Title: Canadian echocardiography bootcamp for Adult Cardiology residency: A “low-tech” approach for the modern world

Authors: Michael Ruiz[1,2] MD MSc FRCPC, Claudia Frankfurter[2] MD FRCPC, Chi-Ming Chow[1,2] MD FRCPC

[1]St. Michael’s Hospital, Department of Cardiology, Toronto, Ontario, Canada
[2]Division of Cardiology, University of Toronto, Toronto, Ontario, Canada

ABSTRACT

Introduction: The transition from internal medicine to cardiology residency requires rapid skill acquisition and echocardiography is a key competency. We developed and implemented an echocardiography bootcamp for residents starting Adult Cardiology training, targeting skill improvement in image acquisition, knobology, and common pathology interpretation.
Methods: This bootcamp was delivered to ten first-year cardiology residents in their first month of Cardiology residency. It featured four sequential components: (1) a self-reviewed didactic YouTube video, (2) an in-person didactic lecture, (3) an in-person group scanning session with standardized patients, and (4) a group-based review session of common cardiac pathology. Self-reported surveys assessed previous exposure to echocardiography as well as comfort levels pre- and post-bootcamp.
Results: Prior echocardiography exposure through point-of-care ultrasonography (POCUS) was uniformly high among participants. This reflected baseline self-perceived comfort in common echocardiographic views, whereas comfort was poor in views not typically taught with POCUS. Post-bootcamp, improvements were most notable in the less familiar views, as well as with knobology and Doppler techniques. Participants rated hands-on teaching with sonographers as particularly beneficial and recommended increased scanning time and enhanced instruction on measurement techniques.
Conclusion: This bootcamp illustrates a pragmatic and scalable model beneficial for the early transition into Cardiology residency, relying on “low-tech” solutions such as a focused curriculum and the utilization of scanning time with standardized patients. This model can foster enhanced preparedness and resident comfort, with a potential to standardize introductory echocardiography education within and across residency programs.

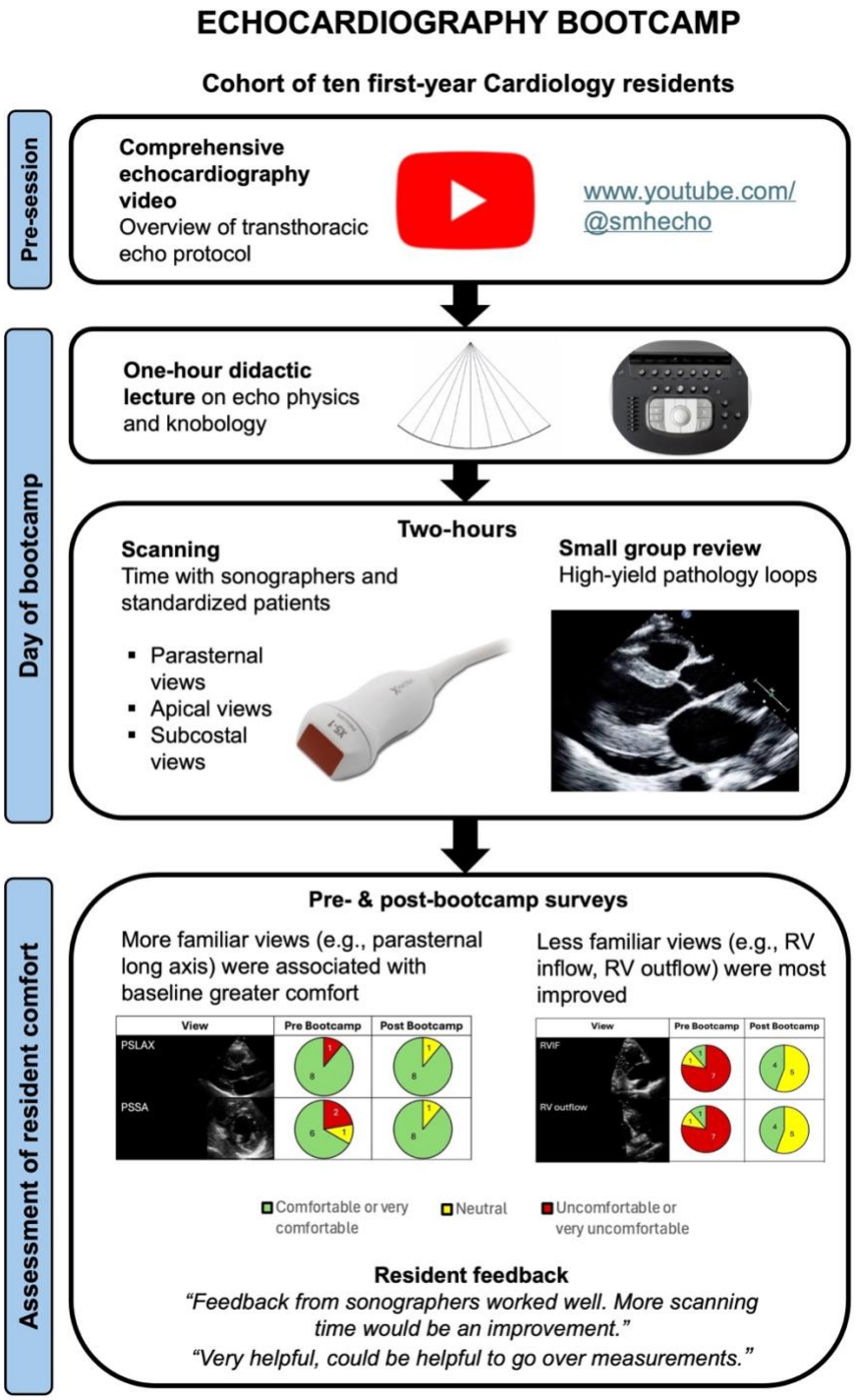

Figure 1. Graphical abstract for the echocardiography bootcamp. A "low-tech" combination of a pre-session lecture, a didactic lecture on echocardiography physics and knobology, followed by scanning time with sonographers and reviewing of high-yield pathology loops led to greater resident comfort in echocardiographic image acquisition.