

Provided for non-commercial research and education use.  
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>

that have routinely used CPET in patients with AAA related their data to outcomes through prospective, local or national registries then the vascular community might develop a greater understanding of its uses and limitations. Timbrell *et al.* highlighted the mention of CPET within the AAA Quality Improvement Program (AAAQIP) guidance.<sup>7</sup> We support these guidelines but this particular recommendation was based on expert opinion; the guidance does not cite a higher level of evidence to support the inclusion of CPET, and the lack of evidence surrounding the inclusion of CPET prompted the present systematic review. The review itself represents new evidence that might inform revisions to AAAQIP guidance.

At present, only 32% of UK hospitals have access to CPET,<sup>8</sup> CPET is not widely used outside the UK, and the predominance of Endovascular Aneurysm Repair has considerably changed the context for physiological risk-stratification of patients with AAA prior to surgery. Nonetheless, population data have suggested that non-invasive cardiac stress testing might confer benefit prior to elective non-cardiac surgery for the subgroup at high risk of peri-operative cardiac complications,<sup>9</sup> and these data illustrate that the role of CPET in vascular patients deserves focussed investigation. The clear potential of CPET to improve patient selection, optimisation and surgical outcome in vascular surgery remains in need of formal research.

## References

- 1 Schanzer A, Greenberg RK, Hevelone N, Robinson WP, Eslami MH, Goldberg RJ, et al. Predictors of abdominal aortic aneurysm sac enlargement after endovascular repair. *Circulation* 2011;**123**(24):2848–55.
- 2 Brown LC, Greenhalgh RM, Powell JT, Thompson SG. Use of baseline factors to predict complications and reinterventions after endovascular repair of abdominal aortic aneurysm. *Br J Surg* 2010;**97**(8):1207–17.
- 3 Patterson BO, Holt PJ, Hinchliffe R, Loftus IM, Thompson MM. Predicting risk in elective abdominal aortic aneurysm repair: a systematic review of current evidence. *Eur J Vasc Endovasc Surg* 2008;**36**(6):637–45.
- 4 Patterson BO, Holt PJ, Hinchliffe R, Nordon IM, Loftus IM, Thompson MM. Existing risk prediction methods for elective abdominal aortic aneurysm repair do not predict short-term outcome following endovascular repair. *J Vasc Surg* 2010;**52**(1):25–30.
- 5 Patterson BO, Karthikesalingam A, Hinchliffe RJ, Loftus IM, Thompson MM, Holt PJ. The Glasgow Aneurysm Score does not predict mortality after open abdominal aortic aneurysm in the era of endovascular aneurysm repair. *J Vasc Surg* 2011;**54**(2):353–7.
- 6 Grant SW, Grayson AD, Mitchell DC, McCollum CN. Evaluation of five risk prediction models for elective abdominal aortic aneurysm repair using the UK National Vascular Database. *Br J Surg* 2012;**99**(5):673–9.
- 7 *Framework for improving the results of elective AAA repair*. Vascular Society, available from: <http://www.vascularsociety.org.uk/library/quality-improvement.html>; 2009.
- 8 Huddart S, Young EL, Pradhu P. A national survey of CPET practice in the UK. In: *4th National Perioperative CPET Meeting*. London; 2011.
- 9 Wijeyesundera DN, Beattie WS, Austin PC, Hux JE, Laupacis A. Non-invasive cardiac stress testing before elective major non-cardiac surgery: population based cohort study. *BMJ* 2010;**340**:b5526.

E.L. Young

Department of Anaesthetics, Royal Surrey County Hospital,  
Guildford, UK

S. Huddart

Department of Anaesthetics, Royal Surrey County Hospital,  
Guildford, UK

R.P. Pearse

Centre for Translational Medicine and  
Therapeutics, Barts, UK

The London School of Medicine and Dentistry, London, UK

A. Karthikesalingam\*, R.J. Hinchliffe, I.M. Loftus, M.M. Thompson,  
P.J.E. Holt

St George's University of London and St George's  
Vascular Institute, London, UK

\*Corresponding author.

E-mail address: [alankarthi@googlemail.com](mailto:alankarthi@googlemail.com) (A. Karthikesalingam)

© 2012 European Society for Vascular Surgery. Published by Elsevier Ltd. All rights reserved.

<http://dx.doi.org/10.1016/j.ejvs.2012.05.024>

## CHIVA Effectiveness Score: The Correct One is Below

The article Validation of a New Duplex Derived Haemodynamic Effectiveness Score, the Saphenous Treatment Score, in Quantifying Varicose Vein Treatments by C.R. Lattimer *et al.* *EJVES* 43 (2012) 348–354 proposes: “Protagonists for saphenous conservation surgery (CHIVA) have the option to change the scoring by giving competency the improved score of 1 and occlusion a reduced score of 2. However, it is important that the order of precedence should remain the same with reflux prioritizing over occlusion and occlusion prioritizing over competency”. A CHIVA procedure disconnects and diverts shunts thereby fractionating the blood columns. Saphenous reflux is not a failure provided there is an effective disconnection. This can be confirmed using Valsalva manoeuvre when the reflux is no longer increased or triggered. This is because the saphenous vein is no longer overloaded by inflow from the deep veins. Reflux in this setting represents an outflow drainage path. The same principle applies to reflux in saphenous tributaries and other areas of detectable reflux. These refluxing flows occur because they are draining their physiological territories according to a physiological a “hierarchy” which occurs when the shunts are successfully corrected. Reverse flow in this situation should not be considered a failure. Occlusion is a failure because the CHIVA's purpose is conservative. So, failure occurs when there is an occlusion and also when the reflux can be induced by a Valsalva manoeuvre at the saphenofemoral junction, saphenous trunk or its tributaries. Success is represented by antegrade flow (competency) or Valsalva negative reflux in these areas.

C. Franceschi\*

Hôpital Saint Joseph, 185 rue Raymond Losserand,  
75014 Paris, France

\*Tel.: +33 687811610.

E-mail address: [claud.franceschi@wanadoo.fr](mailto:claud.franceschi@wanadoo.fr)

© 2012 European Society for Vascular Surgery. Published by Elsevier Ltd. All rights reserved.

<http://dx.doi.org/10.1016/j.ejvs.2012.06.027>

DOI of original article: 10.1016/j.ejvs.2012.07.006.