Published in final edited form as:

Am J Med Sci. 2015 November ; 350(5): 403–408. doi:10.1097/MAJ.0000000000000520.

How Do Residents Spend Their Time in the Intensive Care Unit?

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Abstract

Purpose—To describe the work of residents and the distribution of their time in 6 ICUs of 2 medical centers.

Methods—We conducted a total of 242 hours of observation to capture data on tasks performed by residents in 6 ICUs, including adult, pediatric, medical and surgical units. For each observation period, the percentages of total time spent on each task and on the aggregated task categories were calculated.

Results—Overall, while in the ICUs, residents spent almost half of their time in clinical review and documentation (19%), conversation with team physicians (16%), conversation attendance (6%) and order management (6%). The two medical centers differed in the time that residents spent on administrative review and documentation (4% in one medical center and 15% in the other one). The pediatric ICUs were similar in the 2 medical centers, whereas the adult ICUs exhibited differences in the time spent on order management and administrative review and documentation.

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Conflicts of Interest

None of the authors have declared conflicts of interest.

Conclusions—While in the ICUs, residents spent most time performing direct patient care and care coordination activities. The distribution of activities varied across 2 medical centers and across ICUs, which highlights the need to consider the local context on residents' work in ICUs.

Keywords

Intensive Care; Time Study; Human Factors Engineering; Resident; Work

Introduction

Physicians' time is a valuable resource, particularly in settings like intensive care units (ICUs) with critically ill patients that require a highly qualified workforce^{1, 2}. Understanding how physicians spend their time is important in this context. The Institute of Medicine report on Resident Duty Hours³ has highlighted the importance of accurately describing the activities performed by residents to ensure that both educational and patient care objectives are adequately satisfied. In addition, the implementation of various health information technologies such as computerized provider order entry (CPOE) and electronic health records (EHR) has led to concerns about workload and time spent on indirect patient care activities⁴. We sought to gather more information about how residents spend their time while working in the ICU.

Studies have examined the work of physicians in hospitals^{5–7}, in particular in the emergency department (ED)^{8, 9}, anesthesiology^{10, 11} and surgery^{12, 13}, but little is known about the work of physicians in ICUs; in contrast, some research has examined the work of ICU nurses^{14, 15}. A recent study¹⁶ reports results of a time study of 18 critical care attending physicians and third-year fellows in a pediatric ICU and a general adult ICU in 2 Canadian hospitals. Observers used a personal digital assistant to record activities performed by critical care physicians; the total observation time was 58 hours spread over days and nights, and weekdays and week-ends. Critical care physicians spent about 75% of their time on communication with other staff, about 25% on indirect patient care (e.g., reviewing and reading documents related to patients, ordering tests, checking for results), 17% on documentation, about 10% on either direct patient care (e.g., admitting patient, examining patient, patient communication), 10% in transit and the rest of their time on supervision/education, medication-related tasks, administration and personal or social activities. (Note that they frequently observed physicians multitasking, so their percentages add to more than 100.) The major weakness of this study is the lack of discrimination of communication activities. Patient communication was categorized as direct care, but all other communication activities were grouped and represented about 75% of time spent by physicians. Hoffman and colleagues¹⁷ compared work performed by a nurse practitioner (NP) to the work performed by 6 critical care and pulmonary fellows in one step-down medical ICU. Results showed that the NP and the fellows spent about 40 to 44% of their time in routine management of patients (i.e., procedures/testing, information gathering and documentation), and that the NP spent more time in coordination of care (i.e., consultation and patient/family interaction) whereas the fellows spent more time in non-unit activities (i.e., educational activities, administration, transit and personal activities). This study was limited to a single step-down medical ICU and data were obtained via work sampling

instead of direct continuous observations. ICUs are uniquely complex environments in which multiple healthcare professionals work together in multiple teams to meet the needs of critically ill patients. Therefore, further research is necessary to specifically define the work done by residents in ICUs.

A job task analysis of residents was conducted to measure the time spent by residents on various activities in a range of ICUs in two medical centers. The job task analysis captures information on all tasks performed by the residents while they are in the ICUs. We also assessed the impact of structural characteristics (i.e. hospital, ICU, adult versus pediatric ICU, surgical versus medical ICUs) on time spent by residents in the ICU.

Methods

Sample

The study was conducted in 6 ICUs in 2 different medical centers. In the first academic medical center (MC1), we collected data in one 24-bed adult medical/surgical ICU, an 8-bed cardio-thoracic surgery ICU and a 17-bed pediatric ICU. In the second academic medical center (MC2) we collected data in one 24-bed adult medical/surgical ICU, a 38-bed neonatal ICU and an 11-bed pediatric ICU. The 2 adult medical/surgical ICUs are hybrid ICUs where medical patients are cared for by intensivists and surgical patients are the responsibility of surgeons. The 2 PICUs and the NICU were closed ICUs with dedicated pediatric intensivists and neonatologists. In the cardio-thoracic surgery ICU, patients were the responsibility of the surgical team with the assistance of physician assistants. At the time that data were collected, residents in ICUs of MC1 used an EHR to access and document patient information; in MC2, there was no EHR system installed; all physician documentation and ordering were done on paper.

Participants in this study were residents who were doing a rotation in one of the participating ICUs. This research effort was part of a larger study to examine the impact of computerized provider order entry (CPOE) on physician tasks in the ICU [http://cqpi.engr.wisc.edu/cpoe_home]. Resident physicians were chosen as the subjects for this particular study due to the goals of the parent project, i.e., to determine how CPOE affects the work of physicians in the ICU setting. During their rotation, residents spend the majority of their time in the ICUs and are responsible for writing the majority of patient orders and thus, would provide the most relevant data pertaining to order-writing.

Data collection tool

The method for the job task analysis was real-time direct observations by outside observers who used a computerized data collection tool developed by Weinger, Slagle and colleagues^{10, 18} to document the tasks performed by ICU residents. Each recorded task was automatically time-stamped and logged into a data file^{10, 18}. Using a stylus on the touch screen of a tablet computer facilitated data collection by permitting observers to enter data while standing or walking. Outcomes obtained from the analysis include total time and percent time for each task.

Data collection procedures

Four trained human factors engineers followed residents for periods of a maximum of 3 hours. Only 1 resident was followed during each observation. The observer remained at a distance that allowed clear identification of physician tasks but did not interfere with patient care. Conversation with participants was minimal. The observer recorded each task the resident performed in real-time on the tablet computer.

Early pilot observations aided the research team in preparing for data collection. An initial list of 62 tasks developed based on the literature¹⁴ was progressively refined to 17 tasks (see Table 1 for the list of 17 tasks and their definitions). The 17 tasks were organized into 4 categories: (1) direct patient care, (2) care coordination, (3) indirect patient care, and (4) non-patient care. A human factors engineer and a critical care physician (PC and KEW) classified the job tasks into high-level categories, in consultation with another physician (JMW). The pilot observations provided training for the observers as well as a means for making further revisions to the software's user interface, task taxonomy, and observation procedures. Additionally, the software was designed so that task categories could be rapidly, accurately, and reliably selected. A training manual was created to standardize data collection procedures, such as where the observers should stand, how they should avoid disrupting patient care, and proper use of the job task analysis software.

Inter-observer reliability was assessed between a human factors engineer and a physician, as well as between pairs of the 4 trained human factors engineers on the observation team¹⁹. Reliability was assessed by calculating the degree to which the same tasks were recorded by 2 researchers independently observing the same resident. After each reliability-testing observation, the researchers examined the data and discussed discrepancies in how tasks were recorded. Data collection began once inter-observer reliability reached the desired goal of at least 80% agreement. The stability of inter-observer reliability was assessed periodically throughout the data collection period.

Participation in the study was voluntary. The study received institutional review board approval at the research university and both participating hospitals. Each resident participant was given an information sheet explaining the purpose of the study, as well as the risks and benefits associated with participation. If family members were available or if the resident was caring for an awake and alert patient, the observer asked the resident to briefly explain the research study to the family members and/or patient; this provided them with an opportunity to refuse to have their caregiver (i.e., the resident) observed while caring for this patient. Observations were suspended during residents' personal time and when residents were behind closed curtains with their patients.

Data analysis

For each observation, the percentages of total time spent on each task and on the aggregated task categories were calculated. Because the distributions of the percentage variables across the observations were highly skewed, data for each unit and hospital are presented as median values instead of means. Statistical hypothesis testing was performed by running multi-level contrast models on transformed variables. Planned contrasts* compared time spent by

residents in various ICUs and the 2 hospitals; this analysis also included comparisons between the 2 adult medical/surgical ICUs of the 2 hospitals, the 2 pediatric ICUs of the 2 hospitals, adult ICUs versus pediatric ICUs, and a surgical ICU versus other ICUs. The p-values were adjusted to account for the number of contrasts, using the false discovery rate.

Results

A total of 54 observations of residents were completed in the ICUs of MC1 (133 hours) and 40 observations of residents in ICUs of MC2 (109 hours) (see Table 2). The total observation time in each ICU varied from 36 to 56 hours. Most observations were completed on weekdays (65% in MC1 and 70% in MC2) and during the day (5am–4pm) shift (74% and 80%). About one-third of the observations in each medical center incorporated daily morning or afternoon patient rounds.

Table 3 shows how residents spent their time in various ICUs of the 2 medical centers. Overall, while in the ICUs, residents spent 35% of their time in direct patient care, 43% doing care coordination, 6% in indirect patient care, and 11% of their time in non-patient care tasks. Residents spent nearly half of their time doing 4 tasks: clinical review and documentation (19%), conversation with team physicians (16%), conversation attendance (6%) and order management including medications (6%). Conversation attendance represents times when the residents were not active participants in a conversation; this task occurred most often during rounds (67%).

Interesting similarities and differences emerge when comparing data for the 2 medical centers (see Figure 1). Residents in both medical centers spent similar amounts of time on most tasks. The exception is that residents in MC1 spent substantially less time on indirect patient care, specifically on administrative review and documentation (4% as compared to 15%). Residents in MC1 also spent more time using and adjusting monitors and devices (2% compared to 1%), less time on non-clinical manual tasks (0% compared to 1.3%) and more time on other non-patient care tasks (0.3% compared to 0.02%).

We then compared similar ICUs across the 2 medical centers: the 2 adult medical/surgical ICUs and the 2 pediatric ICUs. In comparing the 2 medical/surgical ICUs, we found that residents in MC1 spent less time in order management including medication management (2% compared to 8%), in indirect patient care, particularly administrative review and documentation (2% compared to 16%), and in non-clinical manual tasks (0% compared to 1.3%). None of the differences between the pediatric ICUs of the 2 medical centers were significant.

Residents in the cardio-thoracic surgical ICU of MC1 tended to spend their time differently from residents in other ICUs. They performed direct patient care tasks more often (45% compared to 33%), in particular physical care of patient (8% compared to 3%), use of monitors and devices (4% compared to 1%), and patient conversation (2% compared to 0%).

*Detailed results of the planned contrasts are available from the first author.

They performed care coordination tasks less often (29% compared to 45%), and they averaged less time on indirect patient care (5% compared to 6%).

We also compared time spent by residents in adult ICUs (the two medical/surgical ICUs and the cardio-thoracic surgical ICU) and pediatric ICUs (the two PICUs and the NICU). When working in pediatric ICUs, residents spent less time on physical care of patient (2% compared to 6%) and patient conversation (0% compared to 1%), and more time on the use of monitors and devices (2% compared to 0%) and in conversation attendance (10% compared to 4%), as compared to residents in adult ICUs. They also spent more time on indirect patient care (10% compared to 5%), particularly administrative review and documentation (8% compared to 4%), and less time on non-patient care (9% compared to 12%), such as in-between tasks (6% compared to 9%), which includes time spent waiting, in transit and searching for something.

Discussion

While in the ICUs, residents spent the majority of their time (78%) in direct patient care and care coordination activities, in particular clinical review and documentation, and conversation with team physicians. Residents play a critical role in managing ICU patient care by placing orders, documenting care activities, and reviewing various clinical information sources (i.e., direct patient care activities). Another major role of residents in ICUs is related to care coordination through conversation and communication with other healthcare team members, in particular physicians. These 2 roles are represented in the 78% of time spent by residents in direct patient care and care coordination.

Our findings contrast with results of Hoffman and colleagues¹⁷ study, which found that physicians spend a majority of their time in “routine management of patients” (about 40% of their time), which includes most of our direct patient care activities, except for patient conversation. In our study, residents spent 35% of their time in direct patient care. Hoffman and colleagues’ study showed that fellows spent 22% of their time in care coordination, whereas according to our data, residents spent 43% of their time in care coordination. The only difference between our definition of care coordination and Hoffman’s definition is that we included patient conversation in direct patient care whereas Hoffman and colleagues included patient conversation in care coordination. Even when accounting for this difference of definitions, it is clear that residents in our study spent a larger proportion of their time in care coordination activities as compared to fellows in Hoffman and colleagues’ study. This may be related to the organizational and educational structure of ICUs where residents are more involved in ensuring that all aspects of patient care are coordinated and fellows are slightly more involved in direct patient care and oversight of the residents’ work. Ballerman and colleagues¹⁶ found that critical care attendings and fellows spent about 75% of their time in professional communication, which is higher than the sum of the conversation tasks in our care coordination category. This difference may be explained by the different samples; our study examines the work of ICU residents whereas Ballerman and colleagues examine the work of attendings and fellows.

A number of differences emerge when comparing the work of residents in ICUs in the 2 medical centers. For instance, residents in ICUs of MC2 spent more time in administrative review and documentation. One possible explanation for this result may be the different levels of administrative support and requirements between the 2 medical centers. This result highlights the need to understand the local organizational and sociotechnical context that can influence tasks performed by residents²⁰. Alternatively, we did not find significant differences in tasks performed by residents in the PICUs of the 2 medical centers. This may be because the PICUs were small units and the number of observations per unit was consequently small compared to the adult medical-surgical ICUs.

Residents in the cardio-thoracic surgical ICU of MC1 spent their time differently from residents in all other ICUs. All residents observed in the cardio-thoracic surgical ICU were 2nd-year residents. The difference between the residents in the cardio-thoracic surgical ICU and residents in the other ICUs may represent the way a surgical ICU is organized: residents spend significant time in the ICU whereas senior physicians (i.e. attendings and fellows) spend more time in the operating room. Therefore, the direct patient care responsibilities of the residents are higher, and their opportunity to communicate with team physicians may be diminished.

Our study focused on what happens in the ICUs; therefore, we did not record tasks performed by residents outside of the ICUs, such as educational tasks (e.g., participating in conferences). Our focus was on the work activities of residents; further research should examine how the activities of residents fit in the overall work of ICU healthcare teams consisting of other physicians, nurses, pharmacists, respiratory therapists, unit clerks and others. A major strength of the study was the direct real-time collection of data on activities performed by residents while in the ICUs.

Conclusion

Our observational job task analysis method documented the variety of tasks performed by residents while in ICUs, as well as variations across ICUs. This methodology can be used to examine how changes such as implementation of a new technology (e.g., electronic health record) can affect the work of ICU physicians. It can be used to further understand workflow and workload in the ICU, and its relation to physician outcomes.²¹ The method can also help to understand the work of physicians who in concert with other care team members (e.g., ICU nurses¹⁵) influence a range of patient and family outcomes through their multidisciplinary team work.²²

Acknowledgments

Approval for this research was obtained from the University of Wisconsin-Madison Health Sciences IRB and the IRB from Geisinger Health Science.

Source of Funding:

This research was made possible by funding from the Agency for Healthcare Research and Quality (AHRQ). Grant Number: R01 HS15274. Principal Investigator: Pascale Carayon, PhD; co-PI: Kenneth Wood, DO. This publication was also supported by grant 1UL1RR025011 from the Clinical & Translational Science Award (CTSA) program of

the National Center for Research Resources National Institutes of Health [PI: M. Drezner]. Kara Schultz Van Roy's Ph.D. studies were funded by an AHRQ T32 training grant (HS000083) [PI: M. Smith].

References

1. Hawari FI, Al Najjar TI, Zaru L, et al. The effect of implementing high-intensity intensive care unit staffing model on outcome of critically ill oncology patients. *Critical Care Medicine*. 2009; 37(6): 1967–1971. [PubMed: 19384194]
2. Pronovost PJ, Angus DC, et al. Physician staffing patterns and clinical outcomes in critically ill patients. *Journal of the American Medical Association*. 2002; 288(17):2151–2162. [PubMed: 12413375]
3. Ulmer, C.; Wolman, DW.; Johns, ME., editors. *Resident Duty Hours: Enhancing Sleep, Supervision, and Safety*. Washington, DC: The National Academies Press; 2008.
4. Poissant L, Pereira J, Tamblyn R, et al. The impact of electronic health records on time efficiency of physicians and nurses: A systematic review. *Journal of the American Medical Informatics Association*. 2005; 12(5):505–516. [PubMed: 15905487]
5. Tipping MD, Forth VE, Magill DB, et al. Systematic review of time studies evaluating physicians in the hospital setting. *Journal of Hospital Medicine*. 2010; 5(6):353–359. [PubMed: 20803675]
6. Dresselhaus TR, Luck J, Wright BC, et al. Analyzing the time and value of housestaff inpatient work. *Journal of General Internal Medicine*. 1998; 13(8):534–540. [PubMed: 9734790]
7. Gabow PAMD, Karkhanis AMS, Knight ARN, et al. Observations of residents' work activities for 24 consecutive hours: Implications for workflow redesign. *Academic Medicine*. 2006 Aug; 81(8): 766–775. [PubMed: 16868436]
8. Hollingsworth JC, Chisholm CD, Giles BK, et al. How do physicians and nurses spend their time in the emergency department? *Annals of Emergency Medicine*. 1998; 31(1):87–91. [PubMed: 9437348]
9. Levin S, France DJ, Hemphill R, et al. Tracking workload in the emergency department. *Human Factors*. 2006; 48:526–539. [PubMed: 17063967]
10. Weinger MB, Herndon OW, Zornow MH, et al. An objective methodology for task analysis and workload assessment in anesthesia providers. *Anesthesiology*. 1994; 80(1):77–92. [PubMed: 8291734]
11. Berry AJ, Hall JR. Work hours of residents in seven anesthesiology training programs. *Anesthesia and Analgesia*. 1993; 76:96–101. [PubMed: 8418748]
12. Chung RS, Ahmed N. How surgical residents spend their training time. *Archives of Surgery*. 2007; 142:249–252. [PubMed: 17372049]
13. Warner BW, Hamilton FN, Brunck BS, et al. Study of surgical resident work hours and time utilization. *Journal of Surgical Research*. 1990; 48:606–610. [PubMed: 2362422]
14. Wong DH, Gallegos Y, Weinger MB, et al. Changes in intensive care unit nurse task activity after installation of a third-generation intensive care unit information system. *Critical Care Medicine*. 2003; 31(10):2488–2494. [PubMed: 14530756]
15. Douglas S, Cartmill R, Brown R, et al. The work of adult and pediatric intensive care unit nurses. *Nursing Research*. 2013; 62(1):50–58. [PubMed: 23222843]
16. Ballermann M, Shaw N, Mayes D, et al. Validation of the Work Observation Method By Activity Timing (WOMBAT) method of conducting time-motion observations in critical care settings: An observational study. *BMC Medical Informatics and Decision Making*. 2011; 11(1):32. [PubMed: 21586166]
17. Hoffman LA, Tasota FJ, Scharfenberg C, et al. Management of patients in the Intensive Care Unit: Comparison via work sampling analysis of an acute care nurse practitioner and physicians in training. *American Journal of Critical Care*. 2003 Sep 1; 12(5):436–443. 2003. [PubMed: 14503427]
18. Slagle J, Weinger M, Dinh M-T, et al. Assessment of the intrarater and interrater reliability of an established clinical task analysis methodology. *Anesthesiology*. 2002; 96(5):1129–1139. [PubMed: 11981153]

19. Schultz, K.; Slagle, J.; Brown, R., et al. Development of a job task analysis tool for assessing the work of physicians in the intensive care unit. In: The Human Factors and Ergonomics Society. , editor. Proceedings of the Human Factors and Ergonomics Society 50th Annual Meeting; The Human Factors and Ergonomics Society; Santa Monica, CA. 2006. p. 1469-1473.
20. Carayon P, Hundt AS, Karsh B-T, et al. Work system design for patient safety: The SEIPS model Quality & safety in health care. 2006; 15(Supplement I):i50–i58.
21. Steyrer J, Schiffinger M, Huber C, et al. Attitude is everything? The impact of workload, safety climate, and safety tools on medical errors: a study of intensive care units. Health care management review. 2013 Oct-Dec;38(4):306–316. [PubMed: 23085639]
22. Shaw DJ, Davidson JE, Smilde RI, et al. Multidisciplinary team training to enhance family communication in the ICU. Crit Care Med. 2014 Feb; 42(2):265–271. [PubMed: 24105452]

Figure 1.
Comparison of Time Spent in Task Categories across 6 ICUs in 2 Medical Centers

Table 1

Task categories

Task Categories	Tasks	Description of Tasks
Direct Patient Care	Physical care of patient	Patient assessment, procedures, assisting clinicians, transporting patient, hand hygiene, observing clinicians' care activities
	Use of monitors and devices	Adjusting medical devices, observing monitors and equipment
	Patient conversation	Conversing with patient
	Order management including medications	Review and documentation of orders and medication administration records
	Clinical review and documentation	Review and documentation other than medications and orders, such as reviewing the patient chart, nursing documentation or notes.
Care Coordination	Conversation with team physician	Conversing with physicians assigned to the same unit, including attendings, fellows, residents, physician assistants, and medical students.
	Conversation with non-team physician	Conversing with physicians who are not assigned to the same unit, including consultants, referring physicians and other attendings, fellows, residents, physician assistants and medical students.
	Conversation with nurse	Conversing with nurses
	Conversation with other ICU staff	Conversing with unit pharmacist, respiratory therapist or unit desk clerk
	Conversation attendance	Standing, listening, not actively participating in conversation
	Conversation with patient's family	Conversing with the patient's family or other patient visitors
Indirect Patient Care	Conversation with other non-ICU staff	Conversing with other ancillary clinical personnel, such as laboratory, radiology, physical therapy, nutritionists or paramedics.
	Administrative review and documentation	Review and documentation of other administrative documents
Non Patient Care	Conversation with non-clinical staff	Conversing with non-clinical staff, such as housekeeping or information technology, or with unidentified people, including those on the other end of a phone conversation.
	Non-clinical manual tasks	Other non-clinical manual tasks
	In-between tasks	Time spent idle, waiting, in transit, or searching for something.
	Other tasks	Tasks not included in any other category

Table 2

Description of observations

	Medical Center 1 (MC1)		Medical Center 2 (MC2)	
	# of observation periods	# of hours of observation	# of observation periods	# of hours of observation
TOTAL	54 (100%)	133 (100%)	40 (100%)	109 (100%)
Weekdays	35 (64.8%)	88 (66.2%)	28 (70.0%)	76 (69.7%)
Day shift	40 (74.1%)	101 (75.6%)	32 (80.0%)	94 (86.2%)
Daily rounds	17 (31.5%)	46 (34.2%)	15 (37.5%)	45 (41.3%)

Table 3

Time distribution of tasks performed by residents in ICUs (median percentages)

	Medical Center 1 (MC1)				Medical Center 2 (MC2)			
	Adult ICU	CT Surg	PICU	Total	Adult ICU	NICU	PICU	Total
1 Direct patient care	41.37%	45.28%	33.16%	39.48%	33.54%	34.80%	26.59%	31.65%
1.1 Physical care of patient	3.96%	8.03%	1.98%	3.96%	5.73%	2.62%	1.28%	3.80%
1.2 Use of monitors and devices	0.91%	3.86%	1.39%	1.58%	1.53%	0.17%	0.48%	0.53%
1.3 Patient conversation	0.41%	1.58%	0.00%	0.37%	0.66%	0.00%	0.10%	0.00%
1.4 Order management including meds	2.28%	5.72%	4.63%	4.02%	7.81%	4.04%	6.16%	6.42%
1.5 Clinical review and documentation	20.91%	19.04%	17.34%	19.60%	14.48%	25.86%	15.71%	17.06%
2 Care coordination	45.67%	29.32%	50.16%	45.67%	39.56%	39.09%	44.06%	41.61%
2.1 Conversation with team physician	22.14%	13.22%	16.19%	16.39%	15.20%	15.05%	22.08%	17.07%
2.2 Conversation with non-team physician	0.00%	0.00%	0.00%	0.00%	0.42%	0.00%	1.63%	0.42%
2.3 Conversation with nurse	4.84%	7.41%	5.16%	6.45%	7.13%	3.65%	3.60%	4.24%
2.4 Conversation with other ICU staff	0.47%	0.69%	0.71%	0.64%	0.76%	0.02%	0.17%	0.19%
2.5 Conversation attendance	4.73%	4.76%	7.78%	4.82%	4.03%	19.24%	6.14%	6.25%
2.6 Conversation with patients family	0.41%	0.18%	0.38%	0.25%	0.20%	0.09%	1.70%	0.32%
3 Indirect patient care	2.84%	4.64%	4.21%	4.05%	16.25%	11.56%	16.54%	14.78%
3.1 Conversation with other non-ICU staff	0.21%	0.59%	0.00%	0.12%	0.00%	0.41%	0.00%	0.00%
3.2 Administrative review and documentation	2.20%	3.70%	3.70%	3.33%	16.11%	10.66%	16.49%	14.53%
4 Non-patient care	11.37%	12.27%	8.61%	10.20%	12.20%	8.89%	9.33%	10.66%
4.1 Non-clinical conversation	0.57%	0.17%	0.61%	0.35%	0.68%	0.06%	1.83%	0.40%
4.2 Non-clinical manual tasks	0.00%	0.00%	0.00%	0.00%	1.31%	1.34%	0.60%	1.32%
4.3 In-between tasks	9.59%	7.84%	5.74%	6.42%	8.08%	6.59%	5.79%	6.76%
4.4 Other tasks	0.29%	0.46%	0.44%	0.30%	0.00%	0.04%	0.24%	0.02%
								0.18%

Note: Because the percentages in this table are medians, each column will not sum to 100%.