

## NAPCRG 52nd Annual Meeting — Abstracts of Completed Research 2024.

**Submission Id:** 7034

### **Title**

*The T-Connector Approach: a simultaneous method for in-office assessment of home blood pressure monitor accuracy*

### **Priority 1 (Research Category)**

Hypertension

### **Presenters**

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### **Abstract**

Context: Hypertension Canada recommends home blood pressure monitors (HBPM) for diagnosing and managing hypertension. However, 29% of HBPMs are inaccurate by 10 mmHg or more. This makes determining HBPM accuracy of great clinical importance, but there is no established method of doing so in the office. Serial blood pressure (BP) measurements can be attempted, but a large number is needed to rule out transient changes in BP. Objective: To introduce the novel approach of using a T-Connector between a patient's HBPM and their physician's office sphygmomanometer to permit a simultaneous blood pressure reading. Study Design: 89 participants had the accuracy of their personal HBPMs assessed by 1) a family physician using our T-Connector Approach and 2) the gold standard method called Dual Observer Auscultation, which involves 2 physicians alternating between the HBPM and a mercury manometer for 9 readings. Setting: Kaye Edmonton Clinic Family Medicine Clinic and a hypertension research lab. Population: Adults who own a HBPM. Instrument: The T-Connector Approach uses latex tubing, a plastic barbed tee piece, and a metal connector from the primary care clinic (the piece used to switch blood pressure cuffs) to connect a patient's HBPM to their physician's office sphygmomanometer. Outcome Measures: an inaccurate HBPM was defined as providing a blood pressure reading  $\geq 10$  mmHg different than the T-Connector or dual observer auscultation methods. We primarily compared the ability of the T-Connector to detect inaccurate monitors compared to the dual observer auscultation (DOA) gold standard method. Results: Compared to DOA, the T-Connector's assessment of HBPM error was an average of 2.97 mmHg lower, 95% limits of agreement were -10.72 to 16.65 mmHg, and the intraclass correlation coefficient (ICC) was 0.47. Sensitivity and specificity for detecting an inaccurate monitor were 0.33 and 0.97 respectively, with a positive predictive value (PPV) of 0.75, and a negative predictive value (NPV) of 0.85. Cohen's kappa was 0.39. Conclusion: Based on the Cohen's kappa of 0.39 (fair agreement), PPV of 0.75, and NPV of 0.85 there appears to be reasonable utility for using a T-Connector to qualitatively declare a HBPM to be inaccurate for its user. However, the

sensitivity was low (0.33) and the ICC being  $<0.5$  indicates poor agreement for quantitative assessment of the mmHg of error.

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