

Technology in Anesthesia Curriculum Project

Revision 0.1

January 15, 2005

Dr. Charlotte Bell, STA President, has suggested that the STA education committee might be able to make recommendations to the ASA House of Delegates about curricular content and goals related to anesthesia technology education. As a starting point we should list some of the various curricular objectives that might be important. Please examine this list, with suggested revisions and additions.

Respectfully submitted,

John Doyle

Anesthesia Machine Fundamentals

- Describe the various safety features of the modern anesthesia machine
- Describe how an anesthetic vapourizer works

Electrical Safety in the Operating Room

- Describe the differences between “macroshock” and “microshock”
- Describe the differences between a “line isolation monitor” and a “ground fault circuit interrupter” and explain why the latter are not used for life support equipment
- Explain how electrocautery systems work and why the electrical current they produce does not result in ventricular fibrillation
- Discuss “Ohm’s law” and why clinicians should care about it

Physics of Gases and Fluids

- Describe the ideal gas equation and its derivative laws (Boyle's law, Charles' law, etc.)
- Discuss the special safety issues in storing gases in cylinders
- Describe the means by which pressure regulators work
- Describe the means by which Venturi devices work
- Describe the means by which flow meters work
- Describe the differences between laminar and turbulent gas flow, and why clinicians should care about it

Airway Gas Monitoring

- Describe the means by which capnographs work
- Describe the means by which agent concentration monitors work
- Describe the means by which oxygen gas concentration monitors work

Laser Safety

- Describe the types of lasers used in surgical procedures
- Discuss the special risks of laser use in the airway and the means available (such as special tracheal tubes) to mitigate these risks
- Describe the actions needed to prevent and to manage airway fires
- Describe the use of Venturi jet ventilation for laser airway procedures
- Discuss total IV anesthesia vs. inhalation technique for laser airway procedures

Physiological Measurement

- List the “standard monitors” to be used in all cases of general anesthesia
- List the means by which blood pressure may be measured
- List the various measurements that can be obtained using a pulmonary artery catheter