oxygenator to the gas filter. During CPB, a 3-way cock was inserted at the gas outlet of the oxygenator to allow for gas monitoring. Liquid sevoflurane was delivered by a syringe pump. After priming the system with a bolus of 1.5 mL, sevoflurane was started at the rate of 15 mL/h, and the pump flow was adjusted to target a minimum alveolar concentration ranging from 0.8 to 1.2. Moreover, the bispectral index permitted us to determinate the depth of anesthesia, with a target range of 40 to 60. During CPB, we observed an increase of sevoflurane pump flow, ranging 15-to-20 mL/h. Indeed, during CPB, the flow in the device was continuous. Thus, the consumption was higher because the reflection function of the AnaConDa was not exploited. After CPB, the AnaConDa was moved back to the breathing circuit between the endotracheal tube and the Y-piece. When the surgery was completed, during patient transfer to the ICU, the AnaConDa was kept on the patient. In the ICU, the sevoflurane infusion via the AnaConDa was continued until the decision was made to allow the patient to emerge from anesthesia. Then, the gas outlet of the ventilator was connected to another FlurAbsorb anesthetic gas filter.

Conflicts of Interest

None.

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Establishing a Telemedicine Respiratory Therapy Service (eRT) in the COVID-19 Pandemic

To the Editor:

RESPIRATORY therapy (RT) services have played a vital role in the treatment of patients with coronavirus disease 2019 (COVID-19). RTs provide support for all ventilators, noninvasive respiratory support, and oxygen therapy in the hospital. Many RT services in the United States have been overstretched by the surge in COVID-19 patients requiring high-flow oxygen and respiratory support. Often RTs have had to quarantine due to exposure because of their proximity with patients and the fact that many devices cause aerosolization of the virus, further reducing the number of RTs for service. We aimed to support bedside RT services with an RT using the established intensive care unit (ICU) telemedicine RT (eRT) service in a tele-location covering six hospitals across the health system in continuous fashion.

An emergent committee was set up with RT and the Tele-ICU service (Penn Elert) to use our TeleICU platform across the health system in six hospitals. We established a 24/7 RT service using our established TeleICU camera system across 6 hospitals and 320 ICU beds. We implemented both proactive rounding and reactive interventions based on physiologic parameters being fed to the TeleICU. Our aim was also to reduce exposure of COVID-19 to RTs by reducing bedside contact with patients at a time when personal protective equipment (PPE) was in limited supply.

The total interventions done between March 26, 2020, and April 27, 2020, are presented in Table 1. Most interventions occurred during the day ($n = 331$) versus night ($n = 592$)—96.65% of the interventions were related to COVID pneumonia, 4.8% of interventions were considered acute, and others were based on proactive rounding. This is a conservative number, as not all interventions were logged due to clerical errors during data collection.

Interviews of the remote and on-the-ground staff revealed significant satisfaction with the service. Having eRT resulted in reduced work for the bedside team. Besides, a huddle was done between RT and eRT, reducing necessary exposure by entering the room. Penn Medicine implemented a 24-hour eRT service across the health system during the COVID-19 crisis in three weeks. About a thousand patient contact episodes were avoided or augmented using this service per month. The eRT service enabled the optimal use of resources at a time of rapid expansion of need. eRT was able to perform and complement many "traditional" duties done by the ground therapist, including ventilator checks, optimizing ventilation settings in conjunction with the bedside nurse under direct vision using the cameras and implementing, and adherence to low stretch protective lung ventilation policies. Ventilator checks themselves resulted in 735 PPE kits being spared and reduced exposure of the staff. eRT also helped reduce the number of intubations and self-extubations. The service also enabled RTs who had health issues, which precluded them from working directly with COVID-19 patients, from continuing to work effectively in their role with this patient group. We are continuing the service with the view of maintaining it in the long term.

COVID-19 created a condition for the rapid deployment of these services across a sizable academic system by alleviating several barriers, including inertia and implementation anxiety. However, our system was unique in terms of low expenses needed as we used an existing infrastructure. Other systems may encounter a significant financial barrier or opt to use less expensive alternative telemedicine solutions. We hope that our

Table 1
Number of Interventions by eRT in One Month

Intervention (n = 923)	Intervention Type	Total Number	Gains
Routine (n = 878)	Advanced ventilator management	20	Improved clinical outcomes
	ARDS compliance and ventilator check	735	Saving PPE, improved quality of care resulting in shorter stay, and monetary savings
	Checking adherence of ventilatory settings with existing orders	92	Improved clinical outcomes, safety
	Extubation check	21	Safety
	Other	10	BiPaP setting, HFNC troubleshooting
Acute care interventions (n = 45)	Advanced ventilator management	39	Improved clinical outcomes, reducing lung injury
	Other	6	Airway bleeding identification, preventing self-extubation, CPAP trial

Abbreviations: ARDS, Adult respiratory distress syndrome; BiPaP, biphasic positive airway pressure; CPAP, continuous positive airway pressure; eRT, telemedicine respiratory therapy service; HFNC, high flow nasal cannula; PPE, personal protective equipment.

example provides a framework for similar deployments in other US hospitals during an incoming wave of the COVID-19 pandemic.

Conflict of Interest

None.

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