

Prevalence and Factors of Intensive Care Unit Conflicts

The Conflicus Study

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Rationale: Many sources of conflict exist in intensive care units (ICUs). Few studies recorded the prevalence, characteristics, and risk factors for conflicts in ICUs.

Objectives: To record the prevalence, characteristics, and risk factors for conflicts in ICUs.

Methods: One-day cross-sectional survey of ICU clinicians. Data on perceived conflicts in the week before the survey day were obtained from 7,498 ICU staff members (323 ICUs in 24 countries).

Measurements and Main Results: Conflicts were perceived by 5,268 (71.6%) respondents. Nurse-physician conflicts were the most common (32.6%), followed by conflicts among nurses (27.3%) and staff-relative conflicts (26.6%). The most common conflict-causing behaviors were personal animosity, mistrust, and communication gaps. During end-of-life care, the main sources of perceived conflict were lack of psychological support, absence of staff meetings, and problems with the decision-making process. Conflicts perceived as severe were reported by 3,974 (53%) respondents. Job strain was significantly associated with perceiving conflicts and with greater severity of perceived conflicts. Multivariate analysis identified 15 factors associated with perceived conflicts, of which 6 were potential targets for future intervention: staff working more than 40 h/wk,

(Received in original form November 17, 2008; accepted in final form July 27, 2009)

Supported by a grant from the European Society of Critical Care Medicine (ECCRN Established Investigator Award 2007).

* A complete listing of the Conflicus study investigators can be found in the online supplement.

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This article has an online supplement, which is accessible from this issue's table of contents at www.atsjournals.org

Am J Respir Crit Care Med Vol 180, pp 853-860, 2009

Originally Published in Press as DOI: 10.1164/rccm.200810-1614OC on July 30, 2009
Internet address: www.atsjournals.org

AT A GLANCE COMMENTARY

Scientific Knowledge on the Subject

Conflicts in the intensive care unit create obstacles to good communication and decision making and may threaten the quality of care. However, no study has evaluated the prevalence of, or the factors associated with, ICU conflicts.

What This Study Adds to the Field

Up to 70% of intensivists reported conflicts. These conflicts are perceived as severe in more than half the cases, and they are associated with increased job strain.

more than 15 ICU beds, caring for dying patients or providing pre- and postmortem care within the last week, symptom control not ensured jointly by physicians and nurses, and no routine unit-level meetings.

Conclusions: Over 70% of ICU workers reported perceived conflicts, which were often considered severe and were significantly associated with job strain. Workload, inadequate communication, and end-of-life care emerged as important potential targets for improvement.

Keywords: end-of-life; caregivers; nurses; family members; burnout

Intensive care units (ICUs) are probably the most stressful places in hospitals (1-3). To restore organ function and overall health in patients with acute life-threatening illnesses, ICU workers must often unravel a complex web of causative factors while making multiple treatment decisions in rapid succession (4). At the same time, they must provide clear and honest information to the patient or family, who are often struggling with emotional distress (5, 6). There may be insufficient time and energy available to identify and

work on sources of conflict within the ICU staff and with patients or families. Furthermore, when death becomes inevitable, conflicts related to end-of-life decisions (7) may occur within the ICU team, with consultants, and with the family (8–11).

Despite evidence that conflicts are common and harmful in the ICU (12, 13), no large study has recorded their prevalence, characteristics, and risk factors. In a study in patients with prolonged ICU stays, Studdert and colleagues identified conflicts for 31.8% of patients (14). Other studies focused on conflicts at the end of life. Although interviews of ICU directors suggested a low rate of conflicts (15), family members reported conflicts for up to 78% of patients in whom the appropriateness of continued life-supporting treatment was in doubt (16). Most of the conflicts occurred either between families and ICU staff members (8) or within the ICU team (17). Conflicts not only create distress, but also potentially affect quality of care (2, 18, 19). Thus, ICU conflicts have been shown to be strongly associated with burnout syndrome in nurses and physicians (12, 13). Furthermore, the rate of conflicts has been used to assess several interventions, such as proactive communication strategies (20) and ethics consultations (21). Finally, an intervention specifically designed to decrease conflicts surrounding decision-making in seven ICUs was evaluated (22). The intervention facilitated deliberative decision making without improving patient or surrogate satisfaction.

The objective of this study was to examine the prevalence, characteristics, and factors of ICU conflicts reported by ICU staff that occurred in the week before the survey day, in several parts of the world. Because we sought to assess the burden on ICU staff members, we focused on perceived conflicts without trying to achieve objective standardization of responses.

METHODS

Study Design

In 2006, the ethics section of the European Society of Intensive Care Medicine (ESICM) designed a 1-day cross-sectional study on conflicts in the ICU. A questionnaire designed to collect data on ICU conflicts (see the online supplement) was prepared by the ESICM Ethics section. The questionnaire was to be completed by all staff members working in each participating ICU on December 7, 2006.

Development of the Questionnaire

A panel composed of the ESICM members (physicians and nurses) used a five-step modified Delphi approach to develop a consensus about definitions of perceived ICU conflicts and the information to be collected during the study (Appendix 1). Suggestions made during the coordinators' meeting at the annual ESICM conference were incorporated. Questionnaire validation conducted in three centers led to changes in the order of items. Conflict was defined according to Studdert and colleagues, with modifications (14), as: "Dispute, disagreement, incompatibility, opposition, or difference of opinion involving more than one individual and related to the patient's management or to interpersonal conflict." ICU conflicts were described according to three categories of perceived characteristics: parties involved in the conflict, source of the conflict, and clinical impact and severity of the conflict.

Other Collected Variables

The ICU and respondent characteristics reported in Table 1 were collected. Three country characteristics taken from the World Health Organization website (<http://www.who.int/research/en/>) were recorded: number of physicians per 1,000 population, percentage of urban population in the country, and government expenditure on health. Because conflicts in the ICU may be associated with job strain, respondents were asked to complete a 12-item scale derived from the Job Content Questionnaire (<http://www.workhealth.org/strain/jsquest.html>) (23). This scale explores three domains (job demand, control, and social support) to measure the degree of job strain (24). The job strain score was

TABLE 1. INTENSIVE CARE UNIT CHARACTERISTICS

Variable	Number (%) or Median (Interquartile Ranges)
Public hospitals	255 (81.5)
Number of hospital beds	500 (264–845)
Hospitals with more than 5% of paying patients	64 (20.4)
University and university-affiliated hospitals	170 (54.3)
Type of ICU	
Medical	39 (12.5)
Surgical	25 (8)
Medical-surgical	223 (71.2)
Trauma	5 (1.6)
Cardiac	7 (2.2)
Other	14 (4.5)
Closed ICUs (as defined by the investigators)	185 (59.1)
Number of ICU beds	12 (8–18)
ICU mortality in 2005	16 (9.5–22)
Presence of a senior physician 24 h/d	235 (75.1)
Number of nurses per ICU	25 (14–40)
Number of physicians per ICU	6 (4–10)
Availability of an ethics consultant	142 (45.4)
Availability of a psychologist	177 (56.5)
Routine recording of ICU conflicts	52 (16.6)
Relevance of the topic of ICU conflicts, scored from 0–100	50 (30–80)

Definition of abbreviation: ICU = intensive care unit.

obtained by adding the control and social-support subscores, then subtracting the demand subscore ($[(\text{social support} + \text{control}) - \text{demand}]$). Therefore, the lower the job demand score, the higher the score and lower the job strain. Also, the higher the social support or the job control scores, the higher the score and the lower the job strain. Overall, the higher the total score, the lower the job strain.

Selection of Participating Countries and Centers

The ESICM Ethics section members (240 intensivists and nurses) were invited to participate in the study. Among those who agreed, 26 were national coordinators who represented 397 ICUs in 29 countries (Figure 1). Each national coordinator was asked to provide comments on the questionnaire; to translate the questionnaire into that country's language and to have the translated version validated by a national coordinator of another country having the same language or by another investigator from the same country, helped by physicians and nurses working in the same ICU; to invite adult ICUs in the national society to participate in the study; and to obtain approval from the ethics committee for each ICU.

In each ICU, one physician or nurse was the local investigator. Each local investigator received a copy of the research project and translated questionnaire and organized a local information meeting for ICU staff members in the relevant ICU 2 to 4 weeks before the study. Local investigators completed a form on ICU characteristics. Each local investigator recorded the number of intensivists scheduled to work in the ICU on the study day (December 7, 2006). As 9,274 clinicians in the 397 participating ICUs were scheduled to work on the study day, 9,274 questionnaires were sent to each local investigators.

Approval by Local or National Ethics Committees and Confidentiality

Ethics committee approval according to local legislation was mandatory for study participation. Failure to meet this requirement led to exclusion of six ICUs from the study.

Participating ICU physician and nurse staff members completed an anonymous questionnaire on perceived ICU conflicts over the last 7 days in their ICU.

Audit of the Database

Data entry was centralized and was performed by two technicians who used a double-keyboarding procedure. Inconsistent data on ICU characteristics were corrected by national coordinators. No effort was made to obtain missing data. The job strain score was computed only

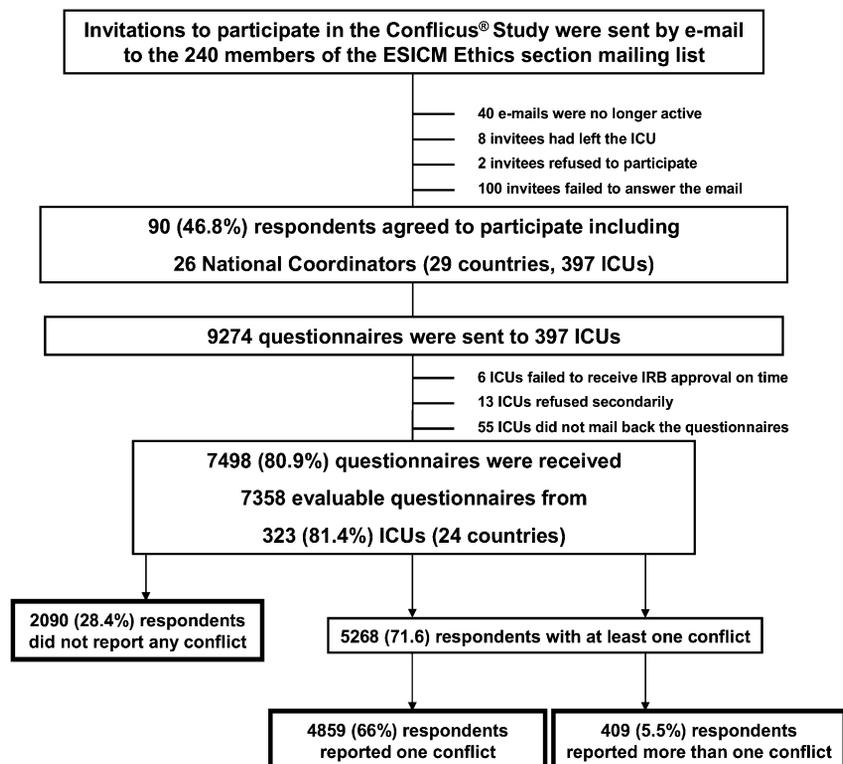


Figure 1. Study flow chart.

for those respondents who completed the 12-item scale (all but 574 of the 7,358 respondents).

Statistical Analysis

Continuous variables were reported as medians (interquartile ranges) and categorical variables as proportions. For between-group comparisons, we used the Wilcoxon rank-sum test for continuous variables and either the Pearson chi-square test or Fisher exact test, as appropriate, for categorical variables. Continuous variables were dichotomized using medians as cut-off values.

The variables were organized into three tiers: country, ICU, and respondent. To identify factors associated with reporting one or more conflicts, we built a three-tiered hierarchical logistic mixed model using the GLIMMIX procedure of the SAS software version 9.1 (SAS Institute, Cary, NC). The effects of country-based and ICU-based variables on the outcome (conflict[s] or no conflict) were included through both fixed and random effects. Multilevel modeling takes into account the hierarchical structure of the data, which may manifest as intraclass correlations. To obtain a conservative estimate of the standard error, a separate random-error term should be specified for each level of the analysis (25). Therefore, to avoid overestimating the significance of risk factors for reported conflicts, we took intraclass correlations into account, and we specified a separate random-error term for each tier. Variables potentially associated with reported conflicts that occurred were introduced into the multivariate model and selected using a backward approach. The hierarchical model comprised three levels: country (level 3), center (level 2), and respondent (level 1). All variables with *P* values less than 0.10 by univariate analysis were introduced into the multivariate model (Table 4). We did not correct for multiplicity of statistical tests. All tests were two-sided. All statistical tests were performed using the SAS software package, version 9.1.

RESULTS

We received 7,498 (81%) completed questionnaires from 323 (81%) ICUs in 24 (83%) countries (Figure 1). Table E1 in the online supplement reports the number of participants in each country. Among staff members working on the study day, 80% participated in the study. The 140 questionnaires with no answers

to more than 12 items were excluded. Among the remaining 7,358 respondents, 2,090 (28%) reported no perceived conflicts within the last week and 5,268 (72%) reported at least one perceived conflict; 409 (5.5%) respondents reported more than one perceived conflict. The prevalence of respondents reporting perceived conflicts varied considerably (from 26 to 100%) across countries.

ICU characteristics are reported in Table 1. ICUs had a median of 12 (interquartile range, 8–18) beds. The patient-to-nurse ratio was 2 (1–3) and the patient-to-physician ratio was 5 (2.5–6). An ethics consultant was available in 142 (45%) ICUs and a psychologist in 177 (56.5%) ICUs. Table 2 shows that about half the ICUs held routine unit-level meetings at least weekly and that 55 (18%) ICUs allowed unrestricted visitation. Decisions were routinely shared with family members in one-third of participating ICUs. Overall, nurses were involved in half the discussions and decisions to forgo life support. Symptom control at the end of life was ensured jointly by nurses and physicians in 65% of the ICUs.

Table 3 reports the characteristics of the respondents. Nurses and nurse assistants contributed 59.5% of the respondents.

Table 3 and Figure 2 depict the characteristics of ICU conflicts. One-third of conflicts occurred between ICU staff and patients or relatives and the remaining occurred within the ICU team. To assess the pathogenesis of conflicts, we asked respondents about sources of conflict and links to earlier events. The main reported sources of conflict were general behaviors (Figure 2A) and end-of-life care (Figure 2B). Among general behaviors perceived as causing conflicts, the most common were personal animosity, mistrust, and poor communication within the ICU team. The main perceived sources of conflict related to end-of-life care were lack of psychological support, absence of unit-level meetings, and problems with the decision-making process. Furthermore, 1,874 (25%) respondents believed that the conflict they reported was related to a previous conflict and 6,523 (87%) anticipated that the same type of conflict would recur in their ICU. Most respondents (5,248, 70%) believed that the reported conflict could have been prevented.

TABLE 2. INTENSIVE CARE UNIT ORGANIZATION

Variable	Number (%)
Nurse-physician interactions	
Participation of ICU nurses in daily rounds	286 (91.4)
Participation of ICU nurses in clinical research	154 (49.2)
Regular unit-level meetings (at least one/wk)	153 (48.9)
Availability of ICU working groups	216 (69)
Interactions with family members	
Provision of a family information leaflet	203 (64.8)
24-h visitation policy	55 (17.6)
Recent extension of visiting hours	114 (36.4)
Availability of a room for family information	235 (75.1)
Family members allowed to sleep in the ICU	72 (23)
Routine use of the shared decision-making model	104 (33.2)
Routine involvement of relatives in patient care, if desired	88 (28.1)
Family information provided jointly by nurses and physicians	142 (45.4)
Time slot dedicated specifically to family information each day	147 (47)
End-of-life care (4 centers with missing values)	
Nurses involved in EOL discussions	
Always or routinely	108 (35)
Frequently	71 (23)
Rarely or never	130 (42)
Nurses involved in EOL decisions	
Always or routinely	99 (32.1)
Frequently	75 (24.3)
Rarely or never	135 (43.6)
Routine information of relatives about EOL decisions	
Always or routinely	233 (75.4)
Frequently	35 (11.3)
Rarely or never	41 (13.3)
Nurses present at family end-of-life meetings	
Always or routinely	81 (26.2)
Frequently	67 (21.7)
Rarely or never	161 (52.1)
Who implements EOL decisions	
Nurses alone	7 (2)
Physicians alone	144 (46.7)
Both nurses and physicians	158 (51.3)
Who makes symptom-control decisions at the end of life	
Nurses alone	2 (0.6)
Physicians alone	107 (34.6)
Both nurses and physicians	200 (64.7)
Use of terminal extubation	
Always or routinely	20 (6.5)
Frequently	54 (17.5)
Rarely or never	235 (76)
Dying patients can be discharged to wards	162 (52.4)

Definition of abbreviations: EOL = end of life; ICU = intensive care unit.

To assess the magnitude of conflicts, the questionnaire included several response options: severe, dangerous, harmful, counterproductive, and hurtful (to the respondent). Respondents could select none, one, or several of these descriptors. Conflicts were perceived as "severe" by 3,974 (53%) respondents, as "dangerous" by 3,899 (52%) respondents, and as "harmful" by 6,253 (83%) respondents. Several other findings suggested that the reported conflicts constituted substantial problems. Thus, the job strain score was significantly lower (indicating more job strain) for respondents reporting at least one conflict, and job strain scores were also lower when conflicts were described as severe or dangerous (Figure 3). When interviewed about the effects of conflicts within the past 7 days on team cohesion, respondents reported that conflicts were harmful to relations within the ICU team in 92% of cases and to relations with consultants and families in 75% of cases. A possible harmful effect of conflicts within the past 7 days on quality of care was reported by 70% of respondents, and 44% of respondents reported a possible harmful effect on patient survival.

Several questionnaire items investigated conflict resolution. Only 3,000 (40%) conflicts were resolved at the time of the

TABLE 3. CHARACTERISTICS OF THE RESPONDENTS

Characteristics of the Respondents (N = 7,498)	Number (%) or Median (Interquartile Ranges)
Age	34 (28–42)
Female sex	5,316 (70.9)
Religiosity (0 not religious to 5 very religious)	2 (0–3)
Born in the country in which the respondent works (7,310 answers)	6,425 (87.9)
Graduated in the country in which the respondent works (7,105 answers)	6,520 (91.7)
Not married (7,105 answers)	2,874 (40.4)
Number with children	4,041 (53.9)
Job title in the ICU	
Nurse	3,300 (44)
Nursing assistant	1,161 (15.5)
Senior physician	595 (7.9)
Junior physician	521 (7)
Physiotherapist	359 (4.8)
Consultant	320 (4.3)
Head nurse	273 (3.6)
ICU head	145 (1.9)
Other	529 (7)
Unknown	295 (3.9)
Number of years spent working in the ICU	6 (2–12)
Hours worked per wk	40 (36–50)
Hours worked per shift	8 (8–12)
Number of wk since last vacation	12 (5–17)
Received training in ethics and communication	3,197 (40.4)
Number of dying patients cared for over the last wk	1 (0–2)
Number of end-of-life decisions implemented over the last wk	0 (0–1)
Number of deaths over the last wk	0 (0–2)
Receiving antidepressant therapy	592 (8.1)
Job Strain Scale: total score*	
Demand	5 (3–6)
Control	1 (0–1)
Social support	2 (1–3)
Parties involved in conflicts among the 5,268 respondents who reported at least one conflict	
Physicians and nurses	1,719 (32.6)
ICU nurses	1,437 (27.3)
ICU staff and family	1,402 (26.6)
ICU physicians	1,312 (24.9)
ICU staff and consultants	1,075 (20.4)
ICU staff and patients	906 (17.2)
ICU staff and physiotherapists	882 (16.7)

Definition of abbreviation: ICU = intensive care unit.

* The Job Strain Scale is a 12-item scale derived from the Job Content Questionnaire (<http://www.workhealth.org/strain/jsquest.html>). This scale explores three domains (job demand, control, and social support) to measure the degree of job strain. The total score is obtained by adding the control and social-support subscores then subtracting the demand subscore. Higher scores indicate less job strain.

survey. Informal debriefing and discussion was perceived to be the best means of resolving intrateam conflicts (80 and 84% of nurses and doctors, respectively). Compared with intrateam conflicts, conflicts between staff and patients/relatives less often led to the intervention of a consultant (42.8 vs. 57.6%, $P < 0.0001$), face-to-face debriefing (75.9 vs. 84.8%, $P < 0.0001$), or intensified communication within the ICU team (84.1 vs. 76.6%, $P < 0.0001$). However, conflicts between staff and patients/relatives more often resulted in patient transfer to another ICU or to a ward (13.5 vs. 7.5%, $P < 0.0001$), initiation of an ICU working group (48.3 vs. 42.7%, $P = 0.0004$), limitation of visiting hours for the relatives (39.1 vs. 25.9%, $P < 0.0001$), intensified communication with the relatives (80.6 vs. 67.1%, $P < 0.0001$), or legal action (16.3 vs. 9.8%, $P < 0.0001$).

By multivariate analysis, 15 factors were associated with conflicts within the past 7 days, including 6 factors potentially

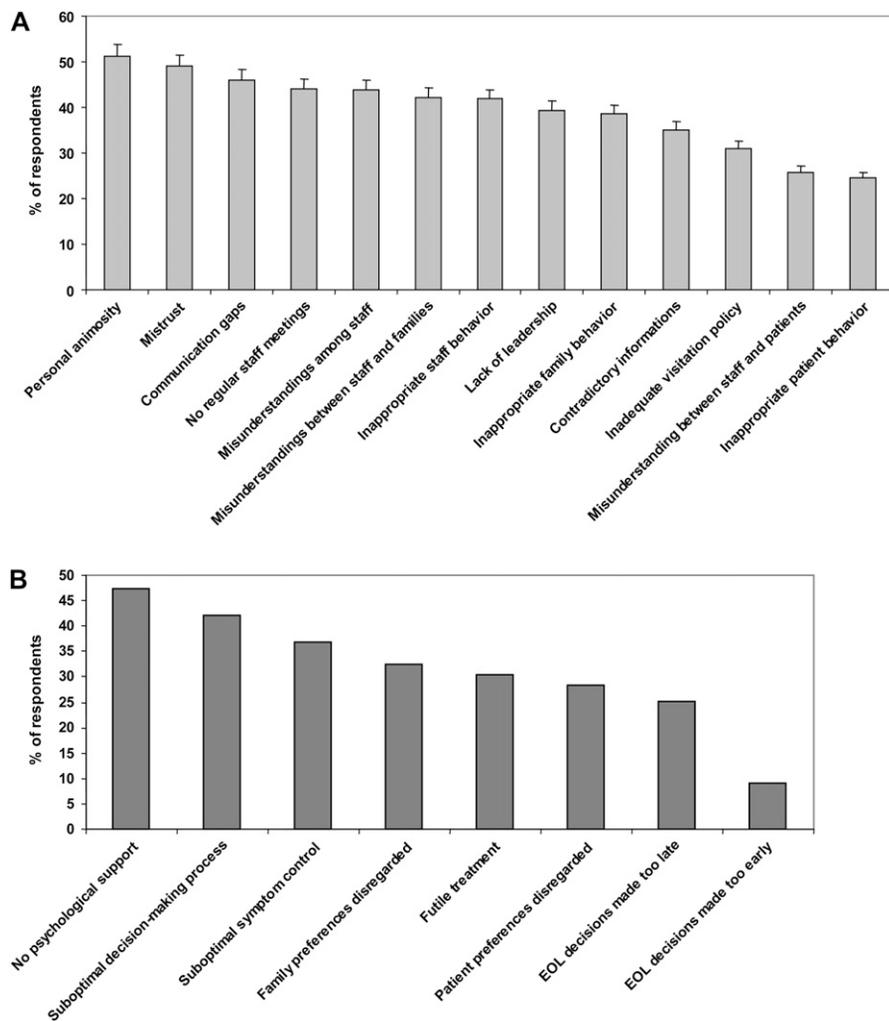


Figure 2. Sources of conflicts. (A) Sources of behavior-related conflicts. (B) Sources of conflicts associated with end-of-life care.

amenable to improvement (Table 4). The country itself was not independently associated with the prevalence of conflicts. The nine factors that were not potential targets for improvement were male sex of the respondent, age older than 34 years, being a parent, specific training in ethical issues, being the head of the ICU, being a junior physician, being a senior physician, being a nurse, and lower government health expenditure. Doctors were less likely to report conflicts than were other staff members. Of the six independent factors that were potential targets for improvement, four were associated with a higher prevalence of conflicts, namely, working more than 40 hours per week, having more than 15 beds in the ICU, caring for one or more dying patients over the last week, and providing pre-mortem and post-mortem care for at least one patient who died within the last week. Two other factors were associated with fewer conflicts: symptom control performed jointly by physicians and nurses and routine unit-level meetings. A sensitivity analysis limited to severe conflicts identified similar risk factors (data not shown).

DISCUSSION

In this large cross-sectional survey, we found that up to 70% of ICU staff members reported ICU conflicts. More than 80% of conflicts were perceived as more harmful than useful and half as severe or dangerous. Conflicts were significantly associated with job strain. Several factors associated with conflicts in this study may be amenable to specific preventive strategies.

This is the first large multicenter study on the incidence of conflicts reported by ICU staff. Moreover, no published studies report the prevalence of conflicts in acute care wards, emergency departments, operating rooms, or clinics. Only three previous studies investigated the prevalence of ICU conflicts, and they focused chiefly on conflicts involving, or reported by, patients and relatives. Conflicts occurred for nearly one-third of patients with prolonged ICU stays (14), the main sources of team-family conflicts being decisions about life-sustaining treatments and poor communication. Although ICU directors reported few conflicts (15), families and ICU physicians and nurses perceived conflicts for up to 80% of patients requiring treatment-limitation decisions (8, 16). Among 48 family members of ICU patients who participated in audiotaped interviews, 46% reported conflicts, most of which were team-family conflicts stemming from perceived poor communication or unprofessional behavior (8, 16). In a study involving semi-structured interviews of physicians and nurses, conflicts were reported for 78% of patients requiring treatment limitation (16). The main sources of conflict were decisions about life-sustaining treatment, communication, and pain control (16). These findings prompted studies of ways to address and to prevent conflicts surrounding ICU end-of-life care (9, 20, 21, 26).

This survey is the first study that provides information from a large number of ICU staff members in several countries. Moreover, respondents were given the opportunity to report all perceived conflicts and risk factors, including intrateam conflicts and conflicts unrelated to end-of-life care. A striking finding is

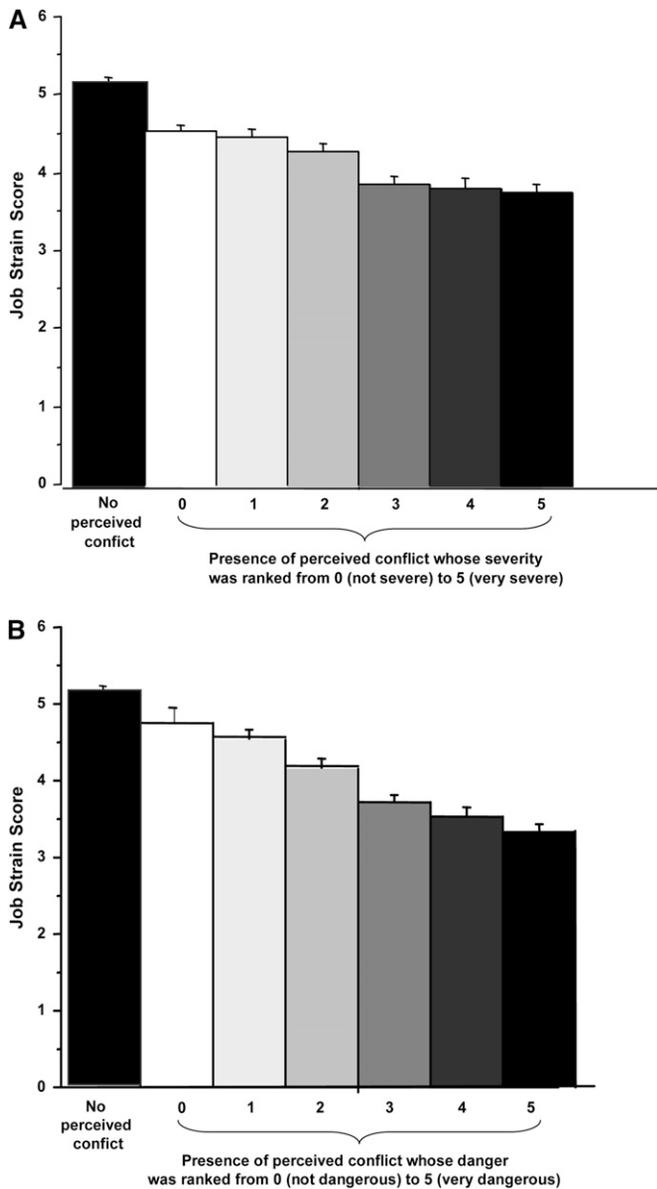


Figure 3. Impact of conflicts on job strain according to (A) perceived severity or (B) dangerousness of conflicts. Lower demand and higher control and social support lead to higher score and indicate less job strain; therefore, the total score is obtained by adding the control and social-support subscores then subtracting the demand subscore. Higher total scores indicate less job strain. P value < 0.0001 for all comparisons using the Kruskal-Wallis test between the level of severity or danger (ranked from 0–5) and the Job Strain Score.

that intrateam disputes accounted for the majority of conflicts, with only half the conflicts stemming from end-of-life care. In agreement with previous findings, poor communication within the ICU team, in general or during end-of-life care, was perceived as a common source of conflict. This finding and previous data support the usefulness of conflict-prevention strategies centered on ICU staff members.

Among the variables significantly associated with conflicts in our study, six may be amenable to change as part of conflict-reduction strategies. Although the length of the workweek and number of beds per ICU may seem difficult to change, previous studies indicate that decreasing the patient-to-nurse ratio to mitigate the physical and emotional strain placed on nurses improves patient safety, quality of care, and cost-effectiveness (12, 18, 19,

27). Regarding the number of ICU beds, the apparent contradiction between cost-effectiveness and the well-being of ICU workers requires further investigation (28). A valid evaluation would require integrating the cost of absenteeism, back pain, and high nurse turnover related to job dissatisfaction, as well as costs related to conflicts and to poor patient outcomes stemming from ICU size. We found that conflicts were less likely to occur in ICUs that held regular staff meetings. Previous studies indicate that multidisciplinary unit-level conferences for debriefing staff members are rarely held (29). Nurses have reported that it is difficult to speak up, that disagreements are not appropriately resolved, and that nurse input into decision making should be increased but is not well received by physicians (30). Moreover, discrepancies have been identified between nurses and physicians regarding the quality of collaboration and communication (17). These discrepancies were associated with suboptimal conflict resolution (29). Unit-level meetings, with the head nurse and ICU director rotating as facilitators, provide excellent opportunities for highlighting the valuable role played by nurses in the ICU, enhancing respect and understanding within the ICU team and ensuring that all team members send the same messages to patients and families (31). During unit-level meetings, team members can express and talk through their disagreements, identify and resolve sources of hostility, share information about patients and families, and communicate their uncertainties regarding medical decisions. Well-led meetings may promote a sense that all members of the team contribute equally to the chain of events that affects patient outcomes, family outcomes, ICU worker burnout, and the occurrence of conflicts (32). Surprisingly, training in ethics was associated with a higher rate of perceived conflicts. However, we did not include training in ethics among factors amenable to improvement, as we believe that selection bias occurred regarding this factor: ICU members who were more sensitive to conflict were probably more likely to have sought specific training in ethics and communication. Also, staff members with training in ethics were perhaps asked to assist with cases generating conflict.

Three of the six variables amenable to potential preventive strategies were related to end-of-life care. In previous studies, most conflicts occurred during the care of dying patients (8, 14, 16). In our study, both end-of-life care and a higher number of deaths were independently associated with conflicts. Therefore, ensuring that the same physician or nurse is not in charge of several dying patients at the same time might reduce conflicts. In addition, although death of patients is the strongest risk factor for burnout in ICU staff (13), improving communication to assist the decision-making process increases job satisfaction (33, 34). Explaining the principles of palliative care to families and having physicians and nurses work together to evaluate pain, anxiety, and other symptoms are simple means of decreasing conflicts while significantly improving the quality of death. Although studies are needed to confirm these results, we believe that available data are sufficiently convincing to warrant changes in clinical practice. We suggest testing interventions designed to reduce conflicts, such as decreasing the number of working hours, holding unit-level meetings at least once a week, and ensuring that each ICU staff member is responsible for no more than one dying patient at a time. Evaluation criteria should include patient outcomes (safety, quality of care, and quality of death), family-related variables (satisfaction, stress, and anxiety), and ICU staff-related variables (satisfaction, burnout, conflicts, and absenteeism), as well as cost-effectiveness criteria.

This study has several limitations. First, we defined conflicts and selected questionnaire items based on the existing literature and on suggestions from a panel of practicing ICU physicians and nurses. The definition of conflict used in our study may be open to criticism, and some of the types of reported conflicts may have

TABLE 4. FACTORS ASSOCIATED WITH INTENSIVE CARE UNIT CONFLICTS (MULTIVARIATE HIERARCHICAL ANALYSIS)

	Estimate	Odds Ratio*	95% CI	P Value
Intercept	3.0604			
Respondent characteristics				
Male sex	0.1871	1.21	1.05–1.40	0.0101
Older than 34 yr	−0.1603	0.85	0.74–0.98	0.0236
At least one child	−0.1414	0.87	0.75–1.00	0.0507
Works more than 40 h/wk	0.2561	1.29	1.11–1.50	0.0009
Training in ethics	0.1638	1.18	1.02–1.34	0.0089
Job title in ICU†				
Doctor	Reference	1	—	0.0005
Nurse	−0.1858	0.83	0.69–1.00	
Physiotherapist	−0.4911	0.61	0.45–0.83	
Other	−0.4567	0.63	0.49–0.82	
End-of-life care				
Cared for at least one patient who died within the last wk	0.1546	1.17	1.02–1.34	0.0270
Involved in pre-mortem and post-mortem care of at least one dying patient within the last wk	0.4248	1.53	1.33–1.76	<10 ^{−4}
Symptom control in dying patients ensured jointly by nurses and physicians	−0.2488	0.78	0.59–1.03	0.0753
Center characteristics				
Routine ICU unit-level meetings	−0.2725	0.76	0.57–1.02	0.0666
More than 15 ICU beds	0.2522	1.29	0.97–1.70	0.0771
Country characteristics				
Government health expenditure (as a percentage of total government expenditure)	−0.0240	0.98	0.96–1.00	0.0363
Covariance parameters	Estimate	Standard Error		
Country	0.2906	0.1199		
ICU	0.7595	0.0962		

Definition of abbreviations: CI = confidence interval; ICU = intensive care unit.

* Higher odds ratios indicate factors associated with more conflicts.

† The variable “job title” encompassed four groups: doctors (senior physicians, junior physicians, consultants, and ICU heads who were physicians), nurses (nurses, nurse assistants, and ICU heads who were nurses), physiotherapists, and other. “Doctors” was the reference category.

limited relevance. However, our finding that 80% of reported conflicts were perceived as severe or dangerous suggests that conflicts were believed to be major problems. Also, we are not able to tell how many of the respondents per ICU reported the same conflict. Therefore, we cannot separate conflicts that staff members experienced themselves from conflicts they perceived in others. Second, we did not collect data on the culture in each ICU, most notably how respondents would place their ICU on a line from a hierarchical/paternalistic environment to a democratic/equal-rights environment. However, if ICU culture affects conflict occurrence, and if ICU culture reflects the overall culture of the country where the ICU is located, one would expect to see major differences in conflicts between countries. No such differences were found in this study. Third, we were unable to separate chronic conflicts from acute conflicts. Respondents were perhaps more likely to focus on ongoing conflicts rather than on conflicts that were resolved during the last week. Conflict severity and resolution may vary according to time from the beginning of the conflict, and occasional conflicts within a team that works well together may have a different impact from conflicts within a climate of simmering anger and resentment. Respondents were asked to report conflicts that occurred within the last week. However, fewer than half the respondents reported that the conflict was resolved at the time of the study, about 80% believed that the same type of conflict was likely to recur, and about 20% indicated that the reported conflict was related to a previous conflict. Fourth, although data were obtained from 24 countries, the country distribution was skewed, with Brazil contributing 19% of ICUs and 21% of respondents, whereas the United States contributed only 2% of ICUs and 2% of respondents. Nevertheless, although the extent to which the participating ICUs and

respondents were representative of their country was unknown, the response rate in each ICU was 80%. Although the study cannot be taken as a faithful picture of ICU conflicts worldwide, the high rate of perceived conflict suggests that conflict in the ICU may be a universal phenomenon that should be addressed. The sampling bias suggests that the study may overestimate the number of conflicts. Efforts to design conflict-prevention strategies that are likely to be effective in many parts of the world may contribute to improve this perception. Fifth, given the number of respondents, the high Type I error might influence the final results for some covariates. Sixth, we did not use the recommended translation/back-translation method for translating our questionnaires. However, the questionnaires were completed by ICU staff members, who were more likely to understand our intent than patients would have been. Last, patients or families were not surveyed. Previous studies have provided data on conflicts involving patients and their relatives.

In summary, up to 70% of ICU workers reported perceived conflicts, which were usually considered deleterious and were significantly associated with reported job strain. Workload, communication, and end-of-life care emerged as potential targets for improvement. Multifaceted conflict-reducing interventions that target the well-being of all ICU professionals should be designed and evaluated.

Conflict of Interest Statement: E.A. received \$1,001 to \$5,000 from Pfizer France and \$1,001 to \$5,000 from Gilead France for serving on an advisory board, and \$10,001 to \$50,000 from Pfizer France in industry-sponsored grants for the Outcomerea Study Group. J-F.T. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. C.L.S. received up to \$1,000 as a consultant for Eli Lilly & Co., \$5,001 to \$10,000 from Novartis Corp for serving on a data steering committee, up to \$1,000 from Hutchinson Technology Incorporated for serving on a safety committee, \$5,001 to \$10,000 from Artisan Pharma, Inc. for serving on a data monitoring

committee, \$5,001 to \$10,000 from Eisai Corp for serving on a steering committee, up to \$1,000 from Eli Lilly in lecture fees, \$5,001 to \$10,000 from Takeda and \$1,001 to \$5,000 from Eisai Corp as an investigator in industry-sponsored grants. M.S. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. K.R. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. A.L. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. R.A. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. M.S. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. F.R. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. B.R. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. D.B. received \$1,001 to \$5,000 from Pfizer in lecture fees for a nonpromotional course in medical statistics and up to \$1,000 from GlaxoSmithKline in lecture fees for lectures about end of life in the intensive care unit. D.H. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. G.J. received \$1,001 to \$5,000 from AstraZeneca Hong Kong, \$1,001 to \$5,000 from Drager Medical, \$1,001 to \$5,000 from Fresenius Kabi, \$1,001 to \$5,000 from Gambro China, and \$1,001 to \$5,000 from Maquet AB in grants for educational activity—BASIC course development and delivery. A.F. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. P.A.-M. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. R.O. received \$1,000 to \$2,000 for external lectures from Abbott Laboratories Poland. J.B. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. M.D.V. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. A.V. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. A.K. received \$1,001 to \$5,000 from Pfizer, \$1,001 to \$5,000 from Lilly, and up to \$1,000 from Fresenius in lecture fees. S.C. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. L.K. received up to \$1,000 from Merck, Sharpe, and Dohme in nonpromotional lecture fees. K.H. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. F.A. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. A.K. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. H.G. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. T.K. received \$1,001 to \$5,000 for lectures on CAP/HAP diagnosis and treatment from Sanofi Aventis, \$5,001 to \$10,000 for the Department's Distinguished Lecturers Program 2007 to 2008, 2008 to 2009 from MSD. A.M. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. S.C. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript. B.S. does not have a financial relationship with a commercial entity that has an interest in the subject of this manuscript.

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