



## Respiratory Therapy and COVID-19

### HIGHLIGHT

*Respiratory therapists (RT) are key members of healthcare teams in a variety of settings. Over the past year, they have played a significant role in the treatment and management of COVID-19 patients. ASPR TRACIE interviewed Katie Mattare, BS, RRT, Clinical Coordinator for the Adult Respiratory Therapy Department at Johns Hopkins Hospital in Maryland to gain insight into the RT experience during the pandemic. On a daily basis, she works in a clinical building, where she focuses on staffing (e.g., orientation, reviews, and discipline), education for RT, nurses, and other types of providers. Katie is also a member of the hospital's emergency management committee.*

### ■ ASPR TRACIE

Tell us about how you first learned of COVID-19 and any changes you made early on.

#### ■ Katie Mattare (KM)

Johns Hopkins Hospital (JHH) started anticipating the pandemic in January, and reached out to us, asking what types of equipment we would need to manage a respiratory pandemic.

About ten years ago, all the departments under the hospital's emergency management committee participated in a mass casualty planning exercise, so we took that information and updated all the equipment and stock numbers and went from there, anticipating how much equipment we thought we would need. It was hard to believe this was really happening at first, but the next thing I knew, they were ordering the equipment, and that's when I started tracking the situation more closely.

At the time, we did not order additional ventilators; our focus was on running the ventilators we had. We ordered ventilator circuits, water for the ventilators, heat and moisture exchangers (HME), filters, high flow nasal cannula equipment, non-invasive equipment, endotracheal (ET) tubes, ET tube tape, and suction catheters. The hospital followed up shortly thereafter and asked what kind of ventilators we would order if we needed more, and why, so we revisited our findings from the exercise and updated our information and costs.

At JHH, we had a stockpile of ventilators. As things started ramping up at our sister hospitals, they needed and were more comfortable using our ventilators, so we ordered new ones. We were lucky because we had stockpiled LTV-1200s,

**Respiratory therapists have two options when it comes to education: a two-year program or a bachelor's degree in respiratory therapy. Therapists perform clinical work for two years, sit for board exams with the National Board for Respiratory Care, and then apply for state licensure.**



which are pretty common and have been around for years. The next type we were able to purchase are the same ones we use in the hospital's emergency department (ED), so all of our charge staff were super comfortable with them. In the few years prior to the pandemic, we had also trained all of our staff on working in the ED in case there was a need, which increased their familiarity with these ventilators as well. We printed equipment guides, laminated them, and put them on the machines.

## ■ ASPR TRACIE

**As prepared as you were, what were some of your biggest challenges once patients started coming in?**

### ■ KM

There are thousands of nurses in a hospital, but only 100 RTs. I'm sure this was a problem faced by RT departments nationwide. You could pull nurses from operating rooms and cancel elective surgeries, but there were no additional RTs to pull.

We were very lucky because we have 12-14 people in our PRN pool who work on an as-needed basis. Normally, they work four shifts every six weeks, but a lot of them were able to pick up more shifts. JHH also has a separate pediatric department which was able to provide some support with minimal training. We generally have a very low attrition rate; the people who left in the past year did so to go back school. We reached out to them and other employees who had left to start families to see if they had availability, and some of them were able to come back to work for us.

We had to train others, including Certified Registered Nurse Anesthetists (CRNA) and medical residents to help manage ventilators. We also trained some speech language pathologists and physical therapists to help with head turning and basic oxygen management techniques.

Telling my staff that in addition to ramping up and working extra hours, they had to train another 40 colleagues—in the next two weeks—was not ideal, but in the end, having that level of backup was priceless.

## ■ ASPR TRACIE

**How did managing the first surge of patients go?**

### ■ KM

At first (in the spring of 2020), some RTs had concerns about being responsible for newly trained staff. We reassured them that we would all be doing our best, in good faith, and we would not be leaving anyone to deal with this alone. The new staff had lots of questions and need extra supervision. Once we had trained so many colleagues, we found a rhythm, but our personnel needs went from 15 to 30 staff per shift. I think we are the only group in the hospital that has worked mandatory overtime. The stress level stayed high for a while, but as the residents and CRNAs felt more comfortable, some of the demand on the RTs eased a bit.

What compounded the challenge of training new staff was the information about the virus and patient care changing nearly every day. We were watching other countries' experiences and incorporating their lessons while they learned them. Staff safety balanced with providing the best patient care possible was the primary goal of the protocols we developed throughout that period. This was not a period of "business as usual plus busy," it was a period of "business changing every day plus very busy."

## ■ ASPR TRACIE

**How did you communicate the changes in protocols to staff?**

### ■ KM

Luckily, our staff were as curious as we were. We sent out a daily email reminder and they checked their email every day, whether they worked or not.

## ■ ASPR TRACIE

**What was most concerning to you early on?**

## ■ KM

The hardest part was not knowing when it was going to end! It was also difficult to hear the horror stories out of New York and California, where so many staff were getting sick. I remember leaving here at the beginning, crying because I was so scared for my staff. It was overwhelming for me to imagine—we were able to manage at full capacity, but what if we started losing staff to illness? What if we had to care for our own colleagues? We were fortunate; of the small number of staff who did end up sick, we were able to trace their infection back to the community, meaning they did not become infected while providing patient care.

Another factor that contributed to our concern about staff health was our lack of personal protective equipment. Traditionally, we used new masks every time we entered a patient's room. Early on, we were instructed to wear the same mask all day, take it home, air it out, and bring it back the next day. We had to wear our surgical and N95 masks until they were soiled or damaged (a significant change from our normal practice).

Even though we ordered masks when we ordered the other supplies, we did not order enough, nor could the mask supply have kept up with the demand nationally or worldwide.



## ■ ASPR TRACIE

**Did the hospital have to retrofit any rooms to accommodate patient surge?**

## ■ KM

Not for COVID-19, but as part of the mass casualty exercise I mentioned earlier, we discussed what other places in the hospital could handle increased demands associated with oxygen and ventilator use. Then, seven years ago, we acquired another clinical building and as engineers were retrofitting the historic side, they added new piping in the walls so they could meet those demands. We took a bunch of high-flow nasal cannulas over and ran them at maximum capacity for ten minutes to determine if the pressure changed. Having this capacity has helped immensely during the pandemic.

## ■ ASPR TRACIE

**Did you run into supply issues with medications?**

## ■ KM

We pipe oxygen through the walls of the entire hospital, so thankfully oxygen was not a challenge. We tried to use as few nebulizers as possible, focusing more on using metered-dose inhalers (MDI) to minimize the risk of spread. (Nebulizers use liquid medication and run for 5-15 minutes; MDI use powdered medication and are administered via one or two breaths.) We did ration the MDIs, saving them for COVID-19 patients only.

Circuitry was a big problem; at first, we tried to solely use HMEs to humidify the gases being delivered from the ventilator to COVID patients who were having problems breathing on their own. We realized that patients were having very thick secretions and clogging their endotracheal tubes, so we had to switch to actively humidifying the gas passing from the ventilator to the patient. That is when we started running out of inhalation water and circuitry—once the clinical plans changed, we had to switch the equipment we were using, leading to a higher demand on supplies we didn't have. To ration this equipment, we changed the frequency with which we changed it out, which went against what we had been trained to do. Like our masks, we kept COVID patients on equipment until it was visibly soiled. We could not follow best practices because we simply did not have the equipment. Even today, we are still experiencing a shortage on inhalation water.



## ■ ASPR TRACIE

**Going against your training like that must do a number on your psyche; what are some of the ways you supported staff through this type of “moral injury?”**

### ■ KM

We were very lucky because we received so much support from the community. Both shifts got a lot of meals in the beginning and the hospital created a group that helped manage donations. Our administrative team shopped for snacks and drinks nearly every week and set up an area in our office where staff could come by for breaks. Having the area in our office space allowed us to physically see our staff and better determine how they were doing.

We talked a lot. We know them, we know their families, and we were aware of the additional stressors our staff had to face every day when they went home. So many of our colleagues have children at home, so after staff worked their mandatory overtime, they rushed home to help teach and care for their kids. They were physically and mentally exhausted.

## ■ ASPR TRACIE

**What are some of the lessons you’ve incorporated into your plans to prepare for another surge or similar incident?**

### ■ KM

We will definitely update our plans once a year. We will also continue training our staff to work in the ED, with a focus on the ventilators we have stockpiled. The CRNA and resident groups also requested refresher training, since it increases their comfort level. We will also keep the related education updated so that it is ready to go out immediately.

A lot of the equipment is run using proprietary parts (e.g., filters and circuits). When companies could not keep up with the demand, we ended up having to piece things together, which added unnecessary stress. We learned how important it is to buy equipment with parts that are more universal (and thus, easier to acquire in an emergency).

We were also trying to make sure we had what we needed (e.g., heated wire for active humidity) while being aware of cost. The hospital was not able to do what traditionally brought in much of the revenue to maintain its function, so it was important to keep a balance between need and want in the back of our heads.

When I had first filled out that spreadsheet ten years ago during the mass casualty exercise, we came up with numbers and increased the stock. Over time, we decreased the stock partly as a cost-saving measure, and I do not know that we will ever do that again.

## ■ ASPR TRACIE

**How did newer staff manage the past year?**

### ■ KM

Maryland’s governor passed a mandate allowing students at the end of their coursework to work with us. Some of our newest staff missed some of their senior year, so they were a little nervous and shellshocked. They did not get to experience the same amount of clinicals as other RTs had, and we adjusted our expectations of new employees accordingly. In December, during our second surge, we did have some unlicensed students supporting RTs. We ended up hiring six students who are currently seniors to work with us; we meet with them once a week to do some hands-on work with equipment in a less stressful environment.

## ■ ASPR TRACIE

**What would you tell RTs who might be second-guessing their profession?**

### ■ KM

Know that the field is constantly changing—whether from a clinical perspective or the machines you will be using—be prepared for change and to keep learning.

I would also reassure them. We had great support, not just from the community, but from our nursing and physician colleagues. On some units, we had to ask nurses to administer some of the treatments we normally would have, because we simply did not have enough staff. Everyone was very understanding, and no one was ever left alone.