



African Federation for Emergency Medicine
African Journal of Emergency Medicine

www.afjem.com
www.sciencedirect.com



ORIGINAL RESEARCH ARTICLES

The availability of alternative devices for the management of the difficult airway in public emergency centres in the Western Cape



La disponibilité de dispositifs alternatifs pour la gestion des voies respiratoires problématique dans des services des urgences publics dans la province du Cap Occidental

Willem J.L. Jooste, Daniël J. van Hoving *

Division of Emergency Medicine, Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa

Received 1 September 2014; revised 29 October 2014; accepted 12 November 2014; available online 7 January 2015

Introduction: The failed or difficult airway is a rare, but life-threatening situation. Alternative airway devices to direct laryngoscopy are essential aids to manage these scenarios successfully. The aim of this study was to determine which alternative airway devices are currently available in public emergency centres in the Western Cape Province, South Africa.

Methods: A cross sectional study was conducted in 15 emergency centres. Data regarding the availability of different classes of alternative airway devices were documented on a standardised data collection sheet by a single investigator via direct observation. Incomplete or non-functional equipment was classified as unavailable. Summary statistics were used to describe the data.

Results: Twenty-six different types of alternative airway devices were documented. Three centres (20%) had no alternative airway device. Five centres (33.3%) stocked only one device, three centres (20%) had two devices and four centres (26.7%) had more than two devices. Most centres ($n = 12$, 80%) stocked supraglottic airways (only one centre (6.7%) had paediatric sizes). Tracheal tube introducers were available in five centres (33.3%). Four centres (26.7%) had video-laryngoscopes, but none had optical laryngoscopes. Retroglottic devices and needle cricothyroidotomy equipment were available in two centres (13.3%). Although surgical cricothyroidotomy equipment was available, the equipment was widely dispersed and only three centres (20%) had pre-packed sets available. None of the specialised paediatric centres had needle cricothyroidotomy equipment readily available.

Discussion: The study demonstrated that Western Cape public emergency centres are currently inadequately stocked with regard to alternative airway devices. A guideline regarding the procurement and implementation of these devices is needed.

Introduction: Les voies respiratoires problématiques ou insuffisances respiratoires constituent une situation rare, mais potentiellement mortelle. Les dispositifs de gestion des voies respiratoires alternatifs destinés à guider les laryngoscopies sont des outils essentiels pour gérer ces scénarios avec succès. L'objectif de cette étude était de déterminer les dispositifs de gestion des voies respiratoires alternatifs actuellement disponibles dans des services des urgences publics dans la province du Cap Occidental, en Afrique du Sud.

Méthodes: Une étude transversale a été réalisée dans 15 services des urgences. Les données relatives à la disponibilité de différentes catégories de dispositifs de gestion des voies respiratoires alternatifs ont été documentées sur une fiche de collecte de données standardisées par un observateur unique, par observation directe. L'équipement incomplet ou qui ne fonctionnait pas a été classé comme non disponible. Des statistiques synthétiques ont été utilisées afin de décrire les données.

Résultats: Vingt-six types de dispositifs de gestion des voies respiratoires différents ont été rapportés. Trois services (20%) ne disposaient pas de dispositif de gestion des voies respiratoires alternatif. Cinq services (33, 3%) ne stockaient qu'un dispositif, trois services (20%) stockaient deux dispositifs et quatre services (26,7%) comptaient plus de deux dispositifs. La plupart des centres ($n = 12$, 80%) étaient dotés de dispositifs supraglottiques (seul un service (6, 7%) disposait de dispositifs en taille pédiatrique). Des aides à l'intubation étaient disponibles dans cinq services (33,3%). Quatre services (26, 7%) étaient dotés de vidéo-laryngoscopes, mais aucun ne disposait de laryngoscopes à fibre optique. Des dispositifs rétroglottiques et des aiguilles de cricothyroïdotomie étaient disponibles dans deux services (13, 3%). Bien que des dispositifs de cricothyroïdotomie chirurgicale étaient disponibles, ceux-ci n'étaient pas disponibles partout, et seuls trois services (20%) disposaient de kits préemballés à disposition. Aucun des services spécialisés en pédiatrie ne disposait de dispositif de cricothyroïdotomie facilement accessible.

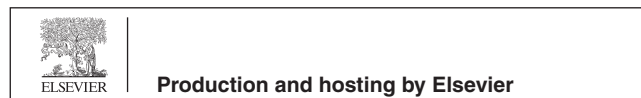
Discussion: L'étude a démontré que les services des urgences publics disposaient à l'heure actuelle de stocks inadéquats de dispositifs de gestion des voies aériennes alternatifs. Une directive concernant l'approvisionnement et la mise en service de ces dispositifs est nécessaire.

African relevance

- Managing a threatened airway is stressful without the necessary expertise.
- The availability of alternative ventilation and intubation devices are essential.
- Public Emergency centres often lack adequate alternative airway devices.

* Correspondence to Daniël J. van Hoving. nvhoving@sun.ac.za

Peer review under responsibility of African Federation for Emergency Medicine.



Introduction

Advanced airway management is indicated when a patient fails to protect his or her own airway. Failure to secure a threatened airway can have devastating consequences, leading to permanent neurological damage or even death. However, managing the threatened airway is not always a straightforward procedure and many factors come into play.

About 4% of patients will not be amenable to timely intubation via direct laryngoscopy due to the presence of a difficult airway, whilst 0.3% will have a failed airway.¹ Although a universal definition of the difficult airway is not used in published literature, it has been defined by the American Society of Anesthesiologists (ASA) as ‘the clinical situation in which a conventionally trained anaesthesiologist experiences difficulty with facemask ventilation of the upper airway, difficulty with tracheal intubation, or both’.² The concept of the failed airway is also included here and is defined by the ASA as the failure of endotracheal tube placement after multiple attempts.² In these situations, alternative devices to the endotracheal tube and laryngoscope to achieve intubation, as well as equipment other than the bag-valve-mask to ventilate the patient, become paramount in an attempt to avoid the dreaded ‘cannot ventilate, cannot intubate’ situation. A vast number of alternative devices, many in a plethora of subtly altered incarnations, are currently available. They act as facilitators of direct laryngoscopy, either as alternative ventilation devices or alternative intubation devices.

The NAP4 project, a prospective study that evaluated all major airway events that transpired in United Kingdom hospitals over a one year period, highlighted the concept that successful airway management in the emergency centre (EC) called for adequate training of staff (‘the right person’), an environment conducive to successful intubation (‘the right place’), adequate preparation as well as the right equipment.³ This equipment, including alternative airway equipment, should preferentially be standardised across a hospital, with a list of minimum equipment to be available in the EC to be standardised at a national level.³ In South Africa, the Emergency Medicine Society of South Africa (EMSSA) offers guidance to the management of the difficult airway through their published guidelines on rapid sequence intubation.⁴ According to these guidelines at least one alternative device for ventilation (Laryngeal Mask Airway (LMA) or Laryngeal Tube) should be available as a rescue airway device. Furthermore, equipment to establish a surgical airway (cricothyroidotomy set or percutaneous tracheostomy set) as definitive alternative intubation technique is mandatory equipment. Other alternative intubation techniques (video laryngoscopy, fibre-optic laryngoscopy, intubating LMAs and lighted stylets) are advocated if they are suited for the clinical scenario and if the expertise is available. The availability of such devices in a South African setting has not yet been studied. It is only through the establishment of the *status quo* that a potential shortage of alternative devices to aid in the management of the difficult airway can be illuminated. The need for intervention can subsequently be assessed and suitable recommendations can be made. This study aimed to determine the availability of alternative airway devices in public ECs in the Western Cape, South Africa.

Methods

A cross-sectional study was completed over a 12-day period (19 June to 30 June 2013). This study was approved by the Stellenbosch University Health Research Ethics Committee (S12/08/233).

The Western Cape Province covers an area of 129,370 km² and is home to approximately 5.3 million people; 78% relying on state health services.⁵ The City of Cape Town houses the biggest proportion of these inhabitants with an approximate citizenship of 3.5 million people.⁵ Health services in the public domain are provided by the Western Cape Provincial Department of Health and include 41 provincially aided or district hospitals, 5 regional hospitals and 3 tertiary hospitals.⁶ The tertiary hospitals (Groote Schuur Hospital, Tygerberg Hospital and Red Cross War Memorial Children’s Hospital) offer general as well as highly specialised services, the regional hospitals render services at a general specialist level, whilst the district hospitals function as specialist supported entities.⁵ Fifteen ECs in 11 hospitals in the Western Cape Province were sampled. The study included all three tertiary hospitals, four regional hospitals and four district hospitals (Table 1). One regional hospital (Mowbray Maternity Hospital) was excluded as it is a specialised Maternity and Neonatal hospital and does not have a general EC. The four district hospitals were included as these centres evaluate a high percentage of relatively ill patients and subsequently perform more endotracheal intubations compared to smaller district hospitals. Khayelitsha District Hospital, as well as Mitchell’s Plain District Hospital, opened after the study was commenced and were not included. The tertiary hospitals have separate ECs handling paediatric, surgical and medical emergencies. One of the tertiary hospitals (Red Cross War Memorial Children’s Hospital) is a paediatrics only facility, with separate medical and surgical ECs. The centres were all analysed individually.

A single data collector with knowledge regarding alternative airway devices collected all the data on a standardised data collection sheet (web appendix). Devices were categorised into: (1) Adjuncts to difficult intubation; (2) Alternative ventilation equipment; and (3) Alternative intubation equipment. Equipment that was not in a working condition or had missing parts was categorised as ‘unavailable’. Equipment that was used inappropriately, for example disposable tracheal tube introducers that were reused, were also classified as ‘unavailable’. Data were transferred to a password protected electronic spreadsheet (Microsoft Excel®, Microsoft Corporation, Redmond, WA).

Data were analysed using Microsoft Excel® (Microsoft Corporation, Redmond, WA) and summary statistics are presented.

Results

Twenty-six different types of alternative airway devices were documented. Five ECs (19.2%) had one type of alternative airway device available, seven (26.9%) stocked at least two devices, whilst four ECs (26.7%) had more than two devices available. Three centres (20%), all situated in tertiary hospitals, had no alternative airway device available, whilst the best stocked EC (a regional hospital) had five different types of

Download English Version:

<https://daneshyari.com/en/article/3222647>

Download Persian Version:

<https://daneshyari.com/article/3222647>

[Daneshyari.com](https://daneshyari.com)