

Non-Invasive Doppler Blood pressure monitoring in the Monoplace Hyperbaric Chamber, Reviewed. Weaver LK, Bell JE, Medina, T, Laveder T Hyperbaric Medicine Department & Clinical Engineering, LDS Hospital Salt Lake City, UT and Intermountain Medical Center, Murray, UT

INTRODUCTION/ BACKGROUND: Blood pressure (BP) measured non-invasively (NIBP) may need to be monitored during hyperbaric oxygen (HBO₂) therapy in the monoplace chamber. The Oscillomate 1630 , used for NIBP during monoplace HBO₂ therapy is not available. The use of an ultrasonic Doppler device for NIBP monitoring in the monoplace was published in 1991,¹ and will be described.

MATERIALS AND METHODS: Ultrasound wiring from a Parks Medical Electronics, model 811-B, 9 mghz ultrasound, adult flat probe and luer-lock pressure tubing was inserted through, and caulked within, the bore of a 4-inch length of 3/8th OD copper pipe conduit. This assembly can then be passed through the chamber hatch via a standard Sechrist intravenous pass-through fitting. Radial or brachial arterial blood flow is detected by the ultrasound probe taped into position over the artery. The systolic NIBP is measured by inflating a standard BP cuff with a hospital oxygen flow meter, while observing the sphygmomanometer located inside the chamber. The cuff pressure relief valve is adjusted slightly open permitting the cuff to deflate automatically when the oxygen flow from the flow meter is reduced. The systolic NIBP is recorded when the first flow sound is heard during deflation.

RESULTS: The NFPA allows only physiological and communications leads inside the class B chamber. This device meets the NFPA 99, 2005 edition requirements. This device can be assembled inexpensively and safely with commonly available supplies.

SUMMARY / CONCLUSIONS: This method has been used to obtain NIBP at the LDS Hospital for 20 years with no mishaps. We suggest this is a viable alternative for patients needing NIBP monitoring.

1. Weaver LK, Howe S. Non-Invasive Doppler Blood Pressure Monitoring in the Monoplace Hyperbaric Chamber. J Clin Monit 1991;7(4):304-308.