# IMPROVED SEDATION CAPNOGRAPHY AND ENHANCED PATIENT SAFETY FOR SEDATION ANESTHESIA
## THE CASE FOR A UNIVERSAL CAPNOGRAPHY ADAPTER

Michael Jach, MD, Cardiac Anesthesiologist, Suburban Hospital, Division of Johns Hopkins HealthCare

JOHNS HOPKINS MEDICINE


## ABSTRACT

**Current state of monitoring in the USA: there is a widespread practice of improvisation due to lack of appropriate equipment for sedation capnography. It is estimated that in 30% of cases capnography is either absent or deficient.**

Below are three case reports making the case for a universal capnography adapter to enable capnography off multiple commonly used airway products. Each case demonstrates that the application of a universal capnography adapter meets clinical monitoring standards in situations where specialty airways are not available. A universal capnography adapter advances diagnostic capnography for multiple airway products used for procedural sedation and directly impacts patient safety.


## BACKGROUND

**The American Society of Anesthesiologists has strict safety mandates for sedation capnography.**

*" During regional anesthesia (with no sedation) or local anesthesia (with no sedation), the adequacy of ventilation shall be evaluated by continual observation of qualitative clinical signs. During moderate or deep sedation, the adequacy of ventilation shall be evaluated by continual observation of qualitative clinical signs and monitoring for the presence of exhaled carbon dioxide unless precluded or invalidated by the nature of the patient, procedure, or equipment. "*

*ASA Mandate 3.2.4*

## LEARNING OBJECTIVES

1. Study the feasibility of a universal capnography adapter to advance diagnostic capnography for procedural sedation.
2. Establish a quick method of enabling capnography off pre-existing airway products.

### CASE 1:

85 year old male undergoing TAVR for critical aortic stenosis. Multiple comorbidities including CKD,COPD and CHF.

**ANESTHESIA:** Total intravenous anesthesia with Propofol infusion.

**AIRWAY:** Natural airway with non-rebreather face mask for oxygen supplementation.

**CAPNOGRAPHY:** universal capnography airway adapter applied to side perforations on mask.

**OUTCOME:** Full compliance with ASA monitoring standards for sedation capnography.

### CASE 2:

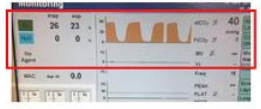
33 year old male for right inguinal hernia repair.

**ANESTHESIA:** local infiltration anesthesia with intravenous sedation.

**AIRWAY:** natural with nasal cannula for oxygen supplementation and carbon dioxide sampling for capnography. Patient required placement of oropharyngeal airway to relieve airway obstruction.

**CAPNOGRAPHY:** universal capnography adapter applied to Guedel airway with transfer of nasal cannula to oropharyngeal airway

**OUTCOME:** adequate oxygenation and high quality capnography tracing. Full compliance with ASA monitoring standards for sedation capnography.



### CASE 3:

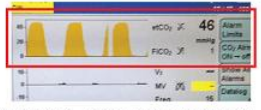
66 year old female undergoing transesophageal echocardiography.

**ANESTHESIA:** intravenous sedation.

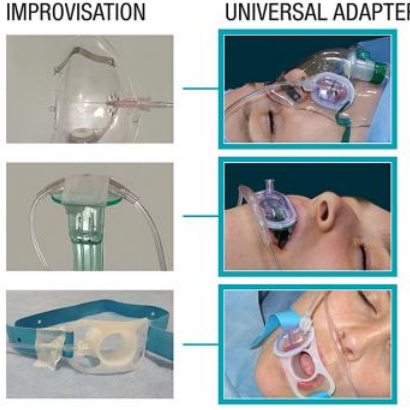
**AIRWAY:** natural airway with protective bite block.

**CAPNOGRAPHY:** nasal capnography tracing degraded; rescue capnography achieved by applying universal adapter to side aperture of bite block.

**OUTCOME:** successful capnography off bite block application. Full compliance with ASA monitoring standards for sedation capnography.



## CURRENT STATE OF AFFAIRS




## CONCLUSIONS

A universal capnography adapter is a viable method to enable capnography off multiple commonly used airway products. It represents a significant diagnostic advance superseding the current practice of improvisation for procedural sedation. A universal adapter can rapidly convert multiple airway products to capnography capable products for enhanced patient safety

## CONTACT AND DISCLOSURE

Michael Jach, MD
Department Anesthesiology, Suburban Hospital
Clinical Consultant for Jada Medical LLC
Mjach1@jhmi.edu