

The ExSpiiron2Xi

Avoid the Need to Rescue

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Clinical Applications Director





Market Basics

Respiratory compromise increases patient mortality rates by over 30% and ICU stays by about 50%.

- Post-operative respiratory failure is the largest single-source of avoidable in-patient days and is the third most common patient safety event. Patients with respiratory compromise are 29x more likely to die.¹
- Respiratory compromise impacts approximately 1 million patients each year causing 5 million extra hospital days with an added cost of \$53,000/patient. Most importantly, over 60% of respiratory arrests are potentially avoidable due to delayed intervention. Many causes for respiratory compromise may not be diagnosed or part of the patient's medical history.
- We estimate RMI's addressable market to be about \$4B in the U.S. alone.
- Minute Ventilation (MV) is the best indication of a patient's respiratory status



Where can the ExSpiiron be utilized?

- PACU
- ICUs(CCU/PICU/MICU/SICU)
- General Hospital Floors
- Step Down, Procedural Sedation (OR, Interventional Radiology, Cardiac Cath Lab, Endoscopy (GI lab), Bronch Lab)
- Emergency Department.



ExSpirom Quantifies Real-time Ventilation



Minute Ventilation

Respiratory Rate

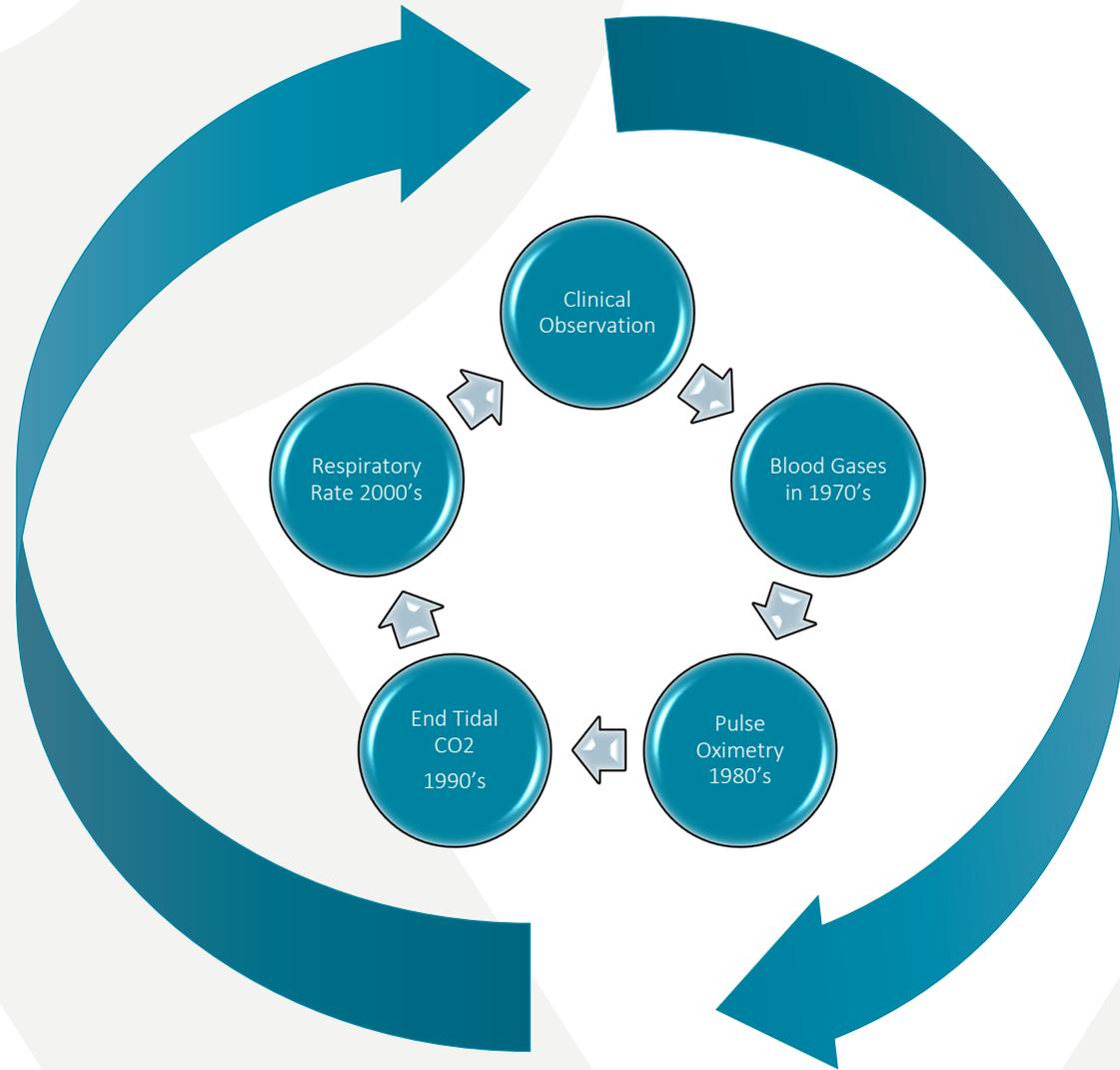
Tidal Volume

A change in minute ventilation is the most sensitive indicator of a change in respiratory status

Minute Ventilation is the amount of air breathed in a minute.

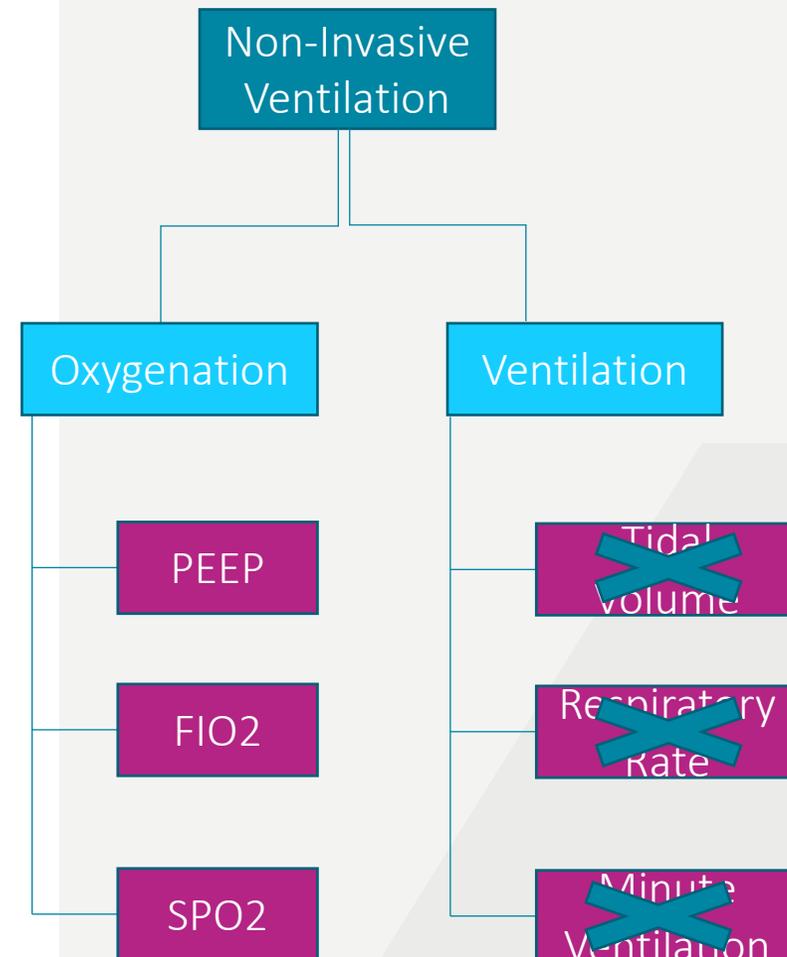
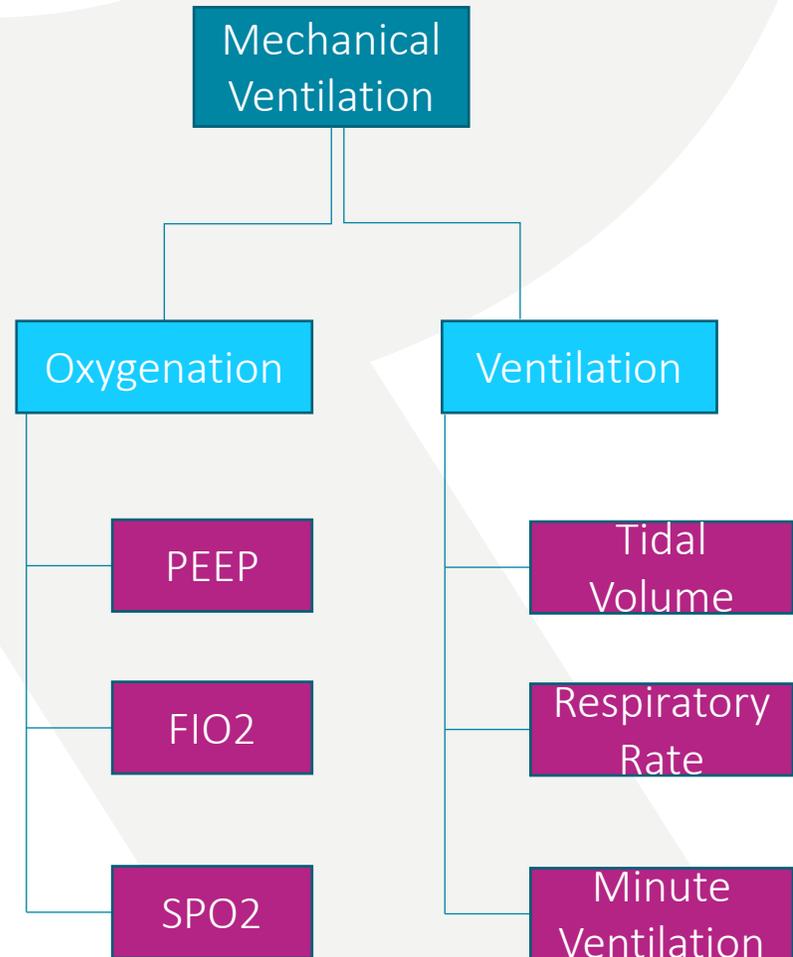


Ventilation Monitoring Advancements



Ventilation Monitoring

In the past



How do you say it?

How do I Pronounce the Name Correctly?



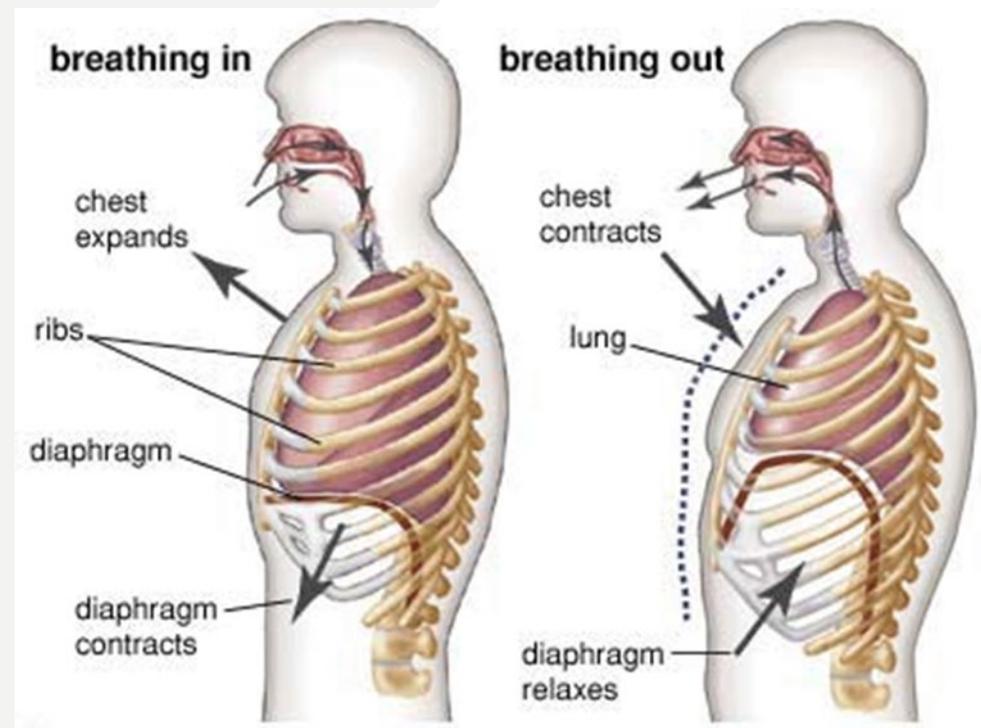
X-Per-on



Basic Philosophy of RM's measurement

How does Bio Impedance work?

 = Low Voltage Electrical Current



More Air = More Impedance
(Less Current)

Less Air = Less Impedance
(More Current)



Normal Ranges of Respiratory Parameters

| Value | Normal Range | Description |
|--|--|---|
| Adult Respiratory Rate (ages 21 and above) | 12-18 breaths/min | Breaths per minute |
| Pediatric Respiratory Rate (ages 1 to 20) | 12-40 breaths/min | Breaths per minute |
| Tidal Volume | MV / RR | Volume per single breath (usually mL) |
| Minute Ventilation | Dependent on gender, height, and weight. See tables below. | Volume of air exchanged in one minute (usually L) |

Predicted Minute Ventilation

Body Surface Area



| FEMALE | | Predicted MV (L/min) | | | | | | | | | | | | | | | | | |
|--------|-----|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|-----|--|
| 76 | 193 | 5.8 | 6.2 | 6.7 | 7.1 | 7.4 | 7.8 | 8.1 | 8.4 | 8.7 | 9.0 | 9.2 | 9.5 | 9.7 | 10.0 | 10.2 | 10.4 | | |
| 75 | 191 | 5.7 | 6.2 | 6.6 | 7.0 | 7.4 | 7.7 | 8.0 | 8.3 | 8.6 | 8.9 | 9.1 | 9.4 | 9.6 | 9.9 | 10.1 | 10.3 | | |
| 74 | 188 | 5.7 | 6.1 | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.2 | 8.5 | 8.8 | 9.0 | 9.3 | 9.5 | 9.8 | 10.0 | 10.2 | | |
| 73 | 185 | 5.6 | 6.1 | 6.5 | 6.9 | 7.2 | 7.5 | 7.8 | 8.1 | 8.4 | 8.7 | 9.0 | 9.2 | 9.4 | 9.7 | 9.9 | 10.1 | | |
| 72 | 183 | 5.6 | 6.0 | 6.4 | 6.8 | 7.1 | 7.5 | 7.8 | 8.1 | 8.3 | 8.6 | 8.9 | 9.1 | 9.4 | 9.6 | 9.8 | 10.0 | | |
| 71 | 180 | 5.5 | 5.9 | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 8.0 | 8.3 | 8.5 | 8.8 | 9.0 | 9.3 | 9.5 | 9.7 | 9.9 | | |
| 70 | 178 | 5.4 | 5.9 | 6.3 | 6.7 | 7.0 | 7.3 | 7.6 | 7.9 | 8.2 | 8.4 | 8.7 | 8.9 | 9.2 | 9.4 | 9.6 | 9.8 | | |
| 69 | 175 | 5.4 | 5.8 | 6.2 | 6.6 | 6.9 | 7.2 | 7.5 | 7.8 | 8.1 | 8.3 | 8.6 | 8.8 | 9.1 | 9.3 | 9.5 | 9.7 | | |
| 68 | 173 | 5.3 | 5.8 | 6.2 | 6.5 | 6.8 | 7.2 | 7.5 | 7.7 | 8.0 | 8.3 | 8.5 | 8.7 | 9.0 | 9.2 | 9.4 | 9.6 | | |
| 67 | 170 | 5.3 | 5.7 | 6.1 | 6.4 | 6.8 | 7.1 | 7.4 | 7.7 | 7.9 | 8.2 | 8.4 | 8.6 | 8.9 | 9.1 | 9.3 | 9.5 | | |
| 66 | 168 | 5.2 | 5.6 | 6.0 | 6.4 | 6.7 | 7.0 | 7.3 | 7.6 | 7.8 | 8.1 | 8.3 | 8.6 | 8.8 | 9.0 | 9.2 | 9.4 | | |
| 65 | 165 | 5.2 | 5.6 | 6.0 | 6.3 | 6.6 | 6.9 | 7.2 | 7.5 | 7.7 | 8.0 | 8.2 | 8.5 | 8.7 | 8.9 | 9.1 | 9.3 | | |
| 64 | 163 | 5.1 | 5.5 | 5.9 | 6.2 | 6.6 | 6.9 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.4 | 8.6 | 8.8 | 9.0 | 9.2 | | |
| 63 | 160 | 5.0 | 5.5 | 5.8 | 6.2 | 6.5 | 6.8 | 7.1 | 7.3 | 7.6 | 7.8 | 8.0 | 8.3 | 8.5 | 8.7 | 8.9 | 9.1 | | |
| 62 | 157 | 5.0 | 5.4 | 5.8 | 6.1 | 6.4 | 6.7 | 7.0 | 7.2 | 7.5 | 7.7 | 8.0 | 8.2 | 8.4 | 8.6 | 8.8 | 9.0 | | |
| 61 | 155 | 4.9 | 5.3 | 5.7 | 6.0 | 6.3 | 6.6 | 6.9 | 7.2 | 7.4 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.7 | 8.9 | | |
| 60 | 152 | 4.9 | 5.3 | 5.6 | 5.9 | 6.3 | 6.5 | 6.8 | 7.1 | 7.3 | 7.5 | 7.8 | 8.0 | 8.2 | 8.4 | 8.6 | 8.8 | | |
| in cm | | | | | | | | | | | | | | | | | | | |
| | | kg | 45 | 55 | 64 | 73 | 82 | 91 | 100 | 109 | 118 | 127 | 136 | 145 | 155 | 164 | 173 | 182 | |
| | | lbs | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 | |
| | | Weight | | | | | | | | | | | | | | | | | |

(Figure 5.2.1— Predicted Minute Ventilation based on Height and Weight – Adult Female)

| FEMALE | | Predicted MV (L/min) | | | | | | | | | | | | | | | | | |
|--------|-----|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| 60 | 152 | 2.2 | 2.5 | 2.7 | 2.8 | 3.0 | 3.2 | 3.3 | 3.4 | 3.6 | 3.7 | 3.9 | 4.1 | 4.3 | 4.5 | 4.7 | 4.9 | | |
| 58 | 147 | 2.2 | 2.4 | 2.6 | 2.8 | 2.9 | 3.1 | 3.2 | 3.4 | 3.5 | 3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 4.8 | | |
| 56 | 142 | 2.1 | 2.3 | 2.5 | 2.7 | 2.9 | 3.0 | 3.1 | 3.3 | 3.4 | 3.5 | 3.7 | 3.9 | 4.1 | 4.3 | 4.5 | 4.6 | | |
| 54 | 137 | 2.1 | 2.3 | 2.5 | 2.6 | 2.8 | 2.9 | 3.1 | 3.2 | 3.3 | 3.4 | 3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.5 | | |
| 52 | 132 | 2.0 | 2.2 | 2.4 | 2.6 | 2.7 | 2.8 | 3.0 | 3.1 | 3.2 | 3.3 | 3.5 | 3.7 | 3.9 | 4.1 | 4.2 | 4.4 | | |
| 50 | 127 | 2.0 | 2.2 | 2.3 | 2.5 | 2.6 | 2.8 | 2.9 | 3.0 | 3.1 | 3.2 | 3.4 | 3.6 | 3.8 | 4.0 | 4.1 | 4.3 | | |
| 48 | 122 | 1.9 | 2.1 | 2.3 | 2.4 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.3 | 3.5 | 3.7 | 3.8 | 4.0 | 4.1 | | |
| 46 | 117 | 1.8 | 2.0 | 2.2 | 2.3 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.2 | 3.4 | 3.6 | 3.7 | 3.9 | 4.0 | | |
| 44 | 112 | 1.8 | 2.0 | 2.1 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.1 | 3.3 | 3.5 | 3.6 | 3.8 | 3.9 | | |
| 42 | 107 | 1.7 | 1.9 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.7 | 2.8 | 2.8 | 3.0 | 3.2 | 3.3 | 3.5 | 3.6 | 3.8 | | |
| 40 | 102 | 1.7 | 1.8 | 2.0 | 2.1 | 2.2 | 2.4 | 2.5 | 2.6 | 2.7 | 2.7 | 2.9 | 3.1 | 3.2 | 3.4 | 3.5 | 3.6 | | |
| 38 | 97 | 1.6 | 1.8 | 1.9 | 2.0 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.6 | 2.8 | 3.0 | 3.1 | 3.2 | 3.4 | 3.5 | | |
| 36 | 91 | 1.5 | 1.7 | 1.8 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.5 | 2.7 | 2.9 | 3.0 | 3.1 | 3.2 | 3.4 | | |
| 34 | 86 | 1.5 | 1.6 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.4 | 2.6 | 2.7 | 2.9 | 3.0 | 3.1 | 3.2 | | |
| 32 | 81 | 1.4 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.3 | 2.5 | 2.6 | 2.7 | 2.9 | 3.0 | 3.1 | | |
| 31 | 79 | 1.4 | 1.5 | 1.6 | 1.8 | 1.9 | 2.0 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | | |
| 30 | 76 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | 2.1 | 2.2 | 2.2 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | | |
| in cm | | | | | | | | | | | | | | | | | | | |
| | | kg | 7 | 9 | 11 | 13 | 15 | 16 | 18 | 20 | 22 | 24 | 27 | 31 | 35 | 38 | 42 | 45 | |
| | | lbs | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 60 | 68 | 76 | 84 | 92 | 100 | |
| | | Weight | | | | | | | | | | | | | | | | | |

(Figure 5.2.3— Predicted Minute Ventilation based on Height and Weight – Pediatric Female)

| MALE | | Predicted MV (L/min) | | | | | | | | | | | | | | | | | |
|-------|-----|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|-----|--|
| 76 | 193 | 6.6 | 7.1 | 7.6 | 8.1 | 8.5 | 8.9 | 9.2 | 9.6 | 9.9 | 10.2 | 10.5 | 10.8 | 11.1 | 11.4 | 11.7 | 11.9 | | |
| 75 | 191 | 6.5 | 7.1 | 7.5 | 8.0 | 8.4 | 8.8 | 9.1 | 9.5 | 9.8 | 10.1 | 10.4 | 10.7 | 11.0 | 11.3 | 11.5 | 11.8 | | |
| 74 | 188 | 6.5 | 7.0 | 7.5 | 7.9 | 8.3 | 8.7 | 9.1 | 9.4 | 9.7 | 10.0 | 10.3 | 10.6 | 10.9 | 11.2 | 11.4 | 11.7 | | |
| 73 | 185 | 6.4 | 6.9 | 7.4 | 7.8 | 8.2 | 8.6 | 9.0 | 9.3 | 9.6 | 9.9 | 10.2 | 10.5 | 10.8 | 11.1 | 11.3 | 11.6 | | |
| 72 | 183 | 6.4 | 6.9 | 7.3 | 7.8 | 8.2 | 8.5 | 8.9 | 9.2 | 9.5 | 9.8 | 10.1 | 10.4 | 10.7 | 10.9 | 11.2 | 11.5 | | |
| 71 | 180 | 6.3 | 6.8 | 7.3 | 7.7 | 8.1 | 8.4 | 8.8 | 9.1 | 9.4 | 9.7 | 10.0 | 10.3 | 10.6 | 10.8 | 11.1 | 11.3 | | |
| 70 | 178 | 6.2 | 6.7 | 7.2 | 7.6 | 8.0 | 8.4 | 8.7 | 9.0 | 9.3 | 9.6 | 9.9 | 10.2 | 10.5 | 10.7 | 11.0 | 11.2 | | |
| 69 | 175 | 6.2 | 6.7 | 7.1 | 7.5 | 7.9 | 8.3 | 8.6 | 8.9 | 9.2 | 9.5 | 9.8 | 10.1 | 10.4 | 10.6 | 10.9 | 11.1 | | |
| 68 | 173 | 6.1 | 6.6 | 7.0 | 7.4 | 7.8 | 8.2 | 8.5 | 8.8 | 9.1 | 9.4 | 9.7 | 10.0 | 10.3 | 10.5 | 10.7 | 11.0 | | |
| 67 | 170 | 6.0 | 6.5 | 7.0 | 7.4 | 7.7 | 8.1 | 8.4 | 8.7 | 9.1 | 9.3 | 9.6 | 9.9 | 10.1 | 10.4 | 10.6 | 10.9 | | |
| 66 | 168 | 6.0 | 6.4 | 6.9 | 7.3 | 7.7 | 8.0 | 8.3 | 8.7 | 9.0 | 9.2 | 9.5 | 9.8 | 10.0 | 10.3 | 10.5 | 10.8 | | |
| 65 | 165 | 5.9 | 6.4 | 6.8 | 7.2 | 7.6 | 7.9 | 8.2 | 8.6 | 8.9 | 9.1 | 9.4 | 9.7 | 9.9 | 10.2 | 10.4 | 10.6 | | |
| 64 | 163 | 5.8 | 6.3 | 6.7 | 7.1 | 7.5 | 7.8 | 8.2 | 8.5 | 8.8 | 9.0 | 9.3 | 9.6 | 9.8 | 10.1 | 10.3 | 10.5 | | |
| 63 | 160 | 5.8 | 6.2 | 6.7 | 7.0 | 7.4 | 7.7 | 8.1 | 8.4 | 8.7 | 8.9 | 9.2 | 9.5 | 9.7 | 9.9 | 10.2 | 10.4 | | |
| 62 | 157 | 5.7 | 6.2 | 6.6 | 7.0 | 7.3 | 7.7 | 8.0 | 8.3 | 8.6 | 8.8 | 9.1 | 9.3 | 9.6 | 9.8 | 10.1 | 10.3 | | |
| 61 | 155 | 5.6 | 6.1 | 6.5 | 6.9 | 7.2 | 7.6 | 7.9 | 8.2 | 8.5 | 8.7 | 9.0 | 9.2 | 9.5 | 9.7 | 9.9 | 10.2 | | |
| 60 | 152 | 5.6 | 6.0 | 6.4 | 6.8 | 7.1 | 7.5 | 7.8 | 8.1 | 8.4 | 8.6 | 8.9 | 9.1 | 9.4 | 9.6 | 9.8 | 10.0 | | |
| in cm | | | | | | | | | | | | | | | | | | | |
| | | kg | 45 | 55 | 64 | 73 | 82 | 91 | 100 | 109 | 118 | 127 | 136 | 145 | 155 | 164 | 173 | 182 | |
| | | lbs | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 | |
| | | Weight | | | | | | | | | | | | | | | | | |

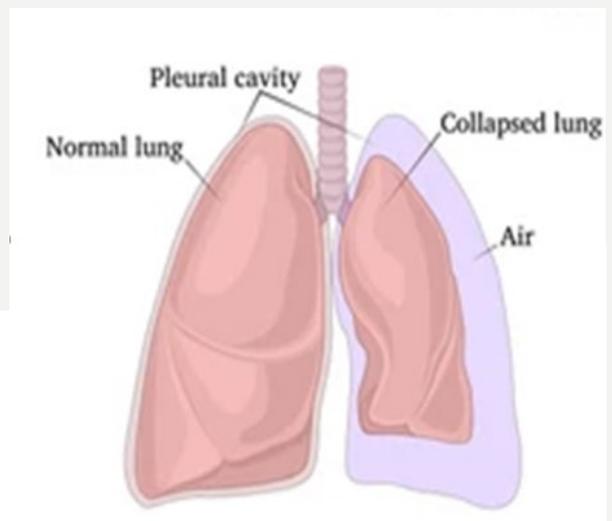
(Figure 5.2.2 - Predicted Minute Ventilation based on Height and Weight – Adult Male)

| MALE | | Predicted MV (L/min) | | | | | | | | | | | | | | | | | |
|-------|-----|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
| 60 | 152 | 2.6 | 2.8 | 3.0 | 3.2 | 3.4 | 3.6 | 3.8 | 3.9 | 4.1 | 4.2 | 4.5 | 4.7 | 5.0 | 5.2 | 5.4 | 5.6 | | |
| 58 | 147 | 2.5 | 2.7 | 3.0 | 3.2 | 3.3 | 3.5 | 3.7 | 3.8 | 4.0 | 4.1 | 4.4 | 4.6 | 4.8 | 5.0 | 5.2 | 5.4 | | |
| 56 | 142 | 2.4 | 2.7 | 2.9 | 3.1 | 3.3 | 3.4 | 3.6 | 3.7 | 3.9 | 4.0 | 4.3 | 4.5 | 4.7 | 4.9 | 5.1 | 5.3 | | |
| 54 | 137 | 2.4 | 2.6 | 2.8 | 3.0 | 3.2 | 3.3 | 3.5 | 3.6 | 3.8 | 3.9 | 4.2 | 4.4 | 4.6 | 4.8 | 5.0 | 5.2 | | |
| 52 | 132 | 2.3 | 2.5 | 2.7 | 2.9 | 3.1 | 3.3 | 3.4 | 3.5 | 3.7 | 3.8 | 4.0 | 4.3 | 4.5 | 4.7 | 4.8 | 5.0 | | |
| 50 | 127 | 2.2 | 2.5 | 2.7 | 2.8 | 3.0 | 3.2 | 3.3 | 3.4 | 3.6 | 3.7 | 3.9 | 4.1 | 4.3 | 4.5 | 4.7 | 4.9 | | |
| 48 | 122 | 2.2 | 2.4 | 2.6 | 2.8 | 2.9 | 3.1 | 3.2 | 3.3 | 3.5 | 3.6 | 3.8 | 4.0 | 4.2 | 4.4 | 4.6 | 4.7 | | |
| 46 | 117 | 2.1 | 2.3 | 2.5 | 2.7 | 2.8 | 3.0 | 3.1 | 3.2 | 3.4 | 3.5 | 3.7 | 3.9 | 4.1 | 4.3 | 4.4 | 4.6 | | |
| 44 | 112 | 2.0 | 2.2 | 2.4 | 2.6 | 2.7 | 2.9 | 3.0 | 3.1 | 3.3 | 3.4 | 3.6 | 3.8 | 4.0 | 4.1 | 4.3 | 4.4 | | |
| 42 | 107 | 2.0 | 2.2 | 2.3 | 2.5 | 2.6 | 2.8 | 2.9 | 3.0 | 3.1 | 3.3 | 3.5 | 3.6 | 3.8 | 4.0 | 4.1 | 4.3 | | |
| 40 | 102 | 1.9 | 2.1 | 2.3 | 2.4 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.1 | 3.3 | 3.5 | 3.7 | 3.9 | 4.0 | 4.1 | | |
| 38 | 97 | 1.8 | 2.0 | 2.2 | 2.3 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | 3.2 | 3.4 | 3.6 | 3.7 | 3.9 | 4.0 | | |
| 36 | 91 | 1.8 | 1.9 | 2.1 | 2.2 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.1 | 3.3 | 3.4 | 3.6 | 3.7 | 3.8 | | |
| 34 | 86 | 1.7 | 1.9 | 2.0 | 2.1 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 3.0 | 3.1 | 3.3 | 3.4 | 3.6 | 3.7 | | |
| 32 | 81 | 1.6 | 1.8 | 1.9 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 3.0 | 3.1 | 3.3 | 3.4 | 3.5 | | |
| 31 | 79 | 1.6 | 1.7 | 1.9 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.8 | 2.9 | 3.1 | 3.2 | 3.3 | 3.4 | | |
| 30 | 76 | 1.5 | 1.7 | 1.8 | 2.0 | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.9 | 3.0 | 3.1 | 3.3 | 3.4 | | |
| in cm | | | | | | | | | | | | | | | | | | | |
| | | kg | 7 | 9 | 11 | 13 | 15 | | | | | | | | | | | | |



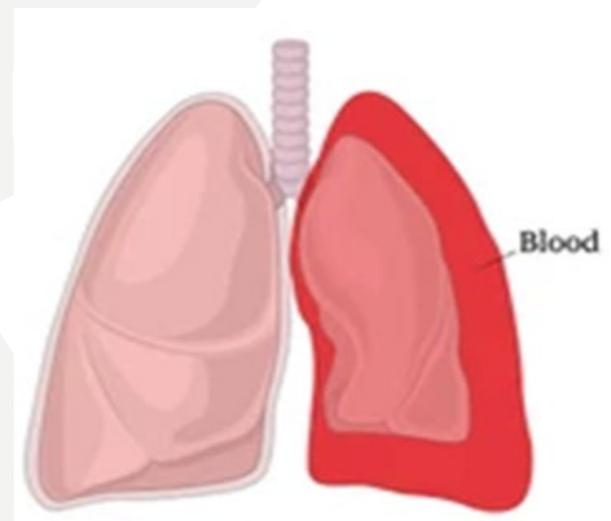
Asymmetrical Lungs

Pneumothorax



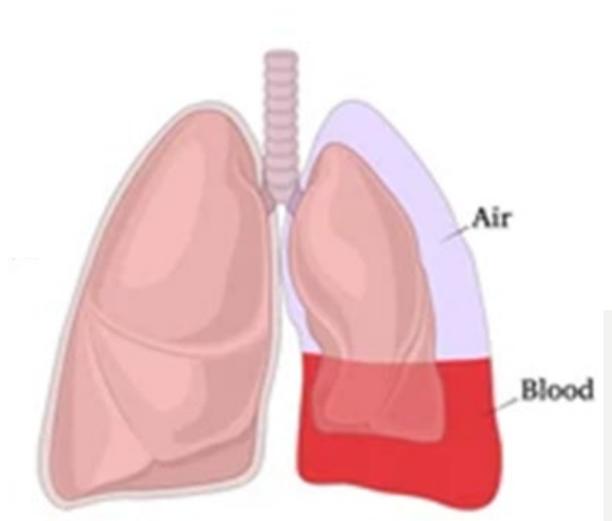
Air in the pleural space

Hemothorax



Blood in the pleural space

Hemopneumothorax



Blood and air in the pleural space

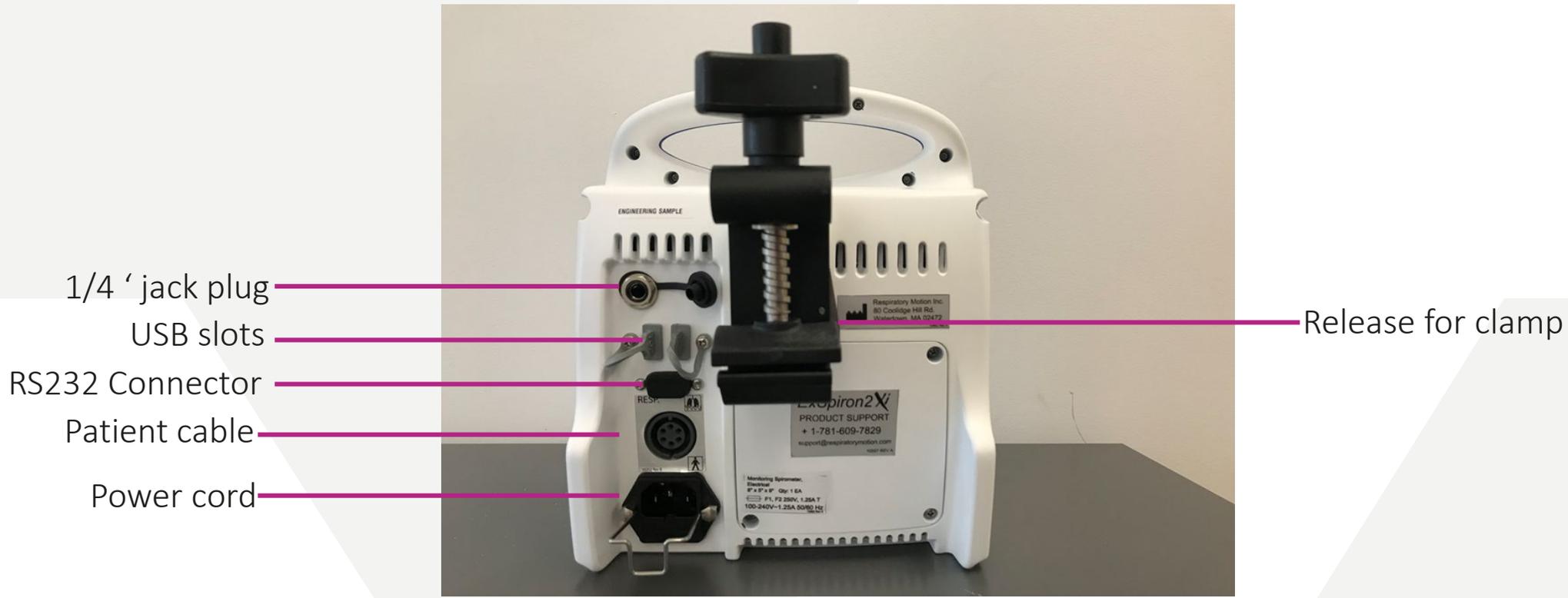
ExSpirom2Xi



Attached stylus

Illuminated power button

The Back of the ExSpiiron



1/4 ' jack plug

USB slots

RS232 Connector

Patient cable

Power cord

Release for clamp

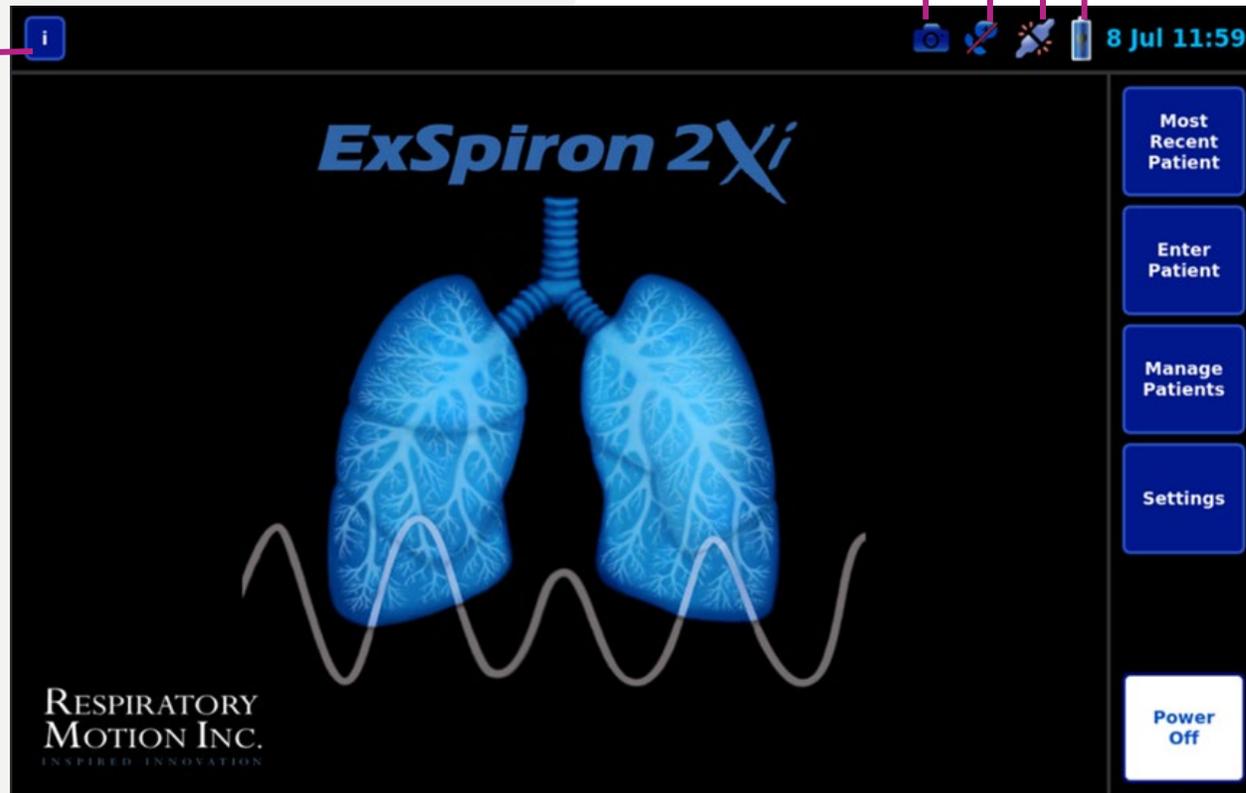


Main Screen Icons

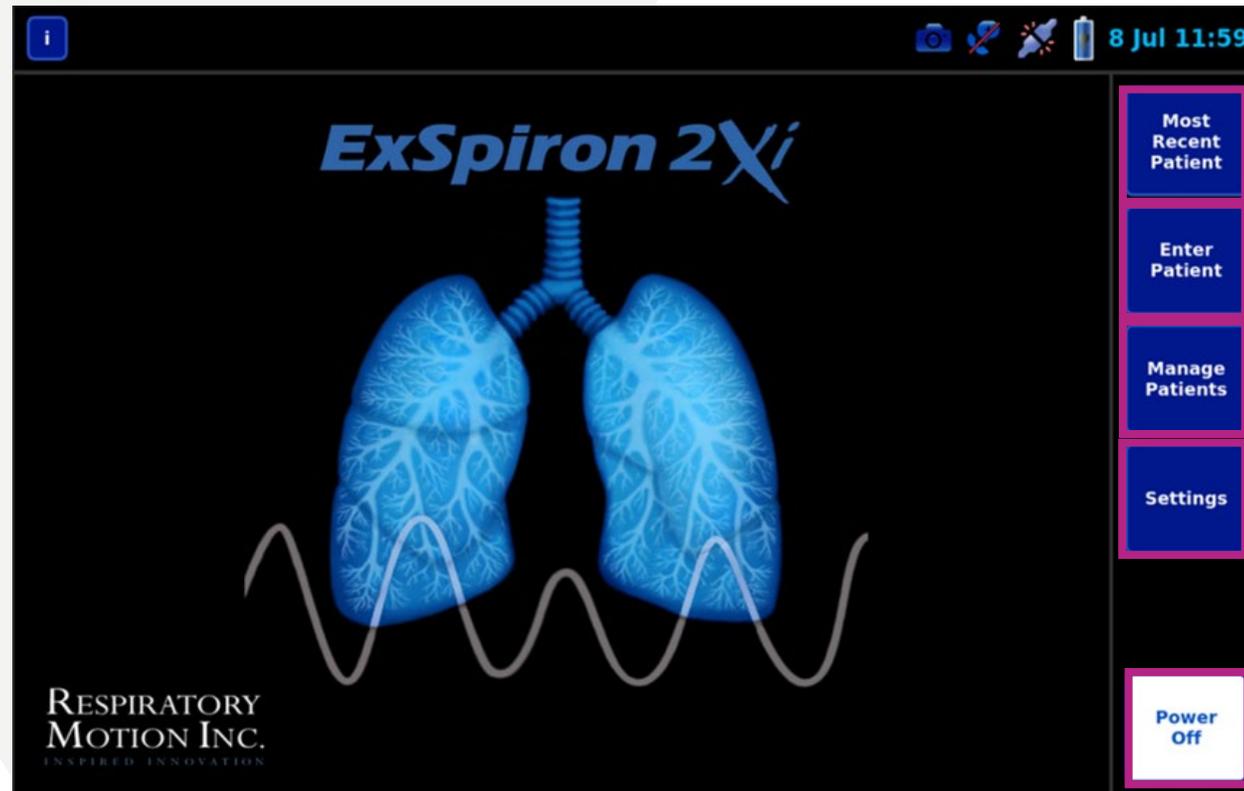
Understanding the icons

System information

Screen capture
Nurse Call
EHR Connectivity
Battery/Charge



The Main Screen



Most Recent Patient

To access the last patient

Enter Patient

To enter a new patient

Manage Patients

To edit/manage a patient

Settings

To enter settings

Power Off

To power off

Entering a patient



Existing Patient:

Search by Name or MRN

| Name | MRN |
|------|-----|
|------|-----|

Patient Data:

First Name: MRN:

Last Name:

Mode: * Adult Pediatrics

Birth Sex: * Male Female

Date of Birth:

Height: * ft in cm ft/in

Weight: * lb kg lb

Comment:

Buttons: Cancel, New Patient, Confirm

Keyboard: A virtual keyboard with blue keys and white text, including a globe icon on the bottom left.



The Trace screen

Confirm connectivity and choose Mode

Adult/Pediatric
Respiratory Trace

- To start Basic Monitoring
- To start Volume Sync
- To access patient history
- To access settings
- To access percent baseline
- To close monitoring session



Modes of Monitoring

When to use each mode

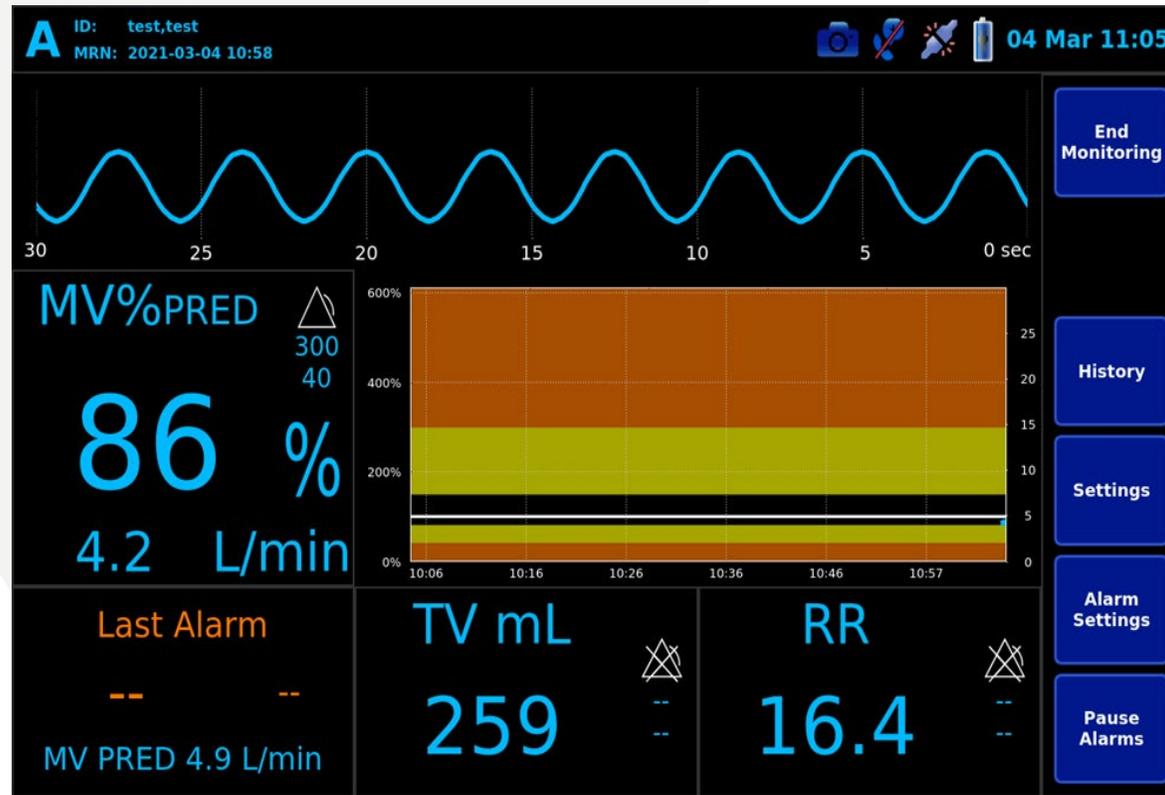
Basic Monitoring: Most Common mode of monitoring, can be Used for: Patients above 35 kg with no artificial airway, spontaneously breathing, Procedural Sedation, Monitored Anesthesia Care, General Care Floor

Volume Synch: used for monitoring both adult and pediatric patients who are initially on a ventilator and utilizes a calibration or synchronization with the ventilator to maintain continuity of measurements before and after extubation.

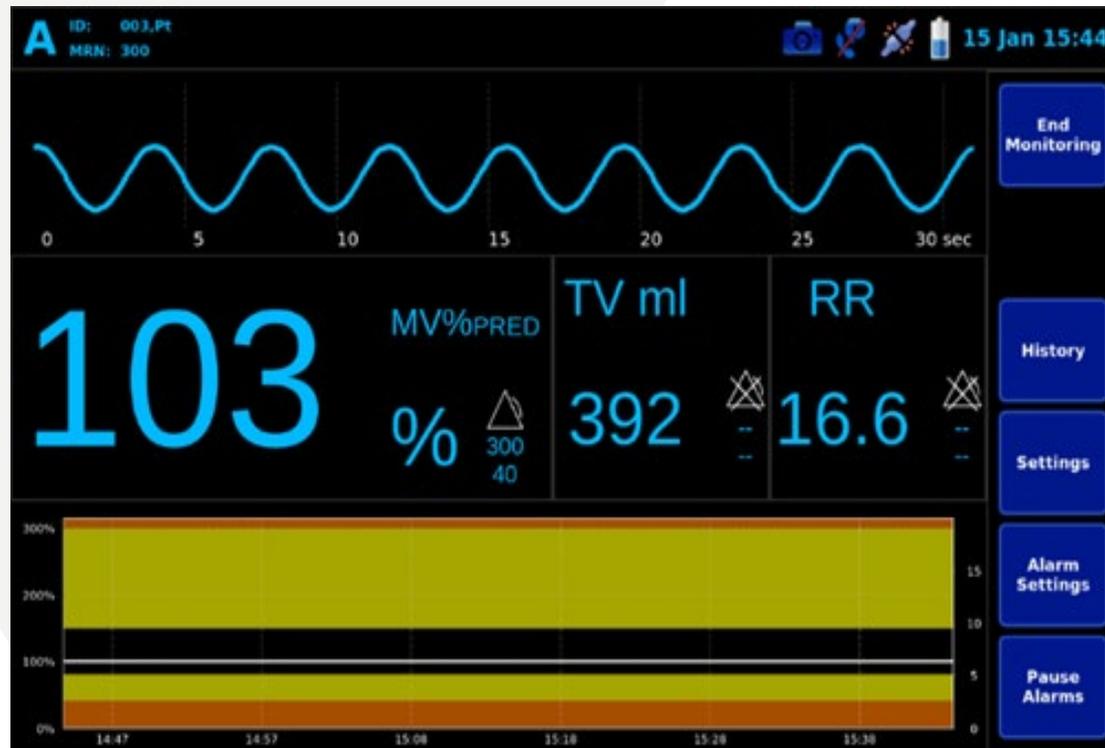
Percent Baseline: used for non-intubated patient who presents with unilateral (NOT bilateral) asymmetry, has not been provided sedation/analgesia before the start of the monitoring session, and can also be used to initiate monitoring in the PACU when a pediatric patient has not been monitored in the Operating Room while on the Ventilator.

Critical Care Screen

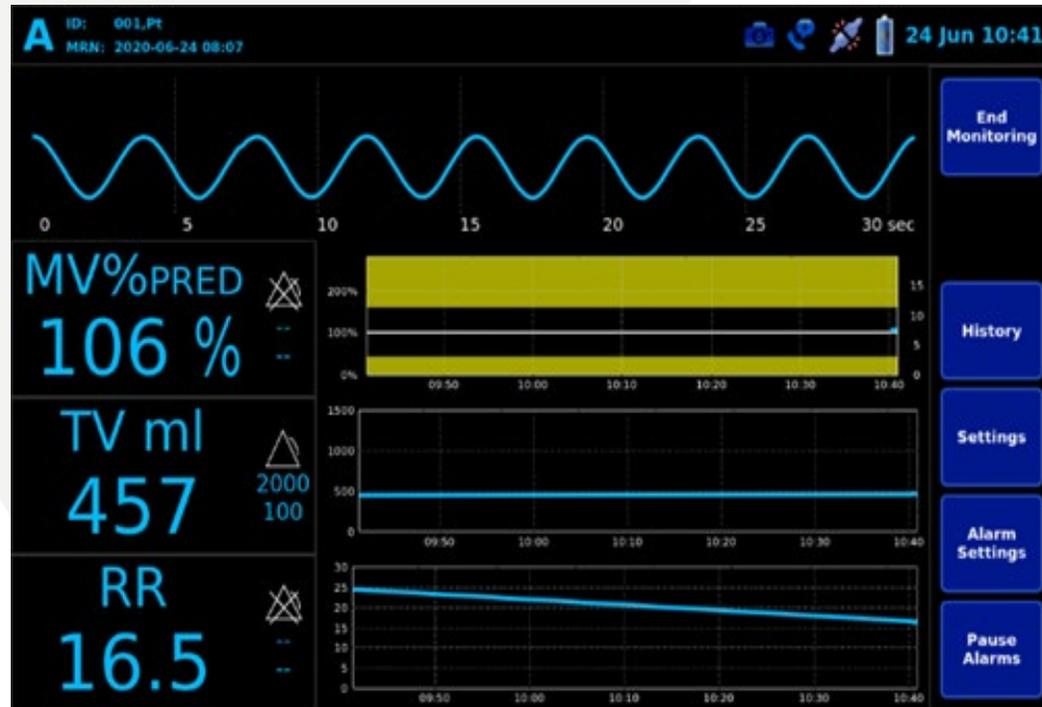
The screen that most looks like the 1Xi



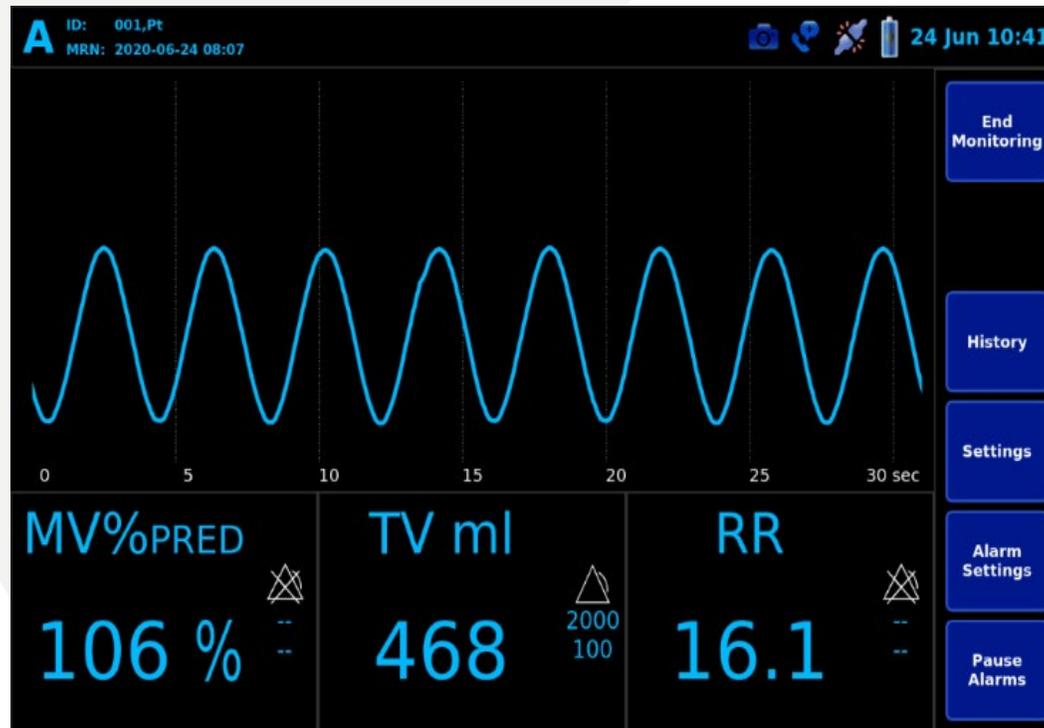
General Screen



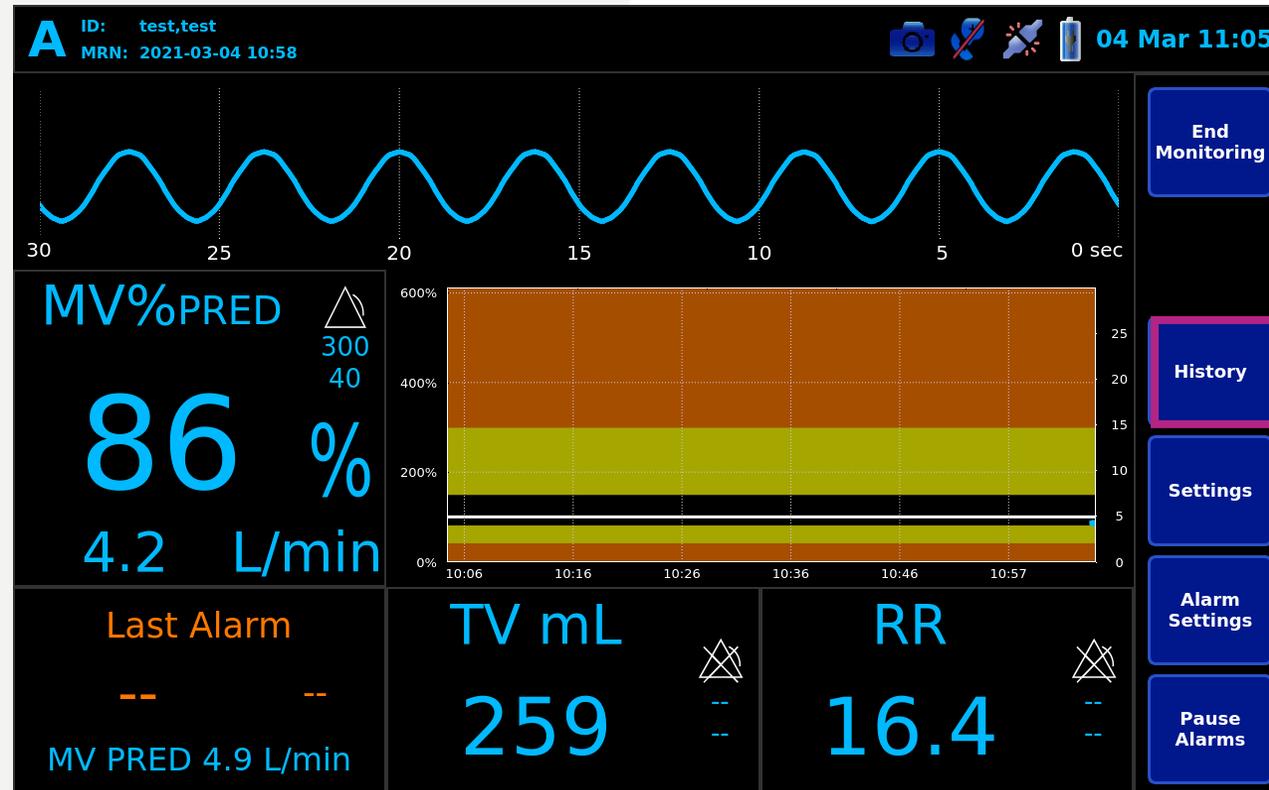
Stacked Trend Screen



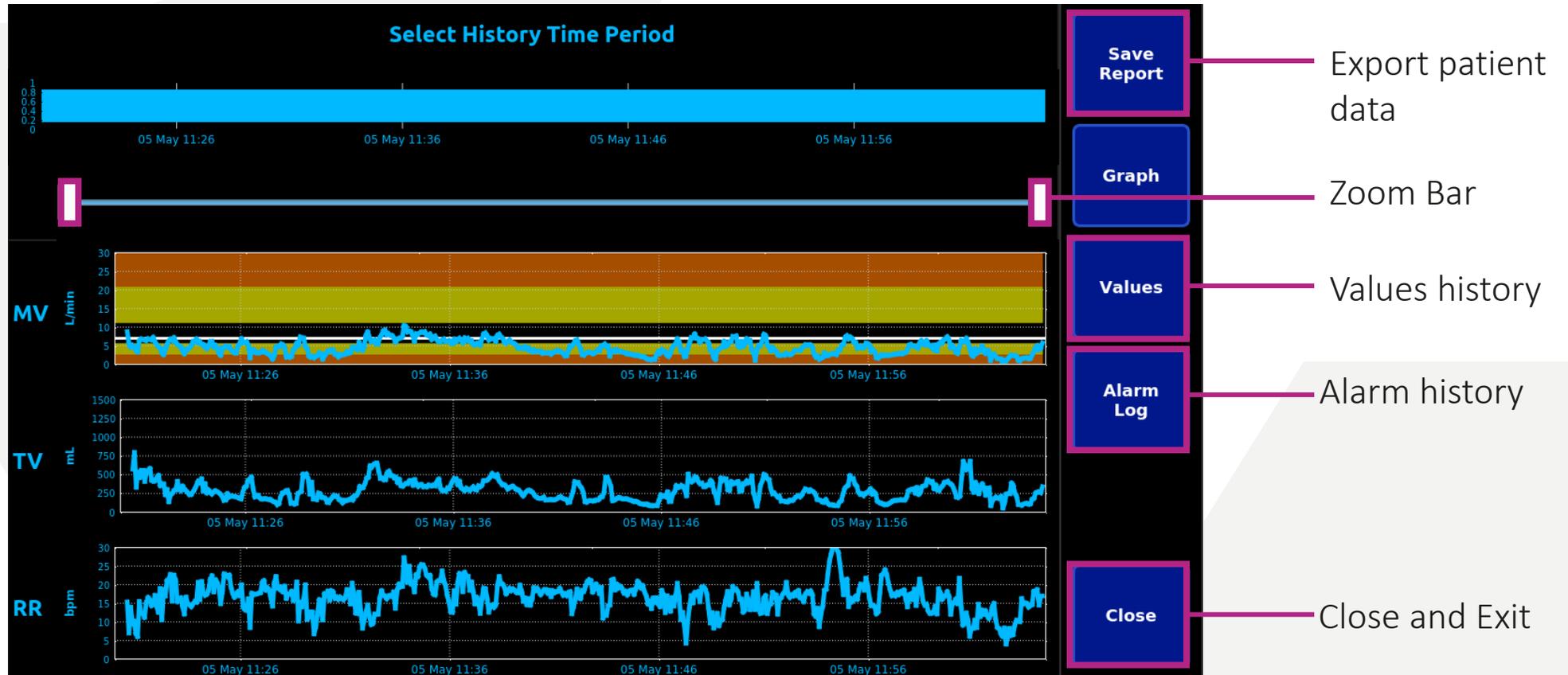
Respiratory Trace Screen



Current Patient History



History Screens



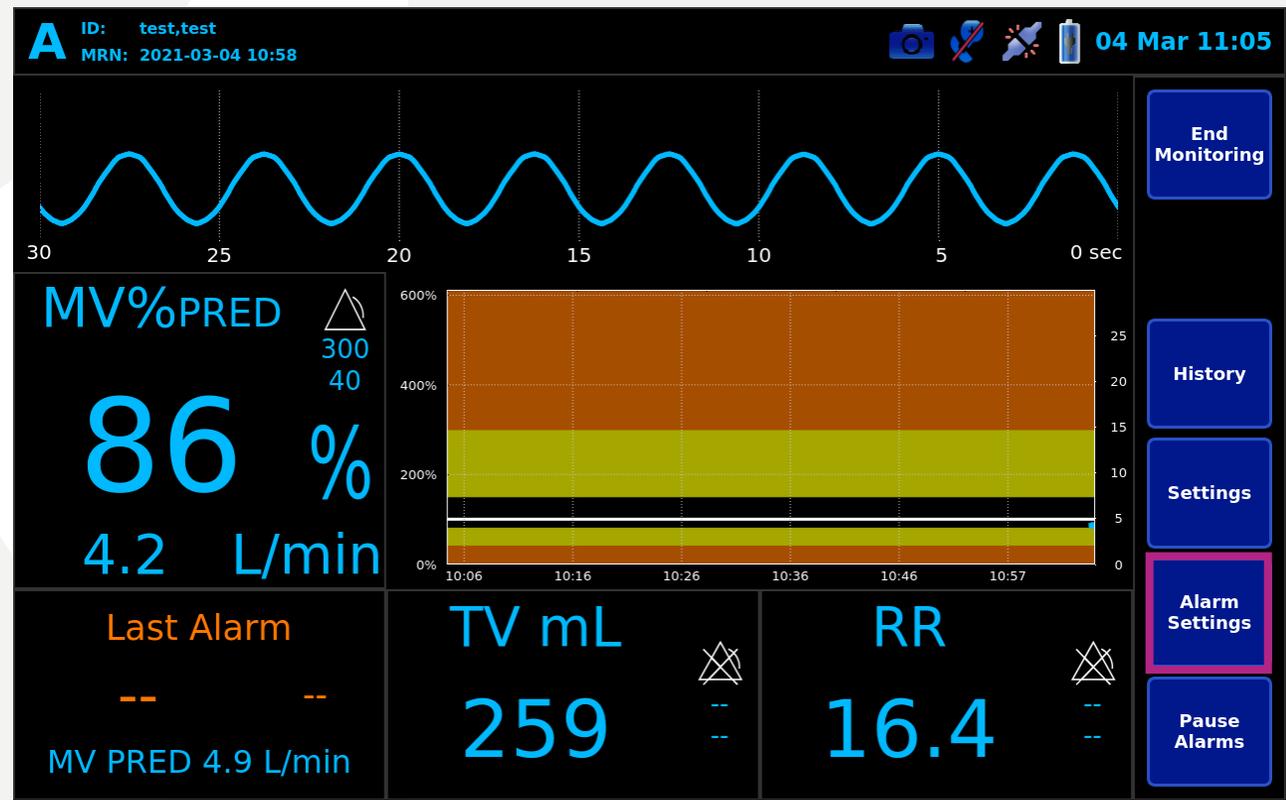
Alarm Settings



The *ExSpirom 2Xi* includes an alarm system which generates visual and audible alarm signals in response to the detection of technical or physiological alarm conditions

To Set Alarm Limits:

To set alarm limits for MV, TV, or RR, press the Alarm Settings button or the Alarm Icon. This opens the Alarm Limits Pop-up. Once alarms are configured for the parameter, the alarm limits are displayed below this symbol.





Physiological Alarms

The *ExSpirom 2Xi* physiological alarms appear on the monitoring screen in “orange”

The following alarm conditions are configured and accepted by the operator from the Alarm Limits Pop-up before each monitoring session:

- Low MV
- Low TV
- Low RR
- High MV
- High TV
- High RR



Technical Alarms



The *ExSpiron 2Xi* physiological alarms appear on the monitoring screen in “blue”

. The following technical alarm conditions are monitored by the Alarm System:

- **Low Battery**

- Alarm is triggered when the battery life is below 10%.
- Alarm is resolved when the Power Cable is plugged in.

- **PadSet Detached**

- Alarm is triggered when the ExSpiron PadSet is pulled off the patient’s skin or when the PadSet is detached from the Patient Cable.
- Alarm is resolved when the ExSpiron PadSet is correctly adhered to the patient and connected to the Patient Cable.

- **Signal Interference**

- Alarm is triggered when the system detects interference from other equipment including high frequency surgical systems.
- Alarm is resolved when the system has 10 seconds of good signal and can calculate MV, TV and RR.
- Alarm can also be triggered by an intermittently disconnected PadSet or Patient Cable.
- Note: The audible alarm signal for this alarm condition is generated only if:
 - The ExSpiron 2Xi detects intermittent interference for 5 consecutive minutes.
 - The ExSpiron 2Xi detects interference so severe that it is impossible to calculate MV, TV and RR for more than 30 seconds.
 - The Signal Interference Audible Alarm toggle button is ON.

- **High Impedance**

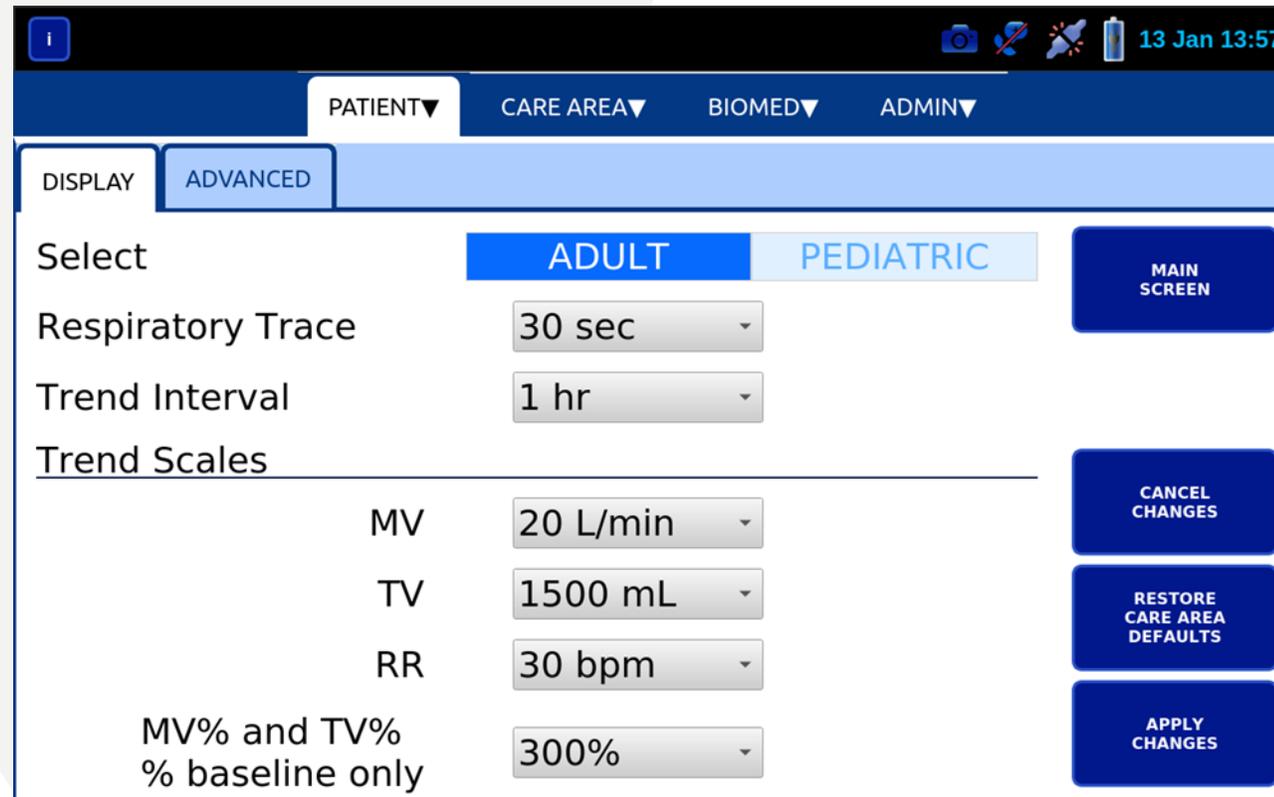
- Alarm is triggered when the patient’s baseline impedance is too high.
- May be resolved by replacing the Electrode PadSet.

- **Low Impedance**

- Alarm is triggered when the patient’s baseline impedance is too low.
- May be resolved by replacing the Electrode PadSet.

Patient Settings

Any custom cutoff set in this setting will be cleared when the current patient is closed.

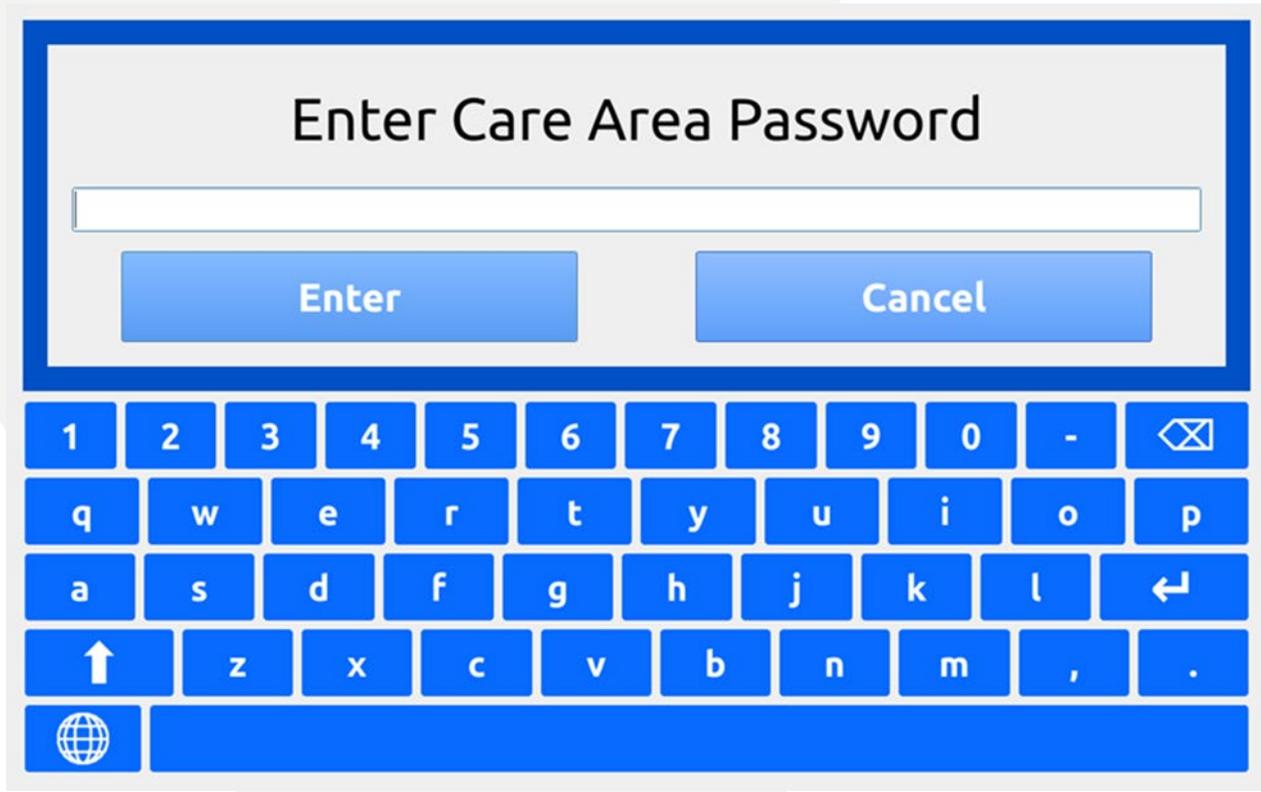


The screenshot shows a mobile application interface for 'Patient Settings'. At the top, there is a navigation bar with 'PATIENT', 'CARE AREA', 'BIOMED', and 'ADMIN' options. Below this, there are two tabs: 'DISPLAY' and 'ADVANCED', with 'ADVANCED' being the active tab. The main content area is divided into two sections: 'Select' and 'Trend Scales'. The 'Select' section has two buttons: 'ADULT' (highlighted in blue) and 'PEDIATRIC'. Below this are three rows of settings, each with a label and a dropdown menu: 'Respiratory Trace' set to '30 sec', 'Trend Interval' set to '1 hr', and 'Trend Scales' (which is a section header). Under 'Trend Scales', there are three rows: 'MV' set to '20 L/min', 'TV' set to '1500 mL', and 'RR' set to '30 bpm'. At the bottom of the 'Trend Scales' section, there is a label 'MV% and TV% % baseline only' and a dropdown menu set to '300%'. On the right side of the screen, there are four blue buttons: 'MAIN SCREEN', 'CANCEL CHANGES', 'RESTORE CARE AREA DEFAULTS', and 'APPLY CHANGES'. The top right corner of the screen shows the date and time: '13 Jan 13:57'.



Care Area Settings

In Care Area Tab, use the buttons to select the default units for device. The Care Area Alarms allows the user to modify the alarm limits settings. A Care Area Password is required to edit these settings.





Care Area Settings cont.

13 Jan 13:58

PATIENT CARE AREA BIOMED ADMIN

DISPLAY ADVANCED UNITS ALARMS

Select **ADULT** PEDIATRIC **MAIN SCREEN**

Trend Interval 1 hr

Trend Scales

| | | |
|----|----------|--------------------------------|
| MV | 20 L/min | CANCEL CHANGES |
| TV | 1500 mL | RESTORE BIOMED DEFAULTS |
| RR | 30 bpm | APPLY CHANGES |

MV% and TV%
% baseline only 300%

13 Jan 13:58

PATIENT CARE AREA BIOMED ADMIN

DISPLAY ADVANCED UNITS ALARMS

Select **ADULT** PEDIATRIC **MAIN SCREEN**

Alarm Delay 2 min

Cutoff Filter 40 bpm

CANCEL CHANGES

Signal Interference Audible Alarm

OFF **ON** **RESTORE BIOMED DEFAULTS**

Default SCREEN **Critical Care** General Care **APPLY CHANGES**



Care Area Settings cont.

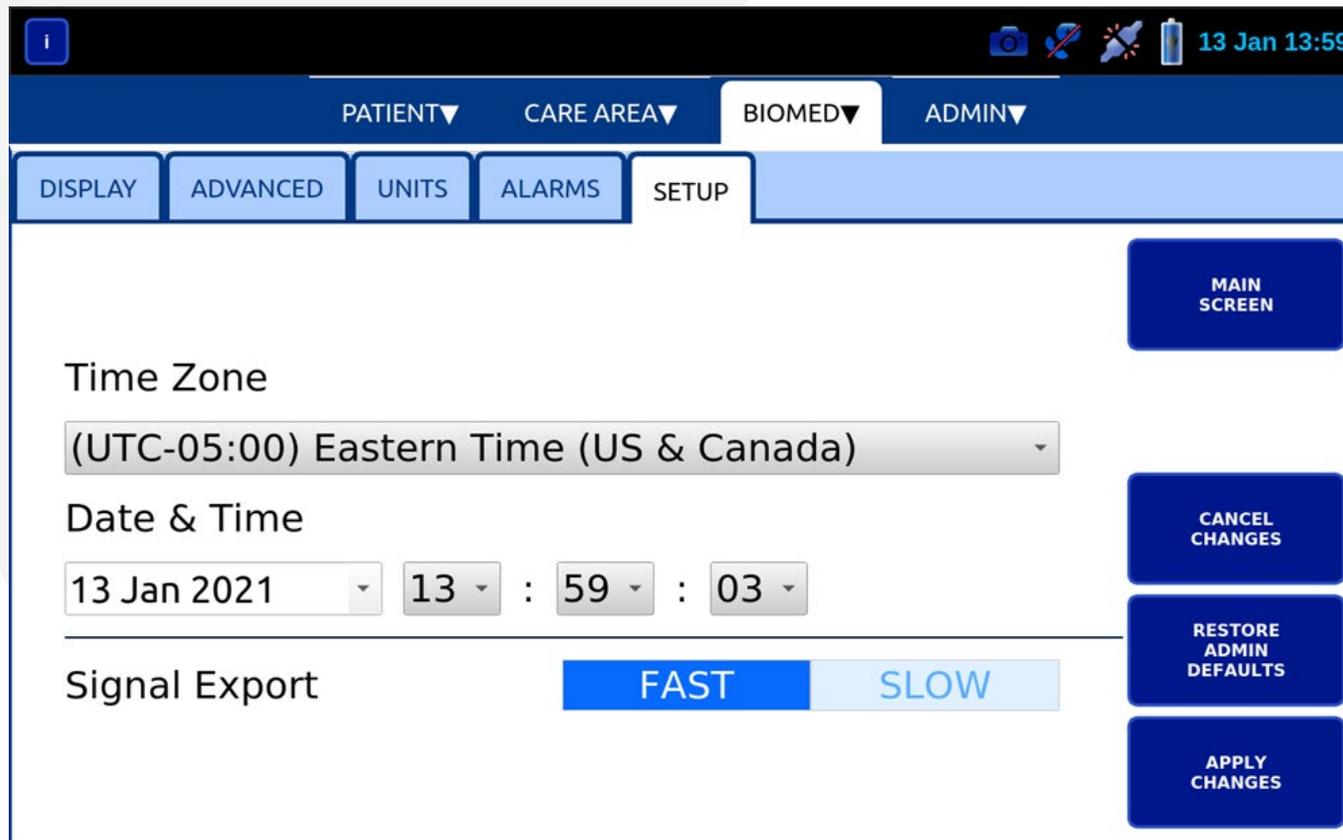
The screenshot shows the 'UNITS' settings screen. At the top, there is a navigation bar with 'PATIENT', 'CARE AREA', 'BIOMED', and 'ADMIN'. Below this is a sub-menu with 'DISPLAY', 'ADVANCED', 'UNITS', and 'ALARMS'. The 'UNITS' section contains three rows of settings: 'Height' with 'cm' and 'in' options, 'Weight' with 'kg' and 'lb' options, and 'MV' with 'L/min' and 'ml/min' options. On the right side, there are four buttons: 'MAIN SCREEN', 'CANCEL CHANGES', 'RESTORE BIOMED DEFAULTS', and 'APPLY CHANGES'.

The screenshot shows the 'ALARMS' settings screen. At the top, there is a navigation bar with 'PATIENT', 'CARE AREA', 'BIOMED', and 'ADMIN'. Below this is a sub-menu with 'DISPLAY', 'ADVANCED', 'UNITS', and 'ALARMS'. The 'ALARMS' section contains three rows of settings: '% MV' with a range from 40 to 300, 'TV ml' with a range from 100 to 2500, and 'RR bpm' with a range from 5 to 125. Each row has 'Low' and 'High' labels and 'OFF' options. On the right side, there are four buttons: 'MAIN SCREEN', 'CANCEL CHANGES', 'RESTORE BIOMED DEFAULTS', and 'APPLY CHANGES'.

BioMed Settings

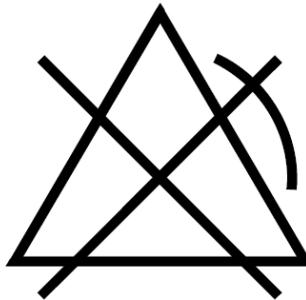


In the BioMed Tab, you can change the settings globally for facility preferences on display ranges, units, alarm defaults date, time and signal export speed.

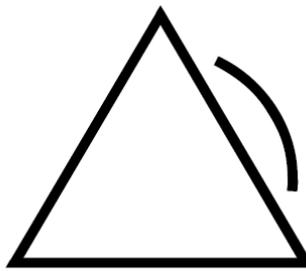




Alarms on the screen



Alarm Limits Not Configured



Alarm Limits Configured



Alarms Paused



Pausing/Unpausing Alarms

The alarm system can be paused at any time by pressing Pause Alarms at the bottom right of the Monitoring Screen.

While the alarm system is paused, no alarm sounds will be generated, and the text “ALARMS PAUSED” will appear in the notification panel with a 2-minute timer. If a physiologic alarm is triggered, the value will still turn orange, even if the alarm system is paused.

The alarm system will remain paused for 2 minutes after the button is pressed. Alarms can be unpaused by pressing the Unpause Alarms button .

Alarms will resume after two minutes if not manually unpaused.



Patient Monitoring Connection

The data from the ExSpirom2Xi can be displayed on the Philips Patient Monitor using Intellibridge, Intellivue and Capsule



Not connected to IntelliVue monitor



Connected to IntelliVue monitor

The data from the *ExSpirom 2Xi* that can be displayed on the Philips Patient Monitor is the respiratory trace (IntelliBridge Only) and the three parameters: Minute Ventilation (MINVOL), Tidal Volume (TV) and Respiratory Rate (RRaw).

All *ExSpirom 2Xi* alarms are transmitted to the Philips IntelliVue Monitor. Pausing alarms on the *ExSpirom 2Xi* pauses ExSpirom-related alarms on the Philips Patient Monitor. Alarm conditions transmitted by ExSpirom 2Xi will appear on the IntelliVue monitor within 10 seconds.



Nurse Call

The *ExSpiron 2Xi* can communicate audible alarms to a Nurse Call System via a 1/4" Nurse Call Cable



Not connected to Nurse Call Accessory



Connected to Nurse Call Accessory

