

Switching from general to regional anaesthesia may cut greenhouse gas emissions

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Switching from general to regional anaesthesia may help cut greenhouse emissions and ultimately help reduce global warming, indicates a real life example at one US hospital over the course of a year, and reported in the journal *Regional Anesthesia & Pain Medicine*.

The evidence suggests that regional anaesthesia provides more effective pain relief, has fewer unpleasant side effects than general anaesthesia, shortens [hospital stay](#), and may be preferred by patients, say the authors.

But it may also have an important environmental role that is "truly global in nature," they add.

Unlike [general anaesthesia](#), it doesn't use volatile halogenated agents, such as desflurane, or nitrous oxide. These [greenhouse gases](#), which can be retained in the atmosphere for up to 114 years, damage the earth's ozone layer, increasing the risk of [global warming](#) and [climate change](#).

Regional anaesthesia, instead, uses a local nerve block along with intravenous sedatives.

In 2009, in the USA alone, more than a million hip and knee replacement procedures were carried out, lasting an average of 2 hours.

If all of these were done under general anaesthetic, that would be the

equivalent of 112,000 kg of desflurane and 9000 kg of [nitrous oxide](#) released into the atmosphere, calculate the authors.

That's equivalent to the [greenhouse emissions](#) generated by 3,260,000 lbs of coal burned, or 333,000 gallons of petrol used, or 7,350,000 car miles, or 378,000,000 smartphones charged.

In 2019, the Hospital for Special Surgery in New York opted to carry out as many hip and knee replacements as possible, using regional anaesthesia. Out of the 10,485 procedures carried out that year, just 4% (419) were done under general anaesthetic.

The authors calculated that this substitution 'saved' the equivalent of nearly 27,000 lbs of coal burned, 2750 gallons of petrol, 60,500 car miles, or 3,110,000 smartphones charged.

"This certainly is not a complete analysis as we have not calculated how the manufacture of regional anesthetic agents or the impact of the plastics involved in regional anesthetic kits might affect the earth compared with volatile anesthetics," they acknowledge.

And not all surgical procedures can easily be switched to regional anaesthesia, they concede.

But they point out: "Although no definitive data can provide us with the specific contribution of anesthetic gases to the worldwide greenhouse gases, studies estimate that healthcare systems generally are responsible for 5-10% of the national pollutant emissions and the anesthetic gases in the USA contribute to approximately 50-60% of an operating theater's carbon footprint."

They conclude: "Thus, increasing the use of [regional anesthesia](#) is potentially good for the climate, improves the quality of care (at least for

hip and knee replacements), and may allow individual practitioners to take personal responsibility in the fight against global warming."

More information: Green-gional' anesthesia: the non-polluting benefits of regional anesthesia to decrease greenhouse gases and attenuate climate change, *Regional Anesthesia & Pain Medicine*, [DOI: 10.1136/rapm-2020-101452](https://doi.org/10.1136/rapm-2020-101452)

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