



Date: April 27, 2012  
Memo to: Mr. Mark Gottinger, RN, LSO  
From: Ms. Barbara Sams, Director of Standards Development, with technical support from Dr. Raymond Lanzafame and Ms. Penny Smalley, SSC-3 Secretary  
Subject: Clarification: Oxygen Use during Laser Procedures

### Question:

I am writing in follow up to a conversation we had about a month ago to clarify Z136 standards for oxygen use during laser procedures. This question came up on the laser safety committee for Allina Health, (Mpls, Mn), that I sit on. Allina Health is one of the largest healthcare organizations in Minnesota, made up of several hospitals and clinics. The standard the Allina committee wanted to adopt was to use Oxygen at 21% during all laser cases. The standards/appendix does indicate 21% oxygen for endotracheal intubation laser cases.

In reviewing the 2011 version of the ANSI Z136.3 standards, it speaks to oxygen use in two different entries.

7.6.2 endotracheal fires.

States, "the lowest possible concentration of oxygen (approximately 21%) shall be used in laryngo-tracheal procedures... "

Appendix B: Use of lasers in health care

B1.3 Fire and explosion hazards

#11) when using an endotracheal tube, air concentration of oxygen (21%) shall be used unless the patient requires otherwise.

First of all, my anesthesiologists tell me 21% for a general anesthetic is not easy to, or even possible to maintain a patient's saturation rate. I'm not involved in delivering anesthesia so I trust their judgment. I'm sure you had anesthesia practitioners review this section and would like resources to review with my anesthesiologists.

Confused about standard vs. appendix entry. Standard states specifically Oxygen at 21% for laryngo-tracheal cases and the appendix states when using an endotracheal tube, air concentration of oxygen (21%) shall be used unless patient requires otherwise.

Would like clarification on 21% oxygen concentration for all endotracheal intubation during all laser procedures or just for laryngo-tracheal cases.



Explanation:

With respect to oxygen use during laser procedures, and after consultation with the members of SSC-3, I would reiterate that the body of the standard is normative (shall/should) while the appendices are informative. Further, the Z136 standards are voluntary standards intended as guidance to establish a laser safety program. This standard, Z136.3 *American National Standard for Safe Use of Lasers in Health Care* is specific to laser safety in health care, i.e., anyone who might become exposed to a laser being used for health care applications.

The guidance offered in the normative section of the standard from 7.6.2

"...the lowest possible concentration of oxygen (approximately 21%) shall be used in laryngo-tracheal procedures, and adequate exhaust ventilation should be provided in colonic procedures."

The parenthetical (approximately 21%) is not to be understood as "use Oxygen at 21% during all laser cases". Rather the focus should be "lowest possible concentration".

From SSC-3 secretary,

"Anesthesia requirements are not black and white and cannot be set up with clear statements. What is done depends on the patient and his/her medical history, the presenting symptoms and presence of other problems and surgical challenges - the procedure, the time factor, etc.....and the decision as to oxygen levels is like a prescription - under a doctor's care only."

From SSC-3 physician member,

"The practice of medicine in operatories has numerous scenarios and has numerous considerations to assure that the proper procedure is performed safely on the proper patient. Oxygen concentrations are indeed a medical prescription and the HOW the gas is delivered, in what concentrations and with what other inhaled agents is determined by the anesthesiologist and the underlying condition and minute to minute clinical condition of the patient during the procedure."

Mark, as you know, the standards are advisory; it is the responsibility of the LSO to make decisions as to how to implement the requirements. This often means the LSO may follow the advice given in section 1.3.1

"The LSO shall effect the knowledgeable evaluation and control of laser hazards by utilizing, when necessary, the most appropriate clinical and technical support staff and other resources." It is recommended that you source the answers to these questions from a physician in your facility, as this would be the most appropriate clinical resource.