

LETTER

Long live dynamic parameters!

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See related viewpoint by Sondergaard, <http://ccforum.com/content/17/6/327>

In a recent article about pulse pressure variation (PPV), after 4 pages of physiologic explanations, Dr Sondergaard finally concluded that 'the subject is an exceptional demonstration of physiology but hardly guides the management of critically ill patients' [1]. If I agree with the first part of this statement (I and others spent years dissecting the complex physiology behind PPV), I strongly disagree with the second part of the sentence for three reasons, which are not opinions but facts.

First, PPV and stroke volume variation (SVV) are increasingly used to guide fluid therapy both in the operating theater and in ICUs. This was confirmed by published peer-reviewed surveys, showing that the use of dynamic parameters increased from 1% in 1998 [2] to 45% in 2012 [3]. If dynamic parameters were not clinically useful one can doubt clinicians would have embraced this concept as they did.

Second, PPV and SVV are today displayed on almost all bedside and hemodynamic monitors, next to other vital signs such as the heart rate, blood pressure and arterial oxygen saturation. If medical device industry has financial interests in doing this, it is not fool enough to make research and development investments on something caregivers do not value in their clinical practice.

Third, at least 10 randomized controlled trials have demonstrated that hemodynamic strategies based on PPV or SVV monitoring allow a significant reduction in post-surgical complications and hospital length of stay (Table 1).

So dynamic parameters are well alive and useful for improving patient outcome. Long live dynamic parameters!

Table 1 Randomized controlled trials demonstrating the ability of hemodynamic strategies based on pulse pressure variation or stroke volume variation monitoring to improve postsurgical outcome

Study	Surgical population	Hemodynamic goal	Clinical benefit
Benes and colleagues, 2010 [4]	Major abdominal	SW <10 %	Decrease in complications and hospital length of stay
Goepfert and colleagues, 2013 [5]	Cardiac	SW <10 %	Decrease in complications and ICU length of stay
Lopes and colleagues, 2007 [6]	Major abdominal	PPV <10 %	Decrease in complications and ICU and hospital length of stay
Mayer and colleagues, 2010 [7]	Major abdominal	SW <12 %	Decrease in complications and hospital length of stay
Ramsingh and colleagues, 2013 [8]	Major abdominal	SW <12 %	Faster return of gastrointestinal function and decrease in hospital length of stay
Salzwedel and colleagues, 2013 [9]	Major abdominal	PPV <10 %	Decrease in complications
Schereen and colleagues, 2013 [10]	Major abdominal	SW <10 %	Decrease in surgical site infections
Zhang and colleagues, 2012 [11]	Major abdominal	PPV <11 %	Faster return of gastrointestinal function and decrease in hospital length of stay
Zhang and colleagues, 2013 [12]	Thoracic	SW = 10 %	Decrease in complications and intubation time
Zheng and colleagues, 2013 [13]	Major abdominal	SW <12 %	Faster return of gastrointestinal function and decrease in ICU and hospital length of stay

PPV, pulse pressure variation; SVV, stroke volume variation.

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Abbreviations

PPV: Pulse pressure variation; SW: Stroke volume variation.

Competing interests

FM is a Vice-President, Global Medical Strategy, at Edwards Lifesciences. Of note, the above statements do not support the use of any specific medical device.

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