

STATEMENT ON THE LABELING OF PHARMACEUTICALS FOR USE IN ANESTHESIOLOGY

(Approved by ASA House of Delegates on October 27, 2004)

Rationale:

The practice of anesthesiology requires the administration of a wide variety of potent medications. These medications are often given in high acuity situations and in environments with poor visibility and multiple distractions. Medications with widely differing actions, such as muscle relaxants, vasopressors, and vasodilators, are often used in the course of a single anesthetic, at times simultaneously. It has been recognized for some time that perioperative medication errors are a significant potential source of morbidity and, rarely, mortality.¹⁻⁴ Interest in medication errors has extended to regulatory agencies, the Federal Government, and the general public.

The recognition and identification of an object depends on shape, color, brightness, and contrast. As these elements become increasingly distinctive, identification of the object becomes faster and more accurate.⁵⁻⁷ Therefore, although multiple factors contribute to medication errors, consistency and clarity of pharmaceutical and syringe labeling, in accordance with human factors, are important elements in their prevention.

Statement:

The primary consideration in the design of labels for pharmaceutical containers should be patient safety and the reduction of medication errors. This is particularly true for the potent medications used in the practice of anesthesiology. Therefore, ASA supports the manufacture and use of pharmaceuticals with labels meeting the following standards, which are consistent with those established by American Society for Testing and Materials International (ASTM International):

1. **Label Content:** The drug's generic name, concentration, and volume or total contents of the vial or ampoule should be the most prominent items displayed on the label of each vial or ampoule containing pharmaceuticals for use in the practice of anesthesiology. In addition, the drug's proprietary name, manufacturer, lot number, date of manufacture, and expiration date should also be included on the label.
2. **Font:** The text on the label should be designed to enhance the recognition of the drug name and concentration as recommended in ASTM International standards D4267, *Standard Specification for Labels for Small-Volume Parenteral Drug Containers* and D6398, *Standard Practice to Enhance Identification of Drug Names on Labels* (Section 7). These standards include recommendations for the font size, extra space for separation around the drug name, and the use of additional emphasis for the initial syllable, or a distinctive syllable, of similar drug names.
3. **Contrasting Background:** Maximum contrast between the text and background should be provided by high-contrast color combinations as specified in Section 6.3.1 of ASTM International Standard D6398, which also minimize the impact of color blindness:

Text	Background
Black	White
Blue	Yellow
White	Blue
Blue	White

4. **Color:** Nine classes of drugs commonly used in the practice of anesthesiology have a standard background color established for user-applied syringe labels by ASTM International standard D4774, *Standard Specifications for User Applied Drug Labels in Anesthesiology*. For these drugs, the color of the container's top, label border, and any other colored area on the label, excluding the background as required for maximum contrast, should be the color corresponding to the drug's classification. The color would be that established in Standard D4774 and therefore identical to the color of the corresponding syringe label.

Drug Class	Pantone Color
Induction Agents	Yellow
Tranquilizers	Orange 151
Muscle Relaxants	Florescent Red 805
Relaxant Antagonists	Florescent Red 805/White Diagonal Stripes
Narcotics	Blue 297
Narcotic Antagonists	Blue 297/White Diagonal Stripes
Major Tranquilizers	Salmon 156
Narcotic/Tranquilizer Combinations	Blue 297/Salmon 156
Vasopressors	Violet 256
Hypotensive Agents	Violet 256/White Diagonal Stripes
Local Anesthetics	Grey 401
Anticholinergic Agents	Green 367

5. **Bar coding:** Essential information including the drug's generic name, concentration, and volume of the vial or ampoule should be bar coded at a location on the vial or ampoule which will not interfere with the label's legibility, as specified in ASTM International Standard D6398 Section 8.

References:

1. Currie M, Mackay P, Morgan C, Runciman WB, Russell WJ, Sellen A, Webb RK, Williamson JA. The "wrong drug" problem in anaesthesia: an analysis of 2000 incident reports. *Anaesthesia and Intensive Care* 1993; 21:596-601
2. Fasting S, Gisvold SE. Adverse drug errors in anesthesia, and the impact of coloured syringe labels. *Can J Anesth* 2000; 47:1060-1067.
3. Merry AF, Webster CS. Labeling and drug administration error. *Anaesthesia* 1996; 51:987-988.
4. Foster P. Drug syringe labeling. *Anaesthesia*. 2003; 58:99-100.
5. Treisman A. Feature and objects in visual processing. *Scientific American* November 1986 pp 114-125.
6. Treisman A. Features and Objects. *Quarterly J of Exp Psychology* 1988; 40A (vol 2) 201-237.
7. Kosslyn SM. Aspects of a cognitive neuroscience of mental imagery. *Science* 1988; 240:1621-1626.

Note: For referenced ASTM International standards, visit the ASTM Web site www.astm.org or contact ASTM customer service at service@astm.org.