Perceived Inappropriateness of Care in the ICU
What to Make of the Clinician's Perspective?

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THE PATIENT'S PERSPECTIVE IS NOW RIGHTLY ACcorded a position of great importance in determining the quality of health care delivery. In the intensive care unit (ICU), for example, clinicians are no longer interested only in ensuring that patients survive to hospital discharge or avoid ventilator-associated pneumonia, but also in achieving long-term, quality-adjusted survival[1] for patients and avoiding posttraumatic stress among surrogate decision makers.[2] Yet the frontline clinicians who provide critical care have rarely been considered to be relevant stakeholders in determining whether the care they deliver is consistent with the care they should deliver.

The APPROPRICUS study, reported by Piers and colleagues in this issue of *JAMA*,[3] suggests that a new, more inclusive approach may be in order. Piers et al[3] examined perceived inappropriateness of care among 1651 ICU physicians and nurses providing care on a single day in 82 adult ICUs across Europe and Israel. Defining perceived inappropriateness of care as care that "clashes with [the clincian's] personal beliefs and/or professional knowledge," the authors found that more than one-fourth of clinicians believed they were providing inappropriate care during this 1 day alone. Roughly two-thirds of these clinicians reported providing care that was disproportionate (typically too intense) to what they believed was warranted for that patient, and one-third reported providing ICU care to 1 patient that they believed could better serve another.

The APPROPRICUS study yielded several additional findings of note. Perceived inappropriateness of care was found to be associated with clinicians' reported intentions to leave their jobs, raising concerns about the sustainability of the workforce necessary to provide critical care if this problem is not remedied. Clinicians practicing in ICUs rated as having suboptimal collaborative environments were more likely to report perceived inappropriateness of care, raising the possibility that center-level characteristics might be targets for interventions designed to reduce perceived inappropriateness of care. In addition, high levels of discordance were observed between clinicians (eg, attending physicians and nurses) in their views of the appropriateness of care for the same patient on the same day. The authors note that such discordance highlights the subjective nature of perceived inappropriateness of care and its potential to serve as a marker of poor communication, decision sharing, or job autonomy in the ICU. However, the same observation could instead signal a lack of construct validity of the measure, raising questions about how common or consequential perceived inappropriateness of care really is.

Overall, the APPROPRICUS study builds from smaller studies[4,5] to provide the best evidence to date regarding the epidemiology of perceived inappropriateness of care. Generalizing the results beyond European and Israeli ICUs is challenging because most of the ICUs studied used closed staffing models, low patient-to-intensivist ratios, and 24-hour attending intensivist supervision—charactertistics not shared by many US or Canadian ICUs. Nonetheless, the large and diverse sample, remarkably high response rate, strong conceptual model, and ability to link clinician observations to individual patients are all substantial strengths. Furthermore, findings such as discordant perceptions of inappropriate care may in fact be higher in the United States, where multiple attending physicians and consultants may be involved in care decisions. Thus, it is important to ask why such a large number of clinicians are providing care they perceive to be inappropriate, and what can or should be done about it?

If so many clinicians are providing care that is not motivated by its appropriateness, what then are they trying to accomplish? Are clinicians heeding the desires of surrogates against their own judgment or attempting to minimize disagreement among members of the clinical team? APPROPRICUS suggests that at least some ICU clinicians believe they are acting appropriately when they responsibly steward scarce resources, but future work will be needed to determine what else motivates ICU clinicians' provision of care. Even if other goals, such as promoting family members' interests, are more important than clinicians' vantage points, it is concerning that so many clinicians are providing care they perceive to be inappropriate.

See also p 2694.

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Ultimately, the specific implications of this study hinge on whether perceived inappropriateness of care is a valid and important outcome measure. Conceptually, providing care thought to be inappropriate could have important consequences for patients today, patients tomorrow, or clinicians themselves. First, perceived inappropriateness of care could engender retribution toward current patients or their families, degrading professional ethics and reducing the quality of care such patients receive. This possibility is supported by considerable face validity, but to date, no evidence.

Second, if repeated episodes of perceived inappropriateness of care increase clinicians' moral distress, then professionalism may erode over time or clinicians may leave the workforce altogether, both of which threaten the quality of care for future patients.[6] These possibilities are supported by correlational but not causal data. For example, the study by Piers et al[3] corroborates prior evidence that perceived inappropriateness of care is associated with burnout syndrome,[7,8] which is in turn associated with reduced productivity, reduced ratings of job performance, and greater intentions to leave one's present job.[9,10] However, none of these associations have been shown to meet traditional criteria for causality.[11] No temporal or dose-response relationships have been identified, and the strengths of the associations generally have been low. Perhaps most importantly, the bulk of data in this nascent field document associations between 2 concomitantly measured subjective end points, enabling several alternative explanations for the results. Does the provision of perceived inappropriateness of care cause clinicians to intend to leave their jobs or do otherwise disgruntled clinicians more commonly report both perceived inappropriateness of care and intentions to leave their jobs?

Third, if perceived inappropriateness of care represents a true threat to clinicians' moral integrity,[12] then reducing perceived inappropriateness of care may be important in its own right, without necessarily considering consequences for patients. Upholding clinicians' moral integrity or the preservation of their core moral beliefs requires that clinicians not be forced to provide care that they find so troubling that it would represent an act of self-betrayal and lead directly to moral harm.[13] This reasoning underlies arguments suggesting that physicians may make conscience-based refusals or conscientious objections to providing many forms of care. Such claims typically have been made to prevent clinicians from providing care they perceive to be wrong for the individual patient, such as those cited in two-thirds of the perceived inappropriateness of care cases in APPROPRICUS. However, conscientious objections conceivably could be based instead on concerns about distributive justice (cited in one-third of cases), if the clinicians believed that violating distributive justice was so wrong that doing so would betray their respective core moral identities.

There is as yet no consensus on what, if any, normative weight ought to be placed on clinicians' moral integrity as a factor governing quality in health care. Indeed, serious challenges have been levied against efforts to incorporate clinicians' values into health care provision.[6,14] Nonetheless, the study by Piers et al[3] raises the possibility that clinicians' values may already be influencing the provision of critical care, and that heterogeneity in such values may result in undue variations in practice.

Although the report by Piers et al[3] provides a hazy lens through which to view appropriateness of care, it yields more clarity than prior studies. Thus, the greatest contribution of APPROPRICUS may be to provide the clarion call needed to spur more rigorous study of what happens to clinicians and the care they provide when requests for care do not resonate with clinicians' conceptions of appropriateness. Such clinician-centered outcomes research, in other words, may usefully supplement the patient's perspective in gauging the quality of health care delivery.

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Perceptions of Appropriateness of Care Among European and Israeli Intensive Care Unit Nurses and Physicians

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Context Clinicians in intensive care units (ICUs) who perceive the care they provide as inappropriate experience moral distress and are at risk for burnout. This situation may jeopardize patient quality of care and increase staff turnover.

Objective To determine the prevalence of perceived inappropriateness of care among ICU clinicians and to identify patient-related situations, personal characteristics, and work-related characteristics associated with perceived inappropriateness of care.

Design, Setting, and Participants Cross-sectional evaluation on May 11, 2010, of 82 adult ICUs in 9 European countries and Israel. Participants were 1953 ICU nurses and physicians providing bedside care.

Main Outcome Measure Perceived inappropriateness of care, defined as a specific patient-care situation in which the clinician acts in a manner contrary to his or her personal and professional beliefs, as assessed using a questionnaire designed for the study.

Results Of 1651 respondents (median response rate, 93% overall; interquartile range, 82%-100% [medians 93% among nurses and 100% among physicians]), perceived inappropriateness of care in at least 1 patient was reported by 439 clinicians overall (27%; 95% CI, 24%-29%), 300 of 1218 were nurses (25%), 132 of 407 were physicians (32%), and 26 had missing answers describing job title. Of these 439 individuals, 397 reported 445 situations associated with perceived inappropriateness of care. The most common reports were perceived disproportionate care (290 situations [65%; 95% CI, 58%-73%], of which "too much care" was reported in 89% of situations, followed by "other patients would benefit more" (168 situations [38%; 95% CI, 32%-43%]). Independently associated with perceived inappropriateness of care rates both among nurses and physicians were symptom control decisions directed by physicians only (odds ratio [OR], 1.73; 95% CI, 1.17-2.56; $P = .006$); involvement of nurses in end-of-life decision making (OR, 0.76; 95% CI, 0.60-0.96; $P = .02$); good collaboration between nurses and physicians (OR, 0.72; 95% CI, 0.56-0.92; $P = .009$); and freedom to decide how to perform work-related tasks (OR, 0.72; 95% CI, 0.59-0.89; $P = .002$); while a high perceived workload was significantly associated among nurses only (OR, 1.49; 95% CI, 1.07-2.06; $P = .02$). Perceived inappropriateness of care was independently associated with higher intent to leave a job (OR, 1.65; 95% CI, 1.04-2.63; $P = .03$). In the subset of 69 ICUs for which patient data could be linked, clinicians reported received inappropriateness of care in 207 patients, representing 23% (95% CI, 20%-27%) of 883 ICU beds.

Conclusion Among a group of European and Israeli ICU clinicians, perceptions of inappropriate care were frequently reported and were inversely associated with factors indicating good teamwork.

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CLINICIANS PERCEIVE THE CARE they provide as inappropriate when they feel that it clashes with their personal beliefs and/or professional knowledge.[1] Intensive care unit (ICU) workers who provide care perceived as inappropriate experience acute moral distress and are at risk for burnout.[2] This situation may jeopardize the quality of care and increase staff turnover.[2-4]

The principal causes of moral distress reported in ICU nurses are delivery of futile care, unsuccessful patient advocacy, and communication of unrealistic prospects to the patients and families.[4-8] ICU physicians may be troubled by a perceived lack of power to make the clinical decision that most benefits a specific patient.[5] A survey among 504 Eu-

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ropean ICU physicians showed that 73% of units frequently admitted patients with no realistic hope of survival, although only 33% of the physicians felt that such patients should be admitted.[9] More recently, 87% of 114 Canadian ICU physician directors reported that futile care was provided in their ICU over the last year.[10] However, earlier studies of perceived inappropriateness of care in the ICU did not provide data linked to individual cases. Consequently, the extent of perceived inappropriateness of care in the ICU is unknown and the magnitude of situations causing moral distress may be underestimated.

The primary objective of this study was to determine the prevalence of perceived inappropriateness of care among clinicians in European and Israeli ICUs, to describe the patient-related situations associated with perceived inappropriateness of care, and to explore the level of agreement among clinicians concerning perceived inappropriateness of care. The secondary objective was to evaluate the hypothesis that perceived inappropriateness of care is associated not only with situational factors, but also with personal characteristics and work-related factors as well as with intentional job leave. The theoretical framework is given in FIGURE 1.[1-7,11-21]

METHODS

Study Design and Procedure

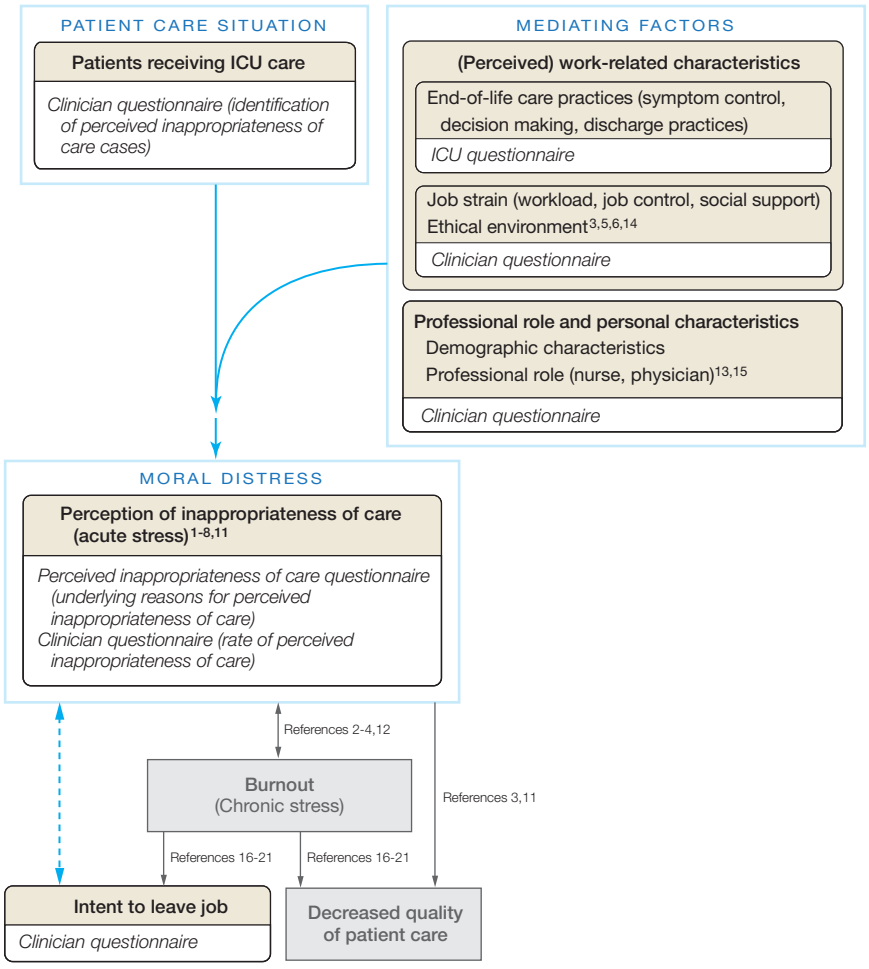
We conducted a single-day cross-sectional study among clinicians in European and Israeli adult ICUs including nurses, head nurses, and junior and senior ICU physicians. Ten members of the European Society of Intensive Care Medicine (ESICM) ethics section agreed to serve as national coordinators with 1 representative in each country (Belgium, France, Germany, Israel, Italy, Malta, Poland, Portugal, Switzerland, and The Netherlands). Each national coordinator recruited adult ICUs for the study and obtained approval from the relevant ethics committee for each ICU. In each ICU, a local investigator contacted and enrolled the ICU clinicians scheduled to work in the ICU on the study day and organized an information session during the week before the study.

The study took place from 8 AM, on Tuesday May 11, 2010, to 8 AM, on Wednesday May 12, 2010, in all participating countries except Israel, where the study took place on May 25, 2010, for organizational reasons. The local investigators were asked to establish a coded list of the patients admitted to the ICU on the survey day. This list was destroyed after data collection to preclude identification of the patients. The local investigators were asked to resend the questionnaires within 1 week, making recall bias unlikely.

Instruments

Three questionnaires were used for data collection: the ICU questionnaire, the clinician questionnaire, and the perceived inappropriateness of care questionnaire (eAppendices 1, 2, 3, available at http://www.jama.com).

Figure 1. Theoretical Framework for the Perception of Inappropriateness of Care and Study Instruments



ICU indicates intensive care unit. A patient care situation that is perceived as inappropriate according to the clinician's personal and work-related background may cause moral distress. When moral distress is repetitive, cannot be avoided, or is not acknowledged by the clinical team or superiors who might potentially affect the distress-causing situation, moral distress may accumulate and subsequently lead to job leave, burnout, decreased quality of patient care, or a combination of these outcomes. The relationship between perception of inappropriateness of care and intent to leave job was investigated in this research (dashed arrow); and the directionality of any association cannot be determined by the study design. Components of the theoretical framework shown in gray were not measured in this study.

The ICU Questionnaire. In each study ICU, the local investigator completed the ICU questionnaire about ICU characteristics (type of hospital and ICU; mortality rate; number of ICU clinicians; and availability of an ethics consultant, psychologist, or both) and end-of-life practices (symptom control, decision making, and discharge of dying patients to the wards).

The Clinician Questionnaire. Each nurse and physician working in the ICU on the day of the survey completed a questionnaire about personal characteristics (including age, sex, religion, professional role, and work experience), perceived work characteristics (job strain and ethical environment), and intent to leave. The respondents indicated the number of patients in their care on the survey day and the number of patients perceived as receiving inappropriate care.

The clinician questionnaire included the Job Strain Scale, a validated 12-item scale exploring job demand, control, and social support.[20,21] According to the job strain model developed by Karasek and Theorell,[20] job strain occurs when job demands (workload) are high and job control (sum of skill use and decision-making authority) is low. A third factor in this job strain model is social support (from the supervisor and coworkers), which protects against job strain. The total score is obtained by adding the control and social support subscores then subtracting the demand score. Higher scores indicate less job strain.

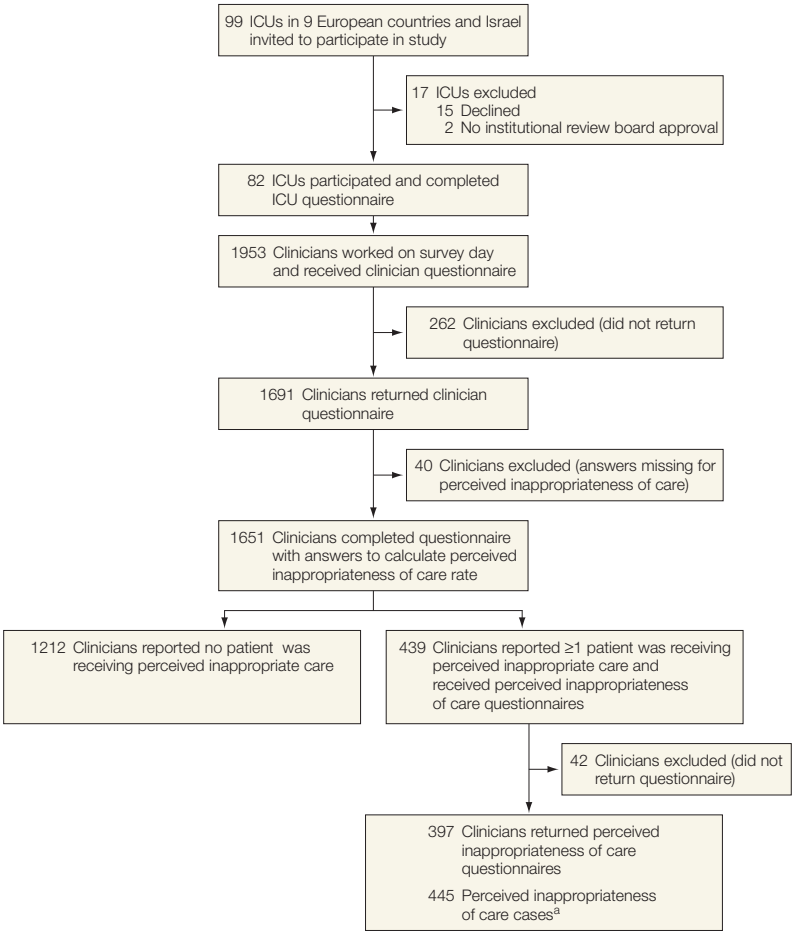
The ethical environment was defined as "the organizational conditions and practices that affect the way ethically difficult patient care problems are discussed and decided."[22] We assessed 7 aspects of the ethical work environment previously identified in scientific studies: tolerance of different opinions and values; possibility of ethical debate[5,6,22-24]; empathic understanding provided by colleagues; collaboration among colleagues[3,8,23,24]; nurse-physician collaboration[5,6]; presence of nurses during communication of end-of-life information; and active involvement of nurses in decision making.[25-27] These 7 items showed good internal reliability (Cronbach α, 0.79; $P < .001$).

The clinicians were asked to report whether they had thoughts of leaving their current job or profession. Past effective job leave due to disagreement about patient care was recorded.[5-7]

The Perceived Inappropriateness of Care Questionnaire. Clinicians who reported perceived inappropriateness of care were requested to complete the perceived inappropriateness of care questionnaire for each patient who was perceived as receiving inappropriate care. The questionnaire evaluated the reasons leading the clinician to consider that care was inappropriate. The patient code allowed us to link the questionnaire responses to data about the relevant patient and therefore to assess the level of agreement among clinicians regarding perceived inappropriateness of care for a given patient.

In this study, we defined perceived inappropriateness of care as a patient-care situation perceived by the respondent to fit 1 or more of the following statements or scenarios: (1) disproportion between the amount of care given and the expected prognosis (too much or too little care); (2) persistent nonadherence of the patient; (3) other patients would benefit more from ICU care; (4) inaccurate information was given to the patient or family; (5) the patient's wishes concerning treatment preferences were known but not respected; (6) one of the parties involved did not par-

Figure 2. Flow of Questionnaire Responses for All Participating Centers



ICU indicates intensive care unit.
[a]The number of clinicians who returned perceived inappropriateness of care questionnaires and the number of perceived inappropriateness of care cases differ because clinicians were asked to complete a questionnaire for each patient for whom they believed inappropriate care was given.

ticipate in decision making related to the patient; and (7) the patient was not getting good-quality care.

To build the study questionnaires, we asked a panel of experts in intensive care, palliative care, and communication to use a Delphi method to develop a consensus about the 7 scenarios and the content of the 3 questionnaires. The original English-language questionnaire was translated into the first language of each participating country then back-translated to English (Brislin method).

The prevalence of perceived inappropriateness of care was defined as the number of clinicians reporting perceived inappropriateness of care for at least 1 of their patients divided by the total number of surveyed clinicians in the same ICU. The perceived inappropriateness of care rate for each clinician was defined as the ratio of the number of patients with perceived inappropriateness of care reported by the clinician over the total number receiving care from the same clinician.

This study has been approved by the appropriate institutional review board in all participating ICUs and countries. Except for Belgium, where written informed consent was obtained from the participating clinicians, completing the questionnaire was taken as evidence of consent to study participation.

Statistical Analysis

Values were described as median or percentage. The χ^2 test was used to assess differences between nurses and physicians and to assess differences in patient characteristics between patient groups.

Two hierarchical multivariate models were built to identify ICU and clinician characteristics (fixed effects) associated with (1) the perceived inappropriateness of care rate and (2) intentional job leave. We modeled the correlation between clinicians working in the same ICU by including a random ICU effect, nested within a given country, to take into account a possible correlation between ICUs in the same country. The full model included all the variables of the ICU and clinician questionnaires. A stepwise backward selection procedure with a significance level of 5% was used to build the final model. All statistical analyses were performed using SAS statistical software version 9.2 and SPSS version 17.

RESULTS

Participating ICUs and Clinicians

Of the 99 ICUs invited to join the study, 82 participated and 17 declined (2 because of no institutional review board approval) (FIGURE 2). In total, 1953 clinicians worked on the survey day and were eligible to receive the questionnaire (median clinicians/ICU, 19.5; IQR, 15-29). The median response rate within participating ICUs was 93% overall (IQR, 82%-100%), 93% among nurses (IQR, 82%-100%), and 100% among physicians (IQR, 80%-100%). The characteristics of the ICUs and clinicians are described in TABLE 1, TABLE 2, TABLE 3, and TABLE 4.

Prevalence of Clinicians Reporting Perceived Inappropriateness of Care

Of the 1651 clinicians who provided responses for calculating the perceived inappropriateness of care rate (number of

Table 1. ICU Characteristics (N=82)

Characteristics	Value[a]
Type of hospital	
University and university affiliated	45/81 (55.6)
Public	31/81 (38.3)
Private	5/81 (6.2)
Hospital beds	
<250	9/82 (11.0)
250-500	26/82 (31.7)
500-750	19/82 (23.2)
>750	29/82 (34.1)
Individual(s) initiating ICU admissions	
Critical care physician	82/82 (100)
Specialist in the wards	33/82 (40.2)
Patients and relatives	5/82 (6.1)
ICU treatment provision by patient category	
Medical	78/82 (95.1)
Surgical	78/82 (95.1)
Trauma	61/82 (74.4)
Cardiac	53/82 (64.6)
Transplant	19/82 (23.2)
Burn	12/82 (14.6)
Other	11/82 (13.4)
Type of ICU	
Closed	61/81 (74.4)
Open	7/81 (8.5)
Mixed	13/81 (15.9)
Availability of an ethics consultant in the hospital	46/81 (56.8)
Nurses working 8-hour shifts	52/78 (66.7)
24-Hour presence of a senior intensivist	60/81 (74.1)
Availability of a psychologist/psychosocial worker	40/81 (59.4)
No. of ICU beds	11 (8-14.5)
No. of ICU admissions per year	650 (356-1085)
ICU mortality in 2009, %	12 (7-20)
ICU length of stay, d	5.2 (3.7-7.0)
No. of ICU nurses	30.5 (23.5-46.0)
Patient-to-nurse ratio	2.0 (2.0-2.7)
No. of ICU physicians	5.5 (3-9)
Junior	2 (1-4)
Senior	4 (2-6)
Patient-to-intensivist ratio	3.3 (2.6-6.0)

Abbreviation: ICU, intensive care unit.
[a] All data are shown as No./total No. (%) or median (interquartile range). Percentages may not sum to 100% due to rounding. Denominators may differ because of missing data (respondent did not fill in).

Table 2. ICU Characteristics for End-of-Life Care (N=82)

Characteristics of End-of-Life Care Practices	No./Total No. (%)[a]
Symptom control decisions	
Physicians only	32/81 (39.5)
Nurses and physicians	49/81 (60.5)
Timing for regular nurse/physician meetings about end-of-life care decisions	
Always or routinely	49/82 (59.7)
Frequently	11/82 (13.4)
Rarely or never	22/82 (26.8)
Nurses present during communication of end-of-life care information to family members	
Always or routinely	40/82 (48.7)
Frequently	16/82 (19.5)
Rarely or never	26/82 (31.7)
Use of terminal sedation	64/81 (79.0)
Use of terminal extubation	38/82 (46.3)
Discharge practices (patient type to destination)	
Intubated patients to the wards	17/82 (20.7)
Dying patients to the wards	54/82 (65.9)
Dying patients to their homes	25/77 (32.5)

Abbreviation: ICU, intensive care unit.
[a] Percentages may not sum to 100% due to rounding. Denominators may differ because of missing data (respondent did not fill in).

Table 3. Clinician Characteristics

Characteristics	No./Total No. (%) of Clinicians (n = 1691)[a]
Age, median (IQR), y	34 (28-42)
Female sex	1108/1686 (65.7)
Resides with partner	1207/1665 (72.5)
Has children	833/1669 (49.9)
Country	
Belgium	379/1691 (22.4)
France	302/1691 (17.9)
Germany	202/1691 (11.9)
Israel	33/1691 (2.0)
Italy	78/1691 (4.6)
Malta	37/1691 (2.2)
Poland	112/1691 (6.6)
Portugal	169/1691 (10.0)
Switzerland	231/1691 (13.7)
The Netherlands	148/1691 (8.8)
Religion or religious status	
Roman Catholic	808/1676 (48.2)
Protestant	133/1676 (7.9)
Muslim	47/1676 (2.8)
Jewish	36/1676 (2.1)
Buddhist	11/1676 (0.7)
Not religious	504/1676 (30.1)
Other	38/1676 (2.3)
"I do not wish to answer this question"	99/1676 (5.9)
Importance of religion (1 very important to 4 not important), median (IQR)	3 (2-4)

Abbreviation: IQR, interquartile range.
[a] Data are shown as No./total No. (%) unless otherwise indicated. Percentages may not sum to 100% due to rounding. Denominators may differ because of missing data (respondent did not fill in).

patients with perceived inappropriateness of care over the total number receiving care from the same clinician), 439 reported perceived inappropriateness of care in at least 1 patient (27%; 95% CI, 24%-29%; Figure 2) (range across countries, 8%-49%). Of the 1218 nurses who completed the perceived inappropriateness of care questionnaire, each provided care to a median of 2 patients (IQR, 1-3); among them, 300 reported perceived inappropriateness of care (25%; 95% CI, 22%-27%). The 407 ICU physicians provided care to a median of 6 patients (IQR, 4-9) and among them, 132 (32%; 95% CI, 27%-38%) reported perceived inappropriateness of care in at least 1 of their patients. Seven of 26 clinicians failed to indicate their job title (nurse or physician) in the questionnaire.

Reasons for Perceived Inappropriateness of Care

In all, 397 clinicians completed 445 perceived inappropriateness of care questionnaires (Figure 2). The most common reported reason for perceived inappropriateness of care was perceived disproportionate care (65%) (FIGURE 3); in 89% of these cases, the amount of care was perceived as excessive and in 11% as insufficient. Disproportionate care was the leading reason for perceived inappropriateness of care among nurses (182/286, 64%) and physicians (99/144, 69%) (15 answers missing on professional role, $P = .33$). The second most common reason for perceived inappropriateness of care was a feeling that other patients would benefit more from ICU care than the present patient (38%) (Figure 3), This feeling of distributive injustice was significantly more common among physicians (64/144, 44%) than among nurses (98/286, 34%) ($P = .05$). Observing a lack of participation in decision making, persistent nonadherence of the patient, a lack of accurate information giving, perceptions of poor-quality patient care, and disregarding a patient's wishes were less frequently given as reasons to report inappropriateness of care in this study (Figure 3).

Of the 379 reports of perceived inappropriateness of care for which this information was available, 237 (63%; 95% CI, 55%-70%) stated that similar situations were common in the ICU. The recurrence of situations was more often reported by nurses when compared with physicians (73% vs 43%; $P<.001$). In 214 of 377 reports (68 missing this response; 57% [95% CI, 49%-64%]), the clinician was not confident that the situation associated with perceived inappropriateness of care would be resolved in the near future (nurses 39% vs physicians 48%; $P=.08$). More nurses, when compared with physicians, were quite, very, or strongly distressed by the perception of inappropriate care (68% [165/241] in nurses compared with 55% [71/128] in physicians; $P=.01$).

Agreement Between Different Clinicians Caring for the Same Patient

Patient codes were correctly recorded in 69 ICUs (FIGURE 4). Perceived inappropriateness of care was reported for 207 patients, corresponding with 23% of 883 ICU beds (95% CI, 20%-27%). For 136 of these patients (66%; 95% CI, 55%-77%), a single clinician, who in most cases was a nurse vs a physician, reported perceived inappropriateness of care (71% vs 29%; Figure 4). For 71 of the 207 patients (34%; 95% CI, 26%-42%), more than 1 clinician reported perceived inappropriateness of care; and in 66% of these patients (45/68 [≥1 professional role unknown in 3 cases]), at least 1 nurse and 1 physician reported the same view (Figure 4). These 71 patients represent 8% (95% CI, 6%-10%) of the 883 ICU beds.

Except for a longer length of stay, no other patient characteristics were associated with agreement on appropriateness of care (eTable 1).

Factors Related to Perceived Inappropriateness of Care

The perceived inappropriateness of care rate is the ratio of the number of patients perceived as receiving inappropriate care, as reported by the clinician, over the total number of patients receiving care from the clinician. The results of univariate analysis are presented in the online supplement (eTable 2).

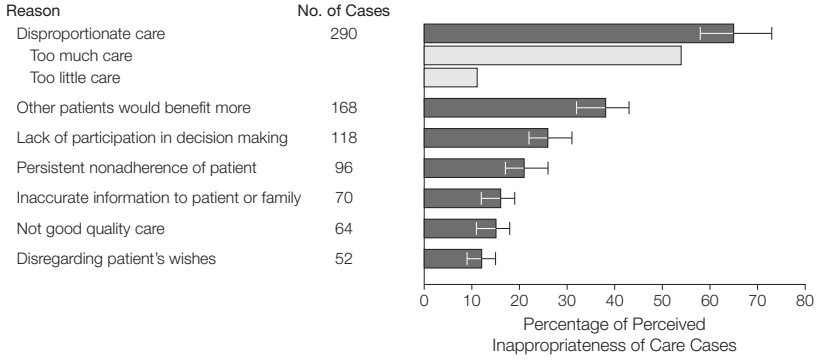
Multivariate analysis revealed that the following factors were independently associated with lower perceived inappropriateness of care rates (fixed effects): (1) decisions about symptom control shared by nurses and physicians as opposed to being made by the physicians only; (2) involvement of

Table 4. Clinician Characteristics in the Work Setting

Characteristics (n = 1691)	No./Total No. (%)[a]
Professional role in the ICU	
Nurse	
Nurse	1115/1685 (66.2)
Head nurse	48/1685 (2.8)
Nursing assistant	91/1685 (5.4)
Nursing school student	10/1685 (0.6)
Physician	
Junior physician	180/1685 (10.7)
Senior physician	198/1685 (11.7)
Head of ICU	32/1685 (1.9)
"I do not wish to answer this question"	11/1685 (0.7)
Years working in ICU, median (IQR)	6 (2-14)
Hours worked per week, median (IQR)	40 (35-42)
Working night shifts	1393/1644 (84.7)
If night shifts, number per month, median (IQR)	5 (3-6)
Participation in an ICU working group	552/1654 (33.4)
Job Strain Scale, median (IQR)	
Total score (–3 most job strain to 9 least job strain)	5 (3-7)
Demand score (0 lowest to 3 highest)	2 (1-3)
Job control score (0 lowest to 5 highest)	4 (3-4)
Social support score (0 lowest to 4 highest)	4 (2-4)
Ethical environment	
Tolerance of different opinions and values	1330/1661 (80.0)
Ethical debate possible	1226/1657 (74.0)
Empathic understanding of colleagues	1481/1664 (89.0)
Good collaboration among colleagues	1600/1676 (95.5)
Good nurse-physician collaboration	1254/1654 (75.8)
Presence of nurse during EOL communication	1073/1657 (64.8)
Involvement of nurses in EOL decision making	857/1648 (52.0)

Abbreviations: EOL, end-of-life; IQR, interquartile range.
[a] Data are shown as No./total No. (%) unless otherwise indicated. Percentages may not add up to 100% due to rounding. Denominators may differ because of missing data (respondent did not fill in).

Figure 3. Reasons and Rates of Perceived Inappropriateness of Care Reported by Clinicians



Error bars indicate 95% CIs.

nurses in end-of-life decisions; (3) good collaboration between nurses and physicians; (4) work autonomy; and (5) perceived lower workload, only among nurses (TABLE 5).

The perceived inappropriateness of care rates were correlated with one another within ICUs and countries (random effect), showing some degree of homogeneity in perceived inappropriateness of care rates in ICUs within a given country.

Intent to Leave

Nine percent of clinicians (95% CI, 7%-11%) left a previous job because of disagreements related to patient care (147/1593; 58 answers missing). More nurses compared with physicians (10% vs 6%) reported past effective job leave ($P=.02$). Almost one-third of the respondents (31%; 95% CI, 28%-33%) had thoughts about leaving their current job (500/1630; unreported professional role for 21; 27% physicians vs 32% nurses; $P=.08$).

Perceived inappropriateness of care was independently associated with higher intentional leave from a job (Table 5). Being a nurse or a physician had no independent effect on job departure (Table 5).

COMMENT

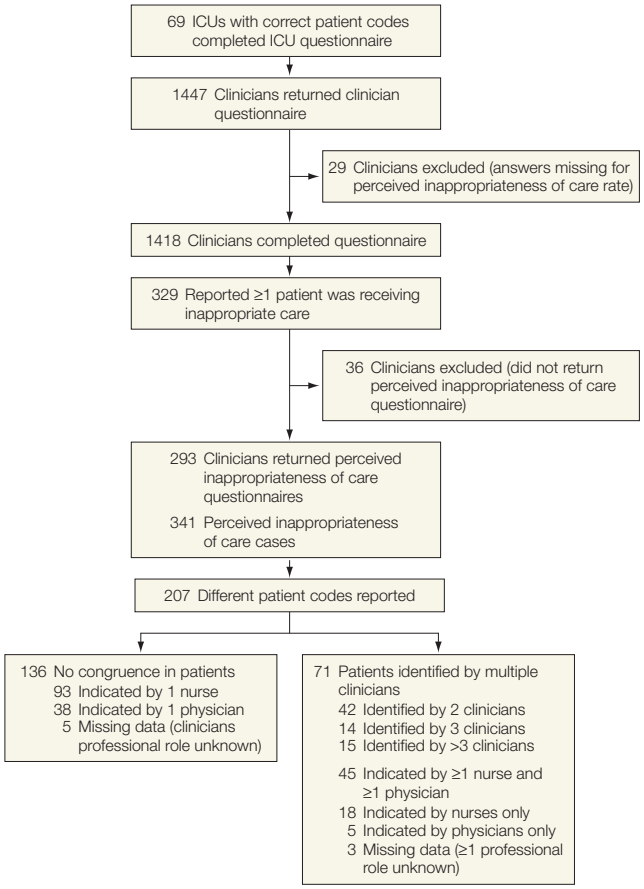
To our knowledge, this is the first large-scale observational study describing perceptions of inappropriate care linked to patient-care situations both in ICU nurses and ICU physicians involved in direct patient care. We found that about 1 in 4 ICU nurses and 1 in 3 ICU physicians believed that they delivered inappropriate care to at least 1 of their patients on the day of the survey. Most of the respondents indicated that similar situations were common in their ICU, and more than half were not confident that these situations would be resolved in the near future.

Repeated perceived inappropriateness of care may strongly influence perceptions of a new patient care situation and as such, affect the quality of patient care.[3,4,12] Moreover, in our study perceived inappropriateness of care was independently associated with intentional job leave both in nurses and physicians.

The most commonly reported reason for perceived inappropriateness of care was excessive intensity of care. In the ETHICUS study (end-of-life practices in European intensive care units), 89% of ICU physicians reported feeling comfortable with the end-of-life decisions they had made.[28] In our study, end-of-life decisions were mostly reported as being made too late or too infrequently. In addition to disproportionate care inducing perceived inappropriateness of care, a perceived failure to observe distributive justice was common, most notably among physicians.[25,29,30]

For two-thirds of patients receiving care from more than 1 respondent, only 1 respondent reported perceived inappropriateness of care. No severity of illness–related characteristics of the ICUs such as average ICU stay length or ICU mortality were significantly related to perceived inappropriateness of care. In addition, the prevalence of perceived inappropriateness of care varied widely across countries and across ICUs and clinicians within a given country. These data underline the subjective nature of perceived inappropriateness of care.[5,13,15,31] The high variability in judgement about appropriateness of care reflects that an individual clinician's judgement is a personal issue related to the clinician's own world view and is therefore colored by his or her

Figure 4. Flow of Questionnaire Responses With Patient Codes



ICU indicates intensive care unit.
[a]The number of clinicians who returned perceived inappropriateness of care questionnaires and the number of perceived inappropriateness of care cases differ because clinicians were asked to complete a questionnaire for each patient in whom they believed inappropriate care was given.

own emotions, attitudes, backgrounds, and beliefs.[32-37]

As such, perceived inappropriateness of care will always be part of health care; however, in those workplaces with higher prevalence of perceived inappropriateness of care, there are organizational factors that are intensifying or not helping clinicians to cope with perceived inappropriateness of care.[3,22,23,32,37] In our study, the variability in perceived inappropriateness of care was largely associated with differences in the ethical environment across ICUs. For example, perceived inappropriateness of care was less common in ICUs in which physicians and nurses had a certain degree of job autonomy, an acceptable workload, and a high level of interdisciplinary collaboration and decision making. Interventions aimed at improving these factors may decrease the likelihood of perceived inappropriateness of care via both an effect on subjective determinants of perceived inappropriateness of care and improved objective matching of the level of care to the expected outcome.

Another interesting finding from our study is the strong link between perceived excessive workload and perceived inappropriateness of care among the nurses only. Conceivably, nurses may be more likely to suffer from a perceived imbalance between the efforts they expend in caring for the patients and the perceived likelihood that their efforts will be rewarded by better patient outcomes.[38] Furthermore, nurses spend considerable time at the bedside and are consequently more acutely aware of the suffering of their patients than are the physicians.[5,15,39,40] Another possible factor is that the medical decisions lie chiefly in the hands of the physicians, with the nurses being asked to accept and to execute those decisions.[15,39,40] Perceived powerlessness is a key determinant of moral distress in nurses and is related to a lack of collaboration in patient-care decision making.[5,23,33] Integrating the perspectives of nurses and the physicians may lead not only to greater mutual understanding with fewer conflicts,[41] but also to better end-of-life decision making and care for the patients and their families.[13,39,42-46] Teaching individual ICU clinicians to create a symbolic distance from their work experiences and outcomes by becoming aware of their own personal values and beliefs might be another effective intervention.[32,38,47,48] Re-

Table 5. Hierarchical Multivariate Regression Analyses

Full Multivariate Models					
Perceived Inappropriateness of Care Rate[a]			Intention to Leave Job[b]		
Factors	OR (95% CI)	*P* Value	Factors	OR (95% CI)	*P* Value
Symptom control decisions (physicians only vs nurses and physicians together)	1.73 (1.17-2.56)	.006	Perceived inappropriateness of care rate	1.65 (1.04-2.63)	.03
Involvement of nurses in EOL decisions (agree vs not agree)	0.76 (0.60-0.96)	.02	Patient-to-nurse ratio	1.41 (1.07-1.85)	.02
Nurse-physician collaboration (good vs poor)	0.72 (0.56-0.92)	.009	Availability of psychologist/psychosocial worker (agree vs not agree)	0.71 (0.51-0.98)	.04
Freedom to decide how to facilitate own work (agree vs not agree)	0.72 (0.59-0.89)	.002	Ethical debate possible (agree vs not agree)	0.67 (0.50-0.89)	.007
Interaction between role and perceived workload (nurse with high workload vs nurse without high workload)	1.49 (1.07-2.06)	.02	Involvement of nurses in EOL decisions (agree vs not agree)	0.74 (0.56-0.98)	.04
Physician with high workload vs physician without high workload	0.81 (0.56-1.19)	.29	High workload (agree vs not agree)	1.38 (1.04-1.58)	.03
			Inadequate time to complete work (agree vs not agree)	1.57 (1.38-2.10)	.002
			No repetitive work (agree vs not agree)	0.76 (0.58-0.99)	.04
			Job requires creativity (agree vs not agree)	0.69 (0.52-0.92)	.01
			Freedom to decide how to do your work (agree vs not agree)	0.75 (0.57-0.97)	.03
			Working with helpful people (agree vs not agree)	0.57 (0.34-0.96)	.03
			Working with people who take a personal interest (agree vs not agree)	0.60 (0.45-0.81)	.001
Covariance parameter	**Estimate (95% CI)**		**Covariance parameter**	**Estimate (95% CI)**	
ICU, nested within country	0.49 (0.32-0.84)		ICU, nested within country	0.17 (0.013-0.35)	

Abbreviations: EOL, end of life; ICU, intensive care unit; OR, odds ratio.

[a] Variables from the ICU questionnaire: hospital (type, number of beds, availability of ethics consultant); type of patients (medical, surgical, trauma, cardiac, transplant, burn patient); number of ICU beds; number of ICU admissions per year; ICU mortality; mean length of stay; type (open, mixed, or closed); number of nurses; nurses working 8- or 12-hour shifts; number of ICU physicians; availability of junior intensivist 24 hours per day; availability of senior intensivist 24 hours per day; availability of psychosocial worker; regarding ICU end-of-life care, decisions about symptom control; regular meetings between nurses and physicians for end-of-life decisions, performance of terminal sedation; performance of terminal extubation; possibility of discharging intubated patients to the wards; possibility of discharging dying patients to the wards; and the possibility of discharging dying patients home. Variables from the clinician questionnaire: demographic characteristics (age, sex, partner, children, religion, and importance of religion); work experience in the ICU; average working hours; working nightshifts or not; performing ICU research or participating in an ICU working group; professional role (nurse, physician); job strain (12-item questionnaire involving demand, control, and support); and 7 items regarding the ethical environment.

[b] Variables included in the full multivariate model for intentional job leave include the same variables used in footnote a plus the perceived inappropriateness of care rate.

alizing that there are different ways of thinking about moral issues can help the clinicians understand their own process of decision making and tolerate differences both in other clinicians' moral reasoning and decision making and in patients'/families' moral reasoning.[11,35,37] As such, disagreeing on the appropriateness of care and openly discussing these different views may be the starting point of good quality decision making truly adapted to the needs and preferences of the patient (or the family in case of incompetence).[34,37,47-49]

The challenge for ICU managers is thus to create ICUs in which self-reflection, mutual trust, open communication, and shared decision making are encouraged in order to improve the well-being of the individual clinicians and, thereby, the quality of patient care.

Limitations and Further Studies

First, the study was not facilitated in a randomly selected sample of countries and ICUs. We chose to work with motivated national coordinators and local investigators to obtain high response rates and therefore to draw sound conclusions about the participating ICUs.

Second, patient coding was not performed in 13 of the 82 ICUs and our evaluation of agreement among clinicians regarding perceived inappropriateness of care for individual patients was consequently incomplete.

Third, a longitudinal study design would be needed to infer causal relationships between perceived inappropriateness of care and burnout or intent to leave. A longitudinal study might also allow an evaluation of the moral residue left by each instance of perceived inappropriateness of care in a given clinician.[3,4,12]

In conclusion, perceived inappropriateness of care is common among nurses and physicians in ICUs and is significantly associated with an intent to leave the current clinical position, suggesting a major impact on clinician well-being. The main reported reason for perceived inappropriateness of care is a mismatch between the level of care and the expected patient outcome, usually in the direction of perceived excess intensity of care. Perceived inappropriateness of care is a subjective factor that does not necessarily indicate a failure to adhere to recommendations for patient care but that may serve as a marker for inadequate communication, decision sharing, and job autonomy within the ICU.

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