

# Peri-operative Value Card

## Front

**The importance of continuous blood pressure monitoring**

MAP < 65 mmHg (low perfusion pressure) may lead to tissue hypoxia. Associated complications might be:

- Stroke
- Acute kidney injury
- Infections
- Pulmonary complications
- Cardiac infarction

Intermittent measurement of the blood pressure bears the risk of missing phases of low pressure that should be avoided.\*\*

**Upgrade to continuous monitoring**

— BP sys — BP dia — MAP — BP measured intermittently

**Blood flow & fluid management**

- What does the displayed CI represent?
- Is this an adequate cardiac index (CI) for the individual patient?
- What could be the reason of this inadequate cardiac index?
- What would be the best individualized goal-directed therapy?
- Would my patient benefit from fluid loading or inotropic/vasoactive drug treatment?

**PULSION**  
Medical Systems
PulsioFlex

🕒 11:35 | 👤 180 cm 85 kg | 🌞 🔔 📶

Start

**AP** 140/80 **118 / 82** 100/65 **(93)** mmHg

**PR** 90/50 **85** 1/min **13:26** Next finger Change

**NIBP** 140/80 **116 / 75** 100/65 **(89)** mmHg

Calibration 0 h 2 min ago

CI

7.06  
4.03  
1.00

-15 min 11:35

CI Trend

8.0

**2.4** l/min/m<sup>2</sup>

2.0

Not calibrated

SVV

**12** %

🔌
👤
🔄

**Heart-lung interaction indicating fluid responsiveness**

**Inspiration**

- Increased intra-thoracic pressure and decreased venous return

**Expiration**

- Decreased intra-thoracic pressure and increased venous return

This effect is more pronounced in hypovolemic patients

**SVV > 10% → indicated fluid responsiveness**

$$\frac{SV_{max} - SV_{min}}{SV_{mean}} = \text{Stroke Volume Variation}$$

**Fluid responsiveness**

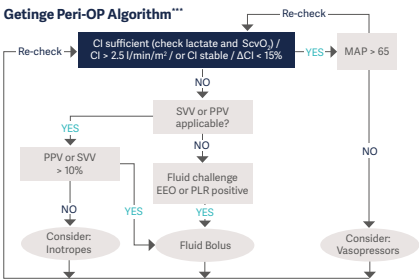
- What does the displayed SVV represent?
- Is the patient volume responsive?
- Is it necessary to verify the volume responsiveness by a volume test, e.g. fluid challenge?

Back

### Individual Patients Personalized Hemodynamic Management



GETINGE



|               |   |  |                    |  |
|---------------|---|--|--------------------|--|
| Blood Flow    | Flow  | Cardiac Index (Trend, Cal)   | CI                 | 3.0-5.0 l/min/m <sup>2</sup>                                 |
|               | Chronotropy                                 | Heart Rate/Pulse Rate  | HR/PR              | 60-100 1/min   |
| Stroke Volume | Stroke Volume Index (Output per heart beat) | SVI****  |                    | 40-60 ml/m <sup>2</sup>                                      |
|               | Preload                                     | Stroke Volume Variation (Dynamic fluid responsiveness)<br>Pulse Pressure Variation (Dynamic fluid responsiveness)            | SVV****<br>PPV**** | <10 %<br><10 %   |
| Contractility | Afterload                                   | Systemic Vascular Resistance Index (Resistance of vascular system)<br>Mean Arterial Pressure                                 | SVRI<br>MAP        | 1700-2400 dyn*cm <sup>-5</sup> m <sup>2</sup><br>70-105 mmHg |
|               | Contractility                               | Left Ventricular Contractility (Increase of arterial pressure over time)<br>Cardiac Power Index (Global cardiac performance) | dPmax<br>CPI       | Trend info - mmHg/s<br>0.5-0.7 W/m <sup>2</sup>              |

This information is intended for an international audience outside the US and does not replace any individual therapeutic decision of the treating physician. Indications, contraindications, warnings and instructions for use are listed in the separate instructions for use. NICCI is only available for CE countries and may be pending regulatory approvals to be marketed in your country.

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\*\*\* Developed by PULSION Medical Systems SE with experts from the medical advisory board

\*\*\*\* SVV and PPV are only applicable in fully ventilated patients with a tidal volume ≥ 8 ml/kg PBW (predicted body weight) and without cardiac arrhythmia

**NOTE:**  
PULSION Medical Systems is a medical device manufacturer and does not practice medicine. PULSION does not recommend these values for use on a specific patient.

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\* Walsh M, Kurz A, Turan A, et al. Relationship between intra-operative mean arterial pressure and clinical outcomes after noncardiac surgery. *Anesthesiology*, 2013;119(3):507-515.

\*\* Nicklas J, Beckmann D, Killat J et al. Continuous noninvasive arterial blood pressure monitoring using the vascular unloading technology during complex gastrointestinal endoscopy: a prospective observational study. *J Clin Monit Comput*. 2018;33(1):25-30.

The values shown on the front page are based on a constructed patient case.