

Table 2 Physiologic deterioration with first pass success vs first pass failure.

Physiologic deterioration	First pass success % (n)	First pass failure % (n)	%Difference (95% CI)
Hypoxaemia	4.5 (262)	27.1 (118)	-22.6 (-26.8 to -18.4)
Arterial hypotension	0.7 (39)	1.8 (8)	-1.1 (-2.4 to 0.1)
Cardiac arrest	0.2 (9)	1.4 (6)	-1.2 (-2.3 to -0.1)
Total patients*	5.2 (300)	28.0 (122)	-22.8 (-27.1 to -18.6)

*Patients may have more than one complication.

were excluded if they were <18 or >89 yr of age, or if they were hypoxaemic, hypotensive, or in cardiac arrest before intubation was attempted. Multivariable logistic regression was performed to evaluate the relationship between first pass failure and the occurrence of physiologic deterioration.

A total of 6247 patients were included in the analysis. Of these, 93.0% (n=5811) required one attempt, 5.7% (n=353) required two attempts, and 1.3% (n=83) required three or more attempts. Physiologic deterioration occurred in 5.2% of patients (n=300) who required one attempt, 26.9% of patients (n=95) who required two attempts, and 32.5% of patients (n=27) who required three or more attempts (Table 2). In the multivariable logistic regression analysis, first pass failure was associated with an increased risk of physiologic deterioration (adjusted odds ratio [aOR], 5.7; 95% confidence interval [CI], 4.4–7.4).

In this study of prehospital intubations by an aeromedical service, first pass failure was associated with a marked increase in the risk of physiologic deterioration. To maximise patient safety during prehospital intubation, every effort should be made to optimise conditions for first pass success.

Benefits of positive pressure ventilation for preoxygenation before rapid sequence intubation are dependent upon oxygenation status

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Positive pressure ventilation (PPV) has been advocated before rapid-sequence intubation (RSI). However, the risk of aspiration owing to gastric insufflation may outweigh the preoxygenation benefits in normoxaemic patients.

An observational study of air medical RSI patients was conducted over a 2-yr period. Waiver of informed consent was granted by the Institutional Review Board. Flight crews were instructed to perform preoxygenation, potentially including the use of PPV, to target SpO₂ values ≥93%. A computerised quality review form was completed immediately after all patients encountered involving advanced airway management. For this analysis, patients receiving PPV were compared with those not receiving PPV with regard to rates of first attempt intubation success without desaturation (FASWD) and reported aspiration events. Patients in whom SpO₂ ≥93% was achieved with passive oxygenation were analysed separately from those in whom SpO₂ values remained <93% despite passive oxygenation.

A total of 9778 RSI patients were included in this analysis. A total of 8966 (92%) were successfully intubated on the first attempt, and a total of 8775 (90%) were intubated successfully

on the FASWD. A total of 8435 patients (86%) achieved normoxaemia (SpO₂ ≥93%) with passive oxygenation alone; the use of PPV was associated with decreased intubation success and an increase in aspiration events. A total of 1343 patients (14%) remained hypoxaemic (SpO₂ <93%) with passive oxygenation alone; the use of PPV was associated with increased intubation success without a statistically significant increase in aspiration (Table 3).

Use of PPV for preoxygenation before RSI appears to be beneficial for patients with persistent hypoxemia (SpO₂ <93%) despite passive oxygenation. However, PPV appears to increase aspiration risk without improving intubation success for patients in whom normoxaemia (SpO₂ ≥93%) can be achieved with passive oxygenation alone. These data suggest that PPV use should be limited to patients with persistent hypoxaemia despite passive oxygenation.

Table 3 Effects of positive pressure ventilation in the presence of persistent hypoxaemia; comparison with normoxaemia

Passive O ₂ result	Parameter	PPV	No PPV	P-value
Normoxaemia (n=8435)	n	4118	4317	–
	Pre-PPV SpO ₂ (%)	97.6	97.0	NS
	FASWD (%)	89.0	93.0	<0.001
	Aspiration (%)	0.9	0.5	0.022
Hypoxaemia (n=1343)	n	1227	116	–
	Pre-PPV SpO ₂ (%)	81.2	83.8	NS
	FASWD (%)	84.0	75.9	0.036
	Aspiration (%)	2.8	1.7	NS

Second victim response in anaesthesiologists after difficult airway management: an international survey

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Airway management has a direct impact on patient experience and outcome but when difficulties occur, the practitioner may experience mental and physical health problems, known as a 'second victim' response. Little is known about the