

Title: NARCOTICS IN THE ICU: P.R.N. WHAT?

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Introduction. Narcotic analgesics are among the most commonly used pharmacologic agents in the critical care setting. Because the intensive care unit nurse is often given wide latitude in administering narcotics, the appropriate use of these agents commonly depends on the recognition and interpretation of the clinical manifestations of pain. This study was undertaken to ascertain the pattern of post-operative narcotic utilization in an intensive care unit (ICU).

Methods. The protocol for this study was approved by the Human Investigation Committee. Data were obtained prospectively from thirty six cardiac surgery patients. Patients were anesthetized with either a narcotic-based technique (fentanyl 75-100 µg/kg) or inhalation. Each narcotic and/or sedative drug administration was recorded separately and included drug, dose, time and the nurse's reason for giving the drug. All patients were studied until extubation. Twelve (12/36) of the patients were studied for 24 hours after extubation. Data are expressed as mean ± SEM. Univariate statistics, coefficient of correlation techniques and Chi square tests were used for data analysis. Statistical significance was attributed to $p < .05$.

Results. In these 36 patients, morphine sulfate was administered 196 times prior to extubation. Total dose ranged from 1 to 58 mg. The mean number of administrations was 5.4 ± 0.6 with a mean dose of 3.0 ± 0.4 mg. Time to extubation was 25.8 ± 3.9 hours. In the 24 hours post-extubation patients received a total dose ranging from 1 to 32.5 mg. A mean of 2.6 ± 0.6 doses was given with a mean dose of 5.1 ± 1.2 mg. There was no significant correlation (Table 1) between total morphine dose and age, pump time, time to extubation, sedative dose, or type of anesthesia. There was also no correlation between the amount of morphine given before extubation and that given in the 24 hours after extubation. Seventeen indications were listed by the nursing staff for administration of morphine in the pre-extubation period (Table 2). In only 10% of cases was pain the indication. In the post-extubation period, however, pain was the indication 90% of the time ($p < 0.0001$ vs. pre-intubation indications).

Discussion. Physician's orders for morphine are commonly written as "prn" or "prn pain". Therefore, considerable discretion is allowed the nursing staff in narcotic administration. The present study

indicates that there is a great variation in reasons given by the nurse for narcotic administration between the pre-extubation and post-extubation periods. The most obvious reason for this paradox is the ability of the patient to verbalize his discomfort or lack of it after extubation. However, misinterpretation of the somatic manifestations of pain prior to extubation could lead to administration of morphine for pain when, in fact, no pain exists. This is suggested by the lack of correlation in the amount of narcotics given in the pre-extubation period as compared to the post-extubation period. We conclude that significant variations in the pattern of indications for narcotic administration exist. Since "increased blood pressure" was the indication for narcotics (35%) it becomes apparent that the nursing staff must be able to differentiate primary cardiovascular from non-cardiovascular (pain) causes of hypertension. Based on the data obtained from this study, decision making by the nursing and medical staff can potentially be improved by 1) greater specificity of physician's orders, 2) improved knowledge of the clinical signs of pain, and 3) increased awareness of alternate methods of treating cardiovascular causes of hypertension.

Table 1
Correlation of Morphine Dose

Variable	r	p
Age	0.04	NS
Duration of CPB	0.33	NS
Time to Extubation	0.39	NS
Sedative Dose	0.16	NS
Type of Anesthesia	0.12	NS

Table 2

Reason Given	Pre-Extubation		Post-Extubation	
	Number	%	Number	%
Elevated BP	118	35	--	--
Agitation	84	25	--	--
Awakening	38	11	--	--
Pain	29	9	31	82
No Reason Given	26	8	4	10
Resp. Control	8	2	--	--
Bucking	6	2	--	--
Anxiety	5	1	--	--
MD order	5	1	--	--
Uncomfortable	5	1	3	8
Procedure	4	1	--	--
Re-exploration	2	1	--	--
Tachycardia	2	1	--	--
Shivering	2	1	--	--
Sedation	1	1	--	--
Lightness	1	1	--	--
Insomnia	1	1	--	--