

## MPN-1

### Can Nurses master Pediatric Cardiac Auscultation following appropriate Teaching and Practice?

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#### Introduction

Pediatric cardiac auscultation (PCA) proficiency is a key clinical skill, fundamental for the efficiency of any pediatric cardiovascular disease (CVD) screening program and for a cost-effective use of pediatric cardiology services.

We aimed to test the hypothesis that non-medical personnel (nurse students) can also become masters of PCA following structured teaching

#### Methods

Pilot study, including two volunteer nurse students full attending a 3-month teaching program of PCA including attendance of 1) relevant e-learning material (videlectures) 2) interactive , multimedia-based PCA lectures and workshops for medical students, 3) weekly attendance of an academic pediatric cardiology outpatient clinic. Their PCA performance was assessed by 1) both students validating a series of recorded digital phonocardiograms representing innocent and abnormal murmurs, additional sounds (clicks, pericardial friction) and heart tone abnormalities (wide S2 split) 2) one student recording and interpreting digital phonocardiograms of 30 school children participating on a pediatric CVD screening program . Their performance was compared to that of 34 medical students attending the same teaching program (1) and against expert pediatric cardiologist, all validating the same digital phonocardiograms (2).

#### Results

1) Both nurse students had 100% sensitivity / 33% specificity to correctly differentiate abnormal from normal auscultatory findings (vs 98% / 65% average values for medical students). Their auscultation quality scores (composite score of several auscultation variables tested) were 8,7 and 7,8 ( vs 7,78 mean, 7,9 median value for medical students).

2) Comparing the nurse and the expert physician auscultation: Agreement was present in 18/30 validations (60%) including normal auscultation (n=10), innocent murmur (n= 6), abnormal murmur (n=1), abnormal extra sounds (n=1). Disagreement regarded a) detected only by expert: innocent murmur (n=4), abnormal murmur (n=1), abnormal extra sound (n=2). b) detected only by student: innocent murmur (n=3, no murmur by expert), abnormal murmur (n=1, innocent murmur by expert), additional sound (n=2, abnormal murmur in 1 case by expert).

#### Conclusions

Pediatric Cardiac Auscultation proficiency can be achieved also by non-physicians, including training nurses, following structured intensive teaching combining e-learning and practical exercise. The role of trained nurses supporting pediatric CVD screening programs, including cardiac auscultation, should be further investigated.