

Non-Invasive Doppler Blood Pressure Monitoring in the Monoplace Hyperbaric Chamber

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INTRODUCTION

- Some patients may need to have blood pressure (BP) measured non-invasively (NIBP) during hyperbaric oxygen (HBO₂) therapy in the monoplace chamber:
 - ✓ Unstable BP with no arterial line
 - ✓ Intravenous narcotics
 - ✓ Hypo/hypertensive
 - ✓ Clinical status (i.e., carbon monoxide poisoning, complaints of dizziness)

INTRODUCTION

- Oscillomate 1630¹ no longer available; alternate device will be discussed
- Previously we described using a Doppler for NIBP during monoplace HBO₂ therapy²



¹Meyer GW, Hart GB, Strauss MB. Noninvasive blood pressure monitoring in the hyperbaric monoplace chambers: a new technique. *J Hyperb Med* 1990;4(4):211-216.
²Weaver LK, Howe S. Non-Invasive Doppler Blood Pressure Monitoring in the Monoplace Hyperbaric Chamber. *J Clin Monit* 1991;7(4):304-308.

MATERIALS AND METHODS

- Parks Medical Electronics (811-B, 9 MHz)
- Adult flat probe and luer-lock pressure tubing
- Inserted through the bore of a 4" length copper pipe (3/8" OD, caulked inside)
- Standard Sechrist intravenous pass-through fitting



MATERIALS AND METHODS

- Radial or brachial arterial blood flow detected by ultrasound probe
 - Tape into position
- Sphygmomanometer inside the chamber



MATERIALS AND METHODS

- Adjust cuff pressure relief valve partially open
 - Secure valve to permit cuff to deflate automatically
- Inflate standard BP cuff with a hospital O₂ flow meter until doppler detection of flow has ceased plus 10 mmHg
- Record systolic BP when first flow sound is heard during deflation



Results

- NFPA 99 chapter 20 limits are met:
 - Only physiological/communications leads inside class B chambers
 - Electrical limits (class B) 28 V and 0.5 w
 - Temperature limits of 60°C

CAVEATS

- It is possible to pressurize the cuff too quickly
- Consider using a pediatric flow meter
- Consider adding a check valve, pressure relief valve set at 220 mmHg



CONCLUSIONS

- This method has been used to obtain NIBP at the LDS Hospital for 20 years.
- We suggest this is a viable alternative for patients needing NIBP monitoring.