free, short, clear guide, entitled "Lower costs by going green!" The American Hospital Association offers its Sustainability Roadmap for Hospitals, which provides access to reliable resources that can help organizations integrate sustainable practices into health care. The American Hospital Association also offers a service called Energy to Care that aims to improve patient care through energy use reduction. Practice Green Health is a nonprofit organization that helps deliver environmental solutions to hospitals in the United States and abroad. The organization also offers many resources, including a Greenhouse Gas Reduction Toolkit and a guide to greening operating rooms.

### Conclusion

No act is too small to help protect the environment. The dangers of climate change are well documented, and by going green, health care professionals are advocating for the health of patients around the world. The many reasons why dermatologists are embracing environmental sustainability are summed up best as "Saving money, healthier community!"

### Funding

None.

### Study Approval

NA.

### Conflict of Interest

None.

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