

## LETTER TO THE EDITOR

## The role of nitrous oxide remains uncertain

Jouni Hirvioja<sup>1,†,\*</sup>, Juho Joutsa<sup>2,3,†</sup>, Pia Wahlsten<sup>4</sup>, and Jaana Korpela<sup>2</sup><sup>1</sup>Department of Emergency Medicine, Turku University Hospital and University of Turku, Turku, Finland,<sup>2</sup>Division of Clinical Neurosciences, Turku University Hospital and University of Turku, Turku, Finland,<sup>3</sup>Department of Clinical Neurophysiology, Turku University Hospital and University of Turku, Turku, Finland, and<sup>4</sup>National Institute for Health and Welfare, Helsinki, Finland

\*Corresponding address. Emergency Department, Turku University Hospital, Savitehtaankatu 1, PO Box 52, 20521 Turku, Finland.

Tel: +358 50 400 3477; E-mail: jouni.hirvioja@tyks.fi, jouhir@utu.fi

We thank Mark A. Gillman for his interest in our case report. As he noted, there is an unintentional error in the introductory sentence describing nitrous oxide as an anesthetic instead of analgesic during dental procedures and labor. There are no claims that nitrous oxide would have been the cause of the patient's death. The mechanisms of death in fatal cases (where nitrous oxide abuse has been recognized as the primary cause of death) include mostly asphyxia but also sudden cardiac arrhythmia [1]. As stated in the case report, our patient died while being intoxicated with several substances of abuse, and the main cause of death was amphetamine intoxication. However, the patient was surrounded by empty nitrous oxide cylinders indicating that he had been also

using substantial amounts of nitrous oxide just prior to his death. Thus, we feel that it is important to recognize that nitrous oxide might have been a contributing factor to the death of our patient.

### Reference

1. Garakani A, Jaffe RJ, Savla D, Welch AK, Protin CA, Bryson EO, McDowell DM. Neurologic, psychiatric, and other medical manifestations of nitrous oxide abuse: A systematic review of the case literature. *Am J Addict* 2016;doi: 10.1111/ajad.12372.

---

† These authors contributed equally.

Received: May 10, 2016. Accepted: May 11, 2016

© The Author 2016. Published by Oxford University Press.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

For commercial re-use, please contact [journals.permissions@oup.com](mailto:journals.permissions@oup.com)