

Category :**Sedation - analgesia**

A82 - Dose comparisons of fentanyl vs. morphine when used as infusion for analgesedation in mechanically ventilated adult intensive care unit patients.

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Introduction:

We aimed to study the dose equivalency of fentanyl and morphine when used for analgesedation in adult mechanically ventilated ICU patients.

Methods:

This is a post hoc analysis of a previously published prospective cluster-crossover trial of fentanyl vs. morphine infusion for analgesedation in two university-affiliated hospital ICUs in Melbourne, Australia.[1] Patient height and weight were collected as part of routine nursing observations. Body Mass Index (BMI), Body Surface Area (BSA), Ideal Body Weight (IBW) and Lean Body Weight (LBW) were calculated using these observations by validated formulae. In one center, hourly data on narcotic dose were extracted from electronic information. In the other center, narcotic dose data were manually extracted from observation charts at 4-hour intervals and missing data was linearly imputed.

Results:

In the initial trial, the median (IQR) ages were 59 (44–68; n=344; male=63%) in the fentanyl group and 59 (45–72; n = 337; male = 62%) in the morphine group.

The median (IQR) weights (kg) were 84 (70-100; n=317) in the fentanyl group and 82 (70-95; n=309) in the morphine group. There were 261 patients in the fentanyl group and 273 patients in the morphine group in which the height and weight were both recorded. Of these, the median (IQR) BMI (kg/m²) was 30 (25-34) and 29 (25-33), the median (IQR) BSA (m²) was 2.0 (1.8-2.2) and 2.0 (1.8-2.1), the median IBW (kg) was 63 and 65 , and the median LBW (kg) was 57 and 58 for fentanyl and morphine respectively.

Table 1 provides the doses and ratios of fentanyl to morphine. The ratios of fentanyl to morphine ranged from 1:48 to 1:59.

Conclusion:

The dose equivalency of IV fentanyl to IV morphine has traditionally been described as 1:100. We have shown when used for analgesedation, the dose equivalency of fentanyl to morphine is approximately 1:55 and doesn't vary significantly when adjusting for weight, BMI, BSA, IBW and LBW.

References:

1. Casamento AJ et al. *Am J Respir Crit Care Med* 2021. Published on line ahead of print.

Table:

	Fentanyl (µg)	Morphine (mg)	Dose Ratio Fentanyl : Morphine
Hourly Dose*/ Total	57.9 (40.0 - 88.0)/1930.0	3.4 (2.2 - 4.9)/ 92.0 (41.5	1:59/1:48
Cumulative dose	(622.5 - 4520.0)	- 275.0)	
Dose (Total/hourly*)			
Per weight (kg)\$	23.6 (8.5 – 53.9)/ 0.7 (0.4 - 1.0)	1.3 (0.5 - 3.5)/ 0.04 (0.02 - 0.06)	1:55/1:55
Per BMI (kg/m2)#	70.5 (28.7 – 173.3)/ 1.9 (1.3 - 3.1)	4.0 (1.7 - 12.6)/ 0.11 (0.07 - 0.18)	1:56/1:55

Per BSA (m2)#	1156.9 (403.2 – 2622.3)/ 29.1 (19.3 - 46.6)	61.2 (24.3 – 166.9)/ 1.7 (1.0 - 2.5)	1:53/1:57
Per IBW (kg)#	35.8 (11.8- 87.5)/ 0.9 (0.6 - 1.4)	2.0 (0.7 - 4.9)/ 0.05 (0.03 - 0.08)	1:55/1:58
Per LBW (kg)#	39.3 (14.3 - 95.3)/1.1 (0.7 - 1.6)	2.3 (0.9 - 5.7)/ 0.06 (0.03 - 0.09)	1:59/1:57

*All data presented as median (IQR); *: hourly dose calculated by total amount divided by number of hours drug administered; \$: n = 317 (fentanyl) and 309 (morphine); # n = 261 (fentanyl) and 273 (morphine).*