

# Can Technology Relieve Pulmonary Complications—and the Staffing Shortage?

## Introduction

Hospitals throughout the United States and worldwide have struggled with understaffing for years, with the effects of the COVID-19 pandemic pushing them to their limits.<sup>1,2</sup> Today, healthcare leaders are challenged to address this national shortage of clinical staff in order to minimize the negative impact it may have on patient care.

One area of the acute care environment that warrants critical attention in this regard is the respiratory therapy department. Recently in the spotlight for treating COVID patients, this department plays a critical role throughout the hospital system: treating patients with chronic respiratory conditions as well as those who develop acute conditions post-surgery.

Solving for a staffing shortage in respiratory therapy—or anywhere in the hospital—by hiring more clinicians may take years. New respiratory therapists (RTs) will need to be recruited, educated, and trained. While this may offer a long-term solution, this white paper proposes another. Technology may offer a solution that enables hospitals to treat more patients who have respiratory problems using the staff they have today.

## Parameters of the RT Labor Shortage

The current labor shortage can be viewed as a supply and demand imbalance. Demand for RTs is growing, the result of more patients with acute and chronic respiratory conditions due to an aging population, the elevated acuity of patients, and the COVID-19 pandemic, including long-COVID patients.<sup>3</sup> This demand may be contributing to the fact that 79% of surveyed RTs said they're experiencing burnout, with inadequate staffing cited as a primary contributing factor.<sup>4</sup>

On the supply side, it's estimated that more than 92,000 RTs will leave the profession by 2030.<sup>3</sup> While this exodus is occurring, enrollment in respiratory care education continues on a downward trend.<sup>5</sup>

The bottom line? In a healthcare environment where the number of patients with respiratory conditions is on the rise, the number of RTs available to treat them continues to decline.

### ↑ DEMAND

- Aging population
- Growing incidence of respiratory disorders
- Elevated acuity of patients

### ↓ SUPPLY

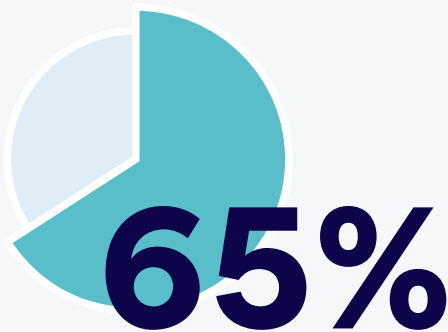
- Decline in respiratory care education program enrollment (27% decrease since 2010<sup>3</sup>)
- Projected RT retirements (92,474 by 2030<sup>3</sup>)
- RT burnout

## Clinical and Economic Impact

Beyond the toll on RTs, healthcare leaders need to consider the other ramifications of this shortage. Surveyed RTs, for example, cited understaffing as one of the top barriers to better patient care.<sup>6</sup> The value these clinicians bring in a clinical setting has been studied and documented. For example, the incidence of ventilator-associated pneumonia (VAP) declined with intervention that included respiratory therapists doing oral care in patients receiving invasive mechanical ventilation.<sup>7</sup> Similarly, RT participation in weaning protocols has been associated with superior outcomes in mechanically ventilated medical patients.<sup>8</sup> If there aren't enough RTs to treat patients in these and other situations, will patient outcomes worsen?

In addition to this clinical impact, there's a potential economic one: if patient outcomes worsen, it can lead to longer hospitalizations and higher costs of care.<sup>9</sup> Today, respiratory failures impose an enormous economic burden for hospitals—due to prolonged mechanical ventilation, ICU admissions, longer hospitalizations, greater resource utilization, and higher readmission rates. In surgical procedures, respiratory failures are considered the leading cause of death and the leading driver of hospital costs. Postoperatively, respiratory failures that require prolonged mechanical ventilation or re-intubation account for poor outcomes and high economic costs.

## TECHNOLOGY AS A GAME-CHANGER



**When surveyed, 65% of RTs said that the availability, function, and performance of technology impacts their ability to care for patients.<sup>6</sup>**

Not surprising, considering the impact of technology throughout the healthcare environment.

Medical technology has shown its potential to be a workforce multiplier, dramatically increasing the power of a resource by enabling more efficient and effective healthcare. Artificial intelligence, for example, supports imaging-based diagnosis in radiology, dermatology, and ophthalmology.<sup>10</sup> Telemedicine was a key enabler during the COVID pandemic, with potential for years to come.<sup>11</sup>

With this frame of reference, it's worth considering how technology can enable more patients to be treated without having to add more staff. And how that can ease a staffing shortage.

## A Promising Technology Solution

When it comes pulmonary complications, such a technology exists in the form of Oscillation and Lung Expansion (OLE) therapy. This proven<sup>12</sup> respiratory therapy has been tested and used in acute care and home care settings and shown to provide outstanding clinical outcomes. It offers a number of features that demonstrate how it could help alleviate the workforce strain related to respiratory complications by reducing treatment time, as well as time on ventilator,<sup>12</sup> length of stay,<sup>12</sup> and more.



### Reduced Treatment Time

OLE therapy is currently available on the **Volara** system. As compared to other modalities that require 45 minutes or more, this device delivers a 10-minute OLE treatment, for a shorter cycle and faster results than other therapies.<sup>12</sup> When you multiply this by the number of patients seen, and the number of treatments delivered to each of those patients, this reduced time could potentially save RTs hours at the bedside.

### Ease of Use

Automation features on the **Volara** system simplify training, whether used by staff or travel RTs, while overall ease of use supports the potential for high ROI when introduced to a facility. Plus, preset therapies can be programmed and customized, enabling one-button automation when delivering therapy.

### Reducing PPCs & LOS

In addition, the benefits of OLE therapy are well documented relative to reducing postoperative pulmonary complications (PPCs): by 31% for all patients and 47% for intubated patients.<sup>12</sup> This ability to reduce PPCs has both clinical and economic significance, as even mild PPCs are associated with increased early postoperative mortality, ICU admission, and length of stay.<sup>13</sup>

Specifically, when OLE therapy is used to treat patients with PPCs, it has been proven to reduce hospital length of stay (LOS) and time on ventilator:<sup>12</sup>

**3.9↓  
DAYS**

**REDUCED ICU LOS**  
for intubated patients, 2.0  
for all patients<sup>12</sup>

**4.9↓  
DAYS**

**REDUCED HOSPITAL LOS**  
for intubated patients, 1.6 days  
for all patients<sup>12</sup>

**68%**

**REDUCTION OF AVERAGE TIME**  
on ventilator, from 94.1 hours  
to 29.7 hours<sup>12</sup>

### Additional Benefits

While these statistics are compelling, the value of OLE extends beyond PPCs as well. Using OLE therapy to treat patients with reactive airways in the emergency department has been associated with significantly improved patient outcomes and reduced hospital admission rates.<sup>14</sup> Providing trauma patients with prophylactic respiratory treatments—including OLE therapy—has been associated with an elimination of unplanned admissions to the ICU and a decrease in hospital stay.<sup>15</sup> A reduction in the need for antibiotic use has also been reported, as well as patient-reported ease of breathing.<sup>16</sup>

## Conclusion

OLE therapy delivered by the **Volara** system supports RT efficiency and effectiveness. When RTs can more efficiently provide effective treatment using OLE therapy, it reduces the amount of time they spend with each patient on each treatment. What's more, when their patients can avoid admission altogether or be released sooner, the number of patients they need to care for may be reduced, further easing their care burden.

In addition to the benefits derived from OLE therapy in terms of patient-level outcomes, it has

been demonstrated that patient benefits can translate to hospital-level benefits, specifically hospital-level postoperative respiratory failure rates—which may lead to better economic outcomes for these facilities.<sup>17</sup>

Deploying this innovative, effective technology is a tactic hospital leaders can use today to address the RT staffing shortage. OLE therapy, as delivered by the **Volara** system, could potentially free up RT staff time while also helping to decrease patient length of stay, reduce readmissions, and more. All with the demonstrated potential for clinical and economic benefits.

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