



Centre for Clinical Effectiveness

Enhancing patient outcomes through clinical application of the best available evidence

EVIDENCE CENTRE
CRITICAL APPRAISAL
Series 2003: Therapy

Carbonated drinks as first-line therapy for esophageal foreign bodies presenting to the emergency department.

Rebecca Ryan
December 2003

Southern Health

MONASH
UNIVERSITY

Centre for Clinical Effectiveness
Monash Institute of Health Services Research
Monash Medical Centre
Locked Bag 29
Clayton VIC 3168
Australia

Telephone: +61 3 9594 7505
Fax: +61 3 9594 7552
Email: cce@med.monash.edu.au (quote author of report)
URL: <http://www.med.monash.edu.au/healthservices/cce/>

December 2003

SUMMARY STATEMENT

Disclaimer - please refer to Appendix 1 for information.

Copyright – please refer to Appendix 1 for information.

Publication of materials – please use the following format when citing this article:

Ryan R.E. (2003). Carbonated drinks as first-line therapy for esophageal foreign bodies presenting to the emergency department. (The Centre for Clinical Effectiveness), Available: <http://www.med.monash.edu.au/healthservices/cce>

[Accessed: Access date...]

Form Version – B.2002.01.15.1

REQUEST

What is the evidence that carbonated drinks are a useful first-line therapy for the removal of esophageal foreign bodies in patients presenting to the emergency department?

REQUESTED BY

Dr Richard Cathie, Emergency Physician, Department of Emergency, Dandenong Hospital

METHODOLOGY

Search Strategy

The Centre for Clinical Effectiveness defines the 'best available evidence' as that research we can identify that is least susceptible to bias. We determine this according to pre-defined National Health and Medical Research Council (NHMRC, 2000) criteria (see Appendix 1).

First, we search for systematic reviews, evidence based clinical practice guidelines, health technology assessments and randomised controlled trials. If we identify sound, relevant material of this type, the search stops. Otherwise, our search strategy broadens to include studies that are more prone to bias, less generalisable or have other methodological difficulties. We include case-control and longitudinal cohort studies in our critical appraisal reports. While we cite observational and case series studies, narrative reviews and consensus statements in our reports, we do not critically appraise them. Such studies can produce accurate results but they are generally too prone to bias to allow determination of their validity beyond their immediate setting.

Details of Evidence Request

Patients (Subjects): Patients presenting to the emergency department with esophageal foreign bodies
Intervention: Carbonated beverage
Comparisons: No treatment or other pharmacological treatment
Outcomes: Successful removal of foreign body, lack of complications (esophageal perforation, lung aspiration)

Search terms

(see Appendix 2 for exact search strategy)

Patients (Subjects): Esophagus, esophageal foreign body, obstruction
Intervention: Carbonated beverage; cola

Resources Searched

We searched the following databases and internet websites:

Resource	Issue or Access Date
APAIS- Health (Public Affairs) (INFORMIT)	May 2003
Australasian Medical Index (INFORMIT)	September 29, 2003
Australian Resource Centre for Hospital Innovations	September 29, 2003
CINAHL (OVID)	1982 to September Week 3, 2003
CINCH- Health (INFORMIT)	May 2003
Current Contents (OVID)	1993 Week 27 to 2003 Week 25
EBM Reviews (OVID) -	
Cochrane Database of Systematic Reviews	3 rd Quarter 2003
Database of Abstracts of Reviews of Effectiveness	3 rd Quarter 2003
Cochrane Controlled Trials Register	3 rd Quarter 2003
ACP Journal Club	1991 to July/August 2003
Health and Society (INFORMIT)	May 2003
Medline Daily Update (OVID)	September 26, 2003
Medline In-Process, Other Non-Indexed Citations, Medline (OVID)	1966 to September Week 3, 2003
PubMed (National Library of Medicine)	Accessed September 29, 2003
National Guideline Clearinghouse	September 29, 2003
Other guideline sites, including:	Searched September 29 and 30, 2003
Agency for Healthcare Research and Quality, Best BETS, New Zealand Guideline Clearinghouse, NHMRC guidelines, Scottish Intercollegiate Guideline Network, UK Clearinghouse on Health Outcomes	

Refinements, Searching & Reporting Constraints

Only articles published in English were considered for the current report. Searching was not limited by year of publication.

Inclusion criteria

- Controlled clinical trials or studies of level I, II or III evidence
- Patients suffering from esophageal foreign body and presenting to the emergency department
- Studies examining the use of carbonated drinks for esophageal foreign bodies, either in comparison to no treatment or another pharmacological treatment

Exclusion criteria

- Studies examining procedural methods (endoscopy) for the removal of esophageal foreign bodies only
- Narrative review or commentary
- Case study or series (level IV evidence)

RESULTS

From our sources we identified 12 potentially relevant articles. We obtained the full text of these articles to determine their relevance and level of evidence.

After examination of these articles, the following articles were excluded as detailed below:

Reason for exclusion	Number
Level IV evidence	2
Study describes procedural methods for foreign body removal	6
Narrative review or commentary (letter)	4
Total	12

After application of predetermined criteria, no articles remained for appraisal. Although two relevant case series were identified by the current searching, such studies constitute Level IV evidence and due to their propensity for bias are not critically appraised here.

The ideal study design to assess the effectiveness of an intervention such as carbonated drink effectiveness for esophageal obstruction is a randomised controlled trial. Such a trial might compare the outcomes of patients administered carbonated drinks with patients receiving standard therapy (such as procedural removal of food obstruction). No such trials or comparative studies with appropriately assigned control groups were identified by the current searches. The two relevant studies identified were case series, which are inadequate to rigorously assess the effectiveness of carbonated drinks for the removal of esophageal obstruction. Case series are prone to bias as they fail to meet important validity criteria including the presence of a control group, randomization and blinding. There is therefore a need to assess the effectiveness of carbonated drinks for the removal of esophageal obstruction with well-designed clinical trials.

Based on our refinements, searching and reporting constraints we are reasonably confident these articles represent the most relevant findings published to date.

REFERENCES

The following papers were evaluated but excluded as detailed above. Studies are presented in alphabetical order according to the first author.

ARTICLES NOT CRITICALLY APPRAISED

Descriptive Case Reports or Case Series

Karanjia ND & Rees M (1993). The use of Coca-Cola in the management of bolus obstruction in benign esophageal stricture. *Annual Report of the College of Surgeons England* **75**: 94-95.

Mohammed SH & Hegedus V (1986). Dislodgement of impacted esophageal foreign bodies with carbonated beverages. *Clinical Radiology* **37**: 589-592.

Procedural (medical) interventions described

Anonymous Ingested foreign bodies. *Emergency Medicine* **21**: 45-46.

Davidson GP, Wigg AJ & Roberts-Thomson IC (1998). Foreign bodies in the esophagus. *Journal of Gastroenterology and Hepatology* **13**: 322-322.

Eisen GM, Baron TH, Dominitz JA, Faigel DO, Goldstein JL, Johanson JF, Mallery JS, Raddawi HM, Vargo JJ, Waring JP, Fanelli RD, Wheeler-Harbaugh J & Stand Practice C (2002). Guideline for the management of ingested foreign bodies. *Gastrointestinal Endoscopy* **55**: 802-806.

Jain R & Nunez M (1997). Esophageal foreign body. *Digestive Diseases* **15**: 368-368.

Hachimi-Idrissi S, Corne L & Vandenplas Y (1998). Management of ingested foreign bodies in childhood: our experience and review of the literature. *European Journal of Emergency Medicine* **5**: 319-323.

McSwain NE, Jr. (1989). Esophageal foreign body. *Emergency Medicine* **21**: 85-86.

Narrative or commentary

Anonymous (1987). Non-endoscopic relief of esophageal obstruction. *Lancet* **1**: 107-108.

Campbell N & Sykes PA (1989). Disimpaction of swallowed bolus. *British Medical Journal* **299**: 53.

Mohammed SH & Hegedus V (1987). Non-endoscopic relief of esophageal obstruction. *Lancet* **1**: 393.

Zbinden S & Schupfer G (1989). Detection of esophageal intubation: the cola complication. *Anaesthesia* **44**: 81.

APPENDIX 1

Copyright

© This publication is the copyright of Southern Health. Other than for the purposes and subject to the conditions prescribed under the Copyright Act 1968 as amended, no part of this publication may, in any form or by any means (electric, mechanical, microcopying, photocopying, recording or otherwise), be reproduced, stored in a retrieval system or transmitted without prior written permission. Inquiries should be addressed to Centre for Clinical Effectiveness.

Disclaimer

The information in this report is a summary of that available and is primarily designed to give readers a starting point to consider currently available research evidence. Whilst appreciable care has been taken in the preparation of the materials included in this publication, the authors and Southern Health do not warrant the accuracy of this document and deny any representation, implied or expressed, concerning the efficacy, appropriateness or suitability of any treatment or product. In view of the possibility of human error or advances of medical knowledge the authors and Southern Health cannot and do not warrant that the information contained in these pages is in every aspect accurate or complete. Accordingly, they are not and will not be held responsible or liable for any errors of omissions that may be found in this publication. You are therefore encouraged to consult other sources in order to confirm the information contained in this publication and, in the event that medical treatment is required, to take professional expert advice from a legally qualified and appropriately experienced medical practitioner.

Levels Of Evidence

Based on "How to use the evidence: assessment and application of scientific evidence" (National Health & Medical Research Council, Canberra, 2000):

Level I		Evidence obtained from a systematic review (or meta-analysis) of all relevant randomised controlled trials.
Level II		Evidence obtained from at least one randomised controlled trial.
Level III	-1	Evidence obtained from pseudo-randomised controlled trials (alternate allocation or some other method).
	-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case control studies or interrupted time series with a control group.
	-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.
Level IV		Evidence obtained from case series, either post-test or pretest/post-test.

APPENDIX 2

Search strategy

	Search terms for MEDLINE
1	exp Foreign Bodies/
2	(foreign adj3 bod\$).mp
3	obstruct\$.mp
4	or/1-3
5	exp Esophagus/
6	\$esophag\$.mp
7	5 or 6
8	4 and 7
9	exp Carbonated Beverages/
10	(carbonate\$ adj3 beverage\$).mp
11	\$cola.mp
12	or/9-11
13	8 and 12

These search terms were used, following appropriate translation, for the different databases searched.