

DEVELOPMENT AND APPLICATION OF DIFFICULT AIRWAY ASSESSMENT SYSTEM TO IMPROVE MEDICAL QUALITY AND PATIENT SAFETY

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INTRODUCTION

To maintain the airway patency is very important especially in the cardiac arrest patients . If unsuccessful endotracheal intubation occurs, the patient may cause to be hypoxic ischemic encephalopathy or death. Early detection of patients with difficult airway can decrease the risk of endotracheal intubation and increase the patient survival rate . The aim of this project is to build the difficult airway assessment system for patients in hospital and to improve the medical quality and patient safety.

METHOD

From August 2020 to December 2022, the team of multiple professions included emergency department anesthesia department, chest medicine doctors, nurses, information technology and quality management department. We used the methods such as brainstorming, documentation review, continuous education and information technological system. Phase one: we set up 8 consistent assessment items for patients in hospital and encourage the medical staff to finish every patient's evaluation. Phase two: there were continuous educations for resident doctors, PGY doctors and professional nurses. Phase three : A comprehensive analysis had carried out through the case analysis of the supporting intubation by anesthesia department and comparing the data of prior difficult airway assessment to understand the actual implementation situation from December 2021 to September 2022.

2020/07

Form a cross-team task force

Which composed of emergency department, anesthesia department, respiratory and chest department, nursing department, specialist department, information department medical quality department and other departments required.

Consensus period

Planning and construction period

2020/08-2021/02

- ◆ Establish a difficult airway assessment
- ◆ Process Establish a difficult airway assessment system
- ◆ Procedure for Difficult Airway Assessment Process

2021/02-2021/04

- ◆ Manage teaching
- ◆ Courses Announcements of the whole hospital and related conference publicity

Publicity and education period

Fully online

2021/04/16



RESULTS

1. Cross-team taskforce will be formed on August 2020, which composed of emergency department, anesthesia department, respiratory and chest department, nursing department, specialist department, information department medical quality department and other departments required.
2. According to the relevant specialties, provide consistent evaluation standards that meet the requirements of the whole hospital, with a total of 9 items. After building the difficult airway evaluation system through information, it is set that each inpatient should be evaluated at least once, and the definition only needs to meet 1 of items which fit for difficult intubation. The system records the case of difficult airway, and the doctor activates the support mechanism according to the current emergence situation then to calls the intubation hotline.
3. Develop a difficult airway assessment process for outpatients, emergency and inpatients, and formulate regular standard operating procedures, which already be launched officially on April 2021.
4. Conduct physical education training courses gradually and continuous E-learning courses, which are stipulated as video courses for all Residents, PGYs and Specialist nurses, and they need to pass the test.
5. A comprehensive analysis had carried out through the case analysis of the supporting intubation by anesthesia department and comparing the data of prior difficult airway assessment to understand the actual implementation situation from December 2021 to September 2022.

Difficult airway assessment system

Difficult airway assessment project(EDA-u-fair)

The Department of Anesthesia provides consistent evaluation criteria that meet the requirements of the entire hospital according to the specialty, with a total of 1-9 items. If one of the items is met, it is a case of difficult intubation



Conduct education and training courses



PGY, resident physicians and specialist nurse are included in the compulsory training courses
The Department of Anesthesiology will teach in person, and in 2021, through actual case teaching, online courses will be launched later

Job title	Required number of trainees	Curriculum		Total Completion Rate (%)
		classroom teaching	e-learning	
Specialist Nurse	177	57%	43%	100%
Resident Physician	133	62%	38%	100%
PGY	41	90%	10%	100%

Announcements of the whole hospital and related conference publicity

Annotation analysis of various categories

(Table1)	Difficult Intubation	Totals of Patient	Specialist nurses note	No. of Patient	%	Evaluation
Determined by the Anesthetist	YES	169	YES	82	48.5%	Positive
	NO		NO	22	13.0%	False Negative
			YES	42	24.9%	False Positive
			NO	23	13.6%	Negative
(Table2)	Difficult Intubation	Totals of Patients	Visit staffs note	No. of Patient	%	Evaluation
Determined by the Anesthetist	YES	6	YES	3	50.0%	Positive
	NO		NO	1	16.7%	False Negative
			YES	0	0.0%	False Positive
			NO	2	33.3%	Negative
(Table3)	Difficult Intubation	Totals of Patients	Residents note	No. of Patient	%	Evaluation
Determined by the Anesthetist	YES	15	YES	3	33.3%	Positive
	NO		NO	3	20.0%	False Negative
			YES	1	6.7%	False Positive
			NO	6	40.0%	Negative
(Table4)	Difficult Intubation	Totals of Patients	PGYs note	No. of Patient	%	Evaluation
Determined by the Anesthetist	YES	5	YES	2	40.0%	Positive
	NO		NO	1	20.0%	False Negative
			YES	1	20.0%	False Positive
			NO	1	20.0%	Negative

CONCLUSIONS

From our results, we suggest that application of difficult airway assessment system is effective to improve the quality of medical care and patient safety. Continuous education programs can help us for accurate and early detection of patients with difficult airway.

Disclosure of Interest: None Declared

Keywords: Airway assessment system, patient safety, quality care