

Treatment Reporting

Interpreting compliance and efficacy reports is a key factor for comprehensive patient follow-up and successful therapy outcomes.¹ F&P InfoSmart is a patient management program which allows for easy access to therapy data from Fisher & Paykel Healthcare CPAP devices.

Apnea Hypopnea Index (AHI)

AHI is the best indicator of therapy efficacy. An effective treatment indicator of 5 is shown on the report (a dotted line on the graph). A number < 5 is within normal limits and > 5 would alert the clinician to look more closely at detailed data. This example shows the AHI below 5 for all days except three.

Pressure

The Pressure Profile can highlight any inconsistencies in pressure. Variability in pressure may be related to nasal congestion, alcohol/sedative use or positional/REM OSA. In this example, the patient's average pressure is 6 cmH₂O and the 90th percentile pressure is 7 cmH₂O. The 90th percentile pressure is the pressure the patient was at or below 90% of the time while on therapy. This pressure may be used as a fixed CPAP pressure for the long term treatment of the patient where appropriate.

System Leak

Excessive leak can negatively impact the effectiveness of a patient's therapy. If the report highlights excessive leak (orange bars) it may be necessary to assess the patient's mask or humidity setting. The system highlights the day in orange if the time with excessive leak for the day is higher than 30%. In general an average leak value > 60 L/min would be sufficient to warrant investigation.

Usage and Humidity

Research suggests a close response relationship between CPAP use and excessive daytime sleepiness;² therefore, the longer a patient uses CPAP therapy the more benefit they will get. Graphical daily usage is shown here with the date on the X axis, hours used on the left Y axis, and humidification setting on the right Y axis. The correct humidity setting for the patient may be critical to patient adherence. The average usage over this 30-day period is 5 hours and 54 minutes and the device was used for 99% of these days. Days when CPAP was used below 4 hours are highlighted in orange.

Quick Assessment of Treatment Efficacy



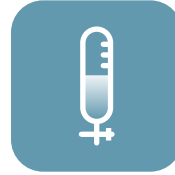
Factors Affecting CPAP Therapy

Treatment reports should never be used alone. To accurately assess patient reports it is important to take into consideration the many factors which can affect CPAP therapy and therapeutic pressure, including:



Body Mass Index (BMI)

Research suggests that BMI can give an indication of OSA severity³ and therefore potential pressure requirements.⁴ (Note: This is an indication only; true severity via AHI is required to more accurately assess this.)



Titration Pressure

Many patients have had a manual polysomnography (PSG) titration. The 90th percentile pressure is representative of the titrated pressure from the PSG.



Mask

High mask leak has been shown to adversely affect AutoCPAP therapy.⁵ Mask leak can be caused by a poor mask fit or mouth leak. If the F&P InfoSmart report suggests high levels of leak, the patient's mask may need to be assessed as significant leak can impact on the patient's delivered pressure. If mouth leak is a concern, the patient may benefit from a full face mask or by adjusting their humidity setting.



Patient/Bed Partner Evaluation

The best indication of a patient's therapy is their own perception. It is important to assess how the patient feels on therapy. Questions about the patient's comfort, sleepiness, and general well-being can help to better interpret therapy results. In addition, it can be useful to ask a bed partner for their assessment of the therapy. They can often report unresolved apneas or partner snoring, which may require pressure assessment.



OSA Severity

If the patient is known to require moderate to high pressures to treat their OSA, or still has unresolved sleep-disordered breathing events as evident by the F&P InfoSmart report, it may be necessary to adjust the pressure to optimize CPAP therapy.

Optimizing CPAP Therapy

Please consult a physician before changing any pressure settings.

| Problem | Suggested solutions |
|--|---|
| High AHI (an effective treatment indicator is an AHI < 5) | The upper and lower pressure limit may need to be assessed. Possible central sleep-disordered breathing events – these usually resolve over time in OSA patients. ⁶ If occurring in conjunction with high leak the detection of events may not be reliable. |
| Patient reports pressure intolerance | Check mask fit and leak levels. The upper pressure limit may need to be assessed. Check that there is no water in the tube, as condensation can result in pressure fluctuations which may disrupt the algorithm and cause false event detection. Ensure SensAwake™ is enabled. |
| Leak | Assess mask fit and possibly mask type. Assess mouth leak; if patient is known to mouth leak, assess mask and humidity settings. |

Compliance Summary

The Compliance Summary displays patterns of CPAP use for up to 180 consecutive days.

Prescription

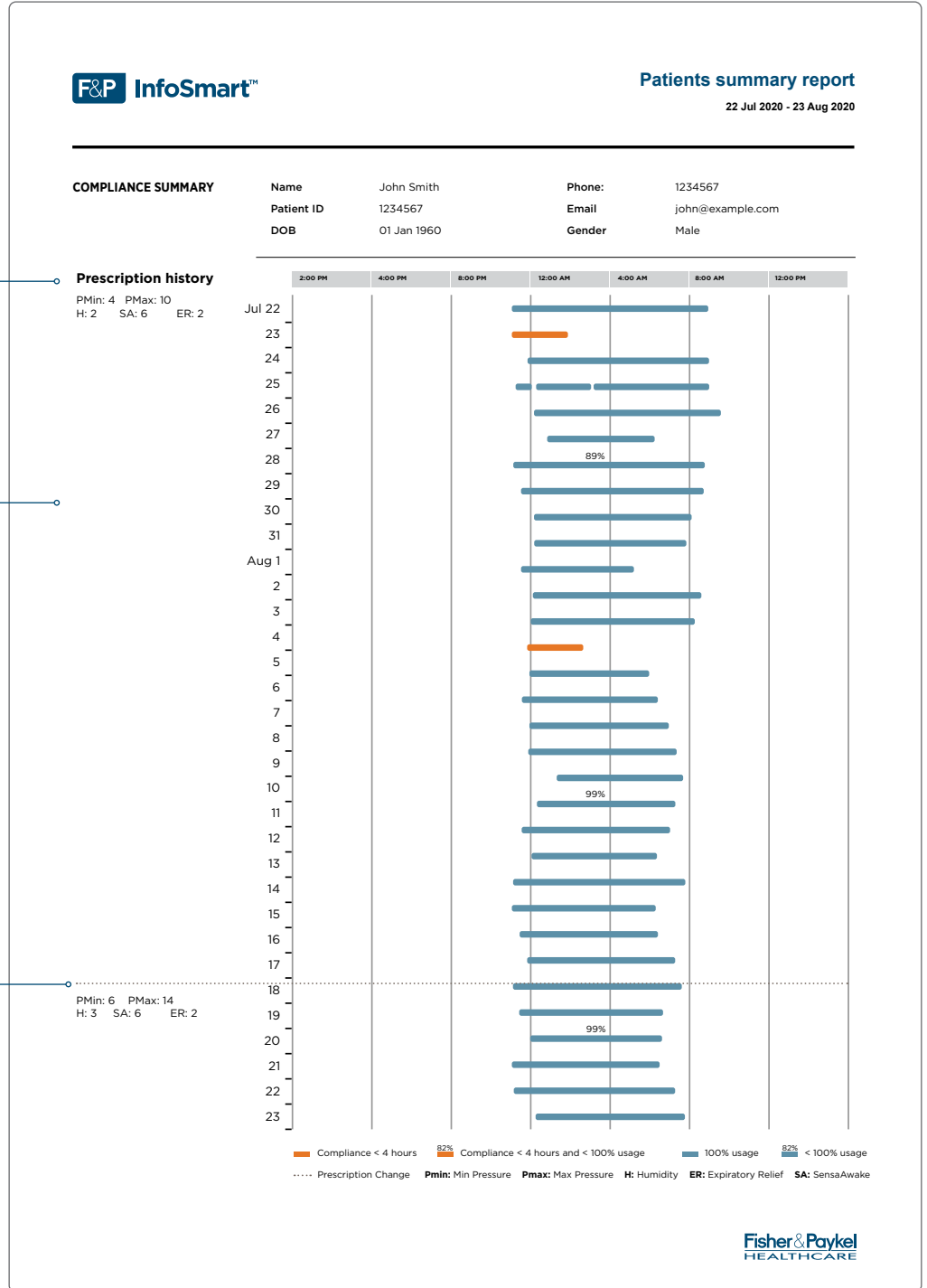
The prescription setting is shown for reference.

CPAP Patterns of Use

Patterns of CPAP use are displayed, helping to track patient sleep hygiene.

Prescription Change

Signaled by a dotted line, the associated new prescription is detailed under the Prescription History.



Optimizing Therapy with SensAwake

SensAwake detects the transition from sleep to wake and promptly reduces the pressure. Ensure SensAwake is activated to optimize pressure relief and patient therapy comfort. Avoid raising the minimum pressure (in Auto mode) or SensAwake pressure (in CPAP mode) to ensure that the patient receives the full benefits of SensAwake at the lowest most comfortable pressure. This technology can be activated in both the Auto and CPAP modes.

Events

Obstructive and central apneas, hypopnea, flow limitations, and SensAwake events are identified for each night. An AHI is also displayed.

SensAwake Events

Events are shown only if SensAwake was activated for that night's treatment.

Ramp

Ramp works by gradually increasing the pressure to the prescribed pressure over a 20-min period. If your minimum pressure is 4 cmH₂O the ramp function will keep the pressure on 4 cmH₂O for 20 min.

01 MAY 2020

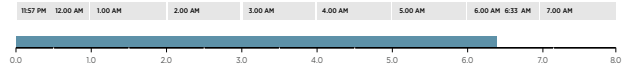
Tuesday 11:57 pm - 6:33 am

Name: John Smith
 Patient ID: 1234567
 DOB: 01 Jan 1960

Phone: 1234567
 Email: john@example.com
 Gender: Male

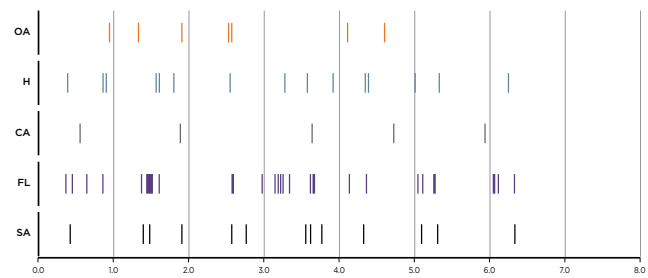
RUN TIME

Total Run Time: 6.6 h
 Percentage Usage: 99%



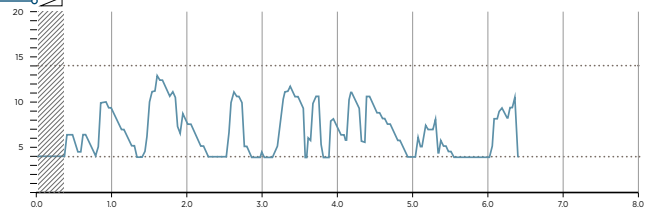
AHI 4.2

Total Obstructive Apneas: 7
 OAI: 1.1
 Total Hypopnea: 15
 OHI: 2.3
 Total Central Apnea: 5
 CAI: 0.8
 Total Flow Limitations: 38
 Flow Limitation /Hr: 5.8
 Total SensAwake: 13
 SensAwake /Hr: 2.0



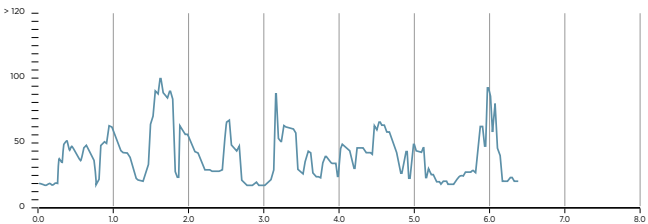
PRESSURE

Median: 5.5
 90th Percentile: 9.5
 Ramp Period
 Min / Max



SYSTEM LEAK

Median: 30
 90th Percentile: 48
 Time with Excessive Leak: 6%



TIME AND EVENTS AT PRESSURE

| P(cmH ₂ O) | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-----------------------|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| T (min) | 124 | 54 | 54 | 36 | 30 | 40 | 42 | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | 1 | 1 | 2 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| H | 0 | 1 | 3 | 1 | 1 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CA | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FL | 2 | 5 | 9 | 3 | 4 | 11 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

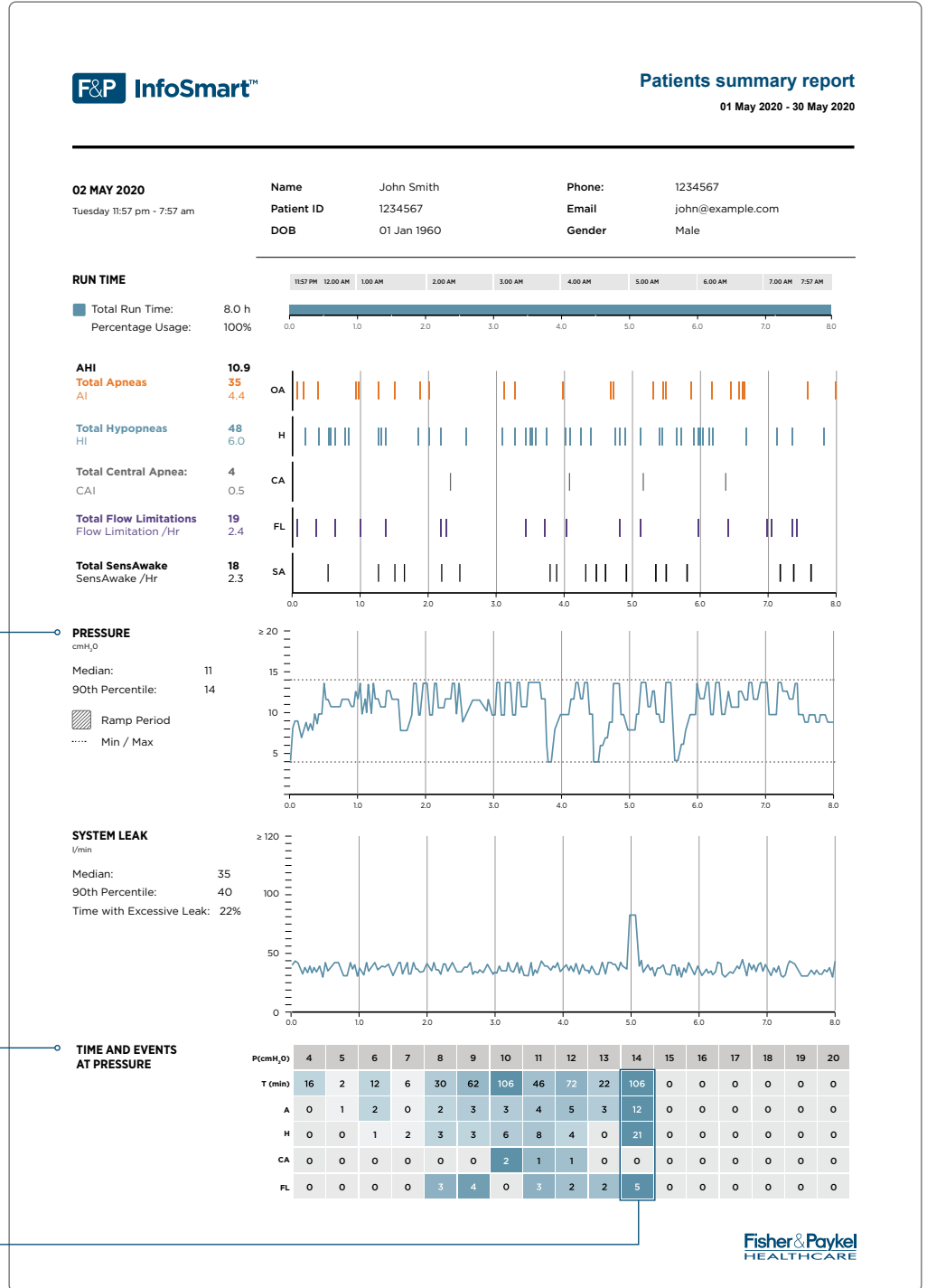
Assessment of Pressure Parameters

If the AHI is higher than normal, the Pressure Profile may reveal that sleep-disordered breathing events are occurring at the maximum pressure. Increasing the maximum pressure may optimize patient therapy. Some patients may need time to acclimatize to CPAP therapy. Often, leaving the patient to get used to therapy for a few weeks may allow these events to resolve.

Increasing the maximum pressure may optimize therapy.

Time and Events at Pressure
This table demonstrates the time spent at each pressure and the associated events. Heat-map table view highlights the areas with highest values. This table will only appear on this report if the device is set to Auto for that night's treatment.

Events occurring at maximum pressure.



Leak Management

Excessive leak can affect therapy efficacy and comfort. Assessing the patient's mask and humidity settings may help to optimize patient therapy.

Pressure Profile

The Pressure Profile demonstrates the pressure variations throughout each night (including minimum and maximum pressures). Prescription pressures are indicated by the horizontal dotted lines.

System Leak Profile

The System Leak Profile demonstrates the leak levels throughout each night.

High Leak

During periods of high leak the event data reported may not be accurate. Note: The pressure will remain constant during periods of excessive leak to prevent unnecessary pressure increases.

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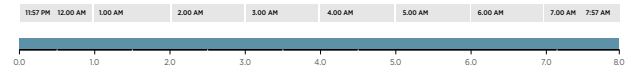
Tuesday 11:57 pm - 6:27 am

Name: John Smith
Patient ID: 1234567
DOB: 01 Jan 1960

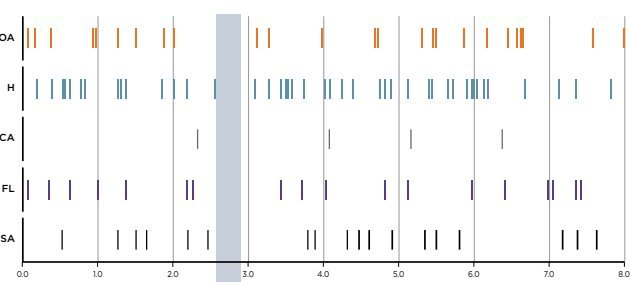
Phone: 1234567
Email: john@example.com
Gender: Male

RUN TIME

Total Run Time: 8.0 h
Percentage Usage: 100%

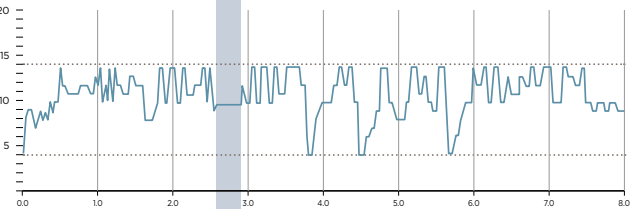


AHI 10.9
Total Apneas 35
AI 4.5
Total Hypopneas 48
HI 6.0
Total Central Apnea: 4
CAI 0.5
Total Flow Limitations 19
Flow Limitation /Hr 2.4
Total SensAwake 18
SensAwake /Hr 2.3



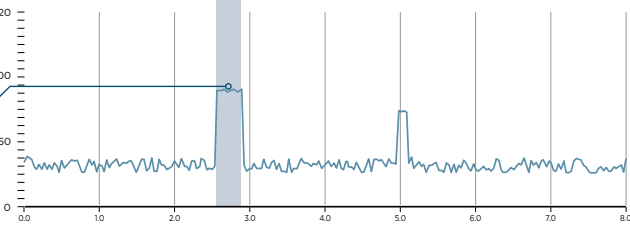
PRESSURE

Median: 11
90th Percentile: 14
Ramp Period
Min / Max



SYSTEM LEAK

Median: 35
90th Percentile: 40
Time with Excessive Leak: 22%



TIME AND EVENTS AT PRESSURE

| P(cmH ₂ O) | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-----------------------|----|---|----|---|----|----|-----|----|----|----|-----|----|----|----|----|----|----|
| T (min) | 16 | 2 | 12 | 6 | 30 | 62 | 106 | 46 | 72 | 22 | 106 | 0 | 0 | 0 | 0 | 0 | 0 |
| A | 0 | 1 | 2 | 0 | 2 | 3 | 3 | 4 | 5 | 3 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| H | 0 | 0 | 1 | 2 | 3 | 3 | 6 | 8 | 4 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 |
| CA | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FL | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 3 | 2 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |

- Haniffa M et al. Cochrane Database Syst Rev 2004; (4): CD003531.
- Weaver TE et al. Sleep 2007; 30(6): 711-9.
- Friedman M et al. Laryngoscope 1999; 109(12): 1901-7.
- Miljeteig H & Hoffstein V. Am Rev Respir Dis 1993; 147(6 Pt 1): 1526-30.
- Berry RB et al. Sleep 2002; 25(2): 148-73.
- Javaheri S et al. J Clin Sleep Med 2009; 5(3): 205-11.