



con il patrocinio di



PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

GREEN ENDOSCOPY

Francesco Bortoluzzi

UOC Gastroenterologia

AULSS3 Serenissima - Venezia





Gastrointestinal endoscopy's carbon footprint

Su Bee Park, Jae Myung Cha



Fig. 1. Climate change affecting every corner of the planet. Modified from NOAA National Centers for Environmental Information.¹



December 2022

GI Multisociety Strategic Plan on Environmental Sustainability 1697

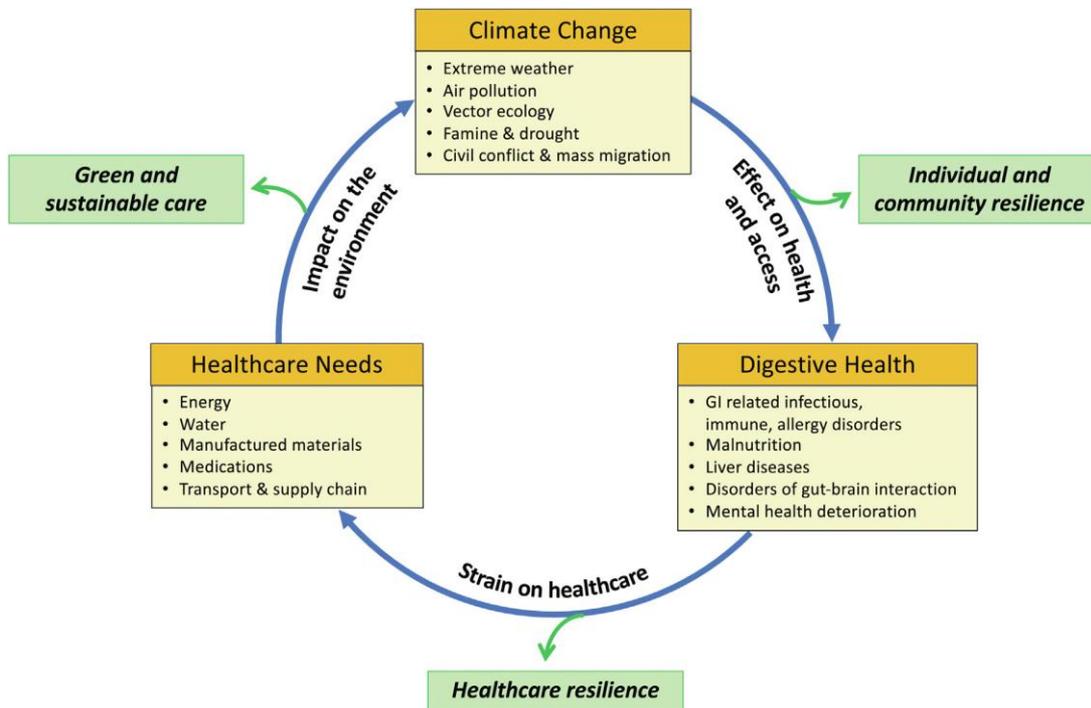
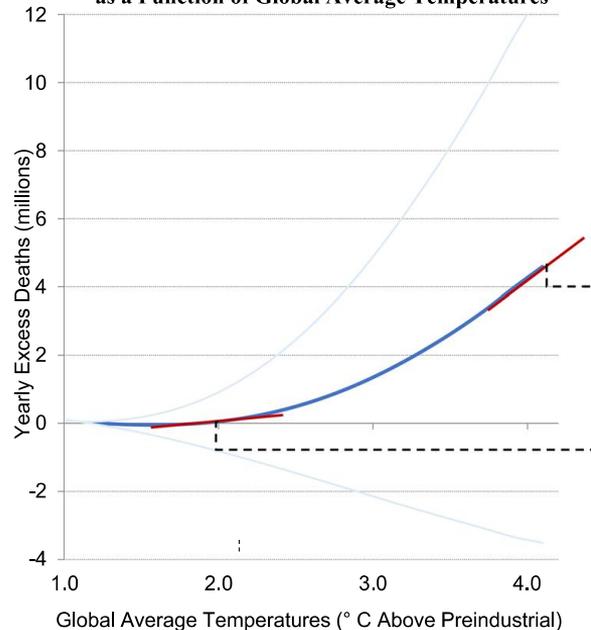


Figure 1. Intersection between health care, climate change, and digestive health and possible intervention areas to affect change and help mitigate the climate crisis.



A Total Yearly Excess Deaths from Climate Change as a Function of Global Average Temperatures



ARTICLE

<https://doi.org/10.1038/s41467-021-24487-w>

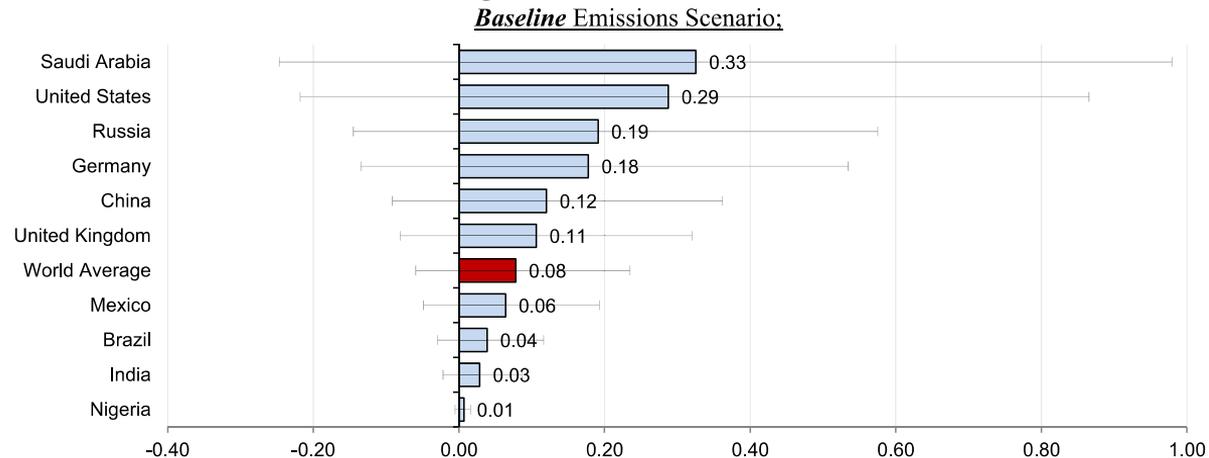
OPEN

The mortality cost of carbon

R. Daniel Bressler ^{1,2,3}

A

Excess Deaths Per Average Citizen's Lifetime Emissions if All Added in 2020





LA SALUTE DEL
PIANETA DIPENDE
DA NOI.

DA NOI?
ODDIO!





The ecological footprint of health care: what health professionals should do

ANTONIO BONALDI*,
SANDRA VERNERO**,
GUIDO GIUSTETTO°,
ROBERTO ROMIZI°°

According to the Lancet, “climate change is the biggest global health threat of the 21st century”. The containment of global warming, in line with the goals set at the Glasgow conference of 2021, should therefore be placed above all else. In reality,

forefront. Especially since the health sector, with 4-5% of the total, contributes significantly to the emissions of CO₂ into the atmosphere. A value that places it in first place among services, more or less double that of all air transport.

Interventions should be directed on several fronts: reducing greenhouse gas emissions from buildings; limiting transfers and improve transport efficiency; reducing the volume of medical waste; promoting healthy and sustainable nutrition; containing environmental pollution by drugs and anesthetic gases and reducing unnecessary tests and treatments.



Health care's response to climate change: a carbon footprint assessment of the NHS in England

Imogen Tennison, Sonia Roschnik, Ben Ashby, Richard Boyd, Ian Hamilton, Tadj Oreszczyn, Anne Owen, Marina Romanello, Paul Ruyssevelt, Jodi D Sherman, Andrew Z P Smith, Kristian Steele, Nicholas Watts, Matthew J Eckelman

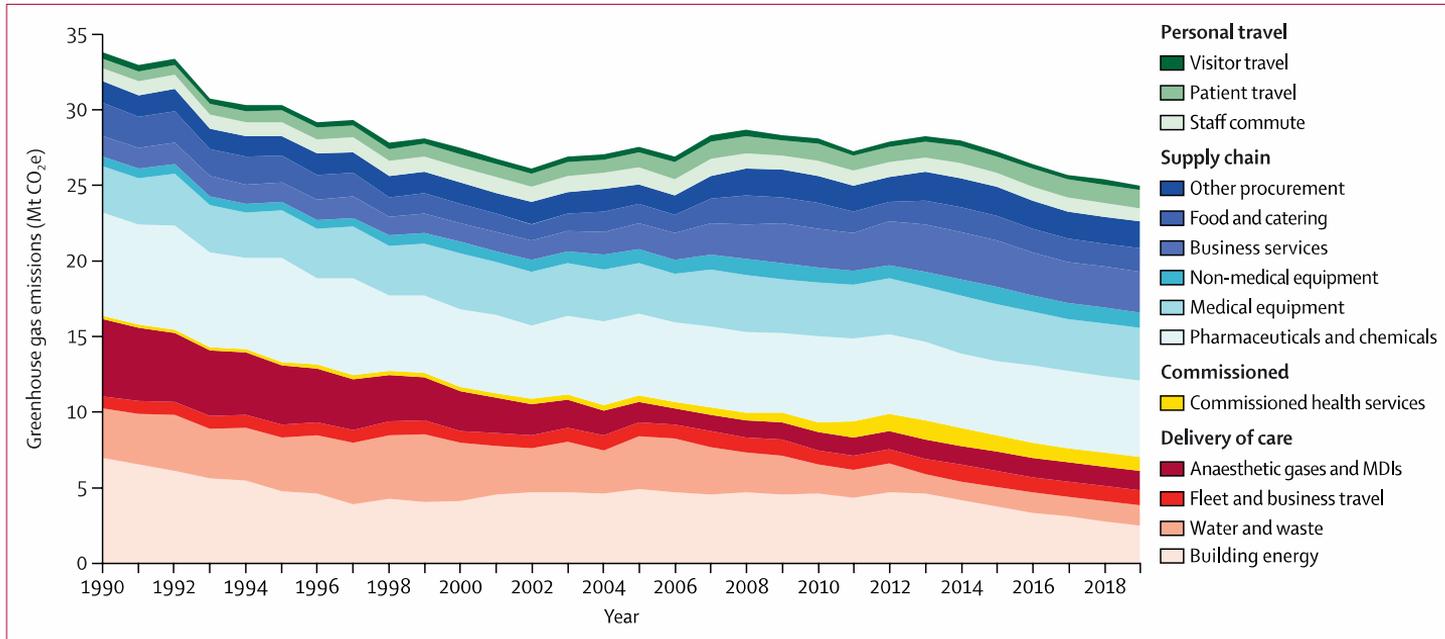


Figure 2: Time series results for the greenhouse gas emissions of the NHS in England, broken down by source of emission, 1990–2019. Data available in appendix 1 (p 39). MDI=metered dose inhaler. Mt CO₂e=megatonnes of carbon dioxide equivalent. NHS=National Health Service.

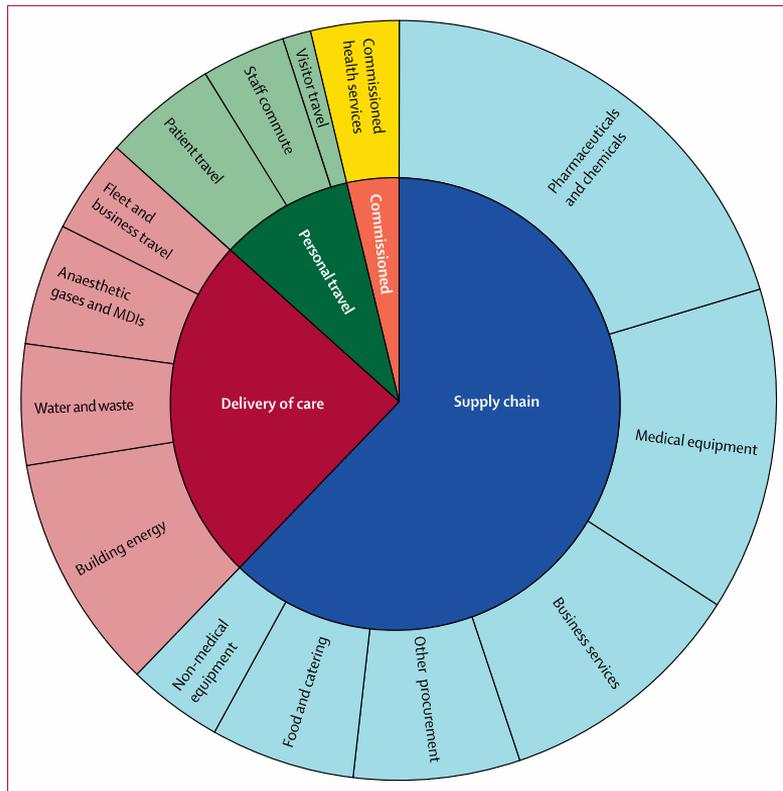


Figure 4: Contribution of different sectors to the greenhouse gas emissions of the NHS England, 2019
Data available in appendix 1 (p 39). MDI=metered dose inhaler. NHS=National Health Service.

Table 1

Main components of a hospital's carbon footprint [4].

Hospital carbon footprint

- Electricity
- Heating and cooling
- Staff travel and products transportation
- Equipment and supplies production and disposal



L. Furlan et al.

European Journal of Internal Medicine xxx

The environmental cost of unwarranted variation in the use of magnetic resonance imaging and computed tomography scans

Ludovico Furlan^{a,b}, Pietro Di Francesco^a, Eleonora Tobaldini^{a,b}, Monica Solbiati^{b,c}, Giorgio Colombo^c, Giovanni Casazza^b, Giorgio Costantino^{b,c}, Nicola Montano^{a,b,*}

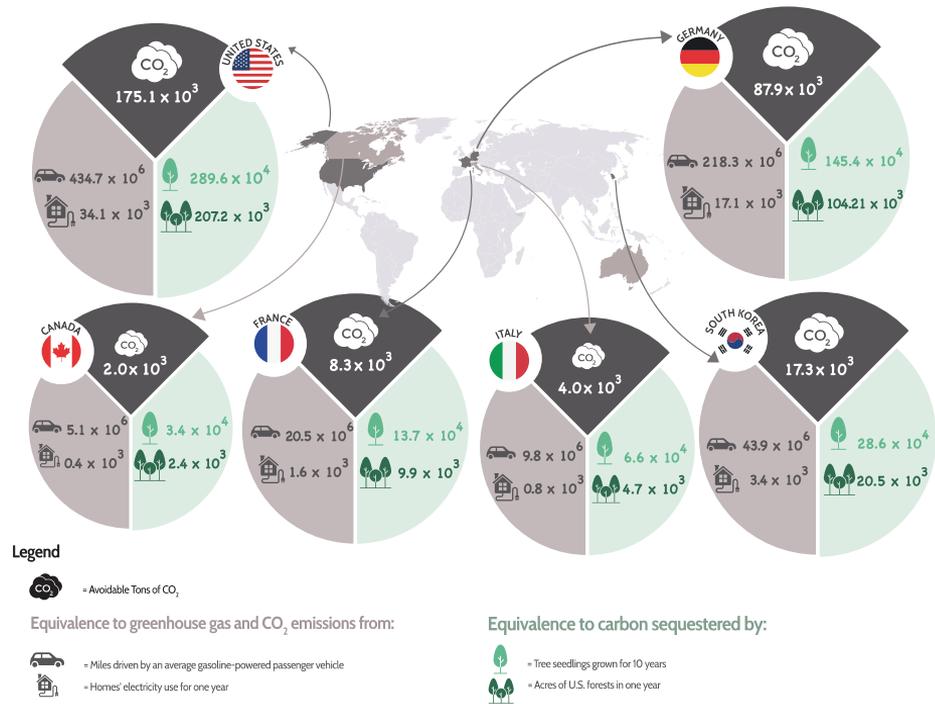
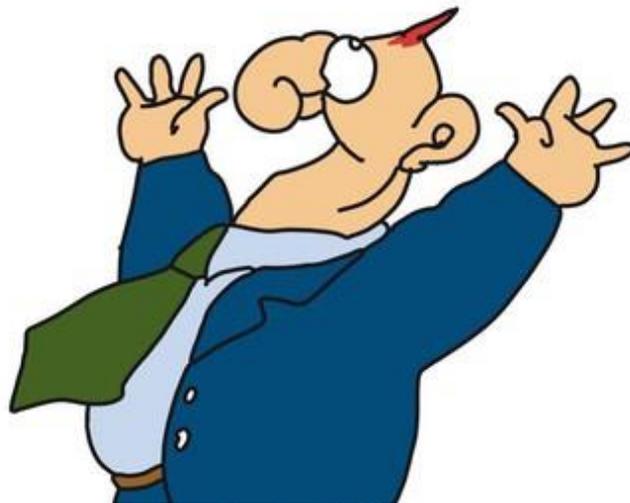
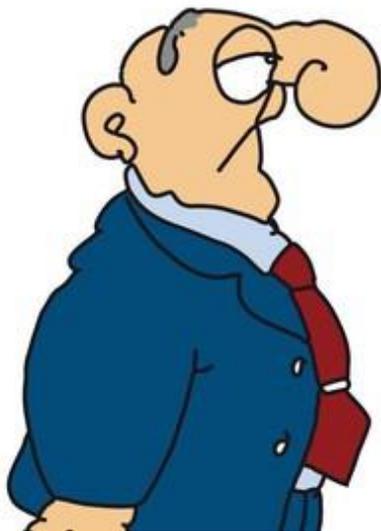


Fig. 2. Potentially avoidable CO₂ emissions from reduction of countries' T-En₁₀₀₀ towards the lowest value.



CON L'EFFETTO
SERRA SI SCIOLGONO
I GHIACCI E ANDIAMO
TUTTI SOTT'ACQUA

E LA TERRA
SARA' LA VENEZIA
DELL'UNIVERSO!





1698 Pohl et al

Gastroenterology Vol. 163, No. 6

Our Vision: Digestive health care for all that aligns with planetary health.

Our Mission: The participating GI societies commit to promote and support sustainable digestive health care for all.



Clinical setting: Devise and foster sustainable clinical practices to reduce waste and carbon emissions.



Education: Raise awareness and share sustainability practices with society members and patients regarding the interaction between climate change, digestive health, and healthcare services.



Research: Raise and allocate resources to support research at the intersection of the environment, climate change, and digestive health.



Society efforts: Achieve environmentally and organizationally sustainable activities across all society mission areas.



Intersociety efforts: Collaborate with national and international GI and hepatology societies to advocate for and support implementation of sustainable practices.



Industry: Engage with GI- and hepatology-focused industry and pharmaceutical partners to develop environmentally friendly products rooted in sustainable economy principles.



Advocacy: Advocate for policies that promote environmentally sustainable GI practices.

Gastroenterology 2022;163:1695–1701

AGA SECTION

GI Multisociety Strategic Plan on Environmental Sustainability

Heiko Pohl,^{1,2} Rabia de Latour,³ Adrian Reuben,⁴ Nitin K. Ahuja,⁵ Swapna Gayam,⁶ Rohit Kohli,⁷ Deepak Agrawal,⁸ and M. Bishr Omary⁹



Figure 2. Vision, mission, and strategic goals.



STATEMENT

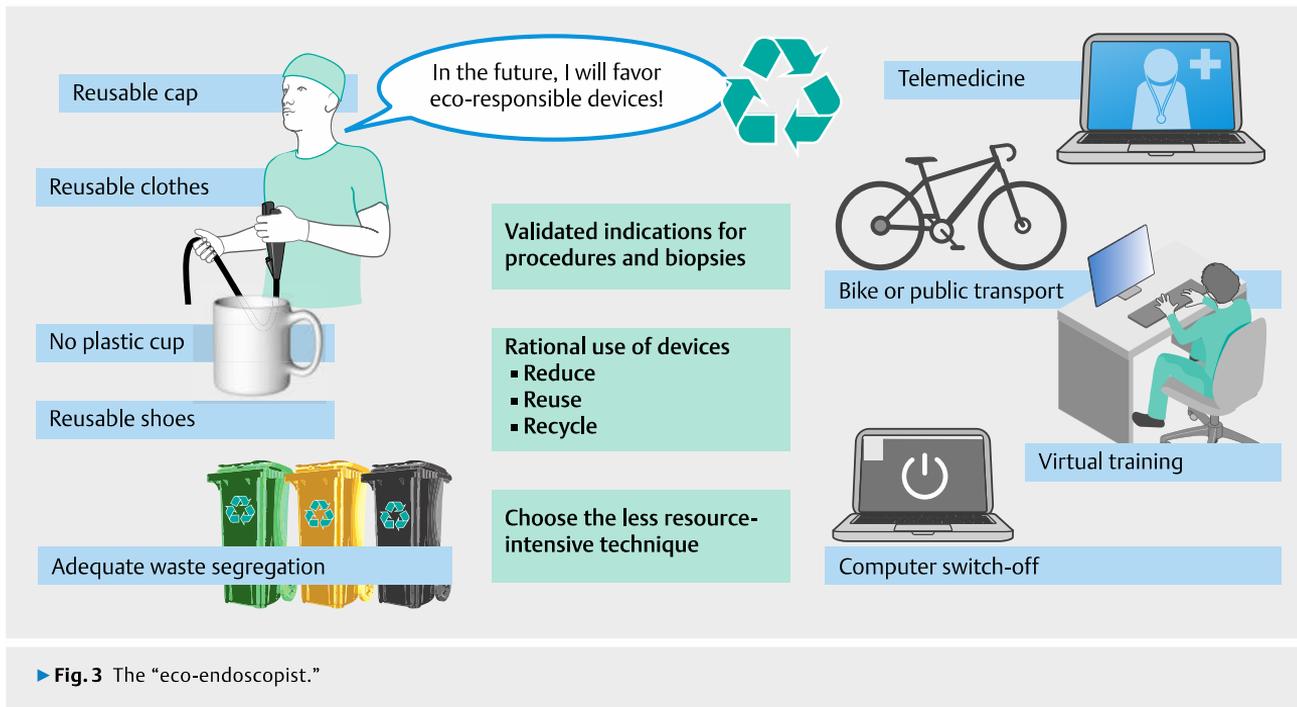
1 ESGE-ESGENA recommend adopting immediate actions to reduce the environmental impact of GI endoscopy.

Reducing the environmental footprint of gastrointestinal endoscopy: European Society of Gastrointestinal Endoscopy (ESGE) and European Society of Gastroenterology and Endoscopy Nurses and Associates (ESGENA) Position Statement



SOURCE AND SCOPE

This Position Statement from the European Society of Gastrointestinal Endoscopy (ESGE) and the European Society of Gastroenterology and Endoscopy Nurses and Associates (ESGENA) reviews the available data on the environmental impact of gastrointestinal endoscopy. It aims to raise awareness of this growing problem that demands urgent action and to outline strategies to achieve sustainable endoscopy practice (“green endoscopy”).



► Fig. 3 The “eco-endoscopist.”



Green endoscopy: British Society of Gastroenterology (BSG), Joint Accreditation Group (JAG) and Centre for Sustainable Health (CSH) joint consensus on practical measures for environmental sustainability in endoscopy

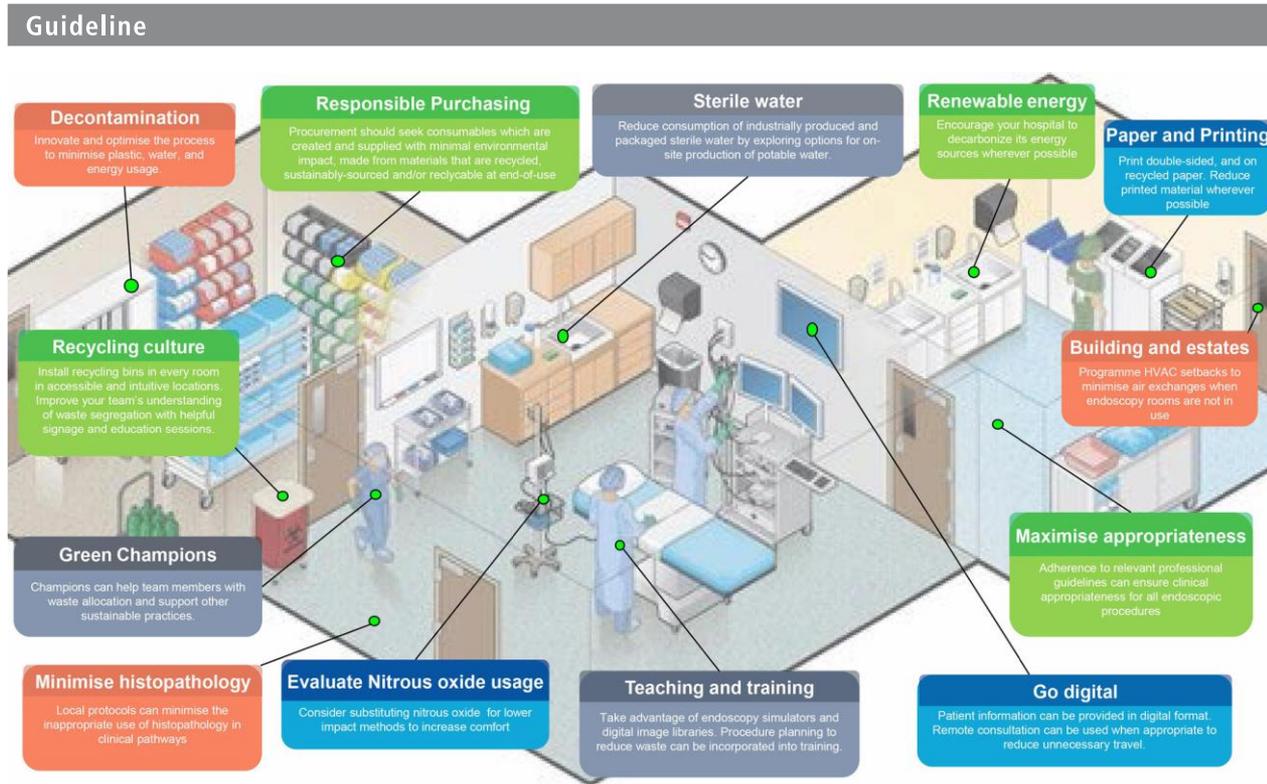


Figure 2 Practical tips for a green endoscopy unit. HVAC, heating, ventilation and air conditioning.



GASTRO
ENTEROLOGIA
BELLUNO

con il patrocinio di



Associazione Italiana
Gastroenterologia e
Digestione



S.I.E.D.



GGE



fismad



ULSS1



Azienda Ospedaliera Integrata
Belluno



Comune di Belluno



Ospedale Civile di Belluno

PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

IL PROBLEMA
E' COMPLESSO.

AH! ALLORA
SONO CAZZI.





Table 2. Action plans for green endoscopy at the individual level

Level	Action plans
Endoscopy unit	Use reusable caps, reusable clothes, and reusable shoes Adherence guidelines for procedure indications Adequate waste segregation
Hospital	Use e-learning and telemedicine Rational use of optimal devices
Daily life	Think environment first Switch-off lights and computers Walking, biking, or public transport No use of disposable cup

Table 1. 3R (reduce, reuse, and recycle) program in gastrointestinal endoscopy

Reduce	Reuse	Recycle
Avoid unnecessary procedures with optimal indications	Reuse caps, trays, and endoscopes	Segregate waste disposal
Digitalization with paperless reports	Use rechargeable batteries	Increase the availability of recycling bins
Favor cold snare polypectomy over hot procedures	Use multi-use clips	Staff training on waste management
Reduce single-use devices		Review waste recycling streams
LED lights		Food recycling
Low carbon alternatives		
Avoid plastic bags and plastic cups		
Switch-off unused lights and equipment		
Avoid overheating		

Modified from Hernandez et al. *Gastrointest Endosc* 2021;93(6 Suppl):AB29.¹⁶

LED, light-emitting diode.



► **Table 8** Environmental research priorities in gastrointestinal (GI) endoscopy.

1	Strategies to reduce unnecessary GI endoscopic procedures and interventions and to lengthen follow-up intervals.
2	Define environmental outcomes related to the field of GI endoscopy.
3	Quantify the environmental impact of reusable GI endoscopes and accessories and identify strategies to reduce their carbon footprint.
4	Quantify the environmental impact of single-use GI endoscopes, and single-use accessories, and identify strategies to reduce their carbon footprint.
5	Quantify the environmental impact of GI endoscope reprocessing and identify strategies to minimize its carbon footprint.
6	Identify the carbon footprint of all types of GI endoscopic procedures at a per-procedure level.
7	Develop strategies for effectively reducing, reusing, and recycling all GI endoscopy-related equipment and waste.
8	Environmental impact of activities and practices related to training in GI endoscopy.
9	Define environmental key performance measures for green quality.
10	Telemedicine in GI endoscopy.

QUANTIFY ...



GASTRO
ENTEROLOGIA
BELLUNO

con il patrocinio di



Azienda Integrata
di Gastroenterologia e
Diagnostica Digestiva



S.I.R.D.



GGE



fismad



ULSS1



Comune di Belluno



Comune di Belluno



Comune di Belluno

PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

VADO
A LAVARMI.

HAI CALCOLATO
L'IMPATTO
AMBIENTALE?



ACTAU



Environmental Impact of Endoscopy: “Scope” of the Problem

Swapna Gayam, MD¹

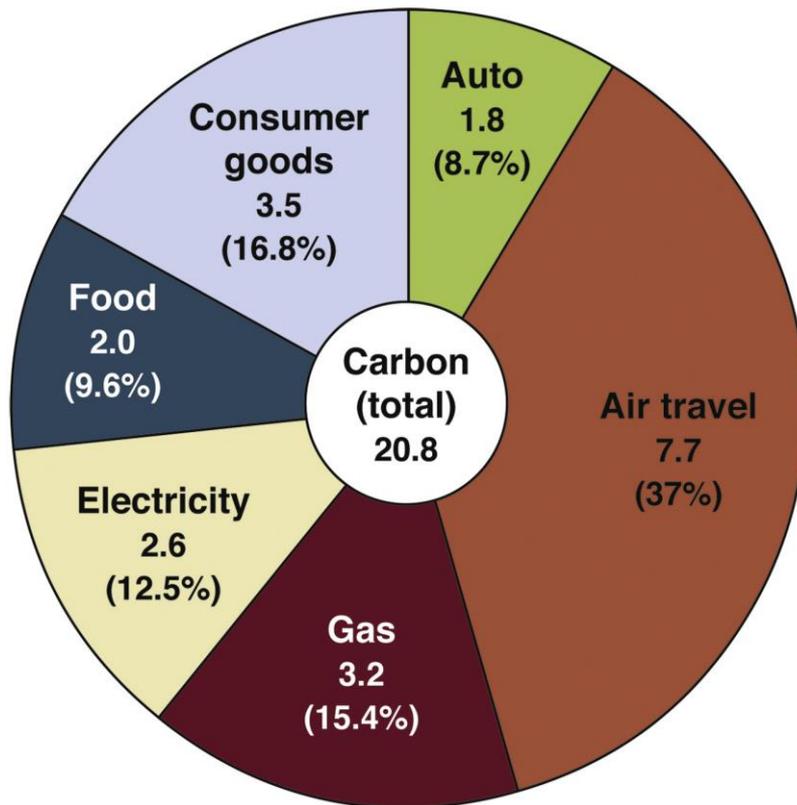
Table 1. Waste generated by an endoscopic procedure

Plastic box that contains 4 × 4 gauze
Plastic water bottle
Plastic bite block
Plastic suction canister
Plastic suction tubing used for endoscopy
Plastic suction canister used by anesthesia
Plastic suction tubing used by anesthesia
Plastic suction catheter used by anesthesia
Plastic isolyzer bottle
Plastic packaging of biopsy forceps
Plastic packaging of disposable scope buttons
Gloves

Table 2. Energy consumption by our endoscopy unit in a single day

Unit	Energy consumption per day
Wash machines (5)	24.67 kW h ^a
Endoscopy machines (6)	27.00 kW h ^a
Anesthesia machine (6)	12.00 kW h ^a
Room lighting (6)	47.88 kW h ^a
Total	111.55 kW h ^a

^aPlease refer to Tables (see Supplementary Digital Content 1, <https://links.lww.com/AJG/B747>) for breakdown of energy calculations.



Carbon footprint of an academic
GI scientist in metric tons of CO₂
equivalents



con il patrocinio di



Associazione Italiana
Gastroenterologia e
Dermatologia Digestiva



S.I.E.D.



GGE



fismad



ULSS1



belluno dotcomiti



Comune di Belluno



Ospedale di Belluno

PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



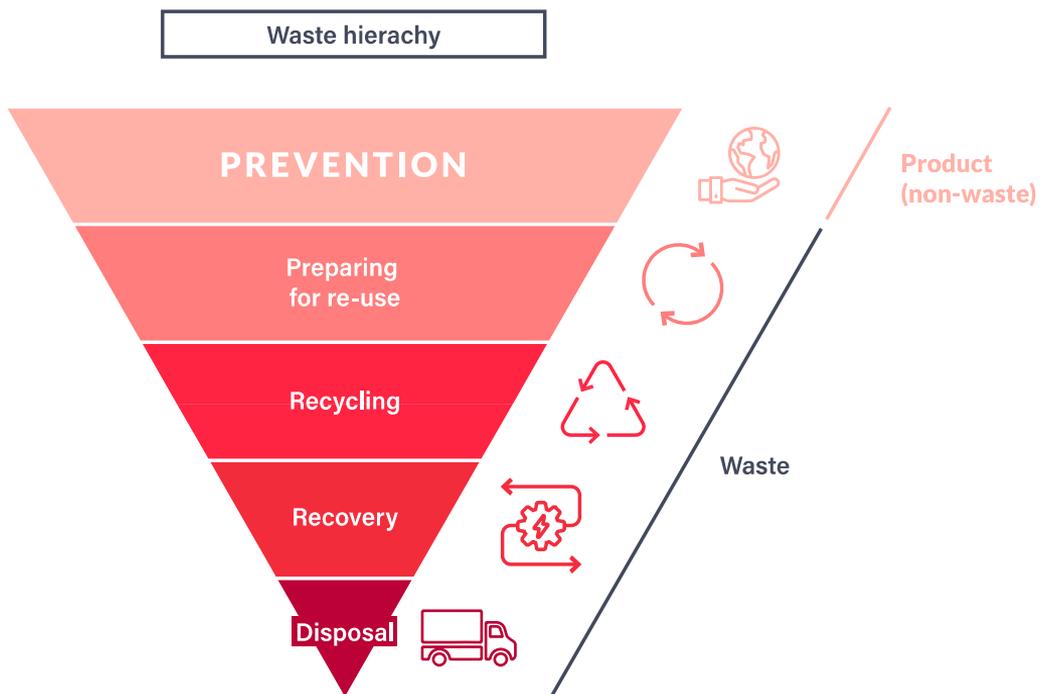
BELLUNO
15-16 GIUGNO 2023

E' UNA VITA CHE NASCONDO
LA TESTA. E ADESSO
MI AVVISANO CHE
ERA MERDA, NON SABBIA.





FIG. 5 — Waste hierarchy for prioritizing actions to reduce environmental impacts of waste



Green endoscopy: British Society of Gastroenterology (BSG), Joint Accreditation Group (JAG) and Centre for Sustainable Health (CSH) joint consensus on practical measures for environmental sustainability in endoscopy

Practice position statement 3:7

We recommend the waste hierarchy must be followed and triage of contaminated, non-contaminated and recyclable waste should be a priority for all endoscopy units.

Practice position statement 3:8

We recommend education of all endoscopy staff in waste management.



Endoscopy

Review

Green endoscopy: practical implementation

Leigh Donnelly



Significance of study

This paper aims to provide practical advice on how to make endoscopy more sustainable.

What is known about the topic
⇒ This is an innovative topic and more research is currently being conducted. The study aims to give practical advice that all endoscopy service users may be involved in creating a more sustainable endoscopy unit.

How might this impact on clinical practice
⇒ It is hoped that this paper will give practical advice to make small changes to make endoscopy more sustainable in the future.

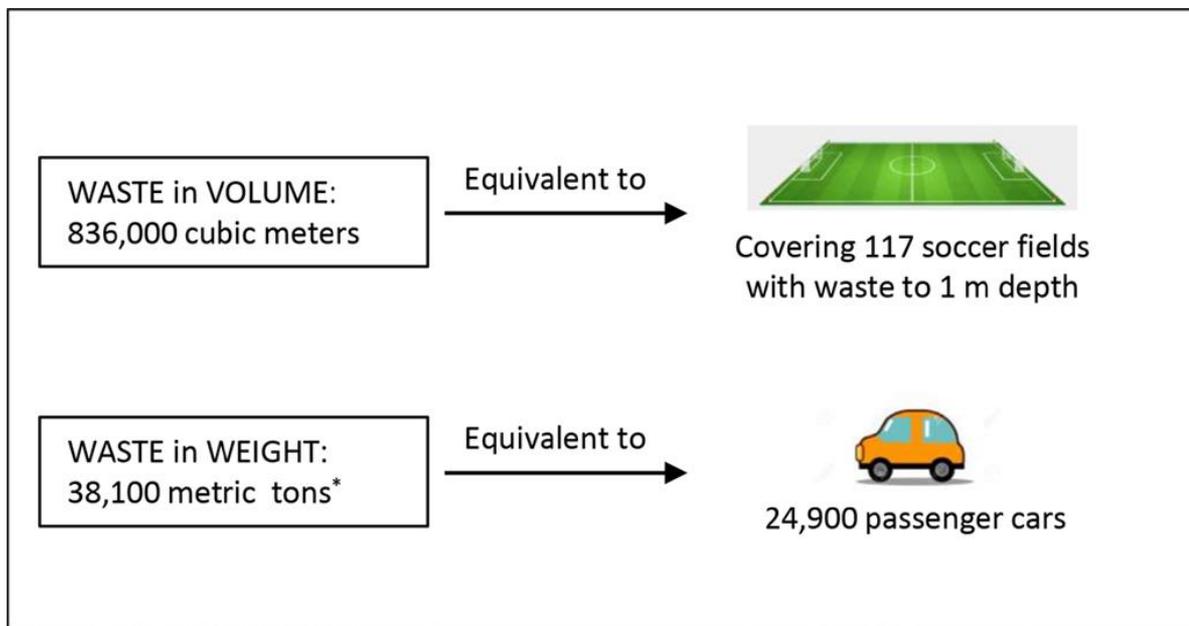


Figure 2 Estimates of annual disposable waste in the USA from endoscopic procedures (18 million, including 11 million colonoscopies, 6.8 million upper endoscopies and 170 000 ERCPs), not including waste from reprocessing of endoscopes. *42 000 US tons.



GI Endoscopy

- Italy: 45 endoscopic procedures per 1,000 persons / year → **2.6 million / year**
- Each digestive endoscopy: **3.1 kilograms** in waste
- Third** largest contributor to waste production in healthcare

8,060,000

Kilograms in waste per year in Italy





Endoscopy Unit

High-volume

- **13,000 procedures/y ear**
- **546 kg waste in 5 days**
- **29 % recycled**

Low-volume

- **2,000 procedures/y ear**
- **73 kg waste in 5 days**
- **0 % recycled**



con il patrocinio di



Assistenza Italiana
Gastroenterologia e
Digestiva (AIGO)



S.I.E.D.
Società Italiana
Endoscopia Digestiva



GGE
Gruppo Gastroenterologico



fismad
Federazione Italiana
Società di Medicina Digestiva



ULSS1



Comune di Belluno



Comune di Belluno



Comune di Belluno

PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

DAGLI ERRORI
DEL PASSATO SI PUO'
IMPARARE
A FARLI MEGLIO.



ALTAN.



Endoscopy

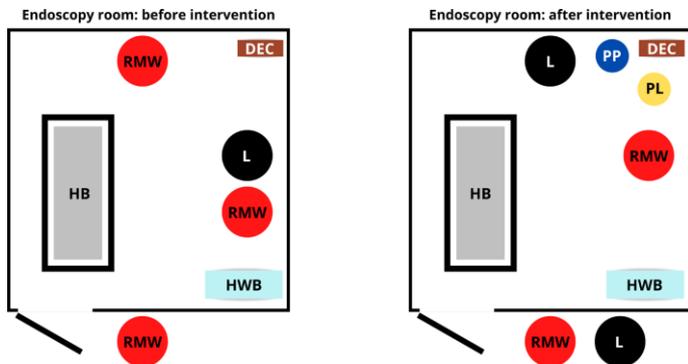
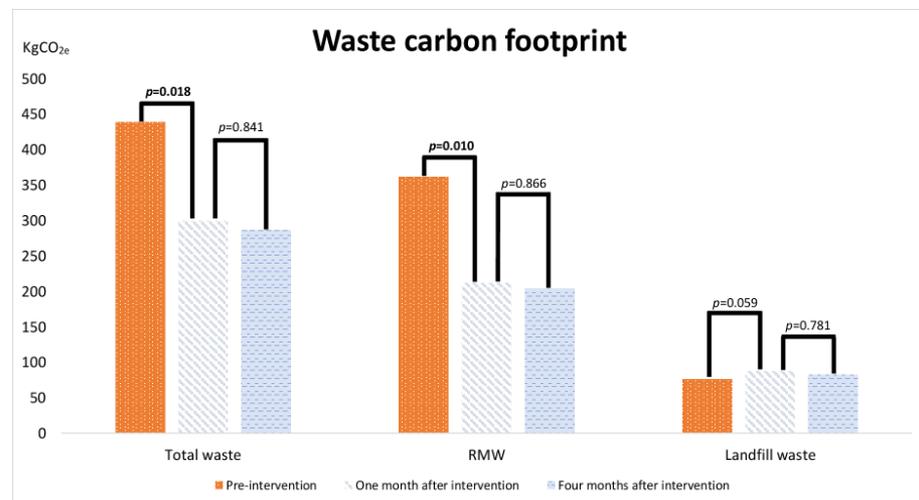
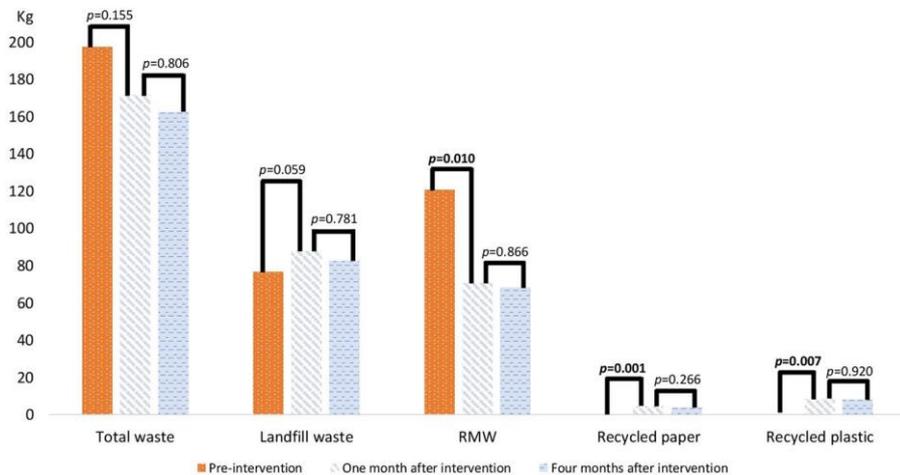


Figure 1 Placement and relocation of bins within endoscopy rooms: before and after intervention. DEC, disposal endoscopic cabinet; HB, hospital bed; HWB, hand washbasin; L, landfill waste; PL, plastic waste; PP, paper waste; RMW, regulated medical waste.

Targeted intervention to achieve waste reduction in gastrointestinal endoscopy

João A Cunha Neves ,^{1,2} Joana Roseira ,^{1,2} Patrícia Queirós,^{1,2}
Helena Tavares Sousa ,^{1,2} Gianluca Pellino ,^{3,4} Miguel F Cunha ^{2,5}

 LANDFILL WASTE	 REGULATED MEDICAL WASTE	 RECYLED PLASTIC *
<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Items not saturated with blood or body fluids <input checked="" type="checkbox"/> Personal Protective Equipment (PPE) <input checked="" type="checkbox"/> Syringes <input checked="" type="checkbox"/> Bandages <input checked="" type="checkbox"/> Non-recyclable items 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Items saturated with blood or body fluids <input checked="" type="checkbox"/> Items containing infectious agents <input checked="" type="checkbox"/> Tubes with blood or body fluids <input checked="" type="checkbox"/> Suction canisters <input checked="" type="checkbox"/> Snares/Net retrieval devices <input checked="" type="checkbox"/> Injectors/syringes without needles 	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Packaging <input checked="" type="checkbox"/> Rigid and soft plastic
		 RECYLED PAPER
		<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Paper/Cardboard <input checked="" type="checkbox"/> Catalogs <input checked="" type="checkbox"/> Paper boxes <input checked="" type="checkbox"/> Packaging





Con il patrocinio di



PROGRESSI E NUOVE FRONTIERE IN GASTROENTEROLOGIA ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

REDUCING UNNECESSARY RESOURCE USE: CAN WE STOP USING STERILE WATER IN COLONOSCOPIES?

Hilalion (San) Ahn, Department of Surgery - The Ottawa Hospital, University of Ottawa
Alexie Leclerc, University of Ottawa - Faculty of Medicine
Catherine Dube, Department of Gastroenterology -The Ottawa Hospital, University of Ottawa
Alaa Rostom, Department of Gastroenterology - The Ottawa Hospital, University of Ottawa
Natalia Calo, Department of Gastroenterology - The Ottawa Hospital, University of Ottawa
Kednapa Thavorn, The Ottawa Hospital Research Institute
Daniel I McIsaac, Departments of Anesthesiology & Pain Medicine - The Ottawa Hospital, University of Ottawa
Clinical Epidemiology Program, Ottawa Hospital Research Institute
David Smith, North York General Hospital
Husein Moloo, Department of Surgery - The Ottawa Hospital, University of Ottawa

Background:

The use of sterile water for irrigation in colonoscopy is ubiquitous in Canada, however, the evidence to support its use is not well known. Compared to tap water, sterile water in plastic bottles may significantly increase environmental and financial costs without patient benefits. Our objective is to summarize the evidence of the effects of tap vs sterile water use in colonoscopy.

Methods:

All studies examining the effects of colonoscopy irrigation were included. Two reviewers performed all steps of the review independently and in duplicate. Key stakeholders such as endoscopists, infection prevention and control leads, provincial quality improvement directors, a director of planetary health, patient input, and manufacturer leads were involved. Various databases were searched to July 2022 using PRESS standards.

Results:

Out of 317 articles, 3 were included in the final analysis. All were prospective studies. A total of 175 colonoscopy sigmoidoscopies were reported. In two studies, there were no clinical adverse events including infections using tap water. The remaining study did not report infectious complications. One study estimated an additional cost USD\$35 per colonoscopy using sterile water. Environmental impacts were not reported.

Conclusions:

There is limited evidence comparing tap and sterile water for irrigation in colonoscopy. In the context of the public health precautionary principle, based on sparse studies, tap water may be safe and economically and environmentally more beneficial compared to sterile water. Switching to tap water in re-usable bottles would support Choosing Wisely Canada's vision to reduce unnecessary interventions although further studies are required.

Choosing Wisely Canada

National Meeting

Abstract Book



In collaboration with:





con il patrocinio di



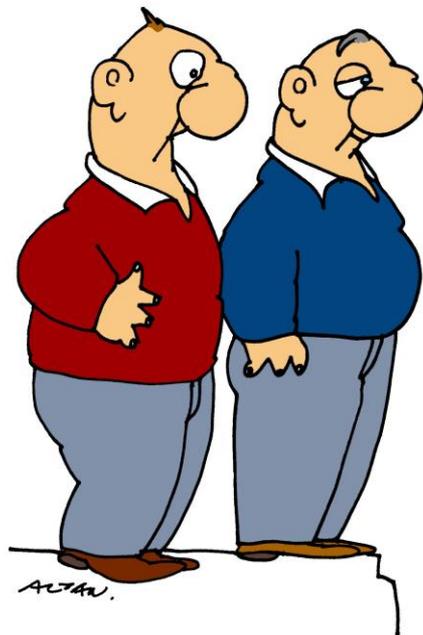
PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

SIAMO
SULL'ORLO
DEL BARATRO!

GODITI
IL PANORAMA.





con il patrocinio di



Associazione Italiana
Gastroenterologia e
Endoscopia Ospedalieri



S.I.E.D.



GIGE



fismad



ULSS1



Azienda Ospedaliera
Belluno



Comune di Belluno



Ospedale Civile
Belluno

PROGRESSI E NUOVE FRONTIERE IN

GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO

15-16 GIUGNO 2023

Position Paper

Sustainability in gastroenterology and digestive endoscopy: Position Paper from the Italian association of hospital gastroenterologists and digestive endoscopists (AIGO)

Francesco Bortoluzzi^{a,c,*}, Andrea Sorge^{b,k,*}, Roberto Vassallo^{c,d}, Luigi Maria Montalbano^{c,e}, Fabio Monica^{c,f}, Sergio La Mura^g, Daniele Canova^{c,h}, Davide Checchin^{a,c}, Paolo Fedeli^{c,i}, Riccardo Marmo^{c,j}, Luca Elli^{b,c,#}, on behalf of the Italian association of hospital gastroenterologists and digestive endoscopists (AIGO)

Position Paper

Correct use of telemedicine in gastroenterology, hepatology, and endoscopy during and after the COVID-19 pandemic: Recommendations from the Italian association of hospital gastroenterologists and endoscopists (AIGO)

Andrea Costantino^a, Francesco Bortoluzzi^{b,c}, Mauro Giuffrè^d, Roberto Vassallo^{c,e}, Luigi Maria Montalbano^{c,f}, Fabio Monica^{c,g}, Daniele Canova^{c,h}, Davide Checchin^{b,c}, Paolo Fedeli^{c,i}, Riccardo Marmo^{c,j}, Luca Elli^{a,c,*}



Associazione Italiana Gastroenterologi
& Endoscopisti Digestivi Ospedalieri



Associazione Italiana Gastroenterologi
& Endoscopisti Digestivi Ospedalieri

Table 2

Measures to improve endoscopic appropriateness.

- Avoid the prescription of EGDS in young subjects (<45 years) in the absence of risk factors or alarm symptoms
- Avoid routine "second-look" endoscopy after previous EGDS performed for digestive haemorrhage
- Avoid EGDS for variceal screening and surveillance patients with cirrhosis and a very low risk of varices requiring treatment
- Avoid the prescription of screening colonoscopies in low-risk subjects or in subjects of advanced age and poor general health status
- Identify digestive findings that do not require endoscopic surveillance ([Table 3](#))
- Use non-invasive tests when indicated in place of endoscopic examinations

Table 3

Digestive findings that do not require endoscopic surveillance.

Oesophagus	Inlet patches Los Angeles grade A or B erosive oesophagitis < 1 cm Barrett's oesophagus
Stomach	Intestinal metaplasia at a single location (i.e. antrum or corpus only) without additional risk factors Fundic gland polyps Antral pancreatic rests
Subepithelial lesions	Leiomyomas, lipomas
Duodenum	Duodenal peptic ulcer
Pancreas	Serous cystic neoplasms
Colon	Low-risk colorectal polyps

Adapted from Rodríguez-de-Santiago et al. [26].



Green endoscopy: a call for sustainability in the midst of COVID-19

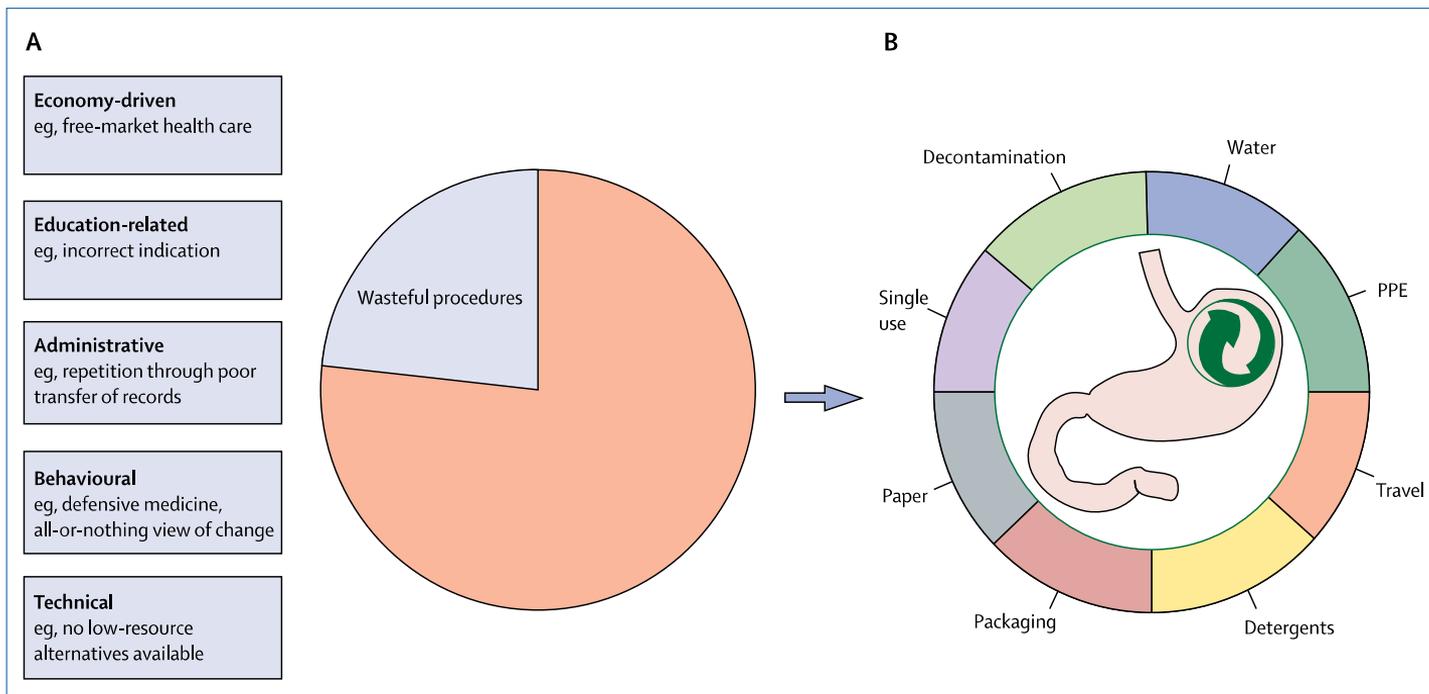


Figure 1: Potential targets for greener endoscopy

(A) Reducing unnecessary procedures by analysing the drivers behind them. (B) Reducing the environmental impact of each procedure through identifying areas of excess waste. PPE=personal protective equipment.



Northumbria Healthcare
NHS Foundation Trust

Appropriate patient selection & reduction in the amount of endoscopy could have the largest impact on carbon emissions

- Can surveillance procedures be reduced?
- Are there alternative investigations?
- Are procedures over used?

**This will require a shift in behaviour patterns and
attitudes**



GASTRO
ENTEROLOGIA
BELLUNO

con il patrocinio di



Associazione Italiana
Gastroenterologia e
Endoscopia Digestiva



S.I.E.D.



GGE



fismad



ULSS1



Comune di Belluno



Comune di Belluno



Comune di Belluno

PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA

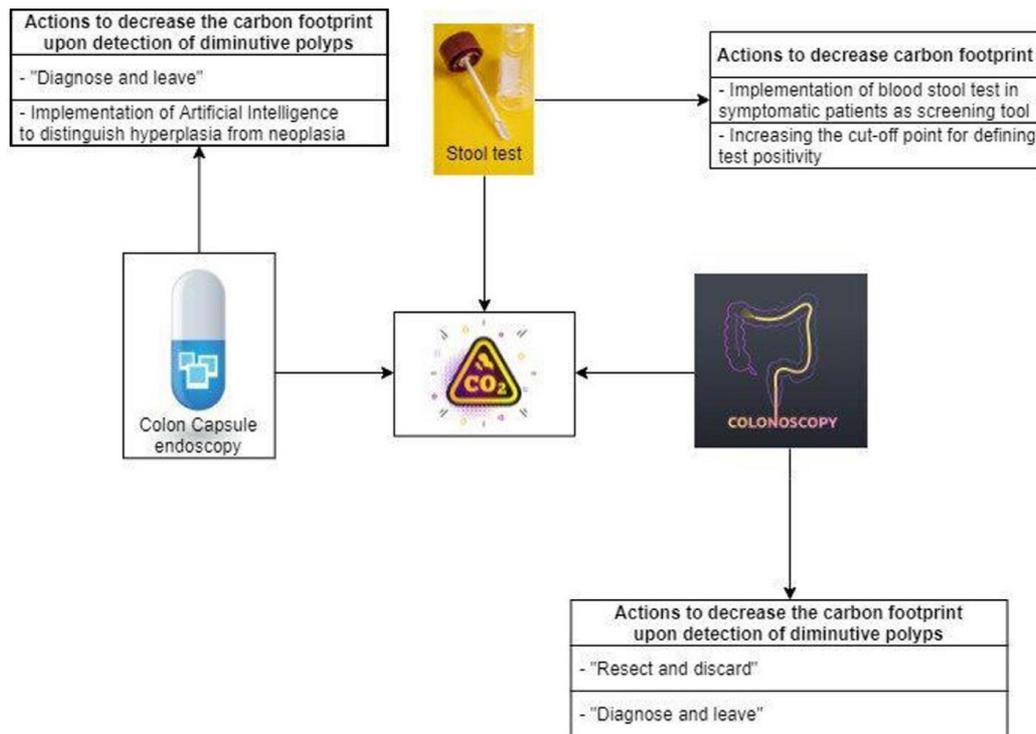


BELLUNO
15-16 GIUGNO 2023

AMBIENTE,
AMBIENTE,
AMBIENTE!
PALLE!

CADRA'
IN DISGRAZIA
ANCHE LUI, COME
IL COMUNISMO.





Carbon footprint from superfluous colonoscopies: potentialities to scale down the impact

Figure 1 Potentialities to reduce the carbon footprint from superfluous colonoscopies.



Key Points

- Health care delivery produces significant environmental emissions that adversely affect human health; processes affecting these emissions must be detailed to devise mitigation strategies.
- The greenhouse gas emissions stemming from a single pathology laboratory procedure may seem small but are significant when magnified across the entire health care sector.
- Opportunities to reduce pathology laboratory emissions include efficient use of biopsy jars, thoughtful prescribing of biopsy procedures, and green purchasing practices for equipment and supplies.

Life Cycle Greenhouse Gas Emissions of Gastrointestinal Biopsies in a Surgical Pathology Laboratory

Ilyssa O. Gordon, MD, PhD,^{1,} Jodi D. Sherman, MD,² Michael Leapman, MD,^{3,*} Michael Overcash, PhD,⁴ Cassandra L. Thiel, PhD⁵*

Table 1

Greenhouse Gas Emissions of Gastrointestinal Biopsy for a Single Patient, by 2 Approaches in kg CO₂e (% of Scenario Total)

Scenario ^a	Supply Production	Chemicals/ Reagent Production	Waste Treatment	Staff Travel	Energy	Total
Scenario 1	0.11 (38)	0.08 (26)	0.05 (19)	0.04 (13)	0.01 (4)	0.29 (100)
Scenario 2	0.28 (36)	0.23 (29)	0.12 (16)	0.12 (15)	0.04 (5)	0.79 (100)

^aScenario 1 is 3 biopsy samples in 1 jar. Scenario 2 is 3 biopsy samples in 3 jars.



con il patrocinio di



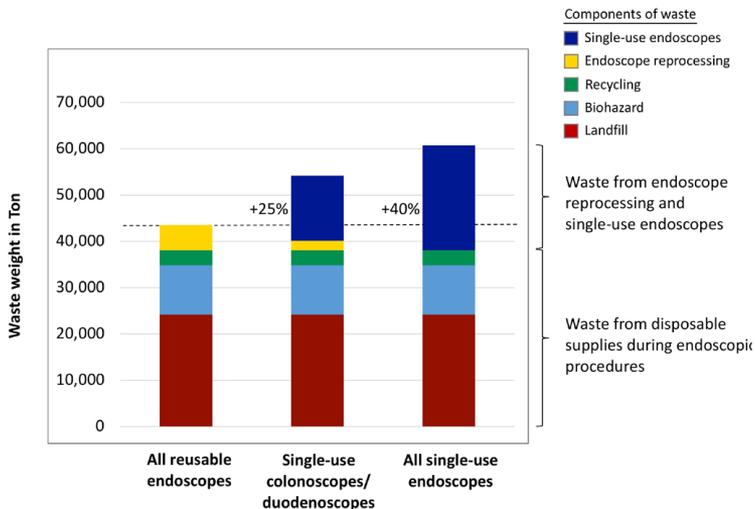
PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

SONO UN NIENTOLOGO:
NON SO UN TUBO DI NIENTE.





Dotted line = 43,500 metric tons (48,000 US ton), equivalent to the weight of 28,400 passenger cars

Figure 3 Annual waste produced during endoscopic procedures in the US overall and by proportion of procedures performed with reusable or single-use endoscopes. Percentages represent the absolute increase in waste from using disposable endoscopes.

Original research

Estimating the environmental impact of disposable endoscopic equipment and endoscopes

Sathvik Namburam ¹, Daniel von Renteln, ² John Damianos, ¹ Lisa Bradish, ³ Jeanne Barrett, ⁴ Andres Aguilera-Fish, ⁵ Benoit Cushman-Roisin, ⁶ Heiko Pohl ^{1,4,5}

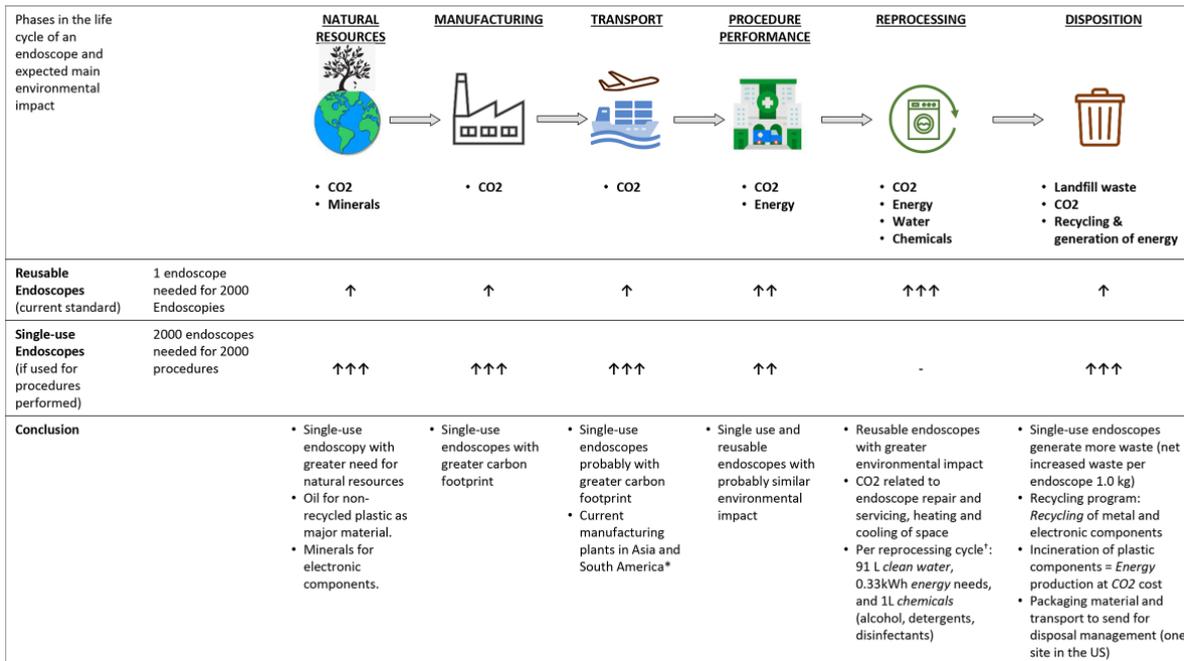


Figure 4 Life cycle of an endoscope from manufacturing to disposal. Up-arrows indicate a possible harmful impact on the environment. *Boston Scientific and Ambu. †Data obtained from Olympus endoscope washing machines. One cycle cleans two gastroscopes or colonoscopes and one duodenoscope.



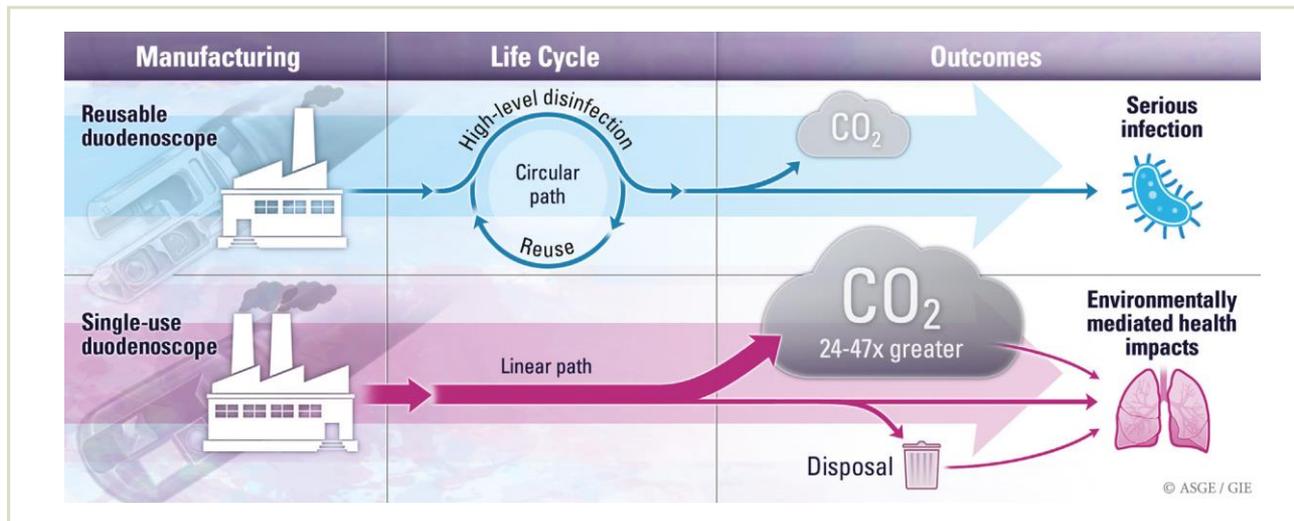
Environmental and health outcomes of single-use versus reusable duodenoscopes

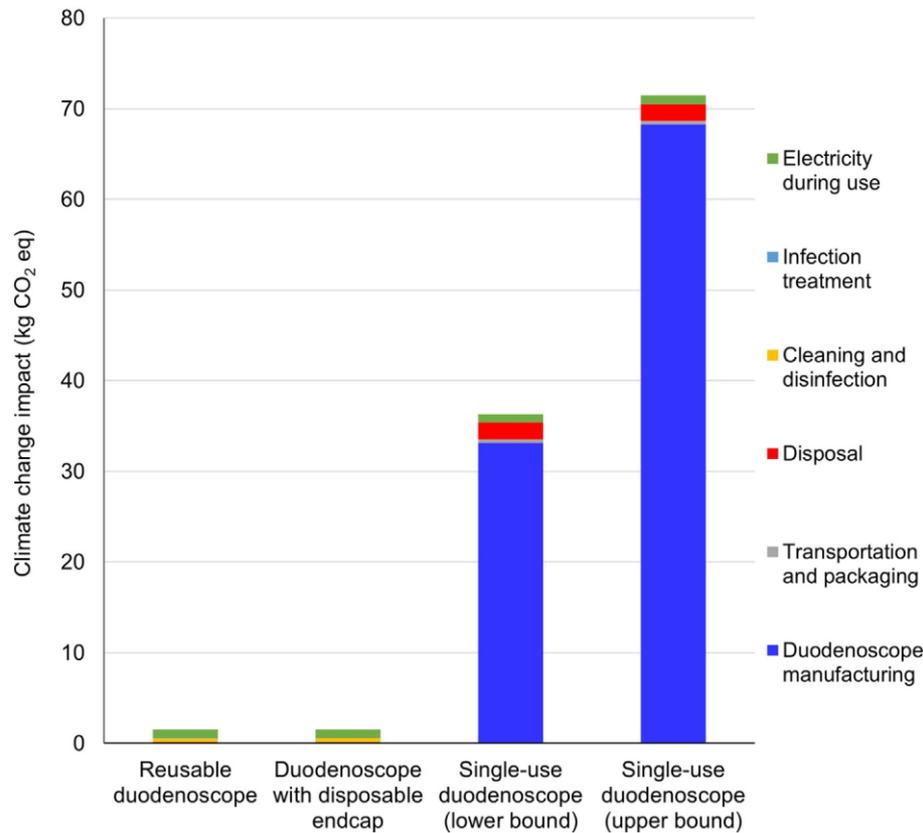


Nguyen Nhat Thu Le, BA,¹ Lyndon V. Hernandez, MD, MPH,² Nimish Vakil, MD,³ Nalini Guda, MD,³ Casey Patnode, MD, MPH,¹ Olivier Jolliet, PhD^{1,4}

Ann Arbor, Michigan; Milwaukee, Summit, Madison, Wisconsin, USA

GRAPHICAL ABSTRACT







To an ecological endoscopic submucosal dissection: tips and tricks to reduce waste



Video 1 To an ecological endoscopic submucosal dissection: tips and tricks to reduce waste.

The authors

Clara Yzet¹, Nicolas Benech¹, Pierre Lafeuille¹, Thomas Lambin¹, Jérôme Rivory¹, Mathieu Pioche^{1,2}

- 1 Gastroenterology and Endoscopy Unit, Pavillon L, Edouard Herriot Hospital, Lyon, France
- 2 Inserm U1032, Labtau, Lyon, France

Corresponding author

Yzet Clara, MD

Service hépato-gastroentérologie,
Hopital Edouard Herriot, 5 place d'Arsonval,
69003 Lyon, France
yzet.clara@chu-amiens.fr

References



con il patrocinio di



PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

DOBBIAMO TROVARE
IL MODO DI AIZZARE
IL POPOLO ALLA CALMA.





Con il patrocinio di



Associazione Italiana Gastroenterologi & Endoscopisti Ospedalieri



S.I.E.R.



GIG



fismad



ULSS1



Comune di Belluno



Comune di Belluno



Ospedale di Belluno

PROGRESSI E NUOVE FRONTIERE IN GASTROENTEROLOGIA ED ENDOSCOPIA DIGESTIVA



BELLUNO

15-16 GIUGNO 2023



Fare di più non significa fare meglio



Associazione Italiana Gastroenterologi & Endoscopisti Ospedalieri

Pratiche a rischio d'inappropriatezza di cui medici e pazienti dovrebbero parlare

Cinque raccomandazioni di GREEN ENDOSCOPY / ENDOSCOPIA SOSTENIBILE

Associazione Italiana Gastroenterologi ed Endoscopisti Digestivi Ospedalieri (AIGO)

1	<p>NON prescrivere esami endoscopici quando è possibile ed opportuno, secondo Linee Guida e buone pratiche mediche, sostituirli con accertamenti non invasivi.</p> <p>Alternative NON invasive agli esami endoscopici, validate dalla letteratura scientifica, sono: calprotectina fecale nel follow-up delle malattie infiammatorie croniche intestinali e nello studio della diarrea cronica, C-13 urea breath test o ricerca antigenica fecale dell'<i>Helicobacter Pylori</i>, ricerca del sangue occulto nelle feci per lo screening del tumore del colon-retto, conta piastrinica e elastografia nello screening delle varici esofagee e nel monitoraggio della cirrosi epatica. Queste alternative possono ridurre sia il rischio di danni per il paziente sia l'impatto sull'ecosistema rispetto agli esami endoscopici. Pazienti e cittadini vanno informati e coinvolti nelle scelte.</p>
2	<p>NON eseguire in corso di esami endoscopici biopsie della mucosa nei casi in cui l'esito dell'esame istologico non influenzerebbe il successivo percorso diagnostico o terapeutico.</p> <p>Il processo di trasporto, analisi e valutazione dei campioni biotipi è altamente dispendioso in termini di risorse, consumo di energia, produzione di CO2 e di rifiuti. Strategie volte a ridurre il numero degli esami biotipi sono raccomandate dalle linee guida internazionali (implementazione dell'uso della diagnosi con magnificazione e colorazioni non vitali; applicazione della tecnica resect and discard per i polipi colici; adesione alle indicazioni di intervalli di sorveglianza). Inoltre eseguire biopsie senza indicazione clinica e senza che l'esito possa influire sulla successiva gestione del paziente può portare a richiedere ulteriori esami diagnostici non strettamente necessari o a interventi terapeutici dannosi.</p>
3	<p>NON eseguire procedure endoscopiche in regime di ricovero ospedaliero se queste possono essere eseguite ambulatorialmente.</p> <p>Il ricovero in regime di degenza ordinaria è associato al consumo di grandi quantità di risorse e alla conseguente produzione di CO2, oltre che al rischio di infezioni ospedaliere. La letteratura scientifica più recente dimostra che, non solo la maggior parte delle procedure endoscopiche di base ma anche quelle più ad alto rischio (come la dissezione endoscopica sottomucosa, la colangiografia pancreatica retrograda endoscopica e la miotomia endoscopica perorale) possono essere svolte in regime ambulatoriale. Nell'identificare le situazioni che necessitano ospedalizzazione vanno considerate: comorbidità, rischio associato alla procedura e facile accesso a cure tempestive in caso di complicanze. Pazienti e cittadini vanno informati e coinvolti nelle scelte.</p>
4	<p>NON utilizzare endoscopi monouso se non in casi altamente selezionati (pazienti immunodepressi o colonizzati/infetti da patogeni multiresistenti).</p> <p>I dati disponibili in letteratura dimostrano che il rischio di trasmissione di infezioni dagli endoscopi è minimo se il reprocessing avviene correttamente. Studi recenti dimostrano inoltre che gli strumenti monouso consumano maggiori quantità di energia e determinano maggiore rilascio di CO2 rispetto agli strumenti tradizionali. La scelta di utilizzare endoscopi monouso deve essere ponderata caso per caso, privilegiando situazioni ad elevato rischio di trasmissione come nei pazienti immunodepressi o colonizzati/infetti da patogeni multiresistenti.</p>
5	<p>NON prescrivere farmaci non strettamente necessari prima, durante e dopo le procedure endoscopiche.</p> <p>L'impatto ambientale delle terapie pre- (preparazione per colonoscopia, soluzioni mucoliche), intra- (farmaci sedativi, analgesici, antibiotici) e post-procedurali non è ancora stato quantificato da studi appositi ma le stime dimostrano che l'uso di farmaci è associato ad un impatto diretto sugli ecosistemi e a un'importante produzione di CO2 (da 1 gr di farmaco si generano fra 10 e 1000 gr di CO2). Viene quindi raccomandato un razionale uso dei farmaci ove siano presenti delle indicazioni supportate da linee guida (esempio per la profilassi antibiotica). Analogamente deve essere razionalizzata la scelta fra sedazione profonda e intubazione orotracheale, dove il coinvolgimento del team anestesiológico determina un maggior consumo di risorse soprattutto se routinario. Pazienti e cittadini vanno informati e coinvolti nelle scelte.</p>

GREEN CW !!!

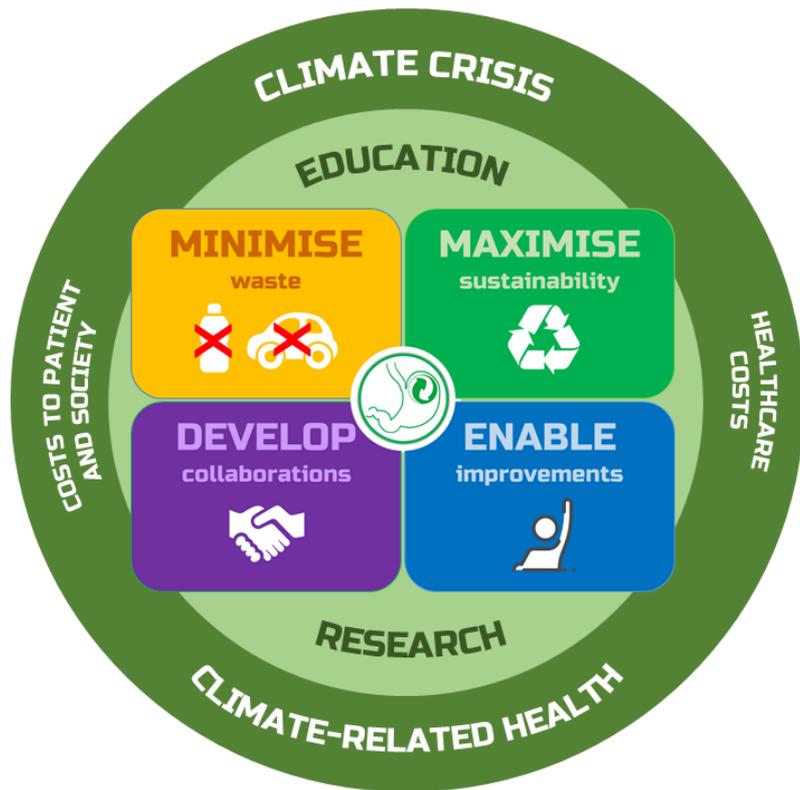
Attenzione: le informazioni sopra riportate non sostituiscono la valutazione e il giudizio del medico. Per ogni quesito relativo alle pratiche sopra individuate, con riferimento alla propria specifica situazione clinica, è necessario rivolgersi al medico curante.

Marzo 2023



DECALOGO DI BUONE PRATICHE

- Diffondere la consapevolezza ambientale tra medici e popolazione
- Favorire corrette abitudini alimentari e stili di vita
- Migliorare appropriatezza prescrittiva (corrette indicazioni e tempistica) degli esami endoscopici; favorire, dove indicato, accertamenti non invasivi (secondo EBM e linee guida)
- Migliorare qualità degli esami endoscopici (istruzioni, preparazione, completezza)
- Migliorare criteri ed indicazione ad eseguire esame istologico in corso di endoscopia, utilizzando ad esempio metodiche di cromoendoscopia
- Privilegiare accessori, lavaendoscopi e DPI a minor impatto ambientale, promuovendo anche politiche di certificazione ambientale presso produttori di medicali ed autorità sanitarie
- Ridurre utilizzo inappropriato di DPI, organizzare percorsi strutturati di smaltimento rifiuti con modalità di raccolta differenziata in sale di endoscopia e nella struttura ospedaliera
- Limitare il consumo di luce nelle sale endoscopiche, attraverso ad esempio l'utilizzo di lampadine a basso consumo ed impiego di luce soffusa durante le procedure
- Adottare percorsi di telemedicina dove indicato (patologie croniche in stabilità clinica) e possibile
- Avviare od implementare percorsi di studio e ricerca dedicati a valutare l'impatto ambientale delle attività di gastroenterologia



Green Endoscopy

Offer recyclable single-use cups and cutlery to patients as opposed to polystyrene and single use plastic.

Encourage your organisation to invest in waste solutions that repurpose single-use plastic



Introduce a sustainability champion into your team that promotes sustainable practice.



A 1.9: The service has a 'green endoscopy' working group to reduce the environmental impact of the service and initiates at least one environmental initiative.

Improve recycling facilities for general waste. Aim to send reports electronically where possible.



Embark on a [Quality Improvement sustainability project](#) to help improve the knowledge and skills required for sustainable healthcare.



Get involved - join the green endoscopy network with The Centre for Sustainable Healthcare [@GreenEndoscopy](#)





con il patrocinio di



PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023





con il patrocinio di



PROGRESSI E NUOVE FRONTIERE IN
GASTROENTEROLOGIA
ED ENDOSCOPIA DIGESTIVA



BELLUNO
15-16 GIUGNO 2023

CI SONO DEI MOMENTI
STORICI CHE A UNO
GLI PIACEREBBE
DI POTER DIRE:
IO NON C'ERO.



GRAZIE PER LA PAZIENZA ...

