

48. **Fact or fiction: the patient cannot spontaneously breathe via the bag valve mask apparatus**

Anil Arekapudi* MD (Trainee), Elia Rackovsky** and Suzanne Karan*** MD

*Resident, ** Research Assistant, ***Associate Professor

Department of Anesthesiology, University of Rochester School of Medicine and Dentistry, Rochester, NY

Email: Suzanne_Karan@URMC.Rochester.edu

Introduction:

While the use of a bag valve mask (BVM) apparatus is common practice, there are varied opinions about whether patients can spontaneously breathe via this apparatus without any assistance. This prompted us to survey our departments and others' knowledge regarding the use of the BVM and to examine the different BVMs to elucidate any differences.

Methods:

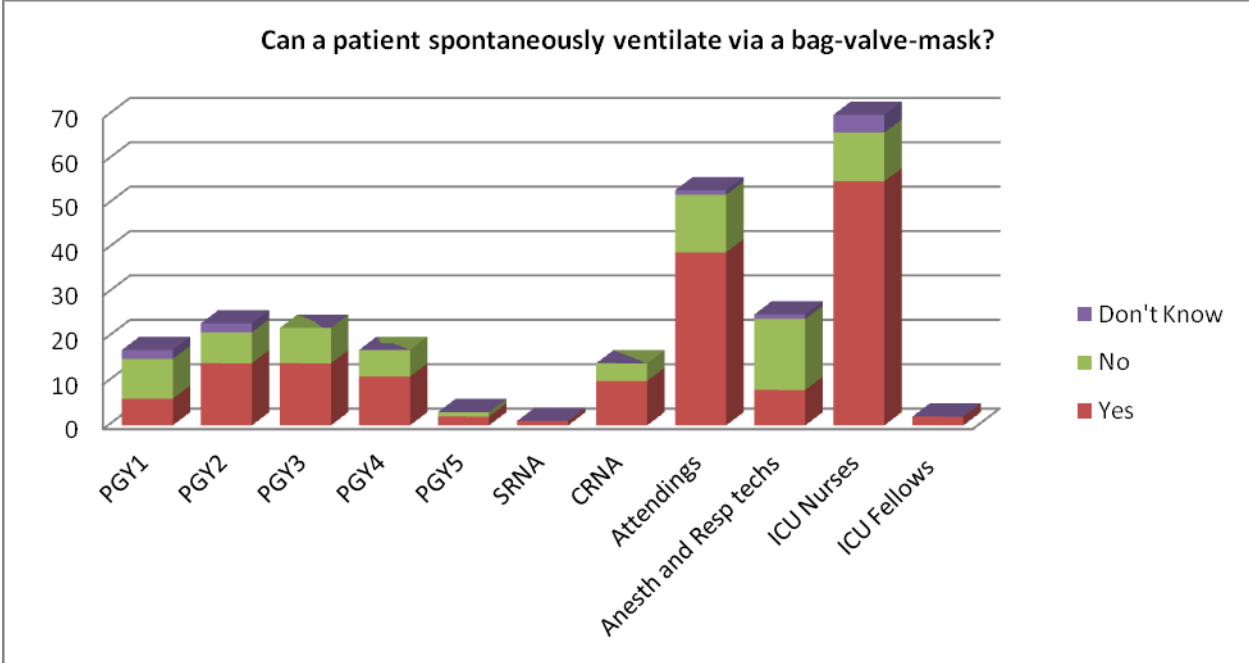
We surveyed a variety of BVM users regarding whether patients can breathe spontaneously via this apparatus. In addition, utilizing our METI human patient simulator®, we compared three BVMs (Ambu Spur II®, Vital Signs®, Mercury Medical®). Data was collected for at least 15 tidal volume breaths at 5 and 10 liters/minute using a facemask attached to each of the BVMs. The fraction of end tidal oxygen (ETO₂) concentration was measured after each breath.

Results:

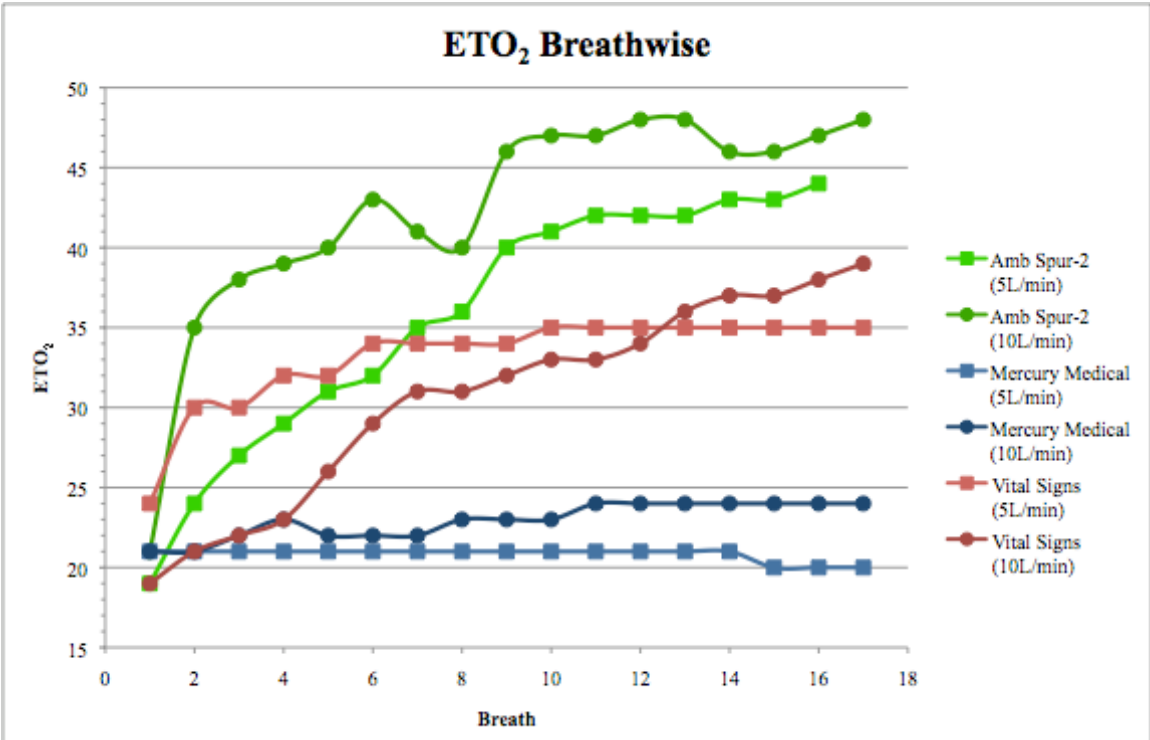
The survey indicated broad disagreement over whether patients can spontaneously breathe via the BVM (see Graph 1). The resulting ETO₂ of each breath are plotted (see Graph 2) and demonstrate that the Mercury Medical BVM produces significantly lower ETO₂ than the other two BVMs during spontaneous ventilation.

Conclusion:

Not all BVMs are alike in allowing a simulated patient to effectively ventilate/oxygenate spontaneously. The differences in the BVMs are due to the presence of the disk valve (Ambu, Vital Signs) versus the duck-billed valve (Mercury Medical). Users of BVMs need to be aware of the different valves present in each device for an understanding of the possible limitation during spontaneous ventilating patients.



Graph 1. BVM user responses to question of whether spontaneous ventilation is possible with the BVM.



Graph 2. Difference in ETO₂ concentration by type of BVM and flow of oxygen used.