



## The Anesthetic Crisis Manual - North American Edition

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*David C. Borshoff* (author). Geoffrey Lighthall (editor). Leeuwin Press Pty Ltd; website: <http://theacm.com.au/product/the-acm-international-edition-us/>. Supported by the Australian Society of Anaesthetists – Endorsed by the European Society of Anaesthesiology

*The Anesthetic Crisis Manual* is intended to serve as a “cognitive aid” and “quick reference handbook” for anesthetic crises commonly encountered in the operating room (OR). Written by David Borshoff, an Australian anaesthetist, supported by the Australian Society of Anaesthetists, and endorsed by the European Society of Anaesthesiology for its crisis checklists, the *Manual* has been adapted for North American practitioners with help from the Editor, Geoffrey Lighthall of Stanford University School of Medicine.

The *Manual* bears a number of similarities to aviation quick reference handbooks (QRHs) – perhaps not surprising considering the author is also a general aviation (private) pilot. An example of this similarity is an initial suggestion to have an assistant “read and communicate the directive”. Also, like other QRHs, and given its intended use in the OR, the *Manual* has been robustly constructed. The pages, which apparently are waterproof, tear resistant, and easy to clean, feel thick and durable. Furthermore, the *Manual's* spiral binding has been helpfully fitted with an attachment to allow easy tethering to an anesthesia machine or crash cart.

The *Manual* is organized into two parts. The first, the heart of the *Manual*, is a crisis management section which lays out management protocols in checklist format for 23

intraoperative emergencies. At least nine draw on established guidelines addressing issues such as cardiac arrest, malignant hyperthermia, and local anesthetic systemic toxicity (LAST). A sequence of colour-coded tabs directs the reader to the appropriate well-described and colour-matched protocol. From a human factors standpoint, the colour sequence appears to have only esthetic and not functional use, with the sequence for tabs 1-14 repeated for tabs 15-23.

Each page is clearly laid out with a series of easy-to-read numbered points that take the reader systematically through critical steps in the immediate management of a problem. The focus on describing management clearly and concisely means that some details are lost; however, on each facing page, there is additional information, such as salient points related to the problem, doses of medications, and further management options.

Nevertheless, it is worth pointing out that the neonatal resuscitation checklist appears to be modelled after the UK guidelines, which differ slightly from the current recommendations of the North American Neonatal Resuscitation Program. Also, there is an error in the Intralipid® dose in the LAST protocol (quoted as  $1.5 \text{ mg}\cdot\text{kg}^{-1}$  instead of the correct  $1.5 \text{ mL}\cdot\text{kg}^{-1}$ ). The author has posted a correction on his website (<http://theacm.com.au/alerts/>), but this correction is also incorrect.

Four tabs are dedicated to airway emergencies: difficult mask ventilation, unanticipated difficult intubation, the dreaded “can't intubate can't ventilate”, and laryngospasm. For these, the author's recommendations reflect the UK Difficult Airway Society guidelines, which differ slightly from the 2013 Canadian Airway Focus Group recommendations. Nonetheless, the information provided is succinct while emphasizing appropriate time management and highlighting that the points provided are

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“not a checklist but a guideline to rehearse regularly”. Remaining tabs cover other respiratory-related problems, obstetric topics, neonatal resuscitation, and four “miscellaneous” problems. The last of these tabs is devoted to a “Terminal Event Checklist – The 10 Ts”, potentially helpful if a diagnosis is elusive. The facing page then lists what to do in the aftermath of a crisis – very good information not often so clearly provided.

The second part of the *Manual*, “crisis prevention”, has a similar tabbed and (repeating) colour-coded format and includes eight undifferentiated intraoperative problems, including desaturation, hypotension, and tachycardia. On one page, the reader is given a broad but structured differential diagnosis (“diagnostic checklist”) instead of a checklist of tasks, and on the facing page, the reader is shown a “diagnostic pathway” with suggestions to help the reader efficiently eliminate the most common causes of the problem. The differentials are complete and generally well-organized, and the diagnostic pathways provide a worthwhile list of actions that could help resolve or further elucidate the specific problem.

In both sections, the *Manual* presents a series of rational steps to address common problems in anesthesia. Clearly,

other approaches are possible, and not all steps presented in the *Manual* need to be followed to manage a particular crisis successfully. Indeed, variations in local and national practice patterns might reduce the utility of certain checklists. Furthermore, while the checklist format could be helpful in some circumstances, in others a (more) familiar algorithm from an established guideline might be of greater help.

Does this *Manual* belong on every anesthetic machine and crash cart in your department? While we would strongly recommend having some kind of reference material on hand in the OR, the specific answer to this question requires careful evaluation of staff preferences, local needs, and available alternatives. It is worth pointing out that a number of similar cognitive aids, in a variety of formats, are freely available for download; readers might also wish to consider them. Nevertheless, *The Anesthetic Crisis Manual* is a practical well-organized resource that provides a reasonable source of information for management of the most common emergencies in anesthesia.

**Conflicts of interest** None declared.