A modified blood pressure monitoring device and hand-held ECG devices are more accurate than pulse palpitation in detecting undiagnosed atrial fibrillation in a family practice setting, a study from the University of Oxford has found.

Using the hand-held devices could reduce the need for 12-lead ECGs, which take up clinical time, suggested study author Dr. Matthew Thompson, formerly co-director of the Oxford Centre for Monitoring and Diagnosis in Primary Care (MaDOx) and now professor and vice-chair for research in the department of family medicine at the University of Washington in Seattle.

The Oxford study involved 1,000 patients age 75 years and older in six U.K. primary-care practices. All patients were screened for atrial fibrillation (AF) by one of nine nurses and then each of three devices, followed by a 12-lead ECG. All ECGs were read by cardiologists blinded to the patients’ diagnosis. The three devices studied were:

- WatchBP, an electronic blood pressure monitor with a light that flashes if it detects AF;
Dr. Thompson

- Omron HeartScan, a single-lead ECG monitor that gives an instant ECG reading and stores it for later study; and

- Merlin, a wristwatch ECG device that records a single-lead ECG to be looked at later.

While 110 participants already had a diagnosis of AF, only 67 were exhibiting AF at the time of the appointment. Another 12 cases were detected during the study.

All of the methods used to detect AF had sensitivities in the 90% range, showing all are useful in ruling out AF.

When it came to detecting AF, the nurses were able to do so using pulse palpitation with a specificity of 86.1% in all patients. In cases of undiagnosed AF, the nurses were able to detect it with a high sensitivity but the specificity was 78.3%. In contrast, the WatchBP had a specificity of 89.7%. When the cardiologists read the ECG from the Omron and Merlin ECG recorders they had specificity scores similar to the WatchBP, at 94.6% and 90.1%, respectively.

The benefit of the WatchBP over the hand-held ECG devices is it does not require the skill of reading ECGs. However, while the sensitivity and specificity of the WatchBP look encouraging, Dr. Thompson warned that based on these results, for every 100 patients there will be one true positive diagnosis of AF and another 10 false positives. With this threat of false positives, “what is not clear is how often you should screen people.”

A Canadian study has also shown a hand-held single-lead ECG device is superior to pulse palpitation in detecting AF. Researchers used the HeartCheck hand-held ECG—manufactured by Canadian company CardioComm Solutions, Inc.—to screen 1,334 people for AF. Only 12 of 28 ECG-confirmed cases of AF were detected by pulse palpitation. The study, by Dr. Karl Boyle and colleagues at the University of Toronto, was presented at the 2013 Canadian Cardiovascular Congress.

**Availability**

Automatic blood pressure monitors with arrhythmia detection similar to the WatchBP are available to consumers and physicians in Canada. Hand-held ECG devices can be purchased online in Canada, although many have not received Health Canada approval. CardioComm’s HeartCheck PEN was recently approved by Health Canada and comes with a service where ECGs can be read by a cardiologist at a call centre.

The Oxford group has reviewed 14 hand-held ECG devices for detecting AF in primary-care practices. Their report was published in July 2013 at [madox.org](http://madox.org).