

Principles of 'green' research

In 2008, the World Health Organization convened a global consultation of over 70 expert researchers to identify immediate research needs with regards to protecting human health in the face of climate. Their report, [Protecting global health from climate change. Global research priorities](#) identified six key themes for future research, which - applied to anaesthesia - may be paraphrased to:

1. Environmental concerns about anaesthetic agents must run in parallel with general health concerns about their use. For example, research into the environmental impact of nitrous oxide should run in parallel to research into the health implications of its use in anaesthesia.
2. Comprehensive risk assessment of anaesthetic practices is essential, and invariably extends beyond an isolated assessment. For example, research into the environmental implications of desflurane use should include aspects related to electricity consumption by and production of specialised vaporisers, unscavenged release, and the carbon footprint incurred through production and transport. The effects of repeated exposure/usage should be taken into account.
3. Comprehensive evaluation of the short and long term effectiveness of alternative or protective strategies is required. For example, what might be the health implications of new strategies for reusable LMA sterilisation in comparison to the continuing environmental impact of single-use LMAs?
4. Research should be generalisable beyond the practice of anaesthesia. For example, ergonomic redesign of anaesthetic rooms to encourage recycling of solid waste may have wider applications in the future design of living/work spaces
5. Research is needed into early warning and critical incident reporting systems, together with information provision and dissemination methods. For example, if proposing to reuse otherwise disposable equipment, systems need to be in place to monitor and report any adverse events arising as a consequence; patients need to be informed why the decision to reuse equipment has been made and what the risks (if any) are compared to the potential financial and environmental benefits
6. Economic assessment must be made of the effects of continuing with current practice compared with adoption of 'greener' methods of anaesthesia. For example, what are the intraoperative superspell costs of inhalational anaesthesia vs. total intravenous anaesthesia vs. regional anaesthesia?