## Overview of
SatScreen's Pattern-based Report Indicators

SatScreen is a new generation of SPO2 analysis software which detects and quantifies relational patterns to assist the physician in interpretation.

SatScreen's pattern based reports use high resolution pulse oximetry to offer a more accurate and in depth look at a patient's respiratory stability. SatScreen provides valuable information to help physicians to screen for a number of sleep-related breathing disorders, such as OSA, Hypoventilation syndrome, & Cheyne-Stokes Respiration.

The graphical outputs are provided in both compressed and expanded form. The front overview page divides the report into pattern based and traditional outputs. Pattern based outputs are summarized in a succinct set of bar graphs where green indicates areas which are usually normal, and red areas indicate moderate to severely high values (see below).

Sample SatScreen Summary View of Normal Values
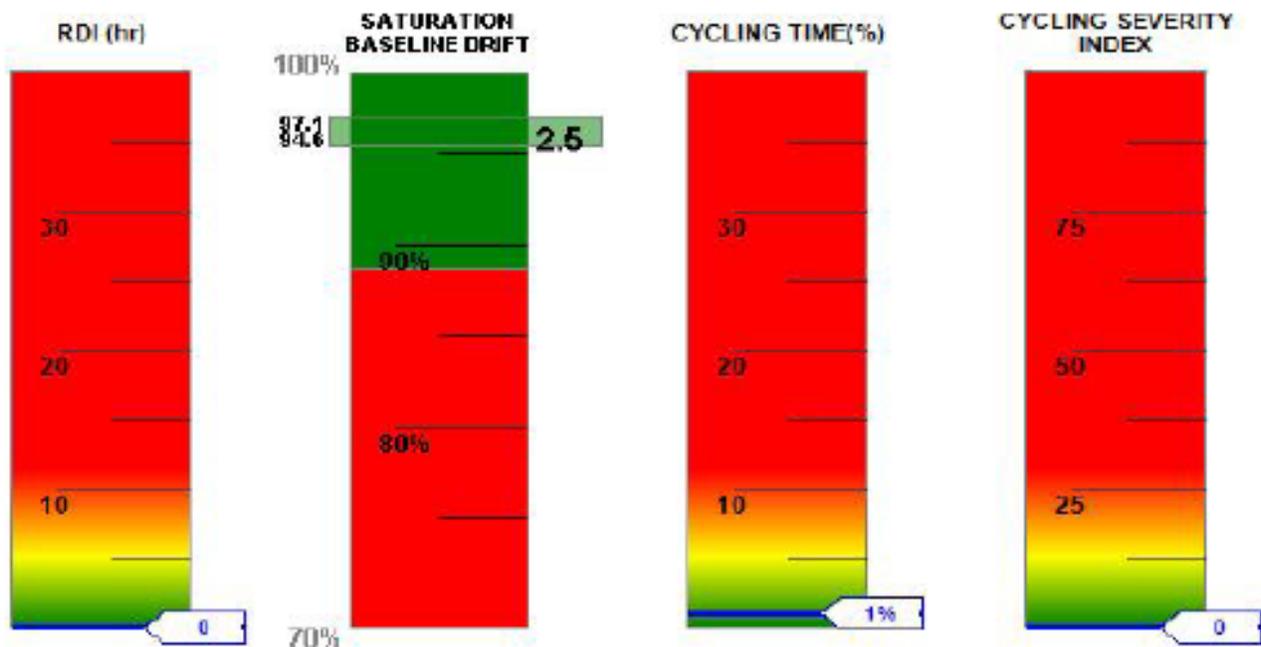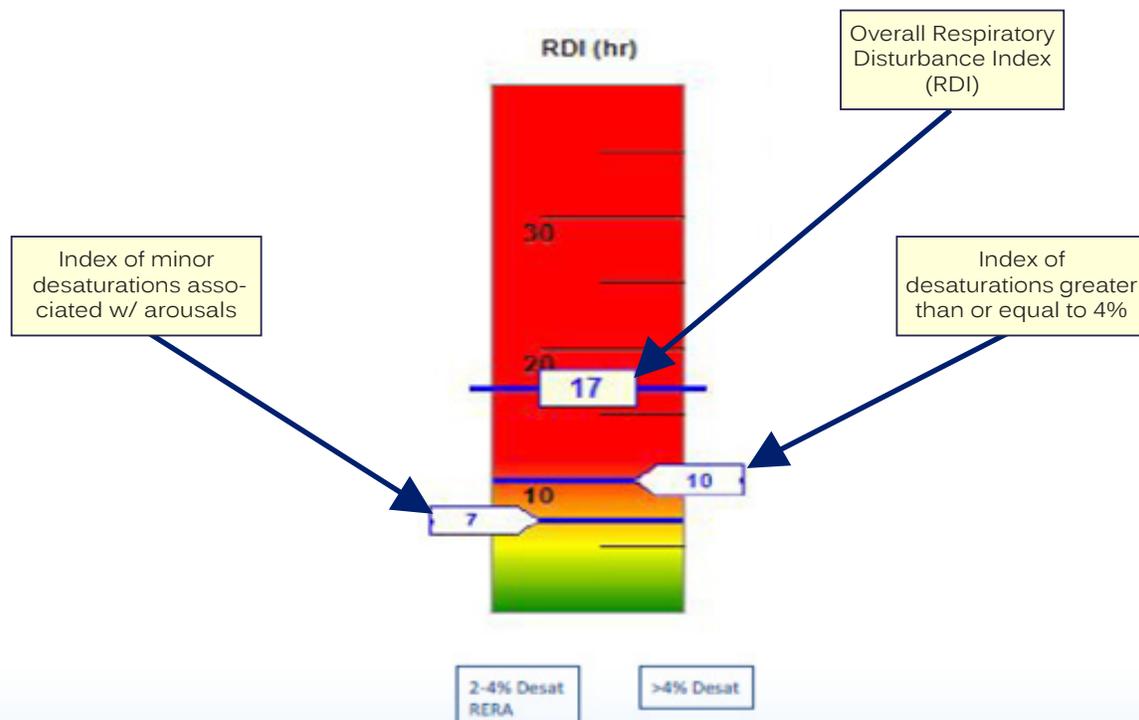
Pattern Based Indices

SatScreen's
Pattern-based Report Indicators
Respiratory Disturbance Index (RDI)

Respiratory Disturbance Index (RDI)

The number of desaturations/hour, adjusted for mild desaturations with abrupt pulse rise to provide sensitivity to mild respiratory events with physiologic arousal.

The hourly index for minor desaturations associated with autonomic arousals is recorded on the left side (2-4% Desat RERA). The hourly index of desaturations equal to or greater than 4% are recorded on the right (>4% Desat). The overall respiratory index is noted in the center.

Sample SatScreen RDI Indicator

RDI (hr)

Overall Respiratory Disturbance Index (RDI)

Index of minor desaturations associated w/ arousals

Index of desaturations greater than or equal to 4%

30

20

17

10

10

7

2-4% Desat RERA

>4% Desat

SatScreen's
Pattern-based Report Indicators
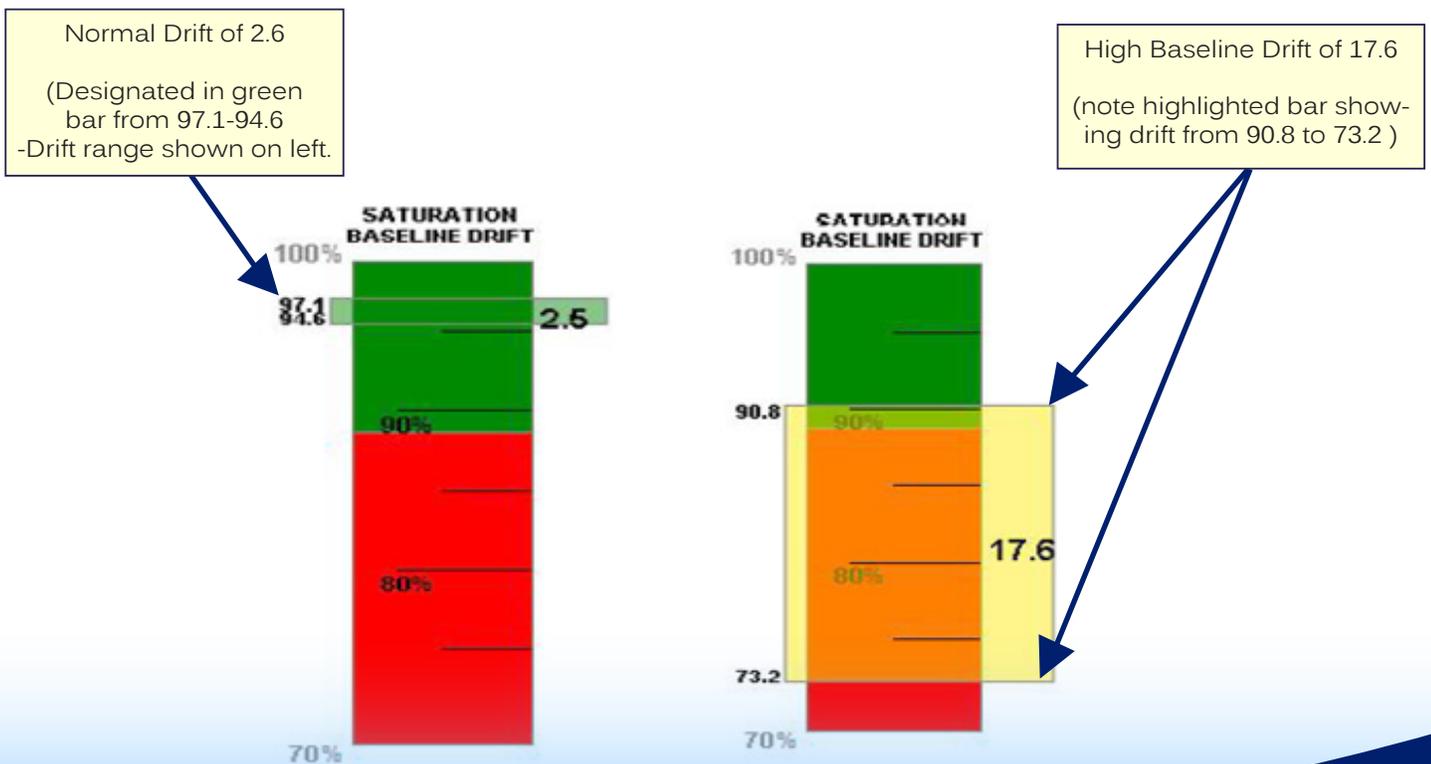## Saturation Baseline Drift

Saturation Baseline Drift

The Saturation Baseline Drift is an indicator for potential sleep hypoventilation and is shown on the second bar graph with the highest baseline and the lowest baseline marked.

This indicator represents the magnitude of decline from the highest to the lowest SPO2 baseline during non cycling time. (Normal is less than 4)

SPO2 baselines represent the average SPO2 over a moving 5 minute window when no cycling, motion, or error signal is detected. (For an accurate baseline, it is recommended to instruct the patient to stay awake during the first 5 minutes of the test)

Sample SatScreen Saturation Baseline Drift Indicator

Normal Drift of 2.6

(Designated in green bar from 97.1-94.6 -Drift range shown on left.

High Baseline Drift of 17.6

(note highlighted bar showing drift from 90.8 to 73.2)

SatScreen's
Pattern-based Report Indicators
Cycling Time (%)

Cycling Time (%)

The Cycling Time indicator represents the percentage of the total study time wherein the SPO2 exhibits a cycling pattern.

SPO2 cycling pattern is defined as 3 or more desaturations occurring sequentially with no more than 120 seconds between each desaturation. To qualify, the desaturation must be 2% or greater and followed by a corresponding recovery within 10 seconds.

Sample SatScreen Cycling Time (%) Indicator

CYCLING TIME(%)

29%

30

20

10

Here, a high cycling time of 29% is shown

SatScreen's
Pattern-based Report Indicators
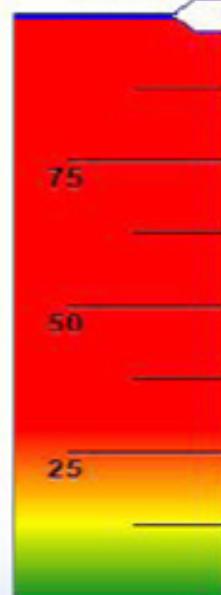## Cycling Severity Index

Cycling Severity Index

One problem with simply counting desaturations is that a low number (such as an ODI of 9) does not mean that the patient does not have severe sleep apnea. Severity depends on many other factors than the simple count per hour. For this reason the industry is introducing new severity indices.

The Cycling Severity Index is a global index of SPO2 cycling severity. Depth of the desaturations, the duration of the desaturations, the recovery time between desaturations, and the SPO2 cycling time are all considered in the representation of this index .

This index is similar to the real-time Saturation Pattern Detection (SPDTM) index used by Covidien (under license from Lyntek) in the Nellcor 600XTM to provide graded alarm of SPO2 cycling in the hospital.

Sample SatScreen Cycling Severity Index Indicator

In this case the Cycling Severity Index is very severe and off the scale at 167.

CYCLING SEVERITY INDEX

167

75

50

25

SatScreen's
Pattern-based Report Indicators
Desat Severity

Desaturation Severity

The values displayed on either side of the Desat Severity indicator only take into account the most severe 10% of desaturations.

The % Desat indicator (on left) displays the the mean amplitude of these desaturations.

The 96% - Lowest Sat indicator (on right) takes 96 minus the mean nadir of the desaturation. The use of 96-nadir accounts for desaturations with low nadirs but starting from low values-- which may otherwise appear to be minor in absolute terms.

Sample SatScreen Desaturation Severity Indicator

Shown on the left, the mean amplitude of the most severe events in this case is 12%.

DESAT SEVERITY (most severe 10%)

Here, the mean Nadir for the most severe desaturations is 72%, for a value of 24 on the index.

30
24
20
12
10

% Desat

96% - Lowest Sat