AlfredHealth

Interrupted time series observational study of Alfred Health clinical pharmacists daily activities

Rachel Stokar,[1,2] Katie Magee,[1,2] Diana Sandulache,[1] Eleanor van Dyk,[1] Susan Poole,[1,2] Ria Hopkins,[1] Chloe Bell,[1] Michael Dooley.[1,2]

1. Pharmacy Department, Alfred Health, Melbourne, Victoria; 2. Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Melbourne, Victoria

Background

In Oct 2018 Alfred Health implemented an organisation-wide electronic health record (EHR) and medication management system (eMMS). It involved a major investment in training and education. Changes to established workflows and the introduction of new work tasks presented challenges for direct-care staff to ensure high standards of patient care were maintained.

Aim

To quantify and compare the time clinical pharmacists spend on direct and indirect patient care activities and interact with patients and other health professions before and after the introduction of an EHR.

Methods

- Uncontrolled before and after time and motion study
- Direct observation of clinical pharmacists working in General Medical and Surgical units
- Two trained observers conducted all observations
- Work tasks were classified and timed using the validated *Work Observation Method by Activity Timing* (**WOMBAT**®)[1] method, *Fig1*.
- Analysis: the difference in time spent on direct care, other tasks and professional interactions were calculated as the proportion of total observed time by study period, 95% confidence intervals (CI) were calculated
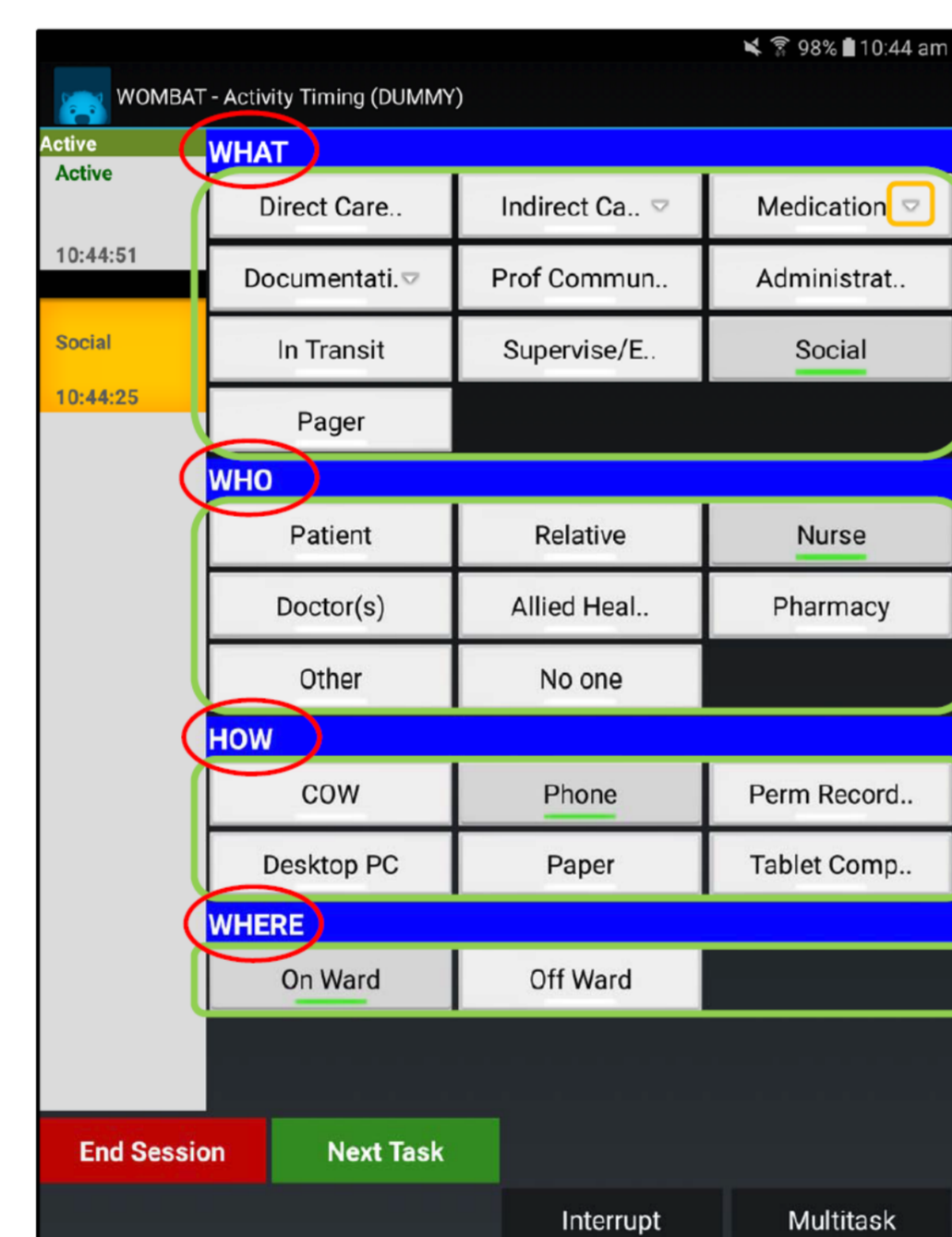

Figure 1: WOMBAT ®[1] data collection tool

Results

A total of 268 hours of observation were included; 183.4hrs before and 84.6hrs after EHR implementation, Table 1.

Table 1. Details of study sample in each study period

	Pre	Post
Number of observations	25	17
Hours of observation, total hr (ave per session, hr)	183.4 (7.3)	84.6 (5.0)
Hours observed GenMed, hr (% of period)	97.5 (53.2%)	39.4 (46.5%)
Hours observed Surg, hr (% of period)	85.9 (46.8%)	45.2 (53.5%)
Number of staff observed	15	12

The number of tasks, task time and overall proportion of time spent on direct care and other activities are shown in Table 2. There was a statistically significant reduction in the overall proportion of time spent on 'admission' and 'discharge'-related direct care tasks but not 'inpatient' clinical activities, Table 2.

Results

Table 2. Task time distribution before and after eMMS implementation

Task classification		No. tasks	Total task time (hr)	Mean task time (min)	Frequency (tasks per hr)	% of total time #	95% CI
Admission	pre	1049	28.1	1.6	5.7	15.3%	14.1, 16.5
	post	414	10.2	1.5	4.9	12.1%	10.6, 13.4
Inpatient	pre	1961	85.5	2.6	10.7	46.6%	41.1, 52.1
	post	964	34.1	2.1	11.4	40.3%	33.6, 49.9
Discharge	pre	779	24.1	1.9	4.2	13.1%	12.0, 14.3
	post	330	8.2	1.5	3.9	9.7%	8.4, 11.0
HCP* liaison	pre	1191	25.8	1.3	6.5	14.1%	11.2, 17.0
	post	533	10.9	1.3	6.3	12.9%	10.7, 14.9
In transit	pre	1156	21.7	1.1	6.3	11.8%	11.1, 12.5
	post	425	10.1	1.4	5.0	11.9%	10.5, 13.4
Meds Supply	pre	463	8.9	1.1	2.5	4.9%	4.1, 5 6
	post	243	3.7	0.9	2.9	4.4%	3.7, 5.1
Other	pre	1338	47.4	2.1	7.3	25.8%	21.2, 30.5
	post	326	27.3	5	3.9	32.3%	23.1, 41.5

* HCP: Health Care Professional; #: Cumulative total >100% due to tasks occurring simultaneously (multi-tasking)

The proportion of time spent on some tasks directly influenced by the EHR were significantly reduced, including time spent locating records and generating discharge summaries. Time spent resolving IT issues increased, see Figure 2a,b,c,d.
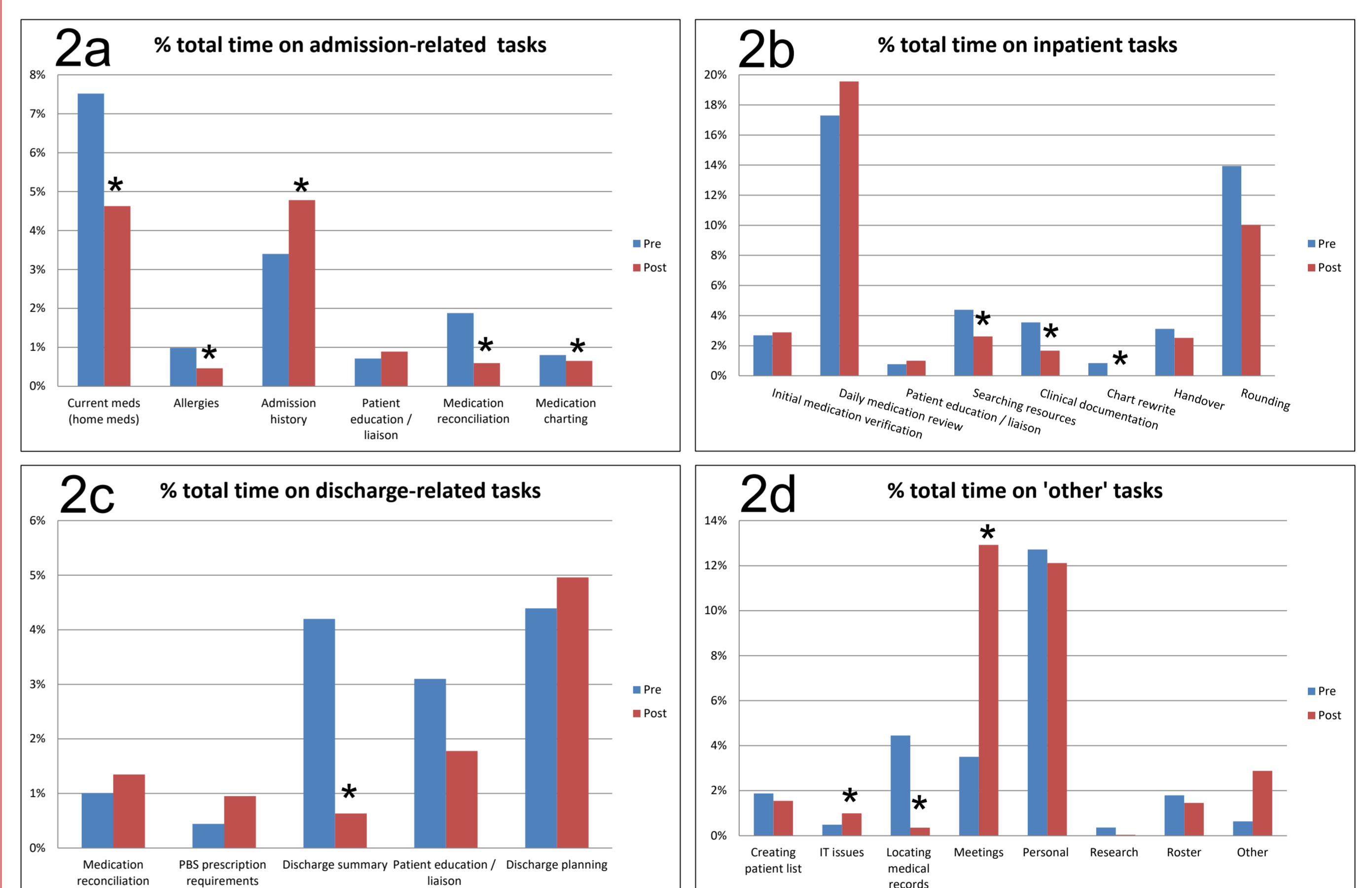
* Statistically significant change pre versus post EHR implementation

Figure 2a,b,c,d. Task time on specific task domains pre and post EHR

There were no statistically significant changes in the proportion of time clinical pharmacists spent with other health professionals or with patients and their families after EHR implementation.
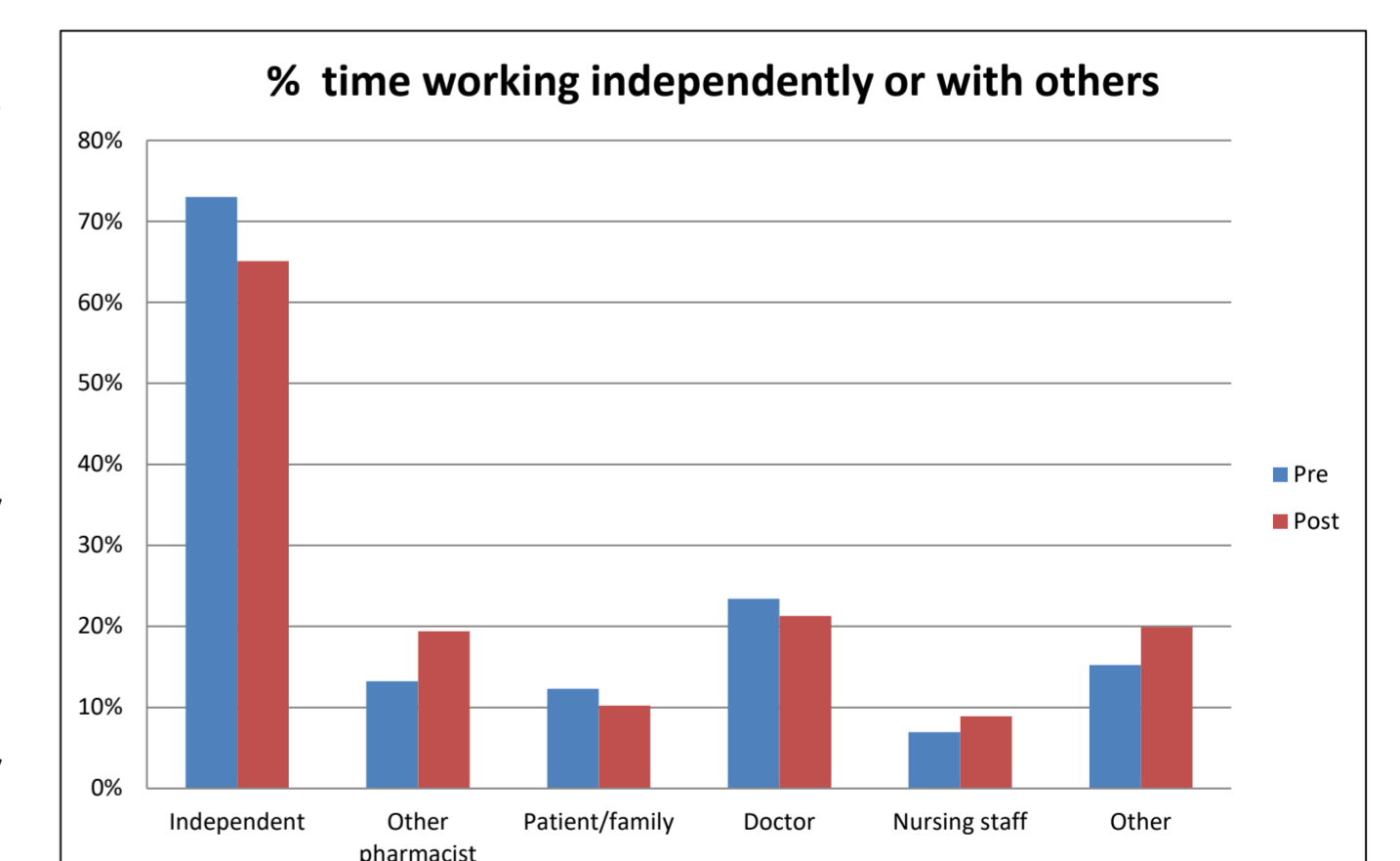

Figure 3. Professional interactions

Conclusion

The EHR implementation was not associated with vast changes in the overall proportion of time that clinical pharmacists spend on clinical and other activities, although changes were observed in tasks, such as locating medical records and IT issues. Professional and patient interactions were not impacted.

References

1. Westbrook JI, Ampt A. Design, application and testing of the Work Observation Method by Activity Timing (WOMBAT) to measure clinicians' patterns of work and communication. *Int J Med Inform* 2009;78:S25-S33.