Supplementary material BMJ Qual Saf

Supplementary Table 1. List of actionable quality indicators to monitor adequate pain management in an ICU.

Indicator	Definition	Indicator	Numerator	Denominator	Optimal
		type			value
1. Performing pain	Percentage of patient-	Process	Number of	Total number of	100%
measurements	shift observations		patient-shift	patient-shift	
	during which pain was		observations	observations	
	measured at least once.		during which	with or without	
			pain was	a pain	
	Specified for subgroups:		measured at	measurement	
	1) type of admission, 2)		least once		
	type of shift				
2. Re-measuring	Percentage of patient-	Process	Number of	Total number of	100%
unacceptable pain within 1	shift observations		patient-shift	patient-shift	
hour#	during which an		observations	observations	
	unacceptable pain		during which an	during which an	
	score was measured*,		unacceptable	unacceptable	
	and pain was re-		pain score was	pain score was	
	measured within one		measured*, and	measured*	
	hour		pain was re-		
			measured		
	Specified for subgroups:		within one hour		
	1) type of admission, 2)				
	type of shift				
3. Acceptable pain scores#	Percentage of patient-	Outcome	Number of	Total number of	100%
	shift observations		patient-shift	patient-shift	
	during which pain was		observations	observations	
	measured* and no		during which	during which	
	unacceptable pain		pain was	pain was	
	scores were observed		measured* and	measured*	
			no unacceptable		
	Specified for subgroups:		pain scores		
	1) type of admission, 2)		were observed		
	type of shift				
4. Unacceptable pain	Percentage of patient-	Outcome	Number of	Total number of	100%
scores normalized within 1	shift observations		patient-shift	patient-shift	
hour#	during which an		observations	observations	
	unacceptable pain		during which an	during which an	
	score was measured*,		unacceptable	unacceptable	
	and pain was re-		pain score was	pain score was	
	measured within one		measured*, and	measured*	
	hour indicating that the		pain was re-		
	pain score was		measured		
	normalized		within 1 hour		
			indicating that		
	Specified for subgroups:		the pain score		
	1) type of admission, 2)		was normalized		
	type of shift				

^{*}Only pain scores measured with a standardized pain assessment tool, such as the Visual Analog Scale (VAS), Numerical Rating Scale (NRS), Behavioral Pain Scale (BPS), or Critical-Care Pain Observation Tool (CPOT) are included.

[#]Unacceptable pain scores were defined as measurements with a VAS or NRS score of ≥4, a CPOT≥3 or a BPS≥6. Acceptable or normalized scores were defined as VAS/NRS<4, CPOT<3 and BPS<6.