

I Was Sick and You Came to Visit Me: Time Spent at the Bedsides of Seriously Ill Patients with Poor Prognoses

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PURPOSE: To learn how much time hospital staff and families spend at the bedsides of seriously ill patients with poor prognoses.

SUBJECTS AND METHODS: An observational study was made of 58 inpatients with cancer, acquired immunodeficiency syndrome, heart failure, obstructive lung disease, or advanced dementia, along with their families and the physicians and nurses working on the medical floors of a university hospital, using direct videotape surveillance of patients' doorways.

RESULTS: The mean (\pm SD) total visitor-minutes spent in the rooms of these patients was 321 ± 297 minutes per day. On average, patients spent 18 hours 39 minutes per day alone. Mean visit durations were 3 ± 3 minutes for attending physicians (including consultants), 3 ± 2 minutes for house officers, 2 ± 1 minutes for nurses, and 24 ± 51 minutes for family. The total person-visits per patient per day were 3 ± 3 for attending physicians, 9 ± 8 for house officers, 45 ± 23 for nurses, and 13 ± 21

for family. Patient sex and age were not significantly associated with total visitor-minutes. In a repeated-measures analysis of variance model, nonwhite patients received fewer total visitor-minutes than did white patients, and patients with dementia received fewer total visitor-minutes than did patients with other diagnoses, especially those with malignancy. Do-not-resuscitate orders were associated with slightly more total visitor-minutes. **CONCLUSIONS:** These seriously ill patients with poor prognoses spent most of their time in the hospital alone. Staff visits were frequent but brief. These data do not confirm anecdotal reports that staff members spend less time at the bedsides of patients with do-not-resuscitate orders. Patients with advanced dementia and minority patients appear to have less bedside contact. Further study is required to confirm these findings and to understand optimal visit time for medical inpatients with poor prognoses. *Am J Med.* 2001;111:385-389. ©2001 by Excerpta Medica, Inc.

At the end of life, abandonment is a major patient fear (1-4). Yet it is largely unknown how much direct contact time family or staff spend with patients, or what amount of time is optimal. Anecdotal accounts have suggested that patients with do-not-resuscitate orders are ignored by medical staff (5). Many physicians share this fear, believing that if they limit resuscitation, their patients will receive less attention (6). Previous studies have attempted to measure time spent at the bedsides of seriously ill patients indirectly, examining such endpoints as the number of orders for diagnostic and therapeutic interventions (7-9), or the frequency of nursing procedures (10). However, these indirect measures presume that it is appropriate to continue interven-

tions that may no longer serve patient needs. Decreases in some of these interventions, such as dialysis or frequent monitoring of vital signs, may actually represent more appropriate care (11). We therefore undertook a study to measure bedside contact with medical inpatients by family and staff, using direct observation of seriously ill patients with and without do-not-resuscitate orders.

METHODS

Subjects

Subjects were enrolled between November 1996 and December 1997. Eligible patients were aged 18 years or more and had one of four diagnoses: metastatic solid tumors (excluding lymphoma, testicular cancer, and first recurrences of breast cancer); human immunodeficiency virus infection meeting the definition for acquired immunodeficiency syndrome (AIDS); dementia confining the patient to bed; or class III-IV congestive heart failure or chronic obstructive pulmonary disease requiring oxygen. Eligible patients were further required to be on a medical floor, in a single room, not cared for by an investigator, and not on contact isolation. We enrolled equal numbers of patients with and without do-not-resuscitate orders.

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We did not require that patients be receiving palliative care, and many patients were receiving active treatment for their underlying diseases.

Written informed consent was obtained from all patients, and the permission of the primary nurse and the intern was also required. Staff members were only informed that a time-motion study was being conducted regarding the care of very sick patients. As a distracter, nurses and house officers were asked to keep a record of the time spent on all their activities for patients, and not only for time spent in the room. This study was approved by the Institutional Review Board of Georgetown Medical Center.

Of the 261 potential patients identified, 165 could not be enrolled for logistical reasons, such as inability to contact a surrogate for consent, death, or equipment difficulties. Those not included because of logistical problems did not differ in diagnosis from study subjects. A further 37 refused. The diagnosis of AIDS was more common among those refusing (17 of 37 [46%] vs. 15 of 58 [26%], $P = 0.02$). Fifty-nine subjects were videotaped, and one with a do-not-resuscitate order was excluded from analysis because of missing data.

Techniques

Time-lapse videocameras were hidden behind the wall-mounted televisions in patients' rooms, facing outward toward the doors. By not focusing the camera on the bed, we protected patient privacy and limited the data to recording exits and entrances. Tapes ran for 24 hours, except in 6 cases in which the patients died or were discharged. Coders were senior house officers not caring for study patients but able to recognize and classify visitor type. They were trained and given highly objective and explicit coding rules. Tapes were reviewed and coded to the nearest second, noting the category of the visitor and time of entry and exit, defined by the shoulder of the person crossing the threshold. Attending physicians were defined as the primary physician, a consultant, or a fellow; house officers included interns and residents; nurses included nurses and nurses' aides; and family included family and friends. Demographic and clinical data were obtained by chart review. Severity of illness was measured using the Acute Physiology and Chronic Health Evaluation-III (APACHE-III) (12).

Analysis

The main dependent variable was total visitor-minutes per day, reflecting the aggregate of all measured visitor types—attending physicians, house officers, nurses, and family. Where a specific visitor type is described, data were analyzed as the aggregate of all visitors of that type, expressed in visitor-minutes (e.g., 3 attending physician visits of 5 minutes' duration would be equal in total visitor-minutes to a single visit by 1 attending physician of 15 minutes' duration or to a single visit by 3 attending phy-

sicians simultaneously for 5 minutes). Data for 6 cases in which tapes ran for less than 24 hours were prorated to 24 hours. Total visitor-minutes were not normally distributed, and therefore the data were rank-transformed, and analysis of variance (ANOVA) was performed on these ranked data, approximating the Friedman test (13). Because multiple visitor types constituted the dependent variable of total visitor-minutes, we used a repeated-measures ANOVA model. All independent variables showing univariate associations of $P < 0.10$ were entered into the initial model. Resuscitation status was also entered into the initial model because of its interest and importance. We tested for interactions in the final model. The model showed some problems with sphericity, and reported significance levels reflect the adjusted degrees of freedom (14). With our sample size, using these rank-transformed data, we had a power of 0.80 to detect a 12-rank (20%) difference in total visitor-minutes for any characteristic at $\alpha = 0.05$, two-tailed test.

Because the independent variables were likely to be differentially associated with the total minutes spent by each type of visitor, we also examined the within-subject effects for each of the visitor types in the model. We examined the parameter estimates for each independent variable (APACHE-III, resuscitation status, race, and diagnosis) against the dependent variables of visitor-minutes attributable to attending physicians, house officers, nurses, and family.

Because the clinical meaning of rank-transformed total minutes at the bedside is abstract, we report the untransformed, unadjusted total visitor-minutes whenever we report time data in the results section. These numbers are for illustrative purposes only, and all statistical testing used rank-transformed data. All analyses were performed using SPSS 9.0 (SPSS Inc., Chicago, Illinois).

RESULTS

The mean (\pm SD) age was 62 ± 19 years. Twenty-nine patients (50%) had do-not-resuscitate orders. Fifty-seven percent ($n = 33$) were women, and 40% ($n = 29$) belonged to a minority group (1 Hispanic, 28 African American). Forty percent ($n = 23$) had a malignancy, 26% ($n = 15$) had AIDS, 19% ($n = 11$) had dementia, and 16% ($n = 9$) had congestive heart failure or chronic obstructive pulmonary disease. The mean APACHE III score was 48 ± 21 (range, 18 to 112).

The unadjusted mean total number of visitor-minutes per day was 321 ± 297 minutes (range, 48 to 1343 minutes). The mean amount of time passed with no visitors in the room was 1119 ± 297 minutes per day. The unadjusted mean duration of visits, number of visits, total time spent with patients, and percentage of visits longer than 5 minutes are shown in Table 1.

Table 1. Time Spent at Patients' Bedsides, by Visitor Type

Type of Visitor	Mean Number of Person-Visits per 24 Hours	Mean Visit Duration in Minutes	Mean Percentage of Visits >5 Minutes*	Mean Total Person-Minutes per 24 Hours
Attending physicians	3 ± 3	3 ± 3	20 ± 30	13 ± 15
House officers	9 ± 8	3 ± 2	21 ± 22	35 ± 42
Nurses	45 ± 23	2 ± 1	12 ± 8	94 ± 58
Families	13 ± 21	24 ± 51	52 ± 34	290 ± 437

* Calculated as the mean of the percentage of visits longer than 5 minutes for each patient by each visitor type, based on prorated time data.

Factors Associated with Visitor Time

In univariate analyses, patient sex and age ($r = -0.05$, $P = 0.71$) were unassociated with total visitor-minutes (331 ± 325 minutes for men, 313 ± 297 minutes for women, $P = 0.91$). However, race (white, 429 ± 324 minutes vs. black or hispanic, 157 ± 94 minutes; $P < 0.001$), and severity of illness as measured by APACHE-III score ($r = -0.27$, $P = 0.04$), showed significant associations. Diagnosis was also significantly associated with total minutes—malignancy, 483 ± 344 minutes; AIDS, 245 ± 293 minutes; dementia, 187 ± 97 minutes; and cardiopulmonary, 198 ± 106 minutes ($P < 0.001$). Resuscitation status was not associated with total visitor-minutes in univariate analysis (orders not to resuscitate, 319 ± 311 minutes vs. 323 ± 287 minutes without, $P = 0.79$).

As shown in Table 2, APACHE-III severity of illness lacked significance in the multivariate model and was not independently associated with differences in the time visitors spent in the rooms of these patients. However, race, diagnosis, and resuscitation status all showed

Table 2. Repeated Measures Model of Total Time Spent with Patients by all Visitor Groups

	Difference in Mean Minutes*	P Value
APACHE-III score	—	0.85
Race		0.003
White	+271	
Minority	Reference	
Diagnosis		0.02
Malignancy	+296	
AIDS	+58	
Cardiopulmonary	+11	
Dementia	Reference	
Do-not-resuscitate orders		0.04
Yes	+4	
No	Reference	

APACHE = Acute Physiology and Chronic Health Evaluation; AIDS = acquired immunodeficiency syndrome.

* Because the data in the model are rank transformed, the differences in unadjusted raw number of minutes of visit time per 24 hours associated with each characteristic are shown for anchoring purposes only.

significant independent associations. The unadjusted, untransformed raw number of minutes associated with each characteristic is displayed for illustrative purposes. Nonwhite minority patients received fewer visitor-minutes than did white patients ($\Delta = 271$ minutes, $P = 0.003$). Patients with a diagnosis of dementia received significantly fewer visitor-minutes, whereas patients with malignancy received significantly more visitor-minutes than did patients with other diagnoses ($\Delta = 296$ more minutes compared with patients with dementia, $P = 0.02$). Patients with do-not-resuscitate orders received more visitor-minutes than did patients without such orders, after adjusting for race, diagnosis, and severity of illness ($\Delta = 4$ untransformed, unadjusted minutes; $P = 0.04$).

Because these independent variables were likely to be differentially associated with total visitor-minutes according to the type of visitor, we also examined the within-subject effects for each of the four visitor types in the model. We examined the parameter estimates for each of the independent variables in the model against the dependent variables of total visitor-minutes attributable to attending physicians, house officers, nurses, and family.

Attending physicians' visitor-minutes were independently associated with resuscitation status and with diagnosis in the repeated-measures model. Do-not-resuscitate orders were independently associated with more visitor-minutes for attending physicians (12 ± 15 minutes vs. 13 ± 15 minutes, $P = 0.05$). The diagnoses of malignancy (14 ± 12 minutes, $P = 0.04$) and AIDS (19 ± 18 minutes, $P = 0.005$) were also associated with more attending physician visitor-minutes compared with patients with dementia (7 ± 8 minutes).

For house officers, none of these independent variables was significantly associated with total visitor-minutes. However, there was a trend toward less time for patients with dementia (26 ± 38 minutes, compared with 32 ± 46 minutes for malignancy, 38 ± 28 minutes for AIDS, and 45 ± 57 minutes for cardiopulmonary disease, $P = 0.19$).

For nurses, only diagnosis was significantly associated with total visitor-minutes. Nurses tended to spend more

time with patients with malignancy (103 ± 60 minutes, $P = 0.01$) and patients with dementia (115 ± 36 minutes, $P = 0.07$), compared with patients with AIDS (80 ± 72 minutes).

For families, race and severity of illness were independently associated with visitor-minutes. White families were associated with more family visitor-minutes (441 ± 504 minutes) than were nonwhite minority families (60 ± 99 minutes, $P < 0.001$). Higher patient APACHE-III scores were associated with fewer family visitor-minutes ($\beta = -1.1$, $P = 0.03$).

Race, Dementia, Resuscitation Status, and Visitors

To further understand the relation between dementia, resuscitation status, race, and visitor group, we explored the data for these respective subgroups. All 11 patients with dementia had do-not-resuscitate orders. Five (45%) of these patients with dementia received no family visits over the 24-hour period, compared with 2 (4%) of the patients with other diagnoses. All of the patients with dementia who received no family visits were African American. One of these patients also had no attending physician visits over the same 24 hours.

DISCUSSION

To our knowledge, only one previous study has reported direct observation of time spent with seriously ill patients, performing a subgroup analysis comparing the time residents spent on work rounds in the rooms of patients with and without do-not-resuscitate orders (15). Our direct observational study paints a broader picture of bedside visits to seriously ill patients with poor prognoses, from inside their rooms looking out. Our patients spent most of their time (>18.5 hours per day) alone. Although we do not know how much time they actually spent sleeping, even subtracting an idealized 8 hours yields an estimated 10.5 hours alone while awake per day. Visits from staff, especially nurses, were very frequent but extremely short. Only family visits were likely to last more than 5 minutes.

In this study, there was little evidence to support anecdotal reports that patients with do-not-resuscitate orders are abandoned by the staff. In multivariate analyses, do-not-resuscitate orders were actually associated with somewhat more visitor minutes after adjusting for severity of illness, race, and diagnosis. In the nursing home setting, Kellogg and Ramos (9) found similarly that the number of nursing home visits by attending physicians was slightly higher for patients with do-not-resuscitate orders, although their data were unadjusted and did not reach statistical significance.

Patient diagnosis was complexly associated with visit time. Overall, patients with dementia received the least

total visitor-minutes. In the repeated-measures model, patients with malignancy and AIDS received significantly more total visitor-minutes than did patients with cardiovascular disease or dementia. Attending physicians, nurses, and families all tended to spend more total visitor-minutes with patients with malignancy. House officers tended to spend equivalently greater amounts of visitor-minutes with patients with malignancy and cardiovascular disease, relative to with patients with dementia. Nurses, however, tended to spend more visitor-minutes with patients with dementia. This may be because nurses perceive that such patients have higher needs for time and attention, or they may simply feel more comfortable visiting patients who are unable to converse. Physicians, on the other hand, may feel less compelled to spend time with patients with whom they cannot converse. Furthermore, the sociologic associations of malignancy, compared with other diagnoses, may invite more time at the bedside among all visitor groups.

Minority patients were particularly at risk of having fewer visitor-minutes. This was not significant for staff, but was highly significant for family. It is uncertain whether this finding was due to limited access to the hospital, disrupted social support systems, socioeconomic issues, or other factors.

Patients with greater severity of illness received fewer visitor-minutes from their families. While this might seem paradoxical, one might surmise that the complex care delivery needs of such patients kept family out of their rooms.

The focus of previous nursing (16,17) and house officer (15,18) time-motion studies has been on how health care workers apportion work time. These studies have often reported only the percentage time in one activity relative to others rather than actual time. Further complicating comparisons, those studies from which one may glean data about actual patient contact time are not strictly comparable in method to our own. For example, Hendrickson et al. (17) studied registered nurses only and found that they spent an average of 56 minutes in direct contact with each patient during the day and evening shifts combined, excluding the night shift. By contrast, we studied both registered nurses and nursing assistants combined and found that these nursing personnel spent an average of 94 minutes in direct patient contact over 24 hours. Wray et al. (15) reported that house officers spent an average of 4.6 minutes per patient on work rounds, and did not study total patient contact time. By contrast, house officers in our study spent an average of 3.3 minutes per visit, but this figure included all visits, not just work rounds. To the best of our knowledge, the number and duration of attending physician and family visits in the hospital have not been previously studied.

Limitations

This study is preliminary and has limitations. Our sample size was small. Because we were comparing patients with and without do-not-resuscitate orders, we did not have a comparison group of nonterminally ill patients. And because it is the first study of its kind, there is no direct way to assess whether there has been any temporal trend in time spent with patients, either with terminally ill patients or with patients in general.

We also cannot completely rule out a Hawthorne effect through which our study itself may have affected the behavior of visitors. However, no members of the staff besides the intern and nurse were informed, and they were “distracted” from the study’s true purposes by being told only that the aim was to validate the diary they were keeping as part of a generic “time-motion study.” The camera position was unobtrusive. Informally, subjects reported that the daily routine, and not the camera, dictated their actions.

Implications

Although we cannot rule out the possibility that there were differences in the way patients with do-not-resuscitate orders were treated in the past, we found no evidence of staff discrimination toward patients with do-not-resuscitate orders now. To the extent that they are generalizable, these findings suggest that neither patients nor physicians should hesitate to initiate do-not-resuscitate orders because of fear that patients will be visited less frequently by staff.

However, these visits were very short, and it is uncertain how much meaningful human interaction can occur in the very short visits we observed. It is also uncertain how visit-minutes might be related to changing hospital staffing levels. Furthermore, patients with advanced dementia and members of minority groups seemed particularly vulnerable to spending time alone in the hospital.

The optimal number and duration of visits for hospitalized patients remains to be determined. Further study will be required to corroborate our findings and to understand the relation between bedside time and other measures of the quality of care, such as symptoms and patient satisfaction. We are undertaking such studies.

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