

Simulator training improves beginner's skills in performing echocardiography in congenital heart disease.

*Weidenbach M. (1), Wagner R. (1), Wild F. (1), Berlage T. (2), Razek V. (1)
Department of Paediatric Cardiology, Heart Center Leipzig, Leipzig, Germany (1)
Fraunhofer Institute for Applied Information Technology, St. Augustin, Germany (2)*

Objectives: Although simulator based training is increasingly used in medical training, there is paucity of studies proving its effectiveness. We have studied the effectiveness of our previously described simulator EchoCom for training echocardiography in congenital heart disease (CHD).

Methods: The simulator consists of a life-sized neonatal manikin, an electromagnetic tracking system and a computer application. The application is linked with a data base of 3-dimensional echocardiographic data sets of CHD. For the present study we have chosen a pre-/post-test design with nine pairs of data-sets. The first set was presented to 10 beginners in echocardiography without clinical information. Participants were asked to scan the data and come up with a presumed diagnosis. All participants underwent a structured simulator based echocardiography training session by an expert afterwards. After training the study was repeated using different data sets of identical lesions. Pre- and post-training results were compared to evaluate the effectiveness of simulator based training. **Results:** Post-training results were significantly better than pre-training results with number of correct diagnoses improving from a median of 3.1 to 8.3.

Conclusion: Simulator based training improves beginner's skills in echocardiography in CHD. We have not compared simulator based training with traditional learning like bed-side teaching or lectures. Bed-side teaching however is often impractical for hands-on training in critical lesions.