Perfusion Index (PI)

What is PI?

- Perfusion Index, or PI, is a relative assessment of the pulse strength at the monitoring site.
- PI display ranges from .02% (very weak pulse strength) to 20% (very strong pulse strength).
- Perfusion Index is a numerical value that indicates the strength of the IR (infrared) signal returning from the monitoring site.
- The LED-based Masimo pulse oximeters such as Rad-5 and Rad-5v display PI as the Pulse Amplitude Index (PAI) where the height of the bar represents the pulse strength. Low PAI is indicated by the lower two bar segments turning red.
- PI is a relative number and varies between monitoring sites and from patient to patient, as physiologic conditions vary.

How do I use PI in a clinical setting?

- During sensor placement, use PI to quickly evaluate the appropriateness of an application site, looking for the site with the highest PI number.
- Placing the sensor at the site with the strongest pulse amplitude (highest PI number) improves performance during motion. Monitor the trend of the PI for changes in physiologic conditions.
- Changes in sympathetic nervous tone affect smooth muscle tone, thereby altering levels of perfusion.¹

How does PI work?

- The Masimo SET infrared signal is influenced primarily by the amount of blood at the monitoring site, not by the level of oxygenation in the blood.
- The ratio of AC (pulsatile) to DC (non-pulsatile) components of the IR (infrared) signal correspond to the pulsatile and the non-pulsatile amounts of blood.
- The relationship of the pulsatile to the non-pulsatile amounts of blood at any particular site corresponds to PI at that site.

Has PI been clinically validated?

- Preliminary data suggest high PI values correspond with health and low PI values with illness on neonates.²

References