Reviewer's report

Title: The Utility of Pocket-Sized Echocardiography to Assess Left Ventricular Systolic Function Prior to Permanent Pacemaker Implantation

Authors: Lawrence Lau, BSca. email: umlau23@myumanitoba.ca Robin Ducas, MD. email: umducasr@cc.umanitoba.ca Jacques Rizkallah, MD. email: jacquesyr@yahoo.com Davinder S Jassal, MD. email: djassal@sbgh.mb.ca Colette M Seifer, MB. email: cmseifer@sbgh.mb.ca Institutions: aFaculty of Medicine, University of Manitoba, Winnipeg, Manitoba, Canada. bSection of Cardiology, Department of Internal Medicine, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba, Canada. Corresponding Author: Dr. Colette Seifer MB (Hons), FRCP (UK) Y3019 St Boniface Hospital Winnipeg, Manitoba, Canada R2H 2A6 phone: (204) 235-3826 fax: (204) 233-2157

Version: 2 Date: 19 January 2015

Reviewer: Lothar Faber

Reviewer's report:

This study aimed to determine whether pocket-sized echocardiography (PSE) with a hand-held device capable of producing 2-dimensional grey-scale anatomic and color-coded flow imaging but without a spectral Doppler output can be used by an inexperienced sonographer to adequately screen for significant left ventricular systolic dysfunction (LVD) in patients awaiting their first permanent pacemaker implantation.

To that purpose, a sonographic trainee (medical student) acquired images using PSE in 71 pacemaker candidates, which were then evaluated by an experienced cardiologist for both image quality and presence of LVD.

Interpretable images where LV ejection fraction could be adequately assessed were obtained in 93% of the patients.

The authors concluded that for patients receiving first-time pacemaker implantation, the use of PSE by a sonographic trainee combined with interpretation by an experienced imaging cardiologist is able to reliably triage for the need to perform standard transthoracic echocardiography.

This reviewer has two problems with this study:

Obviously the authors included a rather „healthy“ patient population: Only 8 patients (by the cardiologist’s judgement, table 3) or 10 (by the trainee’s judgement) had any degree of LV dysfunction, and even less (5/4) had significant LVD in the range where consequences like an ICD are to be contemplated. At the same time, the cardiologist judged 5 cases as uninterpretable. I find it difficult to draw meaningful conclusions out of this low number of „end points“.

Only a minority of cases (28/39%) had a standard echocardiography in addition to the PSE study within a reasonable time window. Concordance was 100/96% in
this subset with respect to EF estimation. Although not very likely, it can thus not be completely excluded that both trainee and cardiologist went wrong with their interpretation of the PSE images in the other 61% of cases. In a controlled study situation like this one, and before suggesting the use of PSE in less controlled areas, in this reviewer’s opinion there should be a ratio of PSE vs. standard echocardiography close to 1:1.

Overall suggestion: The authors should be encouraged to include more patients with LV dysfunction, and to perform more simultaneous standard echocardiographies.