

## Teaching Functional Echocardiography for Non Cardiologists – Mission Possible

Eli Zalzstein<sup>1</sup>, Sergio Kobal<sup>2</sup>, Agi Golan<sup>3</sup>, Daniella Landau<sup>3</sup>, Oded Masner<sup>3</sup>, Kyla Marks<sup>3</sup>,  
Justin Richardson<sup>3</sup>, Eilon Shany<sup>3</sup>, Ehud Zmora<sup>3</sup>

<sup>1</sup> Pediatric Cardiology Unit, <sup>2</sup> Cardiology Department, <sup>3</sup> Neonatology Department, Soroka  
University Medical Center, Beer Sheva, Israel

**Background:** Although ultrasonography has been used by neonatologists for many years, the approach to cardiovascular assessment and monitoring remains suboptimal owing to an over reliance on poorly predictive clinical markers such as heart rate or capillary refill time. Bed-side functional echocardiography (BFE) enables real-time evaluation of cardiac function and systemic hemodynamics.

We have introduced the use of BFE in our neonatal intensive care unit by a short “hands on” teaching course to senior neonatologists.

**Method:** Seven neonatologists, divided into 3 study groups, were instructed by pediatric cardiologists during 6 sessions to perform BFE. The first and last sessions were frontal lectures. Four other sessions, lasting an average of 45 minutes, were “hands-on” sessions. Step-by-step "Alignment-Rotation-Tilting" (ART) maneuvers were used to study 5 basic echocardiography views: long axis, short axis, 4 chambers, sub-costal and “duct cut”.

**Results:** By the end of the course, all participants were able to perform all 5 views successfully. All neonatologists were able to perform BFE and evaluate 4 basic clinical situations: global function of the left ventricle, existence of a patent ductus arteriosus (PDA), measurement of ductal diameter and the direction of flow and evaluation of pericardial effusion.

**Conclusion:** BFE is a basic tool that can be easily mastered, and used by neonatologists to evaluate basic heart function and anatomy. We have shown that this mastery can be achieved by a short combined effort of dedicated pediatric cardiologists and enthusiastic neonatologists.