

Table 1: Characteristics of included studies and outcomes measured by direct observation

<b>First author (year)</b>	<b>Country</b>	<b>No. of hospitals</b>	<b>No. of wards</b>	<b>Number of observers (profession)</b>	<b>Type of ward(s)</b>	<b>Study design</b>	<b>Intervention/s implemented</b>	<b>Outcomes</b>
Freeman (2012)[32]	USA	1	1	2 (Clinical nurse specialist, Nursing supervisor)	Cardiac & thoracic step-down	Uncontrolled before & after	Education, signs, vests, quiet zone, diversion strategies*, process strategies	Interruptions
Kliger (2012)[34] <sup>†</sup>	USA	6	22	2-8 (Nurses)	Medical/surgical	Uncontrolled before & after	Multiple interventions of which only some targeted interruptions <sup>†</sup>	Interruptions  Medication administration errors
Tomietto (2012)[38]	Italy	1	7	2 (Researchers)	Surgical	Uncontrolled before & after	Education, vests, medication location	Interruptions
Anthony (2010)[26]	USA	1	2	1 (ICU Nurse)	Intensive care	Uncontrolled before & after	Education, quiet zone	Interruptions
Conrad (2010)[31]	USA	1	1	Multiple (Not reported)	Progressive care	Uncontrolled before & after	Education, signs, diversion strategies*	Interruptions

								Medication administration time
Nguyen (2010)[36]	USA	1	1	8 (Nurses)	Medical/surgical	Uncontrolled before & after	Education, signs, diversion strategies*	Interruptions
								Medication administration errors
Relihan (2010)[37]	Ireland	1	1	1 (Medication safety officer)	Acute medical	Uncontrolled before & after	Education, signs, vests, checklist	Interruptions
								Medication administration time
Trbovich (2010)[39]	Canada	1	1	4 (2 Human factors graduate students; 2 advanced nurse practitioners)	Chemotherapy day care	Uncontrolled before & after	Education, signs, quiet zone	Interruptions
Kliger (2009)[33] <sup>†</sup>	USA	6	7	2-8 (Nurses)	Medical/surgical	Uncontrolled before & after	Multiple interventions of which only some targeted interruptions <sup>‡</sup> Examples included posters; overhead announcements at beginning and end of	Interruptions

quiet time when med. admin underway; no medical rounds during time of med admin; education of staff

Medication administration errors

Pape (2003)[22]	USA	1	1	1-2 (Nurse researcher; Research assistant participated in pilot)	Medical/surgical	Quasi-experimental three group design	Vests, checklist, diversion strategies* <sup>§</sup>	Interruptions
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\*Diversion strategies involved other staff attending to phone calls and non-emergency patient inquiries and requests, so that the nurses administering medications were not interrupted.

<sup>†</sup>Kliger (2009) and Kliger (2012) report on studies conducted in the same hospitals. However, the interventions in each study were implemented in different wards within the hospitals. Kliger (2009) reports on the implementation of a pilot program, and Kliger (2012) reports on an expansion of this program to other wards.

<sup>‡</sup>Interventions were designed and implemented on each ward individually and were not reported in detail in the publications. Only some of the interventions targeted interruptions.

<sup>§</sup>Study had two intervention groups, with one using diversion strategies and the other using diversion strategies plus vests and checklists.