

# DETERMINING THE STATIC LUNG COMPLIANCE OF THE LAERDAL® SIMMAN SIMULATOR



University of Pittsburgh  
University of Pittsburgh Medical Center

William McIvor, John W. Lutz, Thomas Dongilli, John J. Schaefer III

University of Pittsburgh Medical Center (UPMC),  
Peter M. Winter Institute for Simulation Education and Research (WISER) Pittsburgh, PA 15261



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## BACKGROUND

### Background:

The anesthesiology department of the University of Pittsburgh School of Medicine uses mannequin-based human simulation to complement the education of medical students and physicians. Bag-mask ventilation is one of the skills practiced on the simulator. In order to better understand the haptic experience of facemask ventilating the simulator, and to provide a basis for determining the minute ventilation being delivered during a simulation exercise, the static compliance of SimMan's lungs was measured.

## MATERIALS & METHODS

### Materials and Methods:

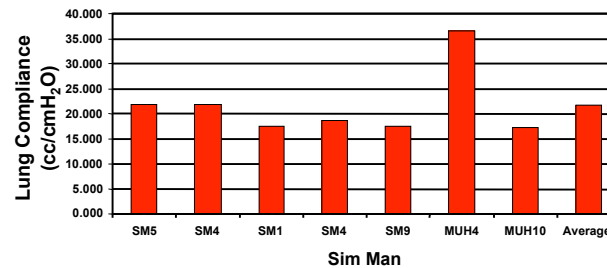
Static compliance was measured in seven Laerdal® SimMan human simulators. The simulators' tracheas were intubated with 8.0 mm endotracheal tubes. Known volumes between 200 to 900 ml of air at 100ml increments were slowly pushed into the lungs from a calibrated 1000ml syringe with a pressure gauge attached. None of the simulator's lungs were airtight; therefore pressure readings were made immediately after slow, steady insufflation. Each pressure measurement was performed three times.

## RESULTS

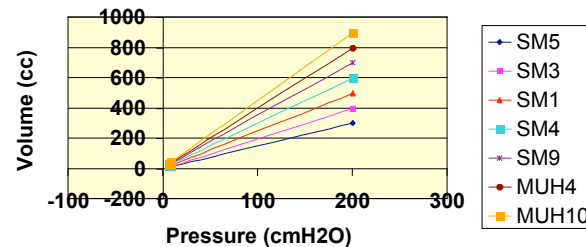
### Results:

The average static lung compliance of the simulators was 21.62-ml/cmH<sub>2</sub>O +/- 6.90, with a range of 17.56-ml/cmH<sub>2</sub>O - 36.62-ml/cmH<sub>2</sub>O.

Lung Compliance Sim Man



Volume Pressure Curves Sim Man



## CONCLUSION

### Conclusion:

The static lung compliance of Sim Man is about 22 ml/cmH<sub>2</sub>O, which compares to reported normal human values of about 100 ml/cmH<sub>2</sub>O.

## REFERENCES

### References:

1. Using Mannequin-Based Human Simulation during the Third-Year Medical Student Clerkship in Perioperative Medicine, 2002 International Meeting on Medical Simulation  
William McIvor
2. Berne RM, Levy MN, Koeppen BM, Stanton, BA. Physiology. 5th ed. St. Louis: Mosby; 2004.