

Single-use scopes may reduce various environmental impacts of gastroscopy in some situations but probably not in routine practice of endoscopy units

We read with interest the letter from Han *et al* about our study¹ and we thank those authors for underlining points to be discussed about the real place of single use and reusable endoscope strategies.

Although the benefits for reducing cross-infections seem significant, assessing the positive indirect environmental impact is difficult, as the number of patients involved in high-infection risk² care remains very low compared with the daily endoscopy practice evaluated in this study, with conventional gastroscopes, disinfected in the standard way, in a routine activity and not in intensive care units with high-level disinfection processes.³ Moreover, this study focused on gastroscopes, with low risk of cross-infections in opposition to duodenoscopes. Of course, the weight of the endoscope's plastic is an important element in the analysis, explaining the difference between our results and those reported for lighter disposable endoscopes (anaesthesia or urology)⁴ or with higher weights like duodenoscope.⁵

The cost for the planet to get a zero risk of infection is nevertheless subject of debate⁶ and a more comprehensive balance between risk for the individual and climate warming for next generation is urgently needed.

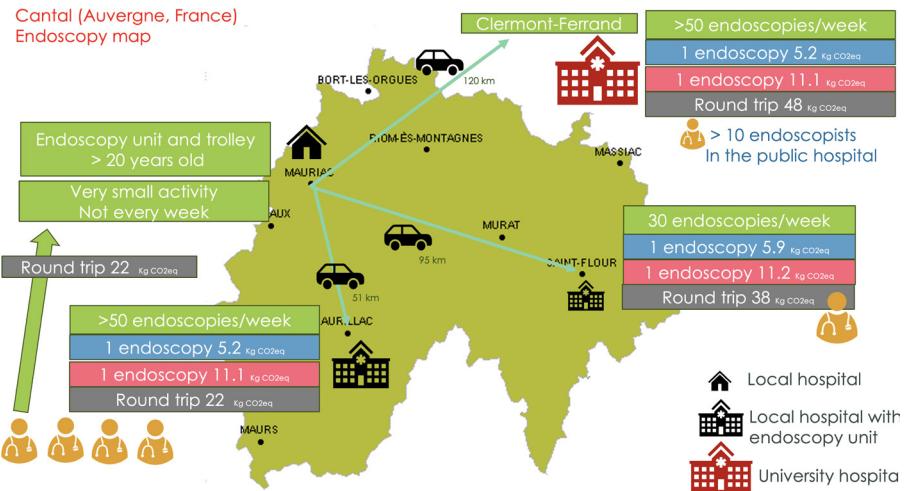


Figure 2 Example of impacts depending on centre volume and distance for people living in an isolated area in Cantal for example.

Contrarily to your mention, we did not focus on carbon footprint but used a multi-criteria approach, considering repairs and decontamination, and evaluating fresh water ecotoxicity (impact $\times 7$), acidification (impact $\times 6$), eutrophisation (impact $\times 4$), where single-use strategy was more impacting than reusable one (figure 1). The only 'benefit' was the water depletion since 3 m^3 were saved, thanks to single-use strategy without decontamination process.

Nevertheless, we share the view that disposable endoscopes have a place, particularly in isolated areas, and we also did a simulation of those distances in an isolated area called Cantal, counting 145 000 inhabitants, located in the central and rural part of France (figure 2). In these towns that have a local hospital but no endoscopy unit (or with very old endoscopy unit or scopes) (like Mauriac in figure 2), it would be

less impactful to move a trained endoscopist with disposable endoscopes from the endoscopy local centre (like Aurillac here), offering a high-quality endoscopy, to run an endoscopy programme locally with single-use scopes instead of moving multiple patients to the endoscopy centre. The ratio becomes beneficial as soon as the patient must travel an extra 14 km to reach the reusable endoscope unit. The role of disposable endoscopes must therefore be measured locally in relation to local arrangements, procedure volumes and the human resources.

Organisation of care could therefore reduce a lot of impacts of endoscopy, by reducing transports.^{7 8} For this, we began to organise exchanges and for example, one endoscopist from our centre goes to Clermont-Ferrand (university hospital, figure 2) every 3 months to treat five patients using Per oral endoscopy myotomy procedures (only one round trip of 340 kms for the doctor) instead of moving all patients with two travels to our centre (one for consultations and one for procedure) what represents a save of 3060 km and 612 kg of CO_2 per day. Cost should naturally be a part of the discussion, but medical transports are so expensive in our country that medico-economic evaluations are needed to determine the real difference between both strategies.

Single-use endoscopes probably have a place to reduce carbon footprint in some settings but also to improve quality of cares in certain situations (specific endoscopes with rare uses, emergency procedures with no decontamination access), but as a daily procedure in an endoscopy unit, it does not seem sustainable at all for our environment to switch from reusable to disposable.

Global vision

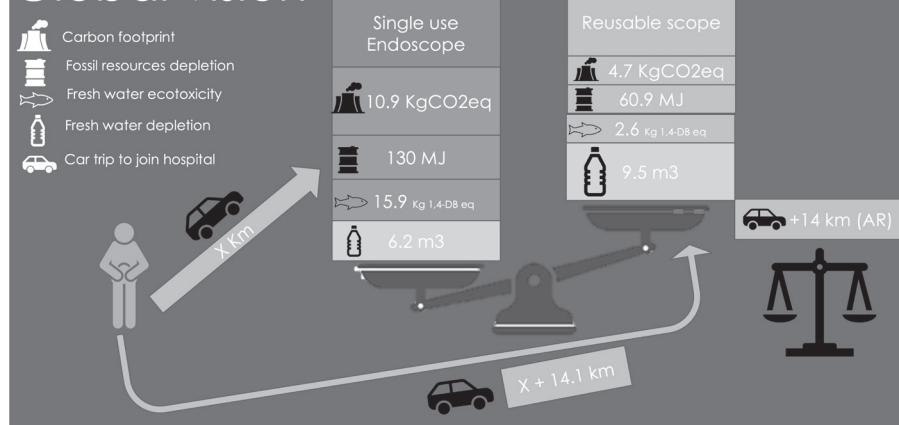


Figure 1 Global vision of the different impacts of single use versus reusable scopes for one gastroscopy.

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Contributors MP is the guarantor, other authors have participated in measuring the different procedures volume and distance.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; internally peer reviewed.

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To cite Pioche M, Vidal G, Ben Rejeb M, et al. *Gut* 2025;74:866–867.

Received 2 October 2024

Accepted 18 October 2024

Published Online First 30 October 2024

Gut 2025;74:866–867. doi:10.1136/gutjnl-2024-334018

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