HELP THEM BREATHE MORE NATURALLY
Your patients’ comfort matters.

That’s why we designed the Puritan Bennett™ 980 ventilator with some of the most innovative breath-delivery technology available.

Simple. Smart. Safe. Because helping your patients breathe more naturally† may make them more comfortable, too.¹

¹Compared to conventional mechanical ventilation (VC, VC+, PC, PS)
Simple
- Innovative user interface
- Customizable display
- Intuitive screen navigation

Smart
- Advanced synchrony tools let you set the ventilator to adapt to each patient’s unique needs
- These synchrony tools help provide the right level of support throughout each breath

Safe
- Unique ventilator assurance feature*
- Integrated expiratory filtration system
Being in the ICU can be unsettling and uncomfortable for patients.

With limited consciousness and limited ability to communicate, patients have little control over their own comfort.\textsuperscript{2,3}

Machines and clinicians may need to assume control over the most instinctive decisions patients have made all their lives, including:\textsuperscript{4}

- When to eat and move around
- How to moderate their body temperature
- When and how they breathe, if they are being mechanically ventilated

It’s easy to see why 71 percent of ICU patients show signs of agitation at least once during their ICU stay.\textsuperscript{2}

That’s why — out of compassion — clinicians often turn to sedation to relieve their patients’ distress.\textsuperscript{2}

But research confirms a strong link between sedation and poor patient outcomes.\textsuperscript{2}

Learn more at medtronic.com/icusedation
Ventilation is sometimes necessary.

But conventional modes of ventilation can’t always match your patients’ breathing patterns or properly manage their work of breathing.

This can make them agitated. And without a better way to manage agitation, sedation can seem like the only option.

In fact, one study reported that 42 percent of all increases in sedation are responses to patient-ventilator asynchrony.⁵,⁶

Respiratory muscle atrophy begins in as little as 18 hours.⁷ Many things can lead to diaphragm atrophy, but reduced activity — including sedation — may be a significant factor.⁸,⁹

What’s more, an increase in sedation can lead to longer ventilator dependency.²,³

That’s the asynchrony vicious cycle. And it may impact your patients’ outcomes.

When used inappropriately, sedation can lead to:

- Failure to wean
- Prolonged ICU stays
- Increased cost of care²

1. Patient is mechanically ventilated
2. Sedation is lightened
3. Patient becomes agitated
4. Patient is sedated to alleviate agitation
5. Patient is at increased risk for muscle atrophy

AN EXAMPLE OF THE VICEOUS CYCLE OF ASYNCHRONY
PATIENTS FACE ENOUGH CHALLENGES IN THE ICU. TRYING TO BREATHE SHOULDN’T BE ONE OF THEM.

Our advanced synchrony tools adapt to each patient’s unique needs — and provide the appropriate level of support throughout the breath, from initiation to completion.

With calculations happening every 5 milliseconds, the Puritan Bennett™ 980 ventilator stays in tune with patients’ demands. It helps them receive the flow and volume they want — when they want it, from breath to breath.
HELPING PATIENTS
DICTATE BREATHS

PAV™+ Software

With PAV™+ software, patients define the rate, depth, and timing of each breath they receive. It can:

• Help you clearly understand the work required to complete each breath
• Tell the ventilator when patients want to begin inspiration, how deep the breath should be, when to end the breath, and how often the patient needs to breathe
• Continuously measure patient demand by reading flow and volume every 5 milliseconds
• Change ventilatory support within the same breath as patient demand changes

When you set the % support within PAV™+ software, the patient and ventilator share the work of breathing (WOB).

MEASURES R (RESISTANCE) AND C (COMPLIANCE)

Measures resistance and compliance every 4 to 10 breaths

CALCULATES WOB WITH R AND C DATA

With R and C data, it's possible to calculate patient-generated pressure ($P_{\text{mus}}$) and WOB in real time using the equation of motion

$$P_{\text{mus}} + P_{\text{vent}} = (\text{flow} \times \text{resistance}) + (\text{volume}/\text{compliance})$$

PROVIDES A VISUAL INDICATOR OF PATIENT'S WOB

Once % support is set, you can check the WOB bar for real-time feedback on how much work the patient is doing

Getting real-time feedback on WOB helps you keep the patient at a sustainable level, reducing the risk of respiratory muscle atrophy and potentially off-loading enough work to avoid fatigue. 

8,9,17
Leak Sync software
Leaks from a mask interface or uncuffed endotracheal tube are common during mechanical ventilation.\textsuperscript{11-13} And that can cause auto-triggering and asynchrony. Leak Sync software can help:
• Detect changes in breathing
• Compensate for leaks
• Adjust effective trigger sensitivity, helping manage the patient’s WOB\textsuperscript{5,10}

Published study
Puritan Bennett™ ventilator leak compensation performance during both invasive and noninvasive ventilation\textsuperscript{14}

Invasive mechanical ventilation
• The Puritan Bennett™ 980 ventilator is one of only two ventilators to acclimate to all leaks in invasive ventilation\textsuperscript{15}
• Leak Sync software now works with VC+ and VS modes\textsuperscript{15}
• Volume-targeted ventilation is shown to be the most lung-protective mode for babies\textsuperscript{16}

Noninvasive ventilation
• In a comparison study using 5 ICU ventilators, the Puritan Bennett™ 980 ventilator was the only ventilator to acclimate to all leaks in noninvasive ventilation\textsuperscript{15}
The Puritan Bennett™ 980 ventilator is built on the reliability and sophisticated breath-delivery technology you have come to expect from this portfolio. With features you can depend on, including:

- **NeoMode 2.0 software**: Helps you provide ventilatory support to neonates weighing as little as 300 grams by delivering tidal volumes as small as 2 mL
- **Noninvasive software**: Allows versatile options, including SIMV and CPAP
- **BiLevel software**: Permits spontaneous breathing at all times and supports biphasic or airway-pressure release ventilation for extra flexibility
- **Proximal flow sensor**: Measures lower flows, pressures, and tidal volumes right at the patient wye in neonate applications
- **Volume control plus**: Lets the patient take spontaneous breaths to achieve a targeted tidal volume as pressure is automatically adjusted
- **Respiratory mechanics software**: Monitors key respiratory parameters for easy patient-status assessment
- **Tube compensation software**: Accurately overcomes the WOB imposed by an artificial airway

Our assurance program includes:

- **Ventilator assurance**: In the event of certain system failures, the ventilator continues to deliver support as close to preset settings as feasible
- **Status display**: An additional screen with data display on the breath delivery unit (BDU) in case the graphic user interface (GUI) is unavailable
- **Stand-by state**: Pauses ventilation while the patient is disconnected; preserves settings, auto-detects the patient upon reconnection, and resumes ventilation
Quality
Our service team worked hand-in-hand with design engineers during the development of the Puritan Bennett™ 980 ventilator. So they can provide the high-quality service that you have come to expect.

Consistency
Our service team operates on a solid foundation of experience and expertise, with more than 50 years of experience with Puritan Bennett™ ventilators.

Responsiveness
With more than 40 customer support engineers across the country, our fully integrated sales, service, and clinical support team lets us respond quickly to your needs.

Integrity
We prioritize strict compliance with industry standards for quality management systems and with our manufacturer-recommended service maintenance schedule.

* Ventilation Assurance provides for continued ventilatory support using one of three backup ventilation (BUV) strategies, bypassing the fault to maintain the highest degree of ventilation that can be safely delivered 

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