Patient grounding validation in monoplace chambers

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BACKGROUND

The National Fire Protection Association (NFPA) 99 requires patients be electrically grounded via high impedance conductive pathway when the hyperbaric chamber atmosphere exceeds 23.5% O2. Both NFPA 77 (2014 edition) and the Sechrist manual recommend an encircling wrist strap, but NFPA 77 (1.4) allows for equivalent or superior systems, methods or devices, to be determined by the safety director (NFPA 99). Though we have routinely grounded our patients treated in monoplace hyperbaric chambers with electrode patches for two decades, we initiated ground checks to validate this practice.

METHODS

We routinely place an electrode patch (Kendall 850 foam electrode P/N# 22850) connected to a grounding strap (Desco P/N# 09680) on the patient before every monoplace hyperbaric session. During the study period, we verified patient ground pre-and post-treatment using the Sechrist patient and chamber ground test kit (PN#20501-1) and recorded this data on a grounding check sheet.

RESULTS

From 2/21/2013 to 12/31/2013 (739 monoplace treatments), we recorded patient grounding verification before treatment for 478 sessions (64%) and after treatment for 440 sessions (60%). We identified four instances of ground failure at the conclusion of the chamber session (1%): the grounding strap was replaced in one instance, and in another, the chart noted that the patient had perspired heavily during the session. For the other two patients, no further data is available.

CONCLUSIONS

It took a number of months to achieve good documentation compliance. We identified a 1% ground failure rate and encourage monoplace chamber manufacturers to develop technology that will notify the chamber operator of ground failure so that ground can be re-established or the chamber decompressed. We plan to continue to use the electrode patch for grounding, as it is has no known safety risk and is preferred by staff (infection control, convenience) and patients (comfort).