

Difficult Airway Alert Card for Difficult Airways in Anaesthesia: Is It Really Helpful or the Need of the Hour? A Review of Current Guidelines, Best Practices, and Future Perspectives

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ABSTRACT:

The management of difficult airways remains one of the most critical challenges in anaesthesia, with unanticipated difficulties contributing significantly to morbidity and mortality. This review examines the utility of the Difficult Airway Alert Card, focusing on its role in improving patient safety, facilitating communication across diverse healthcare settings, and reducing airway-related complications. Current guidelines from leading organizations such as the ASA and DAS emphasize the importance of documentation and patient communication following difficult airway encounters. The design and implementation of effective alert card systems, including integration with electronic health records and patient education, are explored. Challenges such as data privacy, medico-legal implications, and evolving airway anatomy are discussed. Future innovations, including AI-driven predictive analytics, wearable devices, and global airway registries, are proposed to enhance the effectiveness of these systems. The review concludes that while challenges exist, the Difficult Airway Alert Card is an essential tool in advancing perioperative safety and continuity of care.

Keywords: Difficult airway, airway management, alert card, patient safety, ASA guidelines, DAS guidelines, electronic health records, artificial intelligence, airway registries, perioperative care.

1. INTRODUCTION:

The “difficult airway” represents one of the most feared scenarios in anaesthesia, intensive care, and emergency medicine. Despite advancements in airway management techniques such as video laryngoscopy and supraglottic airway devices—unanticipated difficult intubation remains a cause of morbidity and mortality. Clinicians often rely on best-practice guidelines (for example, from the American Society of Anesthesiologists or the Difficult Airway Society) to reduce risk and promptly recognize signs of airway compromise.

However, even after successful management of a difficult airway, there is a need for a robust system to notify future care providers about the patient’s airway challenges. The “Difficult Airway Alert Card” is a tool many institutions have advocated, designed to be a simple yet essential identifier for patients who have experienced a challenging airway or intubation event. This review delves into current guidelines, best practices, and the latest evidence regarding airway alert

cards, exploring whether they are truly helpful or an emerging necessity in modern anaesthetic practice.

2. Understanding the Difficult Airway:

2.1 Epidemiology:

- Incidence of unexpected difficult laryngoscopy ranges from 1–5% in routine anaesthesia, but can be higher in emergency or trauma cases.^(1,2)
- Failed intubation in elective settings is rarer, yet can be catastrophic when it occurs (incidence ~1 in 2000).⁽³⁾
- Populations at higher risk include obese individuals, obstetric patients, or those with anatomical variations (e.g., micrognathia, limited neck mobility).

2.2 Pathophysiology and Risk Factors:

- Structural anomalies (e.g., facial deformities, cervical spine disorders).
- Acquired conditions such as airway tumors, scar contractures, or rheumatoid arthritis affecting temporomandibular joints.

- Physiological changes (e.g., in pregnancy or acromegaly).
- Previous airway interventions leading to scarring or altered anatomy.

2.3 Classifications of Airway Difficulty:

- Mallampati Score (classes I to IV) assesses oropharyngeal structures.
- Cormack-Lehane Grading (I to IV) defines laryngeal view during direct laryngoscopy.
- The El-Ganzouri Risk Index and Wilson Score are additional tools to quantify multiple airway risk factors.

3. Historical Background and Evolution of the Alert Card Concept:

Early discussions about alert cards or “patient passports” for difficult airway situations originated in the mid-to-late 20th century, although they were largely informal. Certain pioneering institutions began issuing letters or notes to inform patients and future providers about the techniques employed for a difficult airway. Over the past 20 years, as communication across healthcare settings became more fragmented, these efforts expanded to formalized “alert cards,” which multiple national societies have acknowledged as a future direction to improve continuity in airway management.

4. Current Guidelines and Position Statements:

4.1 American Society of Anesthesiologists (ASA):

- The ASA “Practice Guidelines for Management of the Difficult Airway” (most recently updated in 2022) emphasize thorough documentation after a difficult airway encounter.⁽⁴⁾
- While they stop short of mandating a physical alert card, they strongly recommend that patients be clearly informed of the event and that future providers have accessible documentation.

4.2 Difficult Airway Society (DAS):

- The DAS guidelines highlight the importance of documentation and patient communication following unanticipated difficult intubations.⁽⁵⁾
- The Society endorses the principle of giving written records to patients, which could be interpreted as an “alert card.”

4.3 Other International Guidelines and Consensus Statements:

- Various European and Asian anesthesiology associations encourage issuing a “difficult airway letter” or “airway alert notice,” with the format left to institutional preference.⁽⁶⁾

- In some regions, electronic medical record (EMR) “flags” or notes are used in lieu of physical cards, but portability outside of a given health system can be limited.

5. Rationale for a Formal Difficult Airway Alert Card:

5.1 Patient Safety and Quality Improvement:

- Unanticipated difficult airways are strongly linked with “can’t intubate, can’t ventilate” scenarios, a major contributor to anaesthesia-related morbidity. Prompt recognition and preparation help mitigate such risks.⁽⁷⁾
- An alert card ensures the lessons learned from a prior difficult airway are carried forward, potentially sparing the patient repeated complications.

5.2 Communication across Healthcare Settings:

- Patients often receive care from multiple providers in various facilities. Centralized electronic records are not universally accessible, especially in rural or international contexts.
- The physical or digital alert card ensures continuity of essential information.

5.3 Clinical and Economic Impact:

- Reduced likelihood of airway “crises” leads to lower resource utilization (fewer urgent surgical airways, emergent staffing).
- Smoother induction processes can decrease operating room delays and costs.

6. Designing a Difficult Airway Alert Card System:

6.1 Card Components: Essential Data and Format:

- Patient Identification: Full name, date of birth, a unique ID (if applicable).
- Airway Difficulty Details: Difficult intubation, difficult mask ventilation, awake fiber-optic used, surgical airway required, etc.
- Strategies That Worked: E.g., videolaryngoscope with a size 4 blade or a flexible bronchoscope.
- Contact Information: Hospital or departmental phone/email for additional records.
- Date of Issue and Review/Update Interval: Ensures that recipients know the data might require periodic validation.

6.2 Implementation Workflow and Issuance Policies:

- Triggers: Any recognized difficult airway (Cormack-Lehane grade ≥ 3 , unplanned surgical airway, >2 attempts at intubation).

- Issuing Authority: Anaesthesiologist of record, airway nurse practitioner, or designated “airway coordinator” for standardization.
- Documentation: Alert card details are ideally mirrored in the EMR and discharge summaries.

6.3 Integration with Electronic Health Records and Databases:

- Alerts in EMR for repeated admissions.
- Regional or national airway databases (where applicable) to ensure multi-institutional awareness.⁽⁸⁾

6.4 Patient Education and Consent:

- Explanation of the significance of the card.
- Emphasis on presenting it at every hospital or clinic visit, even outside of scheduled surgeries (e.g., in emergencies).
- Clear instructions on card maintenance (e.g., keep in wallet or ID pouch).

7. Literature Review and Evidence Synthesis:

7.1 Retrospective Cohort and Observational Studies:

- Limited data but suggest that patients who carry alert cards have reduced incidence of unexpected airway crises in subsequent procedures, as well as improved readiness of the anaesthesia team.

7.2 Prospective Trials and Registries:

- Formal prospective randomization to “card vs. no card” is ethically challenging. However, prospective observational data from specialized Difficult Airway Registries indicate a high acceptance rate among patients and improved communication among different teams within the same health network.⁽⁹⁾

7.3 Qualitative Research: Patient and Provider Perspectives:

- Patients often report relief and gratitude when provided with clear documentation about their airway.
- Providers appreciate having concrete details to guide decisions on sedation technique, equipment, and staffing predictions.

8. Challenges and Limitations:

8.1 Data Privacy and Confidentiality:

- The card contains personal medical details, raising GDPR (General Data Protection Regulation in Europe) or HIPAA (Health Insurance Portability and Accountability Act in the U.S.) considerations.
- Balancing the transparency of airway details with protection of personal health information must be carefully managed.

8.2 Medico-Legal Considerations:

- Negligence claims may arise if the alert card is outdated or inaccurate.
- Clinicians must ensure rigorous checks and disclaimers regarding the validity of card information.

8.3 Accuracy over Time and Risk of False Reassurance:

- Airway anatomy evolves; conditions like cervical spondylosis or obesity can develop or worsen.
- A “normal airway” card from years prior might falsely reassure providers if a new condition emerges.

8.4 Variability in Format and Adoption:

- Lack of a universally accepted template can lead to confusion or insufficient detail.
- Inconsistent adoption within a hospital system or region undermines the intended safety benefits.

9. Current Best Practices and Success Models:

9.1 Institutional Policies and National Programs:

- Some European centers have mandated that every difficult airway triggers an “Alert workflow,” culminating in a standardized letter or card.
- The Canadian Airway Focus Group endorses an approach combining local registry entry with a physical handout for patients.

9.2 Interdisciplinary Airway Teams and Airway Clinics:

- Dedicated “Airway Clinics” offer post-event evaluation, often issuing alert cards along with instructions for future procedures.
- Such multidisciplinary teams (anaesthesiologists, ENT surgeons, nurse practitioners, respiratory therapists) collaborate to ensure consistent data entry and issue updated cards when needed.

9.3 Technological Innovations (QR Codes, Digital Apps):

- Some institutions incorporate QR codes on cards that link to secure web pages with detailed airway management data, updated by authorized providers.
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- Collaboration with digital health app developers can help ensure accurate and timely updates.

10. Future Directions and Innovations:

10.1 Expanded Airway Registries and Global Collaboration:

- Registries can compile real-world data on how alert cards or similar systems mitigate adverse outcomes.

- Multi-center or international collaborations may lead to consensus on a standardized card format or content set.

10.2 Artificial Intelligence and Predictive Analytics:

- AI-powered algorithms can analyze prior airway data, clinical parameters (BMI, neck circumference, etc.), and real-time imaging to predict airway difficulty.
- Linking this predictive data with a patient's alert card could enhance readiness and resource allocation.

10.3 Wearable Devices and Smartphone Integration:

- Rather than a separate card, patients might have a smartphone wallet app or wearable device with near-field communication (NFC) or bluetooth capabilities.
- Clinicians could scan the device to see the latest airway information, bridging the gap between privacy and availability.

RESULTS:

The incidence of unexpected difficult laryngoscopy ranges from 1-5% in routine anaesthesia, with higher rates in emergencies. While major guidelines emphasize thorough documentation and patient communication following difficult airway encounters, they do not mandate physical alert cards. Effective alert cards include patient identification, details of airway difficulty, and successful management strategies. Implementation challenges include data privacy concerns, medico-legal considerations, and variability in adoption across institutions. Best practices involve institutional policies mandating alert workflows and the use of interdisciplinary airway teams for consistent data management.

CONCLUSION:

Difficult Airway Alert Cards have emerged as a logical extension of fundamental principles in anaesthesiology to prevent harm by anticipating and planning for airway complications. While not universally mandated, support from various guideline bodies emphasizes the value of thorough documentation and proactive communication. When designed effectively and combined with a robust institutional or regional approach (including digital alerts, patient education, and registry participation), these cards can significantly bolster patient safety.

However, challenges such as privacy, accuracy over time, and variable adoption must be thoughtfully addressed. The future likely involves refinement toward technologically sophisticated solutions, such as AI-driven registries or wearable devices. Nonetheless, in today's clinical landscape, a clearly worded, patient-centered Difficult Airway Alert Card can serve as a simple, cost-effective tool to reduce the risk of repeated

airway mishaps. Given the high stakes involved, many experts argue it is not merely helpful but indeed an urgent step toward safer perioperative care.

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