Sleep deprivation is common in critically ill patients and may have long-term effects on health outcomes and patients’ morbidity. Clustering nocturnal care has been recommended to improve patients’ sleep.

**OBJECTIVES** To (1) examine the frequency, pattern, and types of nocturnal care interactions with patients in 4 critical care units; (2) analyze the relationships among these interactions and patients’ variables (age, sex, acuity) and site of admission to the intensive care unit; and (3) analyze the differences in patterns of nocturnal care activities among the 4 units.

**METHODS** A randomized retrospective review of the medical records of 50 patients was used to record care activities from 7 PM to 7 AM in 4 critical care units.

**RESULTS** Data consisted of interactions during 147 nights. The mean number of care interactions per night was 42.6 (SD 11.3). Interactions were most frequent at midnight and least frequent at 3 AM. Only 9 uninterrupted periods of 2 to 3 hours were available for sleep (6% of 147 nights studied). Frequency of interactions correlated significantly with patients’ acuity scores ($r = 0.32$, all $Ps < .05$). A sleep-promoting intervention was documented for only 1 of the 147 nights, and 62% of routine daily baths were provided between 9 PM and 6 AM.

**CONCLUSIONS** The high frequency of nocturnal care interactions left patients few uninterrupted periods for sleep. Interventions to expand the period around 3 AM when interactions are least common could increase opportunities for sleep. (American Journal of Critical Care. 2004;13:102-115)
Recognition of the problem of sleep deprivation in critical care settings has led to the development of sleep-promoting interventions and protocols. Clustering of nocturnal care interactions to allow uninterrupted periods has been recommended to improve patients' sleep. However, before more widespread implementation of such programs, more specific information is needed about the nature and temporal patterns of patient care activities and the characteristics of patients and critical care units that may influence patterns of care. Therefore, the purposes of this study were to (1) examine the frequency, pattern, and types of nocturnal care interactions with patients in 4 critical care units; (2) analyze the relationships among frequency, temporal patterns, and types of nocturnal interactions and selected variables related to patients (age, sex, acuity) and site of admission to the intensive care unit (ICU); and (3) analyze the differences in patterns of nocturnal care activities among the 4 units.

**Background**

Sleep has both circadian and homeostatic properties. Disturbed circadian rhythms in human physiological parameters, including sleep and activity-rest, have been associated with decrements in well-being and functioning. From a homeostatic perspective, chronic partial sleep deprivation (decreased duration and increased sleep fragmentation) is associated with deficits in function through complex biochemical, autonomic, and neurophysiological mechanisms that have not been completely explained. Frequent care interactions at night, when physiological sleep propensity is highest, are likely to place patients at highest risk for sleep deprivation. Therefore, it is important to examine the factors that may disturb sleep, such as frequency of care interactions at night.

Studies of sleep in acute and critical care settings conducted during the past 30 years indicated high levels of sleep deprivation in these settings. The consistency in these findings is remarkable, given the wide variety in the methods used to measure sleep (polysomnography, actigraphy, self-report, observation); the range of diagnoses, ages, and sexes of the patients studied; and the use of small samples in the studies. Separate polysomnographic studies included small groups of patients with acute myocardial infarction, patients undergoing open heart surgery, patients undergoing noncardiac surgery, patients with neurological and respiratory disorders, and mixed groups of critically ill adults. Researchers in these studies...
<table>
<thead>
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<th>Variable</th>
<th>Surgical intensive care</th>
<th>Neurosurgical intensive care</th>
<th>Medical intensive care</th>
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<tbody>
<tr>
<td>No. of patients</td>
<td>16</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>No. of nights</td>
<td>48</td>
<td>27</td>
<td>45</td>
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<td>64.8 (16.3)</td>
<td>67.8 (12.9)</td>
<td>70 (13.9)</td>
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<td>Sex, No. of patients (%)</td>
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<td></td>
</tr>
<tr>
<td>Male</td>
<td>10 (63)</td>
<td>6 (67)</td>
<td>6 (40)</td>
</tr>
<tr>
<td>Female</td>
<td>6 (37)</td>
<td>3 (33)</td>
<td>9 (60)</td>
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<tr>
<td>Acuity score, mean (SD)</td>
<td>146.4 (30)</td>
<td>164 (19.8)</td>
<td>144.3 (14.9)</td>
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<td>Total number of care interactions, mean (SD)</td>
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<tr>
<td>Standard</td>
<td>44.8 (10.6)</td>
<td>50.4 (9.5)</td>
<td>37.6 (6.9)</td>
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<td>Corrected*</td>
<td>31.5 (8.6)</td>
<td>32.9 (7.4)</td>
<td>30.6 (8.7)</td>
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<td>Gangrenous foot/respiratory arrest</td>
<td>Perforated colon/colectomy-colectomy</td>
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*Total care interactions corrected for obtaining blood pressure by arterial catheter or outputs by indwelling catheter.
concluded that acutely ill patients have high levels of sleep fragmentation, a predominance of stage I (light) sleep, with a reduction of time spent in other sleep stages (including rapid-eye-movement sleep and slow-wave sleep), reduced total sleep time, and decreased sleep efficiency.

Rates of self-reported sleep disturbance in acute care units and ICUs range from 22% to 61%.\textsuperscript{21-25} Frequent awakenings, prolonged latency to sleep onset, earlier awakening and bedtimes, and generally poor quality of sleep are common. Patients also report that their sleep is poorer during hospitalization than at home\textsuperscript{24,25} and that sleep disturbance is stressful.\textsuperscript{3}

A review\textsuperscript{4} of past studies suggests that characteristics of both the patient and the acute/critical care environment influence sleep disturbance. However, care activities and diagnostic testing appear to be as disruptive to sleep as noise.\textsuperscript{5} The potential significance of care interactions with patients as influences on sleep in critical care settings was recognized more than 30 years ago. In early studies, investigators used observational methods to determine the amount of time patients were permitted to sleep or rest. Walker\textsuperscript{26} observed 4 patients at 8-hour intervals for their first 3 postoperative days after cardiotomy. Each patient had at least 1 interaction with a nurse every hour, with the maximum number of interactions per hour on postoperative day 1 and a decreasing number of interactions on days 2 and 3. The longest uninterrupted period was 50 minutes, a period that Walker concluded was not adequate to allow completion of normal 90-minute sleep cycles. In another small study\textsuperscript{27} of cardiac surgery patients, the most frequent types of nurse-patient interactions were direct monitoring (of vital signs, urine output, and weight), indirect monitoring (checking intravenous catheters, oxygen therapy), and measures to promote oxygenation (coughing or suctioning).

In a larger and more recent study,\textsuperscript{7} a group of 40 patients in a medical ICU had a mean of only 2.2 60-minute blocks of undisturbed time to sleep in 7 days. Only 1 of these blocks fell within conventional sleeping hours, and only 1 procedure was performed in 48% of the hourly time blocks. Measurements of blood pressure and body temperature, suctioning, mouth care, back care, and turning accounted for 76% of the procedures. The investigators\textsuperscript{7} used these data to support clustering care interactions in the critical care unit to allow patients more time for sleep.

| Critical illness patients have little opportunity for prolonged, effective sleep. |
Before such a sleep protocol is implemented across units where critical care is provided for different types of patients, more detailed information is needed about the temporal patterning of specific care activities across nighttime hours, differences in care interactions with patients among care units, and the impact of demographic and illness-related factors on patterns of care interactions. Therefore, the following questions were addressed in this study:

• What are the frequency, patterns, and types of nocturnal care interactions with critically ill patients?
• What are the relationships between patients’ acuity, age, sex, and the frequency of nocturnal care interactions among critically ill patients?
• What are the differences in the frequency of, patterns of, and types of nocturnal care interactions between patients admitted to medical (medical intensive care, coronary care) vs surgical (general surgery and trauma, neurosurgical) critical care units?

Methods
The study design was based on retrospective review of patients’ charts. Approval was obtained from the institutional review board before the study was started.

Sample and Setting
Data were obtained from the medical records of 50 patients, 21 years and older, who were admitted to 4 critical care units of a university-affiliated tertiary care medical center in the northeastern United States. The 4 care units included a 16-bed medical ICU, an 8-bed coronary care unit, a 7-bed neurosurgical ICU, and a 10-bed surgical/trauma ICU. The records of patients who were undergoing treatment with neuromuscular blocking agents, intra-aortic balloon pumps, or continuous venovenous hemofiltration were not included in the study because of the continuous bedside care required by such patients.

Instruments
An activity checklist we developed was used to record care activities that involved interaction with a healthcare provider (nurse, respiratory therapist, nursing assistant, physician) between 7 PM and 7 AM. This period was chosen because most nurses in the ICUs work 12-hour shifts and because this window of time coincides most closely with typical sleeping hours and circadian sleep propensity. The checklist included 22 typical activities related to patient care (Table 1). The categories of activities were derived from the literature and our clinical experience. Activities were selected that involved touching patients or equipment directly connected to patients or involved the presence of the healthcare provider at the bedside. The checklist was reviewed for completeness and clinical relevance by a group of experts in critical care nursing, including staff nurses and advanced practice nurses. Space was available at the bottom of the form for recording additional care activities and notes of the chart reviewer. Two of us (L.M.T. and R.D.), clinical nurse specialists in critical care, extracted data from each medical record.

Patient acuity was measured by using the Navy Workload Management System because it is the standard acuity measure used to determine nursing workload in this hospital. This system is used to identify care requirements on the basis of a series of care indicators, including vital signs, monitoring, activities of daily living, feeding, intravenous therapy/medications, respiratory therapy, treatments/procedures, teaching, emotional support, and continuous care. Staff nurses prospectively evaluate the care requirements of their patients for the ensuing 24 hours. Scores are used to classify patients as requiring “minimal care” (0-12 points), “moderate care” (13-31 points), “acute care” (32-63 points), “intensive care” (64-95 points), “continuous care” (96-145 points),
and “critical care” (146 or more points). These categories were defined and validated by the developers of the Navy system and were labeled according to the intensity of care.\textsuperscript{28} Data were also collected from the medical records on the age, sex, diagnoses, care unit, and procedures performed on each of the patients whose charts were reviewed.

**Procedures**

The chart reviewers randomly chose days during which they reviewed open medical records for patients who stayed for at least 4 consecutive nights in a unit. A patient’s first night in the critical care unit was not included because of the expectation that his or her condition would be more unstable during the first 24 hours after admission. Care activities that occurred between the hours of 7 PM and 7 AM were determined from the medical records and were recorded on the checklist.

**Data Analysis**

Data were entered into a personal computer by using the SPSS (version 10) statistical program (SPSS Inc, Chicago, Ill). Descriptive statistics were used to analyze the frequencies of specific nocturnal care interactions. Care interactions were totaled for the entire night and for each hourly interval. The data were recorded in hourly time blocks and were graphed to enable visual examination of the temporal patterns for the hours from 7 PM to 7 AM. Pearson correlations were computed to examine the relationships between age, acuity, and number of care interactions. Analysis of variance was used to compare the 4 critical care units with respect to number of nighttime activities, patients’ age, and acuity.

**Results**

Review of the records of 50 patients produced 147 nights of data. We had 3 nights of data on 47 patients, and 2 nights of data on 3 patients. The patients with only 2 nights of data were admitted to the coronary care unit, where length of stay tends to be shorter than in the other units. These records were used because the number of records with 3 nights of data available was insufficient. Demographic and clinical data for the samples obtained in each clinical unit appear in Table 2. The sample included 27 men (54%). The mean age was 68 (SD 14.7) years. Mean acuity level for the entire group was 144 (SD 25). Patients’ diagnoses were heterogeneous within and between units. Because of the frequently high numbers of critically ill patients in this hospital, patients are sometimes admitted to units with available beds. For example, patients with medical diagnoses are sometimes sent to surgical units and vice versa. The samples represented the surgical/trauma ICU (n = 16), the neurosurgical ICU (n = 9), the medical ICU (n = 15), and the coronary care unit (n = 10). Patients admitted to the various care units did not differ significantly in age.

A mean of 42.6 (SD 11.3) care interactions occurred per night (Table 2). As seen in Figure 1, interactions were most frequent at 8 PM, midnight, and 6 AM. Overall, interactions were most frequent at midnight and least frequent at 3 AM, at which time 33% of patients had no interactions with healthcare providers. The number of nocturnal interactions did not differ significantly within subjects across the 3 nights of the study.

Over all nights of the study, there were 197 (11% of total intervals) 1-hour intervals when no care interactions took place. The temporal patterning of the

![Figure 2](http://ajcc.aacnjournals.org/)

**Figure 2** Percentage of hourly intervals within which 1 or more care interactions occurred, by intensive care unit (ICU).
removing 89% of the time periods is plotted in Figure 2. Episodes with no interactions were most frequent at 7 PM, 9 PM, 11 PM, 1 AM, 3 AM, and 5 AM, with the maximum number occurring at 3 AM. Because our primary interest was assessment of time available for 90-minute sleep cycles, data sets for each patient were examined to determine the presence of blocks of time of 2 hours or more during which no care interactions occurred for individual patients.

We found 9 intervals of 2 hours or more with no interventions (6% of 147 nights assessed; Table 3). The intervals included 6 2-hour intervals and 3 3-hour intervals. Four (44%) of these episodes occurred in the same 2 patients. Therefore, a total of 7 patients (14%) had uninterrupted time available for sleep during their 2- to 3-night stay in the ICU, and 6 of these patients had only a single 2-hour episode. We found no uninterrupted time intervals longer than 3 hours among the 147 nights of data collected.

Table 4 presents the reasons for nighttime care interactions, listed in descending frequency of occurrence. The most frequent reasons were measurement of vital signs and intake and output; next, in order were administration of medications, assessments, turning, checking/changing ventilator settings, administering respiratory medications such as bronchodilators through ventilator tubing, obtaining blood samples, and bathing.

During 147 nights, only 1 instance of a sleep intervention was documented.

The most frequent interventions were performed hourly or every 2 hours (Table 4). Blood pressures were measured with a standard blood pressure cuff for 100 study nights (68%). Of these, pressures were monitored hourly on 46 nights and every 2 hours or more on 49 nights. A mean of 9.9 cuff readings (SD 2.9) were done each night. Arterial catheters were used to monitor blood pressure for 51 study nights. A mean of 10 (SD 2.81) readings were done per night. Twenty-nine (58%) of these patients had readings obtained at least hourly. Administration of medication occurred a mean of 4.8 times per study night. The most frequent care interactions generally occurred at 2-hour intervals. For example, Figure 3 illustrates the pattern of assessment of vital signs.

Routine daily baths were performed on 62% of study nights between 9 PM and 6 AM. Of these, 61% occurred between 2 AM and 5 AM. The temporal pattern of baths is plotted in Figure 4.
Only 1 record out of the 147 nights of data indicated an intervention for sleep. The nurse noted that she had given the patient a back rub to promote sleep. Neither frequency of care interactions nor acuity scores varied significantly with patients’ age or sex. Acuity score was moderately and positively correlated with frequency of care interactions for each of the 3 nights of the study ($r = 0.32-0.56$, $P < .05$).

A nonsignificant trend toward a difference in levels of patient acuity was detected among the 4 care units, $F_{3,47} = 2.68$, $P = .06$; mean levels of acuity were higher in the neurosurgical ICU and lower in the coronary care unit (Table 2). The frequency of nocturnal care interactions differed significantly among the 4 units, $F_{3,146} = 10.99$, $P < .001$. Post hoc comparisons indicated that care interactions were significantly more frequent in patients admitted to the surgical/trauma ICU and the neurosurgical ICU than in patients admitted to the medical ICU and the coronary care unit (Scheffé tests, all $P s < .05$). Because many of the patients in the surgical units had arterial catheters and urinary catheters that might allow assessment of vital signs and urinary output without waking the patients, totals were recalculated to exclude vital signs on patients who had arterial catheters and exclude urinary outputs on patients who had urinary catheters. Reanalysis of differences between units in the frequency of care interactions revealed no significant differences in the frequency when the use of arterial catheters and indwelling urinary catheters for assessment of vital signs and outputs was considered. The temporal patterns of care interactions were similar between the units, with peaks at 8 PM, midnight, and 6 AM. Because most of the nurses worked 12-hour shifts (7 PM to 7 AM) and a few worked 8-hour shifts (3 PM to 11 PM, 11 PM to 7 AM), these time frames appear to correspond to shift changes. By visual analysis, the increased frequency of interactions occurred on the even hours and a decrease in the number of interactions at 3 AM (Figure 2).

**Discussion**

Our results indicate the frequent and repetitive nature of care interactions with patients in the critical care units studied and suggest that this patterning leaves little opportunity for patients to sleep. By exploring the temporal patterning of nocturnal care interactions and comparing critical care units with different specialties, we extended the work of earlier researchers who also noted that care interactions provide patients little opportunity for sleep. Although we did not measure sleep, the absence of 2 or more consecutive blocks of uninterrupted time on 94% of the study nights makes it extremely unlikely that patients had an opportunity to sleep. The maximum uninterrupted time was 3 hours, a time inadequate to obtain a sufficient quantity of daily sleep. Although we did not evaluate care interactions during daytime.

| Table 4 Types of care interactions with patients during each hour from 7 PM to 6 AM |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Care interaction                | 7 PM  | 8 PM  | 9 PM  | 10 PM | 11 PM | 12 AM | 1 AM  | 2 AM  | 3 AM  | 4 AM  |
| Measuring vital signs           | 109   | 144   | 119   | 144   | 112   | 142   | 113   | 138   | 107   | 141   |
| Measuring vital signs via arterial catheters | 42    | 48    | 41    | 48    | 41    | 48    | 39    | 46    | 37    | 48    |
| Assessing intake/output        | 90    | 118   | 95    | 126   | 95    | 111   | 96    | 115   | 93    | 117   |
| Assessing intake/output via catheter | 84    | 100   | 84    | 104   | 86    | 97    | 87    | 99    | 84    | 101   |
| Giving medications             | 25    | 52    | 34    | 121   | 50    | 98    | 44    | 61    | 27    | 45    |
| Assessing patient              | 38    | 97    | 19    | 40    | 16    | 87    | 17    | 40    | 11    | 61    |
| Turning patient                | 6     | 37    | 22    | 43    | 18    | 32    | 15    | 37    | 7     | 32    |
| Checking ventilator            | 11    | 41    | 26    | 23    | 14    | 46    | 18    | 20    | 2     | 36    |
| Administering medications via ventilator | 2     | 36    | 20    | 6     | 3     | 31    | 13    | 18    | 0     | 24    |
| Obtaining blood samples        | 5     | 39    | 18    | 14    | 6     | 19    | 6     | 13    | 4     | 9     |
| Bathing patient                | 0     | 0     | 2     | 3     | 4     | 9     | 6     | 12    | 1     | 20    |

Values are numbers of interactions.
hours, most likely care interactions, noise, and other sleep-disturbing factors were even more frequent during the daytime. Future studies should evaluate interactions that occur throughout the 24-hour day and how the interactions correspond with objectively and subjectively recorded sleep.

Not surprisingly, care interactions were most frequent on the even hours and appear to reflect practice protocols that require assessments every 2 hours, such as monitoring vital signs and intake and output. Peaks in interactions also occurred at 8 PM, midnight, and 6 AM, perhaps reflecting shift work patterns in this institution, in which the majority of nurses work 12-hour shifts (night shift, 7 PM to 7 AM), but a few work 8-hour shifts. The nadir in frequency of care interactions at 3 AM corresponds to the physiological nadir in sleep, temperature, and alertness rhythms for both patients and nurses. However, it is unclear whether this nadir reflected the nurses’ intention to allow patients time for sleep or whether it reflected a lull in the work flow in the unit. Given the coincidence of this period with natural circadian periodicity, interventions designed to promote sleep might focus on widening this 1-hour window to make more time available for sleep.

The nocturnal interactions in this study most likely indicate the need for monitoring and for managing life-threatening physiological alterations. Protocols, such as hourly monitoring of vital signs, have been developed to ensure detection of life-threatening problems in a timely manner. Although technological advancements, such as arterial catheters, may ensure this level of continuous monitoring without disturbing patients, numerous care activities must be performed to maintain physiological homeostasis in the critically ill. Patients whose conditions are more physiologically stable may require less frequent interventions and therefore may be allowed more uninterrupted time to sleep. Studies should be conducted to determine the safety and efficacy of reducing the frequency of nocturnal interventions and assessments to promote patients’ sleep. Clustering activities can provide extended blocks of uninterrupted time and improve patients’ chances for sleep. The physiological need for sleep must be carefully balanced against the need for frequent assessment of vital signs and the other care activities.

Nurses provided routine daily baths for patients on 55 of the 147 study nights between 2 AM and 5 AM. Bathing is not time sensitive and does not affect patients’ safety. Therefore, baths are most appropriately scheduled when they are most likely to maximize comfort and sleep. Bathing can be a therapeutic and relaxing process that may actually promote sleep if performed in the evening. Recent research suggests that warm baths may enhance slow-wave sleep. However, the extent to which such enhancement occurs with the sponge baths typically performed in critical care units is unknown. The practice of bathing patients at night to enhance the work flow during the day when patients are undergoing procedures or diagnostic testing may be contrary to patients’ needs for sleep if it arouses them.

Only a single care intervention for sleep was documented during the 147 nights of the study. Given the frequency of publications on the topic of sleep in the acute care setting and attention given to the topic by the American Association of Critical-Care Nurses in their published protocol, Promoting Sleep in Acute and Critical Care,7 this finding was surprising and suggests the need to increase awareness of the problem of sleep deprivation in the ICU.

Age and sex were not significantly related to the number of care interactions or acuity levels. However, intensity of patients’ care needs was associated with our count of the frequency of care interactions. The Navy Workload Index was used in this study because it was the measure of patient acuity in this acute care hospital setting. However, given the use of care activities to determine the Navy index, the finding of a relation-
ship between it and our count of care activities is not surprising. Future studies should use a measure that is more reflective of physiological status, such as the Acute Physiology and Chronic Health Evaluation.31

Study Limitations
This study was designed to provide baseline data to support the development of a sleep promotion protocol. Its retrospective design precluded measurement of variables that were not available in the medical records, and the findings are therefore limited by the quality of the available data. Sleep was not measured; we assumed that critically ill patients would sleep if given ample opportunity. This assumption should be tested in future research. Our results reflect practice in a single institution, but practices in this institution are likely to be similar to those in other tertiary care settings. Nevertheless, findings should be generalized with caution.

Implications for Further Research
The primary impetus for this study was the evaluation of time available for patients to sleep in the intensive care setting, but sleep was not directly measured. Further study of the impact of the effects of repatterning care interactions on sleep in which objective methods are used to measure sleep is needed. Polysomnography, the reference standard for measuring sleep, would provide the most detailed data on the physiological attributes of sleep. However, its expense and intrusiveness limit its usefulness in the critical care setting for extended periods of monitoring. Actigraphy is an alternative behavioral measure of sleep that may be most useful in this setting.4 Past studies indicated that a large proportion of total sleep occurs during daytime hours, so 24-hour monitoring would be most useful.32 Future prospective studies should be designed to address the multifactorial nature of the problem of sleep disturbance and include more detailed evaluation of the effects of demographic, psychological, and physiological characteristics of patients, as well as environmental characteristics of the critical care setting.

Conclusion
The multifactorial problem of sleep disturbance in the critical care setting is well known. This problem persists, with little improvement, despite recognition of the problem for more than 30 years. The findings of this study suggest the significant role of care practices, specifically frequent interactions for patients’ care. The findings suggest that many possibilities exist to increase ICU patients’ opportunities for sleep. They also raise questions as to whether common care activities performed at night are done because of patients’ needs, work flow convenience, traditional practice, unit culture, or a combination of factors. The results of this study are being used to refine a protocol to promote patients’ sleep in critical care units. An important feature of the protocol is repatterning of nocturnal activities. In addition, focus groups and educational activities are being conducted to elicit nurses’ ideas about how to improve patients’ sleep and to raise awareness of the problem.

ACKNOWLEDGMENT
This study was funded by a Data-Driven Clinical Practice Grant awarded by the American Association of Critical-Care Nurses.

REFERENCES


The purpose of this study was to explore the frequency, pattern, and type of interactions that occurred during the night for 50 critically ill patients. A randomized, retrospective review of medical records was used to record nocturnal care activities in 4 intensive care units (ICUs) for a total of 147 nights. It was found that, on average, the number of care interactions per night was 42.6. Nocturnal care interactions were most frequent at midnight and the least frequent at 3 AM. There were only 9 uninterrupted periods of 2 to 3 hours that were available for sleep during the study time frame of 7 PM to 7 AM. There was an association with the frequency of interactions and severity of illness, in that patients with higher acuity scores had more frequent interactions. The study has direct implications for critical care nursing care. As sleep deprivation is common in critically ill patients and can contribute to health outcomes, changing nursing care practices to facilitate sleep for the critically ill becomes especially important.

A. Description of the Study
   • What was the purpose of the study?
   • Why is it important to study nocturnal care interactions with critically ill patients?

B. Literature Evaluation
   • What is reflected in the literature about sleep disturbances during critical illness in the ICU?
   • What have previous studies found regarding nursing care interactions that disrupt sleep?

C. Sample
   • Data were obtained from what types of patients?

D. Methods and Design
   • Describe the study methods.
   • How were care activities recorded?

E. Results
   • What were the findings in terms of the frequency and pattern of care interactions?
   • What were common reasons for nighttime care interactions?
   • Did the findings differ significantly among subjects across the nights of the study?
   • What time intervals were found to have no care interventions?

F. Clinical Significance
   • What are implications of the study for ICU nursing care?
   • What are implications for the development of sleep protocols in the ICU?

Information From the Authors: Linda Tamburri, RN, MS, CNS, C, CCRN, lead author of this journal club article, provided additional information about the study. Tamburri explained that the research team chose to study nocturnal care interactions as a means of identifying nursing practice changes. She related, “Two of the investigators on our team had previously conducted a study that examined the sleep patterns of cardiac patients on medical telemetry units. We wanted to extend that work and look at sleep in ICU patients. Because there is limited data on sleep in the ICU, we decided to explore the source of nocturnal interruptions for this population. Another driving factor was that we were eager to conduct a study that could identify opportunities for practical changes in nursing practice.” Tamburri related that while it was expected that the study would find that patients had many care interventions during the night, the research team was most surprised by the number. She shared, “We expected the data to show that a number of patients would have insufficient time for sleep, but we did not anticipate it would be such a large percentage of the nights studied. The high number of patients who received their routine daily bath between 2 AM and 5 AM was also interesting, and raises questions regarding the reasons for this practice.”

When asked about the finding that only 1 sleep-promoting intervention was charted and whether this may have been due to lack of documentation, Tamburri replied, “We do not know if sleep-promoting interventions were absent from the medical record because they were not provided or because the documentation may not have been complete. It is likely that these interventions are often provided, but nurses may not see them as being significant enough to warrant noting them in the medical record.”

Implications for Practice: The findings of the study demonstrate that critically ill patients have a significant amount of care interactions that impact their ability to sleep. This has direct implications for nursing care as well as in terms of activities such as routine bathing on the night shift. Tamburri shared, “The direct implications from this study are that we have many opportunities to increase the time our patients have available for sleep. While this may not always be possible in the most unstable patients, there are many instances in which we can individualize care for each patient. We need to closely examine our nursing practice and hospital systems to be sure our actions are driven by the needs of our patients. For example, do we measure vital signs every 1 to 2 hours because that is our policy, because it is traditional practice, or because it is what the patient’s condition truly warrants? Clustering nursing activities and those of other caregivers to provide greater lengths of uninterrupted time for sleep is another change that can easily be implemented.”

Journal Club feature commentary is provided by Ruth Kleinpell.