

# FastSat®

## WHAT IS FASTSAT?

- FastSat enables rapid tracking of arterial oxygen saturation changes, making Masimo SET the highest fidelity pulse oximetry available today.<sup>1</sup>
- Rapid changes in arterial oxygen saturation are typically 'smoothed-out' by pulse oximeter averaging algorithms, yielding blunted readings. FastSat captures and reports these rapid oxygen saturation changes.

## WHEN DO I USE FASTSAT IN A CLINICAL SETTING?

- FastSat can be valuable during procedures when detecting rapid oxygen saturation changes is paramount:

### **Induction and intubation -**

Often during difficult intubations, clinicians need the fastest response possible in order to track oxygen desaturation. Likewise, clinicians want to see oxygen resaturation as soon as possible to assist in confirming proper tube placement.

### **Sleep studies -**

Pulse oximetry is a standard monitor used in the analysis and diagnosis of sleep-disordered breathing. The accurate measurement of transient desaturations is of hallmark importance for the diagnosis and treatment of sleep apnea. If a pulse oximeter does not have sufficient fidelity to accurately track rapid oxygen desaturations and resaturations, the severity of the disease may be misinterpreted. New Federal guidelines allow greater flexibility for patients with Sleep Apnea to be treated with CPAP when properly qualified. Patients qualify based upon a certain number of apneas and/or hypopneas per hour during an all night recording. Studies have shown that Masimo SET pulse oximetry has the highest fidelity in this setting. Other pulse oximeters often respond too slowly to measure the physiologic change.<sup>1-5</sup>

- FastSat can track breath-to-breath changes in arterial oxygen saturation and thus may be used to assess cyclical recruitment (CR) of atelectasis or ventilator-associated lung injury.<sup>6</sup>

## HAS FASTSAT BEEN CLINICALLY VALIDATED?

- Sleep researchers in adult, pediatric, and infant studies have shown that Masimo SET with FastSat outperforms other technologies in terms of detecting true desaturations and eliminating false desaturations. FastSat has been shown to capture more of the significant desaturations accompanying hypopneas in sleep-disordered breathing patients, thus allowing better diagnosis and qualification for treatment with CPAP.<sup>1-5</sup> The FastSat feature can be enabled in any averaging mode (e.g., 2, 4, 8, 13, or 16 seconds). For the highest fidelity, choose 2 second averaging time, which automatically enables FastSat.

## HOW DOES FASTSAT WORK?

- Traditional averaging simply takes the value of each data point, adds them together, and divides by the number of data points in the set. While this delivers a "smoothing" effect when saturation values are changing quickly, traditional averaging can create what appears to be a time delay in the reporting of actual saturation values.
- With Masimo SET technology, each saturation value stored has an associated signal quality weighting. The better the signal quality, the greater the weight.
- When enabled, FastSat instructs the averaging algorithm to evaluate all the saturation values, taking into account the weighting and timing, yielding an 'intelligent' averaged saturation value that is more representative of the patient's current oxygenation, especially when saturation values are rapidly changing.

## REFERENCES

1. Brouillette RT, Lavergne J, Leimanis A, Nixon GM, Laden S, McGregor CD. Differences in pulse oximetry technology can affect detection of sleep disorders in children. *Anesthesia and Analgesia* 2002; 94:S47-S53.
2. Kopotic RJ, Petterson MT. Comparison of pulse oximeter fidelity in tracking rapid changes in oxygen saturation. *Anesthesia and Analgesia* 2002; 94:S104(A9).
3. Whitman RA. Comparison of the new Masimo SET V3 technology with a conventional pulse oximeter during polysomnography. *Sleep* 2001;24:A412.
4. Whitman RA, Garrison ME, Oestrich TJ. Influence of pulse oximeter technology on hypopnea diagnosis using the newly proposed definition of a respiratory hypopnea. *Sleep* 2002; 25:A509(727. R).
5. Whitman RA, Garrison ME, Oestreich TJ. Comparison between two oximeter technologies in the detection of desaturation during polysomnography. *Respiratory Care*; 2002;47(9):1088.
6. Syring RS, Otto CM, Campbell V, Baumgardner JE. Respiratory Variations in SpO<sub>2</sub> with a Fast Pulse Oximeter. *Anesthesiology* 2003;99:A375 ([www.asa-abstracts.com](http://www.asa-abstracts.com)).