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NEWSLETTER

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WHO Launches "Safe Surgery Saves Lives"

With the Anesthesia Patient Safety Foundation as one of the 160 endorsing professional organizations from literally all around the globe, The World Health Organization (WHO), through WHO's World Alliance for Patient Safety, launched its Second Global Patient Safety Challenge: "Safe Surgery Saves Lives," June 25 in Washington, DC.

This world-wide patient safety initiative acknowledges that surgery often is, in fact, not a therapeutic benefit, but rather a public health *hazard* for much of the world's population and addresses improving the safety of surgical care everywhere. The previous First Global Patient Safety Challenge, "Clean Care is Safer Care," focusing on "Hand Hygiene in Health Care" and clean water was launched in October 2005, and has been widely credited with promoting significant advances in the safety of basic health care in the developing world.

APSF Connection

The new Safe Surgery Saves Lives program centers on a single-page safety checklist, but is presented in a 170-page document that has 4 main sections: Surgical Site Infection Prevention, Safe Anaesthesia, Safe Surgical Teams, and Measurement of Surgical Care and Quality Assurance Mechanisms. The 6-member "Working Group" that produced the Safe Anaesthesia section includes John H. Eichhorn, MD, professor of anesthesiology at the University of Kentucky, who was founding editor of the *APSF Newsletter* and now serves as consultant to the APSF Executive Committee, and also Jeffrey B. Cooper, PhD, director of biomedical engineering at Partners Healthcare/Massachusetts General Hospital and executive vice president of APSF. The other 4 anesthesiologists are from New Zealand, India, Nigeria, and England. Dr. Eichhorn attended the launch event as the APSF representative.

The Safe Surgery Saves Lives June launch event was hosted by the WHO Regional Director for the Americas and attended by Ministers of Health, world leaders in surgery, anesthesiology, and nursing, and also Dr. Atul Gawande, a Harvard faculty member in both Health Policy/Management and Surgery, the organizational leader for this WHO initiative intended to reduce deaths and complications in surgery globally. During the launch there were video links to numerous sites around the world testing the new "WHO Surgical Safety Checklist" and endorsements of this approach to safety from health care associations—anesthesia, medical, surgical, nursing, patient safety, as well as ministries of health—worldwide. The World Alliance for Patient Safety was honored that Senator Edward M. Kennedy had accepted its invitation to deliver welcoming remarks for this global launch. Senator Kennedy affirmed his strong support for this initiative, but his recent health concerns prevented his personal attendance at the expansive event that took place at the Pan American Health Organization headquarters building.

Mission

There are more major surgeries than births worldwide, yet surgery is much more dangerous and has a much higher mortality rate. The incidence of conditions requiring surgery is rising as a proportion of the total global burden of disease, and surgical intervention is expected to increase around the world. Surgical care and its safe delivery can potentially affect the lives of many millions of people worldwide. By defining a core set of minimum standards that can be applied universally across borders and settings, the Safe Surgery Saves Lives Challenge hopes to create an environment of safety that will help improve both access for and care of surgical patients.

Dr. Gawande stated, "Surgical care has been an essential component of public health systems worldwide for a century. The quality and safety of that care has been dismayingly variable in every part of the world. The Safe Surgery Saves Lives campaign aims to change that by raising the standard that people everywhere can expect."

Universal Application

Primarily targeting underdeveloped, resource-challenged parts of the world, but *applicable universally wherever surgery is performed*, the Safe Surgery Saves Lives program focuses on providing simple and practical checklists, practice standards, and protocols specifically intended to help make surgery and anesthesia safer. Quality improvement programs, perceived as a need in a majority of the world, are specifically targeted by the "measurement and QA" section.

The main tangible product of the program is the **"Surgical Safety Checklist"** (see Figure 1) that will be used to promote safety and improve quality of surgical services. The checklist is designed to be simple and widely applicable. It aims to reinforce established safety practices, and many of the steps are already accepted as routine in facilities in many locations. It also aims to foster better communication and teamwork among clinical disciplines (note the requirement for team members to introduce themselves by name and role to open the Time Out). The checklist is intended as a tool for clinicians to improve safety by reducing unnecessary surgical deaths and complications. The individual safety checks have been included based on clinical evidence or expert opinion that their inclusion will reduce the likelihood of serious, avoidable surgical or anesthesia harm and that adherence to them is unlikely to introduce injury or unmanageable cost.

At the time of the June launch, the Surgical Safety Checklist was being field tested in real cases

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Inside:

Announcing

The Doctors Company Foundation Ann S. Lofsky, MD, Research Award

The APSF is pleased to announce the establishment of The Doctors Company Foundation Ann S. Lofsky, MD, Research Award. This award is made possible by a grant from The Doctors Company Foundation. A $5,000 grant will be awarded annually for the next 5 years, beginning in 2008, to a research project deemed worthy of the ideals and dedication exemplified by Dr. Ann S. Lofsky. Dr. Lofsky was a regular contributor to the *APSF Newsletter*, a special consultant to the APSF Executive Committee, and a member of the APSF Board of Directors. Her untimely passing cut short a much-valued and meaningful career as an anesthesiologist and as a dedicated contributor to anesthesia patient safety. It is the hope of the APSF that this award will inspire others toward her ideals and honor her memory.

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NEWSLETTER

The Official Journal of the Anesthesia Patient Safety Foundation

The **Anesthesia Patient Safety Foundation Newsletter** is the official publication of the nonprofit Anesthesia Patient Safety Foundation and is published quarterly at Wilmington, Delaware. Annual contributor cost: Individual–$100, Corporate–$500. This and any additional contributions to the Foundation are tax deductible.

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WHO Develops New Surgical Safety Checklist

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in operating rooms in each of the 6 WHO regions around the world. Included are surgical settings with widely variable economic and resource-availability conditions. The current checklist is labeled "First Edition" to indicate that the checklist may be enhanced over time based on experience and research on its application.

Expansive Background

Supporting the Surgical Safety Checklist is a comprehensive "technical document" focusing on 10 specific objectives to improve the safety of surgical care. It details the rationale for and explains the application of the checklist items though an "implementation manual" for the checklist. It also stands as an extensive additional resource in the 4 areas in which dramatic improvements are targeted in the safety of anesthesia care: surgical site infection prevention, safe anaesthesia, safe surgical teams, and measurement of surgical services. The goal of the Challenge is to improve surgical safety around the world by defining a core set of safety and basic practice standards that can be applied in all WHO Member States regardless of circumstance or environment. The working groups

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World Health Organization

SURGICAL SAFETY CHECKLIST (FIRST EDITION)

Before induction of anaesthesia ▸▸▸▸▸▸▸▸▸ Before skin incision ▸▸▸▸▸▸▸▸▸▸▸▸▸ Before patient leaves operating room

SIGN IN

☐ **PATIENT HAS CONFIRMED**
- IDENTITY
- SITE
- PROCEDURE
- CONSENT

☐ **SITE MARKED/NOT APPLICABLE**

☐ **ANAESTHESIA SAFETY CHECK COMPLETED**

☐ **PULSE OXIMETER ON PATIENT AND FUNCTIONING**

DOES PATIENT HAVE A:

KNOWN ALLERGY?
☐ NO
☐ YES

DIFFICULT AIRWAY/ASPIRATION RISK?
☐ NO
☐ YES, AND EQUIPMENT/ASSISTANCE AVAILABLE

RISK OF >500ML BLOOD LOSS (7ML/KG IN CHILDREN)?
☐ NO
☐ YES, AND ADEQUATE INTRAVENOUS ACCESS AND FLUIDS PLANNED

TIME OUT

☐ **CONFIRM ALL TEAM MEMBERS HAVE INTRODUCED THEMSELVES BY NAME AND ROLE**

☐ **SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE VERBALLY CONFIRM**
- PATIENT
- SITE
- PROCEDURE

ANTICIPATED CRITICAL EVENTS

☐ **SURGEON REVIEWS:** WHAT ARE THE CRITICAL OR UNEXPECTED STEPS, OPERATIVE DURATION, ANTICIPATED BLOOD LOSS?

☐ **ANAESTHESIA TEAM REVIEWS:** ARE THERE ANY PATIENT-SPECIFIC CONCERNS?

☐ **NURSING TEAM REVIEWS:** HAS STERILITY (INCLUDING INDICATOR RESULTS) BEEN CONFIRMED? ARE THERE EQUIPMENT ISSUES OR ANY CONCERNS?

HAS ANTIBIOTIC PROPHYLAXIS BEEN GIVEN WITHIN THE LAST 60 MINUTES?
☐ YES
☐ NOT APPLICABLE

IS ESSENTIAL IMAGING DISPLAYED?
☐ YES
☐ NOT APPLICABLE

SIGN OUT

NURSE VERBALLY CONFIRMS WITH THE TEAM:

☐ **THE NAME OF THE PROCEDURE RECORDED**

☐ **THAT INSTRUMENT, SPONGE AND NEEDLE COUNTS ARE CORRECT** (OR NOT APPLICABLE)

☐ **HOW THE SPECIMEN IS LABELLED** (INCLUDING PATIENT NAME)

☐ **WHETHER THERE ARE ANY EQUIPMENT PROBLEMS TO BE ADDRESSED**

☐ **SURGEON, ANAESTHESIA PROFESSIONAL AND NURSE REVIEW THE KEY CONCERNS FOR RECOVERY AND MANAGEMENT OF THIS PATIENT**

THIS CHECKLIST IS NOT INTENDED TO BE COMPREHENSIVE. ADDITIONS AND MODIFICATIONS TO FIT LOCAL PRACTICE ARE ENCOURAGED.

Figure 1: The new WHO Surgical Safety Checklist is intended to help improve quality of care and enhance the safety of surgery, especially in developing and resource-challenged parts of the world. It is universally applicable, however, and its rigorous adoption clearly could be of significant benefit, particularly in promoting communication and cooperation in the OR, in every surgical suite in the UIS.

Q&A

Why Don't All Vaporizers Have an "Empty" Alarm?

Q Dear Q&A,

Since anesthesia awareness is now in the public forum, I was wondering why the non-desflurane vaporizers don't have an "empty" alarm. Seems like an easy fix to prevent the vaporizer from running out during a case that goes unnoticed. Perhaps it has already been done and we are waiting for the upgrades to occur, but thought I would pass it along.

The above would prevent empty vaporizers, but it would not prevent failure to turn the vaporizer on during a case. With electronic charting being a future reality, is the APSF going to require all electronic charting to flag end-tidal anesthetic gas concentrations that approach awareness MAC values? While the programs are being written it would be of great value if the APSF came out with a list of requirements for electronic charting to prevent mishaps rather than leaving the algorithms to the programmers who usually know nothing about anesthesia.

Terry W. Bejot, MD
Lincoln, NE

A Dear Dr. Bejot,

The consensus is that low agent alarms would be useful on all vaporizers. However, the suggestion of minimizing the risk of patient awareness through the use of a low agent alarm would not be as efficacious as properly measured exhaled agent concentration, which yields an estimate of Minimum Alveolar Concentration (MAC) of the agent. It has been suggested that an exhaled agent concentration greater than 0.8 MAC will minimize the risk of awareness.[1]

The low agent alarm would be a very useful adjunct to monitoring the exhaled agent concentration to indicate the need to refill the vaporizer before it's operation is compromised by having too little agent in the vaporizer. Concern was expressed about retrofitting current vaporizers with reliable low level alarms, because most of the currently available vaporizers are purely mechanical and the alarm system would add complexities of a sensor, potential leak of agent, electronic circuitry, and battery power and maintenance to name a few issues. Add to that the complexities of a sensor/alarm system that must be immune from extraneous radio frequencies (cautery, cell phones, and other devices), and must alarm when the battery is low and when the agent is low or when the device is not working properly.

Some non-desflurane electronic vaporizers already provide a low-level alarm, while some manufacturers have indicated they do plan for monitoring the amount of liquid in all vaporizers on future anesthesia machines. Most likely, the market place will drive all manufacturers in this direction. Meanwhile, the use of exhaled end-tidal agent concentration should be employed and properly monitored to minimize the likelihood of patient awareness.

With regard to electronic charting, the Committee on Technology is not a standards-setting committee and will not be promulgating standards or requirements for medical records of any kind including computerized anesthesia records. Thank you for bringing this important topic to us for discussion.

The Committee on Technology

Reference

1. Hardman J G, Aitkenhead AR. Awareness during anesthesia. *Continuing Education in Anaesthesia, Critical Care & Pain*. 2005 5(6):183-186.

Q Dear Q&A,

I have been asked to come up with an emergency response plan if someone should drop a bottle of isoflurane liquid for inhalation anesthesia. Are there any published guidelines that address how to handle this situation if it occurs? Would this be the same procedure for sevoflurane?

Amanda Wilsey, CVT
Abbott Park, IL

A Dear Ms. Wilsey,

The answer to your question can be found in the Occupational Safety and Health Administration's *Anesthestic Gases: Guidelines for Workplace Exposures* available at http://www.osha.gov/dts /osta /anestheticgases/index.html/anestheticgases/index.html#G. These guidelines, published in 1999 and revised in 2000, apply to all liquid inhalational anesthetic agents and are excerpted as follows:

Anesthetic Gases: Guidelines for Workplace Exposures

These guidelines are not a new standard or regulation, and they create no new legal obligations. The guidelines are advisory in nature, informational in content, and are intended to assist employers in providing a safe and healthful workplace through effective prevention programs adapted to the needs of each place of

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Numerous questions to the Committee on Technology are individually and quickly answered each quarter by knowledgeable committee members. Many of those responses would be of value to the general readership, but are not suitable for the Dear SIRS column. Therefore, we have created this simple column to address the needs of our readership.

Q&A

How Do I Handle an Isoflurane Spill?

"Q&A," From Preceding Page

employment. These guidelines are not intended to address issues to patient care. . . .

Section G. CLEAN-UP AND DISPOSAL OF LIQUID ANESTHETIC AGENT SPILLS

Small volumes of liquid anesthetic agents such as halothane, enflurane, isoflurane, desflurane, and sevoflurane evaporate readily at normal room temperatures, and may dissipate before any attempts to clean up or collect the liquid are initiated. However, when large spills occur, such as when one or more bottles of a liquid agent break, specific cleaning and containment procedures are necessary and appropriate disposal is required (AANA 1992).[1] The recommendations of the chemical manufacturer's material safety data sheet (MSDS) that identify exposure reduction techniques for spills and emergencies should be followed.

In addition, OSHA Standard for Hazardous Waste Operations and Emergency Response (29 CFR 1910.120) would apply if emergency response efforts are performed by employees. The employer must determine the potential for an emergency in a reasonably predictable worst-case scenario, and plan response procedures accordingly. Only adequately trained and equipped workers may respond to spills. When the situation is unclear or data are lacking on the exposure level, the response needs to be the same as for high levels of exposure. Responses to incidental releases of liquid anesthetic agents where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel do not fall within the scope of this standard.

Because of the volatility of liquid anesthetics, rapid removal by suctioning in the OR is the preferred method for cleaning up spills. Spills of large volumes in poorly ventilated areas or in storage areas should be absorbed using an absorbent material, sometimes called a sorbent, which is designed for clean-up of organic chemicals. "Spill pillows" commonly used in hospital laboratories, vermiculite, and carbon-based sorbents are some of the materials commercially available and regularly used for this purpose. Caution should be exercised if broken glass bottles pose a hazard.

Both enflurane and desflurane are considered hazardous wastes under the EPA regulations because these chemicals contain trace amounts of chloroform (a hazardous substance), a by-product of the manufacturing process. Consequently, sorbents that have been saturated with enflurane or desflurane should be managed as an EPA hazardous waste material due to the trace concentrations of chloroform present. Isoflurane and halothane do not contain trace amounts of chloroform or any other regulated substance and are therefore not considered hazardous wastes by EPA.

To minimize exposure to all liquid anesthetic agents during clean-up and to limit exposure during disposal procedures, the following general guidelines are recommended. The waste material should be placed in a container, tightly sealed, properly labeled, and disposed of with other chemical wastes sent to a facility's incinerator or removed by a chemical waste contractor. After a large spill has occurred and the appropriate response action taken, airborne monitoring should be conducted to determine if the spill was effectively contained and cleaned up.

Determination of appropriate disposal procedures for each facility is the sole responsibility of that facility. Empty anesthetic bottles are not considered regulated waste and may be discarded with ordinary trash or recycled. Furthermore, the facility as well as the waste handling contractor must comply with all applicable federal, state, and local regulations.

To minimize exposure to waste liquid anesthetic agents during clean-up and disposal, the following general guidelines are recommended by the manufacturers of liquid anesthetic agents:

- Wear appropriate personal protective equipment. (Refer to section E4 on *personal protective equipment*).
- Where possible, ventilate area of spill or leak. Appropriate respirators should be worn.
- Restrict persons not wearing protective equipment from areas of spills or leaks until clean-up is complete.
- Collect the liquid spilled and the absorbent materials used to contain a spill in a glass or plastic container. Tightly cap and seal the container and remove it from the anesthetizing location. Label the container clearly to indicate its contents.
- Transfer the sealed containers to the waste disposal company that handles and hauls waste materials.
- Health-care facilities that own or operate medical waste incinerators may dispose of waste anesthetics by using an appropriate incineration method after verifying that individual incineration operating permits allow burning of anesthetic agents at each site.

Reference

1. American Association of Nurse Anesthetists (AANA). *Management of waste anesthetic gases.* Park Ridge, IL: 1992. Pp. 16-17.

APSF Executive Committee Invites Collaboration

From time to time the Anesthesia Patient Safety Foundation reconfirms its commitment of working with all who devote their energies to making anesthesia as safe as humanly possible. Thus, the Foundation invites collaboration from all who administer anesthesia, and all who provide the settings in which anesthesia is practiced, all individuals and all organizations who, through their work, affect the safety of patients receiving anesthesia. All will find us eager to listen to their suggestions and to work with them toward the common goal of safe anesthesia for all patients.

International Standards for the Safe Practice of Anesthesia Reviewed

"WHO," From Page 23

of international experts were convened to review the literature and the experiences of clinicians around the world and achieve the consensus contained in the technical document.

Anesthesia Antecedents

The Safe Anaesthesia Working Group was first convened in early 2007. Its initial deliberations involved reviewing the International Standards for a Safe Practice of Anaesthesia, a comprehensive practice protocol document that recognized the wide disparity in medical care resources around the world and recommended solutions, which had been adopted as world standards by the World Federated Societies of Anesthesiologists (WFSA) at the World Congress in June 1992. That document had been created by the independently funded International Task Force on Anaesthesia Safety comprised of experts from 9 countries and chaired by Dr. Eichhorn and also Dr. J.S. Gravenstein, who was then from the University of Florida. The WHO Working Group used the WFSA model as the stimulus for the subject areas and the anesthesia practice standards in the technical document, included in the detailed tabular "Guide to infrastructure, supplies, and anaesthesia standards at three levels of health-care facilities."

In addition to the essential practice standards, the "Safe Anaesthesia" section of 30 pages in the technical document includes highly referenced presentations on the value of pulse oximetry and capnography monitoring; preanesthetic preparation and check-out; anesthetic infrastructure, facilities, and equipment; airway management; and medications and their safe administration. The subsequent section on anticipating and treating hypovolemia and hemorrhage combines anesthesia and surgical considerations. Again, while the first intended target for these patient safety efforts is the underdeveloped and emerging areas of the world, the principles, protocols, and standards are universally applicable in every operating room in the world, including the most advanced and sophisticated. Improvement of anesthesia and surgical patient safety is possible everywhere and is the goal of this initiative.

Links to the WHO appear on the APSF website home page and more specific information about the WHO Safe Surgery Saves Lives Global Patient Safety Challenge can be accessed at: http://www.who.int/patientsafety/safesurgery/en/.

Letter to the Editor:

Newsletter Readers Invited to Participate in Survey on Residual Weakness in PACU

To the Editor:

Residual muscle weakness in the Post-Anesthesia Care Unit (PACU) secondary to intraoperatively administered nondepolarizing relaxants is much more common than most clinicians appreciate, and represents a potentially significant public health and patient safety issue. Recent surveys of clinical practices in Europe suggest that muscle relaxants are often administered without proper monitoring, and recent US publications continue to report significant morbidity associated with under-appreciated residual neuromuscular weakness.

If the incidence of postoperative residual weakness is to be reduced significantly, we need a better understanding of the current practices with nondepolarizing relaxants among clinicians. Surveys in Denmark, Germany, the United Kingdom, and Mexico have suggested that only 43%, 28%, 10%, and 2% of clinicians, respectively, routinely use neuromuscular monitors of any kind. No comparable study of clinical practice in North America has ever been undertaken.

Repeated editorials suggesting proper drug management and intraoperative monitoring have been largely ignored. The standard of care suggested by experts in the field regarding relaxant administration and the need for monitoring thus appear to be at variance with actual clinical practice. The extent to which this is true in the United States is currently unknown.

It is our objective to survey and compare clinical practices associated with the use of neuromuscular blocking drugs and neuromuscular monitoring among anesthesia practitioners in the United States and the European Union. At a time when major changes appear imminent in the way we think about and administer neuromuscular blocking drugs, we believe that a better understanding of actual clinical attitudes and practices is timely.

Thus, we kindly request your help in examining this matter, and invite all readers of the *Newsletter* to anonymously answer a brief series of questions on a website:

http://www.nmjuncture.com/usasurvey/usasurvey.html.

This study is not sponsored by a society, nor does it have any commercial affiliation. We have also secured our institutional approvals for this survey.

Many thanks for your time and help.

Mohamed Naguib

Aaron Kopman

Cynthia Lien

Jennifer M. Hunter

Sorin J. Brull

PRESS RELEASE

Anesthesia Patient Safety Foundation Awards a Grant to the Society for Pediatric Anesthesia

The Anesthesia Patient Safety Foundation has awarded a grant to the Society for Pediatric Anesthesia (SPA) to assist in the development of "Wake up Safe," a quality improvement initiative to collect and analyze causes of adverse outcomes that occur during anesthesia in children in the United States.

The beginning phase involves representatives from 10 major pediatric institutions. Among these are Children's Hospital Boston, the Children's Hospital of New York, Children's Hospital and Regional Medical Center (Seattle, WA), John Hopkins Children's Center, Texas Children's Hospital, and Vanderbilt Children's Hospital, in association with the SPA. The group is developing a standard method for Event Analysis to assess serious perioperative adverse events, which can be used as part of the peer review process in each hospital. Analysis of the data from these events will permit the SPA "Wake up Safe" steering group to make recommendations for practice changes designed to reduce the frequency of these untoward events and improve patient safety.

Although great strides have been made in safety since the discovery of anesthesia 160 years ago, patients continue to experience harm related to anesthesia and surgical care. Despite the millions of anesthetics delivered each year to children and the many years that anesthesia has been used in children, the incidence and etiology of these serious events remain uncertain and not well studied, in large part because these events are relatively rare today and an integrated system to report and analyze them does not exist. The SPA Wake up Safe Initiative should allow us to learn from the adverse events to improve care. After the initial phase, the goal is to make the Event Analysis and the related learning opportunity available to all children's hospitals and pediatric anesthesia programs around the country.

Initially the events to be studied include death, cardiac arrest, serious bodily injury, unanticipated major escalation of care, surgery on the wrong patient or body part, fire, awareness under anesthesia, and the medication error resulting in serious injury. As the participating institutions and the Wake up Safe steering committee gather experience, additional events and other expected and unexpected outcomes will be added.

The Society for Pediatric Anesthesia is the largest professional group for Pediatric Anesthesiologists in the United States. The mission of the SPA is to "foster quality anesthesia and perioperative care, and to alleviate pain in children." The Society has approximately 1700 active members in the United States, including most pediatric anesthesiologists in the country, as well as members from other countries.

The Anesthesia Patient Safety Foundation is pleased to announce the

BOARD OF DIRECTORS WORKSHOP

Innovations in Medication Safety in the Operating Room

Friday, October 17, 2008

1300-1700 (Salons 11-12)

Rosen Centre Hotel

Orlando, FL

Registration is not required for attendance.

Dear SIRS

Reader Ponders Relative Risks of Retrograde Arterial Flow

S AFETY
I NFORMATION
R ESPONSE
S YSTEM

Dear SIRS refers to the Safety Information Response System. The purpose of this column is to allow expeditious communication of technology-related safety concerns raised by our readers, with input and responses from manufacturers and industry representatives. This process was developed by Drs. Michael Olympio, Chair of the Committee on Technology, and Robert Morell, Editor of this newsletter. Dr. Olympio is overseeing the column and coordinating the readers' inquiries and the responses from industry. **Dear SIRS** made its debut in the Spring 2004 issue.

Dear SIRS:

Several staff members are concerned that our invasive arterial monitoring kit (Hospira TRANSPAC IV), if flushed rapidly, can produce retrograde flow. An article by Murphy et al.,[1] "Retrograde blood flow in the brachial and axillary arteries during routine radial arterial catheter flushing" is relevant. I have looked at other similar sets with inline syringes. Any comments on Hospira or other products? Thank you.

Linda Boan, CRNA
West Columbia, SC

Dear Ms. Boan:

I appreciate your question to APSF regarding retrograde flow. If I understood correctly, are you asking whether syringe-type arterial line flush systems, as opposed to pressurized valve mechanisms, might cause retrograde emboli when injected too forcefully? The risk in pressurized valve systems depends upon the pressure in the infusion bag relative to the patient's arterial blood pressure, and the duration of the flush, I suppose, as well as the amount of distal resistance to forward flow. I would not think it unique to any vendor, but your cited article describes the relative risks when using the syringe-type flush mechanism. Retrograde flow is the reason why in-line air bubbles or clot are potentially dangerous, since they might flow retrograde to the aortic arch and then anterograde into the cerebral circulation with a risk of stroke. I will forward your question to Hospira for comment on your specific system.

Sincerely,
Dr. Michael A. Olympio
Co-Editor, Dear SIRS

Dear SIRS:

Thank you for responding to my question. Some staff members feel that the kit's syringe design and the needleless ports, to some extent, are very prone to air entrapment. More importantly, the inline syringe (size 10+ ml) allows flushing (clearing the tubing following withdrawal of blood from the needleless port) at a rate which could result in retrograde flow. While the inline system insures sterility, does it increase the possibility of catastrophe? I appreciate your time and input.

Linda Boan

Dear Ms. Boan:

Thank you for your question about SAFESET, Hospira's closed needle-less blood sampling system. As you noted in your letter, SAFESET can help protect against exposure to blood-borne pathogens and IV line contamination. It also reduces blood waste. It is important to be diligent when priming the SAFESET as it is with any pressure monitoring kit. We try to train clinicians on the most effective means for priming kits with SAFESET. Some key points:

- Prime the reservoir with the tip pointed up (one way stopcock on top).
- Aspirate and re-infuse slowly, no faster than 1 mL per second.
- Prime the reservoir utilizing gravity instead of pressure from the infusion cuff.
- Additionally, some users find it beneficial to tap the transducer, reservoir and sampling ports during the priming process to dislodge any microbubbles.

This and related information is contained in the product's Instructions for Use. Should you need additional copies of our product's Instructions for Use, please do not hesitate to contact our Medical Communications Group at 1.800.615.0187.

If used according to the *Instructions for Use* included with the product, there should be minimal risk of retrograde flow in the patient's arterial system with a Transpac IV kit with SAFESET, and the *Anesthesiology* journal article you referenced would tend to support that belief. The conclusions section of the article states that manual flushing of radial arterial catheters at rates faster than 1 mL/s produces retrograde flow in the proximal axillary artery. It further states in the body of the article that retrograde flow was noted in none of the patients when the 10 mL flush volume used in the study was infused over a period of 9 seconds or greater. Our instructions for use state in section VI to "turn the one-way stopcock integral to the in-line reservoir on and return the fluid contained in the SAFESET in-line reservoir to the patient by pressing the plunger down slowly. Return the reservoir volume to the patient at a rate of 1 cc per second (10 seconds for 10 mL), until the plunger reaches its locked position."

If the Instructions for Use are not followed, of course the risk of retrograde flow would be increased. I would remind the individual who

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Manufacturer Instructions Minimize A-line Risks

"Dear SIRS," From Preceding Page

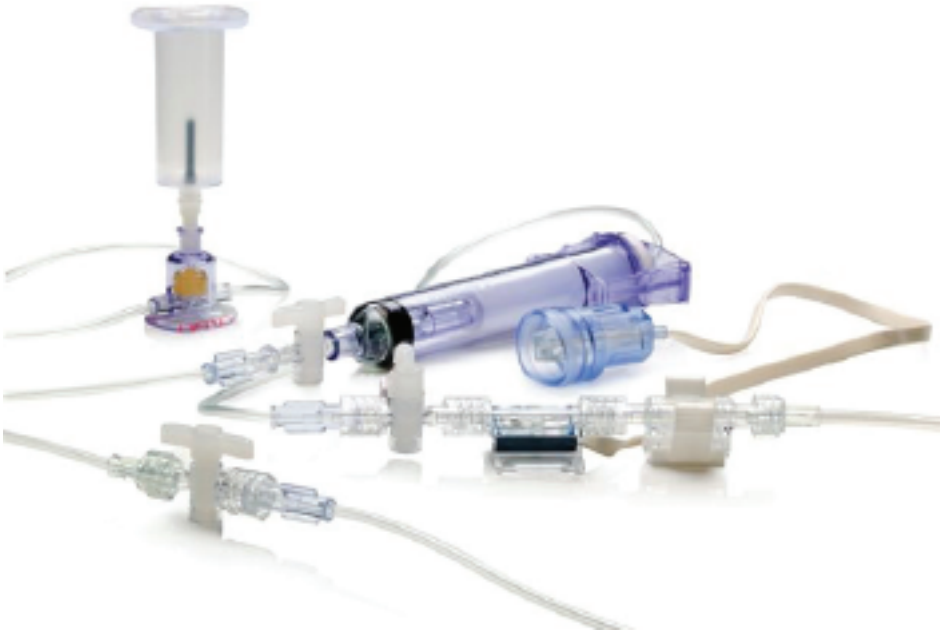
raised this concern that at the end of the referenced article this statement appears: "However, adverse clinical outcomes related to radial arterial catheter flushing are rare, and our previous investigation was unable to document the passage of microbubbles into the central circulation during the flushing process."[2]

Finally, I researched our company's complaint database going back 5 years and found no complaints related to your concern of retrograde emboli when aspirating or re-infusing rapidly.

Steven Pregulman, MD
Global Medical Director - Device Development
Hospira, Inc.

References

1. Murphy GS, Szokol JW, Marymont JH, Avram MJ, Vender JS, Kubasiak J. Retrograde blood flow in the brachial and axillary arteries during routine radial arterial catheter flushing. *Anesthesiology*. 2006; 105:492–7.
2. Murphy GS, Szokol JW, Marymont JH, Avram MJ, Vender JS. Retrograde air embolization during routine radial artery catheter flushing in adult cardiac surgical patients: An ultrasound study. *Anesthesiology*. 2004; 101:614–9.



Transpac IV Kit with SAFESET.

Panel on the Perioperative Management of Patients With Cardiac Stents

Left to right are Dr. Hans Priebe, Dr. Lisa Newsome, Dr. Diane Head, and moderator, Dr. Richard Prielipp, at the recent IARS panel on the perioperative management of patients with cardiac stents.

A panel on the perioperative management of patients with cardiac stents was held a the International Anesthesia Research Society 82nd Congress held on March 29, 2008, in San Francisco, CA. Dr. Richard Prielipp was moderator and panelists included Dr. Diane Head, Dr. Lisa Newsome, and Dr. Hans Priebe. Topics included perioperative management of antiplatelet therapy, the biology and pathophysiology of coronary endothelium, and differences between bare metal stents and drug eluting stents.

Editor's Note: Please see previous issues of this newsletter as well as the comprehensive 2-part review article on Coronary Artery Stents by Dr. Newsome and colleagues that was recently published in the August 2008 issue of *Anesthesia and Analgesia* within the Patient Safety section of that publication.

Israeli Exchange Program Facilitates Information Exchange

by Al Rothstein

Michael Lewis knows the advantages of physician visit programs. The associate professor of clinical anesthesiology and program director of anesthesiology at the University of Miami's Miller School of Medicine is a prestigious Fulbright Scholar.

"I taught Israeli anesthesiology residents and spent 3 days a week building a website dealing with perioperative care of the elderly," Lewis says.

The results of his physician visit allowed Dr. Lewis to develop a well-defined syllabus in geriatric anesthesiology. Once this body of knowledge was organized, he created a website for it and submitted it for peer review. It was submitted to the Association of American Medical Colleges (AAMC), has been approved, and is waiting to be posted on their website. From his experience, the entire anesthesia community has a new, widely available learning tool.

"From a patient safety standpoint, I have created an educational product for caregivers to the elderly during the perioperative period," he says. For example, if an elderly citizen emerges from surgery in a confused state, the anesthesiologist can access the website to reference treatment options.

Dr. Lewis is even more proud of his accomplishment given the rigorous review process he went through to earn the Fulbright Scholarship, including:

- Seeking a sponsor in Israel
- Submitting a detailed written proposal of his anticipated activities
- Waiting for the proposal to be reviewed in the USA, then in Israel.

This careful, painstaking procedure took about 6 months. "Well worth the process, making it even more of an honor," says Dr. Lewis.

He points out that his Fulbright experience was from an academic standpoint. It reinforced his thirst for even more educational visits for himself, and has prompted him to encourage fellow anesthesiologists to do the same. It also ignited his passion to help to start a US chapter of the Israeli Medical Association World Fellowship (IMA-WF), which is known worldwide for its physician exchange visits. In fact, thanks to Dr. Lewis, Dr. Abe Berger, and others, the IMA-WF US chapter (http://www.ima-wf-usa.org) has just become a reality. Dr. Lewis would like to see his fellow anesthesiologists take full advantage of it as the exchange visits through the US chapter develop.

"The IMA programs will allow physicians in private practice as well as in academia to work in Israel," he says.

Dr. Tzaki Siev-Ner, chair of IMA-WF's headquarters in Israel, says the application process for IMA physician visits takes about 2 months. He adds that the American physicians who participate in the IMA's programs will be giving as well as receiving.

"Israel is becoming short on physicians in all specialties, and there is a huge demand for anesthesiologists," Siev-Ner points out.

For example, in one emergency program, visiting Americans would substitute for Israeli anesthesiologists who are recruited to the army.

Another benefit for American anesthesiologists is learning from the experience of Israeli physicians who have dealt with mass casualty situations, Siev-Ner says.

However, he emphasizes that Israel is interested in welcoming these physicians in peace time as well, benefiting from each other's experience, exchanging ideas and knowledge, and initiating joint projects. Nevertheless, he is not asking American anesthesiologists to move to Israel permanently. He says the exchange program allows them to choose to work there for 1 week or longer.

Dr. Lewis says not only does the visiting physicians relieve a physical shortage, but it eases an emotional stress of health care professionals as well: "My Fulbright sabbatical took place during the Lebanon war and I, along with the Israeli physicians, felt the pain of a people under attack."

"You take back to America the ability to provide high quality anesthesia in the presence of limited resources," he says. Because of budget restraints, not all of the medications or equipment readily available to the anesthesiologist in the US is always immediately accessible to a colleague practicing in Israel.

"Because of my single visit with the Fulbright program, I have become a better physician and have been able to contribute to my profession, particularly in the field of geriatric anesthesiology," Lewis adds. "Now that we have more choices for organizations offering physician visits, the potential for contributions that my fellow anesthesiologists can make to their patients has no limit."

Al Rothstein is responsible for public relations for the Israeli Medical Association, United States Chapter Atlanta, GA and Tallahassee, FL. For more information on the Israeli Medical Association's programs, please visit www.ima-wf-usaorg.

APSF COT Selects Philip for New Leadership Role

Dr. Michael A. Olympio, chair of the Committee on Technology (COT), is pleased to announce the appointment of Dr. James E. Philip, ME (E), MD, CCE, as the first media relations director of COT, for a 2-year term. Dr. Philip is a recent addition to COT but has been peripherally involved with the APSF since its inception. Philip co-authored one of the many critical incident manuscripts from Dr. Jeffrey Cooper's laboratory in the 1970s and 1980s, and he was a colleague of Dr. Jeep Pierce, founder of the APSF. He served as a member of the APSF Scientific Evaluation Committee from1995-1999, and was one of several designated speakers for an early APSF project, the Grand Anesthesia Safety Symposium (GASS). Philip continues his safety efforts today, and lectures extensively on "Anesthesia is a Safe Specialty." More recently, Philip served as president of the Society for Technology in Anesthesia. His new position with COT as Media Relations Director is primarily concerned with the timely and accurate communications of COT administrative details and safety efforts through the on-line APSF website. Welcome to Dr. Philip.

Letter to the Editor

Reader Disappointed With *APSF Newsletter*

To the Editor:

I would like to update you on events that have unfolded since the initial publication of the *APSF Newsletter* article by Dr. Evan Kharasch regarding generic sevoflurane.

This article rang a bell that cannot be un-rung. I believe the article only presented partial data, and should have concentrated on the manufacturing process of the Penlon Sigma Delta vaporizer, which degrades all brands of sevoflurane, rather than on the implied "unsafe" formulations of generic sevoflurane. Unfortunately, it is my perception from questions that I continue to receive regarding the safety of generic sevoflurane, that the manufacturers' responses to the article have not been well read.

As a safety organization, the APSF has a responsibility to put forth accurate and objective data. I am very disappointed with the disservice that the APSF and the *Newsletter* have done in this circumstance, which could have been avoided by closer editorial scrutiny. By potentially limiting effective and economical choices and by creating a risk-management issue where none exists, the APSF has, in this case, decreased patient safety and made our jobs more difficult.

George Mychaskiw II, DO, FAAP, FACOP
Jackson, MS

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Letter to the Editor

Modified Calculation of the Cerebral Perfusion Pressure in a Sitting Position: Jugular Starling Resistor and Related Clinical Implications

To the Editor:

Recent case reports described permanent injury from global cerebral ischemia in a beach chair position.[1,2] Follow-up discussion in the *APSF Newsletter* did not result in consensus on safe limits of arterial blood pressure during anesthesia in the sitting position, how the blood pressure should be measured during head-up tilt, and the beta-blocker's role in these complications.[3,4]

Cases of cerebral ischemia in a beach chair position mandate the revision of postural cerebral perfusion management. Perfusion pressure is the difference between the inflow Pi and outflow pressure Po, measured at the organ level: CPP=MAP-CVP or CPP=MAP-ICP if ICP>CVP. While measuring pressure in the intercommunicating vessels, we have to account for the hydrostatic pressure difference (ρgh), where h is the difference in height between 2 measurement points and ρ is the density of blood. Because of the energy conservation law, heart work against gravity is zero (blood flows in a circular fashion as described by Harvey and potential energy remains the same upon completion of the circle).[5] Therefore the site of CPP measurement could be anywhere, as long as the hydrostatic gradient from the measurement site to the organ level ρ remains the same for inflow and outflow pressures and there is no significant flow related pressure drop between the measurement site and the organ level.[4] Simple addition of hydrostatic column from the measurement level to the organ level does not change CPP value: (MAP + ρgh) – (CVP + ρgh) = MAP – CVP. And yet so many neuroanesthesiologists continue to zero the arterial pressure transducer at the level of the external acoustic meatus.[3]

Several considerations come here into play:

1) Measuring arterial pressure alone does not define CPP. In the sitting position arterial pressure is different if measured at the head, torso, or calf level, while CPP is a pressure difference and remains the same. When the arterial pressure transducer drops on the floor, arterial hypertension can be falsely diagnosed. CPP = MAP – CVP would stay the same whether measured at the head, torso, or the floor level.

2) The hydrostatic indifference level (HIL) is a point where pressure does not change during body tilt. Measuring MAP or (MAP – CVP) at this level should be indifferent to the body tilt. The only problem with this approach is that HIL has to be individually determined and HIL for venous and arterial systems was found to be different due to the difference in regional compliances.

3) Even if we measure MAP and CVP simultaneously and eliminate the self-negating effect of hydrostatic column ρgh (25 cm water = 18 mmHg) from the brain to the measurement site, we can not reliably estimate CPP. Negative transmural pressure leads to jugular collapse with the head-up tilt. Directly measured jugular pressure above the thoracic inlet in the upright position stayed around 0 mmHg despite negative CVP in 8 healthy subjects with a gradient reaching 20 cm of water. No such gradient was observed in 2 patients with chronic cardiac tamponade.[6]

4) Arterial pressure measured at the zero venous pressure level is arithmetically equivalent to cerebral perfusion pressure (CPP = MAP – 0). Skull base approximates zero venous pressure level when CVP – ρgh < 0, because jugular veins are exposed to the atmospheric pressure upon exiting the scull. This is the reason why we should adjust the site of arterial pressure measurement when sitting. That is why the skull base can be referred as zero venous pressure level for the cerebral perfusion pressure estimation, unless venous pressure is measured in the jugular bulb directly.

5) Assessing CPP and adjusting the BP measurement level from the heart to the skull (about 20 mmHg) may not be important if MAP is maintained >70-100 mmHg (CPP >50-80), but it is critical if MAP is maintained at 50 mmHg (CPP 30 mmHg).

Venous outflow depends not only on the outflow pressure, but also on the venous resistance. Veins tend to collapse when external pressure exceeds intraluminal pressure, and venous resistance correspondingly increases. Venous resistance becomes infinitely high during occlusion. This phenomenon can interchangeably be described by the nonlinear venous outflow resistance or the change in effective venous outflow pressure (Starling resistor). Starling resistor is implied in the classic definition of cerebral perfusion pressure (mean arterial pressure minus intracranial or venous pressure, whichever comes higher): CPP = MAP – ICP, when ICP > CVP, and CPP = MAP – CVP when CVP > ICP.[4] Jugular veins are exposed to atmospheric pressure and collapse with the head-up position.[6] This collapse can be directly observed when jugular vein distention (JVD - external jugular vein collapse point) moves with the body tilt. Complete cessation of flow in both jugular veins was observed in 2/23 healthy volunteers at 15° and in 9/23 at 90° head-up tilt.[7]

Pressure in jugular veins may become negative due to subtraction of the hydrostatic gradient ρgh from CVP. Therefore CPP = MAP – Patm (0), whenever CVP – ρgh < 0 and ICP < 0. Global brain ischemia during controlled hypotension in a beach chair position is a particular case of the "cerebral venous steal."[8] Cerebral ischemia develops because of exhausted cerebral autoregulation (beta blockade) and is exacerbated by the jugular venous collapse in the sitting position, which leads to a further reduction of CBF (cardiac output diversion or "steal" from the brain similar to the blood flow diversion toward dependent portions of pulmonary circulation). This phenomenon occurs in the sitting position during craniotomy, when CVP – ρgh < 0 (Patm = ICP = 0 with open cranium) and can be accompanied by a venous air embolism if the non-collapsible venous sinus is injured. Cerebral venous steal due to jugular collapse can also occur in patients with intact cranium, when ICP ≤ 0 and CVP - ρgh << 0. Although the vertebral venous plexus becomes the predominant outflow pathway during jugular compression in the sitting position,[7] flow through it is impeded during head rotation/tilt, especially in patients with cervical stenosis. Thus the practice of CPP measurement site adjustment to the skull base level, whenever patient position is changed and CVP - ρgh < 0, is justified. If jugular bulb pressure can be measured directly, pressure transducer level adjustments do not affect CPP calculation, as long as both the arterial and venous transducers stay at the same level.[9]

Given the above considerations, we propose generalizing the CPP formula to account for the effect of atmospheric pressure on the jugular veins. In a sitting position the atmospheric pressure (Patm = 0) will become an effective outflow pressure whenever it exceeds venous pressure.

Thus,

CPP = MAP – ICP,	if ICP>CVP and ICP>Patm	(1)
CPP = MAP – CVP,	if CVP>ICP and CVP>Patm	(2)
CPP = MAP – Patm,	if Patm>CVP and Patm>ICP	(3)

(whichever results in the smallest difference).

If measurements are done at a different level than the skull base or the head position is changed, the hydrostatic pressure gradient (ρgh) has to be subtracted from all the terms of the CPP equation except

See "Calculation," Next Page

Simple Considerations Proffered To Minimize Sitting Position Risks

"Calculation," From Preceding Page

from the atmospheric pressure, as atmospheric pressure does not change when adjusting the measurement level.

If CVP is maintained above 18 mmHg (ρgh), the classical CPP definition[1,2] is valid and measurement level adjustments are not mandatory.

To minimize risk of unrecognized global cerebral ischemia in the sitting position we propose several simple considerations:

1) Obtain baseline BP measurement in the sitting position and use it as a guide (measurement site is not critical as long as it does not change during the case and central blood pressure pulse wave propagation/reflection remains similar).
2) Evaluate for signs of cervical stenosis; avoid cervical malpositioning which could impede blood outflow through the vertebral venous plexus.
3) Document any patient position changes and changes in BP measurement site or technique.
4) If patient position or BP monitoring site is changed, reassess the new CPP to account for the Starling resistor in the cervical veins (CPP = (MAP – ρgh) – max ((ICP – ρgh), (CVP – ρgh), Patm), whereas h is the height from skull base to BP measurement site, Patm=0.
5) Visual assessment of the jugular vein column predicts if jugular veins will collapse in the sitting position.[10]
6) Volume loading will counteract the effect of Patm on the jugular veins and will prevent their collapse once CVP > ρgh (about 18 mmHg).
7) If the controlled hypotension is prolonged and exceeds diurnal minimum in the upright blood pressure, consider neuromonitoring (regional technique, maintaining verbal contact, near infrared cerebral oximetry, MCA Doppler, EEG, etc.).

Mindaugas Pranevicius, MD
Osvaldas Pranevicius, MD, PhD
Bronx, NY

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Letter to the Editor

Reader Recommends Zero Tolerance

To the Editor:

First I would like to confer my support for the APSF. An open forum is the best way to discuss and solve safety issues.

Second, it is good to see the APSF fund safety research initiatives. One hopes, the $1.092 million recently divided among a number of proposals will make a difference.

I have to take umbrage with Dr. Asokumar Buvanendran's proposal "Patients after Minor Surgery with MAC: Is It Safe to Drive?"

Is this research necessary, and does it pass a common sense test? Have we as a society minimized the attention we pay to driving safety well beyond what is reasonable? Would MADD (Mothers Against Drunk Driving) approve of this research?

National Highway Traffic Safety Administration statistics for 2006 show that 42,642 people were killed and 2,575,000 people were injured in motor vehicle accidents for the previous 1-year period. Over 17,000 of the deaths were alcohol related.

Blood alcohol content (BAC) research originally looked at BAC from .02% to 0.1% and found impairment was commonly seen at the .02% levels, but we have rather arbitrarily fixated on .08% as the "safe" BAC. Many other countries have set lower limits.

Cell phones, GPS screens, eating, even in-dash video screens are the norm. Drunk driving and speeding is rampant. I jog, cycle, and motorcycle and am commonly a victim of driver inattention and distraction. Now I might have to worry about a driving, hungry, sleep deprived colonoscopy patient calling ahead his take-out food order on his cell phone!

Dr. Buvanendran's proposal contends if we can return to a baseline level of weaving, reaction times, and collisions on a driving simulator we can drive home. Would he also contend that we are able to return to work safely as well? Should your surgeon, anesthesia provider, and nursing staff go back to work after sedation or a glass of wine at lunch?

There should be NO double standard for driving performance and everything else. We as health care professionals should champion a zero tolerance of intoxicants while driving.

William Higgins, CRNA
Kaneohe, HI

Mock Debate Held on Syringe Reuse Dangers

The APSF Committee on Technology held a mock debate on syringe reuse on May 6, 2008, in Chicago, IL. The vision of the committee was to develop material which could be used to discourage the unsafe clinical practice of reusing infusion syringes during anesthetic care. This effort was a direct corollary of the final paragraph in the Spring 2008 issue of the *APSF Newsletter* Q&A column, which stated that it is insufficient to condemn syringe reuse practices without acknowledging the factors that lead to these behaviors.

Addressing the symptoms without trying to cure the underlying "disease" would be but a short-term solution. Thus, we must investigate, understand, and eliminate the factors that predispose one to the practice of unsafe medicine. As clinicians, we face severe production pressure and take "shortcuts" in the process of safe preparation of medication; we may give in to the financial importance that others, or we ourselves, place on speed and efficiency; or we may sincerely believe that we are preventing waste, thereby reducing the cost of medicine. An understanding of this complex environment may help to eliminate the root cause of such behaviors, which could then facilitate safer practices. At this session, members of the COT reviewed several of the summary points from the CDC presentation on syringe reuse and multiple publicized episodes of viral transmission related to syringe reuse. It was noted that as many as 27% of clinicians could be reusing propofol infusion syringes (while changing the microbore tubing) based on 220 respondents to an APSF Poll. Subsequent to this discussion, 2 teams were randomly organized to conduct an impromptu mock debate on the proposition, "Syringe reuse should be our recommended practice, when using a syringe pump with extended length microbore tubing."

The proponents of this mock proposition argued that there are no data to show that this practice is unsafe; therefore, in the absence of such data it is an acceptable practice. Currently this practice is acceptable and common on medical missions where resources are severely limited. The practice is economically sound and results in less waste; it is also convenient and saves time. Connections are limited, therefore lessening the risk of misconnections and associated hazards. The group argued that it could be considered "financial malpractice" to not reuse infusion syringes in this manner. Furthermore, it is environmentally sound, using fewer resources, with less plastic and storage needed. The group pointed out the lack of intellectual arguments or scientific evidence for the reflux of potentially infectious material up the exchangeable tubing, and into the reusable syringe. Conversely, the group opposing this practice argued that going against single-use labeling required safety data to prove that the practice is safe and acceptable. The lack of evidence is neither compelling nor sufficient to alter a potentially safer practice. The burden of proof must be on proving that this practice is safe. For example, concerns were raised that reflux into a syringe could occur during syringe decompression for refilling, or, during the pressurized injection of another, and potentially contaminated, syringe of bolus drug distally in the IV line. Concerns exist that the plunger of the infusion syringe is in fact contaminated, and may contaminate the internal wall of the syringe, once injected. Alternative practices, such as using prefilled syringes could address convenience issues. On rebuttal, this group further believed that economic, storage, and environmental concerns could be addressed by using "just in time" delivery methods and implementing recycling for disposables. The "learned hand rule" was recommended to justify economics; what is the likelihood of an adverse event multiplied by the cost of such an event?

On rebuttal, the affirmative first group argued that we don't throw away anesthesia machines between cases, and breathing circuit components are always reused. Broad cross contamination issues persist with potentially greater risks from dirty gloves, lack of hand washing, pulse oximeter probes, ECG leads, and blood pressure cuffs that may transmit infectious material between patients.

The COT found this to be a useful and exciting exercise to objectively examine the basis for beliefs and resultant behaviors, particularly when participants were "given permission" to take the unconventional position.

Letter to the Editor

Anesthesia Provider Doesn't Share Pilot's Risk

To the Editor:

Regarding the use of the metaphor of the anesthesia provider as a pilot and the notion that takeoffs and landings are like induction and emergence:

In addition to the ". . . system formed by the patient, the anesthesiologist and/or the CRNA, and the surrounding environment of the operating room (including personnel and equipment) being more complex than that which characterizes commercial aviation . . .," there is another glaring difference. The pilot is on board and suffers the same fate as his passengers as a consequence of his/her actions—not so with the anesthesia provider.

John Danner, CRNA
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Letters to the Editor

Drug Labeling Error is Reported

To the Editor:

Drug errors are common. We would like to report a drug labeling error that occurred in our department.

A pediatric patient was scheduled for an elective plastics operation for which rectal paracetamol was to be part of the analgesic regime. On being handed this product by the operating department practitioner, we discovered from its labeling (Figure 1) that it was out-of-date.

The labeling firstly showed that it was out-of-date. Also more importantly, the actual drug dosage contained in the suppositories was ambiguous. Was it 60 mg or 1 g? Subsequent correspondence with the manufacturers revealed that this product may contain chloral hydrate and not, in fact, paracetamol. The drug was immediately withheld and the error reported. We are subsequently awaiting the results of analysis by the company.

We would like to raise awareness among our colleagues of the potential problems of drug labeling. In the UK, 1 in 10 patients is on the receiving end of accidents or errors, which are estimated to contribute to 72,000 deaths annually. Further, of the 900,000 medical mistakes made annually, less than a third are being reported.[1]

The literature suggests 2 schools of thought on product identification. One is that the drug should be distinguishable by appearance.[2] With many similar sized and shaped suppositories on the market this may be difficult, and therefore current opinion informs us that the only way to be sure of content is to read the label.[3]

Our case demonstrates the worst possible scenario: a wrongly labelled and ambiguous drug. The authors therefore recommend that mistakes can be reduced by careful reading of product labels and reporting any anomalies found. Further, while these techniques may help to reduce human error, they need to work hand-in-hand with anesthetic drug awareness, a term recently coined as pharmacovigilence. Only then can we safely clarify drug products and avoid drug error confusion.

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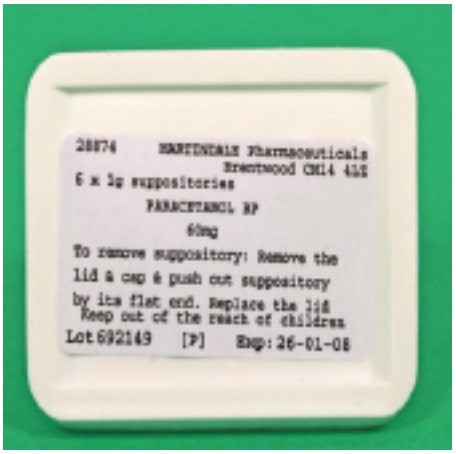

Figure 1. Drug labeling on the reverse.

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Don't Forget the LMA!

To the Editor:

We read with great interest several letters, editorials, and reports on airway management that appeared in the *APFS Newsletters* earlier this year.[1,2] We think that some critical points were not addressed in these reports and that further consideration of this topic is warranted.

It seems that there has been considerable confusion and inconsistencies in interpretations of the Airway Management recommendations that originally appeared in 1993 and were revised more recently by the ASA,[3] or by other international organizations like the Society for Airway Management (SAM) or by some expert collegue.[4] These inconsistencies are present in literature and in our daily practice.

Although a clear message was sent by an excellent publication by Pressman,[5] "Can't ventilate? So please recover spontaneous ventilation," it should be stated that this publication ignored other available resources and options for airway management.

As everyone knows, difficult ventilation is a scenario not so uncommon in the obese patient (when it is really obesity, not as proposed by a BMI 26 kg/m^2),[6] and a valuable resource has been recently re-outlined.[7,8]

The point is those resources and protocols to manage unpredictable difficult airway are right in our hands, or well, in our bags (bag "mask" ventilation, or better, bag laryngeal mask ventilation), whenever you decide to put your patient to sleep. The laryngeal mask airway is a valuable device, often underutilized by anesthesiologists. However, in centers with a significant prevalence of obese patients, the value of this device is fully recognized.

The real question is why do many anesthesiologists forget to rely on a laryngeal mask airway as a helpful tool in the difficult ventilation scenario? The device is an excellent emergency backup airway.

Moreover, in obese patients, it provides temporary airway management and allows for valuable time needed for preparation for a fiberoptic intubation.[4,8]

In addition, for some of us, it is actually the definitive airway used to deliver anesthesia safely and reasonably (with the ProSeal you can really even achieve high peak pressure).

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