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## More on Standardized Alarms

*To the Editor:*—We agree with Weinger<sup>1</sup> that the introduction of standardized alarms based on Patterson sounds may worsen the situation in a busy operating room. Because little information exists in this respect, we carried out a survey in our department among 15 staff members, residents, and nurse anesthetists (5 in each group). Each candidate had to answer four questions, as listed in table 1. All candidates were then confronted with six varying types of alarm patterns, with each pattern repeated five times. Each alarm pattern consisted of a sequence of three to nine atonal sounds. The candidates were then tested for their ability to recognize the alarm patterns when replayed in a different sequence. Only 39% of the patterns were correctly identified.

We conclude that standardization of alarm sounds is desirable, but the sounds should be easy to recognize and should not be an unnecessary

overstimulation in the operating room.<sup>2</sup> The major objections of the candidates to these prEN 475\* (Preliminary European Standard) sound patterns were the sounds are too similar; the combination of tones is too abstract; and the sound patterns should not consist of more than three tones.

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TABLE 1.

Question	Approval (%)
Do you welcome the installation of standardized alarm sounds in all medical equipment?	73
Do you welcome the assignment of a certain tone or combination of tones to a defined alarm category (e.g., blood pressure, temperature, and ventilation)?	66
Do you welcome different sounds for advice, caution, and warning?	66
Do you welcome single tones or a combination of tones?	64 (single tones)

## REFERENCES

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2. Kerr JH: Warning devices. *Br J Anaesth* 57:696-708, 1985

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\* prEN 475 Medical Alarm Signals, March, 1991.

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## Glycopyrrolate and the Central Anticholinergic Syndrome

*To the Editor:*—Grum and Osborne<sup>1</sup> described a 22-year-old woman with central anticholinergic syndrome (CAS) that they attributed to preoperative glycopyrrolate administration. In addition, the patient received intramuscular ranitidine and oral sodium citrate. The authors rejected the premise that the patient's CAS was caused by ranitidine because they believed her responses did not fit the pattern of unopposed H<sub>2</sub>-receptor-mediated effects.

The H<sub>2</sub> blockers have many central nervous system side-effects<sup>2,\*</sup> consistent with the CAS, which can be reversed by physostigmine.<sup>3</sup> Severe headaches, agitation, visual disturbances, tachyarrhythmias, and dry mouth, all of which were present in this patient, are side effects of ranitidine. Ranitidine induced visual disturbances are caused by loss of accommodation. The iris, which reflexly constricts during accommodation, may become sluggish or nonreactive with loss of accommodation, especially when induced by drugs. The result may be dilated and fixed pupils, as in this patient. Dilated pupils are commonly associated with photophobia, which presented in this patient.

Glycopyrrolate may increase systolic and diastolic blood pressures similar to those observed in this case.<sup>4</sup> This, as well as dry mouth, dry skin, and tachyarrhythmia are peripheral effects of the drug.

The patient's response to premedication can be explained entirely by the CAS caused by ranitidine with potentiation of peripheral effects by glycopyrrolate. There is insufficient evidence in this case to support a newly defined CAS secondary to glycopyrrolate.

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(Accepted for publication September 13, 1991.)

\* Glaxo Pharmaceuticals, Zantac (ranitidine hydrochloride). Physicians' Desk Reference, 44th edition. 1990, pp 1010-1012.