

REVIEW OF RE-INTUBATIONS IN A MIXED GENERAL AND NEUROSCIENCES UNIT AND THE DEVELOPMENT OF EXTUBATION CHECK LIST

Juuliana Hamzah, Antony N Thomas
Critical Care Unit, Salford Royal Hospital

Introduction

- Patients who require re-intubation are more likely to have prolonged ICU stays and to die in critical care [1].
- This may be a particular problem in patients with neurological disease [2].

Objectives

- To review the electronic intubation records in a mixed general and neurosciences unit to identify re-intubations in critical care.
- To identify patient factors, risk factors associated and any changes that could reduce the rate of re-intubation.

Methods

- All intubations are recorded using a structured note on our unit.
- The records between January 2019 and November 2020 were reviewed together with the patients' other electronic records.
- The numbers of critical care intubations per patient were calculated and the reasons for re-intubation were classified. (Table 1 and 2).
- Chi-squared tests were used to compare categorical data.

Results

- There were 3657 admissions for 3164 patients admitted in the study period.
- 367 (12%) died on the unit.
- 1525 (48%) had a neurological diagnosis.
- The mean APACHE 2 score was 11 (SD 6).
- We identified 455 intubations in 342 patients. Of these 342 patients, 81 (23%) had more than one intubation in critical care (2=53, 3=24, 4=4) (Table 1).

Number of intubations per patient in ICU	Number of patients	Total number of intubations
1	261	261
2	53	106
3	24	72
4	4	16
Total	342	455

Table 1. Number of critical care intubations per patient.

- Of the 261 patients with single intubation, 81 (31%) died (Chart 1) and 136 (52%) had a neurological disease of which 34 (25%) died (Chart 2).
- The corresponding figures for the 81 patients with multiple intubations were 24 (30%) deaths (Chart 1), 39 (48%) had a neurological diagnosis of whom 8 (21%) died (Chart 2).
- None of these findings was significantly different between the single and multiple intubation groups.
- 154 of the first intubations in critical care were documented as re-intubations, having had their primary intubations prior to admission.
- This gave a total of 256 re-intubations (56% of all intubations).
- Of the reasons for re-intubation, 181 (70%) had had a failed trial of extubation, 52 (20%) had had a tube obstruction or leak and only 10 (4%) had self-extubated (Table 2).
- 33 re-intubations in 28 patients had signs of laryngeal oedema (78% were females).

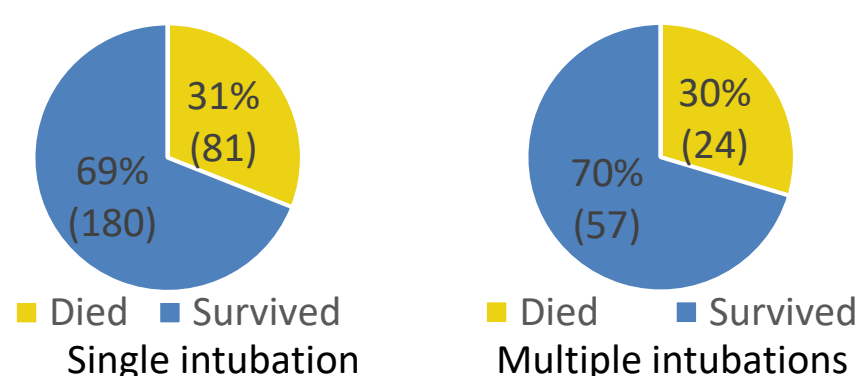


Chart 1. Mortality in patients who were intubated in the ICU.

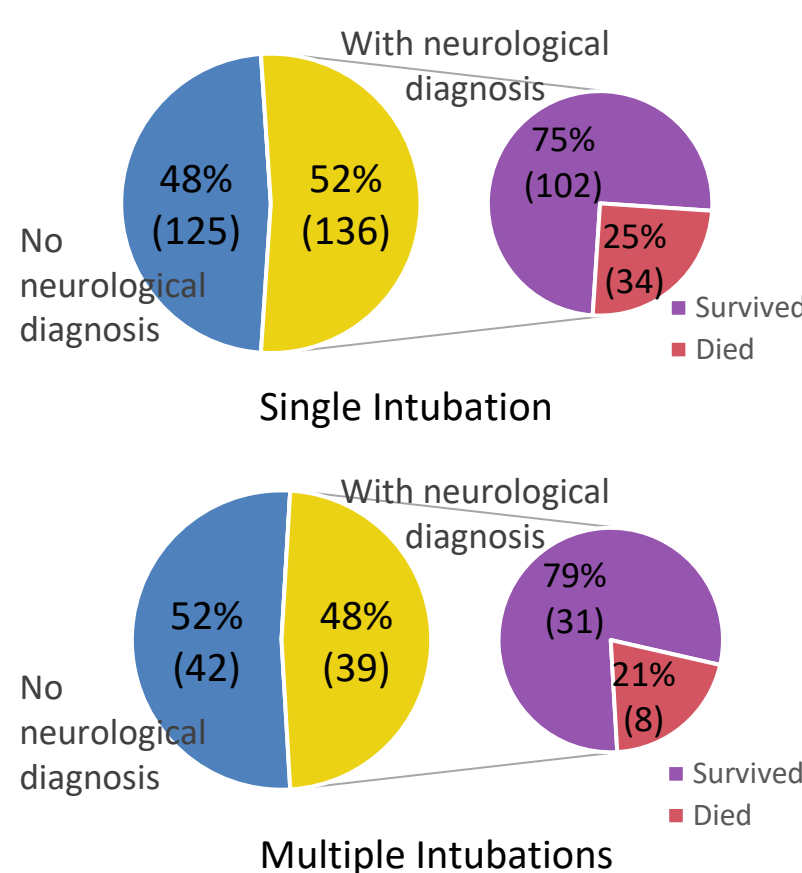


Chart 2. Neurological diagnosis and related mortality in the intubated patients.

Reasons for re-intubation	Number of re-intubation	Percentage (%)
Failed trial of extubation	181	70.7
ETT change for obstructed tube or leak	52	20.3
Self extubation	10	3.9
ETT dislodgement	6	2.3
To facilitate procedure (e.g. imaging, bronchoscopy)	5	2
Tracheostomy dislodgement	1	0.4
Failed tracheostomy tube change	1	0.4
Total	256	

Table 2. Reasons for re-intubation.

Conclusions

- On our unit, there was no difference in the mortality or the number of patients with a neurological diagnosis between patients who had had one or more than one intubation on the unit.
- Over half of all the intubations on our unit were re-intubations, most were associated with trials of extubation.
- To address this problem, we produced a checklist to facilitate best practices around trials of extubation (Figure 1) [3].

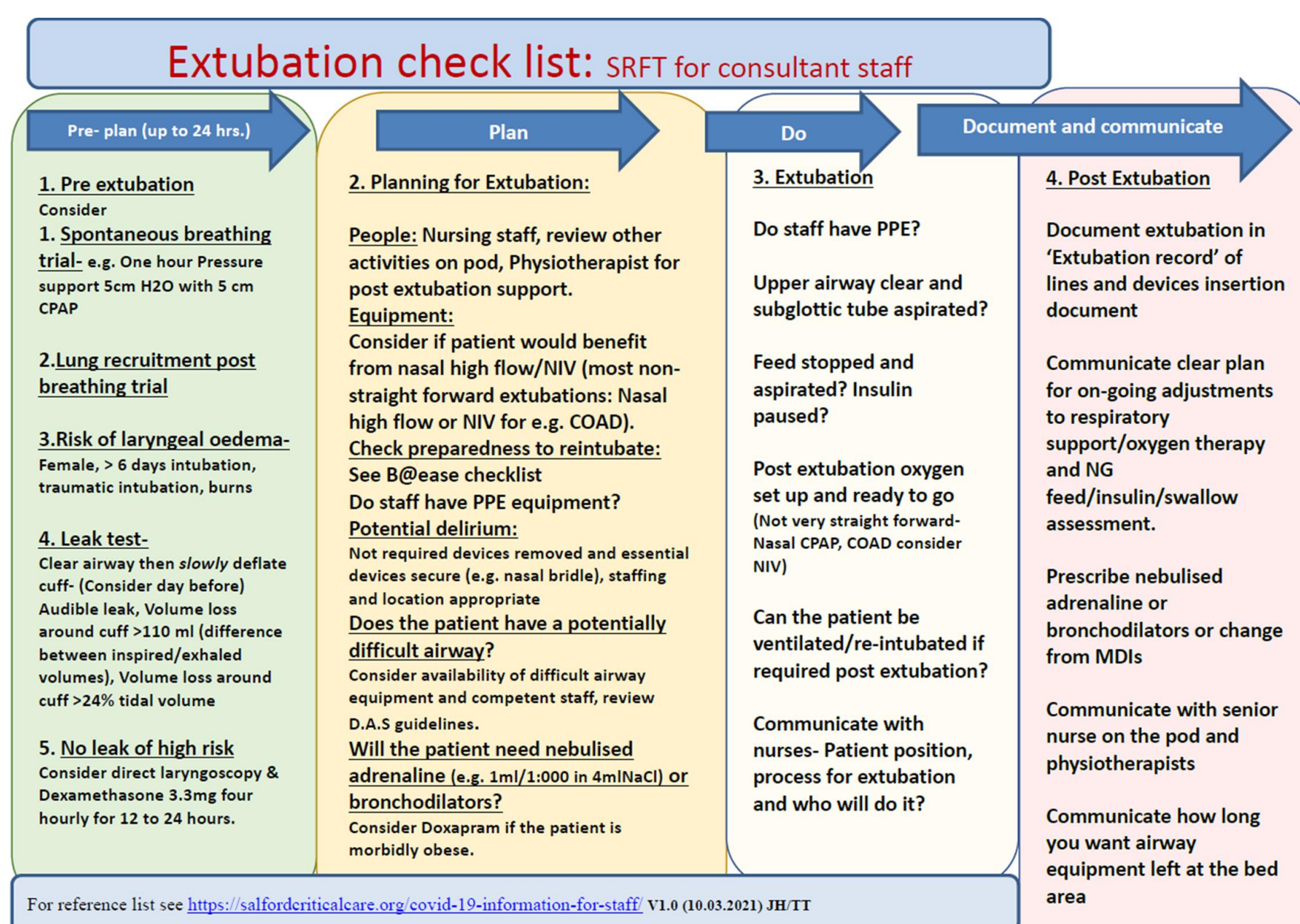


Figure 1. Extubation checklist

References

- Frutos-Vivar F, Esteban A, Apezteguia C, et al. Outcome of reintubated patients after scheduled extubation. J Crit Care. 2011;26(5):502–9.
- Godet T, Chabanne R, Marin J, et al. Extubation Failure in Brain-injured Patients. Anesthesiology. 2017 Jan 1;126(1):104–14.
- <https://salfordcriticalcare.org/extubation-checklist/>