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Marjorie arrived overnight at MGH, after sustaining significant burns encasing 65% of her body. A 52-year-old mother and wife, Marjorie was enjoying a celebratory barbeque pig roast when she lost her footing at the roasting pit's edge and fell onto the hot coals. EMS was activated. Within a short time, the burn team at MGH was notified and prepared for Marjorie's arrival to MGH. Marjorie's burns were evaluated to be mostly third degree and estimated to cover 65% total body surface area (TBSA).

As a respiratory therapist with experience working with patients of this nature, I know that complex burns such as Marjorie's results in the combination of hypovolemic and distributive shock. Subsequently, Marjorie was placed on multiple medications to support her blood pressure and required massive amounts of fluid to replete her volume loss. This resulted in whole-body edema, with particular concern for airway edema. Fortunately EMS had successfully placed and appropriately secured an endotracheal tube in her airway. Arriving in the burn unit at MGH, Marjorie was placed in a heated room and surrounded by a HEPA-filtered plastic bacteria controlled nursing unit (BCNU) to maintain her body temperature and decrease the risk of infection.

The next morning, I received a full account of Marjorie's admission and overnight events, including surgical plans for the day. The respiratory therapist passing off report to me relayed his difficulties managing Marjorie's ventilation, describing Marjorie's acute decompensation overnight, including how his attempts to deliver breaths to her with a manual resuscitator and peep valve connected to her endotracheal tube were minimally effective. Knowing that these types of events in fresh burn patients are commonly the result of chest wall eschar subsequently restricting breath size, I was able to point out to my colleague the most likely reasons behind Marjorie's acute ventilatory decline overnight and made suggestion on how he might elevate the urgency in communicating these findings to team members in future cases. As I suspected, in concluding his report, my colleague informed me that Marjorie's surgeon performed emergency escharotomies on Marjorie's chest overnight, which released the skin's compression around her chest and temporarily improved her ventilation. I was glad to have been able to add to my colleagues understanding of the night's events as well as discuss the early complications commonly seen in significantly burned patients.

That morning we also noticed the cuff of the endotracheal tube no longer maintained an adequate seal in Marjorie's airway, despite the appearance of an appropriate position by CXR. I was concerned that the leak would compromise ventilation. Furthermore, it might allow upper airway secretions to leak into the trachea, increasing the risk of pneumonia. I echoed these concerns to the burn

surgeons during patient rounds and anesthesia was notified of plans to change Marjorie's endotracheal tube during her trip to the OR that morning. I placed Marjorie on a transport ventilator and travelled with her to the OR. Once in the hot OR, I described Marjorie's complex pulmonary status to the anesthesiologist assigned to her surgery. Listening intently, he adjusted the Apollo ventilator to match Marjorie's settings and we carefully transitioned Marjorie off the transport ventilator. Prior to our travel, I obtained a bougie tube exchanger to use, if, in the event it became necessary during the tube exchange. Standing in the OR, I spotted a pediatric bronchoscope and an emergent tracheotomy kit prepared beside and added the bougie tube exchanger to these supplies. I then relayed to the anesthesiologist where I had placed the bougie to aide in Marjorie's artificial airway exchange.

I remained concerned about Marjorie's condition because rapid fluid shifts and severe pulmonary edema following burn procedures often present difficulties for this particular patient population, even with pre-operative planning and additional volume repletion. To my surprise, Marjorie's pulmonary status slightly improved post-operatively. She was easier to ventilate thanks to additional escharotomies and the endotracheal tube exchange was successful. The attending anesthesiologist informed me of the difficulties he experienced during Marjorie's tube exchange, needing to utilize the pediatric bronchoscope and bougie tube exchanger in order to access Marjorie's airway properly. Back in the care of the ICU team, I adjusted Marjorie's ventilator to balance her lung protection with gas exchange needs. I knew I would be meeting Marjorie's family and I welcomed any positive news to share with them. In Marjorie's case, a decrease in her ventilatory requirements served as a hopeful update amidst her devastating tragedy. I introduced myself to Jake that afternoon at Marjorie's bedside. Jake said, "They told me she'd be sick for a while, about six months... Marjorie is a fighter, she won't give up." Sensing uneasiness beneath his encouraging words, I smiled and explained to him how Marjorie's respiratory status had improved over the last few hours and that I was confident all members of the burn team were working very hard to help his wife.

Over the next month, Marjorie slowly stabilized. Her husband, Jake, adjusted his work schedule to visit Marjorie every day. Her endotracheal tube had been changed to a tracheostomy tube, as is common with patients needing prolonged intensive care. It was clear from the growing family photos displayed in Marjorie's room that her facial burns were beginning to heal, revealing familiar characteristics of her features. Jake was now able to recognize and share with us Marjorie's signature expressions and gazes for the first time in weeks. I recognized that this small improvement had put Jake at ease while providing a connection between himself and his wife. Marjorie began to occasionally nod and gesture with commands, especially when Jake was speaking to her. I could tell that Marjorie wanted to reply to her husband but was unable to.

Despite Marjorie's ability to breathe with much less help from the ventilator; her persistent tachypnea limited her candidacy for ventilator-free trials. In my

evaluation, Marjorie's vital signs were stable, and she was not diaphoretic or labored despite her tachypnea. I discussed these important points with the team and suggested performing a ventilator-free breathing trial because I suspected her tachypnea was more closely associated with an exaggerated stress response to her burn injuries opposed to respiratory fatigue. I explained to the nurse why I chose to take this risk and that I was prepared to abort the trial if Marjorie's baseline status deteriorated. Marjorie performed well on her trial despite the underlying tachypnea. Hoping to increase her ventilator-free periods each day, I was careful to consider the pace of Marjorie's ongoing surgical progress while forming her respiratory goals.

The next morning, Marjorie was more alert, making eye contact and mouthing words to Jake, who was at her bedside telling her how proud he was of all her progress. Watching her facial expressions, I wondered what Marjorie was thinking about. Did she have many questions? Was she afraid of the hanging plastic that surrounded her bed? What could I do to help her feel better? I recognized this as an excellent opportunity to evaluate Marjorie for her tolerance with a speaking valve. Additionally, Marjorie's speech language pathologist was planning to reassess Marjorie's swallow ability now that her ventilator needs had decreased, and she was more alert. The nurse also agreed this was the most awake she had seen Marjorie. Later that morning after coordinating a time with the nurse, I trialed Marjorie off the ventilator. Although she remained slightly tachypneic, she was unlabored and demonstrated stable vital signs. As I began her speaking valve evaluation, Marjorie's voice was more like a soft whisper. This was expected, due to her deconditioned state. As soon as Jake re-entered the room and heard Marjorie whisper 'Hi', his eyes lit up and a smile came across his face. He then heard Marjorie say, 'I love you.' I knew that he had not heard his wife's voice for almost two months, and I was glad to provide the chance for husband and wife to finally exchange words together.

During morning team rounds several weeks later, I heard an alarm from Marjorie's ventilator. Upon entering her room I also heard a leak around her tracheostomy tube. While I listened I checked the pilot balloon of Marjorie's tracheostomy tube and noticed that the cuff was inflated with higher than usual pressures despite a persistent audible leak. These findings suggested that although the cuff seemed to be undamaged, it was not adequately sealing to Marjorie's tracheal wall and the tracheostomy tube was now positional in its effectiveness. I was determined to find a solution to this repeated artificial airway issue.

I suspected the combination of her existing anatomy, healing inhalation injury and previous intubations might have left her trachea slightly scarred or damaged, resulting in airway distortions and thus, failure to achieve a proper seal around the tracheostomy tube cuff. Therefore, careful tube selection could offer a solution for optimal cuff position distal to Marjorie's suspected problem zone. I relayed this concept to Marjorie's surgeons and suggested placing an extra-long tracheostomy tube with a modest diameter (in order to facilitate use of a speaking valve and participate in speech therapy). Because Marjorie's unreliable mental status and continued ventilator needs persisted, the placement of a *cuffed* tracheostomy tube

(as opposed to an uncuffed tube) decreased Marjorie's risk for aspiration and inadequate gas exchange. After the last OR case of the day was complete, the burn surgeon and I exchanged Marjorie's conventional tracheostomy tube. This new tube fit well in Marjorie's airway and the previously heard leak was now eliminated.

Over the next two months, Marjorie slowly became more interactive, especially with Jake and Lori (her 15-year-old daughter) at her bedside. Lori would routinely visit each weekend and re-do her Mom's nails and Jake continued to be at Marjorie's side each day. I asked Marjorie about the bright polish updated weekly on her fingernails and toenails. Because her mental status was improving steadily but slowly, Marjorie recalled Lori's name however she was unable to recognize Lori as her daughter. While family support definitely aided Marjorie's recovery, I could only imagine how a 15-year-old girl felt in this situation. Each time I cared for Marjorie, I made an effort to mention Lori and her school events to promote Marjorie's cognitive recovery. Additionally, several times when Lori arrived after school to visit her mother, I extended Marjorie's speaking valve periods whenever feasible. Although Marjorie resisted therapies on days when she was more confused, all of her care providers were very proud of her contributions and progress.

Over the next several weeks, I could see that Marjorie's skin had tightened and contracted, causing the flange of her tracheostomy tube to rest further outward from her stoma. Knowing that Marjorie's neck contraction could lead to limited airway access and difficulty with mechanical ventilation, I alerted the burn surgeon to these concerns and emphasized my findings to Marjorie's nurse. Also due to her skin contraction and healing, Marjorie's bottom lip drooped lower each week and began affecting the quality of her speech, density of her secretions and position of her airway. As several weeks passed, I made a point to remind team members of these concerns during multidisciplinary rounds and patient rounds. Skin releases are a common procedure necessary for burn victims to properly recover. However, in order to perform Marjorie's release and skin graft, her surgeons needed to grow skin in a lab - a time consuming process - because the majority of Marjorie's skin was unharvestable. In the interim, Marjorie's mental status continued to improve, and she began communicating with the tracheostomy tube capped: a progression from her well-tolerated speaking valve use.

Eventually the cells were grown, and Marjorie's neck was released and grafted. Her tracheostomy tube no longer protruded out of her stoma and her speech improved with her lip mobility, thus enhancing the quality of her conversations with Jake and Lori. Additionally, Marjorie's oral secretions were looser and more easily managed as she gained the ability to further close her lips. Continuing his daily visits, Jake enjoyed the moments when Marjorie was more awake and communicative. Lori returned each weekend to share her school updates and made sure Mom was never without fresh nail polish.

Although Marjorie continues to struggle with new and ongoing cardiovascular and gastrointestinal setbacks, she is improving slowly. I have learned that especially

amidst an extended debilitating illness such as Marjorie's, my sensitivity to patient and family needs makes a significant difference in the quality of care received. In Marjorie's case, the care I delivered impacted how she and her family experienced progress. Through efforts mentioned above to promote teamwork while maintaining Marjorie's airway safety and ventilation needs, so much was accomplished as a result of my focused reflection on the present moment and effective collaborative communication strategies. Furthermore, my ability to recognize impediments surrounding ideal respiratory function and to provide solutions based on prioritized patient needs strengthened the integrated care Marjorie and her family experienced. Working with the burn team, caring for patients with such complex needs is an extremely challenging role and is definitely a role I am proud to participate in.

SAMPLE QUESTIONS:

Clinician-Patient Relationship

1. In your narrative, you spoke of Marjorie and the relationship you developed with her during her hospital stay. Can you explain how you develop relationships with patients who are intubated and sedated, such as Marjorie?

Clinical Knowledge & Decision Making

1. You mention it was a risk to suggest a ventilator-free breathing trial for Marjorie. Can you tell what signs helped you guide this decision making and then what signs you were looking for to assess her tolerance?

Teamwork & Collaboration

1. Could you give us an example of a time when conflict arose, and how you dealt with that conflict?