Withholding and Withdrawal of Life-Sustaining Treatments in Intensive Care Units in Asia

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**IMPORTANCE** Little data exist on end-of-life care practices in intensive care units (ICUs) in Asia.

**OBJECTIVE** To describe physicians’ attitudes toward withholding and withdrawal of life-sustaining treatments in end-of-life care and to evaluate factors associated with observed attitudes.

**DESIGN, SETTING, AND PARTICIPANTS** Self-administered structured and scenario-based survey conducted among 1465 physicians (response rate, 59.6%) who manage patients in ICUs (May-December 2012) at 466 ICUs (response rate, 59.4%) in 16 Asian countries and regions.

**RESULTS** For patients with no real chance of recovering a meaningful life, 1029 respondents (70.2%) reported almost always or often withholding whereas 303 (20.7%) reported almost always or often withdrawing life-sustaining treatments; 1092 respondents (74.5%) deemed withholding and withdrawal ethically different. The majority of respondents reported that vasopressors, hemodialysis, and antibiotics could usually be withheld or withdrawn in end-of-life care, but not enteral feeding, intravenous fluids, and oral suctioning. For severe hypoxic-ischemic encephalopathy after cardiac arrest, 1201 respondents (82.0% [range between countries, 48.4%-100%]) would implement do-not-resuscitate orders, but 788 (53.8% [range, 6.1%-87.2%]) would maintain mechanical ventilation and start antibiotics and vasopressors if indicated. On multivariable analysis, refusal to implement do-not-resuscitate orders was more likely with physicians who did not value families’ or surrogates’ requests (adjusted odds ratio [AOR], 1.67 [95% CI, 1.16-2.40]; P < .006), who were uncomfortable discussing end-of-life care (AOR, 2.38 [95% CI, 1.62-3.51]; P < .001), who perceived greater legal risk (AOR, 1.92 [95% CI, 1.26-2.94]; P = .002), and in low- to middle-income economies (AOR, 2.73 [95% CI, 1.56-4.76]; P < .001). Nonimplementation was less likely with physicians of Protestant (AOR, 0.36 [95% CI, 0.16-0.80]; P = .01) and Catholic (AOR, 0.22 [95% CI, 0.09-0.58]; P = .002) faiths, and when out-of-pocket health care expenditure increased (AOR, 0.98 per percentage of total health care expenditure [95% CI, 0.97-0.99]; P = .02).

**CONCLUSIONS AND RELEVANCE** Whereas physicians in ICUs in Asia reported that they often withheld but seldom withdrew life-sustaining treatments at the end of life, attitudes and practice varied widely across countries and regions. Multiple factors related to country or region, including economic, cultural, religious, and legal differences, as well as personal attitudes, were associated with these variations. Initiatives to improve end-of-life care in Asia must begin with a thorough understanding of these factors.

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any ethical questions on the use of life-sustaining treatments for terminally ill patients in the intensive care unit (ICU) exist. Several multinational studies, which are largely limited to developed nations in the West, have now been performed to describe the attitudes of physicians toward end-of-life care practices in ICUs. These studies suggest that most Western physicians deem withholding and withdrawal of life-sustaining treatments acceptable. To illustrate, in a previous questionnaire survey that documented the likely management of a patient with severe hypoxic-ischemic encephalopathy after cardiac arrest, more than 90% of physicians from Europe and North America would implement do-not-resuscitate (DNR) orders; fewer than 10% to 40%, depending on the specific region, would maintain mechanical ventilation and start antibiotics and vasopressors if the patient developed septic shock.

Asia accounts for at least half of all patients with critical illness, mechanical ventilation, and ICU deaths internationally; yet, data on end-of-life care in ICUs in Asia are comparatively sparse and available for only a few countries. Studies suggest that end-of-life care practices vary considerably, even among Western countries, and are influenced by multiple factors, including the personal attitudes and religious affiliations of physicians, the involvement of patients’ families, organizational characteristics of ICUs, societal culture, legislation, and economic status. Because these characteristics vary between and within countries, it may be hypothesized that substantial differences in the way physicians approach end-of-life care exist between Asia and the West, and among Asian countries and regions themselves. We designed the present study to describe the current attitudes and reported practice of physicians who manage critically ill patients in Asian countries and regions at the end of life, with emphasis on the withholding and withdrawal of life-sustaining treatments, and to evaluate the factors associated with these attitudes.

Methods

Study Participation

This was a questionnaire study of physicians who manage patients in ICUs in Asia. A steering committee of ICU specialists from 16 countries and regions was formed. The predominant sampling frame used was lists of ICUs and ICU physicians obtained from national critical care societies and networks. These lists were present for the majority of countries and regions. However, when they were not uniformly complete, or available, regional and personal snowball sampling was used as a supplementary or sole method (eTable 1 in the Supplement). Through these sampling frames, coordinators approached ICU directors or representatives in their respective countries and regions in person or via e-mail. The ICU directors and representatives then invited all physicians at their centers to participate. When necessary, coordinators approached individual physicians directly. Investigators for each country or region obtained approval by institutional review boards and oral or written informed consent as appropriate.

We defined ICUs as adult units that were capable of providing invasive mechanical ventilation and considered by their hospitals to be ICUs. We included intensivists as well as non-intensivists who are primary attending physicians of patients in ICUs (eTable 2 in the Supplement). We defined an intensivist as a physician who has passed an intensive care certification examination, has completed an accredited intensive care fellowship, or who treats patients with multiorgan failure and is recognized by his or her institution as an intensivist.

Questionnaire Development

The steering committee developed a survey by means of the following process: items were generated after a literature review of published surveys in April 2010. A specific table was used to map the questionnaire after discussion with an expert focus group in July 2010. Key questionnaire domains were decision making, communication, implementation and process, symptom management, legal or organizational guidance, ethical and legal aspects of care, religious and cultural influences, conflict resolution, and documentation. Items were worded and redundant or unfocused items removed. In August 2010, validity was assessed by means of modified sensibility testing with 14 ICU experts with backgrounds similar to those of the target participants. Additional items deemed redundant or that lacked face or content validity were removed or adjusted. A last round of testing resulted in agreement on all items in November 2011.

The final survey included fields on the respondents’ demographic characteristics, religion, specialty, ICU, and hospital (eAppendix 1 in the Supplement). Responses were ranked on a 5-point Likert scale where relevant. Questions examined whether life-sustaining treatments, including cardiopulmonary resuscitation (CPR), could be withheld and withdrawn as part of end-of-life care. The perceived frequency of implementing such decisions, and factors relating to the provision of end-of-life care, including attitudes to communication with patients, families, and surrogates, were explored. Other questions examined factors that respondents considered important for deciding on limitation of life-sustaining treatments, the presence of local policies on end-of-life care, and perceptions of legal risk. Two case scenarios were adapted from previous surveys to allow comparison with Western physicians’ responses. The first aimed to understand practice and attitudes in situations when prognosis and quality of life are likely to be extremely poor. A second scenario aimed to understand the influence of families’ or surrogates’ views on perceived end-of-life practices and examined whether respondents modified their management on the basis of 3 hypothetical situations. We translated the questionnaires from English to traditional Chinese, simplified Chinese, Japanese, and Korean and revalidated the translated questionnaires. We assigned passwords to respondents who accessed the online electronic survey, which prohibited uncompleted fields, between May and December 2012.

Statistical Analysis

We expressed categorical variables as frequencies (percentage). To dichotomize answers from the Likert scale, we cat-
We aimed to identify factors independently associated with a response that suggested an inclination against limitation of life-sustaining treatments: specifically, nonimplementation of DNR orders in case 1 and change in decision to full active support on the family’s or surrogate’s insistence in case 2. To account for differences both between and within countries and regions and ICUs, as well as the nesting effect of ICUs within countries and regions, we used generalized linear mixed models with unstructured covariance to model country or region and ICU as random effects. We chose independent variables for the models that were previously shown to affect end-of-life care (eTable 3 in the Supplement): hospitals’ and ICUs’ characteristics including policies on end-of-life care, and respondents’ personal characteristics and attitudes. These attitudes included factors that respondents deemed important when considering limitation of life-sustaining treatments, their perception of communication with patients and families or surrogates, and legal risk. Using data from the World Bank and the World Health Organization, to study the impact of economic factors, we also included each country or region’s World Bank income classification and out-of-pocket expenditure (ie, direct payments and/or outlay) by households as a percentage of total health care expenditure (eTable 4 in the Supplement). We considered a P value of <.05 statistically significant and used SPSS, version 21 (IBM Corp).

Results

Respondent Characteristics
In total, 466 of 785 invited ICUs (ICU response rate, 59.4%) and 1465 of 2460 invited physicians (physician response rate, 59.6%) participated from the following countries and regions: Bangladesh (103 physicians), China (195), Hong Kong (45), India (176), Indonesia (51), Iran (31), Japan (224), Malaysia (104), Pakistan (29), the Philippines (22), Saudi Arabia (79), Singapore (49), South Korea (186), Taiwan (35), Thailand (24), and Vietnam (112). Countries and regions that sampled all public-sector ICUs and those that sampled through national critical care societies and networks accounted for 88.2% of ICUs and 84.4% of physicians (eTable 1 in the Supplement). Table 1 describes the participants’ characteristics.

Withholding and Withdrawal of Life-Sustaining Treatments
For patients with no real chance of recovering a meaningful life, 70.2% of respondents reported that they almost always or often withheld life-sustaining treatments, 20.7% almost always or often withdrew life-sustaining treatments, and 2.5% almost always or often deliberately gave large doses of drugs such as barbiturates or morphine until death ensued, but these proportions varied widely among countries and regions (Figure). Among respondents, 74.5% believed that withholding and withdrawal were ethically different, a view supported by the majority in all countries and regions except Hong
Figure. Proportion of Respondents Who Almost Always or Often Withheld and Withdrew Life-Sustaining Treatments, and Actively Shortened the Dying Process for Patients With No Chance of Recovering a Meaningful Life

Respondents were asked, “For patients with no real chance of recovering a meaningful life, how often have you (A) withheld further active therapy, but continued current therapy (such as not starting vasopressors and hemodialysis); (B) withdrawn active therapy (such as stopping vasopressors and hemodialysis); (C) deliberately given large doses of drugs intentionally (eg, barbiturates or morphine) until death ensues?” Bars refer to percentages of respondents who chose almost always or often withheld (dark blue), withdrew (light blue), and actively shortened the dying process with drugs (white).

Case 1: End-of-Life Care Decisions

Table 3 describes the scenario of a 55-year-old woman with severe hypoxic-ischemic encephalopathy after cardiac arrest. The commonest responses were to decide on treatment after reaching a consensus with other physicians, to implement DNR orders, to tracheotomize and transfer the patient to the general ward when stable, and to maintain mechanical ventilation and start antibiotics and vasopressors if the patient developed pneumonia and septic shock. Regional responses varied widely, with respondents from Bangladesh, China, Iran, and Taiwan being less likely to implement DNR orders and respondents from the same countries and South Korea being more likely to start vasopressors and antibiotics in the event of septic shock (eFigures 3 and 4 in the Supplement).

Case 1: Independent Predictors of Implementation of Do-Not-Resuscitate Orders

A substantial minority (18.0%) would not implement DNR orders in case 1. eFigure 3 in the Supplement depicts the variation across countries and regions. Independent predictors of implementation were Protestant (adjusted odds ratio [AOR], 0.36 [95% CI, 0.16-0.80]; P = .01) and Catholic (AOR, 0.22 [95% CI, 0.09-0.58]; P = .002) respondents (eTable 6 and eFigure 5 in the Supplement). Nonimplementation was associated with respondents who did not agree that the family or surrogate’s request was a factor to consider for limitation of life-sustaining treatments (AOR, 1.67 [95% CI, 1.16-2.40]; P = .006), who were uncomfortable discussing limitation with families and surrogates (AOR, 2.38 [95% CI, 1.62-3.51]; P < .001), and who perceived a greater exposure to legal risk with DNR orders (AOR, 1.92 [95% CI, 1.26-2.94]; P = .002). In addition, although nonimplementation was more likely in low- to middle-income economies (AOR, 2.73 [95% CI, 1.56-4.76]; P = .001), it was less likely when out-of-pocket expenditure as a percentage of total

Kong and Singapore (eFigure 1 in the Supplement). The majority of respondents reported that life-sustaining treatments, including CPR, vasopressors, hemodialysis, and antibiotic therapy could usually be withheld or withdrawn in end-of-life care, but not enteral feeding, intravenous fluids, and oral suctioning (Table 2). Responses, however, again demonstrated variability among countries, with respondents in Bangladesh, China, Indonesia, Iran, Japan, Saudi Arabia, Taiwan, Thailand, and Vietnam being less likely than others to withhold or withdraw mechanical ventilation (eFigure 2 in the Supplement). Active shortening of the dying process with drugs was acceptable to 15.0% of respondents (range between countries, 0.9%-48.9%).

Respondents’ Perceptions of Patients and Families or Surrogates

In all, 84.1% and 77.9%, respectively, of respondents deemed patients’ wishes and families’ or surrogates’ requests to be important factors when considering limitation of life-sustaining treatments (eTable 5 in the Supplement). However, only 43.9% were comfortable discussing limitation with families or surrogates, and 35.6% stated that patients or families or surrogates almost always or often requested inappropriate life-sustaining treatments. The proportion of respondents who almost always or often believed that they exposed themselves to legal risk if they applied limitation of life-sustaining therapy in general, and DNR orders specifically, was 30.0% and 28.7%, respectively. When asked to estimate the proportion of families or surrogates who accept a suggestion of limitation of life-sustaining therapy, 15.0% (20.8% in low- to middle-income countries and regions, 7.3% in high-income countries and regions; P < .001) of the respondents chose 0% to 20%, 16.9% chose 21% to 40%, 24.3% chose 41% to 60%, 28.1% chose 61% to 80%, and 15.7% chose 81% to 100%.
healthcare expenditure increased (AOR, 0.98 per percentage of total healthcare expenditure [95% CI, 0.97-0.99]; \( P = .02 \)).

**Case 2: Impact of Family or Surrogate’s Requests**

Case 2 describes a 50-year-old man with irreversible and likely terminal disease (Table 4), with the respondent faced by 3 hypothetical surrogate situations. Where no family or surrogate or advance directives exist, 28.5% of respondents would continue full life-sustaining treatments including CPR, but if a family or surrogate insisted on withdrawal of therapy, this proportion decreased to 4.8%. If the family or surrogate insisted on the most active treatment, it increased to 45.1%. Among the 1048 respondents who would not continue full active support when there were no families or surrogates or advance directives, 338 (32.3%) would do so if there were families or surrogates who insisted. Adjusted for country or region, a list of independent predictors of a change in decision to full active support on the family’s or surrogate’s insistence is shown in eTable 7 in the Supplement. Respondents who did not agree that the expected long-term quality of life was a factor to consider for limitation of life-sustaining treatments, who were uncomfortable discussing limiting life-sustaining therapy with families or surrogates, and who per-

### Table 3. Case 1

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Respondents, Overall % (Range Between Countries)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 55-y-old woman was resuscitated from a cardiac arrest due to ischemic cardiac disease and admitted to the intensive care unit (ICU) with severe postanoxic lesions. Twenty-four hours later, she has decerebrate movements and the evoked potentials are absent. The consensus (including the senior neurologist) is that her best possible outcome is a persistent vegetative state. She has no close relative or advance directive.</td>
<td></td>
</tr>
<tr>
<td>Question 1. Which process do you follow to decide on the treatment for this patient in the ICU?</td>
<td></td>
</tr>
<tr>
<td>(A) Decide by yourself</td>
<td>5.3 (0-24.5)</td>
</tr>
<tr>
<td>(B) Decide after a consensus is reached with other physicians</td>
<td>53.4 (22.9-76.7)</td>
</tr>
<tr>
<td>(C) Decide after discussions involving other physicians and nurses</td>
<td>18.2 (3.2-48.4)</td>
</tr>
<tr>
<td>(D) Refer to the ethical committee in your hospital</td>
<td>20.2 (0-48.4)</td>
</tr>
<tr>
<td>(E) Refer to court</td>
<td>2.9 (0-17.1)</td>
</tr>
<tr>
<td>Question 2. Is this process likely to result in do-not-resuscitate (DNR) orders being applied in the event of recurrent cardiac arrest?</td>
<td></td>
</tr>
<tr>
<td>(A) No</td>
<td>18.0 (0-51.6)</td>
</tr>
<tr>
<td>(B) Yes, verbal DNR orders</td>
<td>26.1 (3.8-50.0)</td>
</tr>
<tr>
<td>(C) Yes, written DNR orders</td>
<td>55.8 (0-95.5)</td>
</tr>
<tr>
<td>Question 3. The patient remains absolutely stable for 5 d and, although still receiving mechanical ventilation, can breathe spontaneously. What would be the usual strategy in your institution?</td>
<td></td>
</tr>
<tr>
<td>(A) Keep the patient in the ICU (with or without tracheostomy) and start further interventions if a complication occurs</td>
<td>20.2 (0-93.5)</td>
</tr>
<tr>
<td>(B) Keep the patient in the ICU (with or without tracheostomy)–“wait and see”–but withhold therapy if a complication occurs</td>
<td>18.0 (2.0-34.3)</td>
</tr>
<tr>
<td>(C) Keep the patient in the ICU and start increasing doses of morphine or sedatives with the intent to decrease ventilatory conditions (“terminal weaning”)</td>
<td>1.0 (0-5.7)</td>
</tr>
<tr>
<td>(D) Perform a tracheostomy and transfer the patient to the general ward for continued care</td>
<td>47.9 (0-74.7)</td>
</tr>
<tr>
<td>(E) Extubate her and transfer the patient to the general ward for continued nursing care</td>
<td>12.8 (0-69.4)</td>
</tr>
<tr>
<td>Question 4. While the possible options are being considered, let us imagine that the patient rapidly develops fever and septic shock, presumably due to lung infection. What would likely be done in your institution?</td>
<td></td>
</tr>
<tr>
<td>(A) Maintain mechanical ventilation and start antibiotics and vasopressors</td>
<td>53.8 (6.1-87.2)</td>
</tr>
<tr>
<td>(B) Maintain mechanical ventilation and start antibiotics but no vasopressors</td>
<td>22.9 (7.8-44.4)</td>
</tr>
<tr>
<td>(C) Maintain only mechanical ventilation</td>
<td>16.2 (0-47.1)</td>
</tr>
<tr>
<td>(D) Give morphine and reduce ventilatory conditions (“terminal weaning”)</td>
<td>5.0 (0-22.2)</td>
</tr>
<tr>
<td>(E) Extubate and support nursing care (“terminal extubation”)</td>
<td>2.1 (0-24.5)</td>
</tr>
</tbody>
</table>

*Respondents who strongly agreed or agreed that specific treatments can usually be withheld or withdrawn as part of limitation of life-sustaining therapy in end-of-life care. Range is from the country or region with the lowest percentage to the country or region with the highest percentage.

### Table 2. Treatments That Can Usually Be Withheld or Withdrawn

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Respondents, Overall % (Range Between Countries)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemodialysis</td>
<td>71.3 (20.0-100)</td>
</tr>
<tr>
<td>Cardiopulmonary resuscitation</td>
<td>69.7 (11.6-100)</td>
</tr>
<tr>
<td>Tracheotomy</td>
<td>64.5 (14.3-93.9)</td>
</tr>
<tr>
<td>Vasopressors or inotropes</td>
<td>64.6 (25.0-95.9)</td>
</tr>
<tr>
<td>Broad-spectrum antibiotics</td>
<td>59.4 (19.4-90.9)</td>
</tr>
<tr>
<td>Mechanical ventilation</td>
<td>57.4 (9.4-95.9)</td>
</tr>
<tr>
<td>Total parenteral nutrition</td>
<td>55.6 (33.9-87.5)</td>
</tr>
<tr>
<td>Endotracheal intubation</td>
<td>51.6 (6.5-95.9)</td>
</tr>
<tr>
<td>Diuretics</td>
<td>46.6 (19.4-90.9)</td>
</tr>
<tr>
<td>Enteral feeding</td>
<td>35.6 (0-88.6)</td>
</tr>
<tr>
<td>Intravenous fluid therapy</td>
<td>33.9 (3.2-71.4)</td>
</tr>
<tr>
<td>Oral suctioning</td>
<td>24.4 (3.6-80.0)</td>
</tr>
</tbody>
</table>

*Respondents who strongly agreed or agreed that specific treatments can usually be withheld or withdrawn as part of limitation of life-sustaining therapy in end-of-life care. Range is from the country or region with the lowest percentage to the country or region with the highest percentage.
Table 4. Case 2

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Respondents, Overall %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 50-y-old patient suffering from chronic obstructive pulmonary disease for many years has been admitted repeatedly due to respiratory failure, and has required prolonged ventilatory support. This time he is suffering from respiratory failure again, together with prolonged cardiac arrest. After 72 h, he is still deeply comatose and requires ventilatory support.</td>
<td></td>
</tr>
<tr>
<td>Continue full active support treatment including CPR</td>
<td>28.5 15.6 12.4</td>
</tr>
<tr>
<td>Continue the most active support treatments except CPR</td>
<td>48.0 30.4 28.5</td>
</tr>
<tr>
<td>Continue current treatment but no complicated treatments (eg, hemodialysis, surgical intervention)</td>
<td>6.8 6.8 6.8</td>
</tr>
<tr>
<td>Continue current treatment but no additional treatments (eg, antibiotics for sepsis)</td>
<td>18.6 18.6 18.6</td>
</tr>
<tr>
<td>Stop mechanical ventilation (allow the patient to die)</td>
<td>1.7 17.0 30.4</td>
</tr>
<tr>
<td>Stop all treatment (intravenous infusion, nasogastric feeding) except mechanical ventilation</td>
<td>1.0 1.0 1.0</td>
</tr>
<tr>
<td>Obtain ethics consultation</td>
<td>8.3 7.8 7.5</td>
</tr>
</tbody>
</table>

Abbreviation: CPR, cardiopulmonary resuscitation.

Discussion

Variability in physicians’ practice of withholding and withdrawal of life-sustaining treatments matters because it affects how patients die. In this large multinational study, 70.2% of respondents reported that they almost always or often withheld, but only 20.7% reported that they withdrew such treatments for patients with no real chance of recovering a meaningful life. Striking differences in these attitudes existed across different Asian countries and regions. In a hypothetical setting of hypoxic-ischemic encephalopathy, although 82.0% of all respondents would implement DNR orders, the corresponding range among countries and regions was 48.4% to 100%. Factors on multivariable analysis that were independently associated with nonimplementation of DNR orders include characteristics related to country or region (economy, out-of-pocket expenditure on health care, and legal risks) and physicians (religion), and their attitudes (regarding communication with families or surrogates).

Comparing our data with a previous study with the same scenario as case 1, our respondents were less likely (82.0%) to implement DNR orders than physicians from North America, Australia, and Europe (all >90%) (eFigure 6 in the Supplement), and more likely (53.8%) to “do everything” if a patient with hypoxic-ischemic encephalopathy developed septic shock than those in the United States (<40%), Southern Europe (<30%), Canada (<20%), and Australia and Northern Central Europe (<10%) (eFigure 7 in the Supplement). Compared with another Western European survey, our respondents were also less likely to withhold and withdraw life-sustaining treatments or to actively shorten the dying process. Asian society may expect more aggressive life support, with many physicians indicating that only a small proportion of families or surrogates would accept limitation of therapy. However, similar to previous studies demonstrating that country or region was a strong determinant of physicians’ attitudes, our findings show that a unified Asian approach to end-of-life care does not exist. For example, whereas all respondents from Hong Kong, Pakistan, the Philippines, and Singapore would implement DNR orders, only approximately half from China and Iran would. Similar variability was observed with withholding and withdrawal of mechanical ventilation. Clearly, reasons behind differences in attitudes are related at least in part to societal culture and multifaceted. The multivariable analyses were constructed to shed light on the importance of the many plausible reasons (eTables 6 and 7 in the Supplement).

Implementation of DNR orders for case 1 was less frequent in low- to middle-income than in high-income countries and regions. This may suggest possible differences in societal culture between poorer and richer countries and regions, and lower public trust in the health care systems of low- to middle-income economies (where fewer families or surrogates accept limitation of life-sustaining treatments). Nevertheless, respondents were also more likely to implement DNR orders as out-of-pocket health care expenditure increased, and 53.4% listed financial burden for the patient as a factor to consider when limiting treatments. Because data on out-of-pocket expenditure reflect an entire country or region’s health care funding model rather than what happens in individual ICUs, this association requires further investigation.

Although Western guidelines promote patient autonomy, families are often approached to act as surrogates for ICU patients who cannot participate in end-of-life discussions. In many Asian cultures, the role of the family or surrogate is considered paramount, and our findings regarding family and surrogate interactions highlight many challenges. Surprisingly, 56.1% of respondents were uncomfortable discussing...
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Limitation of life-sustaining treatments, 22.1% did not consider families’ or surrogates’ requests important, and 35.6% indicated that these requests were almost always or often inappropriate. Those with the first 2 responses were less likely to implement DNR orders in case 1, and more likely to perform apparently inappropriate CPR if families or surrogates asked in case 2. In keeping with these findings, 28.7% believed that they would be exposed to legal risks from DNR orders, although this proportion ranged from 0% to 80.6% in different countries and regions. Unlike in some Western countries, the lack of an established ethicolegal framework to guide end-of-life care in many Asian countries may contribute to insecurity relating to life support limitation.  

In this study, physicians without religious beliefs were less likely to implement DNR orders in case 1 than were Protestants and Catholics. This contrasts with previous observations that greater religiosity among physicians results in use of more aggressive life-sustaining treatments; for example, Catholic physicians in a Western European survey were less likely to withhold and withdraw such treatments than agnostics. Another European study, however, reveals a more complex interaction between physician attitudes and religion, which is clouded by cultural factors. Indeed, whereas Protestantism and Catholicism allow limitation of life support in principle, how physicians see these principles may vary between regions.

Most physicians were more ready to withhold and withdraw vasopressors and hemodialysis than enteral feeding and intravenous fluids. Although American guidelines recommend reviewing the role of artificial nutrition for the dying, several Asian ethnic groups including the Chinese often see feeding as an expression of filial piety, whereas Islam views nutritional support as basic care and not medical treatment. In addition, contrary to the view of many ethicists, but echoing the findings of earlier multinational studies, three-quarters of our respondents viewed withholding and withdrawal differently.

Our study has several strengths. To our knowledge, it is the largest and only survey of its kind on an underexplored topic in Asia. We studied several factors that may affect attitudes toward end-of-life care, including novel ones such as countries’ and regions’ income classification and out-of-pocket health care expenditure. Our study also has several weaknesses. Although it explored variability across countries and regions, it was not specifically designed to define variability across ICUs within the same country or region. Formal reliability testing was not undertaken, and repeatability of individual responses cannot be ensured. Questions about patients with no real chance of recovering a meaningful life, although adapted from previous studies, are subject to interpretation. Questions on whether specific life-sustaining treatments could be withheld and withdrawn were designed to establish prevalent practice, but the motivation behind such practice was not directly captured. The response rate was moderate, although it was higher than those of previous international surveys: 39.6% in a western European survey and 56.1% in a predominantly European and North American survey. Logistical difficulties posed by an underdeveloped research infrastructure, particularly the absence of a formal registry of ICUs and physicians in Asia, may have resulted in some selection bias. Nevertheless, the combination of approaches used for recruitment resulted in a respondent group that represented sufficiently different backgrounds and experience, and teaching and nonteaching ICUs and hospitals of all sizes (Table 1).

This study has potentially important implications for end-of-life care in Asia. The demonstrated diversity of views across the continent suggests that initiatives to improve care for the terminally ill in the ICU must be tailored for the individual country or region. Although the current status of medical ethics education for physicians in Asia was not directly addressed, we are of the opinion that along with the rapid expansion of availability of ICU services, the ethical dimension of end-of-life care requires greater discussion within the health care community and the public. It is hoped that this will result in locally acceptable guidelines, ethicolegal frameworks, and health care funding models that support humane end-of-life care. Cultural attitudes are not easily changed, and effective public education is a massive undertaking, requiring lobbying of governments and other national bodies. Our data provide an opportunity for countries and regions to compare practices and to evaluate whether their current practices are appropriate or should stimulate further investigation and change.

Conclusions

In general, physicians in ICUs in Asia reported that they were less likely to limit life-sustaining treatments at the end of life than Western physicians. In addition, attitudes and reported practice varied widely across countries and regions and were frequently very different from those reported in similar European, North American, and Australian surveys. Multiple factors related to country or region, including economic, cultural, religious, and legal differences, as well as personal attitudes, were associated with variations in reported practices.
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REFERENCES

33. Luce JM, White DB. The pressure to withhold or withdraw life-sustaining therapy from critically ill patients in the United States. Am J Respir Crit Care Med. 2007;175(11):1104-1108.
37. Curtis JR, Patrick DL, Shannon SE, Treece PD, Engelberg RA, Rubenfeld GD. The family conference as a focus to improve communication
End-of-Life Care in the Intensive Care Unit
How Asia Differs From the West

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The decision to withhold and withdraw life-sustaining treatment in an intensive care unit (ICU) remains a challenge given the presence of technological advances that make it possible to prolong life even when there is minimum chance of meaningful recovery. These decisions are often difficult to make, with strong social, legal, cultural, moral, and religious values affecting attitudes and practices.¹ There is little information available on decision-making processes pertaining to withholding and withdrawal of life-sustaining support in critically ill patients in Asia. In this issue of JAMA Internal Medicine, Phua and colleagues² present, to our knowledge, the first large-scale study to provide valuable insights into end-of-life care practices in this part of the world.

The Differences Between East and West
Phua et al² found that 70% of respondents would almost always or often withhold life-sustaining treatments for patients with no real chance of recovering a meaningful life. However, only 21% would almost always or often withdraw mechanical ventilation and 75% viewed withholding and withdrawing as ethically different. This is in contrast to the West, where withdrawing and withholding ventilation are considered ethically similar.

The authors also found a wide variation in practice among ICU physicians when they were given a scenario of a patient with hypoxic-ischemic encephalopathy. Depending on country or region, 48% to 100% would implement do-not-resuscitate (DNR) orders, whereas 6% to 87% would still maintain ventilation, give antibiotics, and start vasopressors. This practice also differs substantially from that of their European and North American counterparts, more than 90% of whom would consider DNR in a similar scenario and only 10% to 40% of whom would maintain ventilation and start antibiotics and vasopressors.

This study reflects the fact that Asian ICU physicians tended to be more aggressive in their treatment compared with their western counterparts. These physicians believed that Asians expected more aggressive treatment from their physicians. We believe that the main reasons behind their reluctance to implement DNR orders could be 2-fold. First, it could stem from the ICU physicians’ discomfort with having end-of-life conversations with families. The authors found that 56% of ICU physicians were uncomfortable talking about limiting life-sustaining treatments and did not value the family or surrogate’s input (22%) or believed that their input was inappropriate (36%). Other reasons stated were physicians’ perceived legal risks (29%) and distrust of families toward ICU teams from low- to middle-income countries.

The second possible explanation for more aggressive treatment used by Asian physicians could stem from them not knowing the patient’s health care wishes. There is no strong culture of making advanced directives in Asia compared with the United States, where 20% of the population have advanced directives.³ Death and dying is also viewed as a taboo subject in many Asian cultures⁴ and is often not spoken of openly. Collusion—or nondisclosure, in which families “protect” their loved ones from knowing the “bad news” of a cancer diagnosis or life-limiting illness⁵—also prevents us knowing the patient’s preferences. This ignorance of the patient’s wishes, together with traditional Asian values of filial piety and their strong sense of reverent responsibility toward their aging parents, may lead to extraordinary treatment even at the end of life³ and also lead the ICU physicians to adopt a more aggressive stance by default.

Differences Within Asia
There were also marked differences in the responses of ICU physicians from various Asian countries. In one of the given scenarios, all respondents from Hong Kong, Pakistan, the Philippines, and Singapore would implement DNR orders whereas only half from China and Iran would do the same. In particular, respondents from Singapore and Hong Kong stood out as having attitudes similar to those of western physicians toward withdrawing and withholding ventilatory support. These similarities might arise because both have access to high-quality palliative care. According to the World Health Organization, Singapore and Hong Kong were 2 of the only 3 countries or regions in Asia, together with Japan, that have been successful in integrating palliative care into their local health care systems.6 Another possible explanation could be the greater opportunities for exposure of their physicians to the West in terms of rotations and conferences. The medical education structure in these former British colonies is also heavily influenced by the British system, with many physicians taking the postgraduate examinations affiliated with the Royal College in the United Kingdom. Overall, we echo the authors’ opinion that there is no unified Asian approach toward end-of-life care in the ICU; the more affluent countries with a strong palliative care presence or greater exposure to the West share similar attitudes toward implementation of DNR orders.

The Case for Palliative Care in the ICU
The integration of palliative care in an ICU may seem paradoxical because the traditional goal of intensive care is to restore health and reduce mortality and morbidity. So, how can both palliative care and intensive care coexist in the same setting to improve clinical care?

Palliative care physicians in an ICU setting can help to assess and manage distressing physical, psychosocial, and spiritual issues faced by critically ill patients. Communication about end-of-life issues during family meetings is an important skill in which palliative care physicians are trained. This expertise allows them to assist the ICU teams in establishing realistic goals of care together with patients and their families. In addition, palliative care physicians can also provide an independent opinion when the ICU team needs to make the ethically challenging medical decision pertaining to withholding and withdrawal of therapy. The provision of continuity of end-of-life care after the patient leaves the ICU is another added benefit of involvement of the palliative care team, who can continue to extend their care to the patients in the wards. It has also been shown that palliative care involvement in ICUs reduces hospital and ICU lengths of stay.7

Our views are that palliative care physicians—whose strengths are in symptom control, communication, goals of care discussions, advance care planning, and care coordination—would complement the ICU physician, whose forte is the meticulous and holistic care of the sickest patients in the hospital.

Future Research
Overall, Phua et al have successfully reflected the varying attitudes of Asian ICU physicians toward withdrawal and withholding of life-sustaining treatments. Moving forward, more research can be done to study ICU physicians’ attitudes toward palliative care collaborations in Asia. Qualitative studies examining patients’ and families’ views on prolonged mechanical ventilation, withholding, and withdrawal would also shed light on the complex influences affecting decision making and effective provision of end-of-life care for patients in the ICU. Subspecialty ICUs may also have differing practices that may be worthwhile to explore at a deeper qualitative level as well.

REFERENCES