The Need for Gas-Specific "Christmas Tree" Connections

To the Editor:

The pin index safety system reliably prevents inadvertent connections of medical gas tanks to flow meters, ventilators, and inhalation-based anesthesia equipment. Whereas resuscitation or "ambu" bags, face masks, nebulizers, and nasal cannulas use nipple or "Christmas tree" connectors. These facilitate a rapid mechanical connection, by hand, to oxygen sources. Typically, these oxygen sources are flow meters which are either tank-based or wall-mounted.

However, a green oxygen Christmas tree, or nipple connector, was found inadvertently attached to a carbon dioxide tank–flow meter combination. This is illustrated in the accompanying Figures 1 and 2. Thus, a patient could have become accidentally hypoxic. Further inspection then demonstrated that this connector was not "forcibly placed" on the carbon dioxide flow meter. Apparently, the carbon dioxide flow meter and oxygen Christmas tree connector have the same inappropriately compatible diameter and thread size. In addition, "oxygen green" lettering is used on the carbon dioxide flow meter. Ideally, this lettering should be gray.

FIGURE 2. A green oxygen Christmas tree adapter inappropriately attaches onto a carbon dioxide flow meter.

FIGURE 1. A green oxygen Christmas tree adapter inappropriately attaches onto a carbon dioxide flow meter.

Clearly, there is a need for gas-specific Christmas tree connections. These could each be mechanically unique, and color-coded, in a universal or "industry standard" manner, which would be "conceptually similar" to the existing pin index safety system.

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