



# Practical steps to green your endoscopy unit: how to get started (with video)

Prepared by: American Society for Gastrointestinal Endoscopy Sustainable Endoscopy Task Force

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In the United States and worldwide, there is general recognition that the healthcare industry is a significant contributor to greenhouse gas emissions and has a demonstrable impact on climate change.<sup>1</sup> In particular, GI endoscopy is responsible for a large carbon footprint because of resource utilization and waste generation.<sup>2-4</sup> Changes to our field are needed to help mitigate climate change and its downstream deleterious effects on human health and disease, as well as the planet.<sup>5,6</sup> To this end, the American Society for Gastrointestinal Endoscopy (ASGE) has assembled a Task Force on Sustainable Endoscopy composed of interested members from various practice settings to explore strategies to reduce the environmental impacts of endoscopic practice.

In this and subsequent articles in this series, we lay out some guiding steps that practices and providers can take to reduce the environmental impacts of GI endoscopic practice. The steps we propose generally adhere to the following principles:

- **Practical:** Steps are feasible, not too aspirational or overwhelming, and are straightforward to implement with the accompanying guidance (tips);
- **Impactful:** Steps can result in meaningful changes to carbon footprint, waste generation, and other metrics;
- **Balanced:** Steps are neutral or beneficial with respect to quality and high-value care, patient safety, and cost; and
- **Scalable:** Once enacted, practice changes can be readily expanded within and beyond local contexts.

This first article in the series addresses suggested steps for “getting started” to mitigate the environmental impact in your endoscopy unit (Table 1). We propose these steps to lay the groundwork before tackling specific contributors to waste and carbon footprint, which will be addressed in subsequent articles in the series (Video 1, available online at [www.giejournal.org](http://www.giejournal.org)).

## PRACTICAL STEPS FOR GETTING STARTED

### Assemble a team

An important first step is to build a team of interested and invested parties to best strategize, organize, plan, and track initiatives. Ideally, an “Endoscopy Green Team” should

include members of the various groups that contribute to endoscopic care. The composition of the green team will understandably vary from practice to practice. To start, it could include a core group of 4 to 6 dedicated individuals representing endoscopy nurses, endoscopy technicians, and endoscopists who meet on a regular basis to facilitate decision-making. Depending on the chosen initiative, members of other departments such as administration, purchasing, infection control, facility management, and recycling services would be encouraged to attend. In many ways, a green team mirrors the function and processes of a quality improvement (QI) committee, and thus it may be useful to include a QI representative as well. Representatives from these services can be invited to less-frequent strategic meetings of the core group and extended green team members.

### Implementation tips

- Assemble a core team and invite stakeholders from different disciplines.
- Engage members at various stages including trainee, junior, and senior members.
- Set goals and establish a committee charter (Appendix 1, available online at [www.giejournal.org](http://www.giejournal.org)).
- Meet regularly (eg, monthly or quarterly) to discuss ongoing efforts and track progress.

### Understand baseline processes and problems

Building your knowledge base of the main sources of waste and carbon footprint in your endoscopic practice is important both to engage and galvanize colleagues and to frame local environmental initiatives in a larger context. The first step in solving a problem is recognizing and helping people understand there is one. Understanding your endoscopy unit’s waste handling, energy use, and use of disposable supplies and identifying alternative practices that may offer improved environmental impact will be helpful to inform your green team’s priorities and strategy.

### Implementation tips

- Start with the ASGE Sustainable Endoscopy Task Force framing paper accompanying this article<sup>7</sup> and review important background references.

**TABLE 1. Practical steps for getting started**

Steps	Description
1. Assemble a team	Establish an environmental committee (eg, Endoscopy Green Team) with representative members from gastroenterology/endoscopy and other important stakeholder groups.
2. Understand baseline processes and problems	Build your local knowledge base on the environmental impact of GI endoscopy and sources of waste and carbon footprint. Assess your practice's waste handling, energy use, and disposable supplies and practices that may offer more environmentally friendly alternatives.
3. Choose a task or alternative practice to implement	Review published proposed initiatives <sup>7,9-11</sup> and select a task relevant to your practice. Identify practice alternatives and implement them. Consider ease of implementation, cost, and potential gains (Fig. 1).
4. Assess your interventions	Assess the lasting effect of your interventions. Revise and recommit as necessary.
5. Network, collaborate, and share best practices	Establish local and regional networks of other groups with similar focus to share best practices. Disseminate your results within your practice and health system. Incentivize environmental action by rewarding individuals and groups for their achievements.

- Interview and engage endoscopy staff (nurses, technicians, endoscopists, and fellows) regarding what they perceive to be potentially wasteful practices and their ideas for improvement.
- Perform a waste audit of your endoscopy unit (measure total daily weight of municipal waste, hazardous waste, and recyclable waste and calculate waste per procedure).<sup>4,8</sup>

### Choose a task or alternative practice to implement

Review published proposals on reducing waste and carbon footprint of GI practice or follow the suggested initiatives highlighted in this series.<sup>9-11</sup> As a team, decide on a task to address. Initial projects should be those that are easier to implement (less effort) and achieve demonstrable gains. For instance, appropriate disposal of biohazard waste and sharps (regulated medical waste) will lower the environmental impact of your practice and reduce cost.<sup>4,12</sup> Assess the current situation in your endoscopy unit related to that task, specify underlying problems, and identify practice alternatives and implement them (Fig. 1). You may follow an implementation-evaluation cycle much like the “Plan, Do, Study, Act” process that is well established in QI activities.<sup>13</sup> Set a time point to accomplish this task and take into account local regulations and potential roadblocks.

#### Implementation tips

- Possible initial tasks include the following:
  - Ensure appropriate segregation of waste, particularly hazardous waste.
  - Implement (or optimize) a recycling program.
  - Optimize the use of single-use devices (eg, avoid using more than 1 device per patient for polyp resection).
  - Reduce energy expenditure of lighting and electrical equipment (eg, turn off at night and on weekends).

### Assess your interventions

It is important to track and quantify the impact of interventions to gauge success (or failure) and determine if interventions should be refined or if effort should be redirected

elsewhere. Consider the environmental gains in reducing carbon footprint and waste, cost, and effects on quality of care. Encourage ongoing feedback from your colleagues, especially when implementation of practice alternatives is challenging. Gathering data is a concrete way to demonstrate project outcomes and feasibility and also facilitates QI or research projects that are focused on reducing waste and carbon emissions.

#### Implementation tips

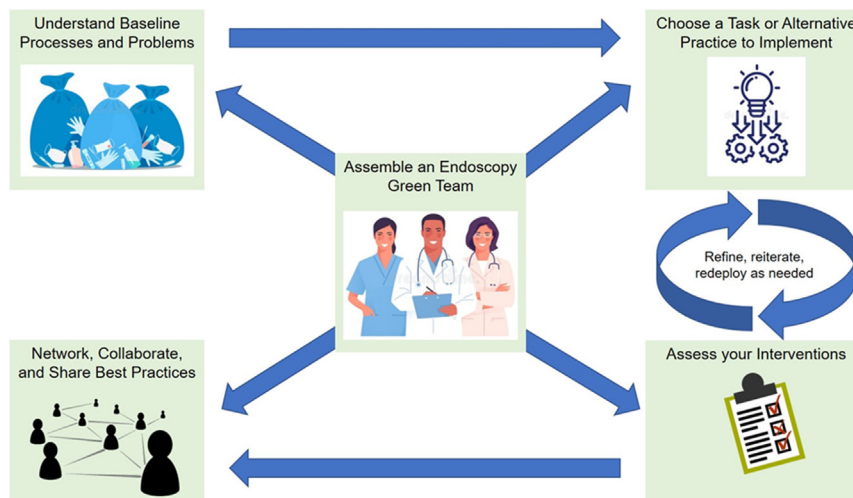
- Select easily measured environmental metric(s) that you want to impact (eg, bags or weight of hazardous waste generated per day).
- Track environmental metric(s) during a baseline period to ensure accurate measurement as well as during and after implementing a particular task to measure impact.
- Be mindful of other practice metrics pertaining to quality of care and cost that may be impacted.

### Network, collaborate, and share best practices

Despite their importance, environmental initiatives within GI endoscopy (and health care in general) are only emerging. Within your GI practice, discuss your activities and share your accomplishments and challenges with your colleagues on a regular basis and invite active participation. Collaborate with other groups within your institution and other endoscopy units to accelerate progress by multiplying the impact of local solutions. Disseminating successful results of green endoscopy activities can also inspire other potential champions to take up similar activities in their practices.

#### Implementation tips

- Discuss your activities with your colleagues periodically at internal conferences.
- Collaborate with GI groups in your area or within the ASGE (eg, through the Endoscopy Unit Recognition Program<sup>14</sup>) to share experiences, accomplishments, and pitfalls.
- Acknowledge and reward accomplishments within the section, the institution, and beyond as appropriate, especially when important successes are achieved.



**Figure 1.** Process diagram for green endoscopic practices

## POTENTIAL PITFALLS

Reducing the environmental impact of our practice and working to mitigate health care's contribution to global warming are important, but implementing any long-lasting changes into our day-to-day practices may be challenging. First, changes cannot be accomplished by one enthusiastic individual alone but need to be carried out by the entire team, including colleagues who may hold different views or priorities. Second, institutional commitment may vary. It is essential to engage section and institutional leadership early on and invite them to participate in extended green team meetings and communicate transparently within your unit and institution about accomplishments and barriers to change. Economic concerns and resource allocation over these interventions may be raised; however, green practice alternatives often reduce overall costs for the endoscopy unit, especially over the long term. Third, infection control considerations may arise, so including institutional infection control or infectious disease representatives as part of the larger green team may be helpful. Some suggested practice alternatives may challenge current regulations or expert guidance statements and require support at the institutional level or societal guidance.

## CONCLUSION

This first paper in a series entitled "Practical Steps to Green Your Endoscopy Unit" provides guiding principles on how to get started with a program to decrease the environmental impact in our practices. At the outset, it is essential to assemble a team of engaged people representing your endoscopy unit that sets goals, identifies green practice alternatives, enables their implementation, and assesses the long-

term effects of their initiatives. Engaging the entire endoscopy team and leadership, collaborating with other units, and sharing best practices will facilitate establishing a greener, more sustainable practice. This is a field in progress, and we do not have all the solutions. Questions will arise during the process and new insights will emerge—in your endoscopy unit and in other units in the country and abroad. It is paramount to reflect on the progress made and be ready to change course if needed.

## DISCLOSURE

The following authors disclosed financial relationships: S. D. Crockett: Clinical trial agreements with Guardant, Exact Sciences, and Freenome. L. V. Hernandez: Stock options in Iterative Health and Liquiglide. H. Pohl: Research support from Steris and Cosmo; advisory board for InterVenn. All other authors disclosed no financial relationships.

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*Abbreviations:* ASGE, American Society for Gastrointestinal Endoscopy; QI, quality improvement.

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## APPENDIX 1: SAMPLE ENDOSCOPY GREEN TEAM CHARTER

Mission statement: To promote, support, and help implement environmentally sustainable practices in the endoscopy unit.

### Objectives

- To assess the environmental impacts of the endoscopy unit
- To assess areas in need of improvement
- To formulate plans for projects designed to reduce the carbon footprint and minimize waste from the endoscopy unit
- To help implement green practices

### Committee Membership

The Endoscopy Green Team (or alternative name) shall consist of at least 3 members that includes at least 1 GI endoscopist, 1 GI nurse, and 1 endoscopist technician. Other members may include trainees and representatives from administration, purchasing, quality improvement committee, infection control, facility management, and recycling services. The committee chair shall be voted on by the full committee by simple majority. Committee members should have some knowledge of the environmental impacts of endoscopic practice and important contributors to the carbon footprint and waste. To limit the size of meetings and to facilitate scheduling and decision-making, the committee may be split into a core or executive team (limit 5 members) and an extended team.

### Meetings

The committee shall convene at least once per quarter virtually or in person. A quorum of any meeting of the

committee shall consist of a majority of its voting members. The chair shall be responsible for establishing and distributing the agendas for meetings. Minutes for all meetings shall be drafted by the chair or appointed secretary and approved by committee members at the following meeting.

### Responsibilities

- The committee shall have the following responsibilities:
1. Evaluate environmental impacts of the endoscopy unit to identify possible green practice changes.
  2. Devise and implement green practice changes as appropriate based on individual practice problems and priorities.
  3. Assess the impact of green practice changes with respect to effectiveness, quality of care, cost, and need to redirect resources as appropriate.
  4. Include all members of the endoscopy unit in the process of implementing green practices (inquire, get ideas, raise awareness, share knowledge).
  5. Disseminate results of green practice changes within and beyond the endoscopy unit through conference presentations, research and publication, and other activities.
  6. Educate the endoscopy unit regarding the concepts of environmental sustainability and the contribution of GI endoscopy to carbon footprint and waste.
  7. Establish, review, and update endoscopy unit programs and policies pertaining to environmental sustainability for approval by the practice/division leadership.
  8. Address other matters referred to the committee by the practice/division leadership or other stakeholders.
  9. Review and update the committee charter at least annually as appropriate.