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OPEN HEART SURGERY

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CHICAGO



October 20–22, 2016

ASA
ATT

American Society of
Anesthesia Technologists
and Technicians

2016
ASATT
Educational
Conference

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the American Society of Anesthesia
Technologists and Technicians

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EXECUTIVE DIRECTOR: Mike McManus
414/908-4942 ext. 119 Fax: 414/768-8001
Email: customercare@asatt.org
Web: www.asatt.org

PRESIDENT

OTONIEL CASTILLO, CER.A.T.T.

Work: 626/564-5737

Email: president@asatt.org

PRESIDENT-ELECT

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Work: 626/564-3108

Email: president-elect@asatt.org

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Work: 425/228-3440

Email: past-president@asatt.org

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Work: 858/657-6535

Email: treasurer@asatt.org

SECRETARY

ALBERT TAGLE, CER.A.T.T.

Work: 702/277-5277

Email: secretary@asatt.org

SENSOR STAFF

SUE CHRISTIAN, CER.A.T.T.

Editor

Work: 615/343-7077 Fax: 615/343-1966

Email: sensor@asatt.org

BILL GLASS, SFB

Layout and Design

Email: Sensor@AlphaBaselnc.com

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provides its readers with information on
anesthesia-related topics, and with a forum
for learning and discussion. The views
expressed herein are those of individual
authors, and do not necessarily reflect
the views or opinions of ASATT.

All submissions pertinent to the objectives of
ASATT will be considered for publication.

Preferred media: CD or via email.

Photos in TIF, JPG or PNG formats preferred.

Photographic prints *can* be returned.

ISSUE DEADLINES:

Fall November 1st
Winter..... January 1st
Spring April 1st
Summer..... July 1st

Display ad rates and size specifications
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Permission to publish all articles and photos
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Who's Who

I AM A PRACTICING ANESTHESIOLOGIST in south central Pennsylvania in both private practice and academic settings. I am a graduate of Washington and Jefferson College and the Pennsylvania State University College of Medicine. I completed an Internal medicine internship and residency in Anesthesiology at Penn State, and was chief resident from July 1992 to July 1993.

I am board certified in Anesthesiology with both a lifetime certification obtained in 1994 as well as a voluntary time-limited certification active until 2019.

I am past president of the Pennsylvania Society of Anesthesiologists and continue to serve on their board and executive committee as ASA alternate director (Pennsylvania) as well as delegate to the American Society of Anesthesiologists House of Delegates. I also sit on the Pennsylvania Medical Society Board of Trustees.

My interests include the politics and regulations as it pertains to the practice of medicine and the specialty of anesthesiology. I have testified on numerous occasions in front of Penn-

sylvania legislative committees and I am active in the legislative efforts of the Pennsylvania Medical Society, the Pennsylvania Society of Anesthesiologists and the American Society of Anesthesiologists.

I enjoy being on the Board of ASATT because I feel that I can bring a broad knowledge of the practice of academic and private practice anesthesia. I also have a strong understanding of medical regulations and I am a student of the politics affecting the future practice of medicine. Furthermore, I value and enjoy

my relationship with the anesthesia technicians and technologists, as well as appreciate what they add to my practice as well as the practice of all anesthesiologists everywhere. They are a truly integral part of the anesthesia care team. My goal is to solidify and advance the practice of anesthesia technicians and technologists.

BTW, I preferred to be called Joe! (Dr. Answine sounds funny since I don't dress like a doctor and drive a cheap car.)

Joseph F. Answine, MD
ASA Liaison to the ASATT



Joseph (Joe) Answine, MD

ASATT Membership and Certification Cards Printable Off ASATT Website

In an effort to reduce cost and time, ASATT membership and certification cards can now be printed off the ASATT website — www.ASATT.org.

To print a membership card, log in to the ASATT website, then go to the **Membership** tab and select **Profile**. Once in your profile you will see a button, **Printable Membership Card**, in the right top corner. Click on that to display your membership card.

To print your certification card you do not need to be logged into the ASATT website. Just go to the **Certification** tab and select **Printable Certification Card**. Enter in the requested information. Keep in mind it must be the information we have in the database, and then click on **View Certification Card**.

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ASA TT 27TH ANNUAL EDUCATIONAL CONFERENCE CHICAGO

October 20–22, 2016
Swissôtel Chicago
323 East Upper Wacker Drive

SCHEDULE OF EVENTS

Thursday, October 20, 2016

- 1100–1500 Program Directors Workshop*
1630–2000 Registration
1800–2000 Welcome Reception/Vendors

Friday, October 21, 2016

- 0700–0815 Registration Breakfast and Vendors
0815–0830 Welcome and Announcements
0830–0930 *T B D* — John Rivera
0930–1030 *Working & Communications with ATTs and Providers* [working title] — Judith Handley, MD
1030–1100 Break / Vendors
1100–1200 *Infection Control in the OR* — Oren Berstein, MD
1200–1330 Lunch / Vendors
1300–1400 *Implementing an Enhanced Recovery After Surgery Program and the Keys to Its Success* — Joseph Answine, MD
1400–1500 *New Horizons New Technologies of Stem Cells* — V.R. Karuparth, MD
1500–1530 Break / Vendors
1530–1630 *Lung Ventilation* — Gary Tzeng M.D.
1630–1730 *Will There be a Shot?! Reducing Anxiety in the Pediatric Patients* — Samuel C. Seiden, MD

Saturday, October 22, 2016

- 0700–0815 Registration Breakfast and Vendors
0815–0830 Welcome and Announcements
0830–0930 *Neuromuscular Blocking Agents and Nerve Stimulation Using Quantitative TOF Monitoring is the New APSF Standard* — Kevin Lueders
0930–1030 *Anesthetic Implications for the Patient with Deep Brain Stimulator* — Maureen Kawka, CRNA
1030–1100 Break / Vendors
1100–1200 Space Labs - Ventilation CO₂
1200–1330 Lunch / Annual Business Meeting
1300–1400 *Disaster Preparedness* — Grete Porteous, MD
1400–1500 *Blood Gases* — Martha Sayers, Cer.A.T.T.
1500–1530 Break
1530–1530 *Burns from an Anesthetic Technician View* — Luisa Winters
1630–1730 Regional Meetings
Region 1 Region 2
Region 3 Region 4
Region 5 Region 6
Region 7

To receive full credit for CEs,
you must turn in your own Evaluation Sheets each day before leaving.

13 CEs awarded for full participation.

Tentative Program subject to change; actual CE count could range from 11 to 13

***Program Directors Workshop is intended for individuals interested in starting an ASATT-approved program in Anesthesia Technology.**

POSITION DESCRIPTIONS FOR ASATT Board of Directors



HAVE YOU EVER WONDERED exactly what the responsibilities are of the individual Board members? Here is a simple overview of the “position descriptions” of the Board of Directors.

Regional Directors — Two-year term

MUST BE A CERTIFIED ANESTHESIA TECHNICIAN OR TECHNOLOGIST, A MEMBER OF ASATT IN GOOD STANDING AND RESIDE WITHIN THE REGION THEY HAVE BEEN ELECTED TO SERVE.

- Responsible for organizing at least one yearly meeting and in some situations, two. This includes obtaining speakers, selecting locations and obtaining sponsors. The Regional Director is financially accountable for operating within the budgeted funds for the regional meeting. They are also responsible for providing an outline of the meeting to ASATT for distribution and sending ASATT a final list of attendees to facilitate awarding of CEs.
- Responsible for promoting the Annual Educational Meeting within the Region with both vendors and members.
- Responsible for attending the Annual Educational Meeting.
- Assisting with registration, sales, etc., during the Annual Meeting.
- Assist with the ASA booth, if needed.
- Responsible for participating in all Board activities, to include:
 - > Attending all Board meetings.
 - > Participating in all Board conference calls. (Usually every other month on a Saturday morning)
 - > Responding to all e-mails when questions/opinions are solicited.
 - > Submitting monthly, quarterly and yearly reports for your Region and/or committees to the President.
 - > Submitting Sensor and Website updates by the date requested.
 - > Participate in the yearly budget process for the region's activities.

Secretary — Two-year term

MUST BE A CERTIFIED ANESTHESIA TECHNICIAN OR TECHNOLOGIST AND A MEMBER OF ASATT IN GOOD STANDING.

- Responsible for taking minutes at all Board meetings and business meetings and submitting the minutes to the Board of Directors.
- Responsible for co-signing all contracts negotiated.

Treasurer — Two-year term

MUST BE A CERTIFIED ANESTHESIA TECHNICIAN OR TECHNOLOGIST AND A MEMBER OF ASATT IN GOOD STANDING.

- Responsible for supervising the handling of ASATT funds.
- Responsible for the accounting of ASATT funds to the membership.
- Responsible for assisting ASATT management in the planning of the annual budget.
- Monitoring the profit and loss on a monthly basis.

President-Elect — Three-year term

MUST BE A CERTIFIED ANESTHESIA TECHNICIAN OR TECHNOLOGIST, A MEMBER OF ASATT IN GOOD STANDING & HAVE HELD A PREVIOUS BOARD POSITION (PAST OR PRESENT).

- Communicating directly with the President of the ASATT.
- Assuming the responsibilities of the President when necessary.
- Being familiar with the Bylaws, Policy and Procedure manual and the working of all committees.
- Succeeding the President at the end of his/her term.

- Co-chairing the Annual Educational Meeting, to include taking care of the ASA booth (set-up, staffing and break-down).
- Chairing the Communications Committee.

President

- Handles daily Society business as required
- Presides at all Society membership, Board of Directors and Executive Committee meetings.
- Responsible for co-signing all negotiated contracts on behalf of the Society.
- Fiscally responsible for operating the Societies business within the approved budget.
- Prepares agendas for Board Business
- Co-Chairs the Annual Educational Meeting, to include taking care of the ASA booth (set-up, staffing and breakdown)
- Responsible for set-up, staffing and break down of ASATT booth at the AANA National Meeting

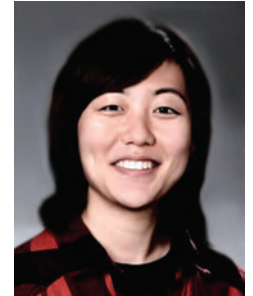
Immediate Past President

- The Immediate Past-President shall serve as a member of the Board and Chairperson of the Nominations Committee.
- The Immediate Past-President shall fulfill various other duties for the Society at the pleasure of the President by mutual agreement of both parties.
- Assist with set-up, staffing and break down of ASATT booth at the AANA National Meeting.
- Participates in conference calls and Board meetings.

No Board members or Officers of ASATT are paid for their time . . . they are voluntary!

OPEN HEART SURGERY

Anticipating needs and providing support during Coronary Artery Bypass Graft



Grace Lee, Cer.A.T.T.

Abstract

Learning and applying what we learn are very important for us in order to anticipate the needs of the patient. The ability to anticipate these needs and support the provider, can impact a patient's survival. One of the best ways to learn is by sharing and discussing knowledge that we obtain from experience, such as in case reviews, not everyone practices in the same way.

In this case review, a 64-year-old female patient was scheduled for quadruple coronary artery bypass graft. Discussion will include: the patient care plan from time of admission to discharge, the patient's medical history, surgical plan, equipment needed, anesthetic plan, potential complications and post-operative care.

Introduction

A 64-year-old female patient is admitted to the pre-operative holding area for scheduled quadruple Coronary Artery Bypass Graft (CABG) surgery. She has a history of angina pectoris and has undergone cardiac catheterization with stent placement four years ago. She has a history of well-controlled hypertension, for which she takes beta-blocker medication. She has a history as a 1- to 1½-pack-a-day smoker for 20 years, but quit smoking seven years ago.

She also is morbidly obese at 65 inches (165cm) tall and weighing 245 pounds (111kg).

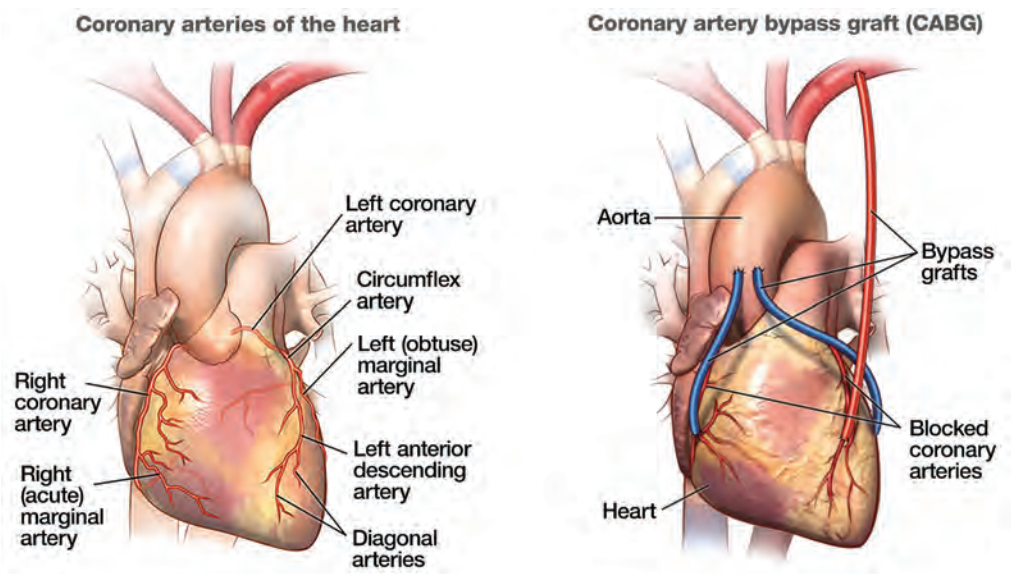
She has had a cardiac stress test, echocardiography and assessment by surgical staff and the results revealed ischemia upon exertion.

Surgical plan

Coronary artery bypass graft is a procedure to improve blood flow to the heart. The surgeon will make a mid-sternal incision and saw the bone underneath to open the chest cavity while cauterizing vessels for hemostasis. Cardiopulmonary bypass cannulas will be inserted into the aorta, inferior vena cava, superior vena cava and

pulmonary artery to oxygenate and circulate blood bypassing the heart and lungs. From that point, a heart-lung machine will take over the patient's heart and lung functions, a perfusionist will be taking over oxygenation, circulation and perfusion including delivering gases and some medications. Once the patient goes on bypass, the heart will be stopped by placing ice in the chest cavity and cold cardioplegia injection to the heart for the surgeon to perform a bypass graft procedure (www.hopkinsmedicine.org, 2016). After the procedure, the surgeon will examine all grafts to make sure they are

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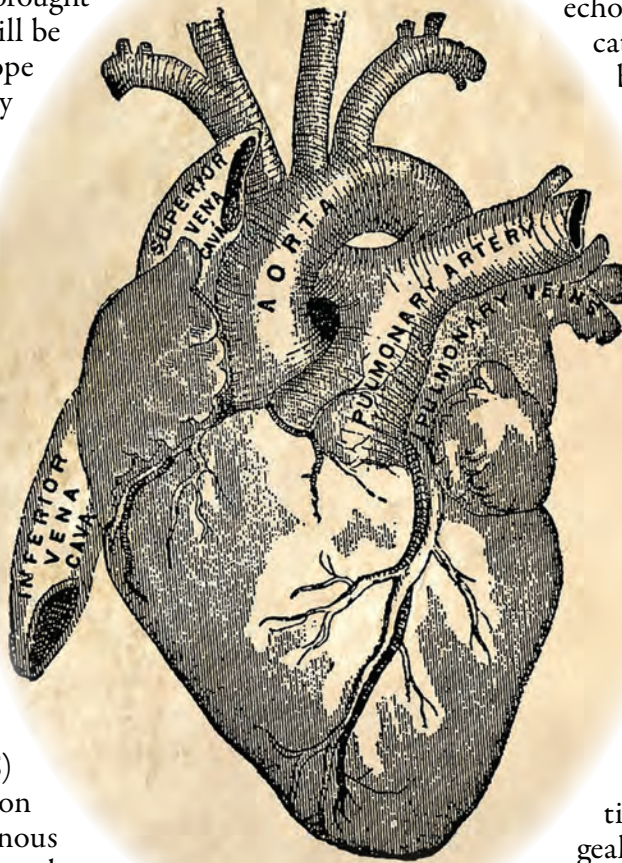
working well. Cannulas will be removed and the heart will be rewarmed and restarted.

Equipment

Meticulous preparation is extremely important to the patient's outcome. Daily FDA anesthesia gas machine check out must be done and all supplies and equipment must be stocked to appropriate par levels, including emergency ventilation equipment. Suction, orogastric/nasogastric tubes must always be available. The goal is to have all the appropriate supplies in the room to prevent or avert an aspiration.

The anesthesia care provider asked for a standard handle with size 3 Macintosh (Mac) blade and size 7.5 endotracheal tube (ETT) for intubation. As a precaution, I also set out a stubby handle, size 4 Mac blade; size 2 Miller blade; size 6.5 ETT; size 7.0 ETT; and oral airways (size 70, 80 and 90mm) on top of the cart. In addition, due to our patient's obesity, I brought the difficult airway cart, which will be on standby, as well as a glide-scope into the room. Preparation is key to meet the needs of the provider, if the patient proves difficult to intubate.

For open heart surgery, we will need not only all ASA standard monitors, but additional non-invasive and invasive monitoring. The invasive monitors and equipment will be utilized to determine our patient's status and to closely monitor oxygenation and perfusion through out the body. These include pulse oximetry, 5-lead electrocardiogram (ECG), capnometry, non-invasive blood pressure cuff, esophageal temperature probe, urine temperature cable, bispectral (BIS) monitor, cerebral oxygen saturation monitor, arterial line, central venous pressure (CVP) line, Swan Ganz catheter, ultrasound, trans-esophageal echocardiogram (TEE) with a bite block, a minimum of three transducers, Vigilance 2 monitor and/or an EV1000. Unlike most of the other cases, 2-pulse oximeters and 2-cerebral oxygen saturation monitors will be needed to ensure bilateral perfusion. Furthermore, arterial line, CVP line, and Swan Ganz must be set up using sterile technique to prevent infection that could be life-threatening. Defibrillator pads and Bovie pads will be placed on the patient as well, prior to induction.



Due to the nature of the surgery location, the patient is at high risk of bleeding. Therefore, as a part of the anesthesia care team (ACT), we would prepare a second blood pump intravenous (IV) set, hotline, Belmont, and Cell Saver. Assess if type and crossed blood has been ordered and assure there is ample supply of crystalloids and colloids to prevent hypovolemia.

Also, a minimum of six infusion pumps must be available in the room to infuse a controlled amount of medications to the patient, such as vasopressors and sedative medications.

Advanced technologies for cardiac output (CO)

Having an accurate cardiac output is crucial, especially for the patients who have compromised heart function. Even though blood pressure is a required measurement, it is not always a good indicator for volume status, which can negatively affect the patient. Therefore, in the cardiac room,

the anesthesia care provider will utilize additional equipment such as: trans-esophageal echocardiogram (TEE), central venous catheter, and Swan Ganz catheter to better assess the patient's condition.

TEE is now frequently used to monitor and diagnose a patient's heart function in the operating room. The TEE creates images of cardiovascular structures by transmitting and receiving ultrasonic waves, typically with frequencies between 2.5 and 7.5 MHz with wavelength of 0.2-0.6mm. (Sandberg, Urman & Ehrenfeld, c2011). By visualizing cardiovascular structures and their kinetics, the anesthesia care provider can assess, evaluate and treat cardiac situations in real time. Evaluations of cardiac output, hypovolemia, left ventricular function and ischemia can be done with a TEE examination. Indeed, cardiac trans-esophageal echocardiogram is a great tool but usually it is not used by itself; commonly additional invasive monitoring devices such as; Swan Ganz with bolus thermo-dilution, arterial line, and CVP are used to complete an assessment.

However, questions arise. Is it always necessary to place a pulmonary artery (PA) catheter to assess the patient's cardiac output? Are there any alternative ways to determine cardiac output without the common risks associated with placing a PA catheter, such as infection, air embolus

MORE ▶

and vascular perforation? What about patients that have contraindications for PA catheter placement? The answers to these questions vary; however, technologies do exist that will help and allow for an appropriate assessment by the anesthesia care provider. These technologies include:

- *Transpulmonary thermodilution*
- *Lithium dilution*
- *Doppler technique*
- *Pulse contour analysis*
- *Carbon dioxide rebreathing*
- *Bioimpedance / Bioreactance*
- *Peripheral pulse variation*

I would like to concentrate on pulse contour analysis. Pulse contour analysis (PCA) technologies such as FlowTraq and LiDCO can be utilized to determine cardiac output from an arterial line. This is a useful confluence, as most cardiac surgery patients are likely to have an arterial line placed, generally without complications or exception, for the beat to beat blood pressure monitoring and blood analysis throughout surgery. This technology uses the variation of arterial pressure, which is proportional to stroke volume based on the heart rate. The FlowTraq determines stroke volume by the equation below:

$$SV = sd (AP) * \chi (Khi)$$

Where $sd (AP)$ is the standard deviation of Arterial Pressure and $\chi (Khi)$ is integrated calibration factor that takes the variations or changes in the vascular tone obtained from a multivariate equation of two major elements:

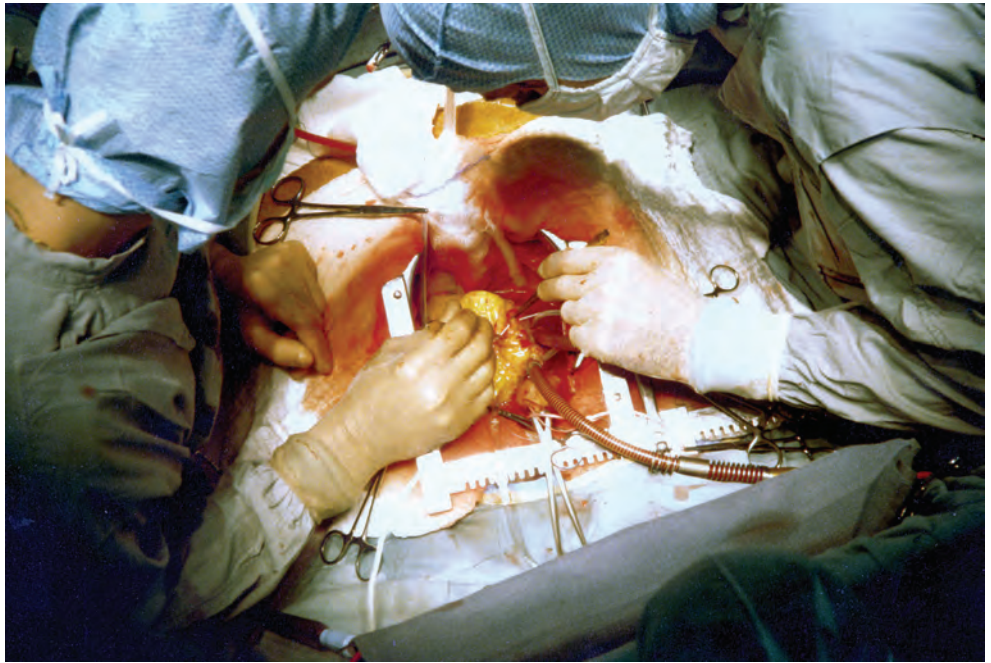
- Biometric variables: age, sex and height (G. J. Langewouters et al. J. Biomech. 17:425-435, 1984)
- Shape variables: analysis of different characteristics of the arterial pressure waveform.

Along with heart rate, the determined stroke volume can then help us calculate cardiac output by using the equation below:

$$CO = SV * HR$$

However, just like other equipment, there are limitations of PCA technology usage. Some of these include that the patient must be mechanically ventilated, including use of muscle relaxants and general anesthesia, is recommended. For these patients a tidal volume greater than 8mL/kg, must be maintained, with no ongoing arrhythmias, and excludes patients with poor right ventricular function and/or poor vasomotor tone (Edwards life science, 2016).

There are alternative technologies for those cases and one of them is LiDCO. LiDCO uses combined technologies of pulse contour analysis and lithium dilution technique. The



cardiac output is calculated from the lithium dose and the area under the concentration–time curve prior to recirculation using the equation below:

$$CO = \text{Lithium dose (mmol)} * 60 / \text{area} * (1-PCV) \text{ (mM*s)}$$

Where *area* is the integral of the primary lithium dilution curve and *PCV* is the packed red cell volume.

While LiDCO has advantages of being less invasive and having good correlation with PA catheter, there are some limitations of LiDCO usage. It is not recommended for use on patients who are in their first trimester of pregnancy, weigh under 40kg, receive neuro-muscular blockade (can cause delay) and have aortic valve regurgitation (Harrison, 2015).

In those cases, other technologies can be used, such as NICOM or Masimo Pleth variability Index (PVI).

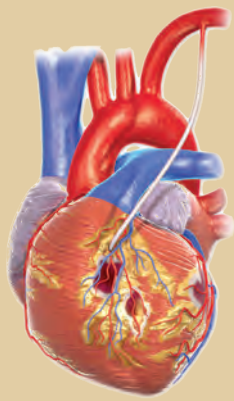
Preoperative anesthesia concerns

Airway management and oxygenation are always the main concerns for the anesthesia care team. In this case, our patient is a geriatric patient who is morbidly obese and was a heavy smoker for a long time. These are all indications for a possible difficult intubation, ventilation and oxygenation.

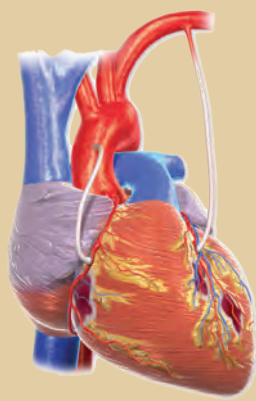
Geriatric patients are vulnerable and sensitive to changes to their physiology, therefore care must be given to everything that is done. Aging decreases vascular compliance, myocardial compliance, total body water and increases total body fat, which are all contributors to pharmacokinetic and pharmacodynamic alteration (Butterworth, Mackey & Wasnick, c2013). Geriatric patients will require lesser amounts and concentrations of medication, which may also have prolonged onset and duration times. In particular, these patients have delayed onset and offset time of volatile agents. Therefore, fast onset, offset and short acting medications might be better choices for geriatric patients. Careful

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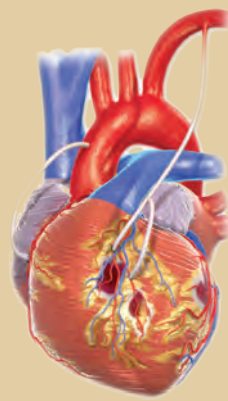
Coronary Artery Bypass Graft



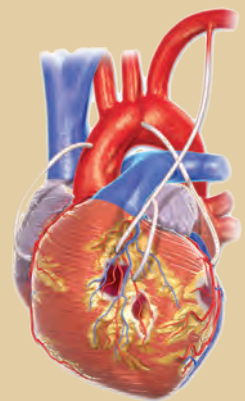
SINGLE



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TRIPLE



QUADRUPLE

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titration of medications is important, in order to prevent adverse reaction. BIS monitoring can be utilized to titrate medication. Aging also decreases elasticity of lung tissue and function of respiratory muscle that will increase the risk of hypoxia. Additionally, elderly patients have decreased beta-adrenergic responsiveness (www.ncbi.nlm.nih.gov, 2016), which means they are less likely to respond quickly to hypovolemia, hypotension or hypoxia. Closely monitoring our patient's vital signs and pre-oxygenating with 100% oxygen for a longer time before induction will help in preventing those events. There are many geriatric patient conditions that can make intubation more difficult, but fortunately our patient has no other geriatric problems such as arthritis or neck mobility problems. She is moving her neck and jaw within normal ranges.

Another concern for our patient is her obesity. Our patient's body mass index (BMI) is 40.8, which classifies her as morbidly obese and it is a concern because morbidly obese patients tend to desaturate more rapidly since metabolic rate is related to body mass (www.openanesthesia.org, 2016). Obese people have an increased demand for oxygen and produce more carbon dioxide. In addition, excessive tissue in the mouth and around the neck can obstruct the airway, which can make it difficult to ventilate and intubate the patient. Utilizing the difficult airway cart and airway adjuncts, such as an oral airway, will be useful to help ventilate and intubate the patient. Moreover, excessive weight on the chest and abdominal area will decrease chest wall compliance and force diaphragm upward which will lead to decrease in functional residual capacity (FRC), that can result in hypoxemia, especially in the supine position. These reasons are primarily why our patient must be well oxygenated prior to the induction. Our patient's obesity also puts her at a higher risk of gastro-esophageal reflux disease (GERD), which increases her risk of aspiration during induction. Due to higher risk of aspiration, performing a rapid sequence induction will be the preferred choice, over standard induction, for protection

of our patient's airway (Dr. Kelly, 2016).

Further complicating things, she was a long time heavy smoker which is another concern for us. Smoking irritates the lungs and cause overproduction of mucus in the airway which can affect ventilation perioperatively and also post-surgical recovery. Suction will be a very useful tool for visualizing the airway and to keep the airways clear. In addition, her lungs' ability to exchange gases may be decreased even though she quit smoking seven years ago. Damage to lung tissue is irreversible after a prolonged habit of smoking. Again, the need to pre-oxygenate before induction, to prevent rapid desaturation, which may lead to hypoxemia, is very important. Furthermore, smoking is a known trigger for asthma that can lead to bronchospasm (www.quit.org.au, 2016), which can be life threatening. Giving albuterol prophylactically and having an inhaler available can help avoid a bronchospasm.

Anesthetic plan / Induction

After thorough review of the patient's health history and current condition, the anesthesia care team has decided on a general anesthesia with rapid sequence induction and Sellick's maneuver to safely secure the patient's airway. After intubation, additional invasive monitors such as CVP and arterial line will be established on our patient to closely monitor and keep her stable. It is within the anesthesia technologist's scope of practice to assist with everything mentioned above including invasive line placement. As a result, I will be scrubbing in for the arterial line and CVP, to assist the provider.

The anesthesia care team (ACT) works together to formulate a care plan. Dr. Richard Kelly, a cardiac anesthesiologist at University of California, Irvine (UCI), sees no issue with the anesthetic plan including the possibility of difficult intubation for the reasons stated above; age, obesity and smoking history. Dr. Kelly also noted that he would give albuterol and anti-acid medication such as Ranitidine pre-operatively to prevent bronchospasm and aspiration.

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Furthermore, he suggested that a lesser amount of Versed should be given prior to induction not only because she is a geriatric patient who requires less amount of medication but also because we want to avoid depressing her own respiratory drive.

As for induction medications, according to Dr. Kelly, UCI anesthesiologist, Dr. Abraham Rosenbaum and UCI anesthesia resident Dr. Jay Shen, any induction agents such as Propofol, benzodiazepines and etomidate are equally safe to induce our patient, except for Ketamine, which is not a good choice in this case because it can cause hypertension. A rise in blood pressure would not be a good thing for our hypertensive patient. Fentanyl can be given together with the other medications as an adjunct or primary analgesic medication.

As far as muscle relaxants, all three doctors concur with the use of rocuronium instead of succinylcholine. Rocuronium can be used in a similar fashion as succinylcholine with the added benefit of a longer duration time, if necessary for a rapid sequence induction (RSI) or if the possible difficult airway is performed. Nitrous oxide will be avoided because of possible complications with expansion in open chest surgery. Advanced cardiovascular life support (ACLS) drugs should always be available in the room during cardiac procedures. In case of potentially fatal arrhythmias or asystole, it is prudent to make sure the defibrillator is connected for synchronized function. Furthermore, the use of other cardioactive drugs such as epinephrine, dobutamine, nitroglycerin and Milrinone may be needed with IV pumps and appropriate tubing. Broad-spectrum antibiotic medications such as Ancef, Vancomycin and Ertapenem might be used to prophylactically treat nosocomial infections that may develop.

After intubation and invasive line placement, trans-esophageal echocardiogram will be done to evaluate the heart.

Maintenance of anesthesia

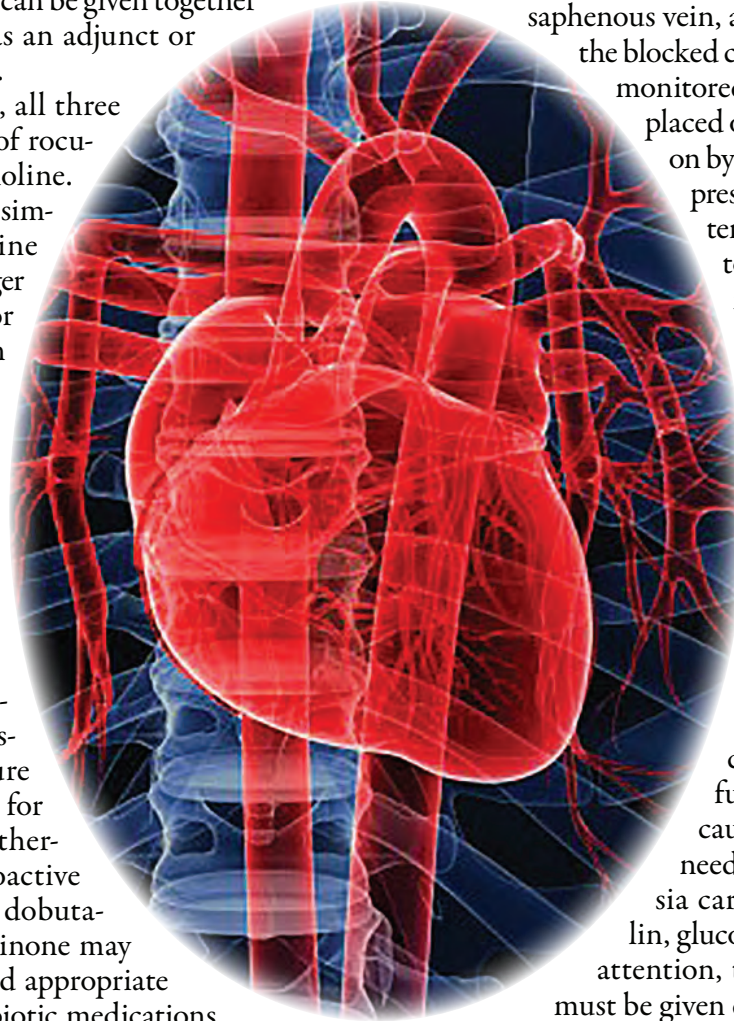
During surgery our patient will go on the cardiopulmonary bypass pump. This is a major concern to the anesthesia care team because it may cause hemodynamic changes in most patients. In addition, before cannulation we need to

double check with the anesthesia care provider that heparin (anticoagulant) has been administered prior to going on the pump. Verifying with the perfusionist throughout the case as to the status of oxygenation and perfusion will be important. Assessing the availability of protamine (heparin reversal) in the room is important prior to coming off-pump. When the surgeon cross-clamps the base of the aorta, it will increase blood pressure so we need to make sure that we have vasodilators and beta-blockers available in the room. Following cross-clamp, the coronary circulation will cease and infusion of cardioplegia will be made. Once the patient has been cooled with ice and put into a lower metabolic state, surgery can proceed. The surgeon will harvest either a vein or

an artery from an alternate site in the body, usually the saphenous vein, and use it as the repair graft for the blocked coronary arteries. Pressure is still monitored and the anesthesia machine is placed on standby. While the patient is

on bypass, continuous positive airway pressure (CPAP at about 5 centimeters of water pressure) will be used to keep alveoli open. This will make ventilation easier when the patient comes off-pump (Dr. Kelly, 2016). After the surgical repair and grafting, the patient is slowly warmed and the re-perfused coronary bypasses will be full of cardioplegia solution that has preserved the heart. This fast and sudden influx of potassium rich cardioplegia will need to be managed and the rewarming of the patient will continue until normal cardiac function is established. As a precaution to hyperkalemia, we will need to make sure that the anesthesia care provider has access to insulin, glucose and/or furosemide. Careful attention, to air emboli and blood clots, must be given during this period of time.

According to *Morgan and Mikhail's Clinical Anesthesiology* by Butterworth, Mackey and Wasnick 5th Ed. (c2013) and Dr. Kelly, choice of maintenance drugs can be sevoflurane, fentanyl or remifentanyl. There is some variability to the choice of muscle relaxant; however, Norcuron is a preferred agent because of its heart-friendly characteristics. Also the use of Amicar (antifibrinolytic agent) may be necessary post-operatively to make certain of good perfusion throughout the new grafts. Sevoflurane will be



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given to the patient through the cardiopulmonary bypass pump and other drugs can be directly infused through the heart-lung machine oxygenator and infusion ports. Other drugs can and might be given using infusion pumps via CVP line or peripheral IV.

Since our patient is going to be on bypass during the surgery, there will be fewer things that the anesthesia care team can monitor from the screen. Things that we can monitor from the screen are bispectral index and mean arterial pressure (MAP). Appropriate range for bispectral index during surgery is below 40 to keep our patient deep and MAP between 50 and 80mmHg during normothermia period and as low as 30mmHg during hypothermia period. An additional way for the anesthesia care team to monitor our patient through out the surgery is periodical blood gas analysis. We can monitor activated clotting time (ACT), hematocrit, potassium, glucose, blood pH, partial pressure of oxygen (PaO₂), partial pressure of carbon dioxide (PaCO₂) and bicarbonate. The following list contains the normal ranges of blood gas values (www.globalrph.com, 2016).

- *ACT: greater than 400-480 sec*
- *Hematocrit: 35-45% for women*
- *Potassium: 3.5-5.0 mEq/L*
- *Glucose: 70-100 mg/dL*
- *Blood pH: 7.35-7.45*
- *PaO₂: 80-100 mmHg*
- *PaCO₂: 35-45 mmHg*
- *Bicarbonate: 22-28 mEq/L*

In order to provide blood gas results for the anesthesia care provider throughout the case, we will make sure that there are plenty of blood gas syringes and laboratory tubes in the anesthesia cart. I will also be checking in periodically to support the anesthesia care provider in other areas such as cell salvage (as necessary), TEE studies (image capture) and ventilation needs.

Close to the end of surgery, protamine will be given to reverse heparin. Washed and processed red blood cells may be given to increase hematocrit as needed. As mentioned earlier, the end of surgery when our patient comes off bypass is a crucial time. For the anesthesia care team, there will be many hemodynamic changes that will impact the success of the surgery and patient survival. When the surgeon releases the cross-clamp, blood pressure will drop so we need to make sure that we have vasopressors available in the room.

Our patient will stay intubated to make it easier for her body to recover from the major open chest surgery and for her heart to regain its function with less stress.

Before we leave the operating room to help transport the patient, there is one more important thing that we need to take care of, the TEE probe. After the anesthesia

care provider pulls it out of the patient, we as the anesthesia technologists should put the entire probe into a collection bin to protect the piezoelectric crystal and send it down to central processing for terminal cleaning (Certified Anesthesia Technician Sara Paraspolo, 2016).

Transportation of the patient

We will be transporting an intubated patient who is under the effects of general anesthesia and a muscle relaxant, the anesthesia care team must therefore take extra precautions and provide extra equipment to safely transport the patient.

Necessary equipment may include, a bag valve mask (Ambu bag) with positive expiratory end pressure (PEEP) valve to keep the patient's alveoli open. A portable monitor to continuously monitor our patient's vital signs is needed while we are transporting her (usually a vital signs module with trending ability is transferred with the patient) and an oxygen tank to provide the greater concentration of oxygen required during the transport. As a precaution, I will also make sure that our provider has advanced cardiac life-support drugs readily available during transport.

While transporting our patient, I can assist the provider by bagging the patient so that they can focus directly on the patient's condition and vital signs.

Upon arrival to the intensive care unit (ICU), I will detach the module from the portable monitor and attach it to the monitor in the room, while the provider places our patient on the ventilator with the respiratory therapist. Bilateral breath sounds are checked to assure the ETT has not been displaced during transport and the infusion pumps are double checked to make sure that they are still set at the correct doses and rates. Medications on pumps may include propofol to keep the patient sedated, Amicar, pressors such as epinephrine or norepinephrine, beta-blockers, Nitroglycerin and insulin to control the blood sugar level. Other medications may be used to maintain the patient while they recover during the post-operative period.

Post-operative period / Emergence

Extubation time varies depending on the patient's condition, recovery, respiratory status and overall how well the surgery went. Most patients are mechanically ventilated for 1-12 hours post-operatively. The anesthesia care team's concerns for the first few post-operative hours are mostly hemodynamic stability and post-operative hemorrhage (Butterworth, Mackey & Wasnick, c2013). To make sure that our patient stays hemodynamically stable and does not bleed post-operatively, her vital signs and drainage output will be closely monitored by the ICU patient care team. Most of these assessments are left in the hands of an intensivist who usually is a member of the anesthesia staff. One major concern, post-operatively, is the development of pneumonia or ventilation difficulties. Morbidity and mortality increase if a cardiac patient develops one of these

MORE 

problems. According to Dr. Kelly and Dr. Shen, if they decide to extubate the patient after a thorough evaluation, it will be more beneficial for the patient to be extubated when almost fully awake, mainly to prevent hypoxemia. Our patient is a geriatric patient who is morbidly obese and was a heavy smoker, which is a bad combination for respiratory function. Therefore, extubation of our patient will occur when she is fully conscious and awake.

Conclusion

Open heart surgery is filled with many potential complications. Due to our patient's health history and her physical condition this was not an easy case to manage. Qualified and educated anesthesia technologists must be available to support the anesthesia care team by anticipating complications and needs. We should consistently be ready for possible worst-case scenarios. In most of these types of cases, every second can make a difference. Our participation and communication with the anesthesia care team can support the providers and enable them to focus more on the patient, which can result in the anesthesia care team's ultimate goal, the best patient care and the best patient outcome.

We as anesthesia technologists should consistently anticipate needs and remain proactive for all of our cases, however, this is amplified in a critical case situation. ■

TAKE THE QUIZ
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certification tips

ARE YOU UNABLE to attend ASATT Regional Meeting in your area? Are you looking for continuing education close to home? The state associations of the AANA host annual meetings that may hold opportunities for you. Many of these state associations have reduced rates for anesthesia technicians. Contact the state association in your area for more information.

Note: The AANA and their state societies are not affiliated with ASATT. ASATT does not guarantee credit for Continuing Education hours from these meetings towards recertification unless prior approval is

requested by the meeting coordinator and granted by ASATT. Some of the topics presented at these meetings will be relevant for anesthesia technician/technologist certification renewal; however, not all of them are acceptable.

The AANA has made a change to their certificates of completion. The expiration date of a program that has

received prior approval by the AANA means that the program provider cannot offer credits beyond that date. Please check your certificates of completion and be sure that the date of completion is either before or on the expiration date. A later date results in the CEs being voided and cannot be used towards recertification. ■

RIGHT!

Correct designation for a Certified Anesthesia Technician Cer.A.T.

Correct designation for a Certified Anesthesia Technologist Cer.A.T.T.

WRONG!

CAT	CATT	CerAT
Cer. A.T.	Cer. A.T.T.	CERAT
Cert.A.T.	Cert.A.T.T.	CerAT.
CerATT	CarroT	CerATT.



DID YOU KNOW?

ASATT has a Science and Technology Award which is awarded to a selected individual annually. Individuals who are considered must submit a technical article to the editor of **THE SENSOR** and/or to ASATT HQ. The article must first be selected for publication in **THE SENSOR**. The author of the technical article must be either an anesthesia technicians or technologists.

The articles considered for the award will be selected from the winter through fall issues of the quarterly published **SENSOR** during that fiscal year. (e.g., Winter 2016 to Fall 2016.)

All published articles will be judged by a panel of medical professionals in anesthesiology and evaluated on the subject matter, relevancy and its written presentation.

All submitted articles must be composed of 2,500 to 3,000 words, be formatted following American Psychological Association (APA) guidelines and have properly annotated bibliographical references. A detailed guide is available at:

<http://owl.english.purdue.edu/owl/resource/560/01/>

All Science and Technology articles submitted for publication will be scanned with plagiarism detection software by ASATT.

PLEASE DO NOT PLAGIARIZE!

If plagiarism is suspected, **THE SENSOR** editor will notify the Board of Directors prior to submitting the information to the ASATT Code of Conduct and Ethics Committee for further investigation.

The technical articles must include a 10-question quiz; answers should either be multiple-choice or true/false. The questions are used for Continuing Education, and should be written by the author of the article.

If you are the recipient of the Science and Technology Award, you will be notified first by mail, and then your name will be announced at the ASATT Annual Educational Conference. If the awardee is in attendance at the conference, a plaque/award and a check in the amount of \$1,500 shall be presented. If the awardee is NOT in attendance, the plaque/award and check will be mailed to the winner at the address on record with ASATT HQ.

So ... what are you waiting for??

Call or email ASATT HQ if you have an article to submit.

Note: Please do not call or email ASATT HQ to ask for help in writing the article. However, you can ask what deadlines exist for article submission. You may submit your article multiple times if it is not selected for publication upon first submission.

Consider Yourself a WRITER?

How about submitting a SCIENCE & TECHNOLOGY ARTICLE?!

- Interested in being published?
- Wish to enhance your professional portfolio?
- Want to help your fellow Cer.A.T.T. and Cer.A.T. colleagues with Continuing Education credits?
- How would you like to possibly WIN an AWARD (and \$1,500 cash!) while you do this?



CERTIFICATION

THERE ARE TWO CERTIFICATIONS that ASATT recognizes: the Certified Anesthesia Technician and Certified Anesthesia Technologist. *Certified Anesthesia Technician (Cer.A.T.)* — No longer offering certification exam. *Certified Anesthesia Technologist (Cer.A.T.T.)* — Completing an ASATT-accredited/approved program, followed by successfully passing the Technologist exam. Certified Anesthesia Technicians in good standing have the opportunity to sit for the Technologist certification exam by completing the **Advancement Program**.*

Continuing Education

Continuing education is essential to enable Anesthesia Technologists and Technicians to ensure personal and professional development in the rapidly changing field of anesthesia technology. Therefore, to retain the Certified Anesthesia Technician and Technologist designation, Anesthesia Technicians and Technologist must document continuing education.

CE Credit Requirements

After an individual has become certified or been recertified, they must begin to earn continuing education credits, according to their two-year certification period. For new certified individuals they must wait for their designated two-year certification period to begin. Example: If you received your Technologist certification July 18, 2016, your certification expires December 31, 2018, so your two-year designated certification period would be January 1, 2017 through December 31, 2018, so you would have to wait until January 1, 2017 to start earning CEs. Individuals holding the Cer.A.T. certification must earn 20 CEs during their two-year certification period. Individuals holding the Cer.A.T.T. certification must earn 30 CEs during their two-year certification period.

Recommended Programs and Credits

It is the responsibility of the individual to ensure appropriate courses are taken and complete records are maintained.

Credit Calculation: One continuing education/contact hour (CE/CH) may be requested for each 50- to 60-minute lecture attended. Hours will not be given for introductory remarks, breaks, business meetings, meals, or non-anesthesia-related topics that do not fall under Category II.

The content of the lectures must be relevant to the Anesthesia Content Outline listed below. During each two-year

recertification period, you may submit only five CE/CH from Category II that do not relate to the Anesthesia Technician Content Outline.

Category I:

Operating Room tasks
Infection Control Techniques
Basic Anatomy and Physiology
Types of Anesthesia
Airway Management Equipment
Anesthesia Gas Machine
and Gas Delivery
Monitors and Ancillary Devices
Pharmacy
Intravenous Therapy

Category II:

Stress Management
Interpersonal Disciplines
Computer Programming
Data Record Keeping
Materials Management
Marketing
Quality Assurance Training

Other educational programs

Activity relevant to the profession of Anesthesia Technology CE/CHs may be earned by active participation in the field of anesthesia technology such as presenting lectures or serving the national organization as an official member of any committee or board. CE/CHs are awarded as follows:

Activity

Presenting a 50–60-minute lecture on a topic relevant to the Anesthesia Technician Content Outline:

1 for each different topic presented

Preparing a 50–60-minute lecture on a topic relevant to the Anesthesia Technician Content Outline:

2 for each different topic prepared

Serving on a official ASATT committee or board

1 for each separate official ASATT committee or board served with a maximum of three each year

Carry forward of excess CEs

CEs earned over the required amounts needed for Technician and Technologist recertification may not be carried over to the next certification period.

Continuing Education CEs accepted by ASATT

- Attendance at an ASATT National meeting
- Attendance at an ASATT Regional meeting
- ASATT *SENSOR* Quizzes. (Only quizzes from your certification period can be used.)
- Active participation on an ASATT board or committee

*Covered in the ASATT REFRESHER/ADVANCEMENT/PROVISIONAL RECERTIFICATION PROGRAM STANDARDS section.

MORE 

- Preparing and or presenting a lecture relevant to Anesthesia Technology
- CEs off the www.anesthesiatechpearls.com website
- BLS – copy front and back (2 CEs), documentation that the course was 4 hours in length (4 CEs);
- ACLS – New (8), Renewal (4); PALS – New (8), Renewal (4)

Other Programs and Credits

On the ASATT website under our Events tab there is a section call **State and Local Meetings**. Listed there will be meetings that have submitted paperwork to have their CEs approved by ASATT. Once the CEs have been approved, the number of approved CEs will be listed.

CE Approval

It is the responsibility of the individual to determine if a seminar or meeting meets the requirements for ASATT approval. If the CE comes from an unapproved organization, the individual risks not receiving approval or full credit. The individual is responsible to maintain evidence that the CE(s) meet the ASATT requirements.

Individuals may request approval for CEs not already approved by ASATT, by completing and submitting the **Pre-Approval Continuing Education** forms. These forms are reviewed and approved by the Education Committee.

If you have any questions or need additional information, contact 8 for assistance. Issues that cannot be readily answered are referred to the Education Committee Chair for review and response.

CE Reporting (Recertification)

Certification expires December 31st every two years. individuals who are due to recertify this year *will receive a postcard indicating that it is time to renew-these will be mailed*

out the middle of November. There will also be an email reminder as well. These will include a short list of instructions for the applicants to complete. **Applications mailed or postmarked after December 31 must include a \$75 late fee. Your application will not be processed unless the correct fees are submitted. Members and non-members alike, who are contacted because of incomplete documentation, will incur an additional \$50 fee to complete the processing of their packet. ASATT grants a renewal extension until January 31st, which means we must receive your packet on or before the 31st. If the 31st falls on a Saturday, your packet is due by the end of business on Friday. If the 31st falls on a Sunday, then your packet is due by the end of business on Monday. There will be no exceptions made for packets received after January 31st, unless prior arrangements were made with the recertification committee.**

Request for an extension

A request for extension must be made in writing to the Chair of the Recertification Committee. Keep in mind that even though an extension may have been granted the CE's submitted must have been completed during your two years certification period.

Late Submissions

If you submit your packet after the grace period of January 31st, you're subject to loss of certification. You would have to go through the Provisional Certification process within a year of loss of certification. (see below)

More information on ASATT recertification

Record Keeping

It is the responsibility of the individual to ensure complete records are maintained. For ASATT members, ASATT sponsored CEs (National and Regional meetings, *SENSOR* Quizzes) will be logged in the ASATT database, and can be viewed under your



CERTIFIED

member profile on the ASATT website. All other CEs earned even if the have an ASATT approval code will need to be submitted at the time of your recertification.

Requirements for certification to be re-established or advanced

ASATT REFRESHER/ ADVANCEMENT/PROVISIONAL RECERTIFICATION PROGRAM STANDARDS

General Information

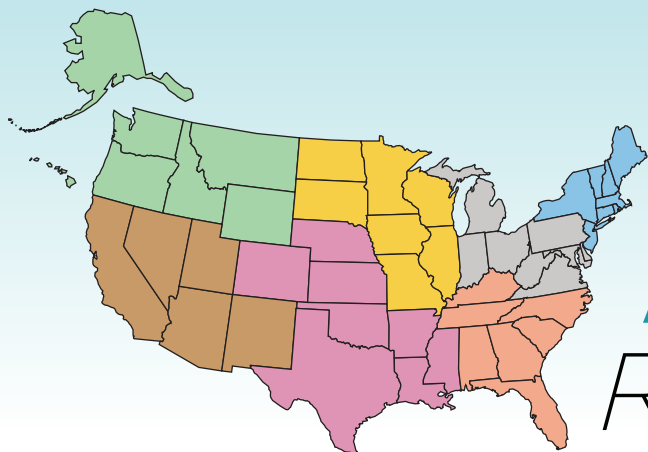
Purpose

There are three methods by which certification can be re-established or advanced:

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 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.

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.

Provisional Recertification may be granted for the previously certified anesthesia technologist/technician whose certification was allowed to lapse due to late or insufficient CE credits beyond the December 31st recertification deadline. ■



ASATT

Regional Activities



REGION 1

CT-ME-MA-NH-NJ-NY-RI-VT

Director: Jonnalee Burgess, Cer.A.T.
Work: 802/296-6314
Email: region1director@asatt.org

Hello Region 1.

First of all I want to thank Quentin Letson for hosting the Region 1 Meeting on Saturday, August 13th in Atlantic City, NJ. As it looks now, it is expected to be a record for Region 1 as far as attendance. We will have standing room only. In next month's Web Report I will give all of the statistics, pictures, details of the speakers and plans for next year's meetings.

I really think that as a team, all of us in Region 1 need to start thinking about where and whom will offer to have meetings in the next year. If you have any questions about hosting the meetings, please feel free to email me at the address above.

As for the 2016 ASATT Annual Meeting in Chicago, IL. Registration is now open so make sure that you get signed up now. Don't miss your chance to network with other Anesthesia Techs. There are a lot of great things in to Chicago to do and see, especially the amazing deep dish pizza in Chicago. It is never too early to start accumulating your CE's for Recertification, even if it is not your year to recertify. See you in Chicago.



REGION 2

DE-IN-MD-MI-OH-PA-VA-WV

Director: Randy L. Harris, Cer.A.T.
Work: 443/492-8928
Email: region2director@asatt.org

Greetings Region 2.

I hope everyone is enjoying the summer as it is coming to an end. I hope everyone is getting ready for our National Educational Conference on October 20-22, 2016. I'm looking forward to seeing you all and Chicago Illinois.

I would like to thank everyone that participated in this

MORE ►



Karen Patrick and Randy Harris



Left: Christina Vines, Meyon Melvin and Region 2 Director Randy Harris.

Below: Region 2 meeting attendees.



year election.

If you're unable to attend this year's National educational conference, there will be an additional regional meeting at the University of Pittsburgh medical center East in Monroeville PA this will be held on October 8, 2016. I would like to take this time to thank Patricia Carlson, Laura Hollis, and Connie Sheckler, for putting this regional meeting together.

It's never too early to think about hosting a regional meeting at your hospital. Please don't hesitate to call or email me with any questions.



REGION 3

AL-FL-GA-KY-NC-SC-TN

Director: Gail Walker, Cer.A.T.

Work: n/a

Email: region3director@asatt.org

Greetings Region 3!!

With summer in full swing and the kids out of school it's easy to ignore things like keeping up with your educational needs and all the things going on with ASATT. Please take a minute to access the ASATT website because your help is needed.

One of the best ways to show your appreciation to a person, group or even an entire department is by nominating them for a Regional Education Award. This is a person or group that has helped promote the education of anesthesia technicians and technologists because they believe in our profession and are committed to seeing us move forward. I can personally attest to the impact that not only receiving the award can have but nominating it as well can have on you. So often, those little acts of kindness are the ones that can have the most profound effect on a person and this award is the perfect way to recognize those that have made a difference in your professional life. July 1st is the deadline so please don't let this opportunity go by without reflecting back on who had the greatest impact on you this past year and letting the rest of our community know about it.

The North Carolina Society of Anesthesia Technicians has a couple of events planned in the near future. Please contact Trevon Logan at trevon.logan@va.gov for more information.

I feel as though I am in a unique position because I have been associated with ASATT for many years and am privileged to know so many of you. When I need advice or a fresh perspective on a problem, I can reach out to any number of technicians for help. Many of you, especially newer members or technicians new to the field may not have this luxury. ASATT is a place where members should be able to turn to if you need help solving a work related problem. For example, where I work we are trying to come up with a better way to handle our fiberoptic scopes. Our breakage is way too high and, short of hiring someone to solely handle equipment, I

cannot come up with a way to solve this issue. If any of you have any suggestions, I'd love to hear from you.

The national meeting will also be here before you know it. With it being on the east coast, many of us in Region 3 should, hopefully, be able to attend. I've heard countless times from members who've attended this national meeting that you truly can't appreciate the impact we have on the profession and how diverse our scope of practice is across the country until you get 300 of us in a room trading war stories. It is well worth the effort to attend.



REGION 4

IL-IA-MN-MO-ND-SD-WI

Director: Jeffery Blakney, Cer.A.T.

Work: 630/957-8558

Email: region4director@asatt.org

Hello Region 4,

The College of Dupage (Illinois) wanted me to pass along some information about the fall Associate of Applied Science Degree (Anesthesia Technology Online Program). The dead line to register has been extended until July 27th 2016 at 5 p.m. Please get in contact with Kathy Cabai for more information.

Registration is now open for the ASATT 2016 Annual Educational Conference, taking place on October 20-22, 2016 Chicago, IL. Let's not forget the earlier you book your Room the less you pay rooms are going fast so hurry up and book. Chicago has committed well over 8,000 quality hotel guestrooms to ASA, and of this quantity more than 1,000 hotel rooms are within walking distance of the McCormick Place Convention Center. Make sure you use onPeak or ASA International Housing Group, and take advantage of reduced rates for hotel rooms in Chicago. Being the conference is in Region 4 lets represent the region with great attendance I look forward to meeting everyone. If you have any questions please do not hesitate to get in contact with me.



REGION 5

AR-CO-KS-LA-MS-NE-OK-TX

Director: Greg Farmer, Cer.A.T.

Work: 817/250-2650

Email: region5director@asatt.org

Greetings Region Five!!!!

I hope everyone has had a wonderful and safe summer. As the dog days are upon us, please bring your four legged friends inside out of the heat. The heat and humidity can kill them. Keep an eye on your neighbors as well. See if they need help when it is hot outside.

There will be a meeting in November. I am in the planning stages currently. I would like to have meetings in every state in Region Five, I just need your help. It can be four to

MORE ▶

six hours. That's just four to six speakers. That's just a few of your providers from your anesthesia team. That's completely doable. We all have to work together to further our profile and improve our knowledge and skills. We do that through education. Meetings will help accomplish that goal.

Speaking of meetings...

**2016 ASATT Educational Conference
October 20-22, 2016 in Chicago!!**

Hope to see you there!

It's up to us whether we want our profession to evolve and improve, or wither and die.

Get involved!

If you don't know how, email me. We can work together to find a solution.

If we all work together, we can improve all of our careers.



**REGION 6
AZ-CA-NM-NV-UT**

Director: Diane Alejandro-Harper, Cer.A.T.

Work: 650/283-2558

Email: region6director@asatt.org

Hello Region 6,

As we approach the end of August, I want to remind everyone to consider attending the National Anesthesia Technology education conference in Chicago, especially if you have not yet attended a conference this year and/or need CEs to maintain your certification. You can receive up to 11-13 CEs.

The agenda for the conference is posted. Please remember the conference is taking place on October 20, 21, 22nd, Thursday, Friday, and Saturday respectively. There will be many great speakers and new topics such Disaster Preparedness, TOF Monitoring, and Stem Cell Technology.

Come join us...learn, meet new faces, and enjoy the city while you are there!

Thank you!



**REGION 7
AK-HI-ID-MT-OR-WA-WY**

Director: Delbert Macanas, Cer.A.T.T.

Work: 808/547-9872 (0930-1830 pt M-F)

Email: region7director@asatt.org

Howzit Region 7!!!

It's August and the year is moving along really quickly. Summer will be ending soon and fall will be upon us before we know it. I am looking forward to the cooler temperatures; it's been really hot and humid this summer in Hawaii.

The Hawaii Regional Education Meeting was just completed on Sunday, August 7th. If you sat through the entire meeting you will receive 8 CE's for the meeting. We had a

great meeting with probably about 90% of all Certified AT's in the state of Hawaii in attendance.

Some comments from the Hawaii Meeting to the question on the last page of the Evaluation Form... "What has being a member of ASATT done for you?"

- A feeling of pride belonging to a group of professionals
- Keeps me informed of new information in the Anesthesia world helps me do a better job
- Being updated with Anesthesia news. Organizes CE credits
- Validates occupation/profession
- Helps keep me updated with CE's/recertification
- It has allowed me to stay in the loop on CE's, future job opportunities, and advancement in Anesthesia Technology
- Updates and refreshes my education
- Provides me with up to date education
- Increased opportunity for employment
- Increased opportunity for advancement of professional body/category
- Increased opportunity for professional net-working and education
- A whole lot both clinically, socially, it has opened my eyes to situations both in and out of the OR.

The fourth Region 7 meeting will be at Evergreen Health Medical Center in Kirkland, WA on Saturday, September 10th. Joseph Fitzgerald is busy coordinating this event and the agenda is just about set. He is also looking to have 8 CE's. If you can help with anything please contact him or me at your earliest convenience. Check the website for the agenda and registration details.

Mario Saldana and his team at Oregon Health Sciences University Hospital will hold the fifth and final meeting for Region 7 on Saturday, November 19th. If you live in Portland and can help with a speaker or sponsor please contact one of us. Watch the website for further details...

Please check the ASATT website for details to other CE opportunities;

The 2016 Wyoming/Montana Association of Nurse Anesthetists Annual Meeting to be held September 23-25, 2016 at Buck's T-4 Lodge in Big Sky, MT.

And the 2016 Northwest States Anesthesia Conference (WANA) to be held on October 7-9, 2016 at Historic Davenport Hotel in Spokane, WA.

I am working with the Education Committee on CE's allowed for these two meetings.

This part of my update is repeated because...

I cannot say this enough, thank you very much Region 7!!! You the members of the Region are making this happen. We are taking Regional Educational Meet-

MORE ►

ings to a new level. Five Regional Educational Meetings in 2016... OUTSTANDING!!!



“Coming together is the beginning. Keeping together is progress. Working together is success.”

- Henry Ford

We are making history and raising the bar for every other region. Can we sustain this momentum??? We need to start looking at 2017. If we can continue to have new members step forward to coordinate meetings, it will lessen the burden on everyone. It’s a challenge... Coordinating a meeting... It’s not easy, but it’s not hard... You never know until you try.

“If you’re walking down the right path and willing to keep walking, eventually you’ll make progress.”

Barack Obama



Annual Meeting in Chicago

Plan to attend the 2016 ASATT Annual Meeting on

October 20-22, in Chicago, IL. It will be held at the Swisotel and rooms should be booked through the ASAHQ website for best rates. Chicago is one of my favorite cities to visit. There is so much to see and do. The Miracle Mile will be within walking distance to our hotel. Navy Pier is blocks away. There’s also great variety of food to choose from. Gino’s East is blocks away from the hotel. I love the Chicago deep dish pizza. If you love Beef, I believe you can not get a bad steak in this city. Find a friend/peer to share a room with to cut your hotel room cost. I hope to see many of you there...

The Annual Meeting, it’s a special one... You are surrounded by your peers, who are experiencing the same problems you are. It is a one of a kind meeting. Make new friends to network with at the meeting.



“Friendship ... is born at the moment when one man says to another, ‘What! You too? I thought that no one but myself...’”

- C.S. Lewis

Are you up for recertification this year? Please do not mess around with your CEs. Or if you just re-certified, start accumulating CE’s for your next cycle. There are so many opportunities to earn CEs this year in Region 7, there is no excuse. I have said it before... Poor planning on your part does not constitute an emergency on ASATT’s part.

Aloha! ■

SCOPE OF PRACTICE

SCOPE OF PRACTICE describes the clinical functions of assessment, procedures, actions and processes that healthcare personnel are permitted to perform within the parameters of the credentialing organization, state, and to a lesser extent, federal laws. Each of these have regulations that describe requirements for education and training, and define Scope of Practice. The Scope of Practice is predominately found in state law and limitations are specific to education, experience, and demonstrated competencies. Individual states or facility rules may limit or narrow the Scope of Practice of an individual through job description

and/or policy.

Scope of Practice can be further delineated by:

- Federal law/Medicare regulations
- Medi-Cal regulations
- Accreditation standards
- Clinical setting (e.g. inpatient, outpatient, lab, emergency department, etc.)
- Legal opinions

ASATT as Credentialing Organization

The credentialing organization is the entity that sets the Scope of

Practice for their *by V. Reyes, Cer.A.T.T.*

profession. Methodology includes professional practice analysis, national certification examination and input from other established professions in the same field, generally as liaison to the Board of Directors.

Professional certification indicates that an individual has met criteria which measures knowledge, skills and abilities necessary for entry-level



MORE ▶

practice in anesthesia technology. The credentials Cer.A.T. and Cer.A.T.T. indicates that the individual has fulfilled the criteria and is therefore qualified to function within their individual Scope of Practice.

Healthcare exists in an environment of increasing regulatory scrutiny. Standards in education and training are intended to encourage a consistent, safe care environment which leads to measureable outcomes for public information.

Job Descriptions

Job descriptions are legal opinions and policies that can define the operational functions and responsibilities of a specific position. The description cannot exceed the state laws that regulate the healthcare practitioner's license, certification or non-licensed Scope of Practice.

Consequences

There are significant risks identified with violations of Scope of Practice. Legal liabilities exist for the allied healthcare professional, the supervisor(s), and the organization if the healthcare professional practices outside of his or her Scope of Practice.

Risks include disciplinary action by licensing/certification boards, hospital or healthcare corporation sanctions and/or fines, as well as the potential for criminal charges in egregious cases.

From an accreditation and regulatory perspective systematic non-compliance with Scope of Practice requirements can result in loss of accreditation and/or sanctions.

Key Reasons Why It Is Important to Establish Scope of Practice

Patient Safety: The right patient, the right professional performing the right clinical service at the right time supports patient safety.

Quality: The allied healthcare professional must have the appropriate

education, knowledge and experience to participate, as a member of the anesthesia care team, in the care of patients.

Patient Satisfaction: The patient's care experience is improved with competent caregivers.

Compliance: Scope of Practice is defined by law and monitored by regulatory agencies.

Legal Requirements: All care activities must be appropriately documented and provided by personnel operating within their Scope of Practice.

Reimbursement: In order to collect for services, facilities must ensure that the right practitioner performed the right clinical service, within the right time frame, with the right clinical record documentation.

Medicare and Scope of Practice

Medicare "Conditions for Coverage" may allow only certain professionals to perform a procedure or provide appropriate supervision levels.

Medicare "Conditions of Participation" (e.g., for hospitals or Medicare-certified surgical centers) require compliance with state law, and have some provisions regarding supervision that affects professionals. Conditions of Participation apply to the facility regardless of the patient population, as in Medicare *vs.* commercial members.

Medicare Reimbursement Rules may impose additional supervision requirements by type of service.

State Medical Benefit Agencies may also impose supervision or countersignature requirements that affect Scope of Practice.

How Do You Know If a Task is Within Scope of Practice?

- Is the skill within the generally recognized scope and standards of practice?
- Is the act something taught in your basic education program?
- Do you know how to perform the act?

- Are you competent?
- Can you document successful completion of additional education to perform the act?

Anesthesia Technology Professionals

The majority of states do not currently recognize anesthesia technology, which means they neither deny nor allow the Scope of Practice that ASATT publishes. It is the responsibility of the technologist/technician to ensure that he or she is adhering to Scope of Practice.

There is a fundamental need for anesthesia technology professionals in every anesthesia practice, regardless of size. In large organizations reliance on these professionals is often very great. The need for credentialing and privileges for these professionals, cannot be overstated. These professionals must be qualified and must at all times understand what they are expected to do and how to do it. Often administrators do not appreciate the function of the anesthesia technology professional, even though it is obvious to all who work in the OR. Initiation of new positions and defense of current staff by the anesthesia providers should be undertaken to ensure an adequate number of competent staff.

To review the ASATT Scope of Practice, refer to the Fall 2015 *SENSOR* or the ASATT Website under the "About Us" tab. ■

Reference

- Nagelhout and Plaus; Nurse Anesthesia: 5th Edition, Ch. 2 pg. 24
- Barash, Cullen, Stoelting; et al: Clinical Anesthesia; 7th Edition – Sec.1 Ch. 2
- Scope of Practice: Business & Professions Code. Title 22 CA Code Regulations
- The Joint Commission, Hospital Accreditation Standards



27TH ANNUAL EDUCATIONAL CONFERENCE

CHICAGO

October 20–22, 2016
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REGISTRATION FORM

Registration Type	Early Bird thru May 31	June 1 thru July 31	Aug 1 thru Sept 14	Sept 15 thru Oct 14	ON-SITE Oct 20–22	DAILY (check one) <input type="checkbox"/> Thurs <input type="checkbox"/> Fri <input type="checkbox"/> Sat	Amount
	Member Mem. # or User ID: _____	\$250	\$300	\$350	\$400	\$500	
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Student**	\$125	\$125	\$125	\$125	\$125		

No registration will be processed without payment. Any registrations that do not have the correct payment attached will be held until full payment is received. No exceptions will be made. **TOTAL**

This is my 1st time attending an ASATT Conference Yes No Special physical or dietary needs? No Yes Describe: _____

Registration fee includes conference materials, opening reception, Friday and Saturday breakfast, Friday and Saturday luncheon, and designated CEs.
 *Spouse/Guest rate includes Welcome Reception, meals, and exhibits only. **Must have a valid school ID.

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Please type or carefully print the information requested exactly as it should appear on the roster and participant's name badge.

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REFUND POLICY

Cancellations made by Sept. 1, 2016, will receive a full refund. Cancellations made Sept. 2 through Oct. 1, 2016, will be penalized 50% of the registration fee. Cancellations made on or after Oct. 2, 2016, will receive no refund.

Print this form, attach payment (if paying by check), and submit to:
American Society of Anesthesia Technologists and Technicians
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www.ASATT.org registration@ASATT.org

Please note that membership dues are not included in the Conference registration fee and are invoiced separately.

Click [HERE](#) to visit the ASA Housing page to see a list of hotels and to make reservations. Or to book by phone, contact the onPeak offices at 855/992-3353 between 9 a.m. and 5 p.m.

Use this form, or click [HERE](#) to register online



VANDERBILT UNIVERSITY MEDICAL CENTER was the host of an educational meeting offering seven continuing educational credits for anesthesia technicians and technologists on April 16, 2016.

Kudos must be given to Julieanna (Kapelan) Brown, Cer.A.T.T., for coordinating the speakers and topics. Julie painstakingly chose topics that were relevant to the practice of anesthesia technology and formulated the objectives so that each lecture contained information for all levels of practice. Attending the conference were technicians and technologists from Tennessee, Alabama, Indiana, Georgia and Kentucky.

We would also like to thank the following speakers who took time away from their families to present informative and entertaining lectures: Dr. Mias Pretorius; Dr. Jason Lane; Dr. Derek Moore; Dr. Brian Allen; Mary Peters, CRNA; and Dan Hatlestad from GE Healthcare. Our sincere appreciation to everyone for making this meeting a huge success! Julieanna is currently finalizing plans for a November conference that will also award seven CEs for full attendance.

Anesthesia Tech Day Celebrations

To show appreciation for their hard work and dedication to patient safety,

Vanderbilt University Medical Center showered the anesthesia technologists and technicians with surprises all week. The festivities included baskets stuffed with snacks and a catered barbecue lunch. Each tech was also presented with a warm-up jacket, as well as movie passes. ■

Front row: Christine Tinglin, Cer.A.T.; Damon Peebles, Cer.A.T.; Janel Henderson; Ray Brazill, Cer.A.T.

Second row: Paivi Belton, Cer.A.T.; Cameron Hix, Cer.A.T.; Jarvis Singelton, Cer.A.T.; Tonia Rozell, Cer.A.T.T.; Julieanna Brown, Cer.A.T.T.; Joe Brock, Cer.A.T.

Back row: Kim Watkins; John Poland, Cer.A.T.; Shannon Summers, Cer.A.T.; Phillip Hood, Cer.A.T.; Dewayne Campbell, Cer.A.T.T.; Jefferey Minnick, Cer.A.T.



We want to hear how **YOU** celebrated Anesthesia Tech Day! Send us your stories and photos and we will gladly include them in the next issue of *THE SENSOR*.



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New Guidelines Available for Pre-Anesthesia Checkout

By Jeffrey M. Feldman, MD, MSE; Michael A. Olympio, MD; Donald Martin, MD; Adam Striker, MD

While chatting with a patient about to undergo a laparoscopic cholecystectomy, you administer an induction dose of propofol and an intubating dose of vecuronium. The patient loses consciousness and spontaneous respiration ceases. You adjust the mask on the patient's face to establish a secure fit and squeeze the reservoir bag, only to find that you are unable to deliver a positive pressure breath. A quick visual inspection of the breathing circuit does not reveal the cause of the problem. Can you reliably ventilate this patient before he becomes hypoxic? Is an alternative method of ventilation readily available and functioning? Is there a reliable source of oxygen? Furthermore, you are using a relatively new anesthesia machine that performs an automated checkout procedure. What functions of the anesthesia machine did the automated checkout actually evaluate? Did you perform a thorough check of the machine before use that could have detected the source of this problem?

FAILURE TO CHECK anesthesia equipment prior to use can lead to patient injury or “near misses.”¹ Checking equipment has also been associated with a decreased risk of severe postoperative morbidity and mortality.² Indeed, a pre-use anesthesia apparatus checkout recommendation (AACR) was developed many years ago and widely accepted as an important step in the process of preparing to deliver anesthesia care.³ Despite the accepted importance of the 1993 AACR, available evidence suggests that it is not well understood and not reliably utilized by anesthesia providers.^{4, 5} Furthermore, anesthesia delivery systems have evolved to the point that one checkout procedure is not broadly applicable to all anesthesia delivery systems currently on the market. For these reasons, a new approach to the pre-use AACR has been developed. The primary goals of this new approach are to have a procedure that is applicable to all anesthesia delivery systems, and one that will be reliably performed.

The effort to revise the AACR was initiated by the Committee on Equipment and Facilities at the 2003 annual ASA meeting after recognizing that the 1993 AACR did not apply to

modern anesthesia delivery systems. A task force was established consisting of representatives from major anesthesia delivery system manufacturers, the American Association of Nurse Anesthetists (AANA), The American Society of Anesthesia Technicians and Technologists (ASATT), and the ASA. The task force met for the first time at the 2004 ASA meeting while working continuously via e-mail since 2003. The result of this process is a document entitled “Recommendations for Pre-Anesthesia Checkout Procedures (2008)” and a growing library of checklists for checking individual anesthesia delivery systems. This information is available on the ASA website in the Clinical Information section (<http://www.asahq.org/clinical/fda.htm>).

The 2008 AACR recommends that 15 separate items be checked or verified at the beginning of each day, or whenever a machine is moved, serviced, or the vaporizers changed (Table 1, next page). Eight of these items should be checked prior to each procedure (Table 2, next page). Some of these steps may be part of an automated checkout process on many machines. Following these checklists will typically require <5 minutes at the beginning of the day, and <2 minutes between cases, but will

provide you with the confidence that the machine will be able to provide all essential life support functions before you begin a case.

Early in the process of developing the new recommendations, the task force recognized that a single checkout recommendation could not be applicable to all modern anesthesia delivery systems. Not only does equipment design differ, but the automated checkout procedures built into many modern systems do not check all of the items that require attention, and vary from machine to machine. As a result, the task force has developed a guideline which describes the items that should be checked prior to use, rather than how each item should be checked. Actual checklists for everyday use will be based upon the guideline, but tailored to the equipment and resources available at a specific anesthetizing location. As a complement to the guideline, reference checklists are being developed for use by practitioners and departments interested in revising their checkout procedures. As new anesthesia delivery systems are adopted, revised checkout procedures will be required as the traditional AACR does not apply to modern equipment.

MORE ►

TABLE 1 | Recommended Essential Steps in a Pre-Anesthesia Checkout Procedure

TO BE COMPLETED DAILY, OR AFTER A MACHINE IS MOVED OR VAPORIZERS CHANGED

ITEM TO BE COMPLETED		RESPONSIBLE PARTY
Item #1	Verify Auxiliary Oxygen Cylinder and Manual Ventilation Device (AmbuBag) are available & functioning.	Provider and Tech
Item #2	Verify patient suction is adequate to clear the airway.	Provider and Tech
Item #3	Turn on anesthesia delivery system and confirm that ac power is available.	Provider or Tech
Item #4	Verify availability of required monitors, including alarms.	Provider or Tech
Item #5	Verify that pressure is adequate on the spare oxygen cylinder mounted on the anesthesia machine.	Provider and Tech
Item #6	Verify that the piped gas pressures are ≥ 50 psig.	Provider and Tech
Item #7	Verify that vaporizers are adequately filled and, if applicable, that the filler ports are tightly closed.	Provider or Tech
Item #8	Verify that there are no leaks in the gas supply lines between the flowmeters and the common gas outlet.	Provider or Tech
Item #9	Test scavenging system function.	Provider or Tech
Item #10	Calibrate, or verify calibration of, the oxygen monitor and check the low oxygen alarm.	Provider or Tech
Item #11	Verify carbon dioxide absorbent is fresh and not exhausted.	Provider or Tech
Item #12	Perform breathing system pressure and leak testing.	Provider and Tech
Item #13	Verify that gas flows properly through the breathing circuit during both inspiration and exhalation.	Provider and Tech
Item #14	Document completion of checkout procedures.	Provider and Tech
Item #15	Confirm ventilator settings and evaluate readiness to deliver anesthesia care. (ANESTHESIA TIME OUT)	Provider

continued from page 24

The task force also recognized that complexity is an obstacle to completing the checkout procedure. Therefore, the group worked hard to differentiate the items that must be checked by a clinician, from those items that could be checked by appropriately trained anesthesia technicians or clinical engineers. Departments that have skilled technician and engineering support may be able to develop checkout procedures that utilize these individuals, thereby reducing the time required from clinicians and increasing compliance with checkout procedures. The guidelines indicate which items could be checked by a technician alone or in conjunction with the anesthesia provider. Notwithstanding the role of the technician, the

guidelines emphasize, however, that the ultimate responsibility for insuring that equipment functions properly lies with the anesthesia provider.

The Task Force further realized a need to emphasize requirements for safe delivery of anesthesia care, and listed these at the beginning of the recommendations. These requirements are the underlying rationale for the guideline, which specifies what should be checked prior to administering anesthesia. The requirements are

- Reliable delivery of oxygen at any appropriate concentration up to 100%.
- Reliable means of positive pressure ventilation.
- Backup ventilation equipment available and functioning.

- Controlled release of positive pressure in the breathing circuit.
- Anesthesia vapor delivery (if intended as part of the anesthetic plan).
- Adequate suction.
- Means to conform to standards for patient monitoring.

The new guidelines for Pre-Anesthesia Checkout were approved in the Spring of 2007 by the ASA leadership as a work product of the Committee on Equipment and Facilities. Since that time, the ASATT, the AANA, and The American Academy of Anesthesia Assistants (AAAA) have endorsed the document. The FDA had endorsed the 1993 recommendations that have been

MORE ►

TABLE 2 | Recommended Essential Steps in a Pre-Anesthesia Checkout Procedure

TO BE COMPLETED PRIOR TO EACH PROCEDURE

SUBSET OF ITEMS IN THE DAILY CHECKLIST TO BE COMPLETED BETWEEN CASES		RESPONSIBLE PARTY
Item #2	Verify patient suction is adequate to clear the airway.	Provider and Tech
Item #4	Verify availability of required monitors, including alarms.	Provider or Tech
Item #7	Verify that vaporizers are adequately filled and if applicable that the filler ports are tightly closed.	Provider
Item #11	Verify carbon dioxide absorbent is not exhausted.	Provider or Tech
Item #12	Breathing system pressure and leak testing.	Provider and Tech
Item #13	Verify that gas flows properly through the breathing circuit during both inspiration and exhalation.	Provider and Tech
Item #14	Document completion of checkout procedures.	Provider and Tech
Item #15	Confirm ventilator settings and evaluate readiness to deliver anesthesia care. (ANESTHESIA TIME OUT)	Provider

removed from their website, but the FDA has agreed to provide a link on their website to the ASA website where the new information will reside. The FDA has also endorsed the new guidelines as educational information.

Now that guidelines for checkout procedures have been developed, it is essential that clinicians be trained to utilize these procedures effectively. This is especially true when a new anesthesia delivery system design is put into service. New designs have significant differences from legacy systems. The APSF has spearheaded the "Technology Training Initiative," described on their website at <http://www.apsf.org/initiatives.php>, to promote critical training on new, sophisticated, or unfamiliar devices that can directly affect patient safety. The results and recommendations of their October 2007 "Workshop on Formal Training and Assessment before Using Advanced Medical Devices in the Operating Room" are published in the previous issue of the *APSF Newsletter*.

It remains to be proven if the goals of this effort will be realized. All anesthesia providers are encouraged to review the new guidelines and develop checkout procedures for use in their own practices. The library of checklists on the ASA website is intended to facilitate the process of developing local checkout procedures. We will continue to add to the library of sample checklists under the direction of Adam Striker from the University of Missouri, Kansas City. The ASA is urging the FDA to consider the recommendations in the guideline when evaluating automated self-tests as part of the 510K approval process of new anesthesia delivery systems. Our Task Force believes that providers who adopt this new approach will have taken all possible steps to elim-

inate the risk of patient injury due to anesthesia equipment malfunction. ■

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Task Force Members: *Russell C. Brockwell, MD; Jerry Dorsch, MD; Susan Dorsch, MD; James Eisenkraft, MD; Jeffrey Feldman, MD (Task Force Chair); Julian Goldman, MD; Carolyn G. Holland, CRNA, MSN (AANA); Tom C. Krejcie, MD; Samsun Lamptang, PhD; Donald Martin, MD (Chair, ASA Committee on Equipment and Facilities); Julie Mills (GE Healthcare); Michael A. Olympio, MD; Gerardo Trejo (ASATT).*

Contributors: *(Individuals who have contributed in some fashion in the process of developing the new checkout guidelines): Abe Abramovitch (Datascope); Charles Biddle, CRNA, PhD; Robert Clark (Dräger Medical); Ann Culp, CRNA, MSN; Chad Driscoll, CRNA, MHS; Ann Graham, CRNA (FDA); Marc Jans (Dräger Medical); Michael Wilkening (Dräger Medical); William Norfleet, MD (FDA).*

INDIVIDUALS PASSING THEIR EXAM

Those who have earned the Cer.A.T.T. designation:

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Region 5

Avo Avdoian, Cer.A.T.T.
Region 6

Jhar Del Pilar, Cer.A.T.T.
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Merck's BRIDION® (sugammadex) Receives FDA Approval for the Reversal of Neuromuscular Blockade Induced by Rocuronium and Vecuronium in Adults Undergoing Surgery

Release Date:

Thursday, December 17, 2015 5:52 pm EST

Dateline City:

KENILWORTH, N.J.

KENILWORTH, N.J.—(BUSINESS WIRE)—Merck (NYSE: MRK), known as MSD outside the United States and Canada, announced today that the U.S. Food and Drug Administration (FDA) has approved BRIDION® (sugammadex) Injection 100 mg/mL (equivalent to 108.8 mg/mL sugammadex sodium) for the reversal of neuromuscular blockade (NMB) induced by rocuronium bromide and vecuronium bromide in adults undergoing surgery.

BRIDION works differently than neostigmine, an agent used to reverse non-depolarizing neuromuscular blocking agents (NMBAs) by increasing the neurotransmitter acetylcholine at the neuromuscular junction. BRIDION forms a complex with the non-depolarizing NMBAs rocuronium and vecuronium, thereby removing these agents from the neuromuscular junction and facilitating the return of muscle function. Unlike neostigmine, BRIDION can be used to reverse different levels of rocuronium and vecuronium-induced NMB, including deep block (1-2 post-tetanic counts [PTCs]).

“The FDA approval of BRIDION reflects Merck’s continued commitment to develop medicines that address unmet needs,” said Dr. David Michelson, vice president, Neurosciences, Merck Research Laboratories. “With BRIDION, we now have a new option with a different mechanism of action to reverse neuromuscular blockade induced by rocuronium and vecuronium in adults undergoing surgery.”

BRIDION is contraindicated in patients with known hypersensitivity to sugammadex or any of its components. Hypersensitivity reactions that occurred varied from isolated skin reactions to serious systemic reactions and have occurred in patients with no prior exposure to sugammadex.

“Anesthesia professionals have a new option in the clinical care of surgical patients,” said Dr. Ronald D. Miller, professor emeritus, Department of Anesthesia & Perioperative Care, University of California, San Francisco. “When surgical procedures end with patients in deep block, as a result of rocuronium or vecuronium administration, BRIDION provides a unique reversal option to restore neuromuscular function.”

BRIDION Clinical Studies

One hundred fifty-seven patients were evaluated in a phase 3, multicenter, randomized, parallel-group, active-controlled safety assessor-blinded clinical study. In the study, patients received either rocuronium or vecuronium and underwent elective surgical procedures under general anesthesia that required endotracheal intubation and maintenance of neuromuscular blockade. At 1-2 PTCs (deep block), after the last dose of rocuronium or vecuronium, 4 mg/kg BRIDION or 70 mcg/kg neostigmine was administered. The time from the start of administration of BRIDION or neostigmine to recovery of the train-of-four (T4/T1) ratio of 0.9 was assessed. Generally, a T4/T1 ratio ≥ 0.9 correlates with recovery from neuromuscular blockade. Neostigmine was not expected to reverse neuromuscular blockade at a depth of 1-2 PTCs.

Patients treated with BRIDION achieved rapid recovery of neuromuscular function from rocuronium-induced

(n=37) deep block (1-2 PTCs) in a median time of 2.7 minutes with a 25th and 75th percentiles of 2.1 and 4.3 minutes respectively, and from vecuronium-induced (n=47) deep block in a median time of 3.3 minutes with a 25th and 75th percentiles of 2.3 and 6.6 minutes, respectively. There were 7 and 6 censored observations in the rocuronium and vecuronium groups, respectively.

An additional phase 3, multicenter, randomized, parallel-group, active-controlled safety assessor-blinded clinical study evaluated 189 patients who received either rocuronium or vecuronium and underwent elective surgical procedures under general anesthesia that required endotracheal intubation and maintenance of neuromuscular blockade. At the reappearance of the second twitch (moderate block), after the last dose of rocuronium or vecuronium, 2 mg/kg BRIDION or 50 mcg/kg neostigmine was administered. The time from the start of administration of BRIDION or neostigmine to recovery of the train-of-four (T4/T1) ratio of 0.9 was assessed.

Patients treated with BRIDION (n=48) achieved faster recovery of neuromuscular function from rocuronium-induced moderate block in a median time of 1.4 minutes with a quartile 1 and quartile 3 of 1.2 and 1.7 minutes, respectively, versus a median time of 21.5 minutes with a quartile 1 and quartile 3 of 9.8 and 42.0 minutes, respectively with neostigmine (n=48). Reversal of vecuronium-induced moderate NMB with BRIDION (n=48) occurred in a median time of 2.1 minutes with a quartile 1 and quartile 3 of 1.8 and 3.4 minutes, respectively, versus 29.0 minutes with a quartile 1 and quartile 3 of 12.2 and 76.2 minutes, respectively with neostigmine (n=45).

Selected Safety Information about BRIDION

Potentially serious hypersensitivity reactions, including anaphylaxis, have occurred in patients treated with BRIDION. In a clinical study, anaphylaxis occurred in 0.3 percent (n=1/299) of healthy volunteers treated with BRIDION. Observe patients for an appropriate period of time after administration and take the necessary precautions. Anaphylaxis has also been reported in the post-marketing setting. Clinical features in anaphylaxis reports have included dermatologic symptoms; hypotension often requiring the use of vasopressors; and prolonged hospitalization and/or the use of additional respiratory support until full recovery.

Cases of marked bradycardia, some of which have resulted in cardiac arrest, have been observed within minutes after the administration of BRIDION. Monitor for hemodynamic changes and treat with anticholinergic agents, such as atropine, if clinically significant bradycardia is observed. Ventilatory support is mandatory for patients until adequate spontaneous respiration is restored and the ability to maintain a patent airway is assured. Should neuromuscular blockade persist after BRIDION or recur following extubation, take appropriate steps to provide adequate ventilation.

In clinical trials, a small number of patients experienced a delayed or minimal response to BRIDION. Monitor ventilation until recovery occurs.

A minimum waiting time is necessary before re-administration of a steroidal neuromuscular blocking agent after administration of BRIDION. If neuromuscular blockade is required before the recommended waiting time has elapsed, use a nonsteroidal neuromuscular blocking agent.

Due to the administration of BRIDION, certain drugs, including hormonal contraceptives, could become less effective due to a lowering of the (free) plasma concentrations. Consider re-administration of the other drug, administration of a therapeutic equivalent drug, and/or non-pharmacological interventions as appropriate.

Recurrence of neuromuscular blockade may occur due to displacement of rocuronium or vecuronium from BRIDION by other drugs. Mechanical ventilation may be required. Stop the administration of the drug which caused displacement, if being administered by infusion.

The use of lower than recommended doses of BRIDION may lead to an increased risk of recurrence of neuromuscular blockade and is not recommended. Also, when drugs which potentiate neuromuscular blockade are used in the postoperative phase, recurrence of neuromuscular blockade is possible.

BRIDION doses of up to 16 mg/kg were associated with increases in activated partial thromboplastin time and prothrombin time/international normalized ratio. Carefully monitor coagulation parameters in patients with known coagulopathies; being treated with therapeutic anticoagulation; receiving thromboprophylaxis drugs other than heparin and low molecular weight heparin; or receiving thromboprophylaxis drugs and who then receive a dose of 16 mg/kg sugammadex.

BRIDION is not recommended for use in patients with severe renal impairment, including those requiring dialysis. BRIDION also has not been studied for reversal following rocuronium or vecuronium administration in the ICU.

Do not use BRIDION to reverse nonsteroidal neuromuscular blocking agents or steroidal neuromuscular blocking agents other than rocuronium or vecuronium.

The most common adverse reactions (reported in $\geq 10\%$ of patients at a 2, 4, or 16 mg/kg BRIDION dose and higher than placebo rate) were vomiting (11 percent, 12 percent, or 15 percent versus placebo at 10 percent), pain (48 percent, 52 percent, or 36 percent versus placebo at 38 percent), nausea (23 percent, 26 percent, or 23 percent versus placebo at 23 percent), hypotension (4 percent, 5 percent, or 13 percent versus placebo at 4 percent), and headache (7 percent, 5 percent, or 10 percent versus placebo at 8 percent).

BRIDION Availability

BRIDION is expected to be available in January 2016.

About Merck

Today's Merck is a global health care leader working to help the world be well. Merck is known as MSD outside the United States and Canada. Through our prescription medicines, vaccines, biologic therapies and animal health products, we work with customers and operate in more than 140 countries to deliver innovative health solutions. We also demonstrate our commitment to increasing access to health care through far-reaching policies, programs and partnerships. For more information, visit www.merck.com and connect with us on [Twitter](#), [Facebook](#), [YouTube](#) and [LinkedIn](#).

Forward-Looking Statement of Merck & Co., Inc., Kenilworth, N.J., USA

This news release of Merck & Co., Inc., Kenilworth, N.J., USA (the "company") includes "forward-looking statements" within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995. These statements are based upon the current beliefs and expectations of the company's management and are subject to significant risks and uncertainties. If underlying assumptions prove inaccurate or risks or uncertainties materialize, actual results may differ materially from those set forth in the forward-looking statements.

Risks and uncertainties include but are not limited to, general industry conditions and competition; general economic factors, including interest rate and currency exchange rate fluctuations; the impact of pharmaceutical industry regulation and health care legislation in the United States and internationally; global trends toward health care cost containment; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approval; the company's ability to accurately predict future market conditions; manufacturing difficulties or delays; financial instability of international economies and sovereign risk; dependence on the effectiveness of the company's patents and other protections for innovative products; and the exposure to litigation, including patent litigation, and/or regulatory actions.

The company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the company's 2014 Annual Report on Form 10-K and the company's other filings with the Securities and Exchange Commission (SEC) available at the SEC's Internet site (www.sec.gov).

Please see Prescribing Information for BRIDION (sugammadex) Injection at http://www.merck.com/product/usa/pi_circulars/b/bridion/bridion_pi.pdf

Language:

English

Contact:

Merck

Media Contacts:

Pamela Eisele, 267-305-3558

Doris Li, 908-740-1903

or

Investor Contacts:

Teri Loxam, 908-740-1986

Justin Holko, 908-740-1879

Source URL: <http://www.mercknewsroom.com/news-release/corporate-news/mercks-bridion-sugammadex-receives-fda-approval-reversal-neuromuscular-b>

CONTINUING EDUCATION QUIZ



SCIENCE + TECHNOLOGY

To test your knowledge on this issue's **Science + Technology** article on page 6, provide correct answers to the following questions on the form below. Follow the instructions carefully.

- 1. What are the two drugs you must have for the patient to go on cardiopulmonary bypass?**
 - A. Heparin and Protamine
 - B. Neostigmine and Glycopyrrolate
 - C. Propofol and Fentanyl
- 2. What kind of medication does the provider need when the patient comes off-pump?**
 - A. Vasoconstrictors
 - B. Vasodilators
 - C. Neuromuscular blockade
 - D. Benzodiazepine
- 3. Which of the following is used to prevent damage to the TEE probe?**
 - A. Lubricant
 - B. Numbing medication
 - C. Gauze
 - D. Bite block
- 4. What medication can the provider use pre-operatively to prevent bronchospasm?**
 - A. Rocuronium
 - B. Norepinephrine
 - C. Albuterol
 - D. Aspirin
- 5. TEE can be used for CABG surgery to evaluate the heart function**
 True False
- 6. What creates images of cardiovascular structures by transmitting and receiving ultrasonic waves?**
 - A. Arterial line
 - B. Transesophageal echocardiogram
 - C. Swan ganz
 - D. X-ray
- 7. Technologies exist that allow for a cardiac output assessment without pulmonary artery catheter.**
 True False
- 8. When referred to during cardiac cases, what does PCA stand for?**
 - A. Pulmonary catheter anesthesia
 - B. Pulse count analysis
 - C. Pressure continuous application
 - D. Pulse contour analysis
- 9. Which PaCO₂ is within normal range?**
 - A. 37mmHg
 - B. 52mmHg
 - C. 28mmHg
- 10. Choose the correct statement:**
 - A. Aging decreases total body fat.
 - B. Fast onset/offset and short acting medications are better choices for geriatric patients.
 - C. Geriatric patients react quickly to hypovolemia, hypertension or hypoxia due to decreased beta-adrenergic responsiveness.

To apply for Continuing Education/ Contact Hours:

- (1) Provide all the information requested on this form.
- (2) Provide correct answers to this issue's quiz in this box > > >
- (3) Mail this form along with \$10.00 (check or money order, payable to ASATT) to:
ASATT
7044 South 13th Street
Oak Creek, WI 53154-1429

The answers to the Spring/Summer 2016 Continuing Education Quiz are:

(circle correct answers)

- | | |
|------------|------------|
| 1: A B C | 6: A B C D |
| 2: A B C D | 7: T F |
| 3: A B C D | 8: A B C D |
| 4: A B C D | 9: A B C |
| 5: T F | 10: A B C |

Name _____ ASATT Number _____

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Signature _____ Date _____

ASATT CALENDAR

2016-2017

Certification packets will begin to be accepted November 15, 2016

Late fee must be submitted with packet January 1, 2017

Recertification cycle ends January 31, 2017

UPCOMING 2016 MEETINGS

Region 1, Atlantic City, NJ.....August 13

Region 7, Kirkland, WA September 10

Region 2, Monroeville, PA..... October 8

ASATT Annual Educational Conference, Chicago, IL.....October 20-22

Region 7, Portland, OR..... November 19

Check the ASATT website frequently; more meetings will be posted soon!



**AMERICAN SOCIETY OF ANESTHESIA
TECHNOLOGISTS AND TECHNICIANS**

7044 South 13th Street
Oak Creek, WI 53154-1429

414/908-4942 Fax: 414/768-8001

info@asatt.org www.ASATT.org