TITLE: Carbon Monoxide Exposure Measurement and Treatment: Clinical Evidence and Guidelines

DATE: 31 January 2011

RESEARCH QUESTIONS

1. What is the clinical evidence regarding the correlation between air measurement of carbon monoxide and serum blood level of carbon monoxide?
2. What is the clinical evidence regarding optimal treatment after carbon monoxide exposure?
3. What are the guidelines regarding the follow-up and treatment of patients exposed to carbon monoxide?

KEY MESSAGE

Limited information was identified regarding optimal treatment methods after carbon monoxide exposure but no information was found regarding correlation of carbon monoxide measurement or guidelines for treatment and follow-up.

METHODS

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 1, 2011), University of York Centre for Reviews and Dissemination (CRD) databases, EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between Jan 1, 2006 and Jan 26, 2011. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials and guidelines. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

Disclaimer: The Health Technology Inquiry Service (HTIS) is an information service for those involved in planning and providing health care in Canada. HTIS responses are based on a limited literature search and are not comprehensive, systematic reviews. The intent is to provide a list of sources of the best evidence on the topic that CADTH could identify using all reasonable efforts within the time allowed. HTIS responses should be considered along with other types of information and health care considerations. The information included in this response is not intended to replace professional medical advice, nor should it be construed as a recommendation for or against the use of a particular health technology. Readers are also cautioned that a lack of good quality evidence does not necessarily mean a lack of effectiveness particularly in the case of new and emerging health technologies, for which little information can be found, but which may in future prove to be effective. While CADTH has taken care in the preparation of the report to ensure that its contents are accurate, complete and up to date, CADTH does not make any guarantee to that effect. CADTH is not liable for any loss or damages resulting from use of the information in the report.

Copyright: This report contains CADTH copyright material and may contain material in which a third party owns copyright. This report may be used for the purposes of research or private study only. It may not be copied, posted on a web site, redistributed by email or stored on an electronic system without the prior written permission of CADTH or applicable copyright owner.

Links: This report may contain links to other information available on the websites of third parties on the Internet. CADTH does not have control over the content of such sites. Use of third party sites is governed by the owners’ own terms and conditions.
RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials (RCTs), non-randomized studies, economic evaluations, and evidence-based guidelines.

One systematic review and two randomized controlled trials were identified regarding the optimal treatment after carbon monoxide exposure. No relevant health technology assessments or evidence-based guidelines were identified. No information was found regarding clinical evidence regarding the correlation between air measurement of carbon monoxide and serum blood level of carbon monoxide or the guidelines regarding the follow-up and treatment of patients exposed to carbon monoxide. Additional articles of potential interest can be found in the appendix.

OVERALL SUMMARY OF FINDINGS

One systematic review\(^1\) that compared the safety and effectiveness of 100% hyperbaric oxygen (HBO), 28% oxygen, and 100% oxygen by non-re-breather mask for the treatment of carbon monoxide poisoning did not present the results in the abstract. The authors, however, indicated that patients should be monitored for symptoms after known exposure, even before confirmation of carbon monoxide poisoning by blood sampling.

One report\(^2\) discussed the results of two RCTs. There were no differences in one month recovery rates reported between groups for patients, who experienced transient loss of consciousness and who were randomized to either six hours of normobaric oxygen (NBO) therapy or four hours of NBO therapy and one HBO session. Fewer worse outcomes were observed from four hours of NBO and one HBO session than from four hours NBO and two HBO sessions in patients, who were initially in a coma. A second RCT\(^3\) examined the feasibility of randomizing patients with carbon monoxide poisoning to different HBO therapy protocols. The authors determined that the randomization was feasible but the efficacy of different protocols would need to be studied further in larger clinical trials.
REFERENCES SUMMARIZED

Health technology assessments
No literature identified.

Systematic reviews and meta-analyses

Randomized controlled trials


Guidelines and recommendations
No literature identified.

PREPARED BY:
Canadian Agency for Drugs and Technologies in Health
Tel: 1-866-898-8439
www.cadth.ca
APPENDIX – FURTHER INFORMATION:

Non-randomized studies


Clinical practice guidelines (not evidence-based)


Review articles


See: 3. Carbon Monoxide Poisoning

Additional references
