



The Sensor

Synchronized Intermittent Mandatory Ventilation

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How a shift in thinking paved the way for SIMV to allow patients to spontaneously breathe while assured baseline mandatory ventilation.

IN THIS ISSUE:

Pediatric: Difficult Airways

A case study of how the anesthesia team addressed difficulties and potential risks.

Member Highlight

Meet Linda Davidson, Cer.A.T., she is an Anesthesia Technical Assistant with IV certification.

Education Program Director Article

Bryan Fulton, M.Ed., BAA, Cer.A.T.T., discusses the rise of Anesthesia Technology in Oklahoma.



AMERICAN SOCIETY OF
ANESTHESIA TECHNOLOGISTS
AND TECHNICIANS

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Perspective

PRESIDENT'S LETTER




Greetings ASATT Members!

Hope you are all having a great start to 2022! As you are all aware, we are still in unprecedented circumstances which specifically effect healthcare more than any other industry and as we continue to navigate the uncertainty together, I would like to commend everyone in your vigilance, tenacity, and dedication to your very important role as allied health professionals on the front lines of patient care.

I have been given much thought towards the many hurdles we are needing to overcome, both on a grand scale as related to the pandemic and pertaining to our niche profession of anesthesia technology. I think you will all agree, that one of the most pressing issues for us as techs is the need for recognition across the spectrum of healthcare. It is almost universally known that our colleagues within the specialty both acknowledge and support our vital contributions in daily clinical practice, however, many decisions pertaining to our roles are made administratively, outside the boundaries of anesthesia. It is for this primary reason that the establishment of baseline qualifications, coupled with aggressive awareness campaigns at the national level, are needed for the continued evolution of our organization. It is with that need in mind, that our organization has decided to release to publication the first ever statement on the clinical use of uncertified personnel in the perioperative environment, of which we no longer endorse.

There remains a great number of clinically astute techs across the country who are not certified, I myself learned from individuals who fell in this category and, to this day, were some of the most knowledgeable and proficient I have worked with. However, to advance the profession to the level of recognition needed, it will be imperative that a professional baseline within our own society be established before any large progress can be made exogenously, specifically in terms of legislation, and of which can only be accomplished via certification.

As defined by Oxford languages, the world's leading dictionary publisher, the term certification is defined as "the action or process of providing someone or something with an official document attesting to a status or level of achievement." Such achievement is going to be the platform by which we all will be able to catapult the field into legitimacy and I hope you all will be joining me in this sentiment, as we collectively and continually embark on the continued evolution of our profession.

David Foster, Cer.A.T.T.
ASATT President 

Update

SOCIETY STATEMENT

Statement on the Clinical Use of Uncertified Personnel


Developed By: Executive Committee

Last Amended: January 1, 2022 (original approval: October 23, 2021)

Anesthesia Technology is an allied health profession, specifically focused on fundamental and advanced clinical procedures, which assist the anesthesia provider in the safe and efficient care of patients undergoing procedures requiring and/or related to anesthetic care. Historically, the role of such personnel in the perioperative setting, associated duties of employment, and defined job descriptions have been largely varied and inconsistent across the country. Many health care organizations implement the use of untrained personnel in the role, often requiring only a high school diploma as the entry barrier to employment. It is for this reason that the American Society of Anesthesia Technologists and Technicians (ASATT) strongly believes that all personnel providing ancillary related care, both directly and indirectly to patients undergoing anesthesia, must demonstrate competencies and possess qualifications appropriate for the provision of such services.

The minimum requirements for education, training, and competency meeting said standards are provided via the national certification examination (NCE) which can only be obtained after entering and successfully completing a unique and rigorous formalized educational process in the field of anesthesia technology, which confers both an associate level college degree and outcomes-based clinical skill set appropriate for entry level professional engagement in the field. Therefore, ASATT will only endorse this practice as one that is limited to those who have demonstrated such ability by successfully passing the NCE.

The continued use of uncertified anesthesia technical staff to perform clinical duties in hospitals across the country has become of great concern to our society, as the use of such unqualified personnel in the clinical capacity has a direct negative impact on patient care. We firmly believe that standard clinical duties assigned to anesthesia technical staff, including, but not limited to airway management, transducer assembly, machine diagnostics, intra-aortic balloon pump, cell salvage, blood administration, rapid transfusion devices, point-of-care testing, and advanced hemodynamic monitoring, should only be performed by those who hold an unencumbered certification issued by ASATT. Furthermore, procedural assistance during the anesthesia care continuum including, intravascular access, intravascular monitoring, general, regional, and neuraxial anesthesia, should only be performed by individuals who carry an unencumbered certification in the profession.

Certified Anesthesia Technologists (Cer.A.T.T.) and Technicians (Cer.A.T.) are individuals who have validated their cognitive and psychomotor abilities through examination and subsequent certification. These individuals are required by ASATT to maintain professional development via continuing education earned on a biannual basis. All other allied health professions use the above-mentioned practices to ensure patient safety and the maintenance of professional and clinical competency—a practice ASATT also endorses. 

Spotlight

MEMBER HIGHLIGHT



Linda Davidson, Cer.A.T.

What is your current job title?

Anesthesia Technical Assistant with IV certification.

How many years have you been in the Anesthesia Technology profession?

Interesting question. I have been performing anesthesia on various species of animals for 32 years. I started doing anesthesia in 1983 in veterinary medicine. I was exposed to challenges with each species, especially avians and reptiles. I have only been working with humans for 14 years.

What do you find most challenging about your job?

Utilization of my full scope of practice has always been the most frustrating. Even though I am certified IV, I haven't started an IV on a patient in 14 years. In my previous job I was placing IO's in ferrets and IV catheters on critters that weighed less than 2 lbs, yet I am not able to place IV's currently. Cell saver and blood draws are also forbidden for me where I am employed.

How many years have you been an ASATT member?

12 years.

What is your fondest memory of ASATT?

Giving birth to my 4 children is my fondest memory, but as far as work goes, I love going to seminars and conferences to hear about what you all are getting to do with all the new technology out there.

What has been your proudest accomplishment? (Personal life, professional life, or both.)

I challenged the Anesthesia Technician test and passed! I am a mother of 4 and grandmother of 4

What is your favorite food?

Thai Food

People would be very surprised to know that...

I am an Artistic Dance Roller Skater and I compete on the National Level. This was a sport I started back up from a child. I was borderline high blood pressure and diabetic. The exercise dropped my weight by 30-lbs and I no longer struggle with medical issues. The competition keeps me on my toes, or my wheels I should say.

What do you enjoy doing in your spare time?

Gardening, making jewelry, wildlife care and rehabilitation, and music. My best friend and I travel the craft fair circuit. We sell jewelry that we make and I also propagate and make succulent arrangements. The same friend and I also rehab owls and other native wildlife. We care for them and release them back into the wild. Rock and Roll concerts are one of my favorite pass times as well.


What is your favorite type of music?

Rock and Roll. I'm an 80's girl.

What is your favorite movie?

The Notebook. To find love that strong is life is rare. I hope someday everyone has that.

What would you like to get around to doing one of these days?

I am close to retiring. I want to travel and see the Americas. Starting with New Mexico. 

Highlights

SOCIETY NEWS



Regional Meetings

Region 4 and 6 will be joint-hosting the first Regional Meeting for 2022 on April 23rd! The meeting will be held via Zoom webinar. Please be on the lookout for more information via email on how to register for the meeting.

Thank you to Region 7 Director, Delbert Macanas and Region 2 Director, Karen Patrick, for hosting such a great regional webinar meeting in November!

Continue to check the ASATT website for future Regional Meetings! With the meetings in a virtual setting, this is a great opportunity to obtain more CEUs and attend different Regional Meetings. All meetings are posted under [EVENTS, MEETINGS/EVENTS](#).



Requirements For Certification To Be Re-established Or Advanced

There are three methods for your certification to be re-established or advanced:

1. **The Refresher Program** is offered to certified anesthesia technologists who have not been substantially engaged in the practice of anesthesia technology for more than 2

HIGHLIGHTS

years and must update their skills and knowledge of current clinical and theoretical practice in anesthesia technology in order to meet the established standards of practice and to apply for recertification through examination.

2. **The Advancement Program** is designed for the certified anesthesia technician who requires additional knowledge and skills in clinical practice in order to meet the established standards of practice of a certified anesthesia technologist.
3. **Provisional Recertification** may be granted for the previously certified anesthesia technologist/technician whose certification was allowed to lapse due to late or insufficient CEU credits beyond the December 31st re-certification deadline.

Visit the [Certification Page](#) on our website to download the necessary forms, applications and to learn more.



Join an ASATT Committee Today!

YOU should join a committee if:

- You enjoy being creative and brainstorming with others
- You often think, "ASATT" should do THIS...."
- You want to genuinely impact on the future of ASATT
- You're looking to gain leadership experience
- You have a genuine passion for the Anesthesia Technologist profession

If this describes you, apply for a position on a committee today. A full committee list is below but their job description of responsibilities and the application to join a committee is on our website.

- Bylaws Committee
- Code of Conduct and Ethics Committee
- Financial Committee
- Nominations Committee
- Strategic Planning Committee
- Item Writers
- Accreditation Committee
- Continuing Education Committee 

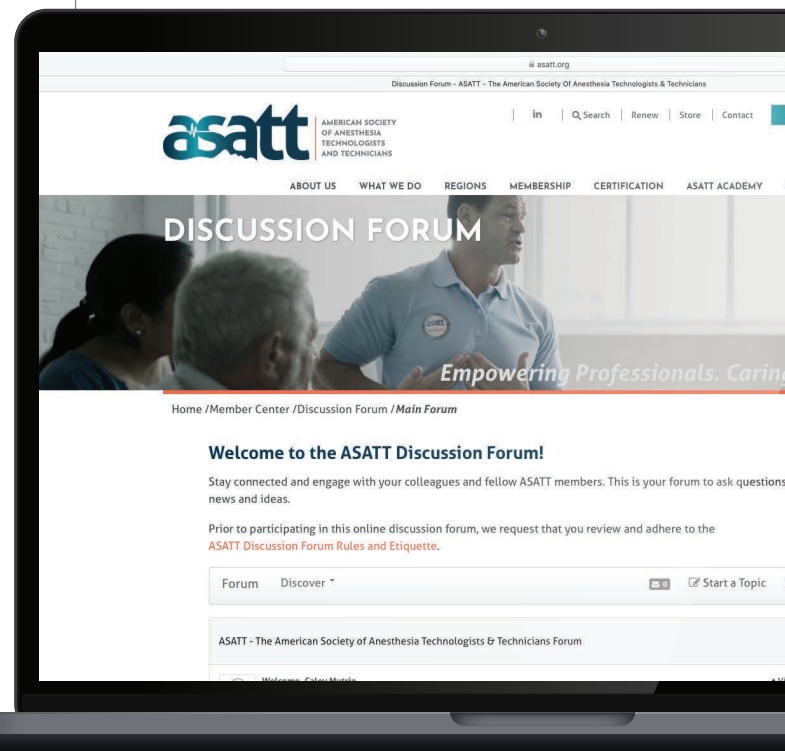
TID BITS

Share. Inquire. Learn.

ASATT's online Discussion Forum is available for members to connect and share!

ASATT has an online Discussion Forum that members can support each other through the sharing of vital resources, knowledge and experiences, and to seek answers to questions and concerns.

[Join the Conversation!](#)



Happenings

ASATT AND RELATED EVENTS


Regional Meetings

The implementation of a virtual platform to hold the Regional Meetings has been a great success so far. Our attendance numbers have never been higher. Many of you have expressed appreciation of the virtual option for its easy accessibility to the regional meetings. The goal as always is to provide as many educational opportunities as possible each year.

Regions 4 and 6 will be hosting a joint meeting April 23rd which should see a large number of attendees from all over.


Your Regional Directors are continuing to plan for more virtual regional meetings throughout 2022. Meetings will

continue to be posted to the website and announced via email and on social media. In 2022, the regional meetings will change to a quarterly basis. Doing so will benefit all participants with,

- Meeting times that allow most anesthesia technologist and technicians across the country to attend meetings.
- By holding one virtual meeting per quarter, operations for members and Regional Directors are streamlined.
- Furthermore, holding one meeting per quarter allows members sufficient time to register. This strategy also aligns with the ASATT 'New Path Forward' Initiative. 



2022 Annual Educational Conference

ASATT is currently planning an on-site 2022 Annual Educational Conference with a theme of "Evolution 2022: The Anesthesia Technology Exposition!" Believing in the power of in-person networking and education, the ASATT Board will continue to monitor COVID-19 guidelines and adjust if necessary to ensure a safe and valuable experience. **SAVE THE DATE** and plan to join us August 10-12, 2022 in Fort Worth, Texas! Details, including registration information, will be coming soon! 

Synchronized Intermittent Mandatory Ventilation (SIMV)



CHELSEY JONES, AAS, CER.A.T.T.
OKLAHOMA CITY COMMUNITY COLLEGE

Ventilation Overview

The gas exchange cycle that occurs during patient respiration is known as ventilation. The process of exchanging oxygen and carbon dioxide in the lungs is essential for the anesthesia care team, which has resulted in the optimization of ventilation modes on the anesthesia gas machine to promote patient safety and improve postoperative outcomes. Depending on the surgical teams' needs and the patient's presentation, the patient requiring mechanical ventilation will generally be ventilated in one of three primary domains. Spontaneous ventilation is the act of the patient supporting their own ventilation; moderate assisted ventilation, meaning the patient will be able to provide ventilation with the support of the mechanical vent. The final domain is obligatory ventilation or the process of the mechanical ventilator controlling the patient's entire respiratory cycle. Regardless of domain, all processes are managed and monitored according to the breath-to-breath volume displacement referred to as tidal volume and the frequency of breaths in a minute. Together, these two metrics establish a patient's minute ventilation, or volume moved in the patient's lungs with a normal range between 5-8L/min. for an adult (Butterworth, 2018).

The importance of minute ventilation is that it provides the patient care team insight into the patient's ability to remove carbon dioxide from the blood. Additionally, minute

ventilation offers insight into the patient's status. For example, a patient presenting with high-minute ventilation could indicate a patient dealing with a septic infection. Whereas a patient with a low minute ventilation would likely suffer from metabolic acidosis unless compensated by the kidneys.

Common Ventilation Mode Overview

Volume control ventilation (VCV), the most commonly employed, "delivers a set volume with each positive pressure breath (Guimaraes, 2018)." VCV ensures the delivery of consistent tidal volumes (Tv) by relying on a continuous flow rate during inspiration. With a constant flow rate and guaranteed Tv, Volume control ventilation is ideal for delivering consistently predictable minute ventilation. However, the advantage of the provider determining minute ventilation does not make VCV the stand-alone ventilation mode. VCV ventilation works on the principle of moving volume in and out with little focus on optimizing oxygenation. This is because expiration begins once the peak pressure is reached in the lung. Unfortunately, for patients with pulmonary disease or poor compliance, proper oxygenation may not occur with volume control ventilation because it is not focused on enhancing oxygen diffusion in the periphery of the lung. For this reason, anesthesia machines have included pressure control modes of ventilation.

Pressure control ventilation (PCV) "delivers a set plateau level of positive pressure with each inspiration." (Guimaraes, 2018). The advantage of PCV is that in a situation where compliance is not ideal, pressure modes of ventilation can

"VCV ensures the delivery of consistent tidal volumes (Tv) by relying on a continuous flow rate during inspiration."

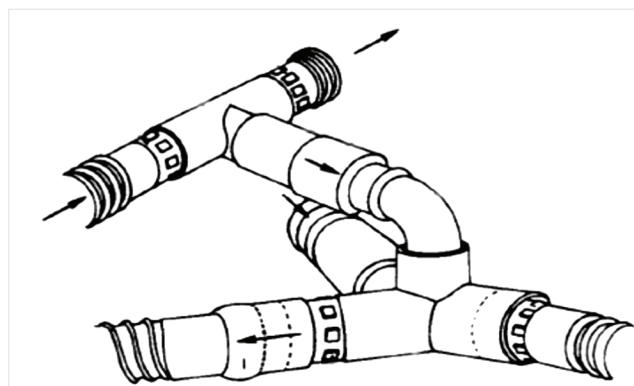
ensure adequate oxygenation without promoting conditions where barotrauma can be induced. These advantages of lower incidences of barotrauma, better oxygenation, enhanced volume distribution, and lower peak airway pressure make PCV a valuable tool for anesthesia personnel. Notwithstanding, neither

mode of ventilation is perfect, leading to advances that sought to embrace the advantages of both VCV and PCV, which is referred to as pressure-regulated volume control. The advent of these ventilation modes led to future advances in ventilation, which will be the focus of this paper.

Intermittent Mandatory Ventilation and Synchronized-IMV

Intermittent mandatory ventilation (IMV) was created in the 1970s as a weaning modality for patients needing ventilation. The goal of intermittent mandatory ventilation is to reduce the dysynchrony between the mandatory breaths delivered from the specific ventilator setting and the breaths taken by the patient. Delivering a set number of controlled, mandatory ventilated breaths, patients in between the cycle were able to breathe spontaneously and without assistance. The patient would gradually acquire the role of breathing independently by reducing the controlled ventilation rate. The downside to intermittent mandatory ventilation was the asynchrony: "mismatch between the patient's demand and the ventilator supply of measure such as ventilation rate, flow, volume or pressure (Lazoff, 2020)." Synchronized breaths (volume or pressure targeted) were administered to combat the varying lack of concurrence, creating a new modality known as synchronized intermittent mandatory ventilation (SIMV). An existing ventilator would require additional components to be added in a "tee-piece" formation. Corrugated tubing was connected to a nebulizer that was heated, the open-end limb attached to the patient's one-way valve port, and the valve was drilled into the inspiratory limb of the ventilator. Upon a spontaneous breath, the valve would then open, and gas is inhaled by the patient.

This method of ventilation senses the patient's breathing and inspiratory effort; thus, the patient receives synchronized triggered mandatory breaths while allowing for patient efforts controlled by "airway pressure drops (Lazoff, 2020)." After a particular set time (or interval), if there is no action (breath) given from the patient, "the ventilator will deliver the mandatory breath (Miller, 2013)."



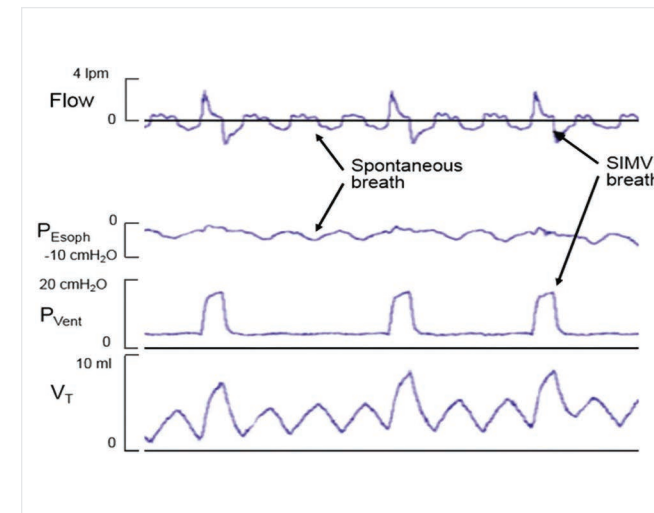
Intermittent mandatory ventilation: a new approach to weaning patients from mechanical ventilation. Chest1973;64(3):331-335

Adoption of SIMV in the clinical Setting

In the 1980s, SIMV quickly rose to prominence in the healthcare setting as an ideal ventilation mode for weaning purposes. At its height, 90.2% of hospitals were defaulting to SIMV as the preferred method of ventilation. However, by 2004 SIMVs usage dropped significantly, with only 18% of hospitals preferring SIMV as the primary mode of ventilation for weaning. In a 1990's study, researchers began to notice the decline in usage and clinicians changing perspectives on synchronized intermittent mandatory ventilation, no longer preferring it as the top-tier weaning modality. What was the reason for the drastic decline in usage? Experts determined that SIMV slowed mechanical ventilation weaning down to an average of 2-4 days, contradicting the initial theory that benefits of SIMV included "reduced work of breathing, reduction in ventilator dyssynchrony, and ease of ventilator weaning." (Lazoff, 2020.) Globally, SIMV was not the ideal choice as a weaning modality (0-6%), and countries within Europe and Latin America, was found less likely to be utilized, leaving North America with SIMV applied in cases where patients had lower severity respiratory illnesses. Essentially the real-world usage and outcomes of using SIMV were not matching the theory of why the mode was initially created.

Comparison

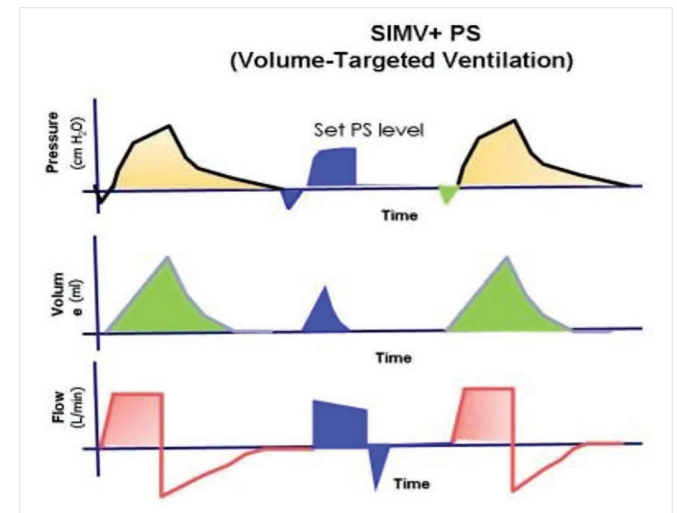
With intermittent mandatory perceived and applauded as the superb ventilation mode and the subjectivity of the importance (or popular belief of the lack thereof) regarding synchronized intermittent mandatory ventilation, a comparison study of both was conducted with neonates suffering from meconium aspiration syndrome (MAS). The aspiration of meconium occurs during labor and delivery (Tian et al., 2016). Confirmed by blood gas analysis, cyanotic lips, and labored breathing, the vocal cord is stained, and the potential for decreased lung compliance arises. Other potential consequences include airway blockage, hypoxemia, and regional lung collapsing. Research methods and analysis evaluate forty neonates, separated into two groups, one receiving proportion assisted ventilation and the later receiving synchronized intermittent mandatory ventilation. Before ventilation, an established measured: TV (tidal volume), MAP (mean airway pressure), HR (heart rates), RR (respiratory rates), PIP (peak inspiratory pressure), MABP (mean arterial blood pressure), FiO2 (fraction of inspired oxygen), and a/APO2 (arterial to alveolar oxygen tension



Bancalari, E. Nelson, C. (2015), Advances in respiratory support for high risk newborn infants. Maternal Health Neonatology and Perinatology, DOI: 10.1186/s40748-015-0014-5

ratio). At 12-hour timed intervals (1, 12, 24, and 48 hours), statistics were measured with no differentiating evidence between the two systems of ventilation in mechanical ventilation, oxygen supply time, and hospitalization (Tian et al., 2016). Additionally, no significant findings appeared in HR, FiO2, MABP, and a/APO2. However, differences were noted in MAP, RR, PIP, and TV. The differences in those two modes can be attributed to pressure control, "a driving pressure must be specified.

Additionally, an inspiratory time or expiratory time I:E ratio must be set (Butterworth, 2013)." Intermittent mandatory ventilation was initially designed as a weaning technique, but there are vast considerations to be analyzed, such as the dependency of patient profile. Research states that IMV should be avoided in patients with chronic lung disease due to muscle fatigue and the potential of air trapping, which can be avoided if synchronized intermittent mandatory ventilation is utilized. The decreased workload of IMV relies significantly on the appropriate applied parameters including, IMV system delivery, patient demography, correct application of PEEP, and correct breathing rate (Kacmarek, 2016). Respiratory alkalosis (excessive breathing, resulting in low carbon dioxide levels in the body) was initially thought to be an attribute to IMV, with lower minute ventilation, yet carbon



Jackson, Christopher. (2020) What are the advantages of pressure-support ventilation (PSV) to wean patients from mechanical ventilation? Medscape.com

dioxide production was increased. According to Kacmarek (2016), "The failure of IMV in this instance is a failure of application." This creates a problem internally; not only were the appropriate measures performed but a different modality was utilized instead of troubleshooting the issue.

Benefits

Clinical studies have shown that the "greatest advantage of SIMV over IMV is that it provides for increased patient comfort (Butterworth, 2013)." This advantage is solidified as the patient could quickly overexert their inspiration effort, the machine will swiftly provide assistance when necessary. Although the concern for an increased effort to breathe is valid, it can be countered and remedied by simply

"The greatest advantage of SIMV over IMV is that it provides for increased patient comfort."
- Butterworth, 2013


adding pressure support to synchronized intermittent mandatory ventilation. "SIMV has the advantage of avoiding acute respiratory alkalosis by allowing the patient to achieve normal alveolar ventilation through an intact ventilatory drive (Lazoff, 2020)." Additionally, the patient is protected from potential pulmonary barotrauma, with

the employment of "limiting inspiratory pressure guard." (Butterworth, 2013). Finally, SIMV's ability to allow for spontaneous breaths has been shown to improve ventilation and hemodynamic responses (Kacmarek, 2016).



Dombrowski, Q. (2011) Ventilator tube, Flickr.com

Conclusion

Over the past several decades, advances in ventilation have allowed for more dynamic approaches to optimizing a patient's performance on a ventilator. From the 1980s to the present, modalities mainly used in the ICU focused on promoting successful patient-driven breaths. No longer was the focus simply on guaranteeing a set volume or set pressure. Instead, the focus was on improving a patient's recovery while on the vent—this shift in thinking where IMV came into vogue, which allowed patients to provide effort. In response to the potential for breath stacking, SIMV was created. SIMV allowed patients to provide breaths without adding breaths to the respiratory rate. 

Take the QUIZ

[Click here](#) for a copy of the quiz.

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Outlook

PROGRAM DIRECTOR INSIGHTS



**BRYAN FULTON,
M.ED., BAA, CER.A.T.T.**
ANESTHESIA TECHNOLOGY
PROGRAM DIRECTOR
OKLAHOMA CITY
COMMUNITY COLLEGE

Growing the profession in 36-months: The rise of Anesthesia Technology in Oklahoma

With every passing year, the field of Anesthesia Technology is growing – both in scope and recognition. Last year, I was provided the honor of sharing with you all the development of the profession related to the growth of the field in Oklahoma. Over the past 36-months, Anesthesia Technology has grown by leaps and bounds in the Sooner State. When I arrived to launch the Oklahoma City Community College Anesthesia Technology program average pay for anesthesia techs in Oklahoma was \$11.50 an hour. To date, Certified Anesthesia Technologists (Cer.A.T.T.) fresh out of school start at approximately \$21 an hour. What is the reason for




this significant salary increase? The implementation of a strategic partnership between Higher Education (OCCC) and the local industry, an association that focused on formalized training, reworking job descriptions, and evaluating the need for skilled personnel. The result has been the recognition of the Certified Anesthesia technologist (Cer.A.T.T.) credential and Cer.A.T.T.'s ability to perform in their scope of practice outlined by ASATT. As we continue to promote formalized Anesthesia Technology education in Oklahoma, we see our partnerships with the healthcare industry growing, increasing this profession's trajectory further.

On October 27th, Oklahoma City Community College unveiled its new expanded Health Professions lab and simulation space. This expansion included a new state-of-the-art Anesthesia Technology Simulation Center. The space consists of two fully functioning operating rooms complete

with two CAE high-fidelity simulators. The new area provides training for students in ultrasound, regional anesthesia, trauma anesthesia, and other modalities. The OCCC Anesthesia Technology program faculty welcomed Governor Kevin Stitt and Current ASATT President David Foster to the Ribbon Cutting ceremony. During the visit, the program highlighted the skill set Certified Anesthesia Technologists bring to the field with a simulation on central line placement. The impact has been resounding, with Governor Kevin Stitt citing the Anesthesia technology profession in his opening ceremony remarks.

To say the growth in this state has been dynamic is an understatement. In 36-months, the entire demographic of this profession in Oklahoma has completely changed, to the point that state officials recognize the impact Certified Anesthesia Technologists have on patient care. To those of

you wondering how to grow this profession we love, the answer is evident; by leveraging the healthcare community's needs with higher educational facilities mission to serve the communities of interest, formalized education has been the catalyst to reshape this profession, enhance the scope, and improve the overall outlook.

If you are someone interested in how to start an anesthesia technology program or are interested in formalized anesthesia technology training, you can contact Bryan at bryan.p.fulton@occc.edu. 

TID BITS

Sensor Quizzes

Don't forget the Sensor Quizzes

In each issue of our Sensor magazines we offer two feature articles, with each article accompanied by a quiz. You have the option of completing the quiz online or printing it off and sending it in.

Earning CEUs has never been so easy.



Learnings

STUDENT CORNER



My OCCC Program Experience

Hello, my name is Kennadee Smith. I am in my spring semester of the Anesthesia Technology program at Oklahoma City Community College (OCCC). Over the past seven months, I have been provided an incredible opportunity to attain knowledge and skills related to anesthesia technology from OCCC. Before being accepted into the OCCC Anesthesia Technology Program, I never had any experience in the medical field, which was intimidating because the rest of my classmates seemed to all have healthcare backgrounds. Despite that initial anxiety, I was welcomed and mentored by the faculty and provided immense support to succeed in this

field. Knowing that the core curriculum is 10-months, it is definitely stressful, but the support in the program makes success possible. The faculty provided me with the profession's knowledge and built confidence in me that I did not always see in myself related to this profession.

The skills that we learn at OCCC are incredible, from IV placement to central line placement and everything in between; we are afforded access to amazing equipment and supplies to help us learn. On top of skills learned, we are afforded the opportunity to demonstrate these skills in the clinical setting, with our faculty providing support. A perfect example of this has been with Floating Swans. We recently

completed a module on PAC placement; for the first several weeks in class, we practiced the technique in the sim-lab and then were able to work alongside our faculty in the placement of the device in clinical. Now, we are being given the opportunities in clinical to demonstrate this crucial skill.

Our cohort's opportunities in participating at many clinical sites have been incredible because it allows us to practice our scope in a diversity of perioperative environments.

In this program, we learn how to properly scrub in for central lines, assist in arterial line placement, read ECGs, prepare advanced hemodynamic monitors, troubleshoot the anesthesia machine, and every other relevant skill in our scope.

Seeing patients come in with minor and/or significant problems and getting apart a skilled active participant in their clinical treatment is an amazing feeling. I love applying the skills I am learning from the program because I know it positively impacts patients' recovery and lives. This program and the opportunities provided have given me the ability to

Kennadee Smith

OCCC Anesthesia Technology student

Write an article for *The Sensor*

Interested in writing an article for the *Sensor*? It's a wonderful opportunity for you to gain national recognition and earn CEUs!

To support you, the Editorial Board will be available to answer questions and provide guidance: proofing grammar, reference documentation, etc.

[Click here](#) for details outlined on the ASATT website. 

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Pediatric Case Study: Difficult Airways



TIDA CHEN, CER.A.T.T.
CHILDREN'S HOSPITAL LOS ANGELES

Pediatric anesthesia is challenging and complex. Compared to adult anesthesia, our small patients have significant variations in physiology and anatomy, both of which present as unique challenges. When difficult pediatric airways are suspected, it can test the most skilled anesthesia care providers. Our patient's best interest is served when we participate and aid in the formulation of an airway management plan that will deliver the best possible outcome.

Pediatric anesthesia is more than simply adult anesthesia with smaller equipment or reduced drug doses. It's important for the anesthesia technologist to be familiar with the anatomical and physiological differences to best assist anesthesia providers. Some important characteristics that must be considered in pediatric care include increased heart rate, increased demand for oxygen, and reduced functional residual capacity (FRC). Some other considerations include cardiac output, which in a neonate is dependent on their heart rate, an increased metabolic demand, and consequently an increased demand for oxygen. Furthermore, pediatric patients have smaller alveoli and reduced lung compliance, however, their chest wall is very compliant. This mismatch results in chest wall collapse during inspiration and low FRC at exhalation. A well preoxygenated adult may have 5-8 minutes of oxygen reserve whereas a neonate may have less than a minute (Butterworth et al., 2018). Neonatal patients have decreased FRC and desaturate very quickly. Consequently, it is imperative to preoxygenate patients for no less than 5 minutes. We may revert to masking after failed

intubation attempts. In regards to anatomical differences, pediatric patients have larger heads in relation to body size. They also have a larger tongue in relation to their mouth opening, as well as a longer and more "floppy" epiglottis which can impede our intubation efforts. Moreover, they also have a narrower nasal passage, an anterior glottic opening, and shorter trachea when compared to adults. Suction should be readily available since secretions can easily obstruct the airway. As mentioned, pediatric patients characteristically have a large tongue and large occiput. This combination can result in a flexed head and tongue that obstructs the airway. Providing a donut-shaped pillow and a shoulder roll will correct the flexion, provide better visualization of the vocal cords, and stabilize the head. A makeshift pillow and shoulder roll can be made from sterile towels (Image 1). This ensures that the suprasternal notch and external auditory meatus is horizontally aligned for the best results (Image 2). Adjunct airway devices such as nasal trumpets or oral airways will help adequately ventilate, oxygenate and manage the



Image 1: Headrest and shoulder roll

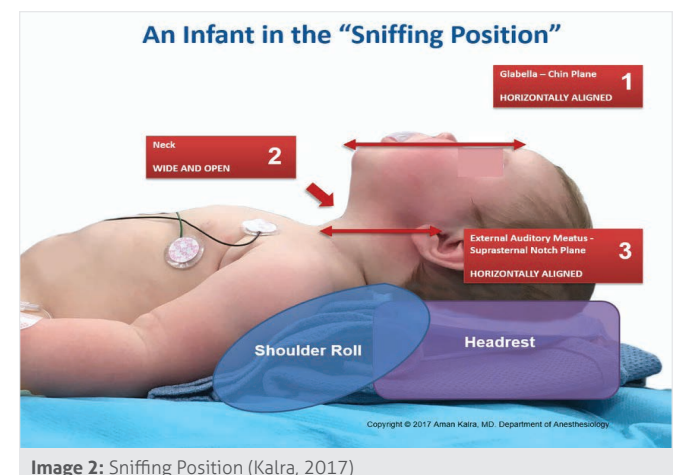


Image 2: Sniffing Position (Kalra, 2017)

patient. Table 1 shows the approximate sizing, however, the Anesthesia Care Team (ACT) should reassess and confirm the sizing after physical assessment of the patient. In some cases an adjunct airway may not be suitable for the patient or the appropriate size may not be available so utilizing jaw thrust will assist in opening the airway. The anesthesia provider is in the best position to provide an adequate mask seal and jaw thrust while the anesthesia tech or a second anesthesia provider ventilates the patient. Signs of chest rise, condensation on the mask, and end-tidal CO2 indicate a patent airway.

Difficult Intubation

Many of us are familiar with the physical exams to determine the ease of intubation. This includes mallampati classification, thyromental distance, and temporal mandibular joint mobility. These exams make it easier for providers to prepare if a difficult intubation is suspected. For unanticipated difficult intubations, it's important to keep the *Difficult Airway Algorithm* in mind. In an anticipated difficult intubation such as ours, we still keep the basics of the algorithm in mind, but we should also prepare with additional equipment that is specific to the patient's needs.

Anesthesia techs should always set the anesthesia provider up to succeed because maximizing the chance of success will also provide the patient with a positive outcome. Should the provider fail at intubating more than twice, the complication rates may rise if alternative approaches are not considered (Fiadjoe et al., 2015).

Sometimes a difficult airway is suspected, but the anesthesia provider may still opt for direct laryngoscopy.

In pediatric patients, Millers are often preferred to a Mac blade, however, if a Wis-Hipple (Wis for short) or Phillips is available, it may provide a better view for the provider. There are also the alternative devices and modes of intubation such as using a Glidescope, C-Mac, or Fiberoptic scope. Depending on the patient's airway pathology different devices and contingency plans can be discussed to see what would be optimal for that specific airway condition.

Case Report

A full-term newborn weighing 3.8 kg presented with an encephalocele protruding into the oral cavity through a cleft lip with cleft palate. The encephalocele was visible out of the patient's mouth and past the lips. Great caution needed to be taken to not injure or rupture the encephalocele, however, the encephalocele took up most of the exterior space as well as the oral cavity leaving only a small opening. It was noted that obstruction was not evident as the patient was on room air while awake, however, while sleeping the patient would have sporadic periods of desaturation.

Induction Plan

Prior to the case, we discussed what size and type of endotracheal tube (ETT), what method of intubation would be appropriate, and contingency plans. Due to the severity of the encephalocele, the use of oral airways, nasal airways, LMAs, and direct laryngoscopy were contraindicated. Prior to the start of the case, we knew who would be a part of the ACT and assigned different roles so it would be clear during the case. Our ACT consisted of two anesthesia techs and three physicians. Our plan was to sedate the patient and

keep them spontaneously breathing throughout the intubation attempt.

We all agreed that the fiberoptic scope (FOB) would be the best equipment to use. Use of intubating LMAs would be contraindicated due to possible rupture of the encephalocele. To create more space in the oral cavity, we also discussed using magill forceps to pull the tongue out and away, as well as a surgical retractor to pull the mouth open.

Induction

Upon arrival, our patient was connected to standard ASA monitoring. Timeout was performed and we began pre-oxygenating our patient. During pre-oxygenation there was some obstruction that was resolved with a jaw thrust maneuver. Ketamine, dexmedetomidine, and propofol were titrated to the patient's physiological response. In addition, 2% sevoflurane was also used to deepen sedation while keeping the patient spontaneously breathing.

	Premature	Neonate	Infant	Toddler	Small Child	Large Child
Age	0-1 month	0-1 month	1-12 months	1-2 years	3-8 years	8-12 years
Weight (kg)	0.5-3	3-5	4-10	8-16	14-30	25-50
Suction Catheter (Fr)	6	6	8	8	10	12
Oral Airway	000-00	00	0 (40 mm)	1 (50mm)	2 (70 mm)	3 (80mm)

During pre-oxygenation, we verbalized the steps of the plan as well as our contingency plan once more. This ensured that our ACT was on the same page and that observing personnel in the room were also aware of our plan. When ready, the attending anesthesiologist verbalized what medications had been given and gave direction for the next steps. Once the bed was lowered (to facilitate passage of the FOB) one anesthesia tech performed jaw thrust, one physician used the retractor to gently pull the lip, and another anesthesia tech used the magill forceps to pull the tongue out and to the right. The physician holding the retractor also held the breathing circuit connected to an uncuffed 2.5 ETT so we could passively oxygenate with 100% oxygen. The FOB was already defogged, lubricated, and loaded with a cuffed 3.5 Oral RAE ETT. The anesthesiologist was able to navigate the FOB past the encephalocele and towards the glottic opening. As a result of the minute anatomy, intubating neonates takes patience and small movements to find and identify familiar structures. Anesthesia techs should be familiar with different anatomical structures to help the anesthesia provider identify the location of the FOB. Finally, in order to prevent a laryngospasm, propofol should be bolused prior to advancing the FOB through the vocal cords. The patient was successfully intubated followed by visible chest rise, misting, and end tidal waveform.

Complications

While we anticipated this to be a difficult intubation, induction and intubation went extremely well. Some

important complications to consider are laryngospasms and 'Can't Ventilate, Can't Intubate.'

Laryngospasm is a complication that can lead to hypoxia, pulmonary edema, or even cardiac arrest (Collins, et al. 2019). Stage II of anesthesia is not skipped during mask

induction therefore the chances of laryngospasm is increased. Anesthesia techs should be able to anticipate what the anesthesia provider needs in the case of a laryngospasm. In the *Anesthesia and Critical Care Review* podcast, Dr. Wolpaw and Dr. Schwengel (2017) discusses how providing continuous positive pressure ventilation (CPAP) with a tight seal via jaw thrust can

break a laryngospasm, however, if the laryngospasm persists, succinylcholine may be required. Many pediatric patients cannot tolerate IV placement in preop and therefore do not have IV access during induction. If the patient does not have IV access during a laryngospasm then succinylcholine may be administered intramuscularly.


Can't ventilate, Can't intubate (CVCI) is an emergency complication that will have everyone's adrenaline rushing. According to the *Difficult Airway Algorithm*, these situations can end in a cricothyrotomy for an emergency airway. With this being said, our ACT collaborated with an Otolaryngologist who was ready and on standby during intubation. The anesthesia tech should be prepared to assist the provider in various ways. From masking to ventilating to IV placement, it is important to anticipate the needs of the patient and provider for the sake of patient safety.

“As a result of the minute anatomy, intubating neonates takes patience and small movements to find and identify familiar structures.”

Continues on next page...

Discussion

Patients with cleft palate and/or cleft lip won't always present as a difficult intubation, however, it is important to have a conversation with the anesthesia provider about what proper tools or equipment are available and on standby. As anesthesia techs, we know our equipment best, but we should always have the humility to ask questions when we are unsure. There is no shame in testing and checking how different equipment functions and fits. For example, our FOB is 3.0 mm in diameter and would not fit a 3.0 oral RAE ETT, however, would fit a 3.0 straight ETT. It is paramount to check these things prior to the start of the case versus when the patient is already in the room. If pediatric patients are uncommon at your hospital ensure the provider is set up for success by having the correct laryngoscope (size and one they are comfortable with) and ETT. Having a shoulder roll and/ or headrest available may also help with the provider's view but is not always necessary. Make sure to frequently use closed-loop communication and support the provider throughout the intubation.

Anesthesia providers have a high stress job that often involves them being the sole person to diagnose and treat any problems that arise. These situations are often critical moments that happen quickly. We can alleviate their stress and improve patient outcomes by being knowledgeable, prepared, and ready. Anesthesia technologists and technicians work as a second pair of hands and eyes to assist the anesthesia provider. Meticulous planning, communication, and coordination are key to the successful management of the patients in any operating room. 

Take the
QUIZ
Click here for a copy of the quiz.

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Partners

ASA

The ASA continues to work for patients; their safety as well as access to quality and affordable healthcare which includes anesthesia care. One issue that has been on the forefront of the ASA's thoughts and work is what is commonly call "surprise billing". Many believe "incorrectly" including legislators that this is due to an attempt by physician anesthesiologists and other specialists to over-charge the uninsured. "Surprise billing" occurs because many times patients unknowingly receive care from an anesthesiologist, radiologist, ER physician etc. that do not accept their insurance even though the facility might. The patients then receive a bill directly to them from these medical providers to ask for payment that the insurance companies refuse to pay. Commonly, this is because the insurance companies refuse to negotiate fair pricing for medical services and refuse to educate their clients/our patients that they have not negotiated a fair payment for those medical services. The legislators

fail to understand the role of the insurance companies when dealing with this problem. Furthermore, they produce legislation that requires insurance companies to pay doctors regardless if the provider is within their network of providers but at very, very low rates. The ASA is fighting for reasonable payment by the insurance companies with the hope that they will eventually negotiate fair prices for needed medical care and to stop worrying so much about collecting more premiums and paying out less earned fees.

Joseph F. Answine, MD, FASA
Liaison to ASATT 



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Notes

REGIONAL UPDATE

REGION 1



Happy February to you all.

I hope your Valentine was good to you. To think that March is just around the corner for more daylight hours and those of us in New England know that there is the 5th Season, Mud season. The smell of rain, new grass, and fresh flowers, I just love spring!!

Anesthesia Tech week is the end of next month, from March 28th thru April 1st. Please take pictures of any celebrations that you would like to share with ASATT. I can include them in the next Sensor Report, or Web Report. I hope you all get the recognition that you all deserve. So many of the patients do not see us or deal with us daily. However, the other Anesthesia providers that we work with and yes, they do appreciate all that you do. If you ever doubt it, just remember we do not do our jobs to satisfy that providers, it is the PATIENT that counts the most. We are the patient advocate when it counts the most. So, this being said


"THANK YOU FOR ALL THAT YOU DO" HAPPY ANESTHESIA TECH WEEK

I would like to start planning for a Region 1 Webinar for everyone. Possibly the first week in May. I will keep you all updated on my progress with the date. I am hoping to get 4 speakers, so it will only be 5 hours maximum. Great way to earn your CEUs and start early if 2022 is your year to recertify. Please send me your ideas for lectures or a virtual workshop. Our Winter Issue of the Sensor is now available, a great opportunity to earn CEUs is to make sure you do the Sensor Quizzes.

Just months away, so start to plan your summer vacation at the same time as The Annual Meeting for 2022 that will be

in Fort Worth, Texas. It is going to be so much fun. The dates are August 10th- August 12th, now go and get ready to put your cowboy hats and boots on. I am going to plan to visit the Dallas Cowboy's stadium while I am there. If you want to go with me, please let me know maybe we could even get a group discount. There is so much to do in that area, you and your family could spend the rest of the week after our conference.

I really do not like the fact that we are still battling COVID and all its strains, but just please stay safe and wear your mask if that is what you prefer. If you prefer to not wear your masks, then I am sure you know exactly what the risks are. Remember to enjoy your families and friends during this continuous battle with COVID.

Respectfully Submitted and Happy Holidays,
Jonnalee Geddis, Cer.A.T. 

REGION 2



Hello members,

I hope everyone is well and staying warm if you're on the East coast.

Don't forget to be thinking about **Anesthesia Tech Week that starts March 27 through March 31**. If you are celebrating,

please send me pictures about what your organization did so I can post on my Web report.

Have you ever thought about being more active in our society? ASATT members may want to consider writing an article for the *Sensor*, ASATT is always looking for members to contribute to our quarterly publication, remember you can earn CEUs and may be eligible for the Science and Technology award and this could be a great way for you to

get more involved. The spring *Sensor* has been published and the summer issue should be published in late May. Remember you can earn CEUs from the quizzes one of the perks for being a ASATT member.

Don't forget to visit our ASATT website it has very useful information and articles on Healthcare news. Please don't forget there is a discussion board where you can ask questions and share ideas.

SAVE THE DATE: Start thinking about our next **Annual Meeting in Fort Worth, Texas** on August 10 -12, 2022. I look forward to seeing everyone in person next year in Fort Worth, TX!

As a reminder: Please everyone stay safe and be healthy!

Stay safe,
Karen Patrick, Cer.A.T. 

REGION 4



Hey region 4!


Hopefully you all got through your recertification and the holidays without a hitch. We have a lot of things happening this year.

The Annual Meeting for this year will be in Fort Worth, start planning now. It is going to be so much fun. The dates are **August 10th- August 12th**. Looking forward to some good Texas BBQ! We will also be having a national online education conference at the end of September. More info on that to come.

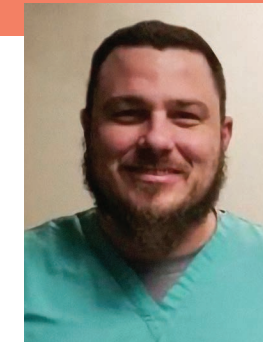
Lastly, I am working with region 6 to host a **Regional Meeting on April 23rd**. You could earn 4-5 CEUs! Keep your eyes open for details. So, we should have plenty of CEUs available for you guys to get for your recertifications.

On a personal note, I know this Covid stuff is putting a lot of stress on us both personally and professionally. All I can say is to stay strong and stay positive. If you want to talk about things happening feel free to reach out to me. Sometimes just talking to other professionals going through the same things can help.

Don't forget to keep checking the ASATT website for updates on the upcoming events. Feel free to reach out with any questions or thoughts you have on these.

Respectfully yours,
Mike Kosanke, Cer.A.T.T. 

REGION 5



Hello from Region 5.

I hope everybody is having a good start to the new year catching up from all the busy time of the end of last year. As you have seen on our website and heard from our president our regional meetings are still

virtual. Make sure to keep checking up on the website for updates. Remember don't wait till the end of the year to make sure you have all your CEUs.

The national conference this year will be in Fort Worth in August from the 10th through the 12th, so make sure you make plans to attend and link up with anesthesia text around the nation. also, there's so much stuff to do in Fort Worth and Dallas to help either extend your stay for vacation or come early for vacation. If there are any topics, you're interested in learning more about make sure you contact your regional director to see if they can get a presenter to help you. Most presenters do ask before they make up a topic to see what Anesthesia Techs are looking for.

Stay safe,
Jason Menchey, Cer.A.T. 

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REGION 6

**Hello Region 6!**

I am so excited for what's to come this year. I am planning a Virtual Meeting in late April 2022 along with Mike Kosanke A.T.T. from Region 4. This will be an opportunity to earn CEUs, connect with others in

our region and across the country, and learn something new! All members of any region are invited to attend. If you know anyone interested in being a speaker at our Virtual Meeting, please ask them to send me an email to: region6director@asatt.org. We would be happy to consider them.

Also, if you are interested in publishing a sensor article and quiz you can earn CEUs that way. Please feel free to reach out to me with any comments, questions or concerns. In regards to getting CEUs, I am happy to help but make sure you give yourself enough time. Many good things to come in 2022 in our profession and in life. Hoping to hear from you soon and see you at the virtual meeting in April! stay tuned for the official date and time and sign up information.

Lauren Luna, Cer.A.T.T. 

REGION 7

**Howzit Region 7!!!**

I hope that many of you had a better holiday season that was better than the prior year. Plus, I hope that you created many good memories of the 2021 holiday season. Winter is almost over, but many of you are

still experiencing some difficult weather. Hopefully, Mother Nature will soon be relaxing her grip on the cold air that some of you are having. NFL football season is almost over... My favorite sport is right around the corner, MLB. Before you know it the temperature "will" start warming up

Many of you are still having problems with the pandemic. It's still a problem here in Hawaii. So, we must take everything in stride and move forward. Please continue to stay vigilant; "Situational Awareness". Don't let your guard down and stay alert.

**"Enjoy every moment.
All of them will be precious later."**

~ Unknown ~

ASATT had a very successful year... There have been changes and some of the changes have not made everyone happy. But, change is not always easy. We have had numerous virtual meetings that were well attended. The 23rd Annual Region 7 Hawaii meeting had >200 attendees, while the Annual meeting had >600 attendees. Wow!!! But, I still miss getting out into our regions, talking and meeting with our members/peers. I hope that we can have a few face to face meetings in 2022.

**"Change begins at the end
of your comfort zone..."**

~ Roy T. Bennett ~

The Annual Meeting will be a live, face to face to be held in Fort Worth, Texas, August 10-12, 2022. Start making plans to attend the meeting. This will be ASATT's first live meeting since the Region 7 meeting on February 29, 2020. There's some new things that our President David Foster wants to try to do at the meeting. We all look forward to seeing our ASATT friends/peers again. Hope to see you there...

**"Finding an old friend is like
finding a lost treasure."**

~ Unknown ~

I'll say it again and again and again... ASATT is the society that will help our profession grow and move forward into the future. I know ASATT's plan WILL NOT make everyone happy, but you must look at the overall direction that our profession is headed. Give our leaders the benefit of the doubt they are not out to short change you. There will be some hard decisions to be made and they are making these decisions with careful consideration to improve our profession. I have been around for a LONG time and we have grown and improved more than many of you know. There's only a small percentage of our peers that have been in this profession >30 years like I have. I was around when we had NOTHING and look at where we stand now. As I have said before... We are laying the foundation for future generations of Anesthesia Technicians & Technologist and we MUST build this **together**.

**"If we fail to adapt,
we fail to move forward."**

~ John Wooden ~

PLEASE BE SAFE AND PROTECT YOURSELVES...

Aloha,

Delbert Macanas, Sr., Cer.A.T.T. 

Academy

ASATT ACADEMY

Virtual Meeting Realignment


The ASATT Board is excited to announce the implementation of a new virtual meeting realignment structure that will offer consistent Regional meetings every quarter. The new model will combine two to three regions each quarter to provide our members with an option to attend a regional meeting nearly every other month throughout the year. This structure will allow our members to plan ahead and register for Regional meetings months in advance.

At the end of April, Regions 4 & 6 will be holding their regional meeting! Check your email and our website for specific details on this and future webinars! We look forward to everyone joining us again for these great education opportunities!

Earn CEUs for SENSOR Publications!

We want to hear from you! Have you recently written an article on Anesthesia Technology or a subject related to the Anesthesia Technology field?

If so, this is the perfect opportunity to showcase your publication in an issue of the *SENSOR* and earn CEUs! ASATT is always seeking Feature Articles from you to share with our membership.

The Board of Directors are reviewing the details so keep your eyes open for more details! 

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