

# Comparing Intubation Airway Barrier Devices Using a Simulated Airway Task Trainer

Sara Toulouie, Abha Sathe, Anna Thiemann, David Lindars, Dr. Seth Ackuayi MD, Dr. Veena Devarakonda MD, Dr. Nathan Stuempfig DO, Dr. Gerin River MD, Dr. Nur-Ain Nadir MD. MEHP. FACEP. California Northstate University, College of Medicine | Kaiser Permanente Central Valley Area | Department of Emergency Medicine, Kaiser Permanente Central Valley



## Background

With the lack of FDA-approved protection barriers and inadequate access to PPE during the SARS-CoV 2 pandemic, clinicians have been compelled to improvise protective barriers during aerosol-generating procedures (AGPs). In this study, we compare the utility of three different airway barrier devices made from plastic drapes, PVC, or fiberglass using a simulated airway task trainer.

## Methods

Anesthesia and Emergency Medicine faculty participated in training sessions with devices made from plastic drapes, PVC, or fiberglass. Time to device setup, first pass intubation, and first bag mask ventilation was calculated. The average time to complete the procedure was compared for each barrier setup for 10 experienced airway practitioners. Participant feedback detailing the unique experiences with each device was transcribed. Four weeks after the training, a survey was circulated to compare the utility of each barrier device setup.

## Average times to Barrier Device Set Up

Barrier Device Type	Plastic Drape		PVC Cube with Plastic Drape		Fiberglass Box	
	Direct	Indirect	Direct	Indirect	Direct	Indirect
Average Time (s)						
Device setup	32	30	42	39	10	9
1 <sup>st</sup> pass intubation	46	39	46	41	57	52
BVM	49	42	48	42	63	65

**Table 1.** First-pass intubation and BVM with direct and indirect laryngoscopy for three suggested intubation barrier devices.

## Acknowledgements

We would like to thank the KP CVA CEPI department for supporting this program.

## Results

Of the 67 total participants, 60% felt more comfortable with direct laryngoscopy (DL) while 97% preferred the indirect or video laryngoscopy (VL) intervention for COVID-19 positive or Patient Under Investigation (PUI) patients. Respondents generally preferred a plain clear plastic drape or clear plastic drape with the PVC cube for both DL and VL set up. Another 40% of respondents indicated that performance of VL or DL was perceived to be more difficult with the rigid fiberglass box. There was no statistically significant difference between time to set up for each barrier device. The survey results indicated a preference for the PVC cube with drape, the clear plastic drape for indirect laryngoscopy, and the clear fiberglass box for DL. The preference for DL and the clear fiberglass box correlated with participants who did not traditionally train with VL.

## Conclusion

With minimal training, a majority of clinicians preferred the PVC cube with drape or the clear plastic drape for indirect laryngoscopy and direct laryngoscopy. The preference for direct laryngoscopy and the clear fiberglass box correlated with participants who did not traditionally train with video laryngoscopy. This information will help guide recommendations on usage of barrier devices during AGPs with COVID-19 patients and can be applied in training future healthcare professional on emergent intubations in high stress situations.