

Anesthesiology
82:317, 1995
© 1995 American Society of Anesthesiologists, Inc.
J. B. Lippincott Company, Philadelphia

A Monitor with a Mind of Its Own

To the Editor:—Patient transport is a period of high risk, particularly after major surgery. Routinely, monitoring equipment is used to permit continued electrocardiography, direct arterial pressure, and pulse oximetry while transporting critically ill patients. We encountered a potentially life-threatening problem while using a newly acquired Hewlett-Packard M1275A transport monitor for the first time during patient transport.

A 73-yr-old patient was in the operating room after completion of mitral and aortic valve replacements. The pulse oximeter and electrocardiogram modules were removed from the operating room's Hewlett-Packard "Merlin" monitor and inserted into the M1275A transport monitor. The waveforms displayed on the M1275A were uniform at a rate of 80 min⁻¹, which appeared to be reasonable because the heart was being externally paced. However, when the arterial pressure module was transferred to the transport monitor, the waveform looked too uniform, and the digital pressure display never varied from 120/70. Our suspicion was confirmed when elevating the transducer above the patient did not affect the arterial pressure display. After confirming the presence of a pulse by palpation, close inspection of the fine print on the transport monitor's screen revealed that the words "demo mode" appeared intermittently in the place where other messages were cycling, and we realized that *all* of the waveforms and data on the screen were simulated!

Brief attempts to turn off the "demo mode" failed because a password is needed both to enter *and to leave* the simulation mode. We quickly restored monitoring to the main operating room monitor, and a different type of monitor was obtained for the transport. Fortunately, the patient's vital signs had not changed significantly during this episode, and no harm came to the patient. Further research revealed that the hospital biomedical engineer had used the internal password to place the monitor into the simulation mode for testing,

but had neglected to return it to normal patient monitoring mode before certifying it as fit for clinical use.

Anesthesiologists should be aware of this novel form of monitoring "failure." A similar event has been described recently,¹ in addition to reinforcing their finding, we propose several specific recommendations. Obviously, human failures were involved in this incident, but improved equipment design could have helped prevent our patient from being exposed to the risk of not being monitored. In particular, we believe it is inappropriate for a password to be needed to *exit* from an internal simulation mode. We also recommend that manufacturers make "demo mode" messages more obvious when a monitor is in a simulation mode by appropriate use of text size, color, and/or brightness and by having it flash. Such messages should be present continuously, not intermittently. A high state of vigilance continues to be warranted, particularly around the time of patient transport.

Giovanni B. Ramundo, M.D.

Resident CA-3

David R. Larach, M.D., Ph.D.

Associate Professor of Anesthesia and Pharmacology

Department of Anesthesia

Penn State University

P.O. Box 850

Hershey, Pennsylvania 17033-0850

Reference

1. Moloney JT, Downey G: What are we really monitoring? (letter). *Anaesth Intensive Care* 22:320-321, 1994

(Accepted for publication October 5, 1994.)

Anesthesiology
82:317, 1995
© 1995 American Society of Anesthesiologists, Inc.
J. B. Lippincott Company, Philadelphia

In Reply:—The "demo mode" of a monitoring product exists for the primary purpose of training new users. Because it is extremely important that the monitor is not placed into "demo mode" while monitoring a patient, we have installed a safety check requiring the use of a password to enter into "demo mode." Once in "demo mode," a visual indication on the monitor indicates "demo mode" status. It is also clearly stated in our documentation that "demo mode" does not support patient monitoring (product warning):

Warning:

The Configuration, Service and Demo modes do not support patient monitoring. When the monitor is attached to a patient it must be in the monitoring mode.

However, we will review the suggestions of increasing the size of the "demo mode" notification and eliminating the password for leaving the "demo mode" and evaluate how we could implement these ideas to further improve our product.

Mike Bunnell

Marketing Manager

Patient Monitoring Division

Hewlett Packard Company

3000 Minuteman Road

Andover, Massachusetts 01810

(Accepted for publication October 5, 1994.)