Is There a Gold Standard for Management of the Difficult Airway?

Carlos A. Artime, MD, Carin A. Hagberg, MD*

KEYWORDS

• Airway management • Algorithms • Difficult airway • Intubation • Practice guidelines

KEY POINTS

- The American Society of Anesthesiologists' (ASA) PRACTICE GUIDELINES FOR THE MANAGEMENT OF THE DIFFICULT AIRWAY are systematically developed using a comprehensive evaluation of the medical literature, opinion surveys, and critical review by expert consultants and opinion surveys from the ASA community at large.
- Several different national anesthesia societies (including the United Kingdom, Canada, France, Germany, and Italy) have published their own guidelines for managing the difficult airway that are based on literature reviews and expert opinion.
- No other specialties involved in airway management have produced their own guidelines for difficult airway management based on a systematic review of the literature.
- No evidence exists to support one set of guidelines over another as a gold standard.

INTRODUCTION

For the clinician involved in airway management, the difficult airway remains one of the most relevant and challenging clinical circumstances owing to the potentially grave implications of failing to establish a patent airway. Therefore, numerous practice guidelines have been developed to assist clinicians in managing the difficult airway; several algorithms have been devised to assimilate these guidelines into stepwise decision trees that a practitioner can use when faced with this clinical situation.

The concept of a gold standard in medicine dates back to 1979 and has since been used innumerable times in the literature.[1] Although a gold standard has been defined by some as an ultimate standard that is beyond reproach,[2] it is more commonly used to

Much of the content in this article has been reprinted from Berkow L, Sakles J (editors). Cases in emergency airway management. Cambridge, UK: Cambridge University Press, 2015 (in press).

Department of Anesthesiology, University of Texas Medical School at Houston, 6431 Fannin Street, MSB 5.020, Houston, TX 77030, USA
* Corresponding author.
E-mail address: carin.a.hagberg@uth.tmc.edu

Anesthesiology Clin 33 (2015) 233–240
http://dx.doi.org/10.1016/j.anclin.2015.02.011 **anesthesiology.theclinics.com**
1932-2275/15/$ – see front matter

describe the best available practice.[3] *Standards of care* refer to a minimum standard that can be expected from a medical practitioner in a given clinical situation. Most clinical gold standards are determined by large randomized controlled trials, systematic reviews, and meta-analyses. The nature of difficult airway management, however, does not provide a practical way of comparing different guidelines or algorithms. This article reviews several different guidelines and algorithms and the evidence supporting them.

THE AMERICAN SOCIETY OF ANESTHESIOLOGISTS' PRACTICE GUIDELINES FOR MANAGEMENT OF THE DIFFICULT AIRWAY

In 1990, the American Society of Anesthesiologists (ASA) formed the Task Force on Management of the Difficult Airway in response to an analysis of the ASA's Closed Claims database that showed that adverse respiratory events were responsible for a plurality of settled or awarded claims related to unfavorable anesthetic outcomes and that death or hypoxic brain damage occurred in most such cases.[4]

The product of that task force was the ASA's 1993 "Practice Guidelines for Management of the Difficult Airway," which sought to "facilitate the management of the difficult airway and reduce the likelihood of adverse outcomes."[5] These guidelines delineated recommendations for evaluation of the airway, basic preparation for difficult airway management, and a strategy for intubating the difficult airway centered on a difficult airway algorithm (DAA). The practice guidelines have since undergone 2 revisions: first in 2003, which, among other changes, incorporated the use of the laryngeal mask airway (LMA) into the algorithm, and most recently in 2013.[6] Among the most recent modifications are the replacement of LMA with supraglottic airway (SGA) to reflect the growing number of SGAs available in clinical practice and the addition of video-assisted laryngoscopy (VAL) as both an initial approach to intubation (awake or following induction of general anesthesia) and after failed intubation when face mask or SGA ventilation is adequate.

The ASA's practice guidelines are systematically developed using a comprehensive evaluation of the medical literature, opinion surveys and critical review by expert consultants, and opinion surveys from the ASA community at large. Evidence from original studies published in peer-reviewed journals was aggregated and systematically reported by the strength and quality of the research design and study findings.

A prominent focus of the ASA's practice guidelines is the formation of organized, preplanned strategies for airway management, including a preemptive evaluation of the airway intended to detect a potentially difficult airway ahead of time. Advanced recognition enables the practitioner to formulate a specific management plan for patients and provides an opportunity to secure the airway before induction of general anesthesia (ie, awake intubation). The likelihood of difficulty with one or more of the following should be assessed: patient cooperation or consent, mask ventilation, SGA placement, laryngoscopy, intubation, and surgical airway access.

The ASA's DAA (**Fig. 1**) is the practice guidelines' recommended strategy for intubation of the difficult airway. It begins with a consideration of the relative clinical merits and feasibility of 4 basic management choices: (1) awake intubation versus intubation after induction of general anesthesia, (2) noninvasive versus invasive techniques (ie, surgical or percutaneous airway) for the initial approach to intubation, (3) VAL as an initial approach to intubation, and (4) preservation versus ablation of spontaneous ventilation.

The ASA's DAA can seem confusing at first glance because it does not follow a linear decision-making tree, as the advanced cardiovascular life support algorithms do. However, it can be better understood and remembered by considering it as 3 separate scenarios: (1) predicted difficult airway (awake intubation), (2) difficult intubation