# The Use of a Modified Sphygmomanometer to Detect Atrial Fibrillation in Outpatients

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*This study was designed to assess the accuracy of a modified sphygmomanometer, that measures pulse irregularity, to detect atrial fibrillation (AF). An irregularity index, defined as the standard deviation of the time intervals between beats divided by the mean of the time intervals, was used to analyze standard 12-lead ECGs from hospitalized patients. A threshold irregularity index was selected such that all ECGs with AF exceeded this irregularity index value. A modified automatic blood pressure monitor was designed to detect AF by calculating the irregularity index of the pulse. The device was used to calculate the irregularity index in an unselected group of outpatients during scheduled office visits in which a standard 12-lead ECG was performed. A total of 125 ECGs, 53 with AF, were analyzed. Using a threshold irregularity index of 0.066, the sensitivity for detecting AF was 100%, the specificity was 92% and diagnostic accuracy 95%. A modified sphygmomanometer was used to analyze the pulse of 450 outpatients, 54 of whom were documented by ECG to be in AF. When paired readings were analyzed, the rhythm was considered to be irregular if both readings were greater than the threshold index. Using a threshold index of 0.06, all the AF patients were correctly identified while 37 non-AF patients also exceeded the threshold irregularity index. In this analysis, the sensitivity was 100%, the specificity 91%, and the diagnostic accuracy 92% for detecting AF. The irregularity index determined using a modified sphygmomanometer can accurately identify AF. (PACE 2004; 27:1–6)*