# ADVANCES IN ENDOSCOPY

Current Developments in Diagnostic and Therapeutic Endoscopy

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## Transitioning to Sustainable Care and Green Endoscopy

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**G&H** How would you define green endoscopy?

**HP** In essence, green endoscopy means to practice endoscopy that is environmentally friendly and affords a way of performing endoscopic procedures that is sustainable for the future. The green endoscopy movement has been born out of concern for the environment, in particular about climate change. People realize they cannot continue to live and work the way they used to. While climate change has been in the center of public discourse, we as humans have affected the environment as never before. Aside from global warming, there are other impacts that threaten human existence, the most concerning of which include biodiversity, land use, and nitrogen runoff. The time to act is now before a tipping point is reached beyond which catastrophic changes will occur.

**G&H** What is gastrointestinal endoscopy's carbon footprint?

**HP** The actual carbon footprint of endoscopy is unknown because research on this topic is in its nascent stage. In the United States, the health care sector in general generates approximately 8.5% of greenhouse gas emissions. It is known that the bulk of that comes from the supply chain, approximately 70% to 80%, which is linked to used instruments and supplies. Procedure-intense specialties such as endoscopy that use a lot of single-use consumables are therefore a major contributor to emissions in health care. One European study reported that endoscopy was the third largest generator of medical waste among the departments within a hospital. Most of us are probably not surprised because we see our waste bins filling up with single-use devices and supplies destined to end up in the landfill. But, this is not just an endoscopy problem; in all areas of gastroenterology practice, a lot of waste is produced and contributes to emissions in a way that is not sustainable.

**G&H** What are the principles of sustainable care?

**HP** As for our practice, sustainability means to provide high-quality care today that can also be provided for future generations. Currently, our health care system is subject to a linear economy; more resources are being used than can be regenerated. Sustainability means to establish a balance between resources that are depleted and what can be regenerated. Because nature takes time replenishing itself, health care must use fewer resources and use what has already been manufactured in one shape or another. Simply put, to move toward a sustainable practice, we as health care providers need to be able to reuse what has already been produced. For this to happen, production of instruments and supplies needs to follow principles of a sustainable economy, for instance, those of a circular economy.

On a broader scale, sustainability is not about the environment alone. The 4 pillars of sustainable care include environment, patient empowerment, prevention,

and lean services. When assessing gastroenterology care, or an intervention, we must consider not only how effective it is and how much it costs, but also how it affects society and the environment, which then includes aspects like access to care and inequalities, in addition to environmental concerns. For instance, empowering patients to take responsibility for their own health should be key and needs to start by promoting healthy living. In that sense, prevention should not start with the first colorectal cancer screening at age 45 years but should be integral to health maintenance early in life. Finally, to practice lean services means to reduce waste in organization and utilization of care.

### G&H What is the American multisociety strategic plan on environmental sustainability?

**HP** In the face of climate change and environmental destruction, the 4 major US gastroenterology societies—the American Gastroenterological Association, American Association for the Study of Liver Diseases, American College of Gastroenterology, and American Society for Gastrointestinal Endoscopy (ASGE)—have acknowledged that the way gastroenterology and hepatology are practiced is not sustainable. The 4 societies have agreed on a 5-year strategic plan that lays out the path toward a sustainable practice in 7 domains: clinical practice, education, research, intrasocietal activities, intersociety collaboration, advocacy, and industry. Each of these domains contains objectives, and for each objective the plan proposes initiatives and milestones. In other words, gastroenterology practitioners have a road map that can be followed step by step to implement practice changes. Of course, this is new to everyone, so the first year is above all set to assess the current situation. For instance, a goal for clinical practice is to measure the carbon footprint of endoscopies and implement green endoscopy practice alternatives at pilot sites. Such experience will then be helpful when looking at other areas of clinical practice (eg, related to general gastrointestinal [GI] care or hepatology). As part of the plan, all 4 societies have also committed to assessing their own carbon footprint with the goal to reduce the environmental impact of societal activities. It is very encouraging to note that the strategic plan has been endorsed by 23 national and international GI societies, highlighting that societies across the world see this as a very relevant issue of our time.

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### G&H How does the European multisociety position statement on reducing the environmental footprint of GI endoscopy differ from the American multisociety plan?

**HP** The European Society of Gastrointestinal Endoscopy and European Society of Gastroenterology and Endoscopy Nurses and Associates Position Statement lists 39 guiding statements to adopt in endoscopy practice related to clinical management, logistics, single-use accessories, education, research, quality, industry, and policy. These, for instance, include to follow principles of reduce, reuse, and recycle, recommend rational use of equipment, encourage appropriate waste management, and suggest against routine use of single-use endoscopes. In a way, the European guiding statements and the US multisociety task force strategic plan complement each other. The former provides specific suggestions for environmentally friendly practices we may adopt now while the latter aims at providing a road map of how to implement changes.

### G&H Are single-use instruments the main problem?

**HP** The short answer is, yes, they are a major problem, but I think that is a little shortsighted. Over the past 20 years, we have seen a shift from reusable to single-use instruments. Single-use instruments are convenient—you unpack them, use them, and throw them away. However, this comes at an environmental cost and cannot continue. There is an increasing interest in finding ways to reuse instruments and to start including the perspective of environmental design. For instance, could a polypectomy snare consist of a reusable or compostable handle and could the plastic sheath be replaced by compostable material or even omitted? Endoscopic device companies are not used to considering the environmental aspect in the design of medical instruments, but they should consider it. To accomplish that, gastroenterologists and industry need to work together to find creative solutions that support a sustainable practice.

### G&H How can an endoscopy service/department be less wasteful?

**HP** Reduce, Reuse, and Recycle—the 3 R's. There are other R's, like Rethink, Redesign, Repurpose, Repair, or Refuse, but the most important of these is Reduce. In addition, the biggest benefit would come from not performing a procedure (or a test) that is not needed or indicated in the first place. Performing procedures that are of high value would also improve the quality of care, as would optimizing use of ancillary instruments. For example, when finding a small polyp, use a snare right away, rather than using a forceps and opening a snare for a second larger polyp. Reducing outdated supplies—that are disposed unused—is another option for reducing waste. Here we can rethink and reorganize. Unfortunately, expiration dates are arbitrary and industry partners may work with us as users to find less wasteful solutions.

Sadly, only little is left that can be reused, including Savary dilators, endoscope valves, and washable gowns. The introduction of single-use endoscopes threatens to completely abolish reusable equipment and would increase waste and emissions. For instance, the net waste mass of disposable endoscopes would increase by 40%, and emissions would increase at least 24-fold. The proposed benefit of omitting infection transmission is outweighed by a greater impact on health related to environmental risks, as recently shown in a study that compared reusable duodenoscopes with a protective cap with disposable duodenoscopes—both options are approved by the US Food and Drug Administration for endoscopic retrograde cholangiopancreatography.

> First, avoid the procedure that does not need to be done. This is probably the biggest impact GI providers can make.

Recycling may make us feel good, but most plastics that have been put in the recycling bin are not recycled and end up in the landfill. If material is recycled, it is degraded during the recycling process and eventually also ends up in the landfill or is incinerated. Thus, recycling is not a permanent solution.

**G&H** Can you provide colleagues with examples of things they can do in their own units tomorrow to begin reducing the carbon footprint?

**HP** First, avoid the procedure that does not need to be done. This is probably the biggest impact GI providers can make. We have all performed procedures with questionable indication or of low value. Interestingly, by following current guidelines, we can reduce overuse and perform procedures of greater value, and by doing so reduce the overall environmental impact of our practice. Second, plan ahead. Know what instruments will be used, and only open them up when needed. Third, reexamine what is going into the biohazard bin. During a recent waste audit in our unit, we noticed that much of what ends up in the biohazard bin does not belong there. Reducing biohazard waste helps the environment and decreases cost. Finally, the ASGE is about to publish a series of short papers describing practical steps on how to green your endoscopy unit. The goal is to provide guidance and propose specific examples that are impactful and can be easily implemented. This series starts with, "How to get started," and I hope it will be used as a road map to implement changes in endoscopy units, step by step.

**G&H** What guidance would you give your endoscopy colleagues on working toward the goal of environmental sustainability?

**HP** Importantly, find like-minded people in your endoscopy unit and start a green team. Identify what needs to be changed, ask what people think is wasteful practice, and then make one change at a time, ideally with support from leadership. Be inclusive—listen to suggestions and include other services, such as waste management, purchasing, reprocessing, and administration.

Although working toward environmental sustainability can be overwhelming and may seem like a daunting task, changing one thing at a time is possible and can inspire others. Most importantly, reducing waste and minimizing environmental harms is the right thing to do. A friend suggested recently that the progressive destruction of the environment may be to a large extent the result of a broken relationship between us and nature. Humans have been considering nature as an object to exploit. But, we are nature; we are interconnected with nature. This is perhaps no more apparent than in our symbiotic relationship with our microbiome. We need a healthy microbiome to stay healthy. We also need to take care of us as being an integral part of nature embedded in our environment; destroying the environment will also harm us. I guess this is a long way of saying that sustainability also starts with each one of us.

One final aspect is that environmental sustainability affects everyone. If we all share similar values about nature and want our children and future generations to enjoy it, then taking some initiatives to address the

biggest problems that we face today is better than doing nothing and having to adjust to the devastation of what is to come if no action is taken.

### G&H What aspects of sustainable care and green endoscopy should be part of future studies?

**HP** Future studies need to include the environmental aspect of care. The old model of care where value was seen in the context of cost to the society needs to transform and integrate the social and environmental aspects. This requires evaluation of how to provide high-quality care that is equal, accessible for all, and environmentally sustainable. Such an approach requires data. What is our current carbon footprint? What are impactful practice changes that are more easily implementable? What are barriers to implementing sustainable practices? These are just some questions for possible research. Researchers must broaden the scope of their studies to combine all aspects of care, not just cost and efficacy, but also the environment.

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## Suggested Reading


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