

COMPARING CAPNOGRAPHY ALARM LIMITS USED IN DIFFERING CARE ENVIRONMENTS

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Introduction: Alarm settings on capnography monitors are important and have the potential to prevent untoward events and even deaths by alerting caregivers to dangerous situations such as apnea and significant changes in CO₂ levels. However, excessive alarms including clinically-irrelevant alarms ('nuisance alarms' or false-positive alarms created by artifact) have been shown to desensitize caregivers to clinically-significant alarms and become a threat to patient safety.^{1,2,3} In addition, they are a source of aggravation to patients and family members, potentially reducing compliance with monitoring. Recently, algorithms have been developed which have been shown to significantly reduce such clinically insignificant alarms.^{4,5}

Our goal was a secondary analysis of data from an alarm survey of experienced users of capnography to compare capnography alarm settings commonly used between multiple care environments. Due to differing monitoring needs in each environment, alarm settings used may differ and such information may be useful to new users in developing their own alarm limit protocols or defaults for each care environment.

Methods: A survey of experienced capnography users was conducted using a web portal (SurveyMonkey.com). Results for the entire group across all care environments are described in a separate paper. In this secondary analysis, data was reviewed and averages analyzed (Microsoft Excel) by individual care environments.

Results: Twenty one experienced users responded for adult applications of capnography. Responses were received from five different care environments. Average values for responses from each environment are presented below.

Table 1 – Average Capnography Alarm Limits Used by Care Environment

Environment	Respondents	etCO ₂ High	etCO ₂ Low	F _i CO ₂ High	RR High	RR Low	No Breath Delay
Procedural Sedation	6	52.5	23.0	6.3	24.0	6.6	17.1
Emergency Depart.	6	50.8	24.5	11.5	28.3	8.3	13.2
General Floor	4	60.0	8.5	6.8	45.0	4.5	27.5
OR-PACU	3	56.7	19.3	3.0	24.0	8.0	19.3
Intensive Care Unit	2	50.0	25.0	NA	32.0	9.0	15.0
All	21	53.8	20.2	7.3	30.3	7.1	18.3

Conclusions: Capnography use has expanded to multiple care environments across the hospital. Alarm limit requirements may vary significantly from one environment to the next based on patient needs. Clinical users in these environments may be less familiar with capnography and having access to alarms limits from experienced users may assist new users in developing their own alarm limits settings. Each institution and ordering physician should recognize that alarm limits should be adjusted based on the population being served and specific patient needs.

References:

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